Skua-11 ST1 Well Drilling Environment Plan

TM-50-PLN-I-00007

Rev 0

Facility:	**TM - Montara Field**
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	Jadestone Drilling Supervisor	x	

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ACRONYMS AND ABBREVIATIONS

Abbreviation	Description
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABF	Australian Border Force
ADB	Asian Development Bank
AFMA	Australian Fisheries Management Authority
AHIS	Aboriginal Heritage Inquiry System
AHO	Australian Hydrographic office
AHS	Australian Hydrographic Service
ALARP	as low as reasonably practicable
AMBFR	Australian Biofouling Management Requirements
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
ANZECC	Australian and New Zealand Environment and Conservation Council
API	American Petroleum Institute
APPEA	Australian Petroleum Production and Exploration Association
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
BCP	Jadestone Blowout Contingency Plan
BHPB	BHP Billiton
BIA	Biologically important areas
BMS	Business Management System
BOD	Biological oxygen demand
BOP	Blowout preventer
BRUVS	Baited Remote Underwater Video Stations
BWM Convention	International Convention for the Control and Management of Ships' Ballast Water and Sediments
CAMBA	China – Australia Migratory Bird Agreement
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CFA	Commonwealth Fisheries Association
CHARM	Chemical Hazard Assessment and Risk Management
CoA	Commonwealth of Australia
CoEP	Code of Environmental Practice
COLREGS	International Regulations for Preventing Collisions at Sea 1972
CPF	Central Processing Facility
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Cwlth	Commonwealth

Abbreviation	Description
DAH	Dissolved aromatic hydrocarbons
DAFF	Department of Agriculture, Fisheries and Forestry (previously Department of Agriculture, Water and the Environment, DAWE)
DAWE	Department of Agriculture, Water and the Environment (previously Department of Environment and Energy) (now Department of Agriculture, Fisheries and Forestry, DAFF, and Department of Climate Change, Energy, the Environment and Water, DCCEEW)
DAWR	Department of Agriculture and Water Resources (now Department of Agriculture, Fisheries and Forestry, DAFF)
DBCA	Department of Biodiversity, Conservation and Attractions (previously Department of Parks and Wildlife, and Department of Environment and Conservation)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (previously Department of Agriculture, Water and the Environment, DAWE, Department of the Environment and Energy, DOEE, Department of the Environment, Water, Heritage and the Arts, DEWHA, and Department of Sustainability, Environment, Water, Population and Communities, DSEWPaC)
DEC	Department of Environment and Conservation (now Department of Biodiversity, Conservation and Attractions, DBCA)
DEH	Department of Environment and Heritage (now Department of Planning, Lands and Heritage)
DEWHA	Department of the Environment, Water, Heritage and the Arts (now Department of Climate Change, Energy, the Environment and Water, DCCEEW)
DGPS	Functioning positioning equipment
DIIS	Department of Industry, Innovation and Science (now Department of Industry, Science and Resources)
DMIRS	Department of Mines, Industry Regulation and Safety (previously Department of Mines and Petroleum)
DNP	Director of National Parks
DOA	Department of Agriculture (previously Department of Agriculture and Water Resources, now Department of Agriculture, Fisheries and Forestry)
DoEE	Department of the Environment and Energy (now Department of Climate Change, Energy, the Environment and Water, DCCEEW)
DoF	Department of Fisheries (now Department of Primary Industries and Regional Development, DPIRD)
DoNP	Director of National Parks
DOT	Department of Transport
DP	Dynamically Positioned
DPaW	Department of Parks and Wildlife (now Department of Biodiversity, Conservation and Attractions, DBCA)
DPIRD	Department of Primary Industries and Regional Development (previously Department of Fisheries)
DPLH	Department of Planning, Lands and Heritage
DSD	Department of State Development
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now Department of Climate Change, Energy, the Environment and Water, DCCEEW)
EEZ	Economic Exclusion Zone

Abbreviation	Description
EMBA	Environment that may be affected
ENVID	Environmental hazard identification (process)
EP	Environment Plan
EPA	Environmental Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPO	Environmental performance outcome
EPS	Environmental performance standard
ESD	Ecologically Sustainable Development
FAO	Food and Agriculture Organization of the United Nations
FPSO	Floating production storage and offtake (facility)
FRDC	Fisheries Research and Development Corporation
HFO	Heavy Fuel Oil
HMCS	Harmonised Mandatory Control System
HP	High pressure
HSE	Health safety and environment
IAP	Incident Action Plan
IAPP	International Air Pollution Prevention
ICD	Inflow control devices
IFO	Intermediate Fuel Oil
IMCRA	Integrated marine and coastal regionalisation of Australia
IMO	International Maritime Organisation
IMPS	Introduced marine pest species
IMS	Introduced Marine Species
IMT	Incident Management Team
IOGP	International Association of Oil and Gas Producers
IOPP	International Oil Pollution Prevention
IPIECA	International Petroleum Industry Environmental Conservation Association
ISM	International Safety Management
ISPP	International Sewage Pollution Prevention
ITF	Indonesian Throughflow (current)
IUCN	International Union for Conservation of Nature
IWC	International Whaling Commission
JAMBA	Japan – Australia Migratory Bird Agreement
JEE	Jadestone (Eagle) Energy Pty Ltd
JHA	Job hazard analysis
JRCC	Joint Rescue Coordination Centre

Abbreviation	Description
JSE	Job Safety and Environment
KEFs	Key Ecological Features
Kl	Kilolitre
LAT	Lowest astronomical tide
LMS	Listed migratory species
LOWC	Loss of well control
LP	Low pressure
LSA	Low specific activity
LTS	Listed Threatened Species
MAH	Monocyclic aromatic hydrocarbons
MARPOL	Marine pollution (legislation)
MARS	Maritime and Aircraft Reporting System
MD	Measured depth
mg/L	Milligrams per litre
MMA	Marine Management Area
MMSI	Maritime mobile service identity
MNES	Matters of national environmental significance
MOC	Management of Change
MODU	Mobile offshore drilling unit
MOM	Marine Operating Manual
MOU	Memorandum of Understanding
MP	Marine Park
MPRA	Marine Parks and Reserves Authority
NAXA	North Australian Exercise Area
NCB	North Coast Bioregion
NEBA	Net Environmental Benefit Assessment
NES	National Environmental Significance
NM	Nautical Mile
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NRC	National Research Council
NRMMC	Natural Resource Management Ministerial Council
NSF	Northern Shark Fishery
NSW	New South Wales
NT	Northern Territory
NTU	Nephelometric Turbidity Unit
NW	North West

Abbreviation	Description
NWMR	North West Marine Region
NWS	North-West Shelf
NWSTF	North-West Slope Trawl Fishery
OA	Operational Area
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 (E) Regs	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009
OPGGS Act	Offshore Petroleum and Greenhouse Gas Storage Act 2006
OSMP	Operational and scientific monitoring plan
OSRL	Oil Spill Response Limited
OVID	Offshore Vessel Inspection Database
OWR	Oiled wildlife response
PAH	Polycyclic aromatic hydrocarbons
PAR	Pre-arrival report
PHG	Pre-hydrated gel
PLONOR	Pose little or no risk
PMS	Preventative Maintenance System
PMST	Protected matters search tool
POB	Persons on board
ppb	parts per billion
ppm	parts per million
PSD	Particle size distributions
PSV	Pressure safety valves
PSZ	Petroleum safety zone
PTS	Permanent Threshold Shift
PW	Produced water
QLD	Queensland
RAN	Royal Australian Navy
ROV	Remote Operated Vehicle
SBFTF	Southern Bluefin Tuna Fishery
SCAT	Shoreline Clean up and Assessment Technique

Abbreviation	Description
SCSSV	Surface controlled subsurface safety valve
SDS	Safety data sheet
SEEMP	Ship Energy Efficiency Management Plan
SFRT	Subsea First Response Toolkit
SIMOPs	Simultaneous operations
SMP	Scientific monitoring program
SOLAS	Safety of Life at Sea
STCW	Standards of Training, Certification and Watchkeeping for Seafarers 1978
STP	Sewage Treatment Plant
TSSC	Threatened Species Scientific Committee
TTS	Temporary Threshold Shift
UAV	Unmanned Aerial Vehicles
USD	United States Dollar
VOC	Volatile organic compounds
VSP	Vertical Seismic Profiling
WA	Western Australia
WA	Western Australia
WAFIC	Western Australian Fishing Industry Council
WAOWRP	Western Australian Oiled Wildlife Response Plan
WBM	Water based mud
WCCS	Worst Case Credible Scenario
WDCS	The Whale and Dolphin Conservation Society
WHP	Wellhead platform
WOMP	Well Operations Management Plan
WSTF	Western Skipjack Tuna Fishery
WTBF	Western Tuna and Billfish Fishery
XT	Christmas tree

1. INTRODUCTION

1.1 Background

Jadestone Energy (Eagle) Pty Ltd (Jadestone) is the operator and titleholder of the Montara development which comprises of the Montara, Skua, Swallow and Swift fields. Jadestone plans to re-enter and sidetrack the existing Skua-11 well in production licence AC/L8. Skua-11 well is located in Commonwealth waters of the Timor Sea, off northern Western Australia (Figure 1-1). Jadestone has prepared this Environment Plan (EP) to manage the environmental impacts and risks for the drilling activities (the Activity) in accordance with the requirements of the Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act) and *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (OPGGS(E)R) as administered and for regulatory acceptance by the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA).

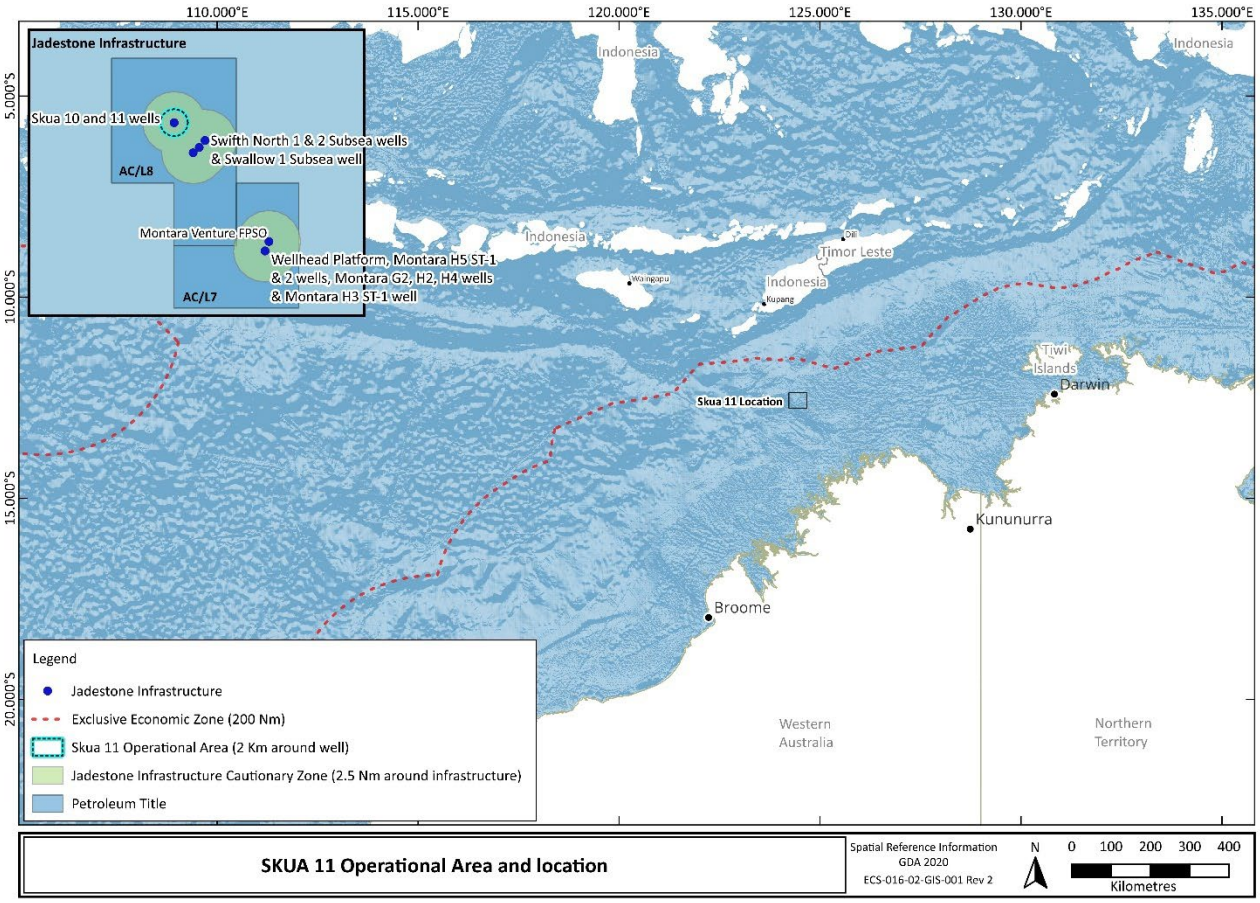


Figure 1-1: Location of the Skua 11 Operational Area and surrounding Montara infrastructure

1.2 Operator and Titleholder Details

Jadestone is the owner, operator and sole titleholder of the Skua- 11 production well, as part of the Montara development, located in production licence AC/L8 in the Timor Sea.

Jadestone's Australian office is located at:

The Atrium Building
Level 2, 168 St Georges Terrace
Perth, Western Australia, 6000
ACN 613 671 819

Jadestone contact for the Activity is:

Chris Holgate, Drilling Manager
Phone: +61 8 6486 6600
Email: aucompliance@jadestone-energy.com

In the event contact details for Jadestone or the liaison contact change within the timeframe of this EP, the Regulator, the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) will be advised of the updated details.

1.3 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 Health Safety and Environment (HSE) Policy (Appendix A) and this EP.

1.4 Legislative Framework

The Activity is located within the Commonwealth Petroleum Jurisdiction Boundary and therefore regulated under Commonwealth legislation; primarily under the OPGGS Act and the OPGGS(E) Regulations. In accordance with Regulation 21 of the OPGGS(E) Regulations, this section describes the Commonwealth legislation, international agreements and other relevant guidelines and codes of practice to the Activity. In the unlikely event of an unplanned hydrocarbon release that migrates into state waters, WA or NT legislation will be triggered. Applicable Commonwealth and state legislation are listed in Appendix B, with key legislation summarised below:

Offshore Petroleum and Greenhouse Gas Storage Act 2006

The OPGGS Act and OPGGS(E) Regulations specify the requirements to manage the environmental impacts of petroleum activities. The Regulations require that an EP must be accepted by the regulatory authority (NOPSEMA) prior to commencing the proposed activity. NOPSEMA guidelines outline the requirements for the content of EPs.

Environment Protection and Biodiversity Conservation Act 1999

Under Commonwealth government streamlining arrangements, NOPSEMA's assessment of this EP provides consideration of the impacts to matters of national environmental significance (MNES) protected under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This obviates the requirement to refer the project to the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

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). In 2018, 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.

Ecologically Sustainable Development

The OPGGS(E) Regulation 4 states that any petroleum activity carried out in an offshore area is carried out in a manner consistent with the principles of Ecologically Sustainable Development (ESD) as set out in section 3A of the EPBC Act. The ESD principles address issues such as climate change, biodiversity conservation, urban development, employment, and economic activity, diversity and resilience. Under the EPBC Act, the ESD principles are:

- decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;

- the precautionary principle - 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
- 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
- the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making, and
- improved valuation, pricing and incentive mechanisms should be promoted.

Jadestone has incorporated the principles of ESD into the decision-making framework described in Section 4 and in the development of control measures and environmental performance outcomes proposed in Sections 6 and 7.

Australia is signatory to several international environmental protection agreements and conventions which are relevant to the region, including for the protection of wetlands and environmental values. Australia is also a signatory to several international conventions of potential relevance to the activity, including:

- Australia-Indonesia Memorandum of Understanding regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974 (Memorandum of Understanding Box);
- Convention on the Conservation of Migratory Species of Wild Animals 1979 (Bonn Convention);
- International Convention on Oil Pollution Preparedness, Response and Co-operation 1990;
- Protocol to International Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter 1996;
- International Convention for the Prevention of Pollution from Ships (MARPOL); and
- United Nations Convention on the Law of the Sea 1982.

1.5 This Environment Plan

The objectives of this EP are to ensure that:

- All activities associated with the Drilling Program are planned and conducted in accordance with Jadestone's Health, Safety and Environmental (HSE) Policy in Section 1.3;
- Potential adverse environmental impacts and risks associated with the proposed activities, during both routine and non-routine operations, are continually reduced to as low as reasonably practicable (ALARP) and of acceptable levels; and
- 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 the Activity. The assessment aims to systematically identify and assess the potential environmental impacts and risks associated with the drilling 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.

NOPSEMA's Guidance Note for Environment Plan Content Requirements (N-04750-GN1344 A339814; January 2024) was referred to in the preparation of this EP.

1.6 Environment Plan Summary

An EP summary will be prepared based on the material provided in this EP and associated Oil Pollution Emergency Plan (OPEP). Table 1-1 summarises the content that will be provided within the EP summary, as required by Regulation 35(7).

Table 1-1: Content to be provided within the EP Summary

EP Summary material requirement	Relevant section of EP containing EP Summary material
The location of the activity	Section 2.2
A description of the receiving environment	Section 3
A description of the activity	Section 2
Details of the environmental impacts and risks	Section 6 and 7
A summary of the control measures for the activity	Section 6 and 7
A summary of the arrangements for ongoing monitoring of the titleholder's environmental performance	Section 8.3
A summary of the response arrangements in the oil pollution emergency plan	Section 8.5 and Oil Pollution Emergency Plan
Consultation already undertaken and plans for ongoing consultation	Section 4 and Appendix E
Details of the titleholders nominated liaison for the activity	Section 1.2

2. Activity Description

2.1 Overview

The existing Skua-11 subsea production well consists of primary and secondary barriers to maintain the integrity of the well. Issues with the production casing, a secondary barrier were identified in 2020 and the well was worked over in 2021. A casing patch was installed at approximately 145 m below the seabed to restore the integrity of the casing. In late 2023 a loss of pressure in the gas lift system indicated a further failure in the production casing. While the integrity of the primary barrier remains intact, activities are required to restore the integrity of the secondary barrier.

Activities will be undertaken to restore the integrity of the secondary barrier for the Skua-11 well, and to allow additional access to the Skua reservoir, via a side track of the existing Skua-11 well (termed Skua-11 ST1).

This section provides a description of the petroleum activity as required under Regulation 21(1) of the OPGGS(E)R (2023) for the Skua-11 well drilling activities.

2.2 Location

The Skua-11 well is a subsea oil producer well located in the Skua field approximately 706 km (376 nautical miles) east of Darwin in a water depth of approximately 80 m (Figure 2-1) in Commonwealth waters of the Timor Sea (Table 2-1). Skua-11 well forms part of the Montara development, where crude oil from the Montara, Skua, Swift and Swallow fields is transported via flowline for processing at the well head platform (WHP) and Floating Production Storage Offtake (FPSO). The WHP currently has five production wells, and there are five subsea production wells located approximately 17 to 18 km from the FPSO.

This EP encompasses the well drilling program for the Skua-11 ST 1 well in Production Licence AC/L8.

Table 2-1: Location of activities

Site	Skua-11 well drilling (subsea well)
Field	Skua
Licence/Permit	AC/L8
Water depth (LAT) m	80
Location	12° 30’ 04.560” S 124° 25’ 05.580” E

2.3 Timing and Duration

The Skua-11 ST1 well activities are scheduled to commence between Q1 and Q3 of 2025 subject to MODU availability, Regulator acceptance and long lead equipment arrival. Operations are likely to last for a period of approximately 66 days in total, however timings are subject to weather and operational efficiency. Therefore, this EP validity period is from January to December 2025. Once accepted, Jadestone Energy will be permitted to undertake the activities at any time during this period.

2.4 Petroleum Safety Zone (PSZ)

A 500 m radius Petroleum Safety Zone (PSZ) exists as an exclusion zone around the Skua-11 subsea wellhead. This will remain in place for the duration of the activities on Skua-11 ST 1.

Pursuant to Section 616 of the OPGGSA, all vessels other than those under the control of Jadestone Energy or authorised by Jadestone Energy, 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 Skua-11 well. 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.

2.5 Operational Area

The Operational Area for Skua-11 ST1 well drilling activities is defined as a 2 km buffer around the existing Skua-11 well (production license AC/L8), in which all planned petroleum activities will take place and will be managed under this EP (Figure 2-1).

The Operational Area includes the 500 m PSZ that will remain in place for the duration of activities under this EP.

When the MODU and support vessels are outside of the Operational Area and remain within Australian waters (e.g. transiting to or from location or holding position outside the PSZ), they fall under the regulatory jurisdiction of the Australian Maritime Safety Authority (AMSA) under the *Navigation Act 2012*. Accordingly, this EP does not cover activities performed by the support vessels while outside the Operational Area; however, this EP does cover oil spill response activities outside the Operational Area.

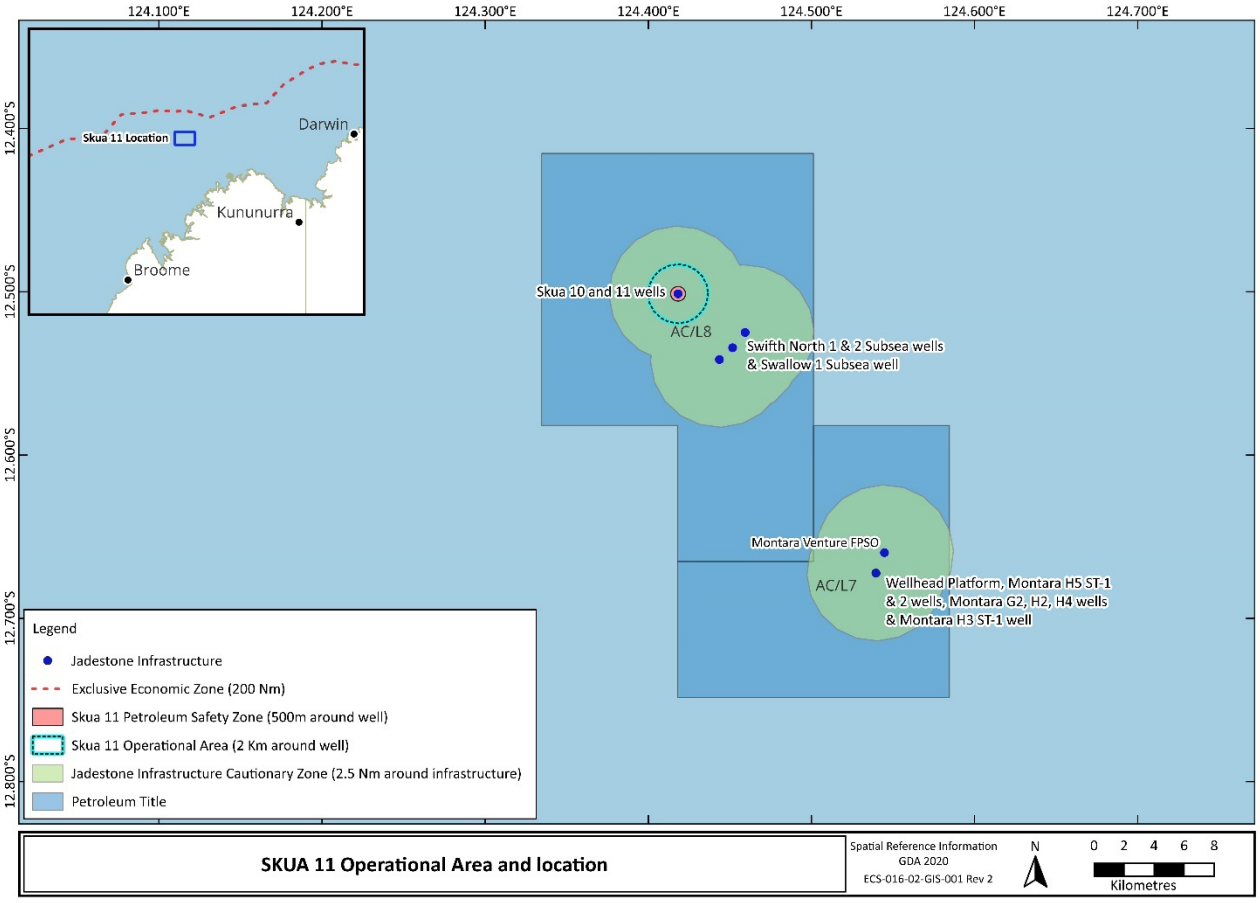


Figure 2-1: Operational Area for the Skua-11 Drilling Activities

2.6 Mobile Offshore Drilling Unit

The mobile offshore drilling unit (MODU) used to support the Skua-11 ST1 drilling activities will be a 'jack up' drilling MODU towed to the Skua-11 well site by support vessels.

The MODU, similar to the MODUs used in previous Montara campaigns, can operate in water depths of up to 146 m and drill to depths of up to 10,700 m. Typical maximum number of berths provides for approximately 140 persons onboard (POB).

2.7 Skua-11 Well Infrastructure

As described in the Montara Operations Environment Plan (MV-90-PLN-I-00001), the subsurface completion of the Skua-11 well 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 CO_2 related corrosion) cemented into the wellbore. The casing of the wellbore serves several purposes:

- To prevent deterioration of the hole, e.g. caving-in, swelling, washouts;
- To effectively isolate formations penetrated while drilling and hence prevent crossflow of fluids from higher to lower pressure zones;
- To provide a sealed passage for flow of well fluids to the production tubing. The production casing and/or liner are the only sections that are exposed to the well fluid. This is important in avoiding leakage of well fluids to the surface from outside of the wellbore; and
- To provide pressure integrity for gas-lift and well killing.

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-11 well is a horizontally completed well that has sand control screens with ICDs across the sandface/reservoir. The upper completion consists of production tubing, a gas lift valve a chemical injection mandrel and a surface controlled subsurface safety valve.

A Surface Controlled Subsurface Safety Valve (SCSSV) is installed in the well's tubing string at approximately 80 m below the seabed to prevent uncontrolled flow in an emergency. The SCSSV is 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.

Other infrastructure within the vicinity of the Skua-11 well associated with the Montara Venture are listed in Table 2-2. Details of this infrastructure are provided for context only, with activities associated with this infrastructure out of the scope for this EP.

Table 2-2: Infrastructure coordinates in the vicinity of Skua-11 *(Surface) (GDA 94, Zone 51)*

Well and Infrastructure Locations	Latitude (South)	Longitude (East)	Distance from Skua-11 well (km)
Montara Venture FPSO (Turret centre)	12° 39' 35.3"	124° 32' 41.1"	22.28 km
Wellhead Platform with the following wells	12° 40' 20.5"	124° 32' 22.2"	23.06 km
Montara H5 ST-2 well	12° 40' 20.466"	124° 32' 22.320"	
Montara H4 well	12° 40' 20.547"	124° 32' 22.321"	
Montara H3 ST-1 well	12° 40' 20.548"	124° 32' 22.162"	
Montara H2 well	12° 40' 20.548"	124° 32' 22.241"	
Montara G2 well	12° 40' 20.466"	124° 32' 22.320"	
Swallow 1 Subsea well	12° 32' 29.5"	124° 26' 36.8"	5.24 km
Swift Manifold	12° 32' 29.6"	124° 26' 37.7"	5.25 km
Swift North 1 Subsea well	12° 31' 29.9"	124° 27' 33.7"	5.18 km
Swift-2 Subsea well	12° 32' 3.6"	124° 27' 6.0"	5.15 km

Skua-10 Subsea well	12° 30' 4.6"	124° 25' 5.4"	5.5 m

2.8 Hydrocarbon - Skua crude oil

Skua crude has an API of 41.9 and a density of 815.4 kg/m^3 (at 15ºC) with a viscosity value of 2.5 cP at 20^{0}C. Approximately 28.4% of the hydrocarbon mass should evaporate within the first 12 hours (Boiling point (BP) < 180°C); a further 21.8% should evaporate within the first 24 hours (180°C < BP < 265°C); and a further 27.4% should evaporate over several days (265°C < BP < 380°C). Approximately 22.4% of the crude is shown to be persistent, classifying it as a Group II (light-persistent) oil according to the International Tankers Owners Pollution Federation (ITOPF, 2020) and US EPA/USCG classifications.

More detail is provided in Section 7.6.1.2 and in the Skua – 11 ST1 Well Drilling Oil Pollution Emergency Plan (OPEP) (TM-50-PLN-I-00006).

2.9 MODU positioning

The activities associated with moving the MODU into the field and setting up on location are detailed in a campaign specific MODU Move Plan. A summary of activities when positioning the MODU at the Skua-11 well subsea drilling location are as follows:

- Any subsea wells or infrastructure within 100 m of the planned location (including Skua-10) will be shut in prior to arrival or departure of the MODU, and only opened when appropriate in accordance with the Matrix of Permitted Operations;
- The MODU will obtain approval from the Montara OIM prior to moving within 1 km of the planned location;
- Two or three support vessels will be used to assist positioning the MODU at the planned location;
- The Surveyor and tow master will confirm the location is within the required tolerance;
- All three legs will be jacked down simultaneously and the MODU preloaded in accordance with the Operator's preload procedures;
- The MODU will jack-up to its working height (+/- 35 m above sea level). The bases of the legs are each fitted with a 'spud can' (each approximately 18 m in diameter) that sit on the seabed, and due to the heavy weights applied, penetrate the surface sediments by approximately 2 m to provide stability for the drilling MODU;
- The MODU will then skid the cantilever deck across until the rotary table is centred above the required location; and
- On completion of drilling, the cantilever will be skidded back, the MODU will "hull-down" the legs until afloat, the legs will be lifted, and the MODU will be towed off location by two or three support vessels.

2.10 Skua-11 ST1 Well Drilling Activity

The activity plan for Skua-11 Side Track 1 (Skua-11 ST1) will be finalised in the Well Operations Management Plan (WOMP), which is to be accepted by NOPSEMA prior to commencement of activities. Provided below is a summary for each of the activities.

The Skua-11 ST1 activities are estimated to take 66 days. Scheduling of activities may be subject to delays (e.g. weather and MODU availability). The activities detailed below provide the basis for identifying environmental impacts associated with the well activities and implementation of mitigation measures.

The Skua-11 ST1well design and casing schematic, showing the interval and casing details for Skua-11 ST1 is shown in Figure 2-2. The activity sequence may change depending upon well diagnostic work; hence the most likely drilling activities are summarised below:

- Mobilise MODU to field.
- Obtain permission to enter Skua 500 m (1,640 ft) zone.
- Position the MODU on location.
- Preload legs, jack up, skid cantilever into position.
- Remove corrosion cap from the subsea tree.
- Connect HP riser to subsea tree, install MODU BOP onto HP riser and pressure test.
- Recover the internal tree cap.
- Run in with 140 mm (5½ in) drill pipe and degas the A-annulus. Via the rig Mud Gas Separator.(or by other means as specified in the MODU Safety Case Revision).
- Install the internal 178 mm (7 in) landing string complete with the universal running tool (URT).
- Install intervention pressure control equipment.
- Recover lower crown plug.
- Bullhead kill well.
- Install deep-set mechanical plug isolate the reservoir
- Cut the tubing above packer and recover SCSSV and 700 m of tubing
- Set a cement plug with remaining completion string to permanently abandon the reservoir.
- Verify cement plug. Release sacrificial stinger, retrieve drill pipe to surface
- Penetrate 244 mm (9⅝ in) and degas B-annulus.
- Pull riser and rack back BOP.
- Dual Cut 244 mm (9⅝ in) casing and 340 mm (13⅜ in) casing.
- Pull 244 mm (9⅝ in) seal assembly.
- Recover 244 mm (9⅝ in) casing.
- Recover 340 mm (13⅜ in) casing with high-pressure well head housing (HPWHH).
- Set kick-off plug.
- Drill 406 mm (16 in) hole open water.
- Run and cement 340 mm (13⅜ in) casing.
- Run riser and BOP.
- Make up to HPWHH.
- Drill 311 mm (12¼ in) hole.
- Run and cement 244 mm (9⅝ in) casing.
- Drill 216 mm (8½ in) hole to well TD.
- Install sand screens and lower completion with deep barrier.
- Wellbore clean up.
- Install temporary suspension packer
- Recover HP riser and BOP.
- Install subsea tree, riser and BOP.

- Run landing string.
- Run upper completion.
- Recover landing string.
- Pull riser and rack back BOP.
- Rig demobilisation, including retracting the cantilever and jacking-down.
-

2.10.1 Planned Discharges

A summary of the indicative discharges associated with the activities is provided in Table 2-3.

Table 2-3: Indicative planned discharges associated with the Skua-11 ST1 drilling activities

Discharge Type	Indicative volume (m^3)	Fluid discharge location
Drilling and Completions fluids and cuttings		
WBM	450	Seabed / Surface
Suspension and completions fluids (Brine)	125	Seabed / Surface
Cuttings	385	Seabed / Surface
Cementing operations		
Cement slurry (riserless / riser in place)	53	Seabed / Surface
Spacer fluids (riserless / riser in place)	31	Seabed / Surface
Residual cement (line flushing)	10	Seabed / Surface
Well abandonment		
Contaminated cement	30	Seabed / Surface

The planned discharges during the activity are described below:

- Cold venting of gas to the atmosphere will be required to remove the gas from the annuli within the well. These volumes are released in two stages. Initially the A-Annulus will be vented, via an approved safe location on the MODU using the rig mud gas separator or a bleed off package (methodology to be the same as that accepted within the MODU Safety Case Revision). Followed by a penetration into the B-Annulus, to release gas, via an approved safe location on the MODU using the rig mud gas separator. Note that the gas volume released remains the same regardless of the methodology for bleed-off, a minor residual gas volume from the B-Annulus will be vented in the water column. The total gas volume that may be vented to the atmosphere is approximately 274 m^3. This is the maximum volume that may be released based on the known temperature, volume and pressures within the annulus spaces, and has been calculated using Boyle's Law, the approximate volume of 274m^3 includes:
    - The volume of gas in-situ in the A annulus has been estimated at 35 bbls (5.5 m^3) at a measured in-situ pressure of 520 psi. Extrapolated to atmospheric pressure this results in an approximate volume of 1223 bbls (194 m^3), using Boyles law. A more accurate calculation considering compressibility and temperature correction results in a slightly lower volume, but the worst case has been assumed for impact assessment purposes.
    - The volume of gas in-situ in the B annulus (trapped between the 13 3/8" and 9 5/8" annulus from beneath the well to the leak at 123 m below the mud line) has been estimated at 25 bbls (3.97 m^3) at an estimated in-situ pressure of 300psi (20.7 bar). At 1 atmosphere pressure this results in an approximate volume of 500 bbls (79.5 m^3) using Boyles Law, again a worst case has been assumed neglecting compressibility and temperature corrections in the calculations. If all

gas is not vented through the MGS once the 9 5/8" casing is penetrated some residual gas may remain beneath the casing hanger, vented into the water column (<5m^3).

- The wellbore clean-up fluids used will include seawater, brine, viscous pills, acid soaking and a surfactant. Fluids are discharged overboard (refer to Section 6.6 for volumes);
- The brine returned from the well with an oil in water content greater than 15 mg/L will be cleaned to less than 15 mg/L and discharged to the sea;
- The components recovered with the upper completion string will be returned to shore where they may either be subject to diagnostics, inspection or disposal; and
- Entry into the well using slickline / wireline to perform intervention activities. Small volumes of gas (approximately 100 scf (<3 m^3)) may be vented to atmosphere from pressure control equipment during slickline runs.
- WBM used to drill the sidetrack well above the reservoir will be discharged overboard.
- Minor volumes of excess cement from P&A or casing cementing operations will be discharged overboard.

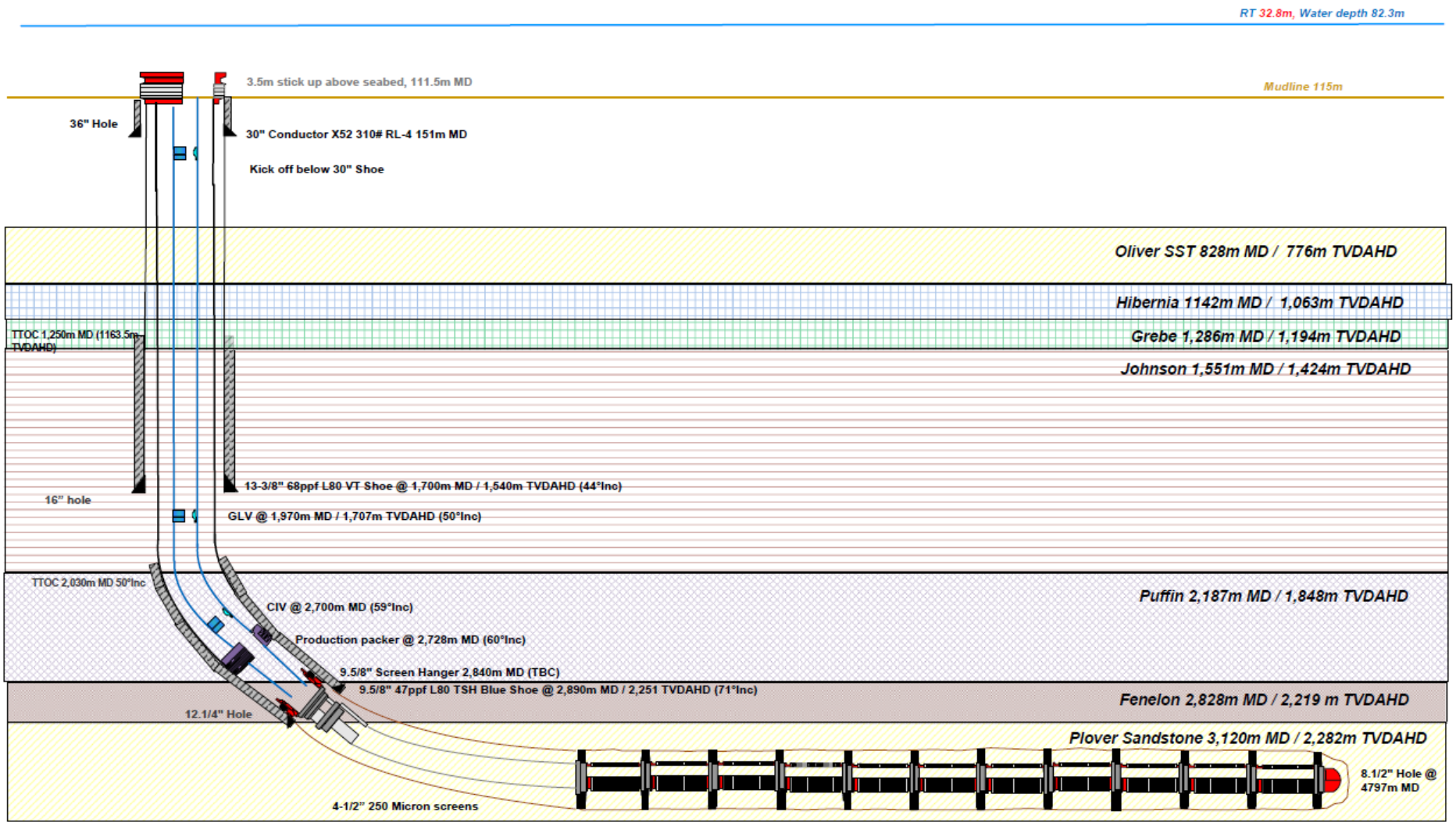


Figure 2-2: Skua-11 ST1 Well Schematic

2.10.2 Blowout preventer installation and testing

A blowout preventer (BOP) consists of a series of hydraulically operated valves and sealing mechanisms (annular preventers and ram preventers) that are normally open to allow drilling fluid to circulate up the marine riser to the MODU.

A BOP is to be used for the drilling and completion program to provide an additional barrier to prevent a loss of well control (LOWC) event. The BOP is used to close in the well in the event of an influx or kick, in which the hydrostatic pressure in the wellbore fluid is exceeded by formation pressure. The MODU's high-pressure circulating system would be used in this event, after closing of the BOP, to remove the influx from the well and regain a hydrostatic pressure overbalance condition. The annular and ram preventers are used to shut in around various tubulars in the well, while the blind shear rams are designed to shear the pipe and seal the well.

Once installed, regular function and pressure tests are undertaken; function tests will be undertaken weekly except in exceptional circumstances. Function testing is undertaken by activating the hydraulic control system onboard the MODU to pressurise the rams within the BOP stack. Given the BOP is located on the MODU, no discharges to the environment occur as a result of function testing.

2.10.3 Abandonment

The current reservoir penetration for Skua-11 will be abandoned as part of these activities. This will involve the placement of mechanical barrier(s) within existing completion followed by a combination cement plug set at a depth suitable to withstand the predicted loads (virgin reservoir pressure minus a gas gradient to surface for the Plover formation).

2.10.4 Cementing

Cement is used to form permanent barriers and fix casings in place. It may also be used to seal a lost circulation zone, and when abandoning the well. The majority of cement will remain downhole although minor volumes will be discharged at the mudline and at sea surface.

Once a hole section has been drilled, steel casing is run into the well. Cement is used to secure the steel casing in the well bore and cementing chemicals are used to modify the technical properties of the cement slurry these include defoaming agents, dispersants and fluid loss control additives.

Excess cement (up to a maximum of ~300%) as calculated in the well specific Drilling Program will be used for the riserless sections to account for potential wash outs, over gauge hole and small seepage losses into the formation.

During cementing operations, there may be some volumes of dry cement (approx. 2 m^3) may be discharged to sea via venting mechanisms in the cementing system. In addition, minor quantities (approx. 2 m^3) of excess mixed cement may also be discharged into the sea during clean-up of the cementing unit (pumps, lines etc) after completion of cementing activities. These quantities are normal volumes associated with any cement activities undertaken worldwide in well construction and are required to conduct operations safely.

Contingency activities may be required in infrequent circumstances (e.g. significant equipment malfunction) whereby it is established that the cement slurry properties being pumped downhole is not within the required specifications for well integrity. While this occurrence is exceedingly rare, leaving this cement in the well could compromise well integrity. In this circumstance, cementing will be aborted, and the defective slurry circulate out of the wellbore.

A volume of cement (approximately 45 m^3) needs to be maintained as a well control contingency. Where possible, at the end of the campaign this cement will be sold or handed over to the next operator on the MODU. Discharge to the sea will only occur if it cannot be handed over to the next operator.

Excess chemicals at the end of the campaign will be backloaded and sent onshore for storage or disposal.

2.10.5 Drilling fluids and cuttings

A drilling fluid program will be developed for the Drilling program. The primary function of the drilling fluid is to control sub-surface formation pressures, cool and lubricate the drill bit, transport the cuttings to the surface, maintain well bore stability and minimise reservoir damage. Drilling fluid is continually circulated down the drill string to the drill bit and returns to the surface via the annulus space between the drill string and the well bore.

The drilling fluids will be water-based muds (WBM) only. WBM typically consist of between 80–90% by volume fresh, or saline water, with the balance made up of water soluble and insoluble drilling fluid additives give the mud the exact properties it requires to meet the desired functions for a particular hole interval. In the marine environment, these additives are either completely inert (naturally occurring benign materials) or readily biodegradable organic polymers, with a fast rate of biodegradation. Drilling fluid additives that are typically used include: sodium chloride, potassium chloride, bentonite (clay)/pre-hydrated gel (PHG), naturally occurring water soluble polymers, barite and calcium carbonate.

Cuttings will typically be removed at surface from the recirculating mud by shale shakers. All cuttings will be discharged overboard at sea surface except during riserless drilling undertaken for the surface hole section when cuttings discharged at the mudline. To minimise the volume required, the fluids are re-used until out of specification, then they will be discharged overboard. Surplus drilling fluids will be discharged overboard. Barite, as well as being added to the drilling fluids, needs to be maintained onboard for well control contingency. Any remaining barite (approximately 45 m^3) will be subject to the decision list provided in Section 6.6.1.

2.10.6 Loss of circulation

Lost circulation is a common occurrence during drilling. In the top-hole sections drilled with seawater loss zones do not present a problem and no action is taken to attempt to cure the losses. These are normally cured as drilling progresses and the loss zone gets plugged with drill cuttings. In intermediate and reservoir hole sections drilled with a closed fluid system, lost circulation is a major problem. As a result, lost circulation encountered while drilling with closed fluid systems will attempt to be cured. To cure losses there is a choice of options available, depending on loss rates. Conventional additives, such as calcium carbonate or cellulose fibres, are used for seepage or partial losses. When total losses occur, it may be necessary to pump cement or cross link polymers to heal the loss zones. Some lost circulation material may be brought back to the surface and discharged to sea, so as not to contaminate the mud system.

2.10.7 Chemical selection

The Drilling Fluid and cementing Programs will detail the chemical additives that will and may be used in during operations. In the absence of Australian standards regarding the suitability of chemical additives, the selection of chemicals will be guided by the Offshore Chemical Notification System (OCNS). The OCNS and the Jadestone Energy Chemical Selection Evaluation and Approval Procedure (JS-70-PR-I-00033) provide a framework and updated register which ranks the environmental performance of chemicals used in offshore petroleum activities and discharged to the environment. Chemical selection will be managed using Jadestone's procedure to ensure environmental impacts and risks associated with chemical use are managed to a level that is ALARP and acceptable.

The OCNS uses the OSPAR Harmonised Mandatory Control System (HMCS) to manage chemical use and discharge. The HMCS was introduced with a view to unifying regulations regarding the use and reduction of the discharge of offshore chemicals across the OSPAR signatories. The objective of the HMCS is to protect the marine environment by identifying those chemicals used in offshore oil and gas operations with the potential for causing an adverse environmental impact and restricting their use and discharge to the sea. A series of associated recommendations provide guidance on how to compare the potential environmental impact of different chemicals, to preferentially select those with low potential for impact while fulfilling other (e.g. technical, HSE and availability) requirements. This involves the generation of an environmental data set (i.e. toxicity, persistence and bioaccumulation potential) and its evaluation using pre-screening

criteria and a decision-support tool called the CHARM (Chemical Hazard Assessment and Risk Management) Model. In cases where the CHARM-ranking is not amenable or applicable (e.g. for inorganic substances), equivalent assessments will be done in accordance with the OCNS guidelines.

Jadestone Energy's Chemical Selection Evaluation and Approval Procedure (JS-70-PR-I-00033) defines the process for the assessment of the offshore use and discharge of chemicals. This document shall be applied to the selection of all drilling and cementing chemicals which, through their mode of use, are expected to be discharged to sea. This includes chemicals discharged during drilling operations and extends to MODU washes and pipe dopes. Proposed chemicals will be reviewed to ensure that they are Chemical Hazard Assessment and Risk Management (CHARM) rated Gold and Silver, or non-CHARM rated D/E and therefore have the least potential for environmental impact. Where proposed chemicals do not meet this selection criteria, a risk justification for chemical use, as documented in Jadestone's Chemical Selection Evaluation and Approval Procedure (JS-70-PR-I-00033), will be followed. If the chemical's use cannot be justified, alternatives will be sought.

In summary, this procedure ensures:

- 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; and
- Selected chemical substances are commercially evaluated and competitively priced.

2.10.8 Well evaluation

Mud logging

Mud logging will be undertaken during drilling operations to evaluate the formation. This will involve the collection and processing of cuttings samples, analysis of mud gas, monitoring and recording of all drilling parameters, pressure detection and full evaluation of the formation.

Formation Evaluation

Formation evaluation is the interpretation of a combination of measurements taken inside the wellbore to detect and quantify oil and gas reserves in the rock adjacent to the well. Mud logging will be undertaken during drilling to evaluate the drilled formations. This will involve collection and processing of cuttings samples, analysis of mud gas, monitoring and recording of all drilling parameters, pit levels and pressure detection. A wireline log is a continuous measurement of formation properties with electrically powered instruments to enable decisions to be made about drilling operations. Wireline logging may be required to confirm cement isolation in the sidetrack well. It is also planned for the primary wellbore to review/confirm casing integrity prior to drilling the sidetrack.

2.10.9 Completions

Once the well has been drilled, wellbore clean-up activities consisting of a scraper run (for planned packer setting intervals) and an open hole completion fluid displacement will be performed. It is planned to run 4.1/2" premium wrapped screens with ICDs in the horizontal section of the well. After the screens have

been run to depth and the hanger set, the well will be isolated with 2 mechanical barriers to allow for retrieval of the BOP and running of the XT. After retrieval of the mechanical barriers, the upper completion tubing (consisting of a 5.1/2" tubing string including a gas lift mandrel and chemical injection valve along with a SCSSV will then be run in the well. Marine growth on the XT will be removed via high pressure water jetting on the MODU, this is part of the testing regime needed to test the HXT before deployment.
Contingency

In the event of technical or operational issues during the drilling activity, contingency activities may be required. The activities are not expected to cause additional risks or impacts but may generate additional volumes of drilling fluids, cuttings, cement, or seabed disturbance.

2.11 Drilling Support Operations

2.11.1 Vessels

Support for the drilling activities will be provided by two or three support vessels (Table 2-4) which will operate out of Darwin. Support vessels (typically 60–90 m in length) will supply equipment, bulk chemicals, liquid drilling fluids, diesel fuels etc. to the drilling MODU.

Each vessel will be compliant with MARPOL requirements.

Table 2-4: Indicative support vessel specifications

Aspect	Primary Tow Vessel/Support 180 MT BP	Secondary Support Vessel/s 140 MT BP
Type/Service	Tug/support/supply vessels/construction vessel	
Length (m)	86	66
Gross Registered Tonnage (tonnes)	4,566	2,147
Maximum Speed (knots)	16	16
Accommodation (berths)	35	32
Total Fuel Tank Capacity (m^3)	1594	827
Rescue Capabilities per vessel	1 fast rescue craft >100 persons rescue capacity	1 fast rescue craft >100 persons rescue capacity

2.11.2 Helicopters

Helicopter support will be based at Mungalalu–Truscott air base to support the MODU as follows:

- Personnel transfers between Mungalalu-Truscott and the MODU for crew changes;
- Down-manning of the MODU for tropical cyclone response (note: an additional Helicopter and crew will be available during cyclone season); and
- Emergency response, including medivac, evacuation of the MODU, and search and rescue.

Routine helicopter operations are expected to be during daylight hours and helicopter flight time between Mungalalu-Truscott and the MODU is 70 minutes with approximately five flights per week anticipated. There will be refuelling facilities on the MODU.

2.12 Fuel and Chemicals

The main engines on the MODU and support vessels require marine diesel for fuel; hydraulic fluid and lubricating oils are required for operation and maintenance of moving parts. Main engines store hydrocarbons in independent storage tanks and oil and hydraulic fluids are kept in storage areas.

Other hazardous liquids used during the drilling activities include biocides, corrosion inhibitors, fluid loss control chemicals and miscellaneous chemicals (including pipe dope, lubricating oils, cleaning and cooling agents, oily water, cement, recovered solvents, stored or spent chemicals, used lubricating oils).

Chemicals used and discharged in drilling operations must be Chemical Hazard and Risk Management (CHARM) rated Gold or Silver or have an Offshore Chemical Notification Scheme (OCNS) rating of D or E. Where proposed chemicals do not meet this selection criteria, alternatives will be sought. Chemicals with substitution warnings are also considered to find alternatives where feasible. If no alternative is available, or a CHARM or OCNS rating is not available, a risk assessment will be conducted according to Jadestone's Chemical Selection Evaluation and Approval Procedure (JS-70-PR-I-00033). To achieve these rankings, the chemicals have the least potential for environmental impact.

Chemicals and hydrocarbons will be packaged, marked, labelled and stowed in accordance with MARPOL Annex I, II and III regulations. Specifically, all chemicals (environmentally hazardous) and hydrocarbons will be stored in closed, secure and appropriately bunded areas.

In the event vessels supporting the drilling activities require refuelling, the vessels will refuel at an Australian port facility.

2.13 Operational Discharges

Operational discharges from the MODU and support vessels will include:

- Deck drainage;
- Putrescible waste and sewage;
- Oily water;
- Cooling water from operation of engines;
- Desalination plant effluent (brine) and backwash water discharge; and
- Ballast water.

An overview of each category is provided below. For further information on operational discharges, refer to Section 6.5.

2.13.1 Deck Drainage

During the activity, the vessels and MODU may receive rainfall on deck. Contaminants on the deck surface will be in trace quantities and will comprise contaminants such as detergents, and oil and grease.

2.13.2 Putrescible Waste and Sewage

The volume of sewage and food waste is directly proportional to the number of persons onboard the MODU and support vessels. Approximately 30-40 L of sewage/ grey water will be generated per person per day. Putrescible waste will consist of approximately 1 L of food waste per person per day.

2.13.3 Oily Water

Bilge water is an almost unavoidable product in vessel operations. Bilge water that is generated in proximity to shipboard equipment (such as in the engine room) may contain residual hydrocarbons. Bunded spaces around machinery may also contain oily water. Oily water will be directed to a bilge water tank, treated and released to marine waters in accordance with MARPOL requirements.

2.13.4 Cooling Water from Operation of Engines

Seawater is used as a heat exchange medium for the cooling of machinery engines. Seawater is drawn from the ocean and flows counter current through closed-circuit heat exchangers, transferring heat from engines

and machinery to the seawater. The seawater is then discharged to the ocean (i.e. it is a once-through system).

2.13.5 Desalination Plant Effluent (Brine) and Backwash Water Discharge

Effluent from the water supply systems onboard the MODU and support vessels will be discharged to the ocean at a salinity concentration higher than seawater. The volume of the discharge is dependent on the requirement for fresh (or potable) water and would vary between the vessels and the number of people onboard.

The effluent may contain scale inhibitors that control inorganic scale formation, such as the formation of calcium carbonate and magnesium hydroxide, in water making plants. Other water purification chemicals (e.g. chlorine) may be added to the potable water. Other water making plant cleaning chemicals may be used and discharged to sea after completion of the cleaning process.

2.13.6 Ballast Water

When at location, support vessels will take on ballast water to allow for safe discharge of deck cargo and/ or bulk products (liquid or dry). In the event support vessels need to take on cargo from the MODU, it is expected that vessels will need to discharge ballast water. Similarly, in mobilisation and demobilisation activities the MODU will need to exchange ballast water and seawater.

2.14 Emissions

Light, noise and gases will be emitted to the environment during the drilling activities. As the drilling activities will be continuous 24 hour operations, light will be continuously emitted from the MODU for the duration of the activity.

Noise associated with the operation of machinery and engines will be generated by the MODU and support vessels.

Gaseous emissions will be made to the environment due to the combustion of hydrocarbons during the operation of equipment and machinery on the MODU and support vessels for the duration of the activity. No flaring will occur associated with the drilling activities.

For further information on light, noise and atmospheric emissions made during the drilling activities, refer to Sections 6.2, 6.3 and 6.4, respectively.

2.15 Out of Scope

Activities that are not covered by this EP are:

- Vertical Seismic Profiling (VSP) or flaring;
- Nearby shipping activity, third-party offtake tankers, and Operational support activities outside the Operational Area;
- Vessel based seismic surveys or use of side scan sonar;
- Anchoring of vessels (other than in an emergency) or MODU;
- Drilling support vessels associated with the Activity outside the Operational Area (where they will adhere to applicable maritime regulations, and Commonwealth and State environmental management obligations);
- Re-commissioning of Skua-11 well, which is covered under the Montara Operations Environment Plan (MV-90-PLN-I-00001 Rev 10);
- ROV based debris clearance survey (prior to MODU arrival) is covered under the Montara Operations Environment Plan (MV-90-PLN-I-00001 Rev 10; and

- Production and maintenance of the Skua-11 well is covered under the Montara Operations Environment Plan (MV-90-PLN-I-00001 Rev 10).

2.15.1 Decommissioning

A future EP will meet the requirements of the OPGGS Act and OPGGS Regulations, and any additional relevant legislation, policies (such as NOPSEMA Policy 'Section 572 Maintenance and removal of property') and guidelines (such as Department of Industry, Science and Resources [DISR] Guideline 'Offshore Petroleum Decommissioning Guideline') in force at the time (NOPSEMA, 2020; DISR, 2022). Decommissioning options will be assessed before the end of the project life, as per relevant legislative requirements, and in consultation with relevant and interested persons.

Any infrastructure remaining at the end of this activity will be added to the infrastructure list maintained by Jadestone (i.e. the XT). The XT has been designed to meet the requirements under the OPGGS Act (Section 572(3)) for full removal as the base case. Through ongoing maintenance and monitoring of subsea infrastructure as per the Jadestone CMMS, all structures, equipment and property associated within title areas AC/L8 will be maintained in good condition and repair to ensure safe access and use of the well and that any infrastructure can be removed at the end of its use, unless there is agreement at that time from NOPSEMA to do otherwise through an accepted EP. The ongoing maintenance and monitoring of the Skua-11 well is completed under the NOPSEMA accepted Montara Operations Environment Plan (MV-90-PLN-I-00001).

For the purposes of decommissioning planning, Jadestone Energy have assumed that the well will be plugged and abandoned within 3 years of production ceasing in field and that the wellhead will be removed no later than 5 years after field production ceases. This activity is not described in this EP as it is part of future decommissioning planning, unless there is agreement at that time from NOPSEMA to do otherwise through an accepted EP

2.16 Terminology Definitions

Term	Definition
Barrier	Any means of preventing an uncontrolled release or flow of wellbore fluid to surface.
Blow out preventor (BOP)	A series of valves installed on the HP riser (on surface) to prevent the escape of pressure either in the annular space between casing and drill pipe or in the open hole during drilling and completion operations.
Christmas Tree (XT)	Is a safety device assembly of valves and chokes, used to regulate the flow of a well.
Completion	The completion string is run inside the production casing and used to produce product from the reservoir to the surface. It is made up of the upper and lower completions (see "upper completion" and "lower completion").
High pressure (HP) riser	A high-pressure riser acts as a conduit between the subsea wellhead and the BOP on the rig surface.
Inflow Control Device (ICD)	A passive component installed in the lower completion string that optimises production by equalising reservoir inflow along the length of the wellbore.
Landing string	The landing strings comprises all the equipment of the riser above the tubing hanger that is contained wholly or partly within the BOP stack and up to the first standard riser joint.
Liner hanger	A liner hanger is a device used to attach or hang liners from the internal wall of a previous casing string. It uses mechanical slips to grip the inside of the casing at pre-determined distances.
Lower completion	Lower completion equipment is run across the desired production interval of the reservoir.

Term	Definition
Packer	A mechanical device for blocking the passage of fluids in an annular space.
Sidetrack	A sidetrack involves drilling a secondary wellbore away from the primary wellbore, to avoid an unusable section of the primary wellbore. Intentional sidetracks might bypass an unusable section of the original wellbore or explore a geologic feature nearby.
Scraper	A downhole tool incorporating a blade or brush assembly that is used to remove scale and debris from the internal surface of a casing string.
Tubing hanger	A component used in the completion of oil and gas production wells. It is set in the XT and suspends and seals the production tubing in the production bore.
Upper completion	The upper completion connects the lower completion with the XT.
Well Barrier	An element of the pressure containing envelope located on a potential leak path able to stop any fluid flow. Each well barrier is designed with regard to fluids characteristics and maximum pressure constraints expected at the considered well barrier depth. The required verification must be carried out to confirm the well barrier will provide the required isolations.
Whipstock	A curved steel wedge installed inside casing or open hole and ensures the drill bit will deflect from the original borehole at a slight angle.
Wireline logging	Is the practice of collecting and recording data from a borehole during drilling or production operations using an electrically powered instrument.

3. Existing Environment

3.1 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 particular 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 2.5); and
- The Environment that May Be Affected (EMBA) – the geographical area encompassing the environment that has the potential to be affected by the unplanned events associated with the activities described (Section 2) depending upon the level of exposure.

The spatial extent of the EMBA and location of the Operational Area is presented in Figure 3-1. The EMBA is based on the low-level exposure of hydrocarbons on and in, the water and represents the largest spatial extent of an oil spill due to the worst-case scenario as per NOPSEMA Bulletin #1. This is further described in Appendix C and below:

1. Surface hydrocarbons EMBA– hydrocarbons that are 'on' the water surface (>1 g/m^2)
2. Entrained hydrocarbons EMBA– hydrocarbon that is entrained 'in' the water (>10 ppb)
3. Dissolved hydrocarbons EMBA– the dissolved component of hydrocarbon in the water (>10 ppb), and
4. Shoreline loading EMBA – hydrocarbon which accumulates on the shore (>10 g/m^2).

Details of the environmental values and sensitivities in the Operational Area and EMBA are described here in Section 3.

This document is informed by a search (in February 2024) of the protected matters search tool (PMST) provided by the Department of Climate Change, Energy, the Environment and Water (DCCEEW; Appendix D), as well as published scientific literature and studies where applicable. Marine and coastal species returned in the search are described, with a focus on protected species that are threatened and migratory. It is important to note that this document describes the environmental values and sensitivities that occur within the boundaries of the EMBA, whereas the PMST incorporates an in-built buffer and hence may report on matters that are actually outside the EMBA.

In addition, a search for aboriginal cultural heritage features within the EMBA was conducted on the Department of Planning, Lands and Heritage Aboriginal Cultural Heritage Inquiry System. No aboriginal Cultural Heritage sites were identified within the EMBA.

A number of spill scenarios have been modelled and the EMBA represents the worst case for all of the spills rather than the worst case of a single spill. The EMBA (Figure 3-1) is denoted by the lowest hydrocarbon exposure thresholds to indicate all receptors that may be *contacted* by hydrocarbons of any phase from any scenario. However, for the purposes of hydrocarbon impact assessment, higher exposure thresholds are applied, to indicate the receptors that could be *affected* (rather than just contacted). Separate thresholds are applied to denote areas where ecological impacts and socio-economic impacts may result, which are defined as;

- **Ecological EMBA** – the area in which the petroleum activity may result in environmental impacts.
- **Social EMBA** – the area in which the petroleum activity may result in socio-economic impacts.

This is further described in Section 7.6. All the receptors within the Ecological and Social EMBAs are contained within the EMBA and therefore fully described within this chapter.

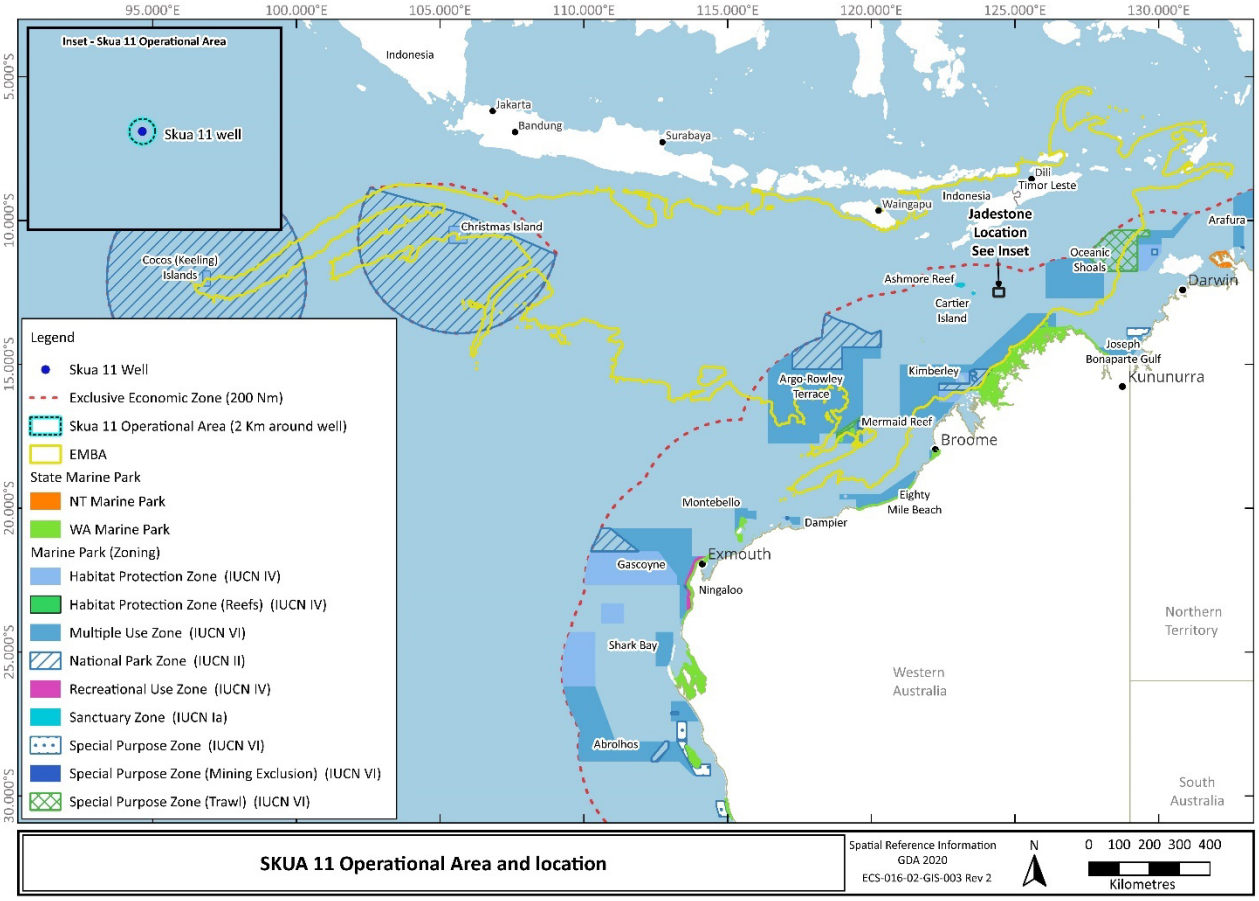


Figure 3-1: Location of the Operational Area and EMBA

3.2 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, including Skua-11 Well, 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. The main physical features and values of the NWMR are:

- 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 140 km and 90 km west, respectively, from the Operational Area;
- A number of key ecological features (KEFs) have been identified in the region (Section 3.4.5). 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; and
- Other priority areas in the NWMR include Rowley Shoals and Ningaloo Reef. However, these areas are at least 700 km from the Operational Area.

Within the NWMR the Operational Area lies at the junction of two provincial bioregions, with all bioregions that intersect with the EMBA summarised in Table 3-1.

Table 3-1: Provincial bioregions in Operational Area

Area	Description	Operational Area	EMBA
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.	✓	✓
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.	X	✓
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.	X	✓
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.	X	✓
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.	X	✓
Timor Transition	The Timor Transition is the second smallest bioregion covering 24,040 km^2. It is shallowest on average of all the NBMB bioregions due to its location on the upper slope of the north margin.	X	✓

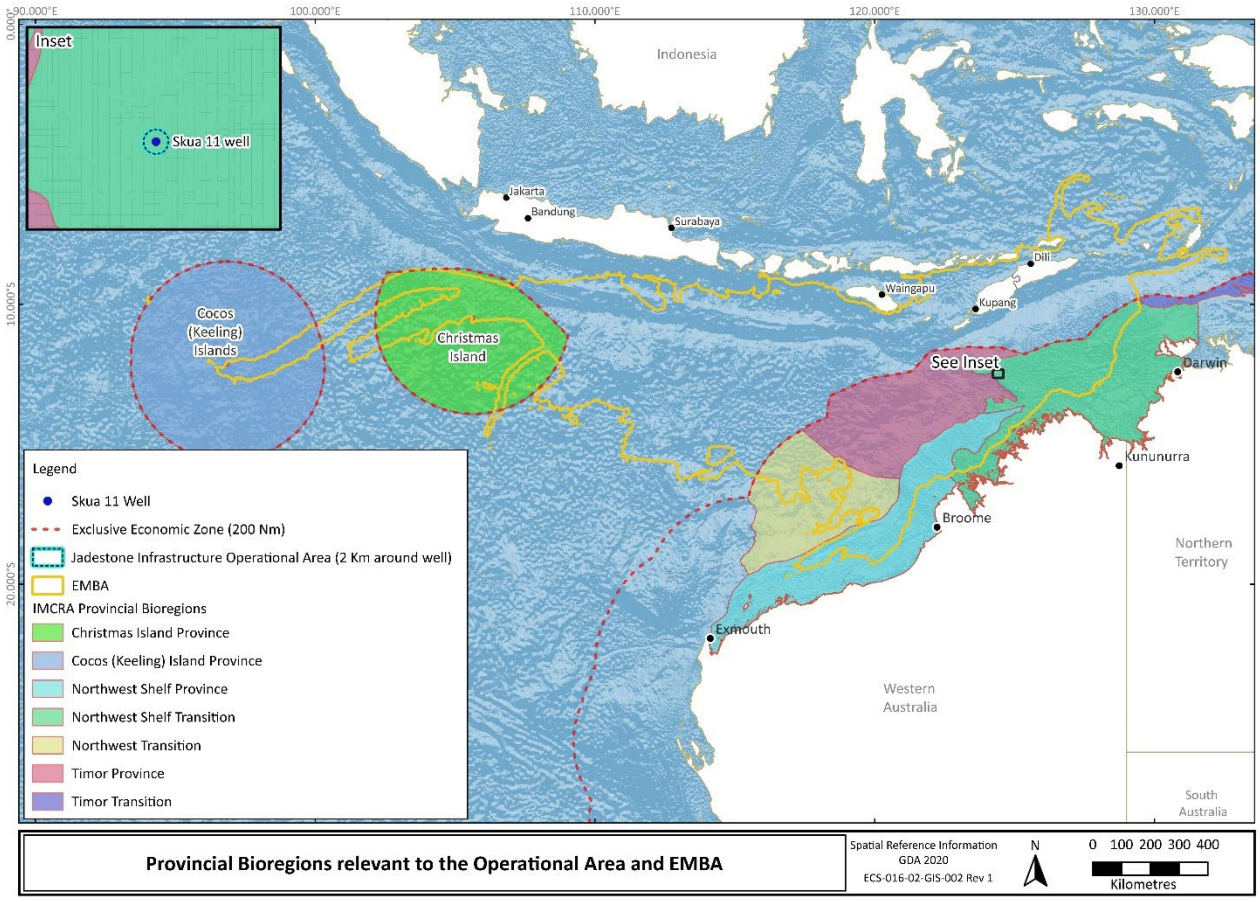


Figure 3-2: Provincial bioregions relevant to the Operational Area and EMBA

3.3 Physical Environment

3.3.1 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 northwest monsoon season occurs from October to March, or wet season, and is characterised by northwest to southwest winds. The monsoon season is generally associated with broad areas of cloud and rain including periods of widespread heavy rainfall;
- Steady northeast to southeast winds (southeast trade winds) from April to September (dry season) caused by development and intensification of anticyclones over southwestern Australia, bring predominantly fine conditions with low rainfall in most areas; and
- Cyclonic activity may occur between November to April. 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 813 mm. Mean maximum air temperature ranges from 28.4ºC in July and 33.1ºC in November. The closest meteorological station to the Skua field is located at Troughton Island approximately 230 km southeast of the Operational Area (Bureau of Meteorology (BoM) 2024) (Table 3-2).

Table 3-2: Meteorological conditions representative of the Skua field (Troughton Island)

Month	Mean Monthly Maximum Temperature (Cº)	Mean Monthly Minimum Temperature (Cº)	Mean Rainfall (mm)	Mean Relative Humidity (%) 9am
January	31.9	26.5	271.7	77
February	31.6	26.3	196	78
March	32.1	26.6	129.8	74
April	32.8	26.9	34.9	64
May	31.3	25.5	35.3	58
June	29.2	23.5	5.5	56
July	28.4	22.2	2.5	58
August	29.0	22.6	0.5	62
September	30.4	24.7	0.3	69
October	31.9	26.5	3.7	69
November	33.1	27.6	12.5	69
December	33.0	27.4	123.5	71
Annual	31.2	25.5	812.9	67

3.3.2 Oceanography (Tides and Currents)

Broad scale oceanography in the northwest Australian offshore area is complex, with major surface currents influencing the Region, including the Indonesian Throughflow (ITF), the Leeuwin Current, the South Equatorial Current and the Eastern Gyral Current (Figure 3-2).

The oceanographic regime of the northwest Australian offshore area is strongly influenced by the 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). The strength of the ITF fluctuates seasonally and reaches maximum strength during the southeast monsoon (May to September) and weakens during the northwest monsoon.

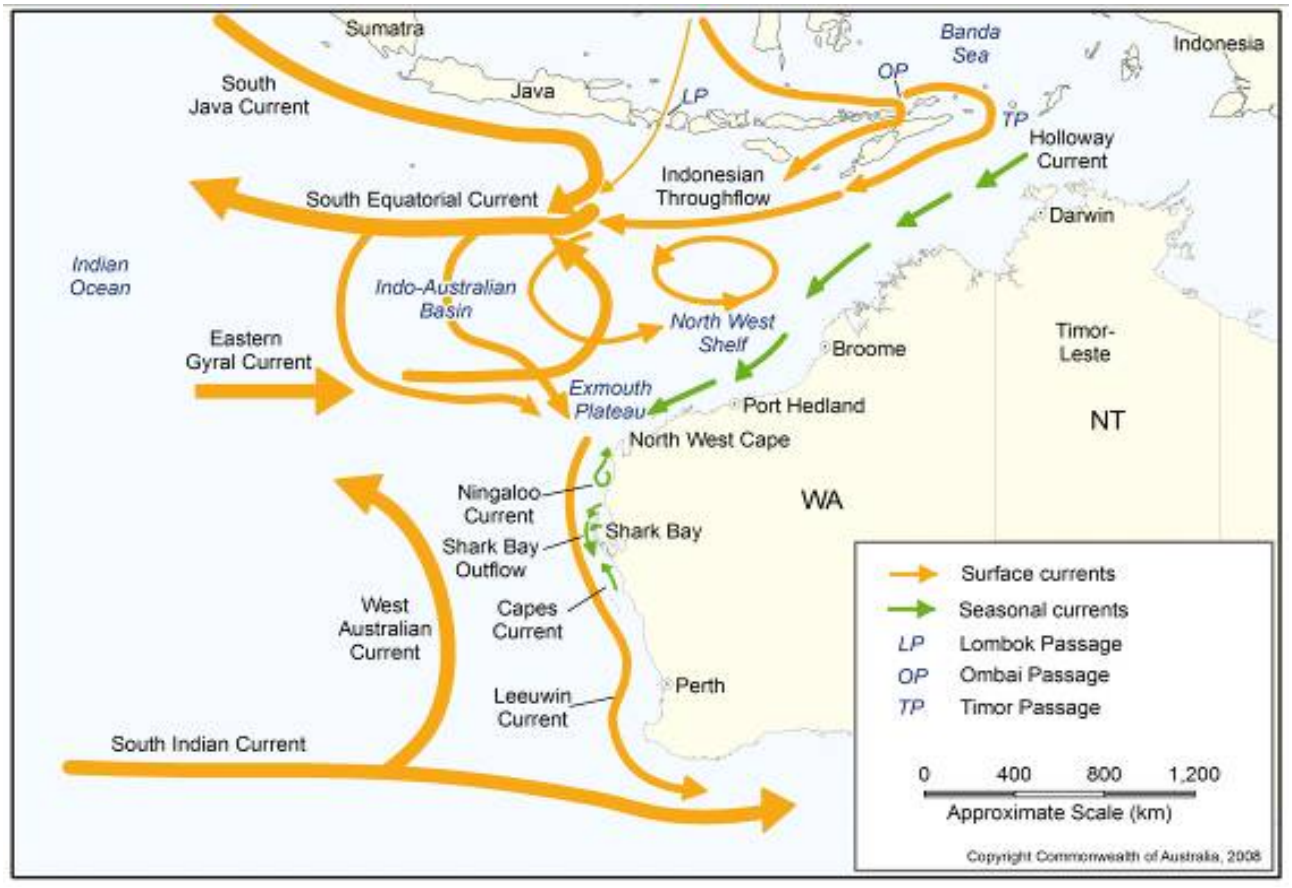
Currents in the Kimberley region are also generated by several more localised factors, including tidal forcing, local wind forcing, inertial oscillations, shelf waves, seiche and trapped waves. Studies undertaken in the vicinity of Scott Reef and Seringapatam Reef suggest that the ITF does not directly 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 the 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. Further east in the region, the maximum tidal range is 5.7 m. The average and maximum surface current speeds within the study area were 0.33 m/s and 1.23 m/s, respectively. The general current directions were predominantly towards the north and south. 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 southeast 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 2008b

Figure 3-3: Key ocean currents influencing Western Australia

3.3.3 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 the 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 Indian Ocean. 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 experienced in the vicinity of Skua field well 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.

3.3.4 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 for the wider Montara Venture found surface water temperatures in the vicinity of the Operational Area (OA) 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 is typically low (<0.2 NTU; Jacobs 2017).

3.3.5 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 Skua field (within the Operational Area) slopes from the east to west and is characterised by a north-south trending gentle scarp. The water depth at the Skua-11 well location is approximately 80 m.

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 4.7 m within the Skua survey corridor (Coogee Resources 2007).

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.

3.3.6 Sediment Quality

Sediment quality sampling undertaken in the vicinity of the Skua-11 well 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).

3.3.7 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).

3.4 Conservation Values and Sensitivities

Conservation values and sensitivities listed and protected under the EPBC Act include Matters of National Environmental Significance (MNES) and Other Protected Matters. MNES occurring, or potentially occurring, in the Operational Area and EMBA are summarised in Table 3-3. The full EPBC Act Protected Matters report is provided in Appendix D.

Table 3-3: Summary of conservation values and sensitivities in the Operational Area and EMBA

MNES and Other Matters Protected under EPBC Act	Operational Area	EMBA
Commonwealth Marine Area	✓	✓
Listed Threatened Species	✓ (24)	✓ (51)
Listed Migratory Species	✓ (35)	✓ (62)
Listed Marine Species	✓ (63)	✓ (122)
Whales and other cetaceans (many of which are also Listed Threatened or Migratory Species)	✓ (23)	✓ (31)
Australian Marine Parks (AMP)	✕	✓ (23)
State and Territory Marine Parks (MP) and Marine Management Areas (MMA)	✕	✕
World Heritage	✕	✕
Wetlands of International Importance (Ramsar)	✕	✓ (3)
National Heritage Places	✕	✓ (1)
Commonwealth Heritage Places	✕	✓ (33)
Threatened Ecological Communities	✕	✕
Key Ecological Features (KEFs)	✕	✓ (12)
Nuclear actions and water resources, in relation to coal seam gas or coal mining	✕	✕
Great Barrier Reef Marine Park	✕	✕

3.4.1 Proximity to key sensitive receptors

The locations of key environmental sensitive receptors in closest proximity to the Operational Area are provided in Table 3-4.

Table 3-4: Locations of key sensitive receptors in relation to the Skua-11 well

Sensitive receptor	Approx. distance from the Operational Area (km)
Goeree Shoal	41
Vulcan Shoal	34
Eugene McDermott Shoal	63
Barracouta Shoal	40
Cartier Island	92
Hibernia Reef	123
Ashmore Reef	149
Cassini Island	203
Browse Island	174
Mainland Australia	229
Rote Island (Indonesia)	225
West Timor	244
Seringapatam Reef	293
Scott Reef (including Sandy Islet)	357
East Timor	341
Savu Island (Indonesia)	341
Flores Island (Indonesia)	464
Sumba Island (Indonesia)	478

3.4.2 Matters of National Environmental Significance (MNES)

Commonwealth Marine Areas

The Operational Area is within the EEZ and Territorial Sea which is a 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.

3.4.3 Listed Threatened and Migratory Species

The PMST search (Appendix D) identified 51 Listed Threatened Species (LTS) and 62 Listed Migratory Species (LMS) as having the potential to occur within the EMBA. The LTS included:

- Three species of marine mammals;
- Eight species of marine reptiles;
- Nine shark and sawfish species; and
- Eight marine bird species.

The relevant sections of this EP discuss the likelihood of these species and their Biologically Important Areas (BIA) occurring within the Operational Area and EMBA. Those species that have been identified as likely to be present in the Operational Area or EMBA are summarised in Table 3-8 to Table 3-11: and further detailed below.

Sensitive habitat areas such as for aggregation, resting or feeding or known migratory routes for these species are shown as BIAs (Figures 3-4 to 3-8). 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 advices are considered to identify any requirements that may be applicable to the risk assessment.

3.4.4 Others matters protected by the EPBC

Listed marine species

A total of 122 Listed Marine Species are either likely to, or may, occur within the Operational Area or EMBA, (including 38 bird species and 33 reptile species).

Whales and other cetaceans

The Protected Matters Search Tool report determined that 31 cetacean species or their habitat, may occur within the Operations Area or EMBA. These species are discussed in Table 3-10.

Australian Marine Parks

In agreement with the states and NT governments, the Australian Government committed to establish Commonwealth marine parks as a component of the National Representative System of Marine Protected Areas. In November 2012, the Commonwealth Marine Reserves Network was proclaimed with the purpose of protecting the biological diversity and sustainable use of the marine environment. Commonwealth marine reserves were renamed as Australian Marine Parks (AMP) in October 2017 and there are six marine regions in the Australian Marine Parks Network, namely the Coral Sea, South-west, Temperate East, South-east, North and North-west. The remaining networks' 10-year management plans were approved and came into effect on 1 July 2018. The management plans establish the management and zoning of the designated AMPs. The EMBA overlaps with the boundaries of eight AMPs, all within the North and North-west Marine Parks Networks. A summary of conservation values and management principles for marine parks found within the EMBAs is provided in Table 3-10.

Table 3-5: Description of Australian Marine Parks within the EMBAs

Australian Marine Park	Straight-line distance from Skua 11 well	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
Ashmore Reef	127 km	• 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). • 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.	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	Straight-line distance from Skua 11 well	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
		• 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 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 (Clarke et al, 2011). • 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:		

Australian Marine Park	Straight-line distance from Skua 11 well	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
		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 Park. These activities contribute to the wellbeing of regional communities and the prosperity of the nation.		
Cartier Island	86 km	• 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 (DoNP 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 (internesting and feeding habitat), with a significant population of nesting green turtles (DSEWPaC 2012c). • Important seabird rookery and staging/feeding areas for many migratory seabirds.	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 scientific research and monitoring. Emergency response permitted. DoNP (2018a)

Australian Marine Park	Straight-line distance from Skua 11 well	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
		• 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 (DoNP, 2014). • 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. • Reef crests are generally algal dominated. • Reef flats feature ridges of coral rubble and large areas of seagrass (DoNP 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 2018a), there is limited information about the cultural significance of this Marine Park. • Scientific research is an important activity in the Marine Park.		
Oceanic Shoals	180 km	• Covers an area of 72,000 km^2. • Examples of the ecosystems of the Northwest Shelf Transition Province and the Timor Transition Province. • Important internesting area for flatback and olive ridley turtles.	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.

Australian Marine Park	Straight-line distance from Skua 11 well	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
		• Important foraging area for loggerhead and olive ridley turtles (CoA, 2017). • BIAs include foraging and internesting 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.		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.
Argo-Rowley Shoals	467 km	• Covers an area of 146,099 km^2. • Important foraging areas for migratory seabirds and the endangered loggerhead turtle (Buxton, C. D and Cochrane, P., 2015). • Important area for sharks, which are found in abundance around the Rowley Shoals relative to other areas in the region (Buxton, C. D and Cochrane, P., 2015). • 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	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)

Australian Marine Park	Straight-line distance from Skua 11 well	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
		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 three known shipwrecks listed under the Historic Shipwrecks Act 1976: Alfred (wrecked in 1908), Pelsart (wrecked in 1908) and See Taube (wrecked in 1954).		
Kimberley	135 km	• 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 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.	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. 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)

Australian Marine Park	Straight-line distance from Skua 11 well	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
		• Adjacent to important foraging and pupping areas for sawfish and important nesting sites for green turtles (Buxton, C.D and Cochrane, P., 2015). • 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 50 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.		
Mermaid Reef	707 km	• 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. • Important area for toothed whales, dolphins, tuna and billfish. • Important resting and feeding sites for migratory seabirds.	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. DoNP (2018a)
Christmas Island	1,683 km	• Established in March 2022. • Covers an area of 277 km^2.	Habitat Protection Zone (IV)	The objective of the Habitat Protection Zone (IV) is to provide for the conservation of ecosystems, habitats and

Australian Marine Park	Straight-line distance from Skua 11 well	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
		• International significance due to its habitats for a range of unique, migratory and threatened species. Over 680 species of fish recorded in the region. • The marine park adjoins Christmas Island National Park, connecting and increasing protections across land and sea. • Important resting and feeding sites for migratory seabirds including Abbott's Booby and Christmas Island Frigatebird (Parks Australia, 2024).	National Park (II)	native species in as natural a state as possible, while allowing activities that do not harm or cause destruction to seafloor habitats. 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)
Cocos (Keeling) Islands	2,618 km	• Established in March 2022. • Covers an area of 467 km^2. • International significance due to its habitats for a range of unique, migratory and threatened species. Over 600 species of fish recorded in the region. • The marine park also adjoins Pulu Keeling National Park, connecting and increasing protections across land and sea. • The central lagoon system and outer reefs are two of the islands important habitats. The lagoon encompasses a variety of unique and distinct habitats. This includes seagrass, which is essential for the resident green turtle population (which is a genetically distinct stock that is unique to the islands) as well as for sustaining fish populations. (Parks Australia, 2024). • The marine park also protects the foraging habitat of thousands of seabirds which nest on North Keeling Island (Pulu Keeling National Park), as well as species like dolphins, deep sea fish and sharks that are or may be threatened elsewhere in the region (Parks Australia, 2024).	Habitat Protection Zone (IV) National Park (II)	The objective of the Habitat Protection Zone (IV) is to provide for the conservation of ecosystems, habitats and native species in as natural a state as possible, while allowing activities that do not harm or cause destruction to seafloor habitats. 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)

State Marine Parks

In addition to the AMPs, the EMBA also intersects four Western Australian State Marine Parks and one Territory reserve. These parks and reserves are discussed in Table 3-6 below.

Table 3-6: Description of State and Territory Marine Parks and reserves within the EMBA

State or External Territory Marine Parks	Straight-line distance from Skua-11 well	Key Features of Conservation Significance	Rules/ Requirements
North Kimberley Marine Park (WA)	197 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 2016).	North Kimberley Marine Park Joint Management Plan 2016 Uunguu, Balanggarra, Miriuwung Gajerrong, and Wilinggin management areas (DPaW 2016)
Scott Reef Nature Reserve	316 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 (Gilmour et al, 2013). 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 (DCCEEW, 2012).	KEF and Commonwealth Marine
Rowley Shoals	751 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 2007)

State or External Territory Marine Parks	Straight-line distance from Skua-11 well	Key Features of Conservation Significance	Rules/ Requirements
Lalang-garram/ Camden Sound Marine Park/North Lalang-garram Marine Park	273 km	• ~270 km north-west of Broome. • Covers an area of approximately 7,863 km^2. The park encompasses: • Five General Use Zones (IUCN VI) (Approx. 4,043 km^2) • Two Sanctuary Zones (IUCN VI) (Approx. 1,340 km^2) • One Special Purpose Zone (Pearling) Approx. 558 km^2) • One Special Purpose Zone (Whale Conservation) (Approx. 1,674 km^2) • One Special Purpose Zone (Wilderness Conservation) (Approx. 246 km^2). **The only zone intersecting the EMBA is a General Use Zone (IUCN VI)** The marine park protects the following conservation values: • Humpback whale calving habitat and nursery area • Feeding habitat for Australian snubfin and bottlenose dolphins • Saltwater Crocodile breeding habitat in the mangroves and tributaries of the St George Basin and Prince Regent River • An example of the ecosystem of the Northwest Shelf Transition provincial bioregion.	Lalang-garram Marine Park Joint Management Plan (DBCA 2022)

3.4.5 Key Environmental Features (KEFs)

The KEFs that intersect the EMBAs are described Table 3-7.

Table 3-7: Description of Key Ecological Features within the EMBA

Key Ecological Feature	Straight-line distance from Skua-11 well	Description and Values
Carbonate Bank and Terrace System of the Sahul Shelf	63 km	• The area contains predictably high levels of productivity especially when compared to the generally low productivity of the region (DSEWPaC, 2012a). • 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 (Brewer et al. 2007). • The banks are known to be foraging areas for loggerhead, olive ridley and flatback turtles.

Key Ecological Feature	Straight-line distance from Skua-11 well	Description and Values
		• Cetaceans and green and largetooth sawfish are likely to occur in the area (Donovan et al., 2008 in DSEWPaC, 2012a.
Ancient Coastline at 125 m Depth Contour	81 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	84 km	• The continental slope KEF consists of two distinct community types, associated with the upper and mid slope, 225 to 500 m and 750 to 1,000 m, respectively. The Timor Province and Northwest Transition bioregions are the second-richest areas for demersal fish across the entire continental slope (DSEWPaC, 2012a). • 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	87 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.
Seringapatam Reef and Commonwealth Waters in the Scott Reef Complex	281 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.

Key Ecological Feature	Straight-line distance from Skua-11 well	Description and Values
Pinnacles of the Bonaparte Basin (North and North West)	295 km	• The limestone pinnacles of the Bonaparte Basin are located in the mid-outer shelf of the western Joseph Bonaparte Gulf and comprise of 61% of the limestone pinnacles in the Northwest Marine Region and 8% of the total limestone pinnacles found within the Australian Exclusive Economic Zone (EEZ; Baker et al., 2008). • 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. • The Pinnacles of the Bonaparte Basin are defined as a KEF as they are a unique seafloor feature with ecological properties of regional significance. Their biodiversity value relates to both the benthic and pelagic habitats (DSEWPaC, 2012a).
Carbonate Bank and Terrace System of the Van Diemen Rise	419 km	• Unique seafloor feature with ecological properties of regional significance. • The KEF is characterised by carbonate terrace, banks, channels and valleys, with variability in water depth and substrate composition contributing to unique ecosystems in the channels. • 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.
Canyons Linking the Argo Abyssal Plain with the Scott Plateau	542 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 localised upwelling (DEWHA 2008).

Key Ecological Feature	Straight-line distance from Skua-11 well	Description and Values
Mermaid Reef and Commonwealth Waters Surrounding Rowley Shoals	709 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) Enhanced productivity is thought to be facilitated by the breaking of internal waves in the waters surrounding the reefs, causing mixing and resuspension of nutrients from water depths of 500–700 m into the photic zone. The steep changes in slope around the reef also attract a range of migratory pelagic species including dolphins, tuna, billfish and sharks. • 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).
Shelf break and slope of the Arafura Shelf	582 km	• The Arafura Shelf is an important ecological feature that creates a unique seafloor which enhances biological productivity on the edge of the shelf and attracts feeding aggregations of pelagic marine organisms. • The physical characteristics of this shelf break and slope comprise of continental slope, patch reefs and hard substrate pinnacles (Harris et al., 2005). • Phytoplankton and invertebrates have been sampled at this KEF and phytoplankton is thought to be the basis for offshore food webs in the area (DEWHA, 2007). • Contains approximately 280 demersal fish species in the area (Last et al. 2005) and other marine species that have been recorded include marine turtles, whale sharks and predatory fish species including sharks (DEWHA, 2008a).

3.5 Biological Environment – Species and Communities' Descriptions

3.5.1 Benthic Habitat and Communities

The benthic habitats in the Operational Area are generally dominated by soft sediments, with occasional patches of coarser sediments. Spatial and temporal distribution of benthic fauna depends on factors such as sediment characteristics, depth and season.

A benthic habitat assessment was undertaken in the area of Petroleum Production Licence AC/L7 during the 2010 wet season, which included areas in the vicinity of the proposed Operational Area (ERM 2011). Surveys were carried out using a towed video system and seabed sediment samples were collected for sediment and macrobenthic fauna analysis. Benthic habitats surveyed were characterised by homogenous, flat, featureless soft sediment; predominantly 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). The benthic habitats and communities in the Operational Area are located within Petroleum Production License AC/L8, immediately adjacent to AC/L7. Although these habitats have not been surveyed, the bathymetry and water depths of AC/L7 and AC/L8 are similar and so the substrate and communities can reasonably be expected to be similar.

3.5.2 Plankton

Plankton is divided into two categories: phytoplankton and zooplankton. Phytoplanktonic algae are important primary producers and range in size from 0.2 to 200 µm. 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.

3.5.3 Fish including 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 EMBA 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).

The Protected Matters Search Tool Report for the EMBA (Appendix D) identified ten threatened and six migratory species.

A description of threatened and migratory fish (including sharks and rays) relevant to the EMBA is provided in Table 3-8. The Operational Area intersects with the Whale Shark foraging BIA (Figure 3-4).

Table 3-8: Fish (including Sharks and Rays) EPBC listed threatened and migratory species

Common Name (Scientific Name)	EPBC Act Status	Type of presence	Operational Area	EMBA	Management		
					Conservation advice	Recovery Plan	Threat Abatement Plan
Whale Shark (*Rhincodon typus*)	V,M	Foraging, feeding or related behaviour known to occur within area	✓	✓	✓ Conservation advice *Rhincodon typus* whale shark (TSSC 2015a)	Ceased 2010	✓ Marine debris
Great White Shark (*Carcharodon carcharias*)	V,M	Species or species habitat may occur within area	✓	✓	No	✓ Recovery plan for the white shark (*Carcharodon carcharias*) (DSEWPaC 2013a)	✓ Marine debris
Northern River Shark (*Glyphis garricki*)	E	Species or species habitat may occur within area	✓	✓	✓ Approved Conservation Advice for *Glyphis garricki* (northern river shark) (DoE 2014a)	✓ Sawfish and river shark multispecies recovery plan (CoA, 2015b)	✓ Marine debris
Scalloped Hammerhead Shark (*Sphyrna lewini*)	CD	Species or species habitat known to occur within area	✓	✓	No	No	✓ Marine debris
Speartooth Shark (*Glyphis glyphis*)	CE	Species or species habitat may occur within area	X	✓	✓ Approved Conservation Advice for *Glyphis glyphis* (speartooth shark) (DoE 2014b)	✓ Sawfish and river shark multispecies recovery plan (CoA, 2015b)	✓ Marine debris
Grey Nurse Shark (*Carcharias taurus*)	V	Species or species habitat likely to occur within area	X	✓	No	✓ Recovery Plan for the Grey Nurse Shark (Carcharias taurus) (CoA, 2015b)	✓ Marine debris

Common Name (Scientific Name)	EPBC Act Status	Type of presence	Operational Area	EMBA	Management		
					Conservation advice	Recovery Plan	Threat Abatement Plan
Southern Bluefin Tuna (*Thunnus maccoyii*)	CD	Breeding known to occur within area	✓	✓	No	No	No
Dwarf Sawfish, Queensland Sawfish (*Pristis clavate)*	V	Species or species habitat known to occur within area	X	✓	✓ Approved Conservation Advice for Pristis clavata (Dwarf Sawfish). (DEWHA 2009a)	✓ Sawfish and river shark multispecies recovery plan (CoA, 2015b)	✓ Marine debris
Green Sawfish (*Pristis zijsron*)	V	Species or species habitat known to occur within area	✓	✓	✓ Approved conservation advice for *Pristis zijsron* green sawfish (TSSC, 2008)	✓ Sawfish and river shark multispecies recovery plan (CoA, 2015b)	✓ Marine debris
Freshwater/ Largetooth sawfish (*Pristis pristis*)	V, M	Species or species habitat may occur within area	✓	✓	✓ Approved Conservation Advice for *Pristis pristis* (largetooth sawfish) (DoE 2014b)	✓ Sawfish and river shark multispecies recovery plan (CoA, 2015b)	✓ Marine debris
Narrow Sawfish, Knifetooth Sawfish (*Anoxypristis cuspidata*)	M	Species or species habitat may occur within area	✓	✓	No	No	No
Giant Manta Ray (*Mobula birostris*)	M	Species or species habitat may occur within area	✓	✓	No	No	No
Reef Manta Ray, Coastal Manta Ray (*Mobula alfredi*)	M	Species or species habitat may occur within area	✓	✓	No	No	No

Common Name (Scientific Name)	EPBC Act Status	Type of presence	Operational Area	EMBA	Management		
					Conservation advice	Recovery Plan	Threat Abatement Plan
Shortfin Mako, Mako Shark (*Isurus oxyrinchus*)	M	Species or species habitat may occur within area	✓	✓	No	No	No
Longfin Mako (*Isurus paucus*)	M	Species or species habitat may occur within area	✓	✓	No	No	No
Oceanic Whitetip Shark (*Carcharhinus longimanus*)	M	Species or species habitat may occur within area	✓	✓	No	No	No

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

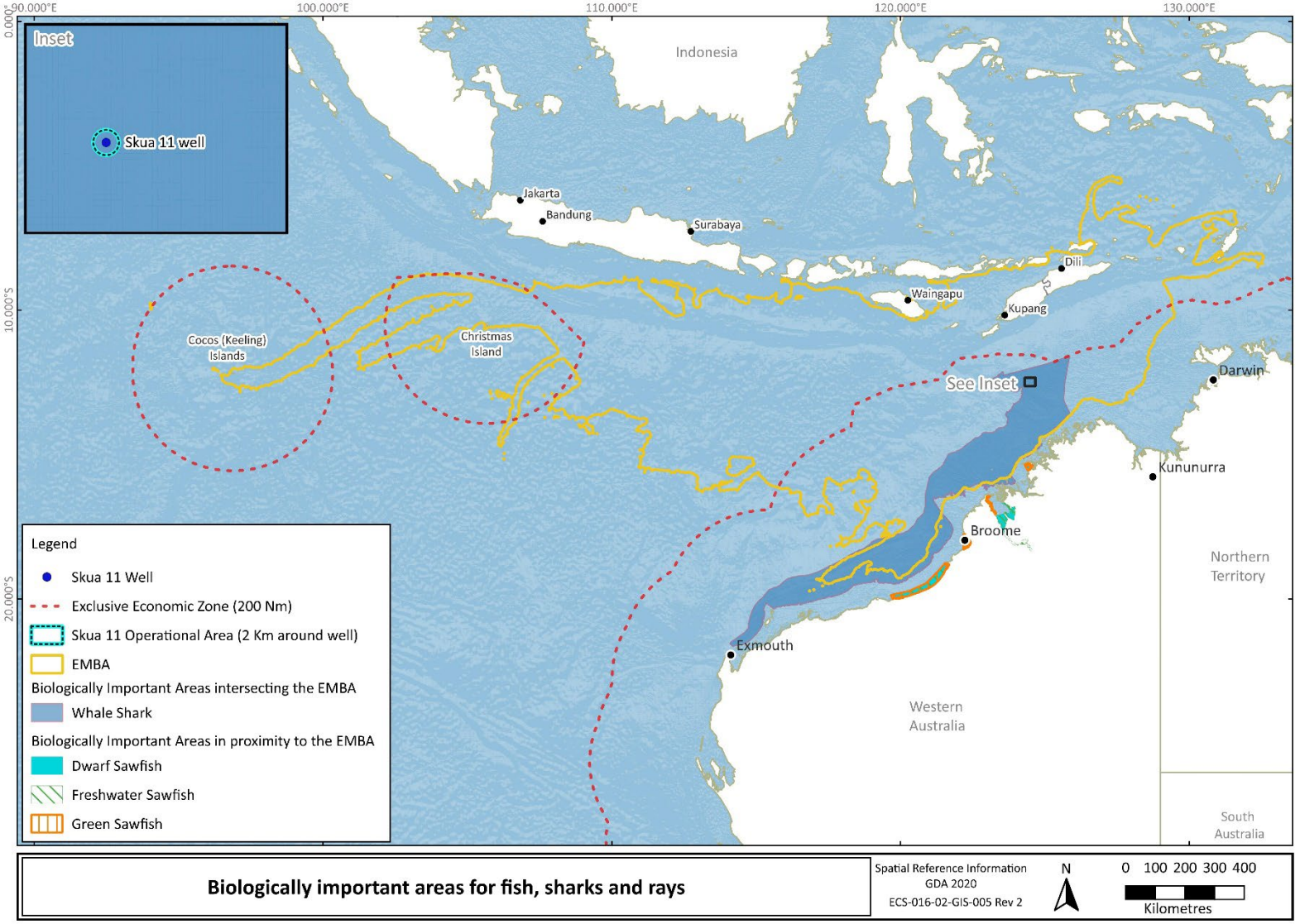


Figure 3-4: BIAs for fish (including sharks and rays)

Whale Shark (Vulnerable/Migratory)

The whale shark (*Rhincodon typus*) is globally distributed in tropical and warm temperate seas, except the Mediterranean. There are two distinct subpopulations, with approximately 75% of the global population in the Indo-Pacific, and the remaining 25% in the Atlantic Ocean (Vignaud et al., 2014 in FRDC, 2019). Ningaloo Reef in WA is a known aggregation site, and whale sharks congregate off Christmas Island from December to January. These aggregations are thought to be linked to seasonal prey fluctuations (DoE, 2015b). The species is an epipelagic filter feeder with a diet of planktonic and nektonic species, including small crustaceans and smaller schooling fish species (DoE, 2023f). Whale sharks are known to be highly migratory with migrations of over 20,000 km recorded (Guzman et al., 2018). Migration along the northern WA coastline broadly follows the 200 m isobath and typically occurs between July and November (DoE, 2015b).

A BIA for whale sharks is located in northern WA, offshore of the Pilbara and Kimberley coastline, and broadly follows the 200 m isobath (DoE, 2023f). The BIA is listed as a foraging habitat, however the Conservation Advice (DoE, 2015b) for this species indicates this BIA represents a migration corridor rather than significant foraging habitat, consistent with tagging studies. Wilson et al. (2006) recorded six whale sharks departing Ningaloo Reef and traveling north-east into the Indian Ocean. Meekan and Radford (2010) showed that whale sharks migrated up the coast from Ningaloo Reef and individually dispersed over a broad area; either north-west into the open Indian Ocean, northward towards Sumatra and Java, or north-east towards the Timor Sea; and Thomson et al (2021) more recently recorded whale sharks tagged in Ningaloo Reef traveling to the NWS. Due to their widespread distribution, highly migratory whale sharks may occur in low numbers within the EMBA.

White Shark (Vulnerable/Migratory)

The white shark (*Carcharodon carcharias*) is a rare, primarily temperate species with a wide Australian range and two subpopulations; eastern Australasia (from Papua New Guinea along Australia's east coast and Macquarie Island to the south-western Pacific, including waters off New Caledonia, Vanuatu and Tonga) and the southern-western population (from western Victoria across southern Australia and up the WA coast; DSEWPaC, 2013a; FRDC, 2019; Kyne et al., 2021a). Although the species has been recorded south from central QLD to up to Ningaloo Reef and may occur further north on both coasts (McAuley et al 2017), white sharks are not known to aggregate within the NWMR and are most likely to be found south of NW Cape (DSEWPaC, 2012a; 2012d). Ongoing research into the movements of this species suggests that female white sharks travel further offshore than males, cover a broader longitudinal range and dive deeper (Bradford et al., 2020). Off the WA coast, the direction and timing of the movement of individual sharks are highly variable, with white sharks travelling along the coast in both directions at most times of the year. The reasons for movements to north-western WA are unknown and little information is available on their reproduction in Australian waters (McAuley et al., 2016; DSEWPaC, 2012d). Individuals may be encountered in low numbers within the EMBA.

Northern River Shark (Endangered)

Northern river sharks (*Glyphis garricki*; Endangered) are rare and although their distribution is uncertain, they are known to occur in the Ord and King Rivers, King Sound and Joseph Bonaparte Gulf in WA along with the South and East Alligator Rivers and the Wessel islands in NT (Udyawer et al., 2021; FRDC, 2019; DSEWPaC, 2010a). It is thought that these sharks segregate during developmental stages and occupy rivers, estuarine systems, macrotidal embayments as well as inshore marine habitats (Kyne et al., 2021a; FRDC, 2019; DSEWPaC, 2010a). Although the northern river shark has been recorded in offshore waters, the frequency of this occurrence is unknown.

The Sawfish and river sharks' multispecies recovery plan (DoE, 2015a) notes observations of adults and juveniles in marine waters north of Derby, WA while pupping and juveniles occur in King Sound and Cambridge Gulf. Under the recovery plan, all aggregations and areas of biologically important behaviours (such as breeding, foraging, resting or migrating) are considered critical to the survival of the species. Individuals may be encountered in low numbers within the EMBA.

Grey Nurse Shark (Vulnerable)

The grey nurse shark (*Carcharias taurus*) has a wide but patchy tropical and temperate distribution in the Indo-West Pacific and Atlantic oceans. There are two distinct subpopulations in Australia on the east and west coast. The west coast population inhabits coastal and continental shelf waters from SW WA (Albany) up to the NW shelf (DoE, 2023b; FRDC, 2019) and although one aggregation site has been documented, data on their distribution along the WA and NT coastline is lacking (Hoschke et al., 2023). Grey nurse sharks undertake large-scale movements to potentially capitalise on seasonal prey aggregations, with individuals migrating 1,294 km along the WA coast from SW WA to Ningaloo, and 1,500 km on the east coast (Dwyer et al., 2023; DoE, 2023b; Jakobs et al., 2019). Grey nurse sharks are thought to move further north along the coast from May to December with lower sea temperatures. Individuals have been caught near Browse Island and off Bali, Indonesia (Hoschke et al., 2023; Momigliano & Jaiteh 2015). Given grey nurse sharks have been observed at seamounts and oceanic coral reefs in the Timor Sea, the species is likely to be present around reefs, banks and seamounts in the EMBA, though likely only in transit.

Scalloped Hammerhead (Conservation Dependant)

The Scalloped Hammerhead shark (*Sphyrna lewini*) is a coastal and semi-oceanic species globally distributed in tropical and warm-temperate waters from the intertidal zone to at least 275 m in depth, with newborns found in coastal zones (Kyne et al., 2021; FRDC, 2019). Recent studies suggest that the Indo-Pacific population (including Australia) is genetically distinct from the Atlantic and Caribbean populations. There is likely to be two subpopulations in Australian waters (WA and the rest of Australia), with the non-WA subpopulation connected to Papua New Guinea and Indonesia by shallow water habitats along northern Australia (Green et al., 2022). Across northern Australia, the pupping season peaks from October to January (TSSC, 2018). This mobile species has a broad Australian range from NSW and QLD across the NT to WA (Bartes et al., 2021; Kyne et al., 2021; FRDC, 2019). Scalloped Hammerhead sharks are known to occur within the EMBA.

Speartooth Shark (Critically Endangered)

The speartooth shark (*Glyphis glyphis*) has been recorded as occurring in macrotidal rivers and estuaries environments, with juveniles and sub-adults utilising large tropical river systems as their primary habitat (Kyne et al., 2021b; DSEWPaC, 2010b Stevens et al., 2005). It is thought that their marine distribution may be limited to the coastal marine environment outside of rivers (Udyawer et al., 2021; FRDC, 2019; DSEWPaC, 2010b). While the speartooth shark is known to inhabit the Wenlock/Ducie/Port Musgrave river system in QLD and various rivers of the Van Diemen Gulf in the NT, new populations of this species were recently discovered in the Daly River, NT and the Ord River, WA (Kyne et al., 2021b). It has been recorded in tidal rivers and estuaries with turbid waters with fine muddy substrates in temperatures ranging from 27 to 33 °C (Pillans et al., 2009).

Remaining populations throughout Australia are considered isolated and their viability is therefore questionable. Both species were listed as threatened in 2001 due to their limited geographical distribution and low population estimates, and the population decline is likely to continue (DSEWPaC, 2010b). It is possible but unlikely that individuals will occur within a small, eastern part of the EMBA.

Southern Bluefin Tuna (Conservation Dependant)

Southern bluefin tuna (*Thunnus maccoyii*) are highly migratory fish that are mainly found in the eastern Indian Ocean and in the south-west Pacific Ocean. With a varied diet including crustaceans, cephalopods, fishes and other marine animals, these fish can be found to depths of 500 m (DoE, 2023a). Southern bluefin tuna school by size, with juveniles under two years of age found in WA and SA inshore waters (DoE, 2023a; TSSC, 2010). Adults inhabit offshore waters from northern WA across southern Australia, including Tasmania, to northern NSW. Breeding takes place in tropical waters between Java, Indonesia, and northern WA from September to April, and the young move down the WA coast from the spawning grounds (CCBST, 2023; Honda et al., 2010).

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, QLD, 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. There are few reports of adult individuals at sea, with only a few records of fish greater than 3 m in total length from the Pilbara coast (DoEE 2017b). Freshwater Sawfish occur in fresh or weakly saline water (DoEE 2017b).

No BIAs for the freshwater sawfish are intersected by the Operational Area and 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)

The green sawfish (*Pristis zijsron*) does not occupy freshwater habitats and although are most common in shallow coastal and estuarine areas, this species has been recorded in depths of up to 70 m from Cairns in QLD across to Broome in WA (FRDC, 2019; DEWHA, 2008a). Green sawfish appear to have limited, tidally influenced movements, occupying only a few square kilometres within the coastal fringe, and strongly associated with mangroves and adjacent mudflats (Lear et al., 2023). Baseline surveys for Chevron's Wheatstone project identified green sawfish habitat and juvenile nursery areas within the north-eastern lagoon of the Ashburton Delta and in Hooley Creek near Onslow. Although their spatial and temporal distribution in these creeks is variable with changing tidal and environmental conditions, they typically return to inshore waters to breed and pup during the wet season (i.e. January; Chevron, 2011). Based on their habitat preferences, it is considered highly unlikely for these sawfish to occur within the deeper offshore waters of the EMBA.

Dwarf Sawfish (Vulnerable)

The dwarf sawfish (*Pristis clavata*) is primarily found in shallow coastal and estuarine areas, from Cairns in QLD around the north of Australia to the Pilbara coastline in WA, with juveniles thought to remain in estuarine waters (FRDC, 2019; DEWHA, 2009a). Based on their habitat preferences, it is considered highly unlikely for these sawfish to occur within the deeper offshore waters of the EMBA.

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 (DCCEEW 2024a, DCCEEW 2024b). 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 (DCCEEW 2024a, DCCEEW 2024b). 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. 2022a). 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. 2022a).

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 NSW (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. 2022b).

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 cuspidata*) are bentho-pelagic inhabiting estuarine, inshore and offshore waters to at least 40 m depth (IUCN, 2024). Inshore and estuarine waters are critical habitats for juveniles and pupping females, while adults occur predominantly offshore (IUCN, 2024). 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, 2024). They are an oceanic and pelagic species that regularly occurs in waters of 18 to 28°C, usually >20°C (IUCN, 2024). Within Australian waters, they are found from Cape Leeuwin (Western Australia) through parts of the Northern Territory, down the east coast of QLD and NSW 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.

3.5.4 Marine Reptiles

The Protected Matters Search Tool Report (Appendix D) identified eight threatened/migratory and one migratory species within the EMBA.

A description of threatened marine reptiles relevant to the EMBA is provided in Table 3-9.

Table 3-9: Marine Reptiles EPBC listed threatened species

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management		
				Conservation advice	Recovery Plan	Threat Abatement Plan
Loggerhead Turtle (*Caretta caretta*)	E,M	Species or species habitat may 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.	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.	No	✓ Approved conservation advice for *Dermochelys coriacea* (Leatherback Turtle) (TSSC, 2009b)	✓ Recovery plan for marine turtles in Australia (DoEE 2017)	✓ Marine debris
Hawksbill Turtle (*Eretmochelys imbricata*)	V,M	Foraging, feeding or related behaviour known to occur within area	No	No	✓ Recovery plan for marine turtles in Australia (DoEE 2017)	✓ Marine debris
Olive Ridley Turtle (*Lepidochelys olivacea*)	E, M	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	Foraging, feeding or related behaviour known to occur within area	No	No	Recovery plan for marine turtles in Australia (DoEE 2017)	✓ Marine debris

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management		
				Conservation advice	Recovery Plan	Threat Abatement Plan
Short-nosed Sea Snake, Short-nosed Seasnake *(Aipysurus apraefrontalis)*	CE	Species or species habitat known to occur within area	No	Approved Conservation Advice for *Aipysurus apraefrontalis* (Short-nosed Sea Snake) (TSSC, 2011a)	No	✓ Marine debris
Leaf-scaled Sea Snake, Leaf-scaled Seasnake *(Aipysurus foliosquama)*	CE	Species or species habitat may occur within area	No	Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (TSSC, 2011b)	No	✓ Marine debris
Salt-water Crocodile, Estuarine Crocodile *(Crocodylus porosus)*	M	Species or species habitat likely to occur within area	No	No	No	No

CE = Critically Endangered; E = Endangered; V = Vulnerable; M = Migratory

Marine Turtles

No BIAs of a marine turtle species occur within the Operational Area. BIA behaviours (such as breeding, resting, nesting, distribution or migratory routes) do overlap areas of the EMBA (Figure 3-5). Habitat critical to marine turtles within or adjacent to the EMBA is presented in Figure 3-6.

A search of the EPBC Act Protected Matters database identified six listed threatened and/or migratory marine turtle species that may occur in or have habitat in the EMBA, these species are discussed below.

Green Turtle (Vulnerable/Migratory)

Green turtles (*Chelonia mydas*) are predominantly found off the WA, NT and QLD coastlines (CoA, 2017). The green turtle is the most common marine turtle breeding otherwise in the NWMR, with WA supporting one of the largest remaining populations worldwide (DSEWPaC, 2012e). The species is primarily herbivorous and forages on algae, seagrass and mangroves, including where these habitats exist at offshore coral reef habitats across most of northwestern Australia (Ferreira et al 2021; CoA, 2017). Green turtles are also known to travel large distances of up to 3,100 km between nesting and feeding areas (Ferreira et al., 2021; DSEWPaC, 2012e). This species breeds all year around, with nesting in the Kimberley region peaking in summer. The highest density rookery was found to be the Lacepede Islands for green turtles, with moderate to lesser density nesting by green turtles in the North Kimberley offshore islands (Tucker et al., 2021).

In the NT nesting sites occur mostly from the western end of Melville Island to near the border with QLD (Northern Territory Government, n.d). The Cobourg Peninsula green turtle genetic stock is the closest to those on the Tiwi Islands and they nest between October and April, with peak nesting period between December and January. Nesting sites for the species in the Bonaparte or Van Diemen bioregions are Black/Smith Point and Lawson Island, east of the Tiwi Islands near Cobourg Peninsula (Chatto & Baker, 2008).

Green turtles are likely to be encountered within the EMBA, mainly within reef areas (Figure 3-5).

Flatback Turtle (Vulnerable/Migratory)

Flatback turtles (*Natator depressus*) are known to occur along the WA, NT, QLD coastlines, and forage widely across the Australian continental shelf and into the continental waters off Indonesia and Papua New Guinea (CoA, 2017). Flatback turtles are primarily carnivorous, feeding predominantly on soft-bodied invertebrates. This species breeds in the region, with the highest density rookeries found to be winter at Cape Domett and summer at Eighty Mile Beach, while moderate to lesser density nesting in winter occurred in the North Kimberley offshore islands (Tucker et al., 2021). Flatback turtles that nest within the Pilbara region typically migrate along the continental shelf to foraging grounds as far north as Darwin at the end of the nesting season, returning to breed at varying intervals of a year or more (Thums et al., 2020; CoA, 2017).

Flatback turtles nesting within the NT are from the Arafura Sea breeding and genetic stock, with unknown long-term trends for this stock (CoA, 2017). Nesting has been recorded on the Tiwi Islands, with the greatest proportion of activity occurring on the west coast of Bathurst Island (Chatto & Baker, 2008a). With nesting females numbering around 11 to 100 per year, this is comparable to or smaller than other nesting sites of the Arafura Sea genetic stock. Nesting and inter-nesting occurs year-round with a peak during June and August, and hatchling emergence peaking between July and September (CoA, 2017).

To date there is no evidence indicating that flatback turtles are present in deep offshore waters during the inter-nesting period (Pendoley, 2019). Foraging individuals may be encountered within the EMBA (Figure 3-5).

Hawksbill Turtle (Vulnerable/Migratory)

Hawksbill turtles (*Eretmochelys imbricata*) predominantly occur along the northern WA, NT and QLD coastlines, with three recognised stocks: north QLD stock located in the north Great Barrier Reef and Torres Strait; north-east Arnhem Land stock in the NT; and WA stock located on the NWS. On a global scale, WA

provides one of the largest remaining hotspots for this species, and these migrating hawksbill turtles traverse shallow continental-shelf waters less than 200 m deep following the coastline and a migratory corridor along the Pilbara coast (Fossette et al., 2021). Hawksbill turtles are omnivorous and feed on algae, sponges, soft corals and soft bodied invertebrates foraging in waters ranging from 1.5 to 84 m deep (Fossette et al., 2021). This species is typically associated with rocky and coral reef habitats, often returning to a small foraging area, and is expected to be found within these habitats along the WA coastline, from Shark Bay to the northern extent of the NWMR, migrating over 4,600 km from their nesting site (Crommenacker et al., 2022; Barr et al., 2021; CoA, 2017). In the NT, nesting occurs on islands concentrated around north-eastern Arnhem land and Groote Eylandt (Northern Territory Government, n.d) and is reported to occur from July to December (Chatto, 1997; 1998; DSEWPaC, 2012d).

Hawksbill turtles may forage on banks and shoals within the EMBA but are unlikely to occur within the deeper waters (Figure 3-5).

Leatherback Turtle (Endangered/Migratory)

Leatherback turtles (*Dermochelys coriacea*) are known to forage and migrate throughout the open offshore waters of Australia, with foraging more common along the east coast and Bass Strait. Records of leatherback turtles nesting in Australia are sparse, and limited to QLD, NSW and NT (DoE, 2023h; CoA, 2017). Leatherback turtles are pelagic throughout their life and almost exclusively feed on jellyfish. There have been no confirmed accounts of nesting on WA beaches (Tucker et al., 2021), although they have been recorded in coastal waters of south-western WA. (DoE, 2023h; CoA, 2017). There have been scattered isolated nestings (one to three nests per year) in QLD and the NT (Limpus & McLachlin, 1994).

Due to the lack of nesting sites in Australian waters, leatherback turtles are likely migrants from neighbouring countries foraging in Australia (Limpus, 2009). It is possible but unlikely to be encountered within the EMBA (Figure 3-5).

Loggerhead Turtle (Endangered/Migratory)

Loggerhead turtle (*Caretta caretta*) range along most of the Australian coastline and throughout the NWMR (CoA, 2017). This species is carnivorous and mainly feeds on benthic invertebrates in a wide range of habitats from nearshore to waters 55 m deep (CoA, 2017). Breeding aggregations occur on Australia's east (QLD, NSW) and west coasts. Loggerhead turtles have one genetic breeding stock within WA with approximately 3,000 females supporting the third-largest population in the world (CoA, 2017; Limpus, 2009; Baldwin et al., 2003).

Capable of large migrations, individual loggerhead turtles from eastern Australian have been recorded foraging in the NT and further afield in Indonesia and Papua New Guinea (Perez et al., 2022). In the Kimberley region, loggerhead turtles are thought to be transient or end-of-migration foragers with no documented nesting sites in the area (Tucker et al., 2021). Although loggerhead turtles forage in the Oceanic Shoals Marine Park, the Arafura Sea and the Gulf of Carpentaria, they are not known to breed in the region. Loggerheads found within the EMBA are most likely to come from the WA population, nesting outside the EMBA (CoA, 2017). (Figure 3-5).

Olive Ridley Turtle (Endangered/Migratory)

Olive ridley turtles (*Lepidochelys olivacea*) are known to nest in the NT and on western Cape York (QLD), with low density nesting recorded on the Kimberley coast, in the Dampier Peninsula and along Camden Sound (Tucker et al., 2021; CoA, 2017). This species is primarily carnivorous and feeds on soft-bodied invertebrates in waters between 15 m and 200 m in depth. Olive ridley turtles can migrate through oceanic waters and have been recorded travelling up to 1,130 km between their nesting and foraging grounds (Cáceres-Farias et al., 2022; CoA, 2017; Whiting et al., 2005).

Olive ridley turtles are known to nest on the Tiwi Islands on the west coast of Bathurst Island and the north coast of Melville Island. These turtles are part of the NT genetic stock, significant at both a national and international level, although long-term trends are unknown (CoA, 2017). The NT genetic stock nests

throughout the year, with peaks between April and June, and most hatchlings emerge between June and August (CoA, 2017).

Inter-nesting habitat for this species encompasses nearshore waters along the north, west and east coasts of the Tiwi Islands. Tracking studies showed these turtles remain close to shore in waters less than 55 m deep within 37 km of the nesting beach during the inter-nesting interval (Whiting et al., 2007a; 2005). Olive ridley turtles may be encountered foraging within the EMBA (Figure 3-5).

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 main threat to the Short-nosed Sea Snake appears to be degradation of reef habitat, where reported changes to the inner region of Ashmore Reef include sand encroachment, which has caused coral outcrops that previously supported high densities of sea snakes to be filled in with sand (TSSC 2011a).

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 (*Aipysurus foliosquama*) 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). Reported coral mortality and changes to the inner region of Ashmore Reef include sand encroachment, has caused coral outcrops that previously supported high densities of sea snakes to be filled in with sand (TSSC 2011b). 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.

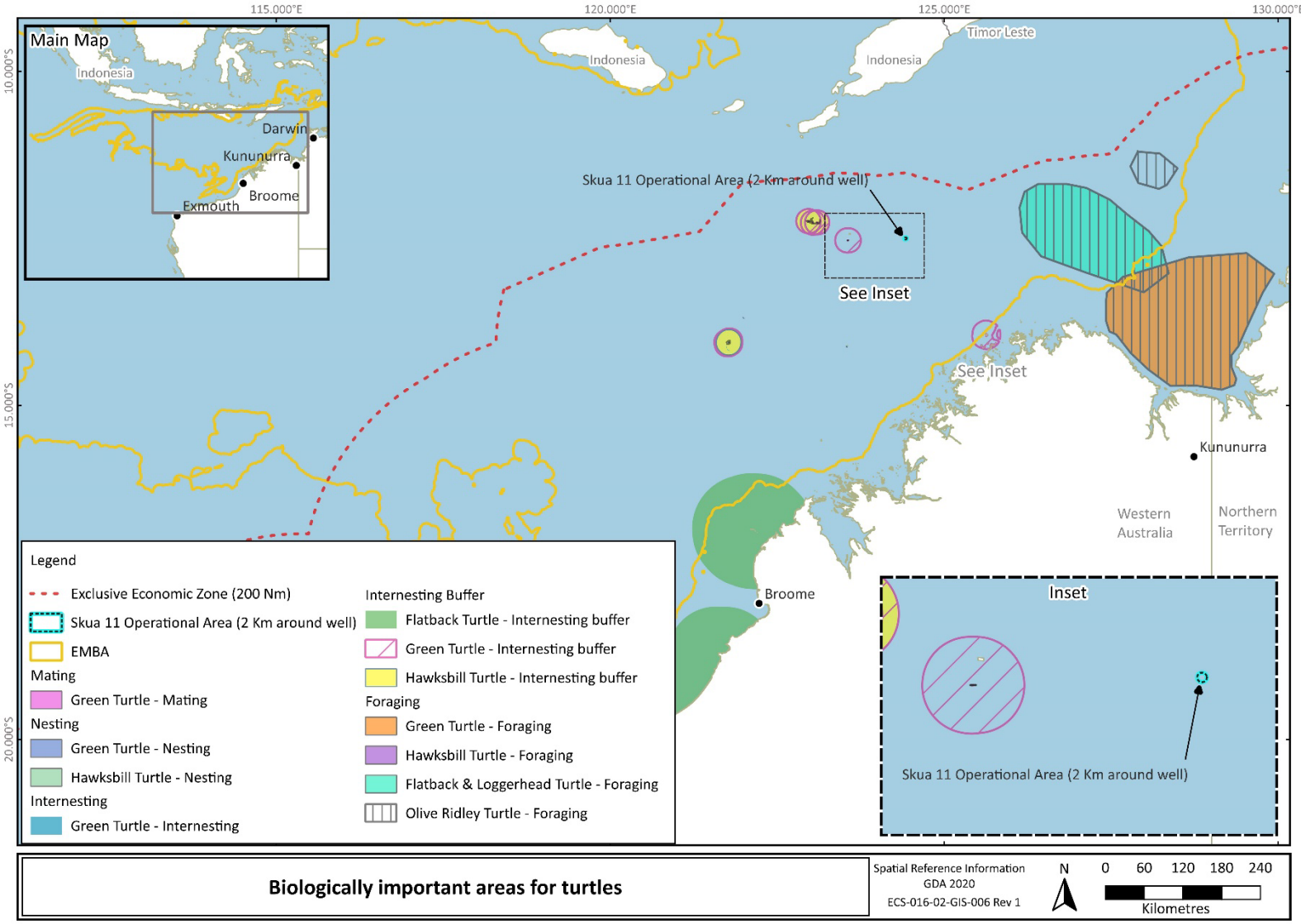


Figure 3-5: BIAs for marine reptiles

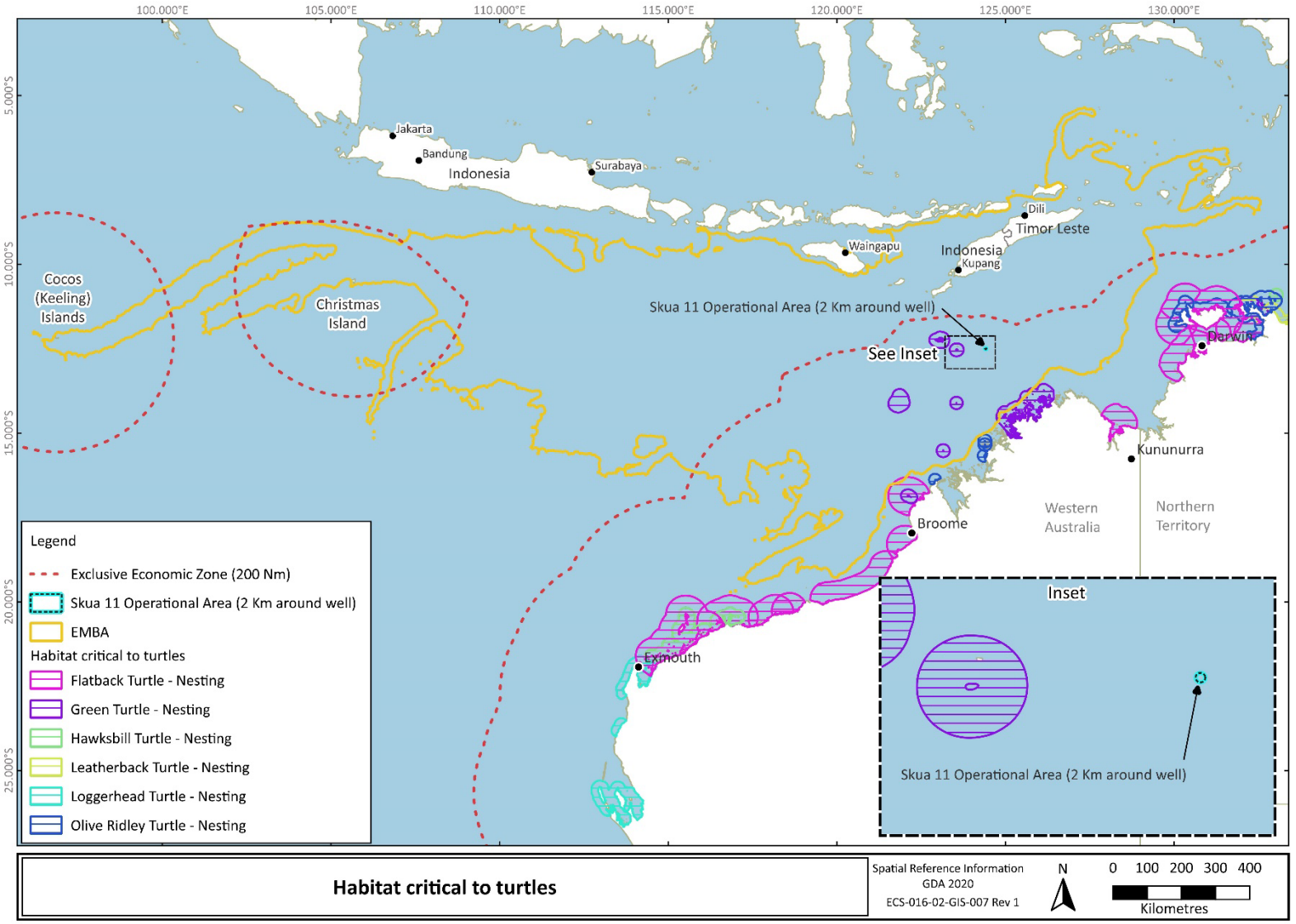


Figure 3-6: Habitat critical to turtles

3.5.5 Marine Mammals

The PMST report for the EMBA (Appendix D) identified:

- Three threatened/migratory; and
- Eight migratory species.

A description of threatened and migratory marine mammals relevant to the EMBA is provided in Table 3-10.

Cetaceans

Marine mammals are typically widely distributed and highly mobile animals. In general, distribution patterns reflect seasonal feeding areas, characterised by high productivity, and migration routes associated with reproductive patterns.

Ten migratory species listed under the EPBC Act, including baleen whales, toothed whales and dolphins were identified as potentially occurring or having habitat within the EMBA. This includes three threatened species; the blue whale (*Balaenoptera musculus*), fin whale (*B. physalus*) and sei whale (*B. borealis*). Of these, only the pygmy blue whale (*B. musculus*) has a BIA in the EMBA (Figure 3-7).

Table 3-10: Marine Mammal EPBC listed threatened and migratory species

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management		
				Conservation advice	Recovery Plan	Threat Abatement Plan
Blue whale (*Balaenoptera musculus*) Including Pygmy Blue Whale	E,M	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 (CoA, 2015a)	✓ Marine debris
Sei Whale (*Balaenoptera borealis*)	V, M	Species or species habitat likely to occur within area	No	✓ Conservation advice *Balaenoptera borealis* sei whale (TSSC, 2015d)	Ceased in 2015	✓ Marine debris
Fin Whale (*Baleenoptera physalus*)	V, M	Species or species habitat likely to occur within area	No	✓ Conservation advice *Balaenoptera physalus* fin whale (TSSC, 2015e)	Ceased in 2015	✓ Marine debris
Humpback Whale *(Megaptera novaeangliae)*	M	Species or species habitat known to occur within area	No	No	No	✓ Marine debris
Bryde's Whale *(Balaenoptera edeni)*	M	Species or species habitat likely to occur within area	No	No	No	✓ Marine debris
Sperm Whale *(Physeter macrocephalus)*	M	Species or species habitat may occur within area	No	No	No	No
Killer Whale, Orca *(Orcinus orca)*	M	Species or species habitat may occur within area	No	No	No	✓ Marine debris

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management		
				Conservation advice	Recovery Plan	Threat Abatement Plan
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) *(Tursiops aduncus)*	M	Species or species habitat likely to occur within area	No	No	No	No
Australian Humpback Dolphin *(Sousa sahulensis)*	M	Breeding known to occur within area	No	No	No	No
Australian Snubfin Dolphin *(Orcaella heinsohni)*	M	Breeding known to occur within area	No	No	No	No
Dugong *(Dugong dugon)*	M	Breeding known to occur within area	No	No	No	✓ Marine debris

E = Endangered; V = Vulnerable; M = Migratory

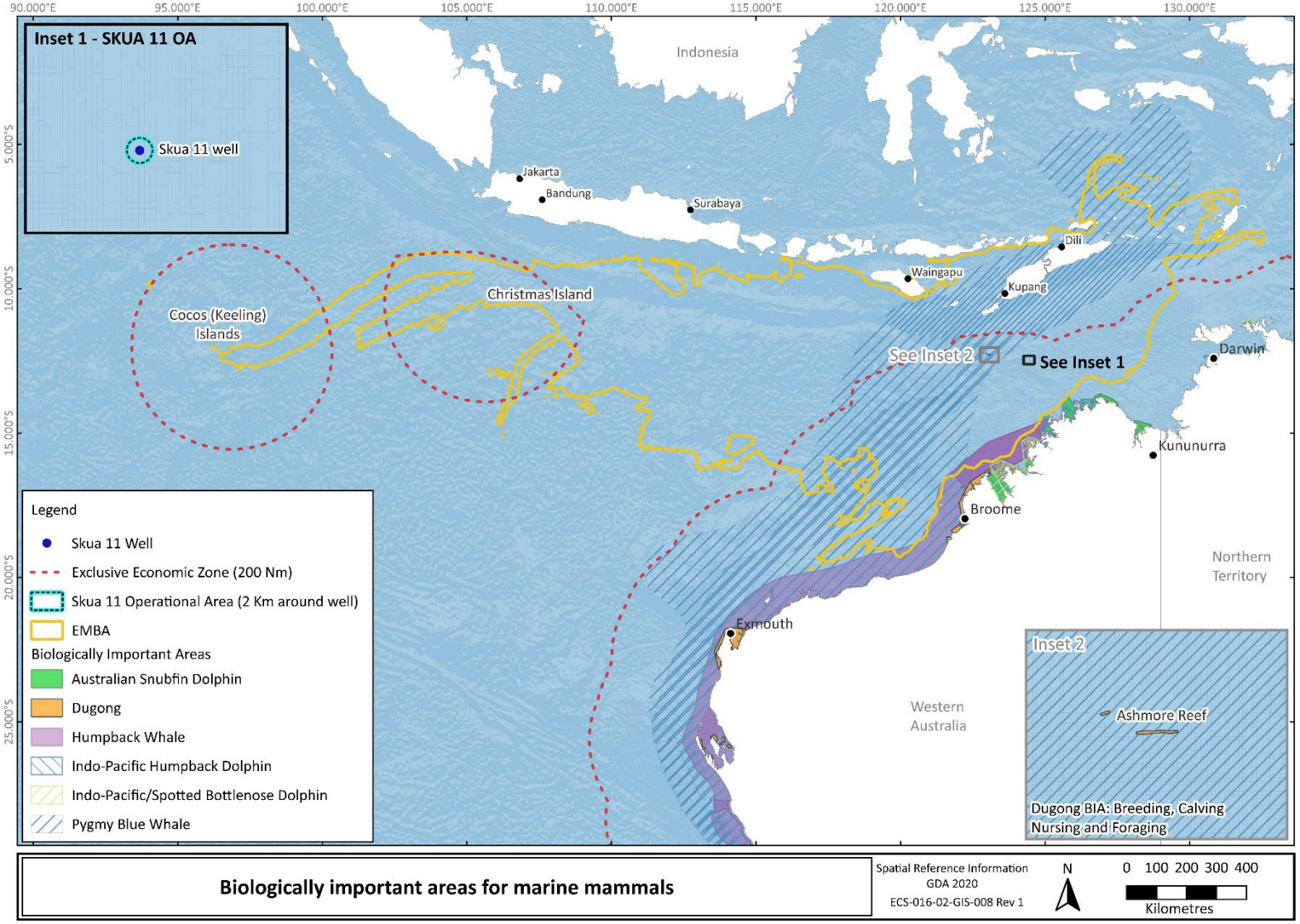


Figure 3-7: BIAs for marine mammals

Blue Whale (Endangered/Migratory)

The blue whale (*Balaenoptera musculus*) has four distinct sub-species, of which two are found in the southern hemisphere; the pygmy blue whale (B. m. brevicauda; Indo-Australian and Tasman-Pacific populations) and the Antarctic blue whale (B. m. intermedia; DoE, 2015e). As southern blue whales occur in waters south of 60°S and pygmy blue whales north of 55°S, blue whales in the region of interest are assumed to be pygmy blue whales (DEWHA, 2008a). As such only this subspecies is discussed below.

The pygmy blue whale is known to migrate along the WA shelf edge at depths between the 500 m and 1,000 m depth contours from the NW Cape south to Geographe Bay (Figure 3-5; DoE, 2023j; 2015e). A biologically important migration corridor is recognised in the deep offshore waters off WA (IUCN-MMPATF, 2023a; DCCEEW, 2023a). The northerly migration toward the calving grounds near the equator occurs in March/April to June (Thums et al., 2021; DoE, 2023j; 2015e). The southerly migration to the feeding grounds in the high latitudes of the southern hemisphere occurs in September/October to December (DoE, 2023j; 2015e). Pygmy blue whales appear to travel as individuals or in small groups when making their migrations (Woodside, 2014).

Generally, this species travels alone or in small groups based on acoustic data. Pygmy blue whale calls from noise loggers deployed around Scott Reef from 2006 to 2009 for the Woodside Browse project found 78% of calls to be from single whales, 18% from whale pairs and 4% from three or more whales (McCauley, 2011; Woodside, 2014).

There are no known breeding areas of significance to blue whales in the EMBA. Given BIAs have been identified within the EMBA, pygmy blue whales are likely to transit through, and forage within the EMBA.

Sei Whale (Vulnerable/Migratory)

Sei whales (*Balaenoptera borealis*) are thought to have a wide distribution, but their distribution limits are unclear as this species is often confused with Bryde's whales. Sightings are rare, but the species may be seen in coastal and offshore waters throughout Australia (DoE, 2023n; Bannister et al., 1996). The species is able to utilise a diverse range of marine habitats, which has been attributed to a combination of dynamic physical and prey processes (DoE, 2023n).

Sei whale migratory movements are well defined with distinct north-south movements as the species migrates between polar, temperate and tropical waters for foraging and breeding. The species feeds intensively between the Antarctic and sub-tropical convergences on planktonic crustacea (DoE, 2023n; Ceccarelli et al., 2011; Bannister et al., 1996). The sei whale does not dive, rather it sinks, and tends to swim at shallower depths comparative to other species (DoE, 2023n). There are no known mating or calving areas in Australian waters and the species is thought to infrequently occur in the NW region (Ceccarelli et al., 2011).

There are no known mating or calving areas, nor any BIAs developed for this species in Australian waters (DCCEEW, 2023a; 2023b). However, it is possible that individual sei whales may occasionally occur within the EMBA.

Fin Whale (Vulnerable/Migratory)

Fin whales (*Balaenoptera physalus*) are widely distributed from polar to tropical waters and have been recorded in all Australian states, other than NSW and the NT (Bannister et al. 1996). Fin whales feed on planktonic crustacea, such as Antarctic krill, and primarily forage in high latitudes.

The species rarely occupies inshore waters and displays well defined migratory movements (essentially north south) between polar, temperate and tropical waters and may migrate through the region (DoE 2023l; Ceccarelli et al 2011; Bannister et al. 1996). Research by Aulich et al. (2022; 2019) found that fin whales travel up the WA coast as far north as Dampier (19°S). After arriving at Cape Leeuwin in April, the species migrates north along the coast to feed in Perth Canyon from May to October. This is thought to be a migratory pathway from Antarctica, and it has been suggested that there are separate fin whale sub-populations on the east and west coasts of Australia (Aulich et al., 2022; 2019). Within Australian waters,

the Bonney Upwelling, at the continental shelf of southern Australia is thought to be an important foraging ground for this species (DoE, 2023l; DoE, 2015f; Bannister et al., 1996).

The Australian fin whale distribution is unclear due to limited observations, but the species is thought to be present from Exmouth along the southern coastline to QLD. There are no known mating or calving areas in Australian waters and no BIAs have been developed for fin whales (DoE, 2023l; 2015f). Given their distribution and movements individual fin whales may pass through the EMBA in low numbers.

3.5.6 Avifauna

The EMBA PMST report (Appendix D) identified:

- Nine threatened/migratory; and
- Twenty-eight migratory species.

A number of marine bird species are known to occur within the region as they forage across large distances over the open ocean. Refer to the EPBC Protected Matters search for the full list of bird species that may occur in the EMBA (Appendix D). Species that are not expected to occur in significant numbers within the marine and coastal environments of the EMBA due to their terrestrial or southern distributions according to the Species Profile and Threats database and The Action Plan for Australian Birds (Garnet, 2011) are not discussed further. Species listed under the EPBC Act as migratory and/or threatened that may occur in the EMBA are outlined in Table 3-11: , with species listed as threatened described in the following sections.

Numerous species of birds 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).

No avifauna migration, resting, foraging or breeding BIAs are present within the Operational Area (Figure 3-8). The nearest breeding/roosting BIA's to the Operational Area are surrounding Cartier Island, where the BIAs extend within 38 km of the Operational Area.

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 are 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 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 (DoE 2023x). 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 (DoE 2023x).

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.

Greater sand plover, large sand plover (Vulnerable/Migratory)

Greater sand plovers are shorebirds that migrate from breeding areas in Mongolia, Siberia and China to coastal areas of all Australian states with the area around Darwin an internationally important site. This species occurs in the greatest numbers in northwestern Australia and is widespread between Northwest Cape and Roebuck Bay in WA, with scattered records between Roebuck Bay and Darwin. Greater sand plovers are recorded at most of the coastline of the NT, with significant areas around the Joseph Bonaparte Gulf, from Anson Bay to Murgenella Creek (including the south coast of the Tiwi Islands), the northern Arnhem coast, and the Port McArthur area (DoE, 2023z; TSSC, 2016a). In Australia, greater sand plovers are almost entirely coastal, inhabiting sheltered muddy, sandy or shelly beaches, large intertidal mudflats, saltmarshes, estuaries, sandbanks, coral reefs, rocky islands rock platforms, tidal lagoons and coastal dunes. Greater sand plovers feed on molluscs, worms, crustaceans and insects they find in wet sand or mud on open intertidal flats (DoE 2023z; TSSC, 2016a). The PMST report states that this species may fly over and be present within the EMBA.

Asian Dowitcher (Vulnerable/Migratory)

Asian dowitchers are large waders that breed in isolated colonies in central and eastern Siberia, Mongolia and north-east China between May and early June. The species arrives in Australia around August each year to feed on inter-tidal mudflats. The estimated Australian population in 2020 (700 mature individuals) is based on counts at Roebuck Bay, north western Australia (high count 400; Rogers et al. 2000), counts of up to 125 individuals at Port Hedland Saltworks, and counts of 300–400 individuals between Darwin and the QLD border.

The population is not severely fragmented and is not subject to extreme fluctuations in their extent of occurrence (EOO), area of occupancy (AOO), number of subpopulations, locations, or mature individuals. The EOO is estimated at 4,600,000 km^2 (range 4,400,000–4,800,000 km^2) and AOO at 320 km^2 (270–380 km^2). Both the EOO and AOO are considered stable (Barden et al. 2021).

The species may fly over and be present within the EMBA, particularly on and around Ashmore Reef.

Christmas Island Frigatebird, Andrew's Frigatebird (Endangered/Migratory)

Christmas Island Frigatebirds are large seabirds that breed only on Christmas Island. They forage and roost widely in south-east Asia and across the Indian Ocean. The species undertakes aerial feeding, predominantly scooping up marine organisms, predominantly flying-fish and squid, and various animal matter from the surface of the water. It sometimes takes eggs, nestlings, grasshoppers and, occasionally, carrion off beaches (TSSC, 2020).

The species has a biennial breeding cycle and offspring take 15 months to reach independence (Hill and Dunn 2004). Breeding occurs in pairs which are seasonally monogamous (Marchant and Higgins 1990) and they build loose nests under the top branches of tall trees, usually 10-20 m from the ground. Females lay one egg between mid-February to early June. The male and female take turns to incubate the egg over a period of approximately 50 days. Nestlings fledge at six months but remain dependent on parents for up to an additional nine months (Nelson 1975). Juveniles take at least eight years to reach adult plumage and reach breeding age at about ten years (James 2014).

It is likely that this species will be present within the EMBA.

Christmas Island White-tailed Tropicbird (Endangered)

White-tailed tropicbirds (Christmas Island) are medium-sized, whitish seabirds with long central tail-feathers. They have a yellow bill and black wing-bars on their upper wings and are distinguished from the white-tailed tropicbird (Indian Ocean) by having a golden or apricot hue to its white plumage (Pizzey &

Knight 1997; Dunlop et al., 2001). There is, however, considerable variation in the extent and intensity of the apricot hue and about 7% of breeding adults show no trace of it (Dunlop et al., 1988a).

The Christmas Island subspecies of the White-tailed Tropicbird is endemic to Christmas Island, and is only known to breed at this location. It is widely distributed across the island (Christmas Island National Park, 2013) and roosts and forages over the Indian Ocean. Both adults and juveniles appear to disperse widely and have been recorded south and south-east of Christmas Island (Marchant & Higgins, 1990). (Department of the Environment, 2014).

Eastern Curlew (Critically Endangered, Migratory)

The eastern curlew is the world's largest species of shorebird (DoE, 2023y; Menkhorst et al., 2017). Eastern curlews migrate annually to breeding grounds in Russia and north-eastern China before returning to Australia in August to forage primarily on crabs in intertidal mudflats (DoE, 2023y; Menkhorst et al., 2017; Bamford et al., 2008). In Australia, the species has a continuous distribution from Barrow Island and Dampier Archipelago in WA through the Kimberley and along the NT, QLD, NSW coasts including the Torres Strait islands (TSSC 2015b). There has been an increase at two sites in the Darwin region between 2009 and 2015, at Lee Point numbers have increased by 9% per year and 17% per year at East Arm Wharf in Darwin Harbour (Lilleyman et al., 2016). This local increase may be due to changes in roosting behaviour and an increase in suitable high tide roosting habitat. The PMST report states that this species and habitat may occur within the EMBA.

Common Greenshank, Greenshank (Endangered/Migratory)

Common Greenshanks are large waders with breeding grounds that extend from the northern British Isles, Scandanavia, east Estonia and north-east Belarus, through Russia and east to the middle reaches of the Anadyr River, the Kamchatka Peninsula, north Sakhalin, and the lower Amur River. Outside of its breeding range, the species is widespread, found in Europe, Africa, Asia, Melanesia, and Australasia.

The common greenshank occurs in all types of wetlands and has the widest distribution of any shorebird in Australia (Higgins & Davies 1996). In Western Australia the common greenshank occurs around most of the coast from Cape Arid in the south to Carnarvon in the north-west. The species is sparsely scattered through most of the Northern Territory.

The species arrives in Australia from August, possibly mainly in the west (Lane 1987), though it also passes through the Torres Strait (Draffan et al. 1983). The common greenshank appears to move elsewhere in Australia from Western Australia by November, but there is no apparent difference in timing of arrival between coastal and inland sites, or northerly and southerly sites (Lane 1987). Numbers increase slowly at most sites during August and September with larger increases at some (widely scattered) sites in October and November (Alcorn 1988).

The PMST report states that this species and habitat may occur within the EMBA.

Sharp-tailed Sandpiper (Vulnerable/Migratory)

The sharp-tailed sandpiper breeds in northern Siberia from the Lena River delta, east to the Chaun Gulf and the Kolyma River delta. The species is a passage migrant through eastern Mongolia, China, Korea, Japan, Micronesia, the Philippines, and southeast Asia. It also occurs less frequently as a passage migrant in the Malay Peninsula, Borneo, and Melanesia (TSCC 2024).

During the non-breeding season, approximately 91 percent of the East Asian - Australasian population occurs in Australia and New Zealand (Bamford et al. 2008). Sharp-tailed sandpipers occur within all states of Australia. They are found mostly in the south-east and are widespread in both inland and coastal locations. The species also occurs in both freshwater and saline habitats (Cramp 1985; Higgins & Davies 1996). In the Northern Territory, it mostly occurs in the northern coastal regions, generally in the east around Groote Eylandt and Gove Peninsula but also around the McArthur River and east of Borroloola. The species is widely but sparsely scattered inland (Higgins & Davies 1996). In Western Australia, scattered records exist along the Nullarbor Plain and the southern areas of the Great Victoria Desert. They are widespread from

Cape Arid to Carnarvon, around coastal and sub-coastal plains of Pilbara Region, through to the Kimberley Division (Higgins & Davies 1996).

Table 3-11: Avifauna Listed EPBC species

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management			
				Conservation advice	Recovery Plan	Threat Abatement Plan	Wildlife Conservation Plan
Red Knot (*Calidris canutus*)	V, M	Species or species habitat may occur within area	No	√ Conservation Advice for *Calidris canutus* (red knot) (DCCEEW, 2024d)	No	No	No
Curlew Sandpiper (*Calidris ferruginea*)	CE, M	Species or species habitat may occur within area	No	√ Conservation Advice for *Calidris ferruginea* (curlew sandpiper) (DCCEEW, 2023c)	No	No	No
Eastern Curlew (*Numenius madagascariensis*)	CE, M	Species or species habitat may occur within area	No	√ Conservation Advice for *Numenius madagascariensis* (far eastern curlew) (DCCEEW, 2023d)	No	No	No
Common Noddy (*Anous stolidus*)	M	Species or species habitat may occur within area	No	No	No	√ *Threat abatement plan for predation by feral cats.* (DoE, 2015c*)*	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management			
				Conservation advice	Recovery Plan	Threat Abatement Plan	Wildlife Conservation Plan
Streaked Shearwater (*Calonectris leucomelas*)	M	Species or species habitat may occur within area	No	No	No	√ *Threat abatement plan for predation by feral cats.* (DoE, 2015c)	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Lesser Frigatebird (*Fregata ariel*)	M	Species or species habitat may occur within area	No	No	No	No	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Great Frigatebird (*Fregata minor*)	M	Species or species habitat may occur within area	No	No	No	No	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Common Sandpiper (*Actitis hypoleucos*)	M	Species or species habitat may occur within area	No	No	No	No	√ Wildlife Conservation Plan for Migratory Shorebirds. (DoE, 2015f)
Sharp-tailed Sandpiper (*Calidris acuminata*)	V, M	Species or species habitat may occur within area	No	√ Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW 2024e)	No	No	No
Pectoral Sandpiper (*Calidris melanotos*)	M	Species or species habitat may occur within area	No	No	No	No	√ Wildlife Conservation Plan for Migratory Shorebirds. (DoE, 2015f)

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management			
				Conservation advice	Recovery Plan	Threat Abatement Plan	Wildlife Conservation Plan
Greater Sand Plover (*Charadrius leschenaultii*)	V, M	Species or species habitat may occur within area	No	√ Conservation Advice for *Charadrius leschenaultii* (greater sand plover). (DCCEEW, 2023e)	No	No	No
Red-tailed Tropicbird *(Phaethon rubricauda)*	M	Breeding known to occur within area	No	No	No	No	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Christmas Island Frigatebird (*Fregata andrewsi)*	E, M	Breeding known to occur within area	No	√ Conservation Advice for the Christmas Island Frigatebird - *Fregata andrewsi* (TSSC, 2020)	Yes	√ *Threat abatement plan for predation by feral cats* (DoE, 2015c) *Threat abatement plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100 000 hectares 2009* (DEWHA, 2009b)	No
White-tailed Tropicbird (*Phaethon lepturus*)	M	Breeding known to occur within area	No	No	No	No	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management			
				Conservation advice	Recovery Plan	Threat Abatement Plan	Wildlife Conservation Plan
Christmas Island White-tailed Tropicbird, (*Phaethon lepturus fulvus*)	E	Species or species habitat known to occur within area	No	Conservation Advice *Phaethon lepturus fulvus* white-tailed tropicbird (Christmas Island) (DoE 2014f)	No	√ *Threat abatement plan for predation by feral cats* (DoE, 2015c)	No
Masked Booby *(Sula dactylatra)*	M	Breeding known to occur within area	No	No	No	√ *Threat abatement plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100 000 hectares 2009* (DEWHA, 2009b)	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Brown Booby (*Sula leucogaster)*	M	Breeding known to occur within area	No	No	No	√ *Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (2018)* (DoEE, 2018c)	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Red-footed Booby (*Sula sula*)	M	Breeding known to occur within area	No	No	No	No	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Little Tern (*Sternula albifrons*)	M	Congregation or aggregation known to occur within area	No	No	No	√	√

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management			
				Conservation advice	Recovery Plan	Threat Abatement Plan	Wildlife Conservation Plan
						Threat abatement plan for predation by feral cats (DoE, 2015c)	Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Wedge-tailed Shearwater (*Ardenna pacifica*)	M	Breeding known to occur within area	No	No	No	√ *Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (2018)* (CoA, 2018) *Threat abatement plan for predation by feral cats* (DoE, 2015c) *Threat abatement plan for predation by the European red fox* (DEWHA, 2018)	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Fork-tailed Swift *(Apus pacificus)*	M	Species or species habitat likely to occur within area	No	No	No	√ *Threat abatement plan for predation by feral cats* (DoE, 2015c)	No

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management			
				Conservation advice	Recovery Plan	Threat Abatement Plan	Wildlife Conservation Plan
Caspian Tern *(Hydroprogne caspia)*	M	Breeding known to occur within area	No	No	No	No	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Roseate Tern (*Sterna dougallii*)	M	Breeding known to occur within area	No	No	No	No	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Common Greenshank (*Tringa nebularia*)	E, M	Species or species habitat may occur within area	No	√ *Conservation Advice for Tringa nebularia (common greenshank)* (DCCEEW, 2024f)	No	No	No
Asian Dowitcher (*Limnodromus semipalmatus*)	V, M	Species or species habitat may occur within area	No	√ *Conservation Advice for Limnodromus semipalmatus (Asian dowitcher)* (DCCEEW, 2024g)	No	No	No
Bar-tailed Godwit (*Limosa lapponica*)	M	Species or species habitat known to occur within area	No	No	No	No	√ Wildlife Conservation Plan for Migratory Shorebirds. (DoE, 2015f)
Oriental Reed-Warbler (*Acrocephalus orientalis*)	M	Species or species habitat known to occur within area	No	No	No	No	No

Common Name (Scientific Name)	EPBC Act Status	Type of presence	BIA within Operational Area	Management			
				Conservation advice	Recovery Plan	Threat Abatement Plan	Wildlife Conservation Plan
Bridled Tern *(Onychoprion anaethetus)*	M	Breeding known to occur within area	No	No	No	√ *Threat abatement plan for predation by the European red fox* (DEWHA, 2008)	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)
Greater Crested Tern *(Thalasseus bergii)*	M	Breeding known to occur within area	No	No	No	No	√ Wildlife Conservation Plan for Seabirds. (DAWE, 2020)

CE = Critically Endangered; E = Endangered; V = Vulnerable; M = Migratory

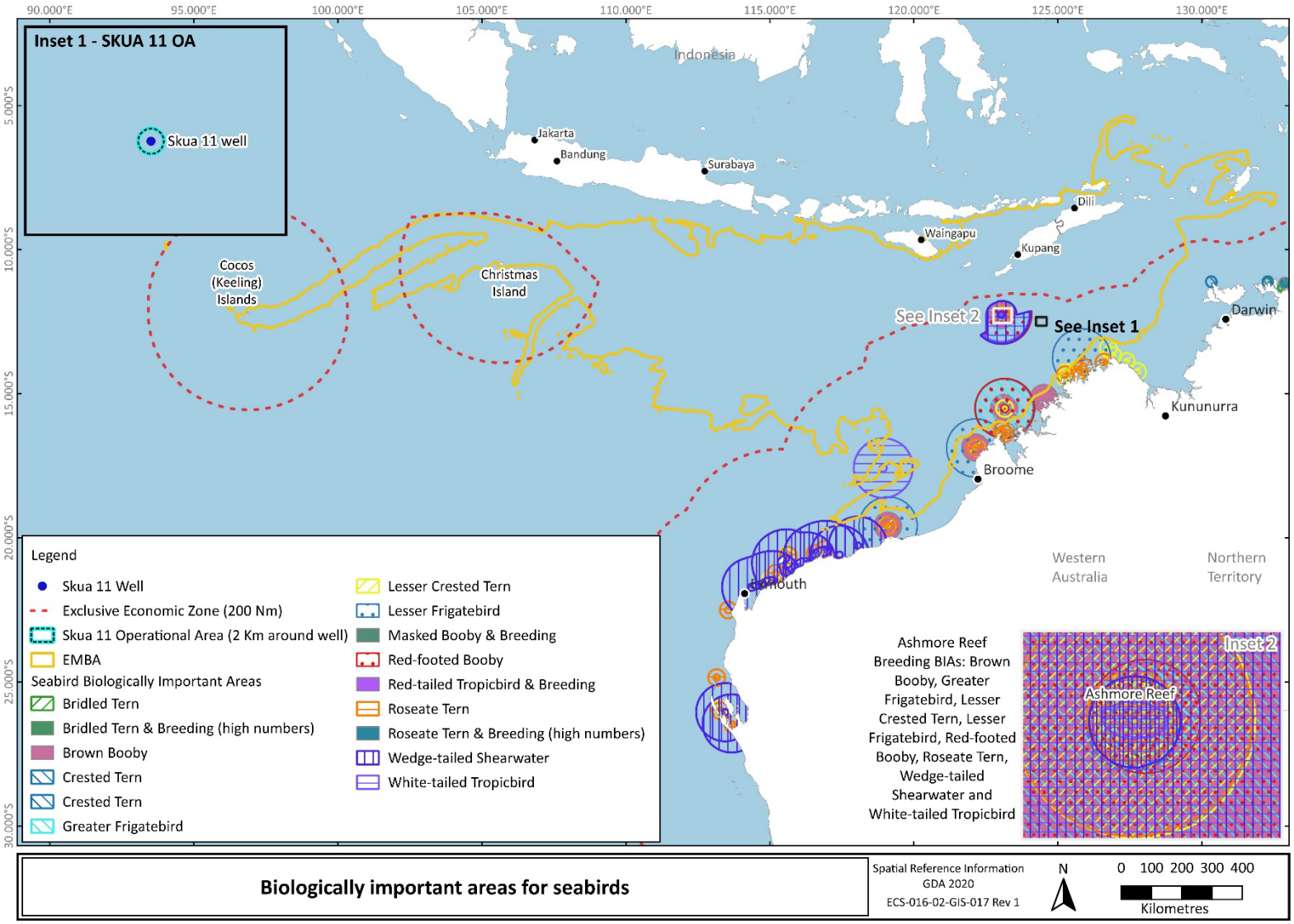


Figure 3-8: Figure BIAs for avifauna

3.6 Social Values

The socioeconomic environmental values and sensitivities (cultural and socio-economic) within the Operational Area and the EMBA, which also include all relevant matters of National Environmental Significance (NES) protected under the EPBC Act, are summarised below.

3.6.1 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 or EMBA.

3.6.2 Recreational and Charter Fishing

Recreational fishing is a popular activity in the Kimberley region; however, effort is concentrated around regional centres due to its remoteness. Transiting recreational vessels passing through the EMBA 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. The remoteness, lack of benthic features and the ongoing exclusion of vessels within the PSZ limits recreational fishing within the vicinity of the Operational Area.

3.6.3 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.

3.6.4 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 3-10, other fisheries in the EMBA are listed below:

Commonwealth

- Northern Prawn Fishery.

Western Australia

- Broome Prawn Managed Fishery;
- Nickol Bay Prawn Managed Fishery;
- Pilbara Line Fishery;
- Pilbara Trap Fishery;
- Pilbara Fish Trawl Managed Fishery; and
- Trochus Fishery.

Northern Territory

- Aquarium Fishery;
- Demersal Fishery;
- Off-shore Net and Lines Fishery;

- Spanish Mackerel Fishery; and
- Timor Reef Fishery.

A number of fisheries are permitted to operate in the Operational Area, however for many of these fisheries, the area is either not appropriate for the collection method or does not contain habitat for the species targeted. Table 3-10 identifies the relevant Commonwealth, State and Territory fisheries that overlap the Operational Area.

Table 3-10: State and Commonwealth commercial fisheries within the Operational Area

Value/Sensitivity	Description
Commonwealth Managed Fisheries	
Western Tuna and Billfish Fishery	• The Western Tuna and Billfish Fishery extends westward from Cape York Peninsula (142°30' E) off QLD 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 (AFMA, 2023). • The Western Tuna and Billfish Fishery targets bigeye tuna (*Thunnus obesus*), yellowfin tuna (*Thunnus albacares*), broadbill swordfish (*Xiphias gladius*) and striped marlin (*Tetrapturus audax*) (CoA, 2022). • In recent years, fishing effort has been concentrated off southwest WA, with occasional activity off SA. 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 (CoA, 2022).
Southern Bluefin Tuna Fishery (CoA, 2022)	• The Southern Bluefin Tuna Fishery spans the Australian Fishing Zone. • Southern bluefin tuna *(Thunnus maccoyii)* is targeted by fishing fleets from several nations. • The spawning grounds/migration route of Southern Bluefin Tuna overlaps with the Operational Area.
Western Skipjack Tuna Fishery (CoA, 2022).	• The Western Skipjack Tuna Fishery is not currently operational. • There has been no fishing effort in the Skipjack Tuna Fishery since the 2009 season, and in that season, activity was concentrated off South Australia. • There are currently 14 Western Skipjack Tuna Fishery permits, however no Australian vessels are targeting skipjack tuna.
North-West Slope Trawl Fishery (AFMA, 2022)	• The North-West Slope Trawl Fishery is managed by limited entry and regulated by what gear type can be used. • The two major target species are deepwater prawn and scampi (*Metanephrops australiensis, M. boschmai, M. velutinus*) which are accessed opportunistically throughout the fishing season. • There are seven permits allowed in the North-West Slope Trawl Fishery, all of which are valid for a maximum of five years. Over the past five years, the North-West Slope Trawl Fishery has generally experienced relatively low levels of fishing effort.
State and Territory Managed Fisheries	
Abalone Fishery (WA) (DPIRD, 2023a)	• There are three types of abalone that are taken by both commercial and recreational fishers in WA – Roe's abalone *(Haliotis roei)*, Greenlip abalone (*Haliotis laevigata*) and Brownlip abalone *(Haliotis conicopora)*. • Recreational abalone fishing is managed in three zones – the zone which overlaps with the operational area is Zone 2 (Northern Zone), from Greenough River mouth to the Northern Territory border. • No abalone fishing is permitted in Zone 2 (Northern Zone) until further notice.

Value/Sensitivity	Description
Mackerel Managed Fishery (WA)	• Near-surface trolling gear from vessels in coastal areas around reefs, shoals and headlands (DPIRD, 2019b). • Targets a range of tropical and temperate pelagic species, including Spanish mackerel (*Scomberomorus commerson*) and grey mackerel (*Scomberomorus semifasciatus*) (DPIRD, 2019b). • According to the FishCube data for 2017-2022 (DPIRD, 2022), the Mackerel Managed Fishery currently has less than three vessels active within the Operational Area and no catch effort has been recorded.
Northern Demersal Scalefish Managed Fishery (WA)	• The Northern Demersal Scalefish Managed Fishery operates off the northwest coast of WA in the waters east of 120° E longitude (Department of Fisheries, 2012b). • The permitted means of operation within the fishery include handline, dropline and fish traps, but since 2002, operation has essentially been trap based (Department of Fisheries, 2012b). • The main species targeted are the Red emperor *(Lutjanus sebae)* and Goldband snapper *(Pristipomoides multidens)* (Department of Fisheries, 2012b). • According to the FishCube Data for 2017-2021 (DPIRD, 2022), the Northern Demersal Scalefish Managed Fishery had catch effort recorded and a vessel count of between 3-6 vessels within the Operational Area.
Northern Shark Fishery (WA) (DPIRD, 2023b)	• Comprises of 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. • Populations of some commercially targeted shark species in WA have been under a recovery plan since the mid-1990s, including the effective closure of most of the Northern Shark Fisheries to protect key habitat for adult sandbar and dusky sharks. No activity has been recorded in the Northern Shark Fishery since 2009.
Pearl Oyster Fishery (WA) (WAFIC, 2024)	• The Pearl Oyster Fishery operates in shallow coastal waters along the North West Shelf. • Target species is the silver-lipped pearl oyster *(Pinctada maxima)*. • Licenced, however water depths in the Operational Area are too deep for collection methods.
Kimberley Prawn Managed Fishery (WA) (WAFIC, 2024)	• The Kimberley Prawn Managed Fishery operates off northern WA between Koolan Island and Cape Londonderry. • The main target species is banana prawns *(Penaeus merguiensis)*, however tiger prawns *(Penaeus esculentus)*, endeavour prawns *(Metapenaeus endeavouri)* and western king prawns *(Penaeus latisulcatus)* are also caught. • Licenced, however habitat and water depth are unsuitable.
Kimberley Crab Managed Fishery (WA) (WAFIC, 2024)	• The Kimberley Mud Crab Managed Fishery is a developing fishery that targets the Giant Mud Crab *(Scylla serrata)* and Orange Mud Crab *(S. olivacea)* via the use of crab traps, between Broome and Cambridge Gulf near the NT border. • Most fishing effort is concentrated around Cambridge Gulf, Admiralty Gulf, York Sound and King Sound. • Area of the Kimberley Crab Managed Fishery that overlaps the Operational Area is closed and habitat and water depth are unsuitable.

Value/Sensitivity	Description
Specimen Shell Managed Fishery (WA) (Department of Fisheries, 2012a)	• Concentration of effort is mainly in Broome, Karratha, Exmouth, Carnarvon, metropolitan Perth, Mandurah, the Capes region and Albany. • The Specimen Shell Managed Fishery targets more than 200 different shellfish species. These are generally collected by divers in shallow coastal waters. • Licenced, however water depth in the Operational Area is too deep for collection method unless ROV is used. Given the remoteness of the area, this is unlikely.
South-West Coast Salmon Fishery (WA) (DPIRD, 2019a)	• There are currently six South-West Coast Salmon Fishery licences. • The South-West Coast Salmon Fishery extends from Augusta in the south to the NT border in the north. • Commercial fishers in WA traditionally target salmon during the annual autumn 'salmon run' in March/April, when large schools form near shore and move around the coast to their spawning area on the lower west coast.
West Coast Deep Sea Crustacean Managed Fishery (WA) (How *et. al.* 2015)	• The West Coast Deep Sea Crustacean Managed Fishery operates off the west coast of WA, on the seaward side of the 150 m isobath out to the extent of the Australian Exclusive Economic Zone. • The West Coast Deep Sea Crustacean Managed Fishery covers three WA management bioregions – North Coast, Gascoyne Coast and West Coast. The North Coast Bioregion overlaps the Operational Area and extends from just south of Onslow (114° 50' E) to the NT border. Most fishing is concentrated on the continental slope between the depths of 500 to 800 m. • Target species include crystal crab *(Chaceon albus)*, champagne crab *(Hypothalassia ascerba)* and giant crab *(Pseudocarcinus gigas)*.
Marine Aquarium Fish Managed Fishery (WA) (DPIRD, 2018)	• The Marine Aquarium Fish Managed Fishery targets species of finfish (including sharks and rays), hard and soft corals, and a range of other invertebrate and plant species. • Fishing activity is currently focused on the southwest Capes region, Perth, Geraldton, Exmouth, and Dampier with the greatest concentration in the Pilbara region. • There are currently 12 licence holders in the Marine Aquarium Fish Managed Fishery.

3.6.5 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 particularly 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.

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.

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 Australia and the Government of the Republic of Indonesia Relating to Cooperation in Fisheries (1992 Fisheries Cooperation Agreement). This MoU 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.

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, 2014).

3.6.6 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 Beach in Broome, Western Australia (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 Peninsula. 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).

3.6.7 Shipping and Vessel Movements

The Operational Area is not located on a major international shipping route. Heavy vessels following the charted Osborn Passage will pass through to the north of Skua-11 well. Support vessels servicing the nearby infrastructure do pass through the Operational Area (refer Figure 3-9).

Shipping and vessel movement occur in varying degrees throughout the EMBA (refer Figure 3-9). 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.

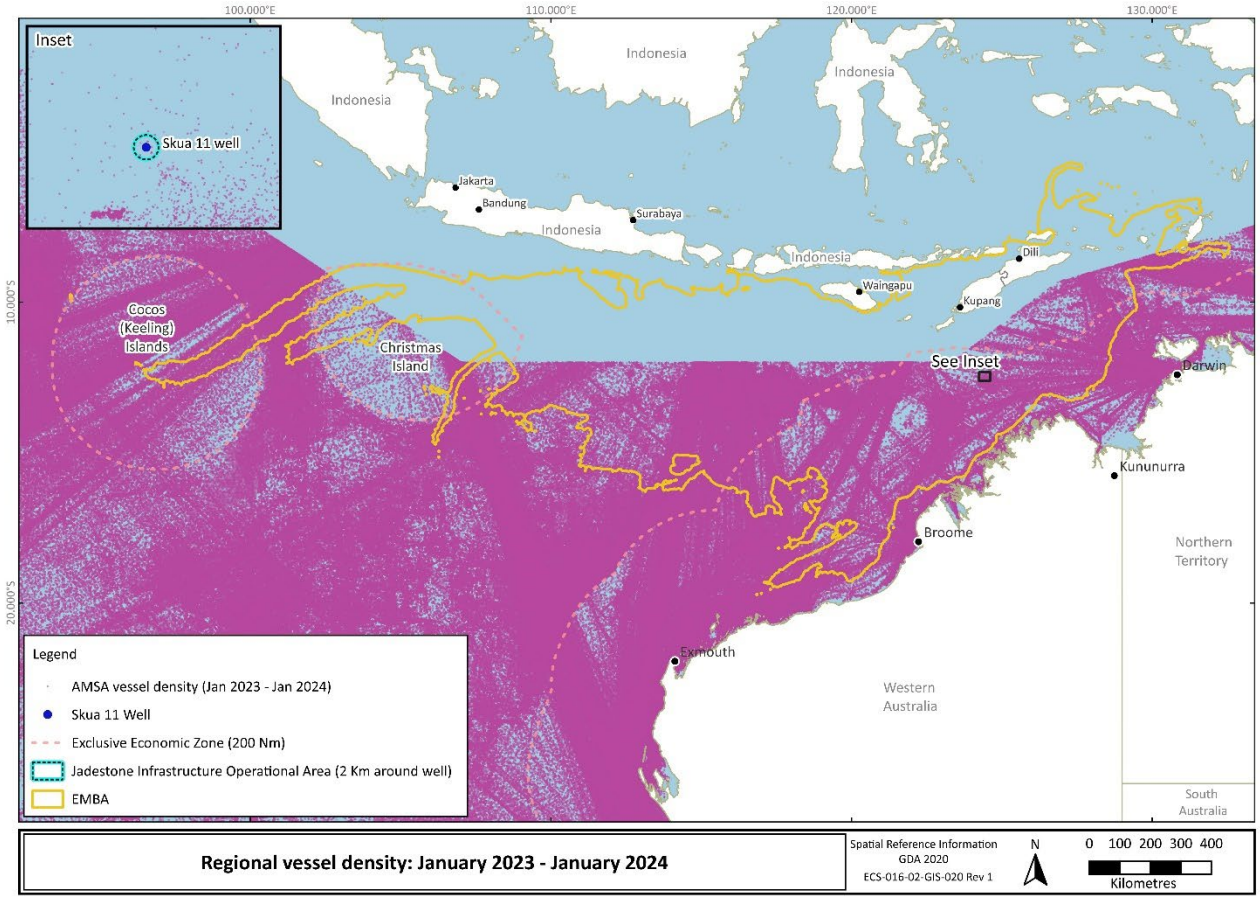


Figure 3-9: Shipping activity within the region

3.6.8 Oil and Gas Industry

Various petroleum exploration and production activities have been undertaken within the Timor Sea, including some within close proximity of the Operational Area. The closest to the Operational Area includes the Jadestone operated Swallow subsea wells and the Montara Venture FPSO well head platform, which are approximately 5 km and 22 km away respectively (Table 3-12).

Table 3-12: 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, NT/RL8
Finder Exploration Pty Ltd	AC/P61, AC/P56, AC/P55, AC/P45
INPEX	AC/P66, AC/P36, WA-343-P, WA-56-R, WA-285-P, WA-532-P, WA-533-P

Titleholder	Title blocks
IPB Petroleum Limited	WA-471-P, WA-485-P
Murphy Australia Pty Ltd	AC/P57, AC/P59
Octanex Bonaparte Pty Ltd	WA-420-P
Pathfinder Energy Ply Ltd	WA-487-P, WA-479-P
Santos Limited	AC/P69, AC/P50, 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, AC/P65, WA-534-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, AC/P51
Woodside Energy Ltd.	NT/RL4, WA-31-R

3.6.9 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 Weapons Range near Derby (approximately 280 km south west).

3.6.10 Tourism

The remoteness and water depth (~80 m) 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) common (ADB 2014).

Scuba diving is very popular in National Parks like Bali Barat and Komodo National Park because of their high marine biodiversity. The development of largely marine-based ecotourism is the main strategy to make these parks 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.

3.6.11 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.

3.6.12 Cultural Heritage

3.6.12.1 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 and the Mayala People determination overlaps the EMBA. The registered native title body corporate for this native title is the Wanjina- Wunggurr Aboriginal Corporation and Mayala Inninalang Aboriginal Corporation respectively and more details is provided in Section 3.6.12.3 below. There are no registered or notified Indigenous Land Use agreements that overlap the EMBA.

3.6.12.2 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 nearest know Australasian Underwater Cultural Heritage Site is a shipwreck, the *Ann Millicent*, located in the vicinity of Cartier Island, approximately 98 km to the west of the Operational Area (DCCEEW, 2024c).

3.6.12.3 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 no Registered and Heritage Surveys and 2 Lodged Aboriginal Cultural Heritage sites. None of these sites or places fall within the operational area. The two Lodged Aboriginal Cultural Heritage sites are located around Maret Island in the Kimberley area. 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.

Brue reef (known as Moonyjangid) has been identified by a number of PBCs as having significance, it is a planar (or platform) reef characterised by a flat topped platform that is usually emergent only at low tide (Collins et al., 2016). Planar reef surfaces have distinctive lithified algal terraces and coralline algae, as well as Porites microatolls which are often prolific. Small reef flat pools with healthy corals may also be present. The reef was historically an important source of food (turtles, trochus shells, clams) to the traditional owners and therefore retains cultural significance for these PBCs.

The limited research at Brue reef undertaken as part of the WAMSI research (Collins et al., 2016) was assisted by the Bardi Jawi, Mayala and Dambimangari people, the Traditional Owners of these lands. Further a grant from Parks Australia in 2022 has facilitated a voyage to Brue Reef to increase understanding of the cultural significance and marine values of Mayala Traditional Owner Sea Country. This knowledge will inform the development of a monitoring approach at Brue Reef, facilitate management of natural and cultural values and foster ongoing relationships between Parks Australia and Traditional Owners.

No native title exists on Brue Reef (AIATSIS, 2010), however, in areas seaward of the mean high watermark, the native title rights and interests include the right to access, move about, in and on and use and enjoy those areas, the right to hunt and gather including for dugong and turtle, the right to access, use and take any of the resources thereof (including water and ochre) for food, trapping fish, religious, spiritual, ceremonial and communal purposes.

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 Skua-11 well EMBA with two overlapping; Wanjina-Wunggurr Aboriginal Corporation and Mayala Inninalang Aboriginal Corporation.

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.

Brue Reef, located approximately 12 nautical miles off the coast of the Dampier Peninsula (NTN 2010) and within the Kimberley Marine Park holds cultural significance for the Mayala people, with many journeys undertaken historically on specific tides for collection of culturally important reef species such as the trochus shell (Parks Australia 2022). *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.

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.

Brue Reef, located approximately 12 nautical miles off the coast of the Dampier Peninsula (NTN 2010) and within the Kimberley Marine Park holds cultural significance for the Walalakoo people, and historically they have fished there (information provided through consultation with PBC).

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.

Brue Reef, located approximately 12 nautical miles off the coast of the Dampier Peninsula (NTN 2010) and within the Kimberley Marine Park holds cultural significance for the Bardi Jawi people, with many journeys undertaken historically on specific tides for collection of culturally important reef species such as the trochus shell (Parks Australia 2022).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.

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.

Ngarluma Aboriginal Corporation

Ngarluma Country encompasses the interior hills, tablelands, river systems and coastline of the west Pilbara region of Western Australia and includes the Burrup Peninsula and islands of the Dampier Archipelago. Ngarluma people believe the Manggan (creative beings) used supernatural force to shape the hills, rivers, seas and landforms. Native title for Ngarluma and Yindjibarndi people includes the rights to access Ngarluma Country, to fish, hunt and take fauna and flora and to collect busah medicine.

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.

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, black 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.

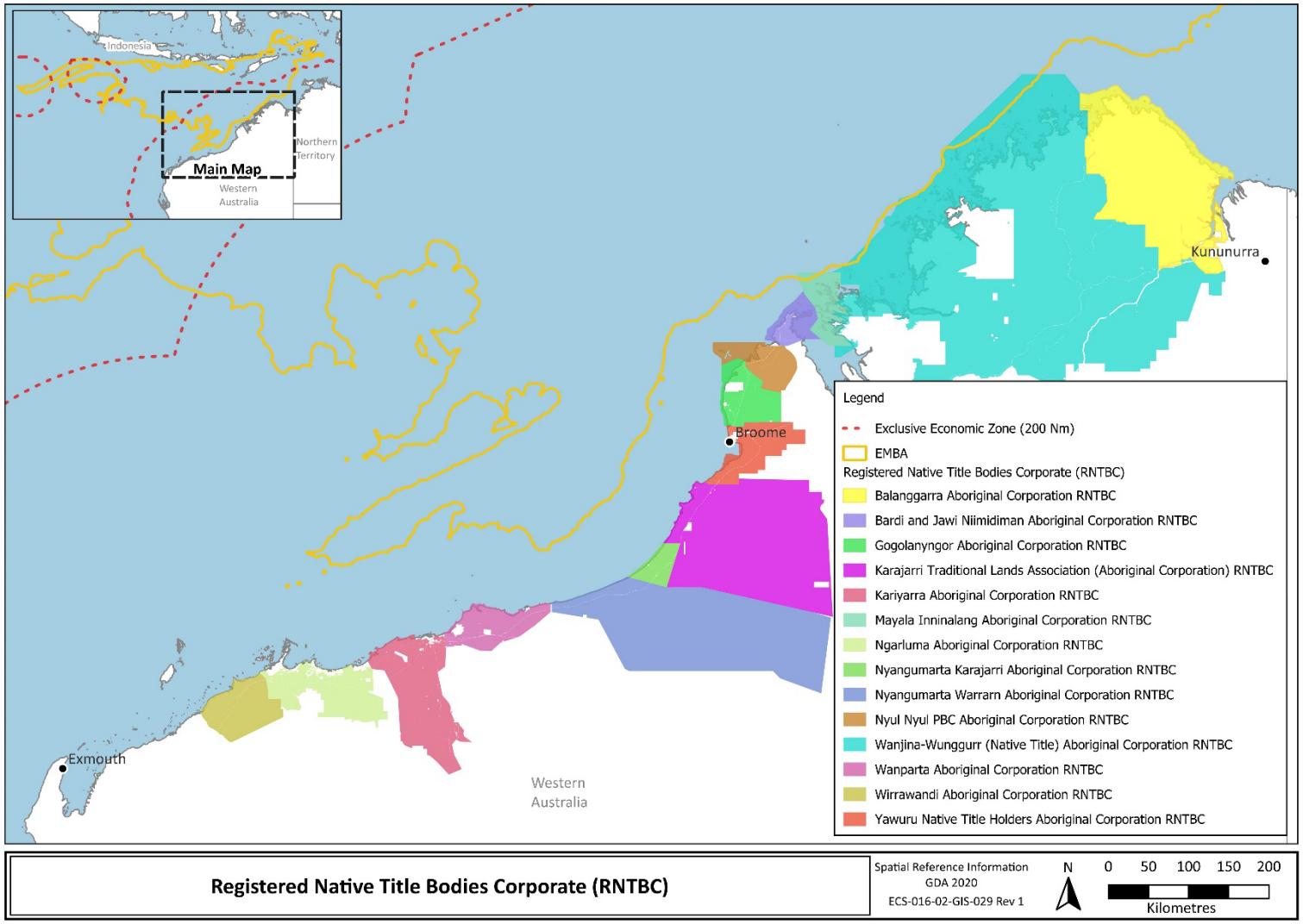


Figure 3-10: Registered Native Title Bodies Corporate within the vicinity of Skua-11 well EMBA

3.6.12.4 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 people's 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. 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.

3.6.12.5 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.

4. Consultation of Relevant Persons

4.1 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 the Montara Operations 5-year EP revision. The list of Relevant Persons has been further refined for the Skua-11 Drilling EP.

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 15 December 2022 and revised on 12 May 2023 and 20 May 2024.

4.2 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.

4.3 Applicable Regulations

The OPGGS(E) Regulations 2023 stipulate several requirements in relation to consultation associated with an EP (Table 4-1).

Table 4-1: 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:

Legislation	Summary	Requirement
		(a) describe the existing environment that may be affected by the activity; and (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:

Legislation	Summary	Requirement
		(a) the Relevant Person may request that particular information the Relevant Person provides in the consultation not be published; and (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(15)	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.

4.4 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[1] 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 that 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 representative spokesperson/s. 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*

[1] 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.

reg 11A(1)(d), the titleholder will have to be faithful to that description. The titleholder will 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).*

4.5 Relevant Persons Identification Methodology

4.5.1 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 4.4, a methodological approach to identification (Figure 4-1). This builds on the historical consultation already undertaken.

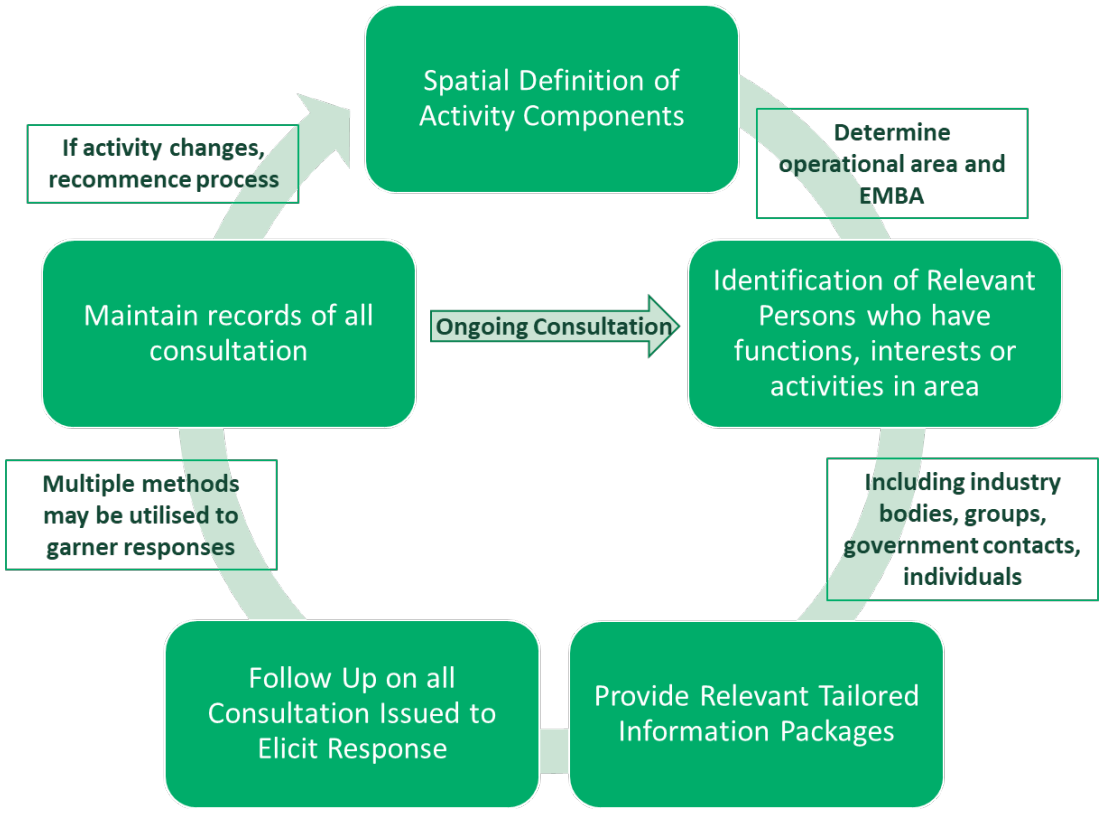


Figure 4-1: Relevant person identification and consultation process

4.5.2 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 previously contacted.
- 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 operations EPs undertaken at Montara.
- 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.

The list of Relevant Persons that was developed for the Operations EP included all of those previously consulted with and the newly identified Relevant Persons. This Relevant Persons list was further refined for the Skua-11 Drilling activities. New consultation packages were prepared to reflect the new legislative requirements to issue to all Relevant Persons identified for the activity.

Relevant Persons within the Skua-11 EMBA were identified by understanding if they had functions, activities or interests that overlapped the EMBA. The exception to this were eNGOs, these are further described in Section 4.5.6.

4.5.3 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 Section 3.6.4.
- 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 and Northern Territory 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.

4.5.3.1 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 with Western Australian Commercial Fishery Licence Holders within or adjacent to the EMBA.

However, in correspondence to Jadestone on 2 April 2024 WAFIC advised:

WAFIC still considers it relevant to consult with commercial licence holders impacted by the operational area of a proposed oil and gas activity.

Jadestone has identified the Western Australian commercial fishery zones that overlap the Skua operational area. In consideration of the 2 April 2024 advice from WAFIC, Jadestone has undertaken a mail out to Western Australian commercial fishing licence holders with fishery zones that overlap the Skua operational area.

As per the initial WAFIC position, and after consideration of the subsequent WAFIC position, Jadestone will not consult further with Western Australian commercial fishery licence holders except in the case of a significant unplanned event (emergency scenario).

4.5.3.2 Fishing Effort within the 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 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 not considered Relevant Persons.

Commercial fishery licence holders in the Northern Territory's Barramundi, Mollusc, 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 not been considered Relevant Persons for the purposes of this activity.

4.5.4 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 Prescribed Body Corporates (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 3.6.12) 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 and PBCs 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) and the Northern Land Council (NLC) 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 coastal 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 EMBA and to date has consulted face-to-face with seven of those PBCs, five specifically in relation to the Skua-11 Drilling EP and two earlier (2023) for the Stag five-year revision Environment Plan. Jadestone has offered to present to another ten PBCs multiple times, one PBC has declined the offer, indicating that it does not regard Jadestone's activities as affecting the Corporation or its members and as a consequence does not need to be consulted further. 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 nine PBCs and the Thamarrurr Development Corporation in the future.

Table 4-2 provides information on historical correspondence and relationships developed with PBCs as part of other Jadestone operations, specifically as part of the Stag Operations and Montara Operations five-year revision EPs. Relationships commenced to be established for the Stag Operations PBCs in April and May 2023 and for Montara Operations PBCs in August 2023. Jadestone have been able to use its relationships with those PBCs to consult for the Skua-11 Drilling activities.

Jadestone recognises that each PBC and the people the PBC represents hold important cultural heritage information, including for their Sea Country. The cultural heritage information provided by PBCs through consultation, for example the significance of Brue Reef to the Walalakoo Aboriginal Corporation and the Bardi Jawi Niimidiman Aboriginal Corporation has also been included in Section 3.6.12.3 of the EP. Jadestone has also conducted their own research into areas of cultural significance for each PBC and this is detailed in Section 3.6.12.3 of the EP.

Appendix E provides a further summary of PBC consultation to date. A summary of effort, information provided and the duration of time to form relationships with the 16 PBCs relevant to the Skua-11 Drilling EP has been included in Appendix E . The full text of the consultation for the Montara Operations five-year revision and the Stag Operations five-year revision EP has been previously submitted to NOPSEMA, and under Regulation 56 of the of the OPGGS(E)R is not included here.

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 should a spill occur provide the 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.

Table 4-2: PBC historical relationships

PBC	Relevant historical relationship
Balanggarra Aboriginal Corporation	Jadestone commenced sending correspondence to the Balanggarra Aboriginal Corporation in August 2023, initially the Montara Operations Invitation for Consultation and subsequently the Skua-11 Drilling Invitation for Consultation. Jadestone has not received any response or comments from the Corporation.
Bardi Jawi Niimidiman Aboriginal Corporation	Jadestone commenced sending correspondence to the Bardi Jawi Niimidiman Aboriginal Corporation in August 2023, initially the Montara Operations Invitation for Consultation and subsequently the Skua-11 Drilling Invitation for Consultation. Jadestone has not received any comments from the Corporation, however the Corporation has sent a draft Consultation Protocol for Jadestone's consideration, and Jadestone has sent back an amended Consultation Protocol for the Corporation's consideration.
Gogolanyngor Aboriginal Corporation	Jadestone sent correspondence in relation to Montara Operations to the Gogolanyngor Aboriginal Corporation in August 2023. The Corporation responded stating that its members will not be affected by that activity and the Corporation and its members do not wish to be consulted further. The Gogolanyngor Aboriginal Corporation was contacted again in March 2024 in relation to Skua-11 Drilling. The Corporation again stated in relation to Skua-11 Drilling that its members will not be affected by that activity and the Corporation and its members do not wish to be consulted further.
Karajarri Traditional Owners Aboriginal Corporation	Jadestone commenced sending correspondence to the Karajarri Traditional Owners Aboriginal Corporation in August 2023, initially the Montara Operations Invitation for Consultation and subsequently the Skua-11 Drilling Invitation for Consultation. Jadestone has not received any response or comments from the Corporation.
Kariyarra Aboriginal Corporation	Jadestone commenced corresponding with the Kariyarra Aboriginal Corporation in April 2023, initially sending the Stag Operations (& Drilling) Invitation for Consultation and subsequently sending the Skua-11 Drilling Invitation for Consultation. Jadestone met with the Directors of the Corporation on 28 July 2023 to present on the Stag Operations activity. Through the Corporation Jadestone invited its members to attend the Stag Operations community consultation sessions held in January 2024. Jadestone and the Corporation have been corresponding for some time on a consultation agreement, which is yet to be finalised. Jadestone has been waiting for some time on the Corporation's response to a draft agreement provided by Jadestone.
Mayala Inninalang Aboriginal Corporation	Jadestone commenced sending correspondence to the Mayala Inninalang Aboriginal Corporation in August 2023, initially the Montara Operations Invitation for Consultation and subsequently the Skua-11 Drilling Invitation for Consultation. Jadestone has not received any comments from the Corporation.
Ngarluma Aboriginal Corporation	Jadestone commenced sending correspondence to the Ngarluma Aboriginal Corporation in April 2023, initially the Stag Operations (& Drilling) Invitation for Consultation and subsequently the Skua-11 Drilling Invitation for Consultation.

PBC	Relevant historical relationship
	Through the Corporation Jadestone invited its members to attend the Stag Operations community consultation sessions held in January 2024. Jadestone has not received any comments from the Corporation.
Nimanburr Aboriginal Corporation	Jadestone commenced sending correspondence to the Nimanburr Aboriginal Corporation in August 2023, initially the Montara Operations Invitation for Consultation and subsequently the Skua-11 Drilling Invitation for Consultation. Jadestone has not received any response or comments from the Corporation.
Nyangumarta Karajarri Aboriginal Corporation	Jadestone commenced corresponding with the Nyangumarta Karajarri Aboriginal Corporation in May 2023, initially sending the Stag Operations (& Drilling) Invitation for Consultation, subsequently sending the Montara Operations Invitation for Consultation in August 2023, and then sending the Skua-11 Drilling Invitation for Consultation. Through the Corporation Jadestone invited its members to attend the Stag Operations community consultation sessions held in January 2024. Jadestone met with the Directors of the Corporation on 10 April 2024 to present on the Stag Operations (& Drilling), Montara Operations and Skua-11 Drilling activities.
Nyangumarta Warrarn Aboriginal Corporation	Jadestone commenced corresponding with the Nyangumarta Warrarn Aboriginal Corporation in May 2023, initially sending the Stag Operations (& Drilling) Invitation for Consultation and subsequently sending the Skua-11 Drilling Invitation for Consultation. Through the Corporation Jadestone invited its members to attend the Stag Operations community consultation sessions held in January 2024. Jadestone met with the Executive Management Team of the Corporation on 15 August 2023, and then with the Directors of the Corporation on 23 May 2024 to present on the Stag Operations (& Drilling) and Skua-11 Drilling activities.
Nyul Nyul Aboriginal Corporation	Jadestone commenced corresponding with the Nyul Nyul Aboriginal Corporation in August 2023, initially the Montara Operations Invitation for Consultation and subsequently the Skua-11 Drilling Invitation for Consultation. Jadestone met with the Directors of the Corporation on 22 February 2024 to present on the Montara Operations activity. At this meeting the Skua-11 Drilling activities were introduced, however the Skua-11 Drilling Invitation for Consultation had not been finalised but was provided to the Corporation a short time later. Jadestone has not received any response or comments from the Corporation in relation to the Skua-11 Drilling activity.
Thamarrurr Development Corporation	Jadestone commenced sending correspondence to the Thamarrurr Development Corporation in April 2023, initially the Montara Operations Invitation for Consultation and subsequently the Skua-11 Drilling Invitation for Consultation. Jadestone have not received any comments from the Corporation.
Walalakoo Aboriginal Corporation	Jadestone commenced correspondence with the Walalakoo Aboriginal Corporation in August 2023, initially sending the Montara

PBC	Relevant historical relationship
	Operations Invitation for Consultation and subsequently sending the Skua-11 Drilling Invitation for Consultation. Jadestone met with the Directors of the Corporation on 14 March 2024 to present on the Montara Operations and the Skua-11 Drilling activities. Jadestone has a Consultation Agreement with the Walalakoo Aboriginal Corporation.
Wanjina-Wunggurr Aboriginal Corporation	Jadestone commenced sending correspondence to the Wanjina-Wunggurr Aboriginal Corporation in August 2023, initially the Montara Operations Invitation for Consultation and subsequently the Skua-11 Drilling Invitation for Consultation. Jadestone has not received any comments from the Corporation.
Wanparta Aboriginal Corporation	Jadestone commenced correspondence with the Wanparta Aboriginal Corporation in April 2023, initially sending the Stag Operations (& Drilling) Invitation for Consultation and subsequently sending the Skua-11 Drilling Invitation for Consultation. Jadestone met with the Directors of the Corporation on 16 August 2023 to present on the Stag Operations activity. Through the Corporation Jadestone invited its members to attend the Stag Operations community consultation sessions held in January 2024. Jadestone has not received any response or comments from the Corporation in relation to the Skua-11 Drilling activity. Jadestone is scheduled to meet again with the Directors of the Corporation on 13 November 2024.
Warrwa People Aboriginal Corporation	Jadestone commenced sending correspondence to the Warrwa People Aboriginal Corporation in August 2023, initially the Montara Operations Invitation for Consultation and subsequently the Skua-11 Drilling Invitation for Consultation. Jadestone has not received any response or comments from the Corporation
Yawuru Native Title Holders Aboriginal Corporation	Jadestone commenced corresponding with the Yawuru Native Title Holders Aboriginal Corporation in August 2023, initially sending the Montara Operations Invitation for Consultation and subsequently sending the Skua-11 Drilling Invitation for Consultation. Jadestone met with the Directors of the Corporation on 10 April 2024 to present on the Montara Operations and Skua-11 Drilling activities.

4.5.5 Community Engagement Sessions

Jadestone 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 from the community) 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 4-3.

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 by 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 also 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 should they wish to and 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 as required 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 Section4.10.2. Jadestone believes that they have made reasonable efforts to engage with any person who wishes to be consulted.

The Land Councils and the PBCs representing Traditional Owners continue to be identified as Relevant Persons.

Table 4-3: Summary of 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
Wyndham	Sunday 24 March, 2pm – 4pm	Front of the IGA store
Kununurra	Monday 25 March, 9am – 11am	Gateway Shopping Centre

4.5.6 Non-government Environment groups

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 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 with activities 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 Person for Montara. In addition, through advertisements and exposure through other mediums, Jadestone provided the opportunity for other eNGOs to self-identify).

4.5.7 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 the Montara Operations EP and thus have been included in the Relevant Persons list for the Skua-11 Drilling EP. Following initial consultation with AAPA on the Skua-11 Drilling EP they have notified Jadestone that they do not consider themselves a relevant person based on the EMBA. Jadestone considers the AAPA position is inconsistent, therefore out an abundance of caution Jadestone has identified AAPA as a Relevant Person for both the Montara Operations EP and the Skua-11 Drilling EP.

4.6 Project Activities

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

4.7 Environmental Values and Sensitivities

4.7.1 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. Once the operational area and EMBA spatial footprints were created, the information was 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.

4.7.2 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 provision of project information through a range of mediums.

4.7.3 Relevant person categories

Table 4-4 outlines the government departments and agencies that have been identified as relevant within Regulation 25(1)(a), (b), (c), (d) and (e).

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

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
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.
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.

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
		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 Climate Change, Energy, the Environment and Water (DCCEEW)	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 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).
NT Government department or agency		
Aboriginal Areas Protection Authority (AAPA)	Self-identified as a Relevant Person for Montara Operations EP	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
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.
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.

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
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'.
Department of Water and Environmental Regulation (DWER)	Considered Relevant Persons under Regulation 25(1)(b)	Responsible for managing and regulating the State's environment and water resources.
Local Government Authorities		
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.

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
West Daly Regional Council	Considered Relevant Persons under Regulation 25(1)(d)	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/or retention leases in adjacent areas.
Eni Australia	Considered Relevant Persons under Regulation 25(1)(d)	Titleholder of several exploration permits, production licences and/or retention leases in adjacent areas.
Inpex	Considered Relevant Persons under Regulation 25(1)(d)	Titleholder of several exploration permits, production licences and/or retention leases in adjacent areas and also 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.
Shell	Considered Relevant Persons under Regulation 25(1)(d)	Titleholder of exploration permits, production licences and/or retention leases in adjacent areas.

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
NT Commercial fishers[2] 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 Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
Coastal Line Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
Demersal Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
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.
Pearl Oyster Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
Timor Reef Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. 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)	Industry body for guided fishing and recreational fishers, including 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.

[2] 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
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 direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
Spanish Mackerel Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
WA Commercial fishers and fishing associations		
Broome Prawn Fishery (WA)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
Kimberley Crab Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. 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 direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
Kimberley Prawn Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
Mackerel Fishery (WA)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
Nickol Bay Prawn Fishery (WA)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
Northern Demersal Scalefish Fishery (WA)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. 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 (WA)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
West Coast Deep Crustacean Fishery (WA)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. 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		
Commonwealth Fisheries Association (CFA)	Considered Relevant Persons under Regulation 25(1)(d)	Peak industry 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 direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.
Northern Prawn Fishing Industry Pty Ltd	Considered Relevant Persons under Regulation 25(1)(d)	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.
North West Slope Trawl Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through direct communication with each fishery licence holder. Relevant when the activity could impact on commercial fishing activity.

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
Seafood Industry Australia (SIA)	Considered Relevant Persons under Regulation 25(1)(d)	Committed to ensuring 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. 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. 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.
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.
Recreational fishing associations		
Recfishwest (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.
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.

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
Kariyarra Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Kariyarra 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.
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.
Ngarluma Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Ngarluma people. 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.
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.
Nyangumarta Warrarn Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Nyangumarta Warrarn 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.
Northern Australian Indigenous Land and Sea Management Alliance (NAILSMA)	Considered Relevant Persons under Regulation 25(1)(d)	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
Northern Land Council (NLC)	Considered Relevant Persons under Regulation 25(1)(d)	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.
Thamarrurr Development Corporation (TDC), including the Thamarrurr Rangers	Considered Relevant Persons under Regulation 25(1)(d)	Not-for-profit corporate entity owned by members of the Wangka, Lirrga and Tjanpa peoples. 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.
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.
Wanparta Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Wanparta 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.
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.
Port Authorities		
Kimberley Ports Authority	Considered Relevant Persons under Regulation 25(1)(d)	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.

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
Pilbara Ports Authority	Considered Relevant Persons under Regulation 25(1)(d)	Responsible for the Ports 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.
Tourism and Business Associations/ Tour Operators		
Absolute Ocean Charters	Considered Relevant Persons under Regulation 25(1)(d)	Operates from Broome, 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)	Offers luxury cruises from Broome to Darwin. Relevant when the activity could impact on coastal waters.
Archipelago Adventures	Considered Relevant Persons under Regulation 25(1)(d)	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)	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)	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
Cannon Charters	Considered Relevant Persons under Regulation 25(1)(d)	Operates from Darwin, offering multi-day fishing experiences along the Northern Territory and Kimberley coast. Relevant when the activity could impact on coastal waters.
Coral Expeditions	Considered Relevant Persons under Regulation 25(1)(d)	Operates from Darwin and Broome providing small ship expeditions. Relevant when the activity could impact on coastal waters.
HeliSpirit Luxury Kimberley Helicopter Safari	Considered Relevant Persons under Regulation 25(1)(d)	Operates 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)	Arranges Kimberley adventure cruises. Relevant when the activity could impact on coastal waters and coastlines.
Kimberley Expeditions	Considered Relevant Persons under Regulation 25(1)(d)	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)	Offers 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)	Offers 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)	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)	Offers 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)	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

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
		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)	Offers cruises of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.
One Tide Charters	Considered Relevant Persons under Regulation 25(1)(d)	Offers 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)	Offers 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)	Offers sailing tours of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.
Seaestar Boat Charters	Considered Relevant Persons under Regulation 25(1)(d)	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)	Offers 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)	Offers cruises of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.
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)	Offers cruises of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
Willie Pearl Lugger Cruises	Considered Relevant Persons under Regulation 25(1)(d)	Offers sail cruises of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.
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 Western Australia and the Northern Territory.
Conservation Council of Western Australia (CCWA)	Considered Relevant Persons under Regulation 25(1)(d)	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)	Peak community sector environment organisation in the Northern Territory. 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. 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.
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).

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
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.
BW Digital	Considered Relevant Persons under Regulation 25(1)(d)	Owner of submarine cable (consultation recommended by ACMA). Relevant when planned or unplanned activities may impact on subsea cables.
Government of Timor Leste	Considered Relevant Persons under Regulation 25(1)(d)	Relevant when the activity may impact on waters outside Australia's maritime jurisdiction (such as an oil spill). Consultation recommended by DFAT.
Inligo	Considered Relevant Persons under Regulation 25(1)(d)	Owner of submarine cable (consultation recommended by ACMA). Relevant when planned or unplanned activities may impact on subsea cables.
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.
Vocus	Considered Relevant Persons under Regulation 25(1)(d)	Owner of submarine cable (consultation recommended by ACMA). Relevant when planned or unplanned activities may impact on subsea cables.
Academic and Research Organisations		

Relevant Person initially consulted	Relevance to the activity	Functions, interest or activities
Australian Institute of Marine Science (AIMS)	Considered Relevant Persons under Regulation 25(1)(d)	Organisation concerned with conservation and research outcomes in the area.

4.8 Consultation Methodology

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

- Identify Relevant Persons (as per Section 4.5)
- 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:

- 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 each Relevant Person has been targeted as much as possible to reduce the information burden on Relevant Persons, 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).

4.8.1 General Follow-up

Jadestone has developed a procedure (Figure 4-2) 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.

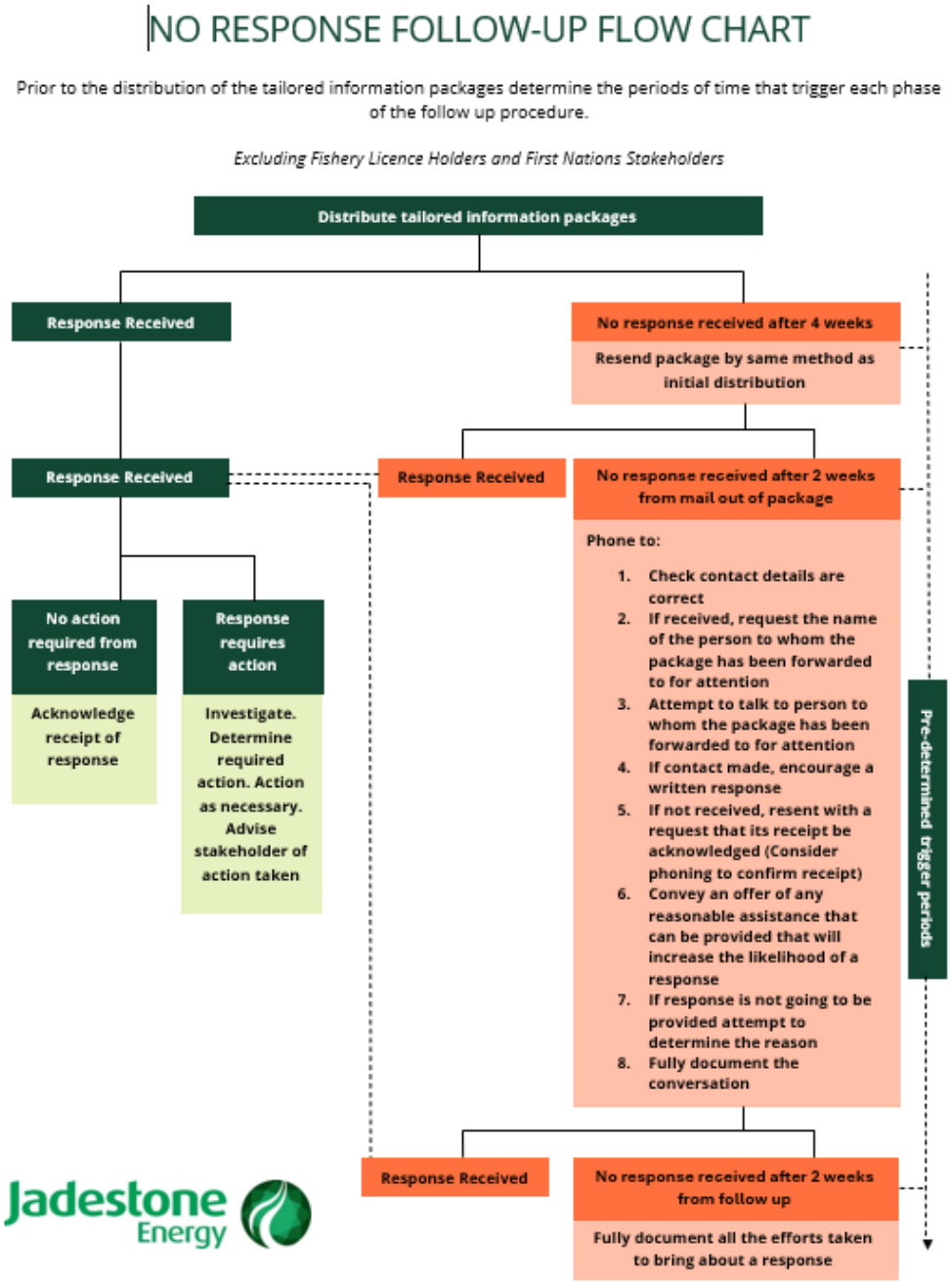


Figure 4-2: No response follow-up flow chart

4.8.2 Newspaper Adverts

To assist Relevant Persons to self-identify display advertisements inviting consultation were placed in a number of newspapers (Appendix F) in March 2023 for activities in the Montara Field:

- 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 information sessions held at various locations (refer to Table 4-3) were also advertised in the Broome Advertiser and the 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.

4.8.3 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 E and the Sensitive Information Report submitted to NOPSEMA.

Jadestone believe that reasonable timeframes have been afforded to all Relevant Persons and is in a position to close consultation required for the development of this EP.

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

4.8.4 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 (MOC) processes and the Relevant Person will be advised of the process.

4.9 International Consultation

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

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.

4.10 Engagement Process

4.10.1 Consultation – Current

Table 4-5 provides a summary of consultation undertaken to date for this revision of the EP.

Table 4-5: 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 E.
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 Consultation Sessions	In summary, eight information sessions were held between 19 and 25 March 2024. All sessions were advertised in the newspapers, on social media and local noticeboards (where available). All Relevant Persons for which Jadestone has an email address were also informed of the sessions in order to provide a further opportunity for engagement.

4.10.2 Community Consultation Sessions Summary

Community consultation 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 social and newspaper reach are provided in Table 4-6.

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 was not close to this, the QR code on the advertisements also provided quick and easy access to further information.

Table 4-6: 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 ad 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 ad.*
4. *This refers to the number of people that walked immediately past the information session location and either engaged in a conversations or choose to walk past.*
5. *This refers to the number of people that engaged in conversations.*
6. *Kalumburu social ads were cancelled due to visit not proceeding due to logistical difficulties 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 Western Australian coastline.

4.10.3 Current status of consultation (September 2024)

Stakeholder	Key dates and information	Next steps
All Relevant Persons excluding commercial fishing licence holders and Traditional Owners.	14 March 2024 – email sent notifying Relevant Persons of upcoming community consultation information sessions. 18 March 2024 – information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them emailed to Relevant Persons. 17 April 2024 – follow up email sent. Week commencing 30 April 2024 – follow up phone calls commenced and ongoing.	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 has 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 E. 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.	14 March 2024 – hard copy letter and information package posted on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. 23 April 2024 – follow up mail out. 26 April 2024 – mail out to WA Commercial Fishing licence holders following WAFIC advice. 7 June 2024 – follow up mail out to WA commercial fishing licence holders.	Consultation complete. No further actions required.

Stakeholder	Key dates and information	Next steps
Traditional Owners	13/14 March 2024 – information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them emailed to PBCs. 18/19 April 2024 – follow up email sent. 8/9 May 2024 – further follow up email sent.	• Consultation complete. No further actions required.
Nyul Nyul Aboriginal Corporation	22 February 2024 – Presentation to Director 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.	
Nyangumarta Warrarn Aboriginal Corporation	23 May 2024 – meeting held with Directors of Nyangumarta Warrarn in Perth.	
Community Consultation 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 4-3.	No further actions required. Information provided to three people who requested information packs following the sessions.

4.11 Reasonable Period

The 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 will still be considered and incorporated into the approvals process wherever practicable. Following this period, email reminders and phone calls will be undertaken to remind Relevant Persons to respond.

The 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. This marks over twelve months of consultation with the majority of Relevant Persons for activities in the Montara field.

4.12 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. Assessment of merit for current consultation for Skua-11 Drilling EP for all Relevant Persons excluding PBC's is found in Table 4-7. An Assessment of Merit for each PBC is provided in Table 4-8.

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 4-7: Current consultation for Skua-11 ST1 Drilling EP as of September 2024

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Absolute Ocean Charters	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No further action required.
Australian Maritime Safety Authority	**Stakeholder Engagement** To notify AMSA's Response Centre (ACC) (rccaus@amsa.gov.au, Ph 1800 641 792) 24-48 hrs prior to operations commencing and at cessation of operations. 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. To plan to provide updates to both the Australian Hydrographic Office and the JRCC on progress and, importantly, any changes to the intended operations.	Jadestone considers this comment has merit and has been actioned through changes to the EP.	Item included in Table 4-9.
Australian Communications and Media Authority (ACMA)	***No objection, concern or claim*** The proposed activities are not in the vicinity of any existing protection zones declared by the ACMA. Suggested contacting submarine cable owners in the vicinity to notify them of Montara activities.	Comment has merit and has been actioned.	Jadestone has contacted submarine cable projects to notify them of Montara activities.
Australian Fisheries Management Authority (AFMA)	***No objection, concern or claim*** Noted the importance of directly engaging with operators in the relevant fisheries, 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*** Seeking clarification about the cautionary area around Skua-11 and if it needs to be added to AHO products.	Comment has merit and has been actioned.	AHO will be notified 4 weeks prior to commencement of activity of required changes to charts (refer Table 4-9).

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Australian Institute of Marine Science (AIMS)	***No objection, concern or claim*** Request for dates of activities.	Comment has merit and has been actioned.	Provision of indicative dates of activities, dependent on approvals and equipment availability.
Australian Maritime Oil Spill Centre (AMOSC)	***No objection, concern or claim*** Request for copy of EP and OPEP for review prior to submission to NOPSEMA.	Noted EP and OPEP provided to AMOSC.	Jadestone EP and OPEP updated to incorporate AMOSC comments. Accepted EP and OPEP to be provided to AMOSC (refer Table 4-9).
Australia's North West	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No further action required.
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 Skua EMBA.
Carnarvon Energy	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No further action required.
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. 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

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
			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.	Comments have merit and have been actioned.	Biofouling management is covered under Jadestone's Biosecurity Manual and has been included in the EP (Section 7.1 Marine Pest Introduction).
Department of Biodiversity, Conservation and Attractions (DBCA) (WA)	*Request that Jadestone has established appropriate baseline survey data. *Request for DBCA's Kimberley regional office to be notified as soon as practicable in the event of a hydrocarbon release.	Jadestone considers these comments to have merit.	Information on EMBA and baseline data assessment process provided and DBCA notification included in OPEP.
Department of Chief Minister and Cabinet (NT) / Northern Territory Gas Taskforce	***No objection, concern or claim*** No comments or concerns with the proposed activity.	Noted	No further action required.
Department of Environment, Parks and Water Security (DEPWS) / Northern Territory Environment Protection Authority (NT EPA)	***No objection, concern or claim*** *Provided information on general pollution management and environmental protection. *Suggestion for Jadestone to review listed legislation and to consider how the statutory requirements of these Acts may apply to the proposed project.	Comment has merit and has been actioned.	Reference to relevant legislation included in OPEP, including contacting DEPWS in the event of a spill. OPEP has been amended to include relevant legislation and notifications as per comments from NTEPA.
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	JSE considers this comment to have merit and have incorporated these into the EP.	*Item included (refer Table 4-9) to ensure AHS notification three weeks prior to commencement of activities.
Department of Foreign Affairs (DFAT)	***No objection, concern or claim*** Recommended consulting with the Government of Timor-Leste.	Comment has merit and has been actioned.	Jadestone has sent Information Package to Government of Timor-Leste.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Director of National Parks (DNP)	***No objection, concern or claim*** Stakeholder Engagement * Confirmed no authorisation required as outside AMP * 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: - Titleholder details - Time and location of the incident (including name of marine park likely to be effected) - Proposed response arrangement as per the Oil Pollution Emergency Plan - Confirmation of providing access to relevant monitoring and evaluation reports when available and - Contact details for the response coordinator	Jadestone considers these comments to have merit and they have been addressed in the EP.	*EP has been drafted to include information on the AMPs in Section 3.4.4). 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 4-10). * Item included refer (Table 4-10) to ensure DNP notification in event of an oil/gas pollution incident.
Department of Primary Industries and Regional Development (DPIRD) (WA)	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No further action required.
Department of Transport (WA DOT)	***No objection, concern or claim*** *Provided guidance note. *Provided comments on OPEP.	Noted	Comments incorporated into OPEP.
Eni Australia	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No further action required.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Environs Kimberley	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No further action required.
Kimberley Port Authority (KPA)	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No further action required.
Kimberley Quest	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No further action required.
Melbana Energy	***No objection, concern or claim*** No objections to the proposed activity.	Noted	No further action required.
Oil Spill Response Limited (OSRL)	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No action required.
Pilbara Port Authority (PPA)	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No action required.
Recfishwest	***No objection, concern or claim*** No concerns with the proposed activity.	Noted	No action required.
Seaestar Boat Charters	***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	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No action required.
Shire of Wyndham/ East Kimberley	***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.
The Wilderness Society	***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
Vocus	***No objection, concern or claim*** No comments on the proposed activity.	Noted	No action required.
Western Australian Fishing Industry Council (WAFIC)	***No objection, concern or claim*** Ongoing correspondence in relation to advice on identifying commercial fishing licence holders.	Comment has merit and has been actioned.	Mail out to WA commercial fishing licence holders.
Wyndham Port WA Cambridge Gulf Pty Ltd	***No objection, concern or claim*** No objections to the proposed activity.	Noted	No action required.

Table 4-8: Assessment of Merit for PBCs

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
Ngarluma Aboriginal Corporation	Numerous unsuccessful attempts have been made over an extended period to communicate with the Ngarluma Aboriginal Corporation to facilitate a consultation meeting with the Directors of the Corporation, including on a number of occasions sending the Skua-11 Drilling Invitation for Consultation.	Jadestone remains committed to attending a consultation meeting with the Directors of the Corporation should the opportunity arise in the future, including if requested to do so.	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. Corporation was also consulted for the Stag Operations (and Drilling) EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.
Kariyarra Aboriginal Corporation	Consultation meeting held with the Directors of the Kariyarra Aboriginal Corporation on 28 July 2023. Following the meeting Jadestone's notes of the meeting were sent to the Corporation. No correspondence has been received from the Corporation regarding the notes.	Jadestone remains committed to attending further consultation meetings with the Directors of the Corporation should the opportunity arise in the future, including if requested to do so.	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. There has been no response to a draft consultation protocol sent to the Corporation. Corporation was also consulted for the Stag Operations (& Drilling) EP.

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
	The Skua-11 Drilling Invitation for Consultation has been sent to the Corporation on a number of occasions. Jadestone has received correspondence from the Corporation's legal advisor requesting the payment of a very substantial amount[3] to be held for the costs of future consultation. Jadestone declined to make such a contribution and offered and subsequently sent a draft consultation protocol. The legal adviser subsequently indicated the Corporation was engaging an in-house legal adviser who would contact Jadestone. Nothing more has been heard from the Corporation.		Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.
Wanparta Aboriginal Corporation	Consultation meeting held with the Directors of the Wanparta Aboriginal Corporation on 16 August 2023. Following the meeting Jadestone's notes of the meeting were sent to the Corporation. On 1 December 2023 the Corporation requested Jadestone attendance at a Directors meeting in early 2024 to facilitate consultation and discussion. On 22 January 2024 Jadestone discussed the request with the Wanparta representative and on 25 January emailed the representative, reiterating the points in the discussion. The Skua-11 Drilling Invitation for Consultation has been sent to the Corporation on a number of occasions. On 4 April 2024 Jadestone received a request from the Corporation to attend a half-day	Jadestone remains committed to attending further consultation meetings with the Directors of the Corporation should the opportunity arise in the future, including the further consultation meeting scheduled for 13 November 2024.	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. Corporation was also consulted for the Stag Operations (& Drilling) EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.

[3] Exact amount disclosed to NOPSEMA in Sensitive Information Report

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
	workshop with Directors on 17 May 2024 at a substantial estimated cost[3]. Jadestone indicated it deemed the cost as excessive, requested a justification for the need for a half-day workshop at the indicated cost, whilst indicating a better approach which Jadestone would agree to would be for a further consultation opportunity at a scheduled meeting of the Directors of the Corporation. The cost to Jadestone for the initial consultation meeting with the Directors of the Corporation on 16 August 2023 had been significantly less than the recently requested amount for the half-day workshop. Jadestone received an email from the Corporation on 14 August 2024 requesting a further consultation meeting at a scheduled meeting of the Directors on 13 November 2024. Jadestone has agreed to the meeting request, deeming it to be demonstrative of its commitment to on-going consultation and the costs being reasonable.		
Nyangumarta Warrarn Aboriginal Corporation	Consultation meeting held with the Executive Management Team (EMT) of the Nyangumarta Warrarn Aboriginal Corporation on 15 August 2023 and a consultation meeting with the Directors of the Corporation was held on 23 May 2024. Following each meeting Jadestone's notes of the meeting were sent to the Corporation. Questions asked and answers given at the 23 May 2024 meeting were: ***Q: Are Jadestone drilling any new wells?*** *A: No, our fields are already established, and we are not planning to drill any new wells. We*	No queries or feedback received following the meeting and forwarding Jadestone's notes from the meeting.	Due to the information provided to the Corporation, including at a face-to-face consultation meeting with the EMT and with Directors of the Corporation, and the time provided for the Corporation to respond Jadestone deems consultation to be completed. Corporation also consulted for Stag Operations (& Drilling) EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
	operate late life assets which are all existing infrastructure in both the Stag and Montara Fields and may work on existing wells. ***Q: How many people are on Stag and how do they sleep?*** *A: We have about six people per room and there is space for approximately 60 persons that can be on board. They get to the facility via helicopter and Jadestone have fatigue management plans in place for their personnel to ensure the safety of their people and facilities.* ***Q: Can Jadestone provide any training for spill response?*** *A: As a small company, Jadestone is not in a position to provide funding to marine ranger groups for oil spill response or to provide training. We currently use resources through the Australian Marine Oil Spill Centre (AMOSC) who also provide training in oil spill response.* ***Q: Are our responses published on your website?*** *Jadestone is being fully transparent through this process and have published every EP submitted on their website even though it is not yet accepted. The sensitive information report containing contact details and full email responses is not published but is provided to NOPSEMA as part of the regulatory submission. If you provide us with any details that you do not want published, please let us know.* No correspondence has been received from the Corporation regarding the notes nor any other matter.		
Nyangumarta Karajarri Aboriginal Corporation	Consultation meeting held with the Directors of the Nyangumarta Karajarri Aboriginal Corporation on 10 April 2024.	No queries or feedback received following the meeting and forwarding Jadestone's notes from the meeting.	Due to the information provided to the Corporation, including at a face-to-face consultation meeting with the Directors of the Corporation, and the time

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
	Following the meeting Jadestone's notes of the meeting were sent to the Corporation. Questions asked and answers given at the 10 April 2024 meeting were: **Q: *How will the Corporation and its members know if an oil spill has occurred?*** *A: 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. Also have a commitment to check contact details are valid every six months.* ***Q: Are there job opportunities for members of the Corporation?*** *A: 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.* ***Q: Can Jadestone provide any support for our marine ranger program?*** *A: As a small company, Jadestone is not in a position to provide funding to marine ranger groups for oil spill response. Jadestone currently use resources through the Australian Marine Oil Spill Centre (AMOSC) who also provide training in oil spill response.* No correspondence has been received from the Corporation regarding the notes nor any other matter.		provided for the Corporation to respond, Jadestone deems consultation to be completed. Corporation also consulted for the Montara Operations and the Stag Operations (& Drilling) EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.
Karajarri Traditional Owners Aboriginal Corporation	Numerous unsuccessful attempts have been made over an extended period to communicate with the Karajarri Traditional Owners Aboriginal Corporation in order to facilitate a consultation meeting with the Directors of the Corporation,	Jadestone remains committed to attending a consultation meeting with the Directors of the Corporation should the opportunity arise in the future, including if requested to do so.	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed.

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
	including on a number of occasions sending the Skua-11 Drilling Environment Plan Invitation for Consultation.		Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.
Yawuru Native Title Holders Aboriginal Corporation	Consultation meeting held with the Directors of the Yawuru Native Title Holders Aboriginal Corporation on 10 April 2024. Following the meeting Jadestone's notes of the meeting were sent to the Corporation. Question asked and answer given at the 10 April 2024 meeting was: ***Q: How will the Corporation and its members know if an oil spill has occurred?*** *A: 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.* No correspondence was received from the Corporation regarding the notes, nor on any other matter.	No queries or feedback received following the meeting and forwarding Jadestone's notes from the meeting.	Due to the information provided to the Corporation, including at a face-to-face consultation meeting with the Directors of the Corporation, and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.
Gogolanyngor Aboriginal Corporation	Shortly after sending the Gogolanyngor Aboriginal Corporation the Skua-11 Drilling Invitation for Consultation Jadestone received advice from the Corporation that: *As the PBC for the Jabirr Jabirr/ Ngumbarl people, GAC considers that its members will not be affected by that activity. GAC and its members do not wish to be consulted further regarding that matter.*	Jadestone has noted and acted on the advice of the Corporation.	As a result of the advice of the Corporation Jadestone deems consultation to be completed. Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
Nyul Nyul Aboriginal Corporation	Consultation meeting held with the Directors of the Nyul Nyul Aboriginal Corporation on 22 February 2024. Following the meeting Jadestone's notes of the meeting were sent to the Corporation. The Skua-11 Drilling Invitation for Consultation has been sent to the Corporation on a number of occasions. Questions asked and answers given at the 22 February 2024 meeting were: ***Q: Is it expected that Jadestone would continue to own and operate the field through to the end of production?*** *A: Yes, most likely Jadestone would own and operate the field through to the end of production and be responsible for decommissioning.* ***Q: Why are Nyul Nyul being consulted when the Montara operation is so far away?*** *A: 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*	Following the raising of the issue of the Lacepede Islands at the meeting Jadestone assessed the issue and has noted in the minutes that: *Jadestone reviewed the spill modelling reports for both Montara Operations and Skua-11 Drilling and can confirm that the Lacepede Islands are approximately 48km outside of the closest boundary of the EMBA which is drawn using the lowest potential impact thresholds.* *As spills can occur during any set of wind and current conditions, modelling was conducted using a stochastic (random or non-deterministic) approach, which involved running 100 randomly selected single trajectory simulations per season, with each simulation having the same spill information (spill volume, location start point, duration and composition of hydrocarbons) but varying start times. This ensured that each spill simulation was subject to a unique set of wind and current conditions.* *The spill modelling was performed using an advanced three-dimensional trajectory and fates model; Spill Impact Model Application Program (SIMAP). The SIMAP model calculates the transport, spreading, entrainment and evaporation of spilled hydrocarbons over time, based on the prevailing wind and current conditions and the physical and chemical properties.*	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. In addition, due to the information provided to the Corporation on the results of the investigations into the potential for impact on the Lacepede islands, Jadestone deems consultation to be completed. Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
	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.* *The 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.* *The Nyul Nyul Directors 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.* No correspondence was received from the Corporation regarding the notes, nor on any other matter.	*Note that the oil spill model, the method and analysis use modelling algorithms which have been anonymously peer reviewed and published in international journals. Furthermore, the work meets and exceeds the American Society for Testing and Materials (ASTM) Standard F2067-13 "Standard Practice for Development and Use of Oil Spill Models".* *The purpose of the modelling is to provide an understanding of a conservative 'outer envelope' of the potential area that may be affected in the unlikely event of hydrocarbon spill. The modelling does not take into consideration any of the spill prevention, mitigation and response capabilities that would be implemented in response to the spill. Therefore, the modelling results represent the maximum extent that the released hydrocarbon may influence, and it does not reach the shorelines of the Lacepede Islands.* *Jadestone understands the importance of the islands to the Nyul Nyul people does not just extend to the islands themselves, but also to the marine life that feed, breed and live there and in the surrounding waters. The EP assesses the potential impacts to marine life in the event of a spill which includes turtles, whales and seabirds (for example) and has plans in place to manage and*	

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
		mitigate any potential effects from a loss of hydrocarbons. *As the Lacepede Islands are outside the EMBA, there is no requirement for spill response planning at this location, however Jadestone's OPEP details all of the scientific monitoring in place to assess any impacts to marine fauna that may frequent the Lacepede Islands.* *Further details on the spill modelling, impact assessment or mitigation measures can be found in the published EP and OPEP, or further specific details can be provided on request.* No queries or feedback received following the meeting and forwarding Jadestone's notes from the meeting.	
Bardi Jawi Niimidiman Aboriginal Corporation	Following numerous unsuccessful attempts to communicate with the Bardi Jawi Niimidiman Aboriginal Corporation by email and by phone over an extended period to facilitate a consultation meeting with the Directors of the Corporation, including on a number of occasions sending the Skua-11 Drilling Invitation for Consultation, the Corporation responded to Jadestone on 9 May 2024, forwarding a PBC consultation protocol for Jadestone's completion and execution. On 13 June 2024 Jadestone forwarded an amended consultation protocol for the Corporation's consideration. No further correspondence has been received from the Corporation.	Jadestone remains committed to attending a consultation meeting with the Directors of the Corporation should the opportunity arise in the future, including if requested to do so.	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.
Nimanburr Aboriginal Corporation	Numerous unsuccessful attempts have been made over an extended period to communicate	Jadestone remains committed to attending a consultation meeting with	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
	with the Nimanburr Aboriginal Corporation to facilitate a consultation meeting with the Directors of the Corporation, including on a number of occasions sending the Skua-11 Drilling Environment Plan Invitation for Consultation.	the Directors of the Corporation should the opportunity arise in the future, including if requested to do so.	Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.
Walalakoo Aboriginal Corporation	Consultation meeting held with the Directors of the Walalakoo Aboriginal Corporation on 14 March 2024, following which Jadestone and the Corporation completed negotiation on and have executed a Consultation Agreement. The Skua-11 Drilling Invitation for Consultation was tabled at the meeting and discussed with Directors during the meeting. Following the meeting Jadestone's notes of the meeting were sent to the Corporation. Questions asked and answers given at the 14 March 2024 meeting were: ***Q: Which communities will Jadestone visit during the community engagement sessions planned for 19 to 22 to 26 March 2024.*** *A: Provided a copy of the draft agenda prepared by KRED, noting the PBC has a copy of the drop-in session schedule. Confirmed these were information sessions, consultation is always done through PBC in the first instance.* ***Q: What of earthquakes and the impact these may have on the Skua-11 well.***	Following the raising of the issue of Brue Reef at the meeting Jadestone sought further information about the Reef and the cultural relationship which has been included in the EP (Section 3.6.12). The Corporation has not responded to the request for further information. Nevertheless, Jadestone has identified Brue Reef as a location to be prioritised for protection should there be an unplanned event during the Skua-11 Drilling activity. No queries or feedback on other matters were received following the meeting and forwarding Jadestone's notes from the meeting.	Due to the information provided to the Corporation, including at a face-to-face consultation meeting with the Directors of the Corporation, the time provided for the Corporation to respond, and the consideration of the cultural relationship to Brue Reef, Jadestone deems consultation to be completed. Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
	A: The Skua-11 well will be designed to stringent design criteria and the well can be shut-in in case of an emergency. Additionally, drilling cannot be completed into known fault lines. ***Q: What happened at Deepwater Horizon.*** *A: Provided a brief overview of the incident and explained difference between Deepwater Horizon and Montara, including the depth of water. Jadestone has stringent safety protocols for drilling activities.* ***Q: Jadestone buys old assets, how are these maintained.*** *A: Provided an overview of the asset integrity inspection and maintenance program implemented at Montara. Explained we use a computer system (CMMS) to assist with the planning of maintenance activities, including the use of an ROV. Discussed pigging lines to get an understanding of pipeline condition internally.* ***Q: What chemicals are used that can harm the environment.*** *A: Provided an explanation of produced water and the addition of chemicals to assist in the process.* *Explained that all chemicals must be approved before they can be used and chemicals for planned discharges in produced water must include an environmental assessment. Also noted that Jadestone has an environmental monitoring program.* ***Q: How far is Kalumburu (WA) from Montara Venture.*** *A: Action – provide a figure showing distances to key communities if requested. Can we also add Blue Reef if coordinates are known?*		

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
	Q: How is Jadestone engaging with other communities. *A: JSE reached out to other PBCs with similar request to meet. Additionally, Jadestone will undertake community information meetings as per schedule provided earlier in the meeting.* *The Directors commented that Jadestone is the first oil and gas operator that presented to the Walalakoo.* The Directors indicated Walalakoo has a cultural relationship with people from other communities along the coastline. Historically fished at the Brue Reef and it is culturally important. No correspondence was received from the Corporation regarding the notes, nor on any other matter.		
Warrwa People Aboriginal Corporation	Numerous unsuccessful attempts have been made over an extended period to communicate with the Warrwa Aboriginal Corporation in order to facilitate a consultation meeting with the Directors of the Corporation, including on a number of occasions sending the Skua-11 Drilling Environment Plan Invitation for Consultation.	Jadestone remains committed to attending a consultation meeting with the Directors of the Corporation should the opportunity arise in the future, including if requested to do so.	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.
Mayala Inninalang Aboriginal Corporation	Numerous attempts have been made over an extended period to communicate with the Mayala Inninalang Aboriginal Corporation in order to facilitate a consultation meeting with the Directors of the Corporation, including on a	Jadestone remains committed to attending a consultation meeting with the Directors of the Corporation should the opportunity arise in the future, including if requested to do so.	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed.

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
	number of occasions sending the Skua-11 Drilling Environment Plan Invitation for Consultation. Whilst the Corporation indicated by email in March 2024 that it would advise Jadestone of an opportunity to make a consultation presentation to Directors at a scheduled meeting of the Directors nothing more was heard.		Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.
Wanjina-Wunggurr Aboriginal Corporation	Numerous attempts have been made over an extended period to communicate with the Wanjina-Wunggurr Aboriginal Corporation in order to facilitate a consultation meeting with the Directors of the Corporation, including on a number of occasions sending the Skua-11 Drilling Environment Plan Invitation for Consultation. An opportunity to meet with Directors on 8 March 2024 was provided but was not able to be taken up due to the short notice period. Whilst the Corporation did then indicate by email on 5 March 2024 of an opportunity to present to the Directors at a meeting in May 2024 nothing more was heard.	Jadestone remains committed to attending a consultation meeting with the Directors of the Corporation should the opportunity arise in the future, including if requested to do so.	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.
Balanggarra Aboriginal Corporation	Numerous unsuccessful attempts have been made over an extended period to communicate with the Balanggarra Aboriginal Corporation in order to facilitate a consultation meeting with the Directors of the Corporation, including on a number of occasions sending the Skua-11 Drilling Environment Plan Invitation for Consultation.	Jadestone remains committed to attending a consultation meeting with the Directors of the Corporation should the opportunity arise in the future, including if requested to do so.	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.

PBC	Summary of the relevant person response, objection or claim (Reg 24(b)(i))	Titleholder assessment of merits of any objection or claim (Reg 24(b)(ii))	Titleholders' response (Reg 24(b)(iii))
Thamarrurr Development Corporation	Numerous attempts have been made over an extended period to communicate with the Thamarrurr Development Corporation in order to facilitate a consultation meeting with the Directors of the Corporation, including on a number of occasions sending the Skua-11 Drilling Environment Plan Invitation for Consultation. A phone discussion was held with the recently engaged Chief Executive Officer of the Corporation, on 14 May 2024, during which it was indicated the Corporation would respond in writing to the Skua-11 Drilling EP. No correspondence has been received from the Corporation.	Jadestone remains committed to attending a consultation meeting with the Directors of the Corporation should the opportunity arise in the future, including if requested to do so.	Due to the information provided to the Corporation (Skua-11 Drilling Environment Plan Invitation for Consultation) and the time provided for the Corporation to respond, Jadestone deems consultation to be completed. Corporation was also consulted for the Montara Operations EP. Jadestone's Stakeholder Management Plan requires contact with the Corporation every six months for the purpose of updating its contact information for the Corporation, including the appropriate person for Jadestone to contact in the event of an emergency response due to an unplanned event.

4.13 Ongoing Consultation with Relevant Persons

Jadestone will continue to consult with Relevant Persons by providing project updates as information becomes available, including updates in relation to specific activities and broader project information, via emails and the provision of information on the Jadestone website. Table 4-9 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 MOC 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, then additional information will be provided to Relevant Persons and any potentially Relevant Persons for the purpose of seeking feedback on the proposed changes.

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 6.9.4.

Jadestone will undertake additional triggered consultation as outlined in Table 4-10, should an unplanned event occur.

Jadestone acknowledges that consultation with Traditional Owners has been limited for the Montara field and this activity and are 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 the presentations to PBCs yet to occur, 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, with Australian Energy Producers (AEP) and other titleholders.

Table 4-9: Standard consultation actions

Activity	Frequency and method	Responsibility
Review of relevant persons list	Annually from date of acceptance unless the activity has already commenced within 12 months of acceptance. Review the list of RP within the EMBA to confirm relevance and any updates due to response received through the consultation mailbox.	Drilling Manager
Confirmation of fishery licence holders within EMBA	Annually from date of acceptance unless the activity has already commenced within 12 months of acceptance – 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 to any new stakeholders.	Drilling HSE Advisor
Review of PBC contacts within EMBA	Every 6 months, Jadestone will call to confirm contact name and details of PBCs	Drilling HSE Advisor

Activity	Frequency and method	Responsibility
	to ensure strong relationship is maintained	
Provision of broader information relating to Jadestone environmental policy	Website updates as required	Country Manager
Provide response organisations with a copy of the OPEP	Email response organisations within 4 weeks of OPEP acceptance	ER Lead
Notification of commencement and cessation of activity to NOPSEMA	Within 4 weeks of commencement date and at cessation	Drilling HSE Advisor
Notification of AMSA Response Centre (ARC) of commencement and cessation of activity (rccaus@amsa.gov.au)	24-48 hours from commencement of operations including	Drilling HSE Advisor
Notification of commencement of activity to Australian Hydrographic Office (datacentre@hydro.gov.au)	4 working weeks prior to operations commencing	Drilling HSE Advisor
Notification of updates to AHO and JRCC on progress and changes to intended operations	Notification as required	Drilling HSE Advisor

In addition, Jadestone will undertake additional triggered consultation as outlined below (Table 4-10).

Table 4-10: 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
Deviation to the planned activity from those originally provided in consultation	Notification to relevant persons via email (including AHO and JRCC as requested through consultation). The deviation will be assessed through the MOC procedure to understand which other relevant persons may need to be notified.	Country Manager
Change to risk profile in operational area	The deviation will be assessed through the MOC procedure to understand which relevant persons may need to be notified describing the change in risk profile and proposed risk management.	Country Manager

Trigger	Action	Responsibility
Change to risk profile in EMBA	The deviation will be assessed through the MOC procedure to understand which relevant persons may need to be notified describing the change in risk profile and proposed risk management.	Drilling HSE Advisor
Significant oil spill event	Notification to response agencies and government agencies immediately by phone. Attempt to electronically notify all relevant persons listed in Table 4-4 as soon as possible. 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. Notification of PBCs and all other stakeholders identified in Table 4-4 within 72 hours of event. 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. Confirmation of providing access to relevant monitoring and evaluation reports when available and contact details for the response coordinator.	IMT Leader
Biosecurity incident: suspected marine pest or disease	Notification of DPIRD via Aquatic.Biosecurity@dpird.wa.gov.au or 1800 815 507 within 24 hours.	Drilling HSE Advisor
Change to Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2023 consultative requirements	Review of SMP.	Drilling HSE Advisor
Change to the operating jurisdiction such that other legislative instruments stipulate new or additional consultative requirements	Review of SMP.	General Manager
An element of Jadestone's continuous improvement process identifies the procedure needs to be amended	Review of SMP.	General Manager
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

4.14 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.		

5. Evaluation of Environmental Impacts and Risks

As required by Regulation 21 of the OPGGS(E) Regulations, this section of this EP provides an outline of Jadestone's approach to the evaluation of impacts and risks due to the Activity (Section 5.1), and the outcomes of the impact and risk assessment undertaken (Section 5.6).

5.1 Assessment Method

The environmental impacts and risks associated with the Activity have been assessed using the Jadestone Risk Management Framework (JS-70-PR-F-00009 Rev 2) and methods consistent with HB 203:2012 and AS/NZS ISO 31000:2009.

'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 a planned event associated with the Activity.

'Risk' is evaluated in terms of likelihood and consequence. Likelihood is defined as the probability or frequency of the unplanned event occurring, and 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 the 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; and
- The impacts and risks are acceptable (Regulation 34).

The impact and risk management process is shown in Figure 5-1.

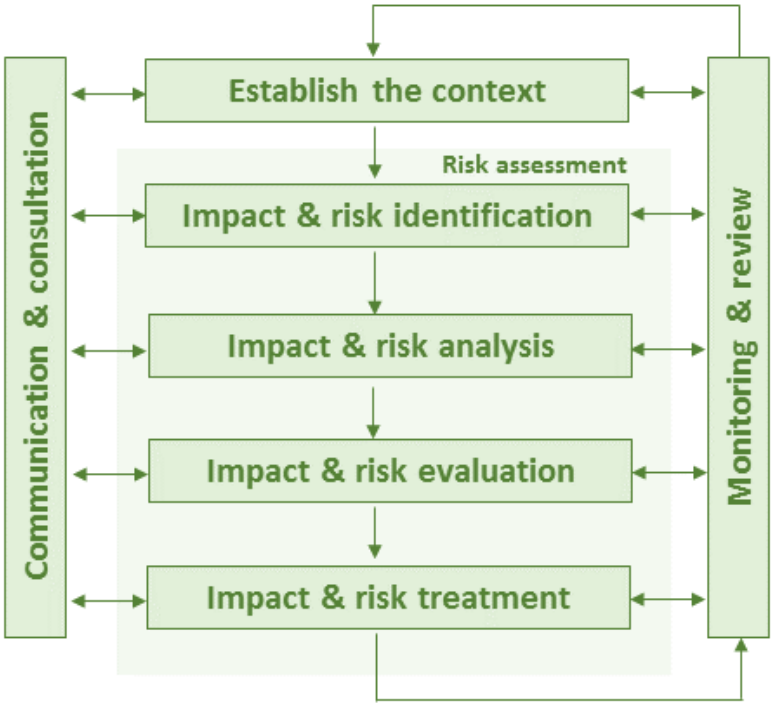


Figure 5-1: Impact and risk evaluation process

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

5.2 Risk Assessment

The assessment process evaluates impacts and risks associated with planned and unplanned events that will or have the potential to impact the environment. Impacts and risks are identified through several 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 and performance reports
- Consultation with 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 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; and

Determination of the residual impact/risk ratings (Section 5.5).

5.2.1 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) is applied. This Hierarchy is used in the industry to minimise or eliminate exposure to impacts and risks;
- **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; and
- **Societal Values** – identifies the views, concerns and perceptions of relevant persons and addresses their concerns as gathered through the ongoing consultation process.

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; and
- **Protective** – use of protective equipment (e.g. the use of appropriate containers).

5.2.2 Risk ranking process for unplanned events

Risks are ranked using the Jadestone Qualitative Risk Matrix (Table 5-1). Environmental ranking of a measure between **Low** to **Extreme** is determined by evaluating the likelihood of the unplanned event occurring, and evaluation the expected severity of the consequence with standard expected control measures in place.

Table 5-1: 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 unplanned 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 5-2).

Table 5-2: Definition of consequence level

Consequence	Consequence description	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 unplanned events are assigned based on preceding performance in relation to the specific activity, within the region or in industry. A likelihood level of **Rare** to **Expected** may be assigned to unplanned events (Table 5-3).

Table 5-3: 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 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.

5.3 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 variation in severity. The degree of impact and the corresponding level of acceptability is assessed against several guiding principles:

- Principles of ESD;
- Conservation and management advice;
- Stakeholder feedback;
- Reputational ramifications;
- Environmental context; and
- Jadestone's HSE Policy and Management System.

The application of the guiding principles within the acceptability matrix are outlined in Table 5-4.

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; 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.

A reduction of impacts to as low as reasonably practicable (ALARP) follows the process described in Section 5.5.

Table 5-4: Jadestone Energy's acceptability matrix

Guiding principles		Impact level				
		1	2	3	4	5
A	**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
B	**Conservation and management advice**	Activity does not contact/ interact with sensitivities protected by conservation and management advice	Activity Triggered 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
C	**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
D	**Reputation**	Slight impact – no media coverage	Limited impact – State media coverage	Considerable impact – national coverage	National impact – persistent national coverage	International impact – international coverage
E	**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
F	**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

5.4 Demonstration of Acceptability

An acceptable level of risk of an unplanned event occurring must be scored with a low or medium rating. Impacts receiving a score of a high (orange) risk rating in Table 5-4 are unacceptable. For those risks found to have an unacceptable rating, a return to the planning process for the Activity is required to determine if an alternative approach to undertaking the Activity can be identified.

5.5 Demonstration of as Low as Reasonably Practicable (ALARP)

Regulation 34(b) of the Environment Regulations requires a demonstration that risks are reduced to ALARP, with the objective to eliminate, prevent, reduce, or mitigate consequences associated with each identified environmental impact and risk.

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 principle 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**:

- Good industry practice or comparable standards should be 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 should be applied for the impact or risk; and
- Alternatives may be identified and additional 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 adoption/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 5-2.

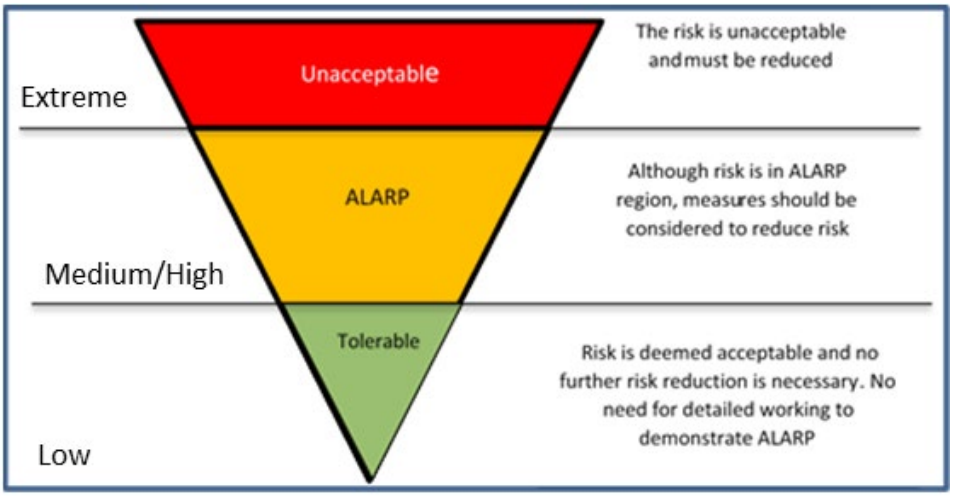


Figure 5-2: ALARP triangle

5.6 Evaluation Summary

An impact and risk assessment workshop was conducted by Jadestone on the 7 December 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, engineering and environmental personnel.

The assessment process undertaken by Jadestone Energy in December 2023 for Drilling Program activities identified eight planned aspects and six 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 Skua-11 Drilling Impact and Risk Register and summarised in Table 5-5.

Table 5-5: Summary of the environmental impact and risk assessment rankings for aspects and hazards associated with planned activities and unplanned events during the Drilling Activities

Aspect/Hazard	Residual Assessment
Planned activities	
1. Light emissions	Acceptable
2. Noise emissions	Acceptable
3. Atmospheric emissions	Acceptable
4. Operational discharges	Acceptable
5. Drilling discharges	Acceptable
6. Interactions with other users	Acceptable
7. Physical disturbance	Acceptable
8. Spill response activities	Acceptable
Unplanned events	
1. Marine pest introduction	Low
2. Interaction with fauna	Low
3. Unplanned release of solids	Low
4. Unplanned release of (non-hydrocarbon) liquids	Low
5. Worst case crude oil or gas release	Medium
6. Worst case spill diesel	Low

5.7 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 to define the Ecological and Social EMBAs as per NOPSEMA Bulletin #1 (see Section 7.6.3);
- Determine the environment that may be impacted within the Ecological and Social EMBAs;
- Determine the environmental receptors that may be affected within the Ecological and Social EMBAs;
- Identify sensitive receptors;
- Determine protection priorities; and
- ALARP and acceptability evaluation for spill response activities.

5.7.1 Determine Oil Spill Modelling and Impact Thresholds

Threshold concentrations for each hydrocarbon component have been determined to define the EMBA, with separate thresholds applied to denote areas where ecological and social-economic impacts may result (Social and Ecological EMBAs). The modelling approach, exposure pathways and thresholds are defined in Sections 7.6.2 and 7.6.3.

5.7.2 Sensitive Receptor Identification

Jadestone has generated spatial layers of known environmental and socio-economic values within the marine and coastal environment in WA State, Northern Territory, Commonwealth and adjacent international jurisdictions, to identify sensitive receptors (locations with highest environmental and/or socio-economic values relative to other locations). The Ecological and Social EMBAs are 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 Areas, Ramsar sites and Marine Protected Areas
- BIA of Listed Threatened and Migratory 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, aboriginal and cultural and aquaculture);
- Economic values: recreational and commercial fishing areas
- Listed species status and predominant habitats (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 Ecological and Social EMBAs have been identified, the potential oil pollution risks are described and evaluated (refer Sections 7.6 and 7.7). In addition, the environmental risks from implementing spill response activities are described and evaluated.

Sensitive receptors are further evaluated by considering what values are contained within them when determining appropriate spill response strategies (refer Table 7-8). 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 the highest risk from the worst-case credible oil spill scenario and are common across all modelled scenarios and seasons, that is, the priority receptors.

5.7.3 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 Ecological and Social EMBAs will be exposed or contacted at the same time or at all. Instead, the Ecological and Social EMBAs is a collation of numerous possible scenarios (100 scenarios for each of the three seasons) 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 Ecological and Social EMBAs 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 ‘

protection priorities'. The selection of protection priorities is based on stochastic modelling of multiple hydrocarbon spills.

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

- Sensitive receptor within Ecological and Social EMBAs; 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[4]; 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 4).

Implementation of operational and scientific monitoring may focus on other receptors, including submerged receptors, as outlined in the Skua-11 ST1 Well Drilling Operational and Scientific Monitoring: Bridging Implementation Plan (TM-70-PLN-I-00009).

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 and social resources at greatest risk of being contacted by an oil spill and can be adapted for any scenario that occurs.

5.7.4 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 5-3.

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 5-4).

4 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.

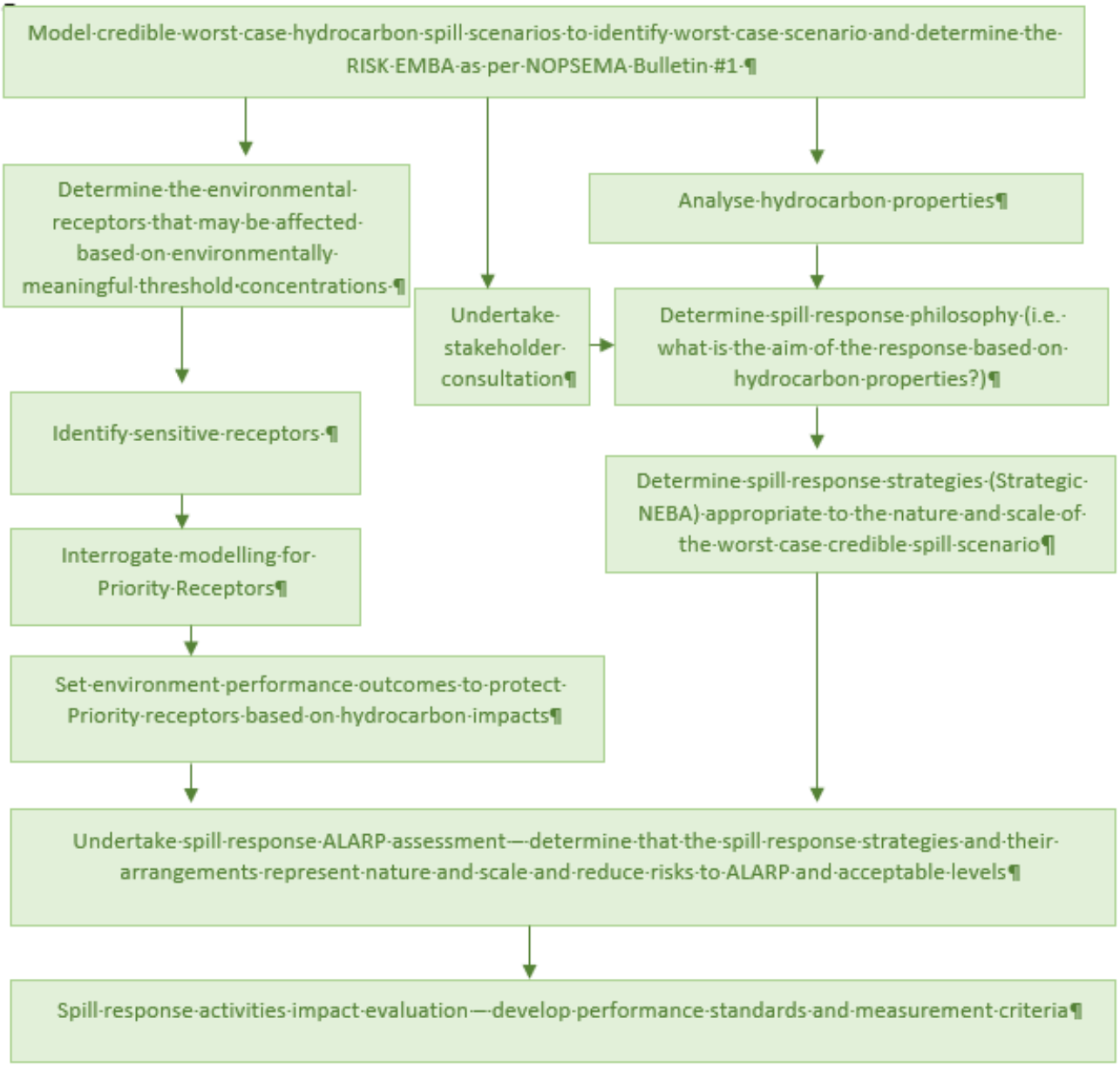


Figure 5-3: Spill scenario evaluation and ALARP determination process

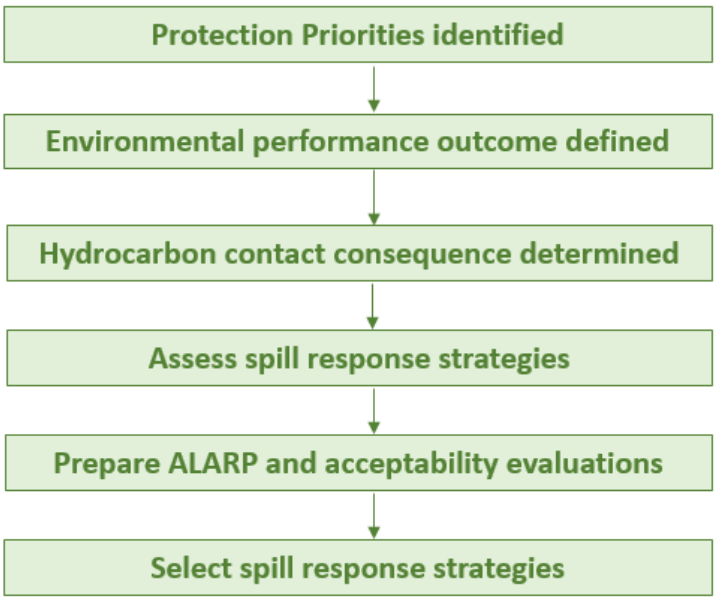


Figure 5-4: Spill control analysis and ALARP determination process

6. Assessment – Planned Activities

Note. In the following tables the OIM refers to the MODU OIM unless otherwise stated.

6.1 Physical Presence

6.1.1 Description of aspect

Physical disturbance	Physical disturbance of the benthic habitat and associated marine flora and fauna will result from: • Mobilisation of the jack-up MODU; and • Drilling / cement discharges at the seabed (refer Section 6.6 and 6.7). The MODU move, usually facilitated by two to three vessels, will see the rig move to its final position for drilling where the MODU will be spudded (spud cans contacted with the seabed) such that the MODU can jack up above sea level. The 'spud cans' of the legs of the jack-up MODU that will stabilise the rig to seafloor are estimated conservatively to have a surface area of 260 m^2 per leg, equating to a footprint of approximately 780 m^2. The spud cans compact benthic communities by direct contact with a temporary increase in turbidity due to seabed disturbance. Note, the seabed surrounding Skua-11 well has previously been disturbed. A total area of approximately 800 m^2 of seabed is expected to be disturbed as a result of the drilling activity. This footprint includes the disturbance associated with re-drilling of the well. Physical disturbance may also occur as a direct result of drilling discharges such as cuttings (assessed in Section 6.6). The physical presence of infrastructure may alter marine fauna behaviour and create habitat for organisms that are attracted to and/or attach to hard substrates. Significant numbers of brown noddies have been recorded nesting on the Montara FPSO (266 nests recorded in August 2022), with brown noddies, bridled terns and brown boobies also using the Montara FPSO and WHP as roosting sites, the Montara FPSO and WHP are located approximately 23 km southeast of the Operational Area. Helicopters operating at low altitude during ascent from and descent to the MODU 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 6.3. No vessels anchor within the Operational Area unless in emergency.

6.1.2 Impacts

Seabed habitat

Elevating the MODU will cause a direct disturbance of benthic habitat within the Operational Area, which is predominantly soft sediment habitat. This will result in the mortality of sessile fauna within this footprint and potentially the mortality of benthic infauna associated with the habitat. Following removal of the MODU, the soft sediment will be left indented, but will remain a viable habitat that would be expected to recolonise with benthic species within weeks to months following removal of the disturbance.

The scale of seabed disturbance due to positioning of the MODU is small in comparison to the vast size of soft substrata habitats spanning the NWS. 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.

For noting, the location of the final positioning of the MODU, has been used in previous drilling campaigns for these purposes. These areas have been evaluated previously during pre-commencement seabed surveys and sensitive habitats (e.g. hard substrates supporting attached communities) have not been identified. It is therefore not expected that such habitats will be a consideration for the proposed drilling campaign and the spud cans will be positioned as close to the previous spud can impressions as possible.

Cultural Heritage

The nearest know Australasian Underwater Cultural Heritage Site is a shipwreck, the Ann Millicent, located in the vicinity of Cartier Island, approximately 98 km to the west of the Operational Area (DCCEEW, 2024c).

Seabirds

The physical presence of the MODU during the activities proposed for this EP is limited to approximately 66 days. In addition, the MODU is a manned facility providing additional deterrent to birds. Therefore, the likelihood of nesting and / or roosting sites being established on the MODU are very low. However, in the unlikely event that nesting sites and/or roosting activities occur there are significant health and safety risks potentially associated with these sites including:

- Risk of bird strike during helicopter operations;
- Health and hygiene issues associated with guano deposition on infrastructure (including cable trays);
- Aggressive adult bird territorial behaviour towards workforce members onboard the MODU;
- A negative effect on the anti-slip properties provided by heli-deck surface due to guano, and thereby does not achieve friction testing requirement;
- Emergency signage and lights become obscured;
- 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;
- Transient obstruction (by guano and/or birds) of the communications path by birds, with the signal obscured for sufficient time to indicate a system loss and therefore shutdown (ESD).

Jadestone completes annual monitoring of the bird presence at the Montara FPSO and WHP infrastructure. This is not expected to be required for the temporary presence of the MODU within the Operational Area that will be located approximately 23 km northwest of the Montara FPSO and WHP. The proposed passive management actions to reduce potential risks from bird presence and any guano build-up on the MODU will be limited to general deck housekeeping, including sweeping of the decks and litter retrieval to remove material that may be used for nests.

To determine the potential impacts from the temporary presence of the MODU, it is important to understand the definition of important habitat as defined in the guidelines and whether that habitat is present within the potential area of impact (Table 6-1).

Table 6-1: Important habitat definitions and presence in the vicinity of Skua – 11 well

Important habitat category	Habitat present in the vicinity of Skua -11 well
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	Habitat within the vicinity of Skua-11 well is utilised by migratory species occasionally and periodically (i.e seasonally by 3 migratory bird species), however the area currently supports <1% of the global populations of these species, and <1.1% of the WA population. Therefore, the region is not considered to support an ecologically significant proportion of the population of the species.
b. habitat that is of critical importance to the species at particular life-cycle stages	Although the Montara FPSO, located 23 km from the proposed temporary MODU, does support nesting brown noddies, (nesting is considered a critical life stage), the habitat itself is not the natural habitat for nesting birds. It also only currently accounts for

Important habitat category	Habitat present in the vicinity of Skua -11 well
	supporting 0.4% of the WA population of brown noddies. Their usual nesting area on Ashmore Reef, situated > 130 km northwest of the temporary MODU location, supports the second largest breeding population of brown noddies in WA, on which neither the Montara FPSO nor the proposed temporary MODU presence, have any impacts from ongoing or temporary operations.
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 proposed MODU location is not at the limit of the species range.
d. habitat within an area where the species is declining	There is no evidence in current literature to suggest that the brown noddy species is declining in numbers. The brown noddy is considered to be mostly secure in Australia, but some colonies have suffered declines that appear mainly to be due to introduced predators (e.g., rats on Christmas Island), but Ashmore Reef (the nearest breeding colony) does not show signs of introduced predators affecting their numbers. The brown booby is a very common booby occurring through all tropical oceans approximately bounded by latitudes 30° N and 30° S. Some declines in Australian populations (unknown causes) documented in South and East Australia (Heatwole et al., 1996) but not in WA. 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).

Sensitive Receptor	Impact description
Environmental receptors	
Seabirds, cetaceans	Fauna most susceptible to impacts from the temporary physical presence include birds, and cetaceans. Migratory species such as seabirds may experience localised and short-term effects through behavioural changes; such as resting or roosting on the MODU 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).

Sensitive Receptor	Impact description
	Behavioural changes could affect the size and composition of the seabird community in the local area, however given the relatively short duration of the proposed activity (approximately 66 days), the absence of important habitat (Table 6-1) within the Operational Area this impact is considered negligible. Birds striking infrastructure, causing injury/mortality, may cause a minor disruption to a small proportion of the population. The only known BIAs that overlap the Operational Area are the most northern part of the Whale shark foraging BIA as described in Section 3. However, only occasional individuals are expected to traverse the area 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 MODU may be required, however this impact is considered negligible given the large navigable area available and the relatively small Operational Area. Impacts to marine fauna are considered ***negligible***.
Benthic communities	The soft pinning process may impact a highly-localised area through habitat degradation and compaction. The Operational Area is distant from key habitats of ecological importance such as coral reefs or shoals (detailed in Section 3), the nearest being Goeree and Vulcan Shoals located approximately 34 and 41 km respectively, to the southwest. Such habitats will therefore not be disturbed by jack up leg or soft pinning activities. A seabed survey is undertaken 3 to 6 months prior to placing the MODU to confirm the absence of large reefs or structures where the MODU will be placed. This ensures multiple attempts are not required to secure the MODU. There are no known 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 areas once the MODU has left the site (Currie and Isaac, 2004), with scars from the jack up legs typically recolonised by benthic organisms over a period of 2 to 3 years. Given the small footprint of the MODU spud cans, and the widespread distribution and abundance of benthic communities within the surveyed areas and the NW Marine Bioregion, the consequence to benthic communities will be a highly localised, negligible, and reversible change to a very small proportion of the overall benthos***.*** 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. Given the short duration of the MODU being stationary, this is not deemed likely to any extent. Impacts to benthic communities are considered ***minor***.
Consequence	**Ranking**
Minor	Acceptable

6.1.3 Environmental performance

Aspect		Physical disturbance		
Performance outcome		**Seabed disturbance limited to planned activities and defined locations**		
ID	**Management control**	**Performance standard**	**Measurement criteria**	**Responsible**
04	Adherence to MODU Move Procedures	Adherence to MODU Move Procedures to minimise disturbance to the seabed via planned and controlled positioning of the spud cans	Records show the MODU movements align with the activity specific MODU Move Procedures	MODU OIM
05	No planned anchoring within the Operational Area	No planned anchoring within the Operational Area	Project Induction material includes an environmental requirements section that details that no planned anchoring is permitted within Operational Area (unless in an emergency).	Drilling Manager

6.1.4 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 impacts to seabed, benthic habitats and marine fauna due to the physical disturbance from the MODU and vessels. The residual risk ranking for this 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
No mooring footprint at seabed	Eliminate	No	No	The MODU must be on location for the proposed drilling program.
		Yes	Yes	No anchoring of the MODU or vessels.
Drill ship	Substitute	No	N/A	The use of a drill ship which maintains station using DP during the activity is not an option due to the shallow water depth.
Semi-submersible drilling rig		No	N/A	The use of a semi-submersible drilling rig, which maintains station using a multi-anchor mooring spread, would cause increased direct disturbance to the seabed compared to a jack-up rig. In addition it is not technically feasible given the well architecture.
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 the MODU.
N/A	Engineering	N/A	N/A	The use of seabed information collected during previous campaigns allows positioning of the MODU such that the spudcans can sit over soft benthic habitats. This information is used in preparation of the MODU move Plan.
N/A	Isolation	N/A	N/A	The drilling activities are located outside of areas supporting highly valuable benthic habitats.
N/A	Administrative	N/A	N/A	Positioning of MODU is based on survey of seabed habitat collected for previous campaigns completed at the Skua field.

6.1.5 Acceptability assessment

The potential impacts of physical disturbance 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 compliance	Jadestone's HSE Policy objectives are met.
Management system compliance	A MODU move plan will be in place to minimise disturbance from MODU positioning. Section 8 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.

Social acceptability	Stakeholder consultation has been undertaken (see Section 4) and no stakeholder concerns have been raised with regards to physical disturbance. Impacts beyond temporary and localised impacts to the seabed are not predicted.
Industry best practice	The APPEA Code of Environmental Practice (CoEP) (2008) principles are met with regards to meeting the requirements of all laws and regulations, and meeting industry's objective to maintain a social licence to operate.
Environmental context	While the physical disturbance to the seabed will result in some potential impacts to benthic habitat and marine fauna, the impact and risk assessment process indicates this will not result in significant effects to marine fauna. Benthic impacts will be highly localised and restricted to the area surrounding the MODU and immediately around the surface hole location, respectively. The resultant potential impacts from MODU positioning are expected to be minor. The Operational Area contains soft sediment habitats that are widely represented at a regional scale on the NWS. The potential impacts are 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 • North-West Bioregional Plan; and • Principles of ESD
Conservation and management advice	No management plans identified physical disturbance as described above as being a threat to marine fauna or habitats. Jadestone Energy has had regard to the representative values of the protected areas within the EMBAs, and the respective management plans and other published information. Physical disturbance is deemed to have a negligible potential to 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 and considered acceptable.
ALARP	The residual risk has been demonstrated to be ALARP.

6.2 Light Emissions

6.2.1 Description of aspect

Artificial light	Light emitted from the MODU and support vessels during 24-hour operations for a period of approximately 66 days in total. The timing is subject to weather, drilling vessel availability and operational efficiency. During periods of reduced visibility, navigational and safety lighting on the MODU 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 attenuating with distance. 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.

6.2.2 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 drilling program are:

- Disorientation, attraction or repulsion; and
- 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; and
- Sensitivity and resilience of the fauna populations that are affected.

Sensitive Receptor	Impact description
Plankton, Fish (including 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, Marangoni et al. 2022). 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. Keenan et al. (2003), noted that adult carangids (Carangidae), which are highly predatory, may have been preying upon higher than usual concentrations of zooplankton that were attracted to an offshore platform light field. There is a potential for individuals to be impacted by light emissions from lighting. 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 drilling 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.***
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). According to the National Light Pollution Guidelines for Wildlife (DoEE 2023), a 20 km threshold provides a precautionary limit based on observed effects of sky glow on marine turtle hatchlings demonstrated to occur at 15-18 km and fledgling seabirds grounded in response to artificial light 15 km away. The effect of light glow may occur at distances greater than 20 km for some species and under certain environmental conditions (DoEE 2023). The closest turtle nesting habitat to the Operational Area is significantly beyond this distance as Cartier Island is approximately 94 km north-west of the Skua-11 well. The nearest BIA boundary for marine reptiles (green turtle) is 74 km west of the Operational Area. As a result, impacts to adults and hatchlings are expected to be ***negligible***. 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, therefore it is considered unlikely they will frequent the Operational Area. It is recognised that some pelagic sea snake individuals may occur and be attracted to the light from the MODU and vessels. 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

Sensitive Receptor	Impact description
	trophic levels, creating food sources and shelter for seabirds (Surman, 2002). The light from the MODU and vessels 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 94 km north-west of the Skua-11 well, 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 (WDCS 2004), so light is not considered to be a significant factor in cetacean behaviour or survival. Light from the MODU and vessels is not considered to have an impact on marine mammal behaviour.
Consequence	**Ranking**
Negligible	Acceptable

6.2.3 Environmental performance

Aspect		Light emissions		
Performance outcome		**Activity lighting managed in accordance with OHS requirements**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
06	MODU and vessel navigation aids and equipment meet regulatory and safety requirements by aligning with *Navigation Act 2012*	Vessels and MODU 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).	Preventative Maintenance System (PMS) 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.	MODU OIM Vessel Master

6.2.4 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 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. Drilling 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 introduction of risk particularly while drilling the hydrocarbon bearing zone. Light from the MODU 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 will be 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.
Installation of a bird deterrent device or system	Engineering	No	No	The activity proposed under this EP is only taking place over a period of approximately 66 days. Based on the short duration and absence of bird BIAs within the Operational Area the installation of a bird deterrent system is not considered warranted. The standard operating procedure for helideck operations will include helideck inspections, which will help to keep birds away from the helideck.

None identified	Administrative	N/A	N/A	N/A

6.2.5 Acceptability assessment

The potential impacts due to light emissions are considered acceptable in accordance with Section 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 compliance	Jadestone's HSE Policy objectives are met.
Management system compliance	Section 8 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for the activities.
Social acceptability	Stakeholder consultation has been undertaken (see Section 4), and no stakeholder concerns have been raised with regards to impacts from lighting on sensitive receptors.
Laws and standards	Lighting on the MODU has been designed to meet health and safety requirements. All vessels in Australian waters adhere to the navigation safety requirements contained within the *Navigation Act 2012* and subordinate Marine Orders with respect to navigation and workplace safety equipment (including lighting). There are no standards for acceptable levels of lighting to seabirds or turtles.
Industry best practice	Lighting on the MODU and vessels is designed to be at minimum safe operational levels.
Environmental context & ESD	While there is direct light spill to sea surface immediately around the MODU and support vessels, the impact and risk assessment process indicates that the light spill will not pose a credible risk to adult turtles or birds that may transit the Operational Area. Light is identified in the National recovery plan for Turtles (2017) as a threat to turtles on nesting beaches only. The Operational Area does not overlap any internesting BIAs for marine turtles, the nearest marine turtle BIA is located approximately 74 km to the west of the Operational Area. There will be no light spill on nesting beaches. 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; • North-West Bioregional Plan; and • Principles of 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 and therefore the activity is considered to be conducted in a manner that is consistent with the Recovery Plan and the National Light Pollution Guidelines for Wildlife (DoEE 2023). Light pollution is identified as a threat in the Wildlife Conservation Plan for Seabirds (CoA, 2020) and includes navigation aids. Though the plan does identify lighting from vessels as having potential impacts, the Operational Area is not in close proximity to any breeding areas and therefore only individuals overflying the location are considered likely and the impacts are considered negligible. No explicit controls are listed in the plan to manage lighting impacts. 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 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 and considered acceptable.

ALARP	The residual risk has been demonstrated to be ALARP.

6.3 Noise Emissions

6.3.1 Description of aspect

Noise emissions	Noise is generated by the MODU, vessels and helicopters associated with the activity. The highest noise levels are likely to occur during supply boat operations, and MODU mobilisation/ demobilisation, during which vessels use thrusters to move into position. During drilling operations, it is intended that support vessels will hold station using thrusters, and the MODU will maintain station using legs as it will be a jack-up rig. No impulsive sound sources, including vertical seismic profiling, side scan sonar or MBES, will be used during the proposed activities under this EP. **MODU Operations** Throughout the 66-day drilling program, low intensity underwater noise of a continuous nature will be emitted from the drilling MODU and support vessels. Noise will be generated during drilling activities from a number of sources, in particular, vessel engine rotation of propellers, by the bit, drill string and associated equipment and by machinery operated on the decks and working areas of the drilling MODU and supply vessels. Marine operations conducted on the decks and working areas of the vessel introduce strong sounds of varying characteristics into the water column, largely at low frequencies. Noise produced from active drill MODUs is predominantly below 2 kHz, with peak frequencies below 500 Hz. A range of broadband values (59 to 185 dB re 1 µPa (ms SPL)) have been quoted for various MODUs (Oceans of noise, 2004), where noise is likely to be between 100 and 190 dB re 1 µPa (ms SPL) during drilling. These levels are expected to decrease rapidly moving from the source. McCauley (1998) reported noise levels generated by a semi-submersible rig, during non-drilling periods the typical broadband level encountered was approximately 113 dB (rms) re 1 µPa@125 m with various tones from the machinery observable in the noise spectra. There was a significant variation in the broadband noise during non-drilling periods, attributed to the operation of specific types of machinery. During periods the broadband noise level increased to the order of 177 dB (rms) re 1 µPa@125 m. Studies undertaken in the Arctic on different MODU types (including semi-submersible and drill ships) indicate that noise levels dropped to 117 dB re 1 µPa within 1 km of the MODU and are much lower than those for large commercial vessels operating at normal speeds (Austin et al., 2018). In general, jack-up MODUs transmit less noise underwater than a semi-submersible or a drill ship due to a smaller surface area being in contact with the water column. Jack-up MODUs have been measured to produce noise between 0.005 and 1.2 kHz during drilling activity with a source level of 59 dB re 1 µPa m (Simmonds et al., 2004). A 2001 underwater acoustic survey (Marine Acoustics, 2001) of a jack-up MODU operating in shallow waters (24.4 to 27.4 m water depth) reported non-continuous (less than one second) noise levels exceeding 120 dB re 1 µPa, were measured to a maximum range of 1.17 to 1.4 km from the MODU in a frequency band of 8.9 to 44.7 Hz. Underwater noise measured during this survey was always below 160 dB re 1 µPa. Noise from MODU operations is expected to be low as all operating equipment including generators, engines and machinery is above sea level in the circumstance of a jack-up drilling rig. Therefore, noise received in the marine environment is expected to be at the lower end of the ranges described above. **Support Vessels** Vessel noise varies with the size, speed, and engine type and the activity being undertaken. The loudest noise level from support vessels is during MODU loading and unloading activities where thrusters are used to maintain position. 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). For the benefit of comparison, a Dynamically Positioned (DP) MODU will typically produce low intensity but continuous sound while holding station, emitting noise levels between 85 and 135 dB re 1 µPa (ms SPL) when not actively drilling (i.e. noise levels just due to thrusters), while the median sound level measured across five FSOs on the NWS was recorded at 181 dB re 1 µPa (Erbe et al., 2013). Under normal operating conditions when vessels are idling or moving between sites, support vessel noise would be detectable only over a short distance (tens of metres). When a support vessel is using main engines and thrusters to hold position, the noise may be detectable above background noise levels for hundreds of metres or more during calm weather conditions, although this range of audibility will be reduced under noisier (windier) background conditions (BHPB, 2005). **Helicopter Operations** 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 (typical cruising height of between approximately 1,000 to 1,400 m). 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 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 drilling activities, and natural underwater noise sources, are provided in Table 6-2.

Table 6-2: Summary of anthropogenic and natural underwater noise sources

Source	Sound Intensity (dB re 1 µPa)	Dominant Frequency (Hz)
Natural Noises		
Ambient sea sound	80 – 120	Varied
Undersea earthquake	272	50
Seafloor volcanic eruption	255+	Varied
Lightning strike on sea surface	250	Varied
Breaching whale	200	10-100
Bottlenose dolphin click	Up to 229	Up to 120,000
Humpback whales (tail fluke, fin slaps)	192	30 – 1,200
Humpback whale song	179	50 – 10,000
Sperm whale clicks	Up to 235	100 – 30,000
Blue whale vocalisations	190	12 – 400

Source	Sound Intensity (dB re 1 µPa)	Dominant Frequency (Hz)
Anthropogenic Noise Sources Expected from the Skua-11 ST1 well drilling activity		
Wellheads and flowlines	Approx. 159 dB re 1 µPa @1 m (SPL).	Non-impulsive, predominantly between 100 Hz and 2.5 kHz.
Support vessels (<100 m length)	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).
Helicopter flyover	Depends on type and size of helicopter and height above sea level. E.g. from 101 to 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).
Active MODU		
Drilling MODU in Timor Sea (McCauley 1998)	157 - 162 dB re 1 µPa, with rapid decreasing intensity of 117 dB re 1 µPa at 125 m and 115 dB re 1 µPa at 405 m from the MODU.	Peak frequencies below 500 Hz.

6.3.2 Impacts

The nature and scale of impacts from noise emissions generated during this activity must be considered in the context of the ambient noise environment. Ambient underwater noise levels are dependent on location, and are often dominated by local wind noise, waves, biological noise and ship traffic. Wind speed and seabed conditions have a clear influence on the ambient noise level. Existing anthropogenic underwater noise sources in the region of the drilling activity include shipping, small vessel traffic servicing the Montara Venture infrastructure and other nearby operators, as well as the overarching operations that are ongoing at the Montara WHP.

The response of marine fauna when exposed to underwater noise from anthropogenic sources is dependent on a number of factors, including distance from the sound source, water depth and bathymetry, the animal's hearing sensitivity, type and duration of sound exposure and the animal's activity at time of exposure. 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, Southall et al., 2019):

- Injury to hearing or other organs: hearing loss may be temporary (temporary threshold shift (TTS)) from which an animal recovers within minutes or hours, or permanent (permanent threshold shift (PTS)) from which the animal does not recover;
- Masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey); and
- 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. This includes attraction to the noise sources as well as avoidance.

Criteria have been derived from a number of sources to determine the potential for behavioural and physiological impacts to sensitive receptors. These thresholds have been compared with measured and predicted sound levels for various sound sources expected during the activity to determine the potential

impacts. For the proposed activity only non-impulsive sound sources have been considered due to the nature of the activity. No impulsive sound sources (for example vertical seismic profiling) have been identified.

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 plans (refer Table 3-3) for a number of the EPBC species that may occur in the Operational Area. The Operational Area also overlaps with one BIA for whale sharks (foraging).

A PMST Search was conducted on a 20 km buffer around the defined Operational Area to identify any MNES species within the vicinity upon which noise impacts may occur. No additional MNES species (potentially impacted by noise) were identified as potentially occurring within a 20 km radius.

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, Southall *et. al*. 2019). 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. 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 MODU will be gradually exposed to increasing noise levels and, therefore, animals will not be startled by sudden or loud noises and as such behavioural responses are expected to be limited. Based on these findings however, it is reasonable to expect that 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 some cetaceans to display some level of avoidance when in close proximity to the support vessels. Sound levels are expected to approach ambient levels over several kilometres. PTS is not considered likely to occur due to the predicted sound levels from vessels on DP and the MODU whilst drilling, with sound levels below the PTS threshold for marine mammals (up to 190 dB re 1Pa during drilling and up to 182 dB re 1Pa for a vessel on DP) in the immediate proximity and the sound levels decreasing with distance from the source. TTS could be expected to occur if marine mammals remain in close proximity to support vessels for 24 hours, but as vessels will be moving throughout the activity this is considered unlikely. Although some studies show the threshold for TTS could be met, this level of noise drops rapidly with distance and dropping below the behavioural threshold level within 1 to 1.4 km of the MODU (Austin et al, 2018; Marine Acoustics 2001). For vessels, the behavioural threshold of 120 dB re 1Pa is likely to be met within a similar distance of 1-2 km. As discussed above, marine mammals may be attracted by the noise sources but are unlikely to remain in the vicinity or approach close enough to result in TTS, particularly given predictions are conservative and typically consider 24 hours of exposure. 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 or more (NMFS 2018). Baleen whales sometimes dive or turn away during overflights, but sensitivity seems 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 2018). 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

Sensitive Receptor	Impact description
	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. Although there are likely to be transient whales passing through the Operational Area (refer Section 3.5.5), it does not contain any known significant feeding, breeding or aggregation areas for marine mammals. The nearest BIA for cetaceans is the pygmy blue whale migration BIA, which is located approximately 65 km at its closest point from the Operational Area and is therefore not expected to be impacted by noise from the MODU or vessels. Impacts to cetaceans from underwater noise generated by drilling activities 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, Popper et. al. 2014). 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). The Recovery Plan for Marine Turtles in Australia (2017) identifies noise interference as a threat to marine turtles and suggest the impact of noise on turtle stocks may vary depending on whether exposure is acute or chronic. This activity will result in chronic noise rather than acute, from the drilling activity and associated vessel movements. No absolute thresholds are known for the sensitivity of turtles to underwater noise, or the levels causing pathological damage. However, Popper et al. (2014), a working group of leading experts, suggested that behavioural responses in turtles, who 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. The Operational Area does not intersect any known inter-nesting areas and is more than 165 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 34 km away from the Operational Area), it is considered unlikely they will frequent the Operational Area.
Fish (including 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 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) 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 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. The whale shark foraging BIA intersects the Operational Area. Whale Shark migration along the WA coast occurs predominantly between July and November (refer Section 3.5.3). The activities

Sensitive Receptor	Impact description
	under this EP are scheduled to potentially occur within this period , dependent on schedule and weather conditions). However, the approved Conservation Advice for *Rhincodon typus* (whale shark) (TSSC 2015a) does not identify noise interference as a threat to the species. Elasmobranchs (rays, skates, sharks) rely on low frequency sound to locate prey. The large hearing structure of the whale shark will be most responsive to long-wave, low-frequency sound (Myrberg 2001) in the range of 20 and 800 Hz. Elasmobranchs do not have swim bladders and are not typical hearing specialists (Baldridge 1970, Myrberg 2001). 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 & 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 the MODU or support vessels 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

6.3.3 Environmental performance

Aspect		Noise emissions		
Performance outcome		Controls implemented to minimise potential harmful impacts to marine fauna from noise		
ID	Management controls	Performance standards	Measurement criteria	Responsibility
07	Support vessels will comply with EPBC Regulations 8.05 and 8.06	Support Vessel Masters will comply with relevant parts of EPBC Regulation (2000): Reg. 8.05 & 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; and • 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.	Project induction material for vessel masters includes the requirements of Regulation (2000): Reg. 8.05 & 8.06. Incident reports record non-compliances with EPBC Regulations 2000 - Part 8 Division 8.1 (interacting with cetaceans).	Logistics Superintendent
08	Vessels will comply with speed limits within the Petroleum Safety Zone (PSZ) (500 m)	Vessels operating within the restricted zone must not exceed a speed of five (5) knots. Online induction includes information on speed limits in the PSZ and requirements on interacting with marine fauna.	Project induction material for vessel masters includes an environmental requirements section that details PSZ speed requirements	Logistics Superintendent
09	Helicopters will comply with EPBC Regulations 8.07 as per Jadestone's 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; and 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). Incident reports record non-compliances with EPBC Regulations 2000 – Part 8 Division 8.1 (interacting with cetaceans).	Logistics Superintendent

Aspect		Noise emissions		
Performance outcome		**Controls implemented to minimise potential harmful impacts to marine fauna from noise**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
10	Preventative Maintenance System (PMS) in place to ensure that vessel machinery and equipment is maintained	Vessel machinery is maintained in accordance with vessel class requirements. Maintenance is conducted in accordance with the vessel PMS.	Records from vessel vetting process confirm PMS schedule adhered to.	MODU OIM Vessel Master

6.3.4 ALARP assessment

Based on 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 MODU, machinery, vessels and helicopters to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Acceptable 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 MODU, vessels, 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 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.
Undertake site specific acoustic modelling as per Approved Conservation Advice for *Megaptera novaeangliae* (humpback whale) (TSSC, 2015c))	Administrative	No	No	Additional cost to undertake site specific acoustic modelling to increase the knowledge of potential impacts. However, noise emissions from these activities are already well documented and the operational area is not within critical habitat for humpback whales.
Develop a noise management plan as per approved Conservation Advice for *Megaptera novaeangliae* (humpback whale) (TSSC, 2015c)).	Administrative	No	No	Additional cost to develop a noise management plan for an activity that is low risk to marine fauna due to the noise emissions and the activity is not within critical habitat for humpback whales.
Undertake drilling activity in alternate season to potentially further reduce exposure to marine fauna from noise emissions e.g. outside of turtle nesting and whale shark migration periods	Substitution	Yes	No	Activity timing can be any time of the year. As the impacts are localised and no significant impacts predicted to marine fauna/habitats or socio- economic receptors, any restriction on timing results in an unacceptable cost for little environmental benefit. No delay in the timing of this drilling activity is important

				to allow the well to be brought back on-line, in a timeframe that supports the ongoing production requirements and economic viability of the Montara and Skua Fields. Given the considerations above, any restriction on activity timing would not be considered reasonably practicable and would not achieve any significant environmental benefit by being seasonally specific.

6.3.5 Acceptability assessment

The impacts due to machinery, MODU, helicopter and vessel noise are considered acceptable in accordance with Section 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	Key Jadestone management system controls include EPBC Regulations (2000) pertaining to vessel and helicopter operations. Jadestone's HSE Policy objectives are met. Section 8 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for the proposed drilling activities.
Stakeholders & reputation	Stakeholder consultation has been undertaken (see Section 4), and no stakeholder concerns have been raised with regards to impacts from noise on sensitive receptors.
Environmental context & ESD	While there are noise emissions expected, the impact and risk assessment process indicates that noise will not pose a credible risk of death, injury or significant behavioural effects to marine fauna. The potential impact is considered acceptable after consideration of: • Potential impact pathways: the pathways and consequences from the temporary localised drilling and engine sources from the MODU and vessels are assessed in Section 6.3.2; • Preservation of critical habitats: remote from Protected Areas or aggregations of noise sensitive receptors; • Assessment of key threats as described in species and Area Management/Recovery plans: See 'Conservation and management advice' below; • North-West Bioregional Plan: vessel and offshore mining noise is regarded 'of potential concern' to multiple conservation values (see Section 6.3.2). As such, minimisation through maintenance and avoidance through application of EPBC Act Reg 8.05 and 8.06 are aligned with the objectives of the Plan; and • Principles of ESD: no impacts from noise sources beyond' negligible' to biological diversity or ecological integrity, no irreversible damage.
Conservation and management advice	Noise interference is identified as a threat in: • The Recovery Plan for Marine Turtles in Australia (2003) • Approved Conservation Advice for M. novaeangliae (Humpback Whale) (2015) • The Conservation Management Plan (Recovery Plan) for the Blue Whale (B. musculus) (DoE 2015). These suggest that noise may lead to the avoidance of important habitat in marine turtles and mask cetacean vocalisations. The Operational Area does not overlap with any turtle or whale BIAs or migratory pathways. Given the distance from the Operational Area to the closest turtle nesting site at Cartier Island (>90 km) and the large navigable area available in the open ocean, it is expected that the impact of noise interference on individual transient turtles or cetaceans travelling through the Operational Area is expected to result in temporary avoidance reactions. Avoidance of

	migratory or nesting seasons is not considered to be ALARP given the low levels of noise from the planned activities and the location of the activity outside of BIAs and migratory pathways. The risk matrix presented within the Recovery Plan for Marine Turtles in Australia provides a risk rating of low to moderate associated with industrial and shipping noise on turtles. No further controls are considered appropriate given the distance from turtle BIAs and the low levels of noise from the proposed activity. The Approved Conservation Advice for *M. novaeangliae* (Humpback Whale) (2015) suggests that should acoustic impacts on humpback calving, resting, foraging areas, or confined migratory pathways be identified a noise management plan should be developed. Given the level of noise generated during this activity and that the Operational Area does not overlap a humpback whale BIA or key area for this species, a management plan is not considered applicable. The risk matrix presented within the Conservation Management Plan for Blue Whales (DoE (2015)) provides a risk rating of low to moderate associated with industrial and shipping noise on blue whales. The proposed controls including reduction of vessel speed in the vicinity of a whale align with the priority for action recommended in this management plan. 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 MPs. This is consistent with the objectives of the protected area management plans and considered acceptable. EPBC Regulation 8 and the Australian National Guidelines for Whale and Dolphin Watching 2017 (DoEE, 2017a) set the requirements for vessels interacting with cetaceans. Commercial vessel noise is identified as a risk in the 'Whale shark management with particular reference to Ningaloo MP' (2013). The Operational Area overlaps a small portion of the Whale shark foraging BIA where aggregations are not as dense or sustained as the Ningaloo MP and the open ocean location does not restrain migratory routes.
ALARP	The residual risk has been demonstrated to be ALARP.

6.4 Atmospheric Emissions

6.4.1 Description of aspect

Emissions	The use of fuel (specifically marine-grade diesel) to power MODU and vessel engines, generators and mobile and fixed plant and equipment will result in emissions of greenhouse gases (GHG) such as carbon dioxide (CO_2) and nitrous oxide (N_2O), along with non-GHG such as sulphur oxides (SO_x) and nitrous oxides (NO_x). Vessels and MODU may utilise ozone-depleting substances (ODS) in closed-system rechargeable refrigeration systems. There is no plan to release ODS to the atmosphere. In the event that entry into the well using slickline / wireline is required to perform intervention activities, small volumes of gas (approximately 100 scf (<3 m^3)) may be vented to atmosphere from pressure control equipment during slickline runs. No flaring is planned to occur during the drilling activities. Cold venting of greenhouse gas may be required to maintain well integrity and, if required, will be conducted via an approved, safe location on the MODU. Approximately 274m^3 could be released to atmosphere.

6.4.2 Impacts

Sensitive Receptor	Impact description
Air quality	Emissions can reduce air quality in the immediate vicinity of the MODU or vessels present in the Operational Area. Air emissions may include criteria pollutants (e.g., nitrogen oxides [NO_x]), and greenhouse gases (e.g., carbon dioxide [CO_2]). Impacts from air emissions depend on discharge volumes, frequency, and duration of exposure as well as the location and nature of the receiving environment. Air quality changes associated with emissions are typically limited to the local air shed, given the rapid dispersal into the atmosphere following release. As the proposed activities 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. Greenhouse gases are persistent by nature and the key impact of these emissions is that they accumulate in the atmosphere. Upon release from a facility, CO_2 persists for thousands of years in the atmosphere, nitrous oxides persist for hundreds of years, and methane persists for a least a decade (EPA 2022). Whilst CO_2 is cycled out of the atmosphere by various carbon sinks (vegetation and the ocean surface in particular) the natural source/sink cycle has been out of balance since the beginning of the industrial revolution, when fossil fuels such as coal first started being combusted, and area of sinks reduced through development resulting in an ever-increasing concentration of greenhouse gases in the atmosphere. This increasing concentration has led to a greenhouse or warming effect resulting in the physical, chemical and biological effects of climate change. Global climate change is the result of atmospheric accumulation of GHG emissions and GHG sinks since the start 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. 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 proposed Skua-11 ST1 activities 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 susceptible to adverse effects of climate change include alpine habitats, coral reefs, wetlands and coastal ecosystems, polar communities, tropical forests, temperate forests and arid and semi-arid environments (DoEE, 2019). Human-induced global warming has already caused multiple observed changes in the climate system including increases in both land and ocean temperatures and an increase in the frequency and duration of heatwaves both on land and in the marine environment (Hoegh-Guldberg et al. 2018) and other extreme weather events. 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 particular 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). Impacts to the physical, biological and socioeconomic receptors within these areas could be impacted with predicted impacts highly variable between ecosystems and within on both the ecosystem structure and its flora and fauna. In many cases, the impacts of climate change on

Sensitive Receptor	Impact description
	biodiversity are exacerbated by other pressures such as land clearing and invasive species, but in some cases, impacts can be unequivocally attributed to climate change (Hughes et al. 2019). Modelling undertaken for another offshore project (BP 2013) examined the projected emissions from a MODU power generation unit. The focus of the modelling of non-greenhouse gases was on nitrogen dioxide (NO_2) as it was determined to be the dominant, non-greenhouse atmospheric pollutant of concern in relation to air quality. NO_2 has the potential to impact on both human health and the environment. The modelling indicated, on an hourly average, the potential for an increase in ambient NO_2 concentrations of 1µg/m^3 within 10 km of the MODU location and 0.1µg/m3 >40 km away. This represents an increase of 2% over typical background concentrations within 40 km, with air quality remaining well below the WHO air quality guideline for NO_2 of 40 µg/m^3 annual mean. Venting may result in localised and temporary reduction in air quality as the gas vents to the atmosphere, and localised and temporary contribution to greenhouse gas emissions. Given the remote, offshore location of the MODU, and short duration of venting activities (leading to rapid dispersion of low volumes of emissions) the potential impacts are expected to be negligible. **GHG Emissions** Typically, a jack-up rig, as proposed for the activities under this EP, may consume 20 m^3 of diesel per day (IPIECA 2023), in total a predicted volume of approximately 1,440 m^3 over the proposed 66-day duration for the activity. A medium sized support vessel is expected to consume approximately 5 t of diesel fuel per day in the field and the helicopter transfers will use approximately 0.766 t of fuel per round trip based on 70 minutes of flight time each way (140 minutes total). Cold venting of gas to the atmosphere will be required to remove the gas from the annuli within the well. These volumes are released in two stages. Initially the A-Annulus will be vented, via an approved safe location on the MODU using the rig mud gas separator or a bleed off package (methodology to be the same as that accepted within the MODU Safety Case Revision). Followed by a penetration into the B-Annulus, to release gas via an approved safe location on the MODU using the rig mud gas separator. Note that the gas volume released remains the same regardless of the methodology for bleed-off, a minor residual gas volume from the B-Annulus will be vented in the water column. The total gas volume that may be vented to the atmosphere is approximately 274 m^3. This volume cannot be measured on the rig degasser, therefore a worst-case assumption of the maximum volume contained with both the A and B-annulus has been calculated using Boyle's Law (refer Section 2.10.1). Venting is not expected to generate exposures significant enough to result in impacts to identified receptors. Predicted GHG Emissions from the activities are presented in Table 6-3 and were calculated using the Australian Governments Clean Energy Regulator NGER calculator (CER 2024). Note that final vessel selections are yet to be made and as such the calculations are based on generic vessel information (IPIECA 2023). ***Table 6-3: Potential GHG Emissions and sources*** **Source** / **Duration (days)** / **Assumptions** / **GHG Emissions (CO_2-e t)** MODU / 66 days / Uses ~20 t fuel/day / 3,587 3 x support vessels / 198 days (3 x 66 days) / Uses ~15 t fuel/day (total) / 2,690 Helicopter operations / 5 round trips per week (approximately 47 flights in total) / Uses ~0.766 t fuel/round trip / 80

<table>
<tr><th>Sensitive Receptor</th><th>Impact description</th></tr>
<tr><td></td><td>
<table>
<tr><td>Cold venting of gas</td><td>1</td><td>Up to 274 m^3 in total</td><td><1</td></tr>
<tr><td colspan="3">Total</td><td>6,357</td></tr>
</table>
Given that the air quality modelling referred to above was conservative, the projected emissions are below air quality guideline limits, and the offshore location for the operations, the impacts to air quality from the MODU, support vessels and helicopter operations emissions are considered ***negligible***.
</td></tr>
<tr><td>Birds</td><td>A reduction in air quality may have a temporary effect on transient bird species passing through the Operational Area. No avifauna BIAs overlap the Operational Area (Section 3), however, seven threatened and/or migratory seabirds were identified as potentially transiting, occurring within, or having habitat potentially occurring within the greater region. These species may be impacted by deterioration in air quality if they are transiting the immediate area of the MODU 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 more than 165 km north-west of the Operational Area, 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***.</td></tr>
<tr><td>Social receptors</td><td>As the Operational Area sits 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 Wandoo facility operated by Vermillion Energy (approximately 20 km north-east) are not expected. Any impacts are therefore considered ***negligible***.</td></tr>
<tr><td>Cumulative Impacts</td><td>The quantities of gaseous emissions are relatively small, and will under normal circumstances, quickly dissipate into the surrounding atmosphere and not result in significant cumulative impacts to the local airshed.
Given the distance from the nearest coastlines where birds will likely congregate, with only individuals overflying the location, cumulative impacts at a population level are not expected.</td></tr>
<tr><td>Consequence</td><td>Ranking</td></tr>
<tr><td>Negligible</td><td>Acceptable</td></tr>
</table>

6.4.3 Environmental performance

Aspect		Atmospheric emissions		
Performance outcome		**No unplanned emissions to the atmosphere; Emissions to air meet regulatory requirements**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
11	MODU Safety Case requires equipment certification and maintenance	All engines, compressors and machinery on the MODU are maintained via the PMS.	Pre-start inspection shows maintenance has been satisfactorily completed as scheduled	Drilling Manager
12	Vessels PMS in place to ensure that vessel machinery and equipment is maintained	Vessel machinery is maintained in accordance with vessel class requirements.	PMS provides status of maintenance	Vessel Master
13	International Air Pollution Prevention (IAPP) Certificate valid	MODU 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	MODU OIM Vessel Master
82	MODU Safety Case details bleed off methodology for annulus gas	When completing the bleed off for both A and B annulus, the methodology for bleed off and cold venting will be completed as per the NOPSEMA accepted MODU safety case.	MODU Safety Case details bleed-off methodology Daily Operational Reports	MODU OIM

6.4.4 ALARP assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to manage atmospheric emissions from the MODU, 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
All equipment producing emissions is removed	Eliminate, Engineering	No	N/A	Atmospheric emissions from the MODU, vessels and helicopters are required for the Activity. Equipment cannot be removed completely.
All emissions producing equipment is substituted for equipment that does not produce emissions	Substitute	No	N/A	All equipment as listed is required; no opportunities for substitution were identified.
Equipment is re-designed/ replaced with equipment designed to reduce emissions.	Engineering	Yes	No	Risk and impact reduction are achieved through planned maintenance ensuring clean and efficient running of engines. Given the volumes of emissions generated, and the low impact considerations due to the location and duration, the costs associated with alternative power generation arrangements are considered disproportionate to the benefits that would be gained.
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.

6.4.5 Acceptability assessment

The potential impacts of atmospheric emissions are considered acceptable in accordance with Section 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 compliance	Jadestone's HSE Policy objectives are met.
Management system compliance	Section 8 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for the activities.
Social acceptability	Stakeholder consultation has been undertaken (Section 4), and no stakeholder concerns have been raised with regards to impacts from atmospheric emissions on sensitive receptors. The Activity is located at distance from aggregations of sensitive receptors and coastal communities.
Laws and standards	Atmospheric emissions from drilling and operational equipment are compliant with MARPOL.

Industry best practice	The APPEA Code of Environmental Practice (CoEP) (2008) principles are met with regards to meeting the requirements of all laws and regulations, and meeting industry's objective to maintain a social license to operate.
Environmental context	While there are atmospheric emissions to the airshed immediately around the MODU 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 • North-West Bioregional Plan; and • Principles of ESD.
Conservation and Management Plans	No Management Plans identified air emissions 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 atmospheric emissions will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state MPs. This is consistent with the objectives of the protected area management plans and considered acceptable.
ALARP	The residual risk has been demonstrated to be ALARP.

6.5 Operational Discharges

6.5.1 Description of aspect

Liquid discharges	Liquid discharges generated from the MODU and support vessels and routinely discharged to the marine environment include: • Deck drainage; • Cooling water from operation of engines; • Desalination plant effluent (brine) and backwash water discharge; • Putrescible waste and sewage; • Oily bilge water • Ballast water. A summary of each waste type is provided below. **Deck drainage** Deck drainage from the MODU and support vessels consists primarily of stormwater and deck wash-down water discharges directly overboard via open deck scuppers. 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. **Cooling Water** Seawater is used as a heat exchange medium for the cooling of power generators used on the MODU and support vessels. Cooling water is drawn through a segregated cooling system and is therefore not contaminated by engine oils or other liquid discharges from the process. Discharge water is approximately 3°C above ambient marine waters but for the MODU will have cooled to ambient by the time it reaches the sea surface (as discharged approximately 20 m above sea surface). The seawater is typically treated with biocides then directed to sea chests, pump caissons etc to prevent blockage of marine growth inside pipes and exchangers.

	Desalination Brine Freshwater is produced on board the MODU and vessels via desalination. The freshwater makers on board the comparative facilities (for example, *Montara Venture* FPSO) result in discharge of maximum 40 tonnes per day of brine of 50.5ºC and a maximum salinity of 38.5 ppm. As a comparative study, the Montara FPSO was assessed by GEMS (2003). The potential behaviour of cooling water discharge from the Montara FPSO during production was modelled 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 2°C 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, the discharge was not greater than 3°C above the ambient water temperature. **Putrescible waste and sewage** All sewage (including grey water) generated onboard the MODU and support vessels is discharged through an inline macerator to comminute solids to a diameter of less than 25 mm. Tertiary treated wastewater on the MODU is discharged directly to the ocean via a sewage treatment plant (STP). The MODU allowable personnel on board (POB) is approximately 110 -140, while the support vessels typically have approximately 12 POB. This loading includes sewage as well as grey water from laundry, showers and wash basins, and food waste from the kitchen. These quantities are derived from existing Jadestone Montara Operations discharge estimates. These estimates are based on the known number of personnel on the assets discharging an estimated 100 l/ person/ d. **Bilge water** Oily water from bilges will be collected and treated via an oil-water separator in accordance with MARPOL requirements (<15 mg/L (v) oil-in-water). Once separated, the oil and grease will be stored in suitable containers ahead of transfer ashore for recycling and the treated water discharged to ocean. **Ballast Water** When at location, support vessels will take on ballast water to allow for safe discharge of deck cargo and/or bulk products (liquid or dry). In the event support vessels need to take on liquid cargo from the MODU, it is expected that vessels will need to discharge ballast water. Similarly, in mobilisation and demobilisation activities, the MODU will need to exchange ballast water and seawater. **Marine Growth Cleaning** Marine growth may be removed from the XT using water jetting tools on board the MODU, with the marine growth and water washed directly overboard to sea. This will fall to the seafloor or be dispersed with the prevailing currents.

6.5.2 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 MODU 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 MODU 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**

Sensitive Receptor	Impact description
	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, and only a small area around the outfall will have a substantially elevated temperature (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 consequence was assessed as localised with full recovery predicted at the end of the Activity, hence ranked ***negligible***. Residual desalination 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 brine discharges is expected to be limited to the immediate point of discharge. As brine is of greater density than seawater, it is expected to sink and rapidly disperse in the currents. The consequence was assessed as localised with full recovery predicted in the short-term following completion of the Activity, hence ranked ***negligible***. **Sewage, grey water and putrescible waste** The potential impact associated with the routine discharge of sewage, grey water and putrescible waste on water quality is changes to ambient water quality and BOD levels from nutrient loading within the direct vicinity of the MODU and support vessels. The discharges of treated sewage and grey water result in localised increases in nutrient concentrations, generate an increase in bacterial activity and associated Biological Oxygen Demand (BOD) in receiving waters and may promote localised elevated levels of phytoplankton due to nutrient inputs. 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 localised with full recovery predicted in the short term at the end of the Activity, hence ranked negligible. The consequence of operational discharges to the water quality are considered to be ***negligible*** given the low toxicity of the discharges and expected dilution within the open water. Marine growth Due to the small volume of discharge of seawater and marine growth from the XT, the impact to water quality will be limited to temporary turbidity and the impacts are expected to be ***negligible***.
Marine fauna: cetaceans, turtles, fish (including sharks and 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 MODU 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; and • 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 MODU 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 small amounts of dissolved hydrocarbons in the oily water drainage after treatment. Given that oil and grease residues in oily water drainage will be in

Sensitive Receptor	Impact description
	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 being discharged. These small amounts of biocides will disperse rapidly on discharge to concentrations below levels of environmental concern to marine biota especially demersal fauna. 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 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). Monitoring of desalination brine of continuous wastewater discharges (including cooling water) undertaken by Woodside for its Torosa South-1 drilling program in the Scott Reef complex found that discharge water temperature decreases quickly as it mixes with the receiving waters, with the discharge water temperature being <1 °C above ambient within 100 m (horizontally) of the discharge point, and 10 m vertically (Woodside 2015). This modelling was based on volumes that are expected to be similar to those identified for this activity. Therefore, the extent of impacts is expected to be localised to the discharge location. 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 increase in salinity and deep, open water surrounding the Operational Area, impacts on fauna from increased salinity in the Operational Area are expected to be ***negligible***. 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 Bioregion, significant impacts on a larger ecosystem or population levels to fish or plankton are not expected to occur. Given the hydro-dynamically active open water environment surrounding the Drilling Activities, 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***. Only receptors in close proximity to the discharge point have the potential to be impacted with full recovery predicted within weeks. **Sewage and greywater and putrescible food waste** The potential impact associated with the routine discharge of sewage and 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.

Sensitive Receptor	Impact description
	While marine mammals and reptiles may transit through the area there are no feeding, breeding or other aggregation areas nearby. The localised extent of any increases in BOD, nutrients, bacteria or phytoplankton and short visit times of these fauna suggest that any impacts from discharge of sewage would be unlikely. Some fish and oceanic seabirds may be attracted to the MODU 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 temporary and is not expected to result in adverse impacts at an ecosystem or population level and impacts are ranked as ***negligible***. **Summary** No important foraging or nesting BIA for marine turtles, fish or marine mammals overlaps the Operational Area. While the northern boundary of the whale shark foraging BIA does overlap the Operational Area, providing potential for whale sharks to be present, their presence is expected to be limited to transiting individuals, due to the size of the whale shark foraging BIA. Impacts overall to marine fauna are expected to be short term with rapid recovery and the consequence of operational discharges was assessed as ***negligible.***
Consequence	**Ranking**
Negligible	Acceptable

6.5.3 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			
14	Routine discharges of treated bilge and deck water will comply with the Navigation Act 2012 (Cwlth), Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (Cwlth) and Marine Order 91	MODU and 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 and Navigation Act 2012 (Cwlth), Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (Cwlth) and Marine Order 91.	Maintenance records or a pre-mobilisation inspection report (e.g. OCIMF OVID, International Marine Contractors Association (IMCA) common marine inspection document (CMID), International Safety Management (ISM) inspection) Current IOPP certificate	MODU OIM Vessel Master
15		Oily residue (sludge) is not discharged to sea but is contained and transferred to shore for disposal.	Oil Record Book	MODU OIM Vessel Master
16	MODU closed drain system and slops tank	No open drains from deck areas where there is a high risk of contamination, e.g., the bleed-off package.	Pre-start audit report	MODU OIM
	Cooling water			
17	Water cooled equipment on MODU is maintained in accordance with the PMS	Water cooled equipment/machinery and heat exchangers maintained in accordance with the PMS.	Pre-start inspection records shows maintenance is scheduled and completed	MODU OIM Vessel Master
	Desalination brine			
18	Potable water systems are maintained	Potable water systems maintained in accordance with PMS.	Pre-start inspection records shows maintenance is scheduled and completed	MODU OIM Vessel Master
	Sewage and greywater			
19	MODU and vessels >400 t STP meets operational needs and is	Pursuant to MARPOL, MODU and vessels have a current International Sewage Pollution Prevention (ISPP) Certificate or	Valid ISPP Certificate	MODU OIM Vessel Master

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
	operated in line with MARPOL conventions	equivalent which confirms that required measures to reduce impacts from sewage disposal are in place.		
	Putrescible waste			
20	Routine discharges of putrescible waste, in accordance with standard maritime practice and Marine Order 95 (Marine Pollution Prevention – Garbage).	MODU and vessels' garbage record book maintained to record quantities of food waste in accordance with Marine Order 95 (Marine Pollution Prevention – Garbage).	Garbage Record Book	MODU OIM Vessel Master

6.5.4 ALARP assessment

Based on the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to manage liquid waste discharges from the MODU and support vessels to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Acceptable as per Section 4. 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	Transfers increase the risks of spills/leaks and safety risks to personnel during transfer operations. 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.
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 MODU 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 are 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.

6.5.5 Acceptability assessment

The potential impacts of liquid waste discharges are considered acceptable in accordance with Section 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 8 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholders & reputation	Stakeholder consultation has been undertaken (see Section 4), and no stakeholder concerns have been raised with regards to impacts from liquid waste discharges on sensitive receptors.
Legislation & Industry best practice	The APPEA Code of Environmental Practice (CoEP) (2008) objectives are met with regards to having appropriate management measures in place to minimise impacts and all wastes are disposed of or recycled at appropriate facilities in accordance with legislative requirements and agreed procedures. Maintenance management system implemented, compliance with relevant MARPOL requirements and certified equipment ensure discharges meet regulatory requirements and are acceptable with standards used globally.

Environmental context & ESD	The activity is located at distance from sensitive receptors and the coastline and no significant impacts on receptors are predicted. While there are liquid waste discharges to sea surface immediately around the MODU and vessels, 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: Section 6.5.1 and 6.5.2 assess the pathways and consequences of localized and degradation of water quality to the marine ecosystem; • Preservation of critical habitats: no impacts on Protected Areas or aggregations of sensitive receptors; • Assessment of key threats as described in species and Area Management/Recovery plans: see Conservation and management advice' below; • North-West Bioregional Plan: The Plan considers vessel and MODU marine discharges and effluents (with associated temperature, BOD and turbidity impacts) as potential concern to various KEFs (Seringapatam Reef and Commonwealth waters in Scott Reef complex, Rowley Shoals and Ningaloo Reef). No KEFs are impacted from drilling operational discharges. Avifauna, dolphin, turtle, sea snakes, shark, and dugong are also mentioned in the NW Bioregional Plan, but no BIAs are predicted to be affected by the MODU or vessel discharges above 'negligible'; and • Principles of ESD: there are no impacts from operational discharges to biological diversity or ecological integrity and no irreversible damage with full recovery in the short term predicted.
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 MPs. This is consistent with the objectives of the protected area management plans and considered acceptable.
ALARP	The residual risk has been demonstrated to be ALARP.

6.6 Drilling Discharges

6.6.1 Description of aspect

Drilling discharges	During the drilling activities discharges to the marine environment will be made, including: • Drilling fluids: ○ Water-based drilling fluids (WBM) • Drill cuttings • Brine, including wellbore clean-up fluids, and • Cementing fluids and cement. Depending on the stage of drilling, discharges may occur at sea surface and at seabed.

A summary of each of the proposed discharges associated with the drilling activity is provided in the following. The drilling methodology is described in detail in Section 2.10.

Drilling fluids

Jadestone proposes to drill the Skua-11 ST1 well exclusively with water-based drilling fluids (WBM). Residual WBM will be discharged from the MODU mud tanks at the end of the drilling activities. The anticipated maximum volume of WBM discharged during the program is 450 m^3.

WBM typically consist of between 80–90% by volume fresh, or saline water, with the balance made up of water soluble and insoluble drilling fluid additives giving the mud the exact properties it requires to meet

the desired functions for a particular hole interval (to control borehole stability and to improve drilling performance and reliability). In the marine environment, these additives are either completely inert (naturally occurring benign materials) or readily biodegradable organic polymers, with a fast rate of biodegradation. Drilling fluid additives that are typically used include: sodium chloride, potassium chloride, bentonite (clay)/pre-hydrated gel (PHG), naturally occurring water soluble polymers, barite and calcium carbonate.

Drill cuttings

Cuttings will typically be removed at surface from the recirculating mud by shale shakers, desanders, and desilters. An estimated 385 m^3 of drill cuttings from Skua-11 ST1 is expected to be discharged to the ocean.

All cuttings will be discharged overboard at sea surface or just below via a discharge pipe unless riserless drilling is undertaken for the surface hole section. In this scenario cuttings will be discharged at the mudline. The fluids are re-used until out of specification, then they will be discharged overboard. Surplus drilling fluids will be discharged overboard. Barite, as well as being added to the drilling fluids, needs to be maintained onboard as a well control contingency which will be stored onboard as dry bulk (approximately 45 m^3).

During the drilling activity an estimated maximum 125 m^3 of brine (30,000 – 40,000 ppm salt solution) will be discharged to the ocean. This brine may contain small quantities of chemicals used to clean the wellbore (surfactants) or prevent corrosion (inhibitors) and control microbial growth (biocides). The brine returned from the well with an oil in water content greater than 15 mg/L will be cleaned to less than 15 mg/L and discharged to the sea.

Cement

Cement is mixed on board the drilling MODU and used to form permanent barriers and fix casings in place. It may also be used to seal a lost circulation zone, and when abandoning the well. The majority of the cement will remain downhole although minor volumes will be discharged at the mudline at the seabed surface, and at sea surface.

Once a hole section has been drilled, steel casing is run into the well. Cement is used to secure the steel casing in the well bore and cementing chemicals are used to modify the technical properties of the cement slurry.

Excess cement (up to a maximum of ~300%) as calculated in the well specific Drilling Program will be used for the riserless sections to account for potential wash outs, over gauge hole and small seepage losses into the formation. This excess typically accumulates on the seabed in the immediate locality of the well.

During cementing operations, there may be some volumes of dry cement (approx. 2 m^3) may be discharged to sea via venting mechanisms in the cementing system. In addition, minor quantities (approx. 2 m^3) of excess mixed cement may also be discharged into the sea during clean-up of the cementing unit (pumps, lines etc) after completion of cementing activities. These quantities are normal volumes associated with any cement activities undertaken worldwide in well construction and are required to conduct operations safely.

Contingency activities may be required in infrequent circumstances (e.g. significant equipment malfunction) whereby it is established that the cement slurry properties being pumped downhole is not within the required specifications for well integrity. While this occurrence is exceedingly rare, leaving this cement in the well could compromise well integrity. In this circumstance, cementing will be aborted, and the defective slurry circulated out of the wellbore.

A volume of cement (approximately 45 m^3) is required to be maintained as a well control contingency. A number of additives with different chemical functions are required during cementing operations these include defoaming agents, dispersants and fluid loss control additives. Excess additives will be backloaded and sent onshore for storage and reuse (where possible) or disposal at the end of the campaign.

The indicative discharge volumes from Drilling and Completions fluids and cuttings associated with the activities is provided in Table 6-4.

Table 6-4: Drill cuttings and mud discharge volumes

Discharge Type	Indicative volume (m^3)	Discharge location
Drilling and Completions fluids and cuttings		
WBM	450	Seabed / Surface
Suspension and completions fluids (Brine)	125	Seabed / Surface
Cuttings	385	Seabed / Surface
Cementing operations		
Cement slurry (riserless / riser in place)	53	Seabed / Surface
Spacer fluids (riserless / riser in place)	31	Seabed / Surface
Residual cement (line flushing)	10	Seabed / Surface
Well abandonment		
Contaminated cement	30	Seabed / Surface

Bulk material inventory control

The objective of effective management of bulk materials is to minimise excess quantities of remaining materials at the end of campaign, whilst ensuring adequate stocks for safe operations and well control contingency are met. Prior to the commencement and during the drilling campaign, inventory control processes will be undertaken to ensure that minimum quantities of drilling materials for safe operations are available. The inventory control process will aid in reducing potential for accidental discharge, optimise recovery and reuse and reduce discharges where possible.

Bulk material disposal at end of campaign

Following completion of drilling at Skua-1, leftover barite, bentonite and cement will be managed in accordance with the below list in order of preference. This decision will be finalised prior to commencing the drilling activity to ensure adequate preparedness activities have been completed, this also ensures that adequate time is given to consider the alternative for onshore disposal as Jadestone have had discussions with suppliers that are working on a potential solution; however it is not currently available and may not be available by the time Jadestone undertake this drilling activity.

9. **Sell or transfer stock to next operator on the MODU**: Any remaining bulk powder barite, bentonite and cement would be retained on board the MODU and provided to the next operator taking the MODU from Jadestone. This option eliminates the potential impacts associated with disposal to sea.
10. **Sell or transfer stock to another operator after transferring to a vessel**: The bulk powders may be transferred back to support vessels to be retained and transported to another operator. The powders may be transferred from MODU to vessel and then onto another MODU or vessel offshore for use. This will be dependent on whether another operator can use the stock on another MODU, the travel distance and cost associated with transferring the stock to another MODU and the storage capacity of the alternative MODU.
11. **Transport onshore for alternative disposal**: This option is not currently feasible (refer to Section 6.6.4 for details) as the road tankers receiving bulks onshore would have their safe working pressure limitations exceeded which can result in explosion risk. However, Jadestone will continue in discussions with suppliers as solutions for this issue are being investigated by industry participants and suppliers. In the event that this option is available to Jadestone and is considered to be a feasible ALARP option prior to commencing drilling, Jadestone would undertake this alternative option.
12. **Following a complete ALARP assessment, discharge bulks to sea**: An ALARP workshop would be completed including discussion with suppliers of bulks to ensure that all feasible disposal alternatives have been

assessed. If the above options are not available, and the potential impact of the bulk discharge is considered acceptable by the workshop attendees, bulk powders would be mixed into a slurry and discharged to sea. It is anticipated that in the worst-case scenario of no other feasible alternatives, the remaining bulks would be mixed into a slurry and discharged overboard with an anticipated volume of 45m^3 for cement and barite.

6.6.2 Impacts

Sensitive Receptor	Impact description
Seafloor - benthic communities and benthic fauna	International Association of Oil and Gas Producers (IOGP) Report 543 *'Environmental fates and effects of ocean discharge of drill cuttings and associated drilling fluids from offshore oil and gas operations'* (2016) reports the following summary of drill cuttings fates, based on numerous field studies, that can be used to identify a conservative extent of cuttings discharge accumulation on the seabed: • Cuttings were detected visually or as elevated barium concentrations in sediments within 10 to 150 m of the discharge. Maximum height of the cuttings pile usually is less than 50 cm; and • WBM drill cuttings discharged near the sea surface tend to accumulate on the seafloor down current from the discharge at distances of about 0.1 to 1 km, or occasionally more in deep water in excess of 300 m depth. Surface discharges will cause the largest (spatial) changes to water quality given influence by surface currents and wind speeds. Hinwood et al. (1994) details that when cuttings are discharged to the ocean from surface, the larger particles which represent ~90% of the mass of the cuttings and associated mud solids, form a plume that settles quickly to seabed close to the release point. Neff (2010) states that in well-mixed oceans waters (as is the case within the Operational Area), the drilling cuttings and fluid plume from a surface discharge is diluted by more than 100-fold within 10 m of the discharge point. Jones et al. (2021) conducted a study on drill cuttings and fluid discharges near Rankin Bank for a similar drilling program in shallow water depths (~78 m). The study used both modelling and ROV sampling and found that maximum total suspended solids (TSS) levels associated with drill cuttings and fluids plumes were <25 mg/L at 500 m from the drilling location and TSS levels up to 15 mg/L were possible out to 1,000 m, however only over a period of minutes as successive discharges intermittently passed through the area. For context, during cyclones and storms TSS concentrations of tens or hundreds of mg/L over a few hours are common in tropical shallow-water reef environments (Abdul Wahab et al. 2017; Fisher et al. 2015). On this basis, Jadestone expects that material changes to water quality will be limited conservatively to within hundreds of metres of the discharge source and intermittently out to distances >1,000 m. Any impacts to benthic communities associated with a temporary and localised increase in TSS are expected to be negligible. Based on review of current available literature it is considered that a cuttings pile spreading out to an extent of 1 km from the drill site, at a depth of approximately 50 cm, was a conservative extent for this drilling activity given it is in shallow water depth (77 to 80 m). Discharges of cement, or cement slurry, from the drilling activities are likely to result in limited impacts to benthic communities. No benthic communities sensitive to light attenuation are found within the Operational Area and the closest shoals are located approximately 28 km southwest of the drilling activities (Goeree and Vulcan Shoals). Due to the localised nature of the cement discharges, no impacts are anticipated at the shoals. Any toxic effects to benthic communities or habitat from cement additives will be highly localised to around the well head and recovery by recruitment of new colonising organisms and migration from adjacent undisturbed seabed area is expected to commence shortly after drilling finishes (Neff, 2005; IOGP, 2016). Due to the restitution time for communities to recover, the limited discharge volumes at the seabed of excess cement and localised extent of potential light attenuation or toxicity effects, impact level for benthic communities is ranked minor. **Physical alteration to benthic communities through smothering**

Sensitive Receptor	Impact description
	Hinwood et al. (1994) explains that the main environmental disturbance from discharging drilling cuttings and fluids is associated with the smothering and burial of sessile benthic and epibenthic fauna. Impacts are generally localised (100–250 m from drill site) and short-lived (<24 months). The smothering effects of sedimentation depend on the mobility of benthic fauna and the rate of cuttings deposition (Kjeilen-Eilertsen et al 2004). Generally, most species present in high-energy environments are well adapted to changes in substrate, especially species with burying behaviour, who experience little effect from sediment deposition (Bijkerek 1988 cited in Kjeilen-Eilertsen et al 2004). Threshold points for benthic fauna tolerance to sedimentation depends on the species and sediment type. For instance, epibenthic fauna are generally unable to escape more than a 1 cm burial depth, whereas infauna, which are adapted to be covered with sediment, may escape from burial to 10 cm depth or more (Bellchambers and Richardson 1995). Kjeilen-Eilertsen et al. (2004] compiled a list of sediment burial threshold levels for different benthic species that have been studied. These burial thresholds ranged from 1 to >50 cm, depending upon taxon and their size and mobility. These data are almost exclusively from shallow-water studies and taxa and are largely based on laboratory experimentation associated with dredged material disposal. It has been found that the 50% hazardous level for burial of deepwater benthic fauna was at a depth of 5.4 cm (Smit et al 2008). In summarizing burial depths and potential harm to benthic macrofauna due to deposition of drilling fluids and cuttings, Smit et al. (2008] established a more conservative threshold depth of 0.65 cm (6.5 mm of deposited sediment below which would be the Predicted No Effect Concentration (PNEC). Therefore, deposits greater than 0.65 cm deep would be needed before benthic macrofauna mortality occurred. This indicates there is the potential for smothering impacts to result in benthic macrofauna mortality over an area of ~1.5 km^2 (based on cutting piles with a 1 km radius) around the drill site. However, any disturbance is expected to be limited to soft sediment in fauna communities. Because these communities are known to recover over a longer period of time (Jones et al., 2021) and are widespread in the region, the potential impacts associated with this program are considered to be limited to localised short-term degradation of habitat. Any smothering effects to benthic communities or habitats from cement discharges will be highly localised to around the well head and recovery by recruitment of new colonising organisms and migration from adjacent undisturbed seabed area is expected to commence shortly after drilling finishes (Neff, 2005; IOGP, 2016). The closest shoals are located approximately 28 km south west of the Drilling Activities (Goeree and Vulcan Shoals) and therefore due to the localised nature of the cement discharges, no impacts are anticipated at the shoals. Due to the restitution time for communities to recover, the limited discharge volumes at the seabed of excess cement and localised extent of potential smothering effects, impact level for benthic communities is ranked minor. **Potential sediment chemical toxicity** Many studies have shown that the effects on seabed fauna and flora from the discharge of drilling cuttings with WBMs are subtle. Although the presence of drilling fluids in the seabed close to the drilling location (<500 m) can usually be detected chemically (Bakke 2013, OSPAR 2009), water based drilling muds have minimal impact beyond that of smothering by the cuttings pile (Currie and Isaacs 2005). Monitoring has shown there is a significant increase in total invertebrate densities with both distance from the drilling site and time since drilling (Gates and Jones 2012). Currie and Isaacs (2005) found the discharge of water-based drilling muds and associated cuttings modified population densities of species immediately after drilling and was detectable at sampling sites up to 200 m distance from a wellhead. The most pronounced effects were evident within 100 m of the well-head. Changes at 100 m and 200 m became undetectable 4 months post drilling activities. Mercury is associated with the barite that is used as weighting agent in WBM. The concentration of mercury impurities in barite will vary with its origin, however the discharges of mercury to the environment can be minimised by selecting barite with low concentrations of mercury. Selection of barite with low contaminants aims to minimise the potential transfer of mercury from the

Sensitive Receptor	Impact description
	drilling mud to the environment and any subsequent potential bioaccumulation. Barite is not considered harmful when used in accordance with recommended workplace precautions, with disposal considered environmentally acceptable in almost all geographic areas (Bruton et al, 2006). The industry has recognised that discharges of heavy metals may cause environmental damage and potentially human health problems. Due to the allowable and significant discharge of barite-laden drilling fluids, 'most countries' regulatory bodies set maximum allowable levels of heavy metals in barite such as a mercury, cadmium, and lead content. The U.S. Environmental Protection Agency limits mercury at no greater than 1 mg/kg and cadmium at no more than 3 mg/kg and considers heavy metal content below these limits not to impose a significant environmental threat. Based upon the evaluation that there is the potential for biological impacts within conservatively 1 km of the well location, it is recognised that these discharges could potentially result in toxicity impacts to benthic infauna. However, benthic infauna within soft sediment communities are not considered to be restricted to the Operational Area and are well represented in the wider region. Given the drilling activity history at the Skua-11 well location, it is considered likely that disturbance and re-deposition of cuttings piles will occur again when the MODU is in situ and drilling commences. The discharge of cuttings and WBM to sea for this activity will result in some cumulative impacts to the sediment in the contaminant levels but given the nature of the discharges, it is unlikely that this will result in significant impacts to the sediment, and the biota will likely begin to recolonise the areas soon after drilling ceases. In summary, because benthic fauna and communities are known to recover over a longer period of time (months to years), the potential impacts associated with this program is considered to be limited to localised long-term degradation of habitat. Based on past surveys of the region, given the sparsity of benthic communities surrounding the well locations, and given the discharge volume is expected is relatively small, and that cuttings piles from the top-hole section are likely to remain close to the well centre for an extended period, it is considered credible that there may be some smothering and minor toxicity impacts to a localised benthic community but recovery is expected within a few years. Impacts are ranked ***moderate*** (*impacts to localised communities*).
Marine Fauna Mammals, reptiles, whale sharks, sharks, sawfish & rays, listed fish species	The potential for toxicity effects to fish and pelagic organisms, including larvae, due to impacts to water quality will be limited due to the use of WBM with a rating of non-toxic, slightly toxic or low toxicity, therefore the consequence to marine fauna is considered in the context of a sub-lethal, localised nuisance to individual or small populations of marine fauna. Also, given that fish and pelagic organisms are mobile and would have a temporary, transient exposure to the plume, the potential for toxicity effects to occur is considered negligible. Turbidity impacts are also likely to be minimal. Thus, there is the potential for only localised, short-term impact on species from either toxicity or turbidity in the water column. Given the tendency for drill cutting and fluid discharged to the seabed to settle rapidly, the temporary degradation in water quality in the upper water column would rapidly dilute and disperse to below levels that could elicit a toxic response, therefore the impact level to marine fauna is ranked ***minor*** – local effects with recovery in weeks to months. The potential for toxicity effects to fish and pelagic organisms due to impacts to water quality from cement discharges will be limited due to the use of cement additives with a rating of non-toxic, slightly toxic or low toxicity, as per the Jadestone Chemical Selection and Evaluation and Approval Procedure. Furthermore, it can reasonably be assumed that any effects would be limited to a small number of individuals within the immediate vicinity of the discharge location given the minor quantities involved, the expected localised mixing zone and high level of dilution into the open water marine environment. Given the small discharge volumes, localised mixing zone and the mobile nature of fish and pelagic organisms, exposure is expected to be temporary and transient and consequences are ranked ***negligible***.

Sensitive Receptor	Impact description
Avifauna	Diving seabirds could be exposed to increased turbidity and prey contamination. However, such impacts are not predicted at population levels given there are no BIA within the area exposed to the plumes. The drilling discharges pose low risks to avifauna, therefore their potential impacts are ranked ***negligible***.
Commercial fisheries Commonwealth – managed State/Territory – managed	The potential for toxicity effects to commercially valuable fish, including larvae, due to impacts to water quality will be limited due to the use of WBM, cement products and additives with a rating of non-toxic, slightly toxic or low toxicity, therefore the consequence to commercial fisheries is considered in the context of a sub-lethal, localised nuisance to individual or small populations of fish and not the fishery in entirety. Also, given that fish are mobile and would have a temporary, transient exposure to the plume, the potential for toxicity effects to occur is considered negligible. Turbidity impacts are also likely to be minimal. Thus, there is the potential for only localised, short-term impact on fisheries from either toxicity or turbidity in the water column. It is recognised that the offshore waters around the Drilling Activities are within broad spawning areas for commercial fish species including the red emperor and goldband snapper (Section 3). However, given the wide area over which spawning may occur, the extended length of spawning periods and that discharges will be localised and readily diluted and dispersed, the potential for impacts to larval fish and other planktonic communities is limited and will not occur at a population level. Full recovery of plankton (i.e. food chain impacts) is predicted within weeks to months due to the quick biological life spans of plankton and recruitment from unimpacted areas within the tidal changes. Thus, potential impacts to commercial fisheries are ranked ***minor*.**
Consequence	**Ranking**
Negligible	Low

6.6.3 Environmental performance

Aspect		Drilling discharges		
Performance outcome		No unplanned chemical discharges within the Operational Area		
ID	Management controls	Performance standard	Measurement criteria	Responsibility
21	Chemical Selection Evaluation and Approval Procedure (JS-70-PR-I-00033)	Drilling chemicals discharged to the ocean are Gold/ Silver/ D or E rated through OCNS, or PLONOR substances listed by OSPAR, or have a complete risk assessment so that only environmentally acceptable products are used. Only water based drilling muds are to be used.	Chemical risk assessment completed form	Drilling Manager
22	Cuttings management system is installed and functional to ensure discharges overboard are minimised and maximum volumes available for re-use	Cuttings returned to the MODU are treated through the onboard cuttings management system to reduce the concentration of drilling mud on cuttings prior to discharge.	Surface losses as reported on the daily mud report	Drilling Superintendent
23		The shale shakers have API standard screens for solids removal particle size cut points.	Surface losses as reported on the daily mud report	Drilling Superintendent
24		While drilling, the shale shakers are inspected regularly to ensure they are running and are not damaged or binding.	Surface losses as reported on the daily mud report	Drilling Superintendent
25	MODU oily water separator	If brine discharges have an oil in water content greater than 15 ppm, discharge stream will be diverted to the MODU for treatment prior to overboard discharge.	Daily Report: Operational discharges from the MODU have an oil in water content less than 15 ppm	MODU OIM
26	Inventory control work instructions are followed to ensure impacts do not exceed those forecast	Inventory controls in place ensure that minimal stock is brought on board without compromising the minimum stock required to manage any well control or lost circulation issues.	Daily Report	Drilling Superintendent
27		Only water-based mud, brine and drilling water within MODU mud pits that is no longer required will be diverted overboard at the end of the activity. Prior to commencing drilling, an ALARP workshop will be completed with input from suppliers, HSE and drilling to document the decision for unused dry bulks (such as barite, cement and bentonite) at the end of the drilling to ensure that the discharge of	Daily Report Jadestone ALARP assessment including evidence of discussion with industry participants and suppliers outlining alternative options for offshore disposal	Drilling Superintendent

Aspect		Drilling discharges		
Performance outcome		No unplanned chemical discharges within the Operational Area		
ID	Management controls	Performance standard	Measurement criteria	Responsibility
		bulk powders will be avoided or reduced to ALARP during the activity..		
28		The volume of drill cuttings discharged to the seabed will not exceed those volumes defined in the EP.	Daily Report	Drilling Superintendent
29		Barite selected for use is compliant with API standards which includes contaminant limit concentrations. These include the following limits per kg dry weight in stock barite • Mercury (1 mg/kg) • Cadmium (3 mg/kg) • Lead (<2 mg/kg)	Records demonstrate barite selected for use is compliant with API standards.	Drilling Manager
30		Only unusable inventories of cement will be diverted overboard as a slurry	Daily report	Drilling Superintendent
31	Pressure safety valves (PSV) are installed on silos containing bulk dry solids.	Silos are pressure vessels controlled with PSV to prevent over pressuring and rupture of tank/uncontrolled release of dry bulk solids.	PSV Register	MODU OIM
32	MODU/Vessel lifting procedures	All personnel involved with lifting equipment operations and maintenance receive adequate training and are competent appropriate to their level of responsibility.	Training records and competency matrix	MODU OIM Vessel Master
33	Bulk transfer procedures	Bulk solids and liquids transferred in accordance with MODU contractor procedures to reduce the risk of a release to sea. The procedures will include the following requirements: • Certified hoses are used • Valve alignment and visual hose checks occur prior to commencing transfers • Radio communication maintained during transfers between MODU and vessel • Vessels maintain station by DP during transfer procedure	Drilling contractor records	MODU OIM

Aspect		Drilling discharges		
Performance outcome		No unplanned chemical discharges within the Operational Area		
ID	Management controls	Performance standard	Measurement criteria	Responsibility
		• MODU control room monitors tank fill levels or air vents watched to detect tank overfill • One person on watch during transfers.		

6.6.4 ALARP assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to manage cuttings and WBM discharges from the MODU to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Acceptable (refer Section 4). No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
Collection of cuttings returns with residual WBM for onshore treatment/disposal (i.e. no offshore discharge)	Elimination (of offshore impacts)	No	No	Drilling is a requirement of the activity and the resultant drilling discharges cannot be avoided. The option of onshore disposal has been evaluated considering: • Additional fuel consumption (and associated emissions) required by support vessels for transport; • Additional risk exposure to workers due to increased handling and loading activities; • Additional road transport and onshore landfill pressure; • Additional financial cost of approximately $3M AUD; • By contrast, offshore discharge will result in only limited and short-term impact to marine benthos given the no-low toxicity of drill fluids; and • No additional safety risk to personnel. The discharge of WBM cuttings and whole WBM to sea for this activity will result in minimal cumulative impacts to the contaminant levels in the sediment, but given the nature of the discharges, it is unlikely that this will result in significant impacts to the sediment, and the biota will likely begin to recolonise the areas soon after drilling ceases. The impacts are therefore considered to be short term and recoverable and therefore of negligible impact. Given the environmental risk potential associated with offshore cuttings disposal, the elevated risk to personnel safety and the significant additional financial cost associated with backloading cuttings to onshore landfill facilities, Jadestone does not consider this option to be reasonably practicable.
Onshore disposal of dry bulks (such as barite, bentonite and cement) at the end of the drilling program	Elimination	No	No	Jadestone has focused on the effective use of inventory control to minimise the volume of dry bulks requiring disposal at the completion of the drilling program. The objective of effective management of bulk materials is to minimise excess quantities of remaining materials at the end of campaign, whilst ensuring adequate stocks for safe operations and well control contingency are met.

				Jadestone quality control assessment of barite ensures mercury content is minimised by assessment against the API standard. It is the base case that any unused dry bulk drilling products will be on sold or handed to the next MODU operator at the completion of the campaign. This base case will allow any remaining unused dry bulk drilling products to be used downhole. Jadestone have investigated alternative options to minimise the discharge to sea. Backloading the dry bulk powder to vessels is possible for transfer elsewhere for re-use (e.g. to another MODU), with careful consideration of pressure ratings in hoses. There are minimum pressure ratings required, the vessel operators that Jadestone has spoken to in September 2024 stated a minimum of ~50psi to prevent line blockages. This option would require the Titleholder drilling with the MODU in question to accept the bulks. The transfer of bulk powders from vessels to a road tanker onshore is not practiced due to the potential for explosion risks. Discussion with Australian vendors in September 2024 confirmed that they are not currently willing to undertake this activity. This is related to the pressure rating of road tankers, these are typically rated to ~24psi. When delivering the bulk to a bulk tanker, the tanker is open to vent so shouldn't be under pressure but if the vent gets blocked there are small pressure relief valves (PRV) to bleed off (a low vent release system). Vessels would typically transfer bulk powders at pressures from ~ 40 – 80-psi furthermore, the valves they typically have installed are either on or off, so full load is delivered instantaneously and can't be choked back). If at the receiving tanker a blockage occurs at the vent or the delivery cannot be purged fast enough through its PRV, then the tank will exposed to a pressure significantly exceeding its pressure rating causing an explosion risk. An open tank into which the bulk gets delivered into would remove all aspects of the over pressure scenario, but large amount of dust would be generated. A constant water mist deluge system to arrest the dust may be an option but the bulks would not be able to be reused. Discussion with operators in different countries was also undertaken, and generally due to the onshore infrastructure in the likes of the UK, Norway and Gulf of Mexico (for example), the ability to pump bulks from vessels to holding tanks is available. The current infrastructure setup in any Darwin and WA ports does not currently facilitate this. Given the current lack of receiving facilities to

				backload dry bulk powder, this option is not currently considered feasible. Jadestone is aware of industry efforts to develop a solution for this issue and will work with other Titleholders and Suppliers to establish if a feasible solution can be established and if so what the risk, time, effort and cost of such a solution would be to enable an informed ALARP analysis to be undertaken prior to the activity commencing. Dry powder bulks could potentially be removed by hand (literally dug out) by personnel entering tanks on the supply vessel once in Port. However, as this requires significant confined space entry and substantial physical labour in hot humid conditions with large exposure to dust Jadestone considers the risk to personnel to be grossly disproportionate to the environmental benefit achieved, hence not ALARP. Another option is to mix the powders into a slurry and then transfer to vessels for transfer and disposal onshore. To enable transport of the slurry, additional chemicals are required to keep it in suspension, or agitation of the mixture is required. This mixture is dense and therefore more than one vessel may be required to transport the mixture back to shore. In addition confined space entry would be required to clean out any tanks where settling of solids occur (or setting of cement). For the reasons outlined above Jadestone does not consider this to be ALARP. In accordance with Article 9 of the Minamata Convention the best available techniques and best environmental practices shall be utilised to control releases of mercury from relevant sources, where by “best available techniques” means those techniques that are the most effective to prevent and, where that is not practicable, to reduce releases of mercury to water and the impact of such emissions and releases on the environment as a whole, taking into account economic and technical considerations. In addition, “best environmental practices” means the application of the most appropriate combination of environmental control measures and strategies. Given that Jadestone will be using the most appropriate combination of control measures including inventory control to minimise the amount of dry bulk products remaining at the end of the campaign, quality control to minimise the amount of mercury in barite and reusing with subsequent operators (where possible) and given the additional environmental risks and impacts, economic outcomes, and lack of appropriate disposal infrastructure for onshore disposal currently available, offshore disposal of unused drilling products at the completion of the

				campaign is considered to meet the requirements of the Minamata Convention as a last resort if the alternatives considered in an ALARP workshop prior to commencing drilling are not feasible.
Undertake drilling activity in alternate season to potentially further reduce exposure to marine fauna from drill fluids and cuttings	Substitution	Yes	No	Drilling activity timing can be any time of the year. As the impacts are localised and no significant impacts are predicted to marine fauna/habitats or socio- economic receptors, any restriction on timing results in an unacceptable cost for little environmental benefit. Not delaying the timing of this activity is important to allow the well to be restored to full integrity. Mitigating the chance of a loss of containment to the environment. Given the considerations above, any restriction on activity timing would not be considered reasonably practicable and would not achieve any significant environmental benefit by being seasonally specific.
Reinjection of cuttings downhole	Isolation	N/A	N/A	Reinjection of cuttings would reduce the potential impact of discharges to sea. However, this is not technically feasible in a subsea well.
Extended cuttings dump chute to below sea surface	Engineering	N/a	N/a	Releases drilled solids (cuttings) deeper in the water column, thereby potentially reducing spatial extent and turbidity plume. The use of a chute does not materially change the environmental outcomes given that cuttings either fall vertically into the sea and thereafter through the water column or vertically through a cuttings chute and thereafter through the water column; a chute does not reduce the volume of cuttings discharged. A chute system introduces higher costs and operational risk. Significant cost associated with engineering, fabricating and/or installing chute. Potential delays if chute becomes blocked. Higher operational risk. Increased depth of concentrated cuttings deposition may inhibit infauna recovery at seabed. Given the low environmental impact of the cuttings discharged (due to the chemicals selected) and the short duration of discharge in an area that is not identified as significant habitat for marine fauna, the additional cost is considered disproportionate to the environmental benefit.
Riserless mud recovery (RMR)	Engineering	N/a	N/a	The use of RMR system to bring the WBM drilling fluids back to the MODU for removal may reduce impacts from smothering and sediment quality reduction. However, RMR increases the suspended sediment in the water column as the cuttings are subsequently discharged from the MODU. Cost associated with changes to equipment and change to the well design. RMR equipment requires additional space on the MODU and additional POB. RMR introduces additional operational/maintenance and risk and additional running time.

				There is also more opportunity for equipment failure. To reduce this possibility, additional inventory of spare parts is required to be on board as well as additional maintenance requirements and competency skills in personnel. Considering the negligible consequence to the marine environment from WBM fluids discharge on cuttings at the seabed, any negligible environmental benefits gained from the implementation RMR are considered disproportionate to the costs and risks associated with RMR system installation and use. The additional RMR management costs and drilling downtime risks are considered disproportionately high to the low environmental benefits. Cost outweighs the benefit.

6.6.5 Acceptability assessment

The impacts of drilling discharges are considered acceptable in accordance with Section 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	With a commitment to using only low toxicity fluids additives during the activities, as well as Jadestone's mitigation and management measures – including design of the well to minimise volumes of cuttings generated and mud/cuttings – a reduced environmental impact footprint is achieved. Jadestone's HSE Policy objectives are met. Section 8 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholders & reputation	Stakeholder consultation has been undertaken (Section 4), and no stakeholder concerns have been raised with regards to impacts from drilling discharges on sensitive receptors.
Industry best practice	The APPEA Code of Environmental Practice (CoEP) (2008) objectives are met with regards to offshore drilling activities. Jadestone Energy apply 'Industry Best practice" in relation to assessment of chemicals for offshore discharge in alignment with guidance provided by the Centre for Environment, Fisheries and Aquaculture Science (CEFAS). CEFAS administer the Offshore Chemical Notification Scheme (OCNS) and apply the Chemical Hazard and Risk Management (CHARM) model to rank offshore chemicals: https://www.cefas.co.uk/. The Jadestone Chemical selection procedure uses this to preferably select lower toxicity chemicals. World Bank Group – Environmental, Health, and Safety Guidelines Offshore Oil and Gas Development – Drilling Fluids and Drilled Cuttings Guidance Number 53 requires that the direct loss system is to be considered an interim solution for the first drilling phase and applied only when the chemical content is low and water-based drilling mud is used. Environmental, Health, and Safety Guidelines Offshore Oil and Gas Development – Drilling Fluids and Drilled Cuttings Guidance Number 59 requires that operators carefully select drilling fluid additives, considering their concentration, toxicity, bioavailability, and bioaccumulation potential. Environmental, Health, and Safety Guidelines Offshore Oil and Gas Development – Emissions and Effluent Guideline Number 134 (Table-1) presents effluent guidelines for offshore oil and gas development. Guideline values for process effluents in this sector are indicative of good international industry practice, as reflected in the relevant standards of countries with recognized regulatory frameworks: • Hg: max 1 mg/kg dry weight in stock barite; and • Cd: max 3 mg/kg dry weight in stock barite

	Environmental, Health, and Safety Guidelines Offshore Oil and Gas Development – Drilling Fluids and Drilled Cuttings Guidance Number 59 requires that operators use high-efficiency solids removal and treatment equipment to reduce and minimise the amount of residual fluid on drilled cuttings. The industry-standard cuttings treatment technology comprises shakers, cuttings dryers, and centrifuges. Shakers separate fluids from solids, thus reducing the overall volume of adhered drilling fluids discharged – as applicable to WBM.
Environmental context & ESD	The environment around the wells is well understood and described in Section 3 of the EP. Further, a detailed risk assessment has been undertaken to evaluate the potential impacts and risks of this activity's particular values and sensitivities within the vicinity of the drilling and wider operational EMBA. A conservative extent of impact has been used for the activity based on recent available literature. The potential impact is considered acceptable after consideration of: • Potential impact pathways: Section 6.6.2 assesses the pathways and consequences of localised impacts to the immediate wellhead seabed and temporary degradation of water quality; • Preservation of critical habitats: no impacts on Protected Areas or aggregation of sensitive receptors; • Assessment of key threats as described in species and Area Management/Recovery plans: see Conservation and Management Advice' below; • North-West Bioregional Plan: The Plan considers drilling cuttings and muds as potential concern to KEFs – specifically Seringapatam Reef and Commonwealth waters in Scott Reef complex, Rowley Shoals and Ningaloo Reef) – none of which are impacted from drilling discharges; and • Principles of ESD: no impacts from drilling cuttings and muds beyond 'negligible' to population levels hence biological diversity or ecological integrity, no irreversible damage.
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 drilling discharges will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state MPs. This is consistent with the objectives of the protected area management plans and considered acceptable.
ALARP	The residual risk has been demonstrated to be ALARP.

6.7 Interaction with Other Users

6.7.1 Description of Hazard

Aspect	The presence of vessels within the Operational Area (2 km) around the Skua-11 well creates a localised disturbance for other users of the area including commercial and recreational fishers, and shipping traffic, however the 500 m PSZ is already in place and marked as restricted on nautical charts and therefore is not additive for this activity.

6.7.2 Impacts

Sensitive receptor	**Impact description**
Social receptors	
Fishing Shipping	The temporary presence of support vessels and the MODU within the Operational Area and restricted zone (PSZ) will result in the preclusion of other users including commercial and recreational fishers, and commercial shipping traffic, of using the area for their purposes. It should be noted that the PSZ around Skua-11 is well established, having been in place since the well was originally drilled (2008). In addition to the Skua-11 subsea well, the Skua-10 subsea well exists within the Operational Area, although Jadestone is the owner/operator of this well. Commercial and recreational fishing is permitted to occur in the vicinity of the Skua-11 well (refer to Section 3.6 for information on State and Commonwealth fisheries permitted to operate in the vicinity of the Operational Area), although the existence of the 500 m PSZ around Skua-11 well means that relevant commercial and recreational fishers are unable to work the area of the restricted zone. Commercial and recreational fishing effort is not anticipated within the Operational Area as the area does not represent important habitat for targeted species, such as natural seabed features (e.g. rocky outcrops or coral reef). No feedback during consultation of relevant persons, including commercial fishers, was received indicating that impact to commercial fishers has or will result from the MODU being on location for completion of the drilling activities. The presence of the MODU, and the movement of support vessels, present obstacles for shipping traffic in the region and are potential navigational hazards and a collision risk. The Operational Area and MODU will be located at least 100 km away from the nearest shipping route and approximately 20 km away from the Montara WHP and FPSO, so it is not anticipated there will be high commercial shipping traffic in the immediate area that will be affected (refer to Section 3.6 and Figure 3-7 for details on commercial shipping, including shipping routes). Any detour by shipping traffic that may occur is considered negligible in comparison to the area available for vessels to navigate through. It is considered extremely unlikely that other users in the area will be impacted in any way by the presence of the MODU or the support vessels and no cumulative impacts from the MODU being within the same exclusion zone as the Skua-11 well PSZ are expected. It should also be noted that the proposed activities under this EP are short in duration, with the activity anticipated to take approximately 66 days, after which only the existing subsurface infrastructure will remain in place.
Consequence	**Ranking**
Negligible	Acceptable

6.7.3 Environmental Performance

Aspect		Interaction with other users		
Performance outcome		**Recreational and commercial fishers, and shipping traffic are aware of the Petroleum Safety Zone (PSZ), Operational Area and associated activities**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
34	Navigational charts and communications depict the location of activities and 500 m petroleum safety zone	AMSA hydrographic charts: Skua-11 well location is marked on relevant Aus-Charts, including the associated 500 m PSZ.	AMSA hydrographic chart demonstrating the location of Skua-11 well and associated PSZ.	Drilling Superintendent
		AHS Notice to Mariners will be issued prior to relevant Skua-11 well drilling activities.	Issue of relevant Notice to Mariners.	Drilling Superintendent

35	Activity vessels equipped and crewed in accordance with Australian maritime requirements (administrative control)	Vessels will be equipped and crewed in accordance with the *Navigation Act 2012* (Cwlth) (as applicable for vessel size, type and class), including implementing:
		• Marine Order 21 (Safety and emergency procedures), including:
		  ○ safety measures such as manning and watchkeeping.
		• Marine Order 27 (Safety of navigation and radio equipment), including:
		  ○ radio equipment and communications
		  ○ navigation safety measures and equipment
		  ○ danger, urgency and distress signals and messages.
		• Marine Order 30 (Prevention of Collisions), including:
		  ○ lights and signals as applicable to vessel class per COLREGS requirements.
		• Marine Order 71 (Masters and Deck Officers), including:
		  ○ all master, mate and watchkeeper officer duties undertaken by crew certified as applicable to vessel class per STCW requirement.
			A Minimum Safe Manning Certificate is in place and identifies minimum crew qualifications to meet the STCW requirements (as applicable for vessel size, type and class).
			
			Records of marine vessel vetting process (as applicable for vessel size, type and class) to demonstrate the following:
			• Global Maritime Distress and Safety System (GMDSS) radio logbook maintained
			• radio equipment available, working and tested at regular intervals
			• electronic and paper based charts are available on the bridge.
			
			A Vessel Cargo Ship Safety Equipment Certificate demonstrates the vessel has lights, shapes and means of making sound signals and distress signals in accordance with COLREGS requirements (as applicable for vessel size, type and class).
				MODU OIM
				Vessel Master

Aspect		Interaction with other users		
Performance outcome		**Recreational and commercial fishers, and shipping traffic are aware of the Petroleum Safety Zone (PSZ), Operational Area and associated activities**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
			Records of vessel crew STCW qualifications align with the Minimum Safe Manning Certificate (as applicable for vessel size, type and class).	
			Non-compliance with relevant Marine Orders 21, 27, 30 and 71 and corrective action undertaken documented (as applicable for vessel size, type and class).	
36	Consultation for Environmental Approvals procedure (JS-70-PR-I-00034)	Relevant persons identified according to current Regulatory requirements.	Consultation records	Drilling Manager
		Relevant persons provided a minimum 4-week period to respond to proposed planned activities.		
		If there is a potential change in the risks or impacts to relevant persons due to planned activities relevant persons are to be consulted prior to the activity commencing.		
		Relevant persons provided information 4 weeks prior to commencement of activities to provide a specified timeframe and assets that will be present for the drilling activities including commercial fishing license holders.		
37	Speed restrictions within the PSZ	Vessels operating within the PSZ must not exceed a speed of five (5) knots.	Project induction material for Vessel Masters and First Mates includes an environmental requirements section that details speed limit requirements.	Logistics Superintendent

6.7.4 ALARP Assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to reduce as far as practicable the imposition due to the physical presence of the MODU and support vessels to activities undertaken by relevant persons in the area. The residual risk ranking for this potential impact is considered Low, and therefore ALARP has been demonstrated, no further controls are required. Additional controls considered but rejected are detailed below.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
Removal of MODU	Eliminate	No	No	To not be physically present is not an option. Without the presence of MODU (or similar rig) the required drilling activities would not be possible.
Conduct drilling activities using a different platform	Substitute	No	No	Any drilling activities, require the physical presence of a drill rig, substituting to a different form of drilling rig will not change the risk profile for interactions with other operators.
None identified	Engineering	N/A	N/A	The drilling activities are located outside of shipping fairways and are not positioned in highly prized fishing habitat.
Dedicated guard vessel in place	Isolation	No	No	A supply vessel will be on site at all times, as per the MODU safety case, although the function is not solely as a dedicated guard vessel. The costs of a dedicated guard vessel are grossly disproportionate to benefit, given the location of the activity and the low usage by commercial fishers, shipping or tourism.
Additional activity specific navigational or communications requirements	Administrative	No	No	The MODU 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 MODU location and movement will occur. Additional procedures would provide no further benefit.

6.7.5 Acceptability Assessment

The potential impacts of the MODU and associated drilling activities on other users 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 compliance	Jadestone's HSE Policy objectives are met.
Management system compliance	Section 8 demonstrates that Jadestone's HSE Management System is capable of continuously reviewing and updating activities and practices at the MODU to reflect the requirements of relevant persons.
Social acceptability	Stakeholder consultation has been undertaken (see Section 4), and no stakeholder concerns

	have been raised with regards to impacts of the MODU on relevant persons.
Laws and standards	The location of Skua-11 well and associated PSZ will remain charted on Australian Hydrographic Service (AHS) nautical charts, and navigation and communication equipment is in place and operable on the assets, as per AMSA's requirements. Activity vessels will be equipped and crewed in accordance with Australian maritime requirements.
Industry best practice	Stakeholders have been provided information on the intended location and timing of the drilling activities.
Environmental context	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. The potential impact is considered acceptable after consideration of principles of ESD.
Conservation and management advice	No management plans identified physical presence as described above as being a threat to other users. Jadestone Energy has had regard to the representative values of the protected areas within the EMBAs, 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 and considered acceptable.
ALARP	The residual risk has been demonstrated to be ALARP.

6.8 Spill Response Activities

6.8.1 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 Skua-11 ST1 Well Drilling OPEP (TM-50-PLN-I-00006) 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 and potentially a MODU 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 (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);
	• Operational discharges including those routine discharges (Section 6.5) from vessels and MODU 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; and
	  ○ Creation, storage and transport of oily and contaminated waste;
	• 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; and
	• Oiled wildlife response activities may involve deliberate disturbance (hazing), capture, handling, cleaning, rehabilitation and release of wildlife.

6.8.2 Impacts

The OPEP provides detail on how response strategies will be implemented.

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 the OA.

Light

Spill response activities will use vessels and potentially a MODU, 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 and/or their 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 3.5), have been identified as key fauna susceptible to lighting impacts that occur within the EMBA. Section 6.2 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 Reef and Cartier Island.

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 6.3 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 3-7).

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 Reef, Scott Reef, Browse Island and Cartier Island (Figure 3-8).

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 (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). Emissions will result in localised decrease in air quality. Section 6.4 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 6.5. 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 would already be contaminated with hydrocarbons there would be 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 of the environment in these 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 communities.

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, bony fish, manta rays and sharks, including 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 7.6.

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 6-5: Impact assessment of spill response activities

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. Section 6.2 provides further detail on the nature of light impacts to fish, birds and marine turtles. 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 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***. Turtle 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, Cartier Island, and Hibernia Reef (priority receptors), however light impacts to the key values within the

Sensitive Receptor	Impact description
	applicable Management Plan are also expected to be ***Negligible*** due to the reasons described above.
Noise	The receptors considered most sensitive to vessel noise disturbance are cetaceans. The humpback whale and Pygmy blue whale (distribution) BIAs overlap the EMBA and species may be vulnerable during their peak activity season (July–October; April – Aug) as they migrate north/south through the EMBAs (Section 6.3). 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 consistent with noise impacts from activities (***Negligible***). Section 6.3 provides further detail on these impacts from vessels and the MODU. With respect to noise from onshore operations (mobile equipment and vehicles), nesting, roosting or feeding birds are considered the most sensitive to noise, in particular, shorebirds aggregating at, WA, NT and Indonesian coast lines. However, the equipment used is not considered to have excessive sound levels and following consultation with DoT and DBCA 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***.
Atmospheric	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. 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 and 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. If 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 Protected Areas, though impacts to the key values within the Protected Area due to discharges from response activities are 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

Sensitive Receptor	Impact description
	of shoreline and shallow water habitats, and bathymetry, and the establishment of demarcated areas for access and anchoring 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 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 to DoT, DBCA 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** 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 and NT Oiled Wildlife Response Plans and the Kimberley Region Oiled Wildlife Response Plan. **Physical disturbance in protected areas** 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 considered ***Minor***.
Invasive Marine Pests-IMP	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 pest is considered Major in the nearshore/coastal environment, which is more conducive to establishment of invasive marine pests 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, it is considered that the additional impact of spill response activities on affected industries would be ranked ***Minor***.
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, bony fish, manta rays and sharks, including threatened/migratory species, which may ingest oil or uptake toxic compounds across gill structures. As a result of increased hydrocarbon exposure to marine fauna

Sensitive Receptor	Impact description
	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 7.6.

6.8.3 Environmental performance

The OPEP contains environmental performance measures for spill response preparedness and implementation.

6.8.4 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).

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).

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 principle, 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 7.6.

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.

6.8.5 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 & management system compliance	Jadestone's HSE Policy objectives are met. Section 8 and the OPEP demonstrate that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity including spill response arrangements.
Stakeholders & reputation	Stakeholder consultation has been undertaken (Section 4), 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, DER) will occur and thus there will be ongoing consultation with relevant persons during response operations.
Environmental context & ESD	The worst-case credible spill scenario for the activity is a loss of well control at Skua-11 well resulting in a spill of 68,047 m^3 over 90 days (Section 7.5). 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: pathways and proposed management are described under individual activities and aspects in Section 6.8.2; • Preservation of critical habitats: described under individual Tactical Response Plans, and ALARP measures considered (Section 6.8.4) to ensure response activities do not increase the risks to critical habitats from spills; • Assessment of key threats as described in species and Area Management /Recovery plan: see 'Conservation and Management Advice' below; • North-West Bioregional Plan: no specific discussion of spill response activities but impacts such as light, noise, vessel discharges, collision with fauna etc are discussed individually under the planned aspects above. The toxicity to marine life from dispersants is noted. As such, the proposed management controls to minimise impacts under this EP, are aligned with the objectives of the NW Bioregional Plan; and • Principles of ESD: Operational NEBA assessments ensure the environmental impacts are neutral or positive; thus, potential impacts to biodiversity and ecosystem integrity are minimised.
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 State Hazard Plan (SHP) Maritime Environmental Emergencies (MEE), 2023.
	• DoT Offshore Petroleum Industry Guidance Note Marine Oil Pollution: Response and Consultation Arrangements, July 2020.
	• DoT OSCP (2015)
	• 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 (2020). ITOPF Members Handbook 2023
	  ○ 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. (2015) A Guide to Oiled Shoreline Clean-up Techniques: Good practice guidelines for incident management and emergency response personnel
	  ○ IPIECA-IOGP. (2023) Oil spill Exercises: Good practice guidelines for the development of an effective exercise programme
	  ○ 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 (OSR) handbooks including:
	  ○ Shoreline operations handbook
	  ○ Containment and recovery handbook
	  ○ Dispersant application field guide.
	• WA Oiled Wildlife Response Plan (WAOWRP) (DBCA, 2022a) and accompanying WA Oiled Wildlife Response Manual (WA OWR Manual) (DBCA, 2022b).

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 MPs impacted by spill response activities to ensure that the objectives of the management plans are not contravened. Noting 'Emergency response' is permitted in all AMPs and State MPs. 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 of National Parks will be notified in the event of an oil pollution incident that occurs within, or may impact upon, an Australian MP and, so far as reasonably practicable, prior to a response action being taken within a MP. The Management Plans for EPBC protected species that identify light, noise and other risks through Sections 6.1 to 6.8 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.
ALARP	The residual risk has been demonstrated to be ALARP.

7. Unplanned Risks

This section of the EP describes the potential risks and environmental impacts from accidental events that may arise during the Skua-11 ST1 well drilling activities and associated mitigation and management measures that will be implemented to reduce risks and impacts to as low as reasonably practicable and acceptable levels.

The environmental risk assessment process identified five accidental environmental risks, summarised in Table 7-1 and presented in detail throughout this section.

Table 7-1: Summary of the environmental risk assessment ranking for accidental events

Hazard	Residual Ranking
Marine pest introduction and establishment	Low
Interaction with fauna	Low
Unplanned release of solids overboard	Low
Unplanned release of non-hydrocarbon liquids	Low
Unplanned release of crude oil or gas	Medium
Unplanned release of diesel	Low

7.1 Marine Pest Introduction

7.1.1 Description of hazard

Invasive Marine Pests (IMP)	Biofouling on immersed surfaces (e.g. ship hulls), floating/immersible equipment and within internal seawater circulation systems, as well as ballast water, are potential pathways for invasive marine pests (IMPs) to translocate on support vessels and the MODU. Excluding tows between the MODU locations, the MODU will be a stationary facility within the Operational Area, located further than 12 NM from the nearest land and in water depths of approximately 80 m. Prior to arriving in Australian waters, the MODU will be required to exchange ballast waters in an open sea area. There is the potential for support vessels to transfer IMPs from international waters into the Operational Area and for them to establish in the local environment. There is a smaller risk of transfer of IMPs from Australian waters. There is also a theoretical potential for IMPs to be transferred into Australian Territory and coastal waters via support vessels when commuting from the Operational Area to/from State/Territory or Commonwealth waters.

7.1.2 Impacts and risks

The introduction and establishment of IMPs can result in impacts 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; and
- Increased requirement for maintenance of vessels and marine infrastructure.

Potential sources for the transfer and establishment of IMPs 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 and anchor cable lockers);
- Biofouling on equipment that routinely becomes immersed in water (including but not limited to equipment such as conductor casing and ROVs); and
- Discharge of high-risk ballast water taken up from 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 (DAWE 2020).

There are three key steps involved for a successful IMP incursion:

- Colonisation and establishment of the IMP 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; and
- Colonisation (e.g. reproduction or dislodgement) of the recipient region by the IMP, followed by successful establishment of a viable new population which then constitute a 'pest' presence (Commonwealth Government, 2009).

Colonisation requires suitable environmental conditions for that particular species including water temperature, water depth, salinity and habitat type. As such, most exotic marine species introduced to Australian waters have distributions restricted to shallower coastal habitats. 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.

Following their establishment, eradication of marine pest populations is often extremely difficult and costly, limiting management options to ongoing control or impact minimisation. For this reason, increased management requirements have been implemented by Commonwealth and State/.Territory agencies with the implementation of Australia's National System for the Prevention and Management of Marine Pest Incursions which focusses on managing biofouling and ballast water.

Biofouling

Under the National Biofouling Management Guidelines for the Petroleum Production and Exploration Industry (DAWR 2009), a risk assessment approach is recommended to manage biofouling.

The Australian Biofouling Management Requirements (the AMBFR, DAFF 2023) set out vessel operator obligations for the management of biofouling when operating vessels within Australian territorial seas to comply with the *Biosecurity Act 2015*. These requirements apply to all operators of vessels subject to biosecurity control and provide guidance for vessel operators on best practice biofouling management.

Operators of all commercial vessels subject to biosecurity control must provide information relating to biofouling management through the mandatory pre-arrival report (PAR). This information is reported through the department's Maritime and Aircraft Reporting System (MARS). The department uses the information to target vessel interventions.

In accordance with the ABMFR (DAFF 2023), from 15 June 2022, all operators of vessels intending to enter Australian territorial waters must also provide information relating to biofouling management as part of the pre-arrival reporting via MARS.

The potential biofouling-mediated IMP transfer risk presented by vessels (including MODUs), is influenced by a number of inter-playing factors. These factors include the type and age of the anti-fouling coating, operational and maintenance history since last drydocking (including where the vessel had been operating),

length of time intended to operate in Australian coastal waters and whether the vessel has undergone biofouling inspection and/or cleaning prior to entering 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, as may be warranted, a Marine Biosecurity Inspection for the purposes of assessing the presence of known and potential IMPs to ensure compliance with Regulation 176. The responsible agency, the WA Department of Primary Industries and Regional Development (DPIRD) has promulgated a list of declared marine pest species.

The MODU will have been inspected and verified to be clear of biofouling-mediated IMP at the time of entry into Australian waters, and this is one of the foundations upon which the selected MODU will be contracted for the activity. The MODU will arrive into the Operational Area in a condition considered to be free of biofouling representing a marine biosecurity hazard to Australian waters.

None of the WA listed marine species of concern should be present on any vessel intended to visit WA waters due to legislated management requirements. In accordance with marine pest management guidelines (as enforced under the *WA Fisheries 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 vessels enter WA waters and ports;
- To minimise risk, a vessel should leave its last overseas port of call within seven days of the last anti-fouling coating application or IMP inspection, prior to direct transit to its target port/area in WA waters. If experiencing delays or deviations, you should seek advice from the Department; and
- 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.

Ballast water

The Commonwealth Department of Agriculture, Fisheries and Forestry (DAFF: formerly the Department of Agriculture and Water and the Environment [DAWE]) is the lead agency for management of ballast water, with responsibility for the management of ballast water sourced both from international and domestic (i.e. Australian) locations. DAFF issued the Australian Ballast Water Management Requirements (DAWE 2020) that are enforced under the *Biosecurity Act 2015* (as amended). Under these arrangements, all vessels that intend to discharge ballast water in Australian waters are obligated to assess and manage their ballast water in accordance with DAFF requirements. These arrangements prohibit the discharge of high-risk ballast water within Australian territorial seas (within 12 NM of the Australian territorial sea baseline) unless the ballast water has been managed to the satisfaction of DAFF or is otherwise assessed to be 'low risk', and prior approval has been obtained for that discharge. By extension, all vessels (including MODUs), mobilised for the project and intending to discharge ballast water within the Australian territorial sea (i.e. within 12 NM of the Australian territorial sea baseline) will be required to manage ballast water to the satisfaction of DAFF. For the MODU and support vessels, unless treated with an approved ballast water treatment system, this would entail the conduct of ballast water exchange 'on the high seas' to the satisfaction of DAFF before arrival in Australian waters.

A MODU typically takes on ballast (including from international waters – such as after dry-docking) and de-ballasts as required (e.g. during mobilisation/demobilisation) to maintain stability and to spud-in effectively. In accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention) vessels (including the MODU), should have Ballast Water Management Plans and Ballast Water Record Books which detail the arrangements in place to manage ballast water and record the time, location and details of any uptake and discharge of ballast water.

The DAFF requires vessels that operate between Australian ports and offshore oil and gas installations within the Australian Exclusive Economic Zone (EEZ) to manage their ballast water before arrival at both the installation and the Australian port. The acceptable area for a ballast water exchange between an installation and an Australian port is in sea areas that are no closer than 500 m from the offshore installation, and no closer than 12 NM from nearest land.

Ballast water discharged in the same place where the ballast water is taken up is considered low risk. There is no requirement to manage ballast water that is taken up and discharged in the same place if the low risk water is at least 95% from the 'same place' defined as within one nautical mile of the point of uptake, or within the port limits of the same port.

Given that the MODU will exchange ballast water before entering Australian waters and will then be discharging low risk ballast water/taking up seawater at location, no adverse impacts to marine ecology are expected.

Support vessels are similarly required to adhere to Australian ballast water management requirements, as detailed in the *Australian Ballast Water Management Requirements, Version 8*. As such and assuming adherence to mandatory Australian requirements, no adverse effects are expected from the discharge of ballast water by support vessels engaged in the drilling activity.

Sensitive Receptor	Impact description
Benthic habitats	The Operational Area benthic habitat comprises soft sandy sediments in 70 to 80 m water depth, open ocean conditions and lacking abundant light at this depth. The only hard substrate available is that associated with the WHP and subsea infrastructure such as flowlines. Given these conditions, the successful establishment of introduced species on the natural habitat is considered unlikely. There is a possibility of establishment on the artificial substrate in the area, but this too is considered to be unlikely. If IMPs were introduced and established successfully on the benthic habitat, it could result in an overall change in localised areas and some degradation of the ecosystem. The potential impact was assessed as ***Moderate*** *Local effect; recovery in months to a year; impact to localised community* as impacts could result in potential mortality to fauna associated with the benthic habitat, with impacts likely localised to within approximately 1 km of the activity.
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 and reproduce in water depths of the Operations Area. However, if IMPs were established, it may have a ***Moderate*** impact – *Local effect; recovery in months to a year; impact to localised community.*
Likelihood assessment	
	Asian green mussel, American slipper limpet and Black striped false mussel were detected in Darwin marinas in 1999 and were successfully eradicated. No recognised marine pest species are known to be established in Darwin harbour. Within Western Australia, the State-Wide Array Surveillance Program (SWASP) is responsible for surveillance of Introduced Marine Pests within ports including the Port of Broome, Port of Dampier and Port of Port Hedland. Results of the surveillance programs are reported through the Department of Primary Industries and Regional Development. As vessels operating from Darwin or Western Australia are expected to have arrived there free of IMPs, it is therefore unlikely that they would acquire any pest species from Darwin or Western Australia. Furthermore, it is not likely that IMPs entering the Operational Area would establish on the benthic habitat (soft sediments). The water depth, open ocean conditions and lack of available light provides a very different environment to that within sheltered port and shallow coastal areas which have historically been colonised by IMPs. Some possibility exists of establishment on the artificial substrate in the area, but if so, such colonisation would in all

	probability be confined to the artificial substrate. The likelihood of a potential introduction and establishment of IMPs is considered R*are* for this location with the intended controls in place.

Consequence	**Likelihood**	**Ranking**
Moderate	Rare	Low

7.1.3 Environmental performance

Hazard		Marine Pest Introduction		
Performance outcome		**No introduction of marine species**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
38	Vessels and MODUs comply with the Biosecurity Manual (JS-70-MN-G-00001)* Vessels comply with Australian Ballast Water Management Requirements (DAWE 2020) Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements (DAFF 2023). MODU/vessels to be sourced from Australian waters where available. Vessel Anti-foulant system maintained in compliance with International Convention on the Control of Harmful Antifouling Systems on Ships, where applicable.	All vessels and MODUs demonstrate compliance with the biosecurity manual requirements. Documented evidence of effective management of ship biofouling, consistent with National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (CoA, 2009). Documented evidence of compliance with DAWE (2020) Ballast Water Management Requirements.	Ballast Water management plan and records Biofouling record book Vessel Check completed	MODU OIM Vessel Master

** The biosecurity manual applies to all marine vessel (with the exception of offtake tanker activities) and MODU 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 and MODUs contracted to perform marine operations.

b) Prevent the introduction of Invasive Marine Pests (IMP) 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 (including MODUs) 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 IMPs being introduced to the Operational Area to As Low as Reasonably Practicable (ALARP).

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 IMPs being introduced and getting established to the level of ALARP. The residual risk ranking for this potential impact is Low. Good industry practice has been applied for the situation or risk. Additional controls were considered but rejected as detailed below. No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
Follow-up marine pest inspection around 75 days after arrival if the vessel is still in WA waters	Isolation	No	No	The objective is to ensure that vessels and the MODU engaged in project activities are free of IMPs at the time of mobilisation. Accordingly, the residual risk of IMP is considered low due to inspection and cleaning controls and the need for any follow-up inspections of vessels 75 days after arrival is negated. If any IMP enters the Operational Area, the nearest habitat is the WHP structure or the benthic habitat (sandy seabed) and the environment is hostile compared to sheltered port and shallow coastal areas which have historically been colonised by IMPs.
Application of new anti-fouling coating to all vessels prior to contract commencement	Engineering	No	No	Substantial additional cost, potential delay to commencement of activity. Little benefit given the requirement to rank as low risk using the IMP 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 biocides are prohibited from use in Australia.

7.1.5 Acceptability assessment

The potential impacts of marine pest introduction are considered 'Acceptable' as the residual risk is Low 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 & management system compliance	Section 8 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 & reputation	Stakeholder consultation has been undertaken (Section 4), and no stakeholder concerns have been raised. Jadestone will continue to liaise with the WA Department of Primary Industries and Regional Development (Fisheries) or the NT Aquatic Biosecurity Unit on current requirements for the management of the risk of marine pest introduction in WA and NT waters respectively.
Law and industry best practice	The implementation of a Biofouling Management Plan and the maintenance of a Biofouling Record Book are consistent with the National Biofouling Management Requirements (2023), and in the IMO Guidelines for the Control and Management of Ships' Biofouling to Minimise the Transfer of Invasive Aquatic Species. Ballast water management will be consistent with the requirements of the Biosecurity Act 2015, as detailed in the *Australian Ballast Water Management Requirements, Version 8*.

Environmental context & ESD	Section 7.1.2 notes it is unlikely that IMPs entering the Operational Area will establish and propagate. The potential residual risk is considered acceptable after consideration of: • Potential impact pathways: section 7.1.1 and 7.1.2 assess risks from biofouling and ballast water; • Preservation of critical habitats: activities are remote from Protected Areas and shallow water, protected environments where the establishment of IMPs is more likely; • Assessment of key threats as described in species and Area Management/Recovery plans: See 'Conservation and management advice' below; • North-West Bioregional Plan: The NW Bioregional Plan mentions the potential for Asian green mussels *Perna viridis* to cause damage in Commonwealth waters of the NW Marine Region, but these mussels typically prefer habitat less than about 12 m deep. The proposed management actions align with the NW Bioregional Plan objectives by minimizing the risks; and • Principles of ESD: the proposed management of biofouling and ballast water risks minimizes the likelihood to adverse effects on biodiversity and ecosystem integrity from invasive species.
Conservation and management advice	Application of guidelines detailed in the National Biofouling Management Requirements (2023), 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 Operational Area, and the respective management plans and other published information. Impacts from any hypothetical successful establishment of marine pests will not impact on any of the social and ecological objectives and values, of any AMPs, or state MPs. This is consistent with the objectives of the protected area management plans and considered acceptable.
ALARP	The residual risk has been demonstrated to be ALARP.

7.2 Interaction with Fauna

7.2.1 Description of hazard

Interaction with fauna	The physical presence and the movement of support vessels and helicopters in the Operational Area increases the potential for physical or disruptive interaction with marine fauna.

7.2.2 Impacts and risks

Potential impacts to marine fauna and avifauna may occur as a result of:

- The physical presence of the MODU; or
- Vessel and helicopter movements associated with drilling operations.

Potential physical and behavioural impacts may range from temporary and localised displacement to injury or mortality from vessel strike.

Impacts to marine fauna associated with noise are assessed in Section 6.3 and impacts to marine fauna associated with light are assessed in Section 6.2.

Physical Presence

Fauna most susceptible to vessel strike include cetaceans, whale sharks, turtles and birds and this is reflected as a threat in many of the conservation advice and recovery plans for these species . Migratory species such as seabirds may experience localised and short-term effects through behavioural changes; such as roosting on platforms, 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). 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. Other fauna such as fish and sea snakes are more likely to avoid vessels and so are considered at low risk of potential strike and will not be discussed further.

Marine Mammals

Cetaceans are naturally inquisitive and 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). The data indicates deaths are more likely associated with container ships and fast ferries. Collisions between vessels and cetaceans are more frequent on continental shelf areas where high vessel traffic and cetacean habitat occur simultaneously (WDCS 2006).

The reaction of whales to the approach of a vessel is variable. Some species remain motionless when in the vicinity of a ship while others are known to be curious and 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). 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).

The Conservation Management Plan for the Blue Whale (DoE 2015) identifies vessel strike as a threat to the species. The Operational Area does not intersect any BIAs or known aggregation areas for marine mammals.

Marine Turtles and Sharks (Whale Sharks)

Marine fauna like turtles and whale sharks that are present in shallow waters or surface waters are susceptible to vessel strike due to their proximity to the vessel (hull, propeller or equipment), presence at the surface (breathing, basking etc) 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 (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 listed or migratory bird species transit the Operational Area, the worst-case consequence of a bird strike with a helicopter would be a fatality of individuals with no lasting effects to populations.

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 2004). 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. A study on collisions between ships and whales (Laist et al. 2001) 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. Project vessels within the Operational Area are likely to travel at speeds of 5 knots or less (and will often be stationary) unless operating in an emergency. Vessel-whale collisions at this speed are uncommon and based on data contained in the US National Ocean and Atmospheric Administration database (Jensen and Silber 2004), there were only two known instances of collisions when a vessel was travelling at less than 6 knots, both of these were by whale watching vessels intentionally positioned amongst whales. 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

Sensitive Receptor	Impact description
	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 potentially occur or have habitat in the Operational Area: the sei whale, blue whale and fin whale (Section 3.5.5). Although Vessel strike is identified within relevant conservation and recovery plans, there are no known key aggregation areas (resting, breeding or feeding) located within or immediately adjacent to the Operational Area; with the Pygmy blue distribution BIA the nearest at approximately 65 km away. The likely worst-case consequence from a support vessel strike to a marine mammal would be the fatality of a single adult, but no effect to populations. With the controls implemented to reduce likelihood of impacts to marine mammals, potential disturbances are expected to be ***Minor*** – *Minor effect; death of individuals.*
Marine reptiles	Turtles and seasnakes are susceptible to vessel strikes when they come to the 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 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 having habitat in the Operational Area; loggerhead, green, leatherback, hawksbill, olive ridley/Pacific ridley and flatback turtles (Section 3.5.4). Marine turtles are predominantly oceanic species except in the nesting season when they come ashore. There are no shorelines near the Operational Area, but turtles may transit the Operational Area to forage on nearby shoals. 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 more than 165 km away (green turtle nesting area at Cartier Island boundary). 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. The worst-case consequence was assessed as the potential mortality of an individual adult but no effects on the population size at either a local or regional scale i.e. ***Minor*** – *Minor effect; recovery in weeks to months; death of individuals.*
Whale sharks	Although the Whale shark's skin is thicker and tougher than other shark species, the species may be more vulnerable to boat strike as they spend a significant amount of time close to the surface (DEH 2005). Whale Sharks tagged off Western Australia (Wilson *et. Al.* 2006, Gleiss *et. Al.* 2013) were found to spend about 25% of their time within 2 m from the surface and greater than 40% of their time in the upper 15 m of the water column. Consequently, whale sharks are vulnerable to collision with smaller vessels as well as larger commercial vessels that have drafts greater than 20 m below the surface. Laist et al (2001) and Vanderlaan and Taggart (2007) found that slower moving vessels provide greater opportunity for both fauna and vessels to avoid collision. The vessels operating within the Operational Area will generally be moving at speeds of 5 knots or less. The most northern part of the whale shark foraging BIA overlaps the Operational Area. However, only occasional individuals are expected to occur as there are no known whale shark aggregations (such as the Ningaloo Reef aggregation) within the region. Furthermore, the BIA overlapping the Operational Area is not considered a 'confined migratory pathway'. Confined migratory pathways are typically constrained by physical (or other) barriers that create a narrow or restricted bottleneck through which most of the population must pass.

Sensitive Receptor	Impact description		
	The worst-case consequence was assessed as **Minor** due to the potential mortality to an individual adult – *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. Flights occur in the daylight and not within major roosting areas, thereby reducing potential interactions and subsequent impacts. Collisions are therefore assessed as **Minor** due to the potential mortality to individual adults– *Minor effect; recovery in weeks to months; death of individuals).*		
Likelihood assessment			
Unlikely	The Drilling Activities 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 during urgent deliveries. Supply vessel speeds within the Operational Area when approaching the MODU are low and are required to be less than 5 knots within the 500 m PSZ. Hence the chance of a vessel-cetacean collision resulting in lethal outcome is reduced. Due to the general low vessel speeds, warning noise of helicopters and lack of any significant bird or cetacean/reptile aggregations nearby, the chance of a vessel collision with marine fauna and bird strikes resulting in a lethal outcome is reduced as individuals are expected to take avoidance behaviour. Worst case risks are on an individual level and the risk ranking with controls in place (Section 7.2.3) was assessed as ***unlikely***.		
Consequence		**Likelihood**	**Ranking**
Minor		Unlikely	Low

7.2.3 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**
39	Support vessels will comply with EPBC Regulations 8.05 and 8.06	Support Vessel Masters will comply with relevant parts of EPBC Regulation (2000): Regulations 8.05 & 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; and • 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; • The above requirements will also apply to whale sharks if they are sighted within 300 m of the vessel.	Online induction includes information on speed limits in the restricted zone and requirements on interacting with marine fauna. Incident reports record non-compliances with EPBC Regulations 2000 – Part 8 Division 8.1 (interacting with cetaceans).	Logistics Superintendent Vessel Master
40	Helicopters will comply with EPBC Regulations 8.07	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; and • A helicopter will not deliberately approach a cetacean from head-on.	Helicopter Contractor's procedures reflect EPBC regulations 8.07. Incident reports record non-compliances with EPBC Regulations 2000 – Part 8 Division 8.1 (interacting with cetaceans).	Logistics Superintendent
41	Potential for collision with marine fauna reduced by a speed restriction within the PSZ	Vessels operating within the PSZ must not exceed a speed of five (5) knots.	Project induction material for Vessel Masters and First Mates includes an environmental requirements section that details speed limit requirements.	Logistics Superintendent

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**
42	Marine fauna collisions reported to National Ship Strike Database	Any vessel collision with EPBC Act listed marine fauna 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 DECCEEW in line with regulations.	Vessel collision incident report Database entry number	Drilling Superintendent

7.2.4 ALARP assessment

Based on the impact and risk assessment process completed, Jadestone considers the control measures described above are appropriate to manage the risk of fauna strike 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	Vessels and helicopters are required during drilling activities and there are no practicable alternatives. The potential for interaction between vessels and fauna cannot be eliminated, however the risk is low given the location, low volume of vessel activity and low speeds and that helicopter noise acts as a deterrent.
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 MODU and to mob/de-mob the MODU.
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 MODU.
Use of marine fauna observers on all vessels to identify fauna close to vessels	Administrative	No	No	Vessel Masters will complete an environmental induction which includes the applicable requirements. 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 that will reduce the potential for impacts on marine fauna.

7.2.5 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 & management system compliance	Jadestone's HSE Policy objectives are met. Section 8 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholder & reputation	Stakeholder consultation has been undertaken (Section 4), and no stakeholder concerns have been raised with regards to impacts from vessel/helicopter operations on sensitive receptors.
Environmental context & ESD	The Operational Area overlaps a small area at the northern end of the Whale shark BIA. Risks 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: Section 7.2.2 describes the consequences and likelihood of vessel strike; • Preservation of critical habitats: location remote from Protected Areas and aggregations of most vulnerable cetaceans, dugongs and reptiles with proposed management minimizing residual risk to individuals; • Assessment of key threats as described in species and Area Management /Recovery plans: see 'Conservation and Management Advice' below; • North-West Bioregional Plan: The NW Bioregional Plan ranks vessel strike to cetaceans, dugongs, turtles within BIA as a 'high risk of significant impact'. No specific actions were raised; hence the management controls are considered sufficient to maintain a residual consequence ranking of negligible; and • Principles of ESD: as worst-case consequences will not impact population levels of protected species, no impacts on biodiversity or ecosystem integrity are predicted.
Conservation and management advice	**Recovery Plan for Marine Turtles in Australia, (DoEE, 2017)** 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 are 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. **Approved Conservation Advice for Rhincodon typus (whale shark) (TSSC, 2015a)** The conservation advice identifies the following risk – boat strike from large vessels. It requires that transit time of large vessels in areas close to marine features likely to correlate with whale shark aggregations (Ningaloo Reef, Christmas Island and the Coral Sea) and along the northward migration route that follows the northern Western Australian coastline along the 200 m isobath are minimised. The location of the Operational Area overlaps the northernmost part of the whale shark foraging BIA but vessels do not frequently transit through the BIA as they are more likely to mobilise from Dampier or Darwin to reach the Operational Area. Other plans that identify vessel strike as a potential threat include the below, though these species are not expected within the operational area. • Approved Conservation Advice for *Balaenoptera borealis* (sei whale) (TSSC, 2015d) • Approved Conservation Advice for *Balaenoptera physalus* (fin whale) (TSSC, 2015e) • Conservation Management Plan for the Southern Right Whale 2011 – 2021 (DSEWPaC, 2012h). 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 MPs. 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 and considered Acceptable.
ALARP	The residual risk has been demonstrated to be ALARP.

7.3 Unplanned Release of Solids

7.3.1 Description of hazard

Solid waste release	An unplanned release of solids to the environment has the potential to occur from: • Waste overboard from MODU or supply vessel operations (e.g. overfull and/or uncovered bins); • Lifting resulting in dropped objects; and • Accidental discharge of dry bulk products (e.g. during supply transfer).

7.3.2 Impacts and risks

Solids overboard has the potential to pollute marine habitats and injure or kill fauna through entanglement, ingestion or exposure (Ryan et al. 1988). The effects are dependent on the size and type of material.

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 fauna through ingestion or absorption by individual fish, cetaceans, marine reptiles and seabirds. 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 as 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 however, only low numbers are likely to be present. The accidental release of waste may result in injury or even death to individuals but is not expected to result in a threat to population viability; hence the consequence to marine fauna was assessed as ***Minor*** given the nature of the objects most likely to be dropped overboard, the transient nature of marine fauna at this location and lack of foraging habitat within the Operational Area.
Benthic habitats	Benthic habitats have the potential to be impacted by accidental release of solids 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, degradation rate, and volume. The extent of physical seabed damage will be limited to the size of an inert dropped object and given the size of standard materials lifted overboard, impacts are expected to be very localised. There are no sensitive or unique marine habitats in the Operational 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 and beyond the Operational Area, the consequence to benthic communities would be a highly localised, negligible, and reversible change to a very small proportion of the overall benthos. The consequence of an unplanned release of solid waste on benthic habitats was assessed as ***Minor***.
Other users	Buoyant solid waste accidentally released to the marine environment may create a navigational hazard to other marine users. The consequence of an unplanned solid waste release on other marine users was assessed as ***Negligible*** given the likely objects that could be dropped overboard.
Likelihood assessment	
Unlikely	The control measures and checks will 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. As such, the likelihood of releasing solids to the environment resulting in a negligible consequence is considered ***unlikely***.

Consequence	Likelihood	Ranking
Minor	Unlikely	Low

7.3.3 Environmental performance

Hazard		Unplanned discharge of solid waste		
Performance outcome		**Zero unplanned discharge of solid wastes into the marine environment**		
ID	**Management Control**	**Performance standards**	**Measurement criteria**	**Responsibility**
43	Waste generated during operations will be managed in accordance with MARPOL 73/78 Annex V Regulation 9 and the vessels' and MODU Waste Management Plan	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	MODU OIM Vessel Masters
44		Hazardous solid wastes will be managed in accordance with Marine Orders – Part 94 (Marine Pollution Prevention – Packaged Harmful Substances), Navigation Act 2012 and Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (Part III) requirements, and Environmental Protection Regs (Controlled Waste).	A waste register will be maintained to show that hazardous wastes are being collected and returned onshore for disposal	
45	MODU and vessel lifting procedures align with Montara Lifting Operations Procedure (MV-00-PR-F-00006) to prevent dropped loads	All personnel involved with lifting equipment operations and maintenance receive adequate training and are competent appropriate to their level of responsibility.	MODU training records and Competency matrix	
46		JSA completed for all lifts under PTW system, and all lifts completed with certified lifting equipment rated for the task.	Completed PTW documentation	
47		A Lift Plan completed for Complex and/or Engineered Lifts.	Approved Lift Plan	

7.3.4 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 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
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 impacts to the marine environment. Complete elimination of hazardous solids is not feasible; therefore, the risk from unplanned releases remains, but consequences are negligible.
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 therefore there are limited opportunities for substitution.
None identified	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.
None identified	Administrative	N/A	N/A	None identified. Maintenance management system implemented, compliance with relevant and appropriate MARPOL and legislative requirements, and certified equipment.

7.3.5 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 & management system compliance	Jadestone's HSE Policy objectives are met. Section 8 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholder & reputation	Stakeholder consultation has been undertaken (Section 4), and no stakeholder concerns have been raised with regards to impacts from solid waste generation or unplanned discharges on sensitive receptors.
Laws, standards and industry best practice	Maintenance management system implemented, compliance with relevant and appropriate MARPOL and legislative requirements, certified equipment. No further controls were identified. The APPEA Code of Environmental Practice (CoEP) (2008) objectives are met with regards to all solid wastes, chemicals and other wastes are disposed of or recycled at appropriate facilities in accordance with legislative requirements and agreed procedures.
Environmental context & 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 region 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: consequences and likelihood of pathways are assessed in section 7.3.1 and 7.3.2; • Preservation of critical habitats: the drilling location is remote from Protected Areas and aggregations of protected and migratory species that could be impacted above 'negligible' from solids discharges; • Assessment of key threats as described in species and Area Management /Recovery plans: see 'Conservation and management advice' below; • North-West Bioregional Plan: The NW Bioregional Plan considers marine debris (such as entanglement and ingestion) a threat to turtles, dolphin, dugong, and various KEF. The proposed management controls are aligned with minimizing this risk; and • Principles of ESD; with the proposed management controls, any worst-case impacts would not affect population levels, hence no impacts to biodiversity or ecosystem integrity are predicted.
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: • Approved Conservation Advice for *Megaptera novaeangliae* (humpback whale); • 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; and • 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.
ALARP	The residual risk has been demonstrated to be ALARP.

7.4 Unplanned Release of (Non-Hydrocarbon) Liquids

7.4.1 Description of hazard

Unplanned discharge of liquids	The MODU is designed to have no direct discharge to the marine environment as there are no direct drainage points. However, non-hazardous and hazardous liquids and chemicals are routinely transported to and from, stored and used aboard the MODU from support vessels, therefore, there is potential for these to be accidentally spilled to the marine environment. The largest instantaneous volume of a non-hydrocarbon hazardous liquid that could be inadvertently spilt is one mud pit, a total volume of approximately 80–120 m^3. The maximum volume of non-hydrocarbons (such as solvents and detergents) released from the deck is likely to be small and realistically limited to the volume of individual containers (e.g. IBCs/drums etc i.e. ~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 on board. Hazardous industrial liquid wastes may include radioactive materials, paint and thinners, waste oil, proprietary cleaning agents and chemicals for chemical injection. Dropped objects are discussed under Section 7.3. Accidental liquid releases may occur during any season at any time given the duration of Drilling Activities. Some chemicals may persist in the marine environment.

7.4.2 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; and
- 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, toxicity, persistence and bioaccumulation potential. Also, exposure may vary depending on the dilution and dispersion potential of the chemical, or whether the chemical floats/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.

For the purposes of this impact assessment, evaluation of the worst-case credible release scenario, that of 120 m^3 of water-based mud (WBM) accidentally discharged to the marine environment, has been evaluated.

Sensitive Receptor	Impact description
Water Quality	If WBM is discharged to the sea in this accidental scenario, it is expected that the plume will largely disperse at sea surface due to the fine particles present in the liquid (for noting, the discharge of WBM from the mud pit does not contain cuttings, and therefore the discharge behaviour in the marine environment is slightly different to the case of planned drilling discharge scenarios considered in Section 6.5). The released mud within the upper water column will disperse with the prevailing currents away from the release point and be diluted rapidly in the receiving waters. In well-mixed sea waters, WBM can be expected to be diluted by 100-fold within 10 m of the discharge and by 1,000-fold after a transport time of about 10 minutes at a distance of about 100 m from the release point (Neff, 2005). Most drilling mud ingredients are low toxicity, non-toxic or used in such small amounts within the WBM that they do not contribute to its toxicity. Potential impacts will include a temporary and highly localised increase in turbidity and decline in water quality with recovery likely within 24-hours. The potential for toxicity to marine fauna is limited due to the temporary exposure and low toxicity resulting from the rapid dilution in the marine environment. The consequence of an unplanned release of non-hydrocarbon liquids on water quality was assessed as ***Minor*** given the likely volumes and types of liquids and the rapid dilution and dispersion that would occur, and full recovery of water quality predicted within days.
Benthic Habitat	Reduction in water quality is expected to occur for a very short duration; as such any affects to benthic habitats are expected to be localised and temporary, given the water depth and the high dispersion of any potential marine pollutant in an open-ocean environment. There is no emergent or inter-tidal habitat that could be impacted by a surface spill and the benthic habitat is predominantly soft sediments. Any spilled material is unlikely to reach demersal species or benthic habitats on the seabed at impact concentrations. Sub-lethal or lethal effects from unplanned discharges at the seabed on marine fauna, are considered ***unlikely*** given the expected low concentrations and short exposure times. The consequence of an unplanned release

Sensitive Receptor	Impact description
	of non-hydrocarbon liquids was assessed as ***Minor*** – based on 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 localised short-term water quality degradation (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 will be dependent on the nature of the liquid released, toxicity and other chemical properties such as biodegradation and bioaccumulation potential. The Operational Area overlaps the Whale shark BIA but aggregations such as those found in Ningaloo are unlikely. Potential impacts to water quality are likely to be limited to the immediate vicinity (tens to hundred metres) of the release point and are not expected to affect overall population viability of these protected species. 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 depending on characteristics and volumes of the spilt chemical and the sea state, and, are likely to be limited to the immediate vicinity and unlikely to affect overall population viability or have economic impacts. The consequence of an unplanned release of non-hydrocarbon liquids on marine fauna was assessed as ***Minor*** given the likely volumes and types of liquids and the rapid dilution and dispersion that would occur in the Operational Area.
Likelihood assessment	
Rare	The control measures and checks proposed will ensure that the risks of unplanned releases of liquids to the marine environment are 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 **u*nlikely*** based on the presence of bunding around non-hydrocarbon liquid containers, and drainage systems and volumes/types of liquids aboard.

Consequence	Likelihood	Ranking
Minor	Unlikely	Low

7.4.3 Environmental performance

Hazard		Unplanned discharge of solid waste		
Performance outcome		**Zero unplanned discharges into the marine environment**		
ID	**Management Control**	**Performance standards**	**Measurement criteria**	**Responsibility**
48	MODU and vessel chemical management aligns with Jadestone requirements.	Any hazardous liquid storage on deck must be designed and maintained with at least one barrier (i.e. form of bunding) to contain and prevent deck spills entering the marine environment.	Pre-start inspection	Drilling Superintendent MODU OIM Vessel Master
49		Safety data sheet (SDS) available for all chemicals to aid in the process of hazard identification and chemical storage and disposal management.	Pre-start inspection SDS available	
50		Chemicals managed in accordance with SDS in relation to safe handling and storage, spill-response and emergency procedures, and disposal considerations	Pre-start inspection Storage and handling as per SDS	
51	MODU and Vessels are compliant with Marine Order 93 to prevent any contaminating liquids and chemicals from entering the marine environment Fluids and additives intended or likely to be discharged to the marine environment will be PLONOR rated/Gold or silver CHARM rated and will have an environmental assessment completed before use.	Vessels and MODU chemical management are compliant with Marine Order 93: • Having a valid International Pollution Prevention Certificate; • Reporting marine incidents to AMSA – 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; • Enacting a compliant Shipboard Marine Pollution Emergency Plan; • Using a compliant Cargo Record Book; and • Washing vessel tanks in accordance with the Pollution Prevention Act.	Valid International Pollution Prevention Certificate Valid SOPEP/SMPEP Cargo Record Book SDS available Environmental assessment of discharged fluids and additives	
52	Spill kits on the MODU 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 with waste managed as per MODU Waste Management Plan.	Pre-start inspection Spill kits at high-risk storage locations	

7.4.4 ALARP assessment

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 **Unlikely** 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
No use of hazardous materials or production of wastes	Eliminate	No	No	Liquid 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 hazardous materials, drilling muds and waste is not feasible; therefore, the residual risk of unplanned releases remains but is low.
Substitute any hazardous chemicals use with non-hazardous chemicals	Substitute	No	No	Where appropriate selection of chemicals or materials to achieve low or no environmental effect is made. Some hazardous liquids are unavoidable such as corrosion inhibitors and biocides, with limited opportunities for substitution.
None identified	Engineering Isolation	N/A	N/A	Safeguards will be implemented as required, by the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and MARPOL Annexures I, II and III. Such safeguards include designated storage and handling areas, correct stowage, accurate labelling and marking, SDS information, spill clean-up equipment and containment (e.g. bunds). No other potential controls were identified. The Activity is remote from sensitive receptors and coastlines.
None identified	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.

7.4.5 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 & management system compliance	Jadestone's HSE Policy objectives are met. Section 8 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholder & reputation	Stakeholder consultation has been undertaken (Section 4), and no stakeholder concerns have been raised regarding impacts from unplanned discharges of non-hydrocarbon liquids.
Laws, standards and industry best practice	The APPEA Code of Environmental Practice (CoEP) (2008) principles are met with regards to complying with relevant laws and regulations, and meeting industry's objective to maintain a social licence to operate. MARPOL requirements are internationally recognised in the shipping industry to manage the potential for pollution.

Environmental context & ESD	While unplanned liquid discharges could occur from the activity, the risk assessment process indicates credible discharges would have a temporary and localised impact on marine waters and will not result in significant impacts to marine fauna. The residual risk is considered acceptable after consideration of: • Potential impact pathways: Section 7.4.1 and 7.4.2 assesses the likelihood and consequences to water quality and marine habitats, flora and fauna from liquid spills; • Preservation of critical habitats: the location is remote from Protected Areas and aggregations of sensitive receptors; • Assessment of key threats as described in species and Area Management /Recovery plans: see 'Conservation and management Advice' below; • North-West Bioregional Plan; the Plan regards chemical pollution/contamination from oil and gas activities and vessels as a pressure on biodiversity, ecosystem function or integrity, social amenity or human health. This EP is aligned with the objectives of the NW Bioregional Plan by minimizing the risks of spills; and • Principles of ESD: the likelihood and consequence of the worst-case credible liquids spill is not predicted to impact individual marine fauna or localized habitats; hence biodiversity and ecosystem integrity are not at risk.
Conservation and management advice	Minimising chemical discharge is an action identified by the Recovery Plan for Marine Turtles in Australia 2017-2027. This requires that best practice industrial management is implemented to minimise impacts to marine turtle health and habitats. A marine chemical spill is unlikely to result in population effects 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.
ALARP	The residual risk has been demonstrated to be ALARP.

7.5 Unplanned Release of Hydrocarbons – Scenarios

7.5.1 Credible spill scenarios

Worst case hydrocarbon spill scenarios due to an unplanned event resulting in a diesel or Skua crude oil spill to the marine environment were identified during the Skua-11 ST1 Well Drilling ENVID workshop. Table 7-2 summarises the credible scenarios considered, with additional detail provided in the below section.

To determine the maximum worst-case credible spill volumes for each identified spill scenario, Jadestone has considered the AMSA (2015) guideline: *Technical guideline for preparing contingency plans for marine and coastal facilities* and NOPSEMA Bulletin #1 Oil Spill modelling (April 2019). 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 would most likely be released in the event of a spill.

Table 7-2: Credible hydrocarbon spill scenarios

Scenario	Hydrocarbon	Release point	Maximum release volume	EP section
Loss of well containment – Skua-11 ST1 well	Skua crude oil	Surface	68,047 m^3 over 90 days	Section 7.6
Damage to subsea infrastructure	Skua crude oil	Subsurface	1,700 m^3	Section 7.6
	Methane gas	Subsurface	~141m^3 released over minutes – days (dependent upon the size of the rupture)	Section 7.6

Scenario	Hydrocarbon	Release point	Maximum release volume	EP section
Vessel collision / fuel tank rupture	MDO	Surface	250 m^3 released over 6 hours	Section 7.7
MODU bunkering	MDO	Surface	5 m^3 released over 15 min	Section 7.7
Hydrocarbon handling and storage	MDO	Surface	500 l instantaneous release	Section 7.7

7.5.2 Credible worst-case scenarios

From the scenarios listed in Table 7-2, stochastic modelling was used to determine the greatest extent for exposure from each fraction of hydrocarbon (surface, shoreline, dissolved and entrained) to form the conservative combined EMBA for all seasons for the largest volumes for each of the different hydrocarbon types.

The loss of well containment scenario with a surface release point at Skua-11 ST1 well represents the greatest spatial extent for hydrocarbon release, therefore, representing the credible worst-case spill scenario. The EMBA, which represents the greatest possible extent of each hydrocarbon fraction, has been used to determine all the relevant environmental receptors. For the purposes of hydrocarbon impact assessment, thresholds are applied, as defined in NOPSEMA bulletin #1, to indicate the receptors that could be *affected* rather than just contacted (See Section 7.6.3 for more details).

7.5.3 Duration of worst-case credible loss of well control scenario

The risk of loss of well control is only credible prior to abandonment of the original well or during activities in the reservoir of the side track well (estimated as 14 + 14 days in total). The worst-case credible scenario for an oil spill in the EP is a loss of well control from Skua-11 ST1 well. The killing of the well using a relief well is the primary source control response. To appropriately assess the timeframe to kill the well, Jadestone has undertaken a review of feasible rig availabilities and activities associated with relief well planning. This review found that 90 days is an appropriate number of days as an estimate from the point of loss of containment to the point that the source is contained.

7.5.4 Relief well design

A nominal relief well location has been identified 2 km north west of Skua-11, this has been specified to give a significant separation between Skua-11 and the relief well rig and as such provide a robust 'drill ability' test. Subject to conditions at the time and regulatory approval the relief well rig would be located closer to Skua-11 therefore making the relief well easier to execute. In addition, as Skua-11 is situated on the far Western edge of the field the sea bed to the north west is clear of infrastructure which facilitates the use of a moored semi-submersible if such a rig is selected as the best option at time of execution.

The intercept point of the relief well has been nominated as 150 m above the 9 5/8" casing shoe (either the existing well or the new well). A survey management plan will be in place to minimise the positional uncertainties. The combined uncertainties of the wells at the intercept point is within the capability of passive and magnetic ranging tools.

If the loss of well control event were to occur during abandonment operations on Skua-11 Jadestone has a complete inventory of all long lead equipment to undertake the primary relief well design.

If the loss of well control event occurred whilst drilling the reservoir on Skua-11 ST1 there would be a shortfall in stock of casing. Jadestone have identified suitable casing to address this shortfall and will monitor its availability throughout the duration of the activity to ensure that relief well timeframes identified in the OPEP (Section 12.2.3) can be met.

As this well is a subsea design undertaken from a Jackup a subsea high pressure riser would be required. In a loss of well control event it is assumed this would remain attached to Skua-11. Jadestone has identified a back-up riser system available in Australia and will monitor its availability throughout the duration of the activity to ensure that relief well timeframes identified in the OPEP (Section 12.2.3) can be met.

Jadestone shall monitor the availability of any equipment not in stock and ensure access throughout the campaign

The kill mud weight is relatively low and a relatively low volume hence well within the capability of drilling fluids suppliers to produce, supply vessels to transport and MODUs to store.

To provide flexibility in order to minimise the time to effect a well kill, three alternative well designs have been identified. A jack-up well using a surface wellhead or a jack-up design using a subsea wellhead, or a semi-submersible MODU design. For both of the jack-up designs, all inventory is located in Australia (Perth and Darwin) and either part of Jadestone's inventory or available through the AEP MOU or other specialist providers. Jadestone has also prepared a relief well design using a semi-submersible MODU, to provide for contingency in the event that a jack-up is not available. The inventory for this design is located in Australia (Perth and Darwin) and either part of Jadestone's inventory or available through the AEP MOU or other specialist providers.

Relief well design parameters, location, trajectory and interception target points, equipment, kill mud weights/volumes and pressures are all detailed in Appendix G of the Blowout Contingency Plan (TM-50-PLN-W-00008) which is updated as needed to ensure availability of equipment and materials to meet the relief well timeframes identified in the OPEP (Section 12.2.3). Appendix G (Well Specific Addendum) of the Blowout Contingency Plan contains all the wells on site specific blowout contingency options (e.g. platform vs. subsea) for each campaign.

7.5.5 Discounted scenarios

Of the spill scenarios considered, the below were discounted as not credible:

- The scenario of a subsea loss of well control from Skua 11 well. A subsea release was considered but eliminated as the high-pressure riser cannot be accidentally unlatched from the well and would not be deliberately unlatched (as could be the case for a lower marine riser package on a MODU) as doing so would result in hydrocarbons accumulating under a MODU that is unable to move.
- The scenario of a loss of well control from Skua-10 well (immediately adjacent to Skua-11 well) has not been considered credible, as Skua-10 well will be shut-in during the MODU move activities.
- Refuelling of helicopters on the helideck of vessels or MODU 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.
- A dragged anchor or misplaced anchor scenarios are discounted as neither the vessels nor the MODU will be using anchors within the Operational Area.

In addition, the scenario of a dropped object damaging the subsea export pipeline is not considered in this EP, as it is covered in the Montara Operations Environment Plan (MV-90-PLN-I-00001).

7.6 Worst Case Crude Oil or Gas Release

7.6.1 Description of hazard

Crude oil or gas release	A loss of well control during drilling activities may occur resulting in a release of Skua crude at sea surface due to a loss of function downhole of safety critical equipment (loss of barriers) or damage to subsea well infrastructure (well valves, wellhead) or existing flowlines. Hydrocarbons may be released to the marine environment at either the MODU (sea surface) or flowlines (Table 7-2).

	In a worst-case credible loss of well control scenario, large quantities of hydrocarbon (worst-case oil release 68,047 m^3 of Skua crude) will be released at the surface to the marine environment until well control can be re-established. Smaller subsurface spill scenarios include a release of Skua crude oil or gas (methane) released due to a ruptured flowline. Both of these scenarios are much smaller in volume and therefore the loss of well control event has been used to determine the EMBA. 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 (including 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.

7.6.1.1 Ruptured flowline scenario

Production flowline

The worst -case surface spill is from a loss of well containment (68,047 m^3 over 90 days m^3 of Skua crude) and the worst-case subsea spill is 1,700 m^3 of crude from a ruptured production flowline.

This flowline volume is the total flowline volume back to the WHP and is based on the assumption that the Swift manifold valve is locked out (and requires an ROV to open it). The full volume has been used as a worst-case scenario assumption to ensure conservatism in the impact assessment.

It is expected that the sequence of events after a flowline rupture is observed / identified are as follows (based on the Montara Incident Response Plan, MV-70-PLN-F-00001)

- Control Room Operator – activates alarms and announce emergency over PA system
- ERT is activated and assembled
- Subsea Wells shut in followed by Montara WHP wells
    - Note: operators will need to manage process on FPSO at this time also to ensure there is no full plant trip causing FPSO to completely shut down
- Vent flowlines back to FPSO to reduce pressure in flowline
- Isolate and shut in plant process valves (it is expected that the manifold valves would be part of this step when available)

It should be noted that whilst the full volume has been used this does not take into account the timeframe before the rupture of the flowline is noted, or the peaks and troughs in the flowline and composition of the fluids. It does however consider that the flowline bleed down at surface would reduce the pressure as such that water ingress into the flowline would be the final result rather than a continuous seep to the environment. This has been shown to be achievable during previous planned flowline depressurisations where downstream choke pressure has reached approximately 102psia internally, this is in comparison to the external hydrostatic pressure at this depth of approximately 134psia. This is achievable due to a volume

of gas being trapped in the subsea flowline risers at the Montara WHP reducing the hydrostatic force applied to fluids in the flowline.

The fluid composition of the flowline at operating pressures includes 100 m^3 gas (essentially methane), 159 m^3 oil, and 1,431 m^3 water. Should the production flow line suffer a rupture, there will be a depressuring of the system until the pipeline pressure drops to below the hydrostatic pressure acting upon the subsea pipeline (~8 barg) local to Skua. Due to the MODU positioning, the pipeline rupture is assumed to occur at or close to the Skua manifold location within the MODU drop zone. The calculated drop cone radius for the worst-case heavy lift at a crane extends to 13 m for 68.2% of dropped objects or to 26 m for 95.4% of all dropped objects. The minimum separation distance between MODU cranes used for marine vessel lifts to a subsea target is approximately 60 m, thus demonstrating the effectiveness of this inherent engineered separation design control measure.

Once depressuring has occurred, (following a rupture) seawater can enter the pipeline to displace oil volumes at lower elevations until a water plug is established. Oil will be displaced to the high points of the pipeline. When reviewing the subsea pipeline routing data, this shows that a trough is formed between the peak at ~2.2 km (point A in Figure 7-1) and sea level, this would restrict the volume of hydrocarbons released to sea due to seawater ingress and settled produced water creating water plugs at the low points of the system.

The peaks and troughs in the line would constrain the potential volume released in the event of a production flow line rupture. The highest peak (worst case scenario) would constrain the volume to approximately 5% of the total oil volume; allowing for a further 20% to cover the initial depressurisation upon rupture equates to a loss of approximately 9.5m^3 (60bbls) of oil mixed with some gas and water. This volume is significantly less that the 159m^3 oil contained within the entire 1700m^3 volume of the pipeline.

It should be noted that isolating the swift manifold (point B in Figure 7-1) would reduce the potential loss of oil by approximately 2% due to the subsea hydrostatic pressure and considering fluid composition and peaks and troughs in the line. As described above, the potential worst-case volume is approximately 9.5m^3 of oil mixed with water and gas, therefore undertaking a separate campaign to replace the SCM to enable the swift manifold valve to be closed would result in a potential reduction in volume of oil by <0.2m^3. The cost is therefore considered grossly disproportionate to the minimal reduction in potential volume released and the low likelihood of occurrence.

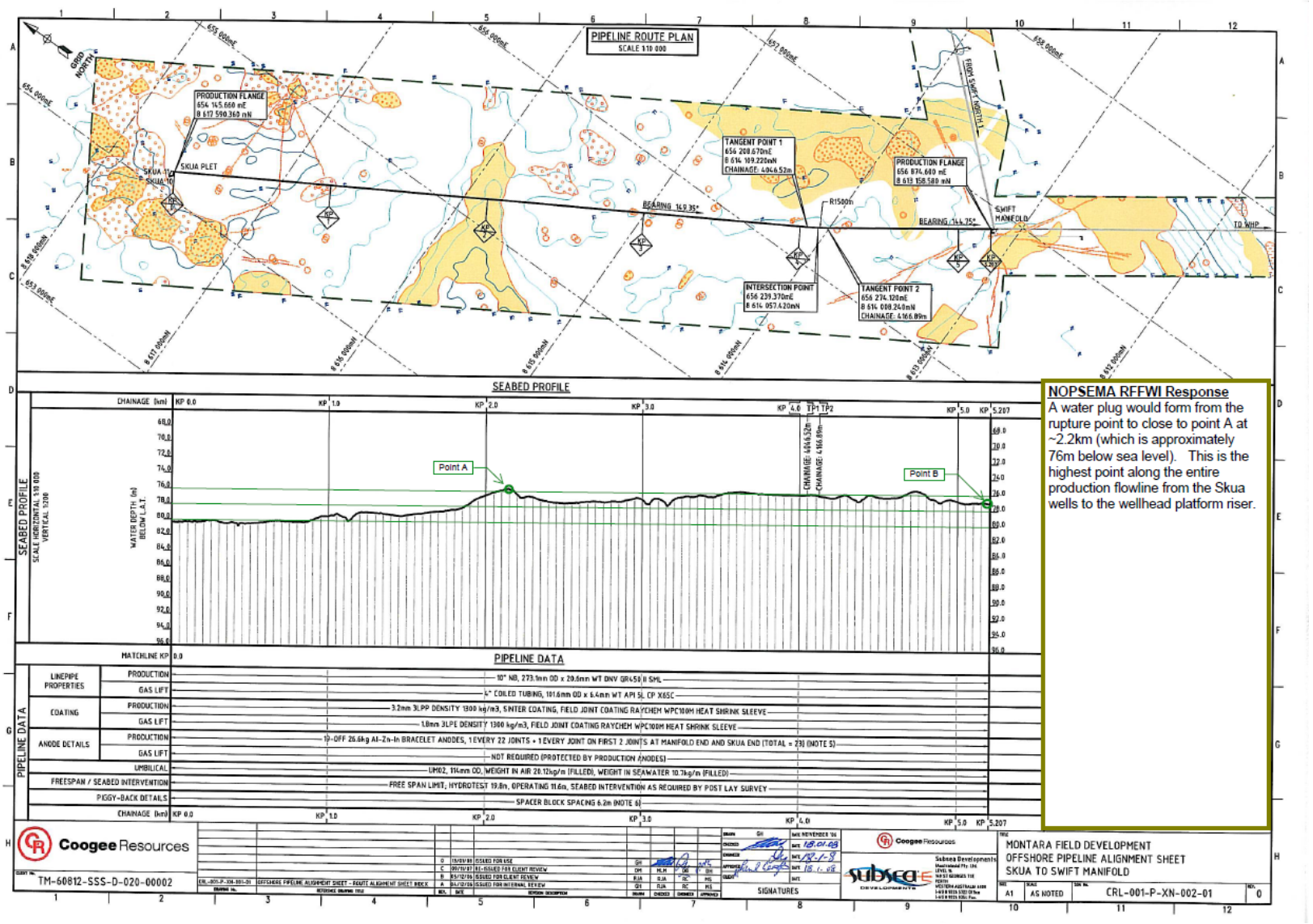


Figure 7-1: Skua to swift manifold pipeline alignment

Modelling of a 1,700m^3 release of crude oil scenario was completed (RPS, 2023) and results in a smaller EMBA than the LOWC scenario presented in this EP. The 1,700m^3 modelling results are presented in the NOPSEMA accepted Montara Operations EP. The LOWC scenario represents the worst case for Skua-11 drilling, and modelling results are presented in Section 7.6.2 and have been used to determine the EMBA.

Gas lift line

In the event of a gas lift line rupture during the activity, there is the potential for ~141m^3 of pressurised gas to be released, (i.e. the entire volume of the gas lift line); at 110 bar this equates to 13.2 tonnes of gas. The size of the hole would determine the duration of the release (minutes to days); it is also likely that seawater ingress would occur (as described for the ruptured production flowline above) but it is difficult to determine the point at which an equlibirium may be reached between the seawater ingress and the gas due to the rupture hole affecting the pressure of the release. Therefore, to ensure conservatism, it is assumed that the entire gas lift line volume is released at the depressurised 110 bar.

Depressurisation of the gas lift line is carried out to eliminate the potential for a Major Accident Event. This is assured at 110 barg and further depressurisation offers no reduction in safety risk but would result in additional gas being sent to the flare (refer ALARP discussion in Section 7.6.8). This risk is only considered credible from the gas lift line when the MODU is adjacent to the Skua-11 well whilst undertaking SIMOPS.

7.6.1.2 Skua Crude Oil Characteristics

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 Section 4 of the Skua-11 ST1 Well Drilling OPEP (TM-50-PLN-I-00006).

7.6.2 Modelling Approach

To determine the spatial extent of impacts from a potential crude oil spill (surface) and the dispersion characteristics of the oil over time, modelling was completed by RPS (RPS 2024) of the worst case hydrocarbon spill for the Skua-11 well; a loss of well control. 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.

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.

1. **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 of the three distinct seasons (summer [November to the following February], transitional [March, September and October] and winter [May to August]) 100 replicate simulations were modelled (i.e. 300 simulations in total). Each were 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.
2. **Contact thresholds**: oil spill models can track hydrocarbon concentrations of surface oil, entrained oil and DAH 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 DAH) to ensure that recorded contacts are for biologically meaningful concentrations.

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. For the purposes of hydrocarbon impact assessment, thresholds are applied, as defined in NOPSEMA bulletin #1, (Table 7-3) to indicate the receptors that could be *affected* (rather than just contacted) to determine the potential for impact.

Impact pathways and impact threshold concentrations are detailed in Section 7.6.3 and Appendix C for floating oil, entrained oil, dissolved aromatic hydrocarbons (DAH) and shoreline accumulation.

3. **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; and
   - 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.

4. **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 (RPS 2024).
5. **Completion of modelling**: each of the 100 simulations was run for a period of two weeks beyond the release duration (90 days), 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.

7.6.3 Exposure pathways and impact thresholds

To assess environmental effects from an unplanned hydrocarbon release, four separate hydrocarbon components that pose differing environmental risks were evaluated (refer Table 7-3):

- 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; and

- Shoreline accumulation – hydrocarbons that accumulate along shorelines.

Threshold concentrations for each of the hydrocarbon phases were developed and applied to the modelling outputs to define the EMBA for each phase. 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 EMBA (Figure 3-1) is denoted by the lowest hydrocarbon exposure thresholds to indicate all receptors that may be *contacted* by hydrocarbons of any phase from any scenario. However, for the purposes of hydrocarbon impact assessment, higher exposure thresholds are applied, as defined in NOPSEMA bulletin #1, (Table 7-3) to indicate the receptors that could be *affected* (rather than just contacted) and is based on scientific knowledge to determine the potential for impact. Separate thresholds are applied to denote areas where ecological impacts and socio-economic impacts may result, which are defined as;

- **Ecological EMBA** – the area in which the petroleum activity may result in environmental impacts.
- **Social EMBA** – the area in which the petroleum activity may result in socio-economic impacts.

The rationale for the selection of the thresholds is described in Appendix C and a summary of the threshold values applied to the Ecological and Social EMBAs is provided in Table 7-3.

The Ecological and Social EMBAs are derived from the seasonal stochastic modelling results (i.e. results from all 300 replicates), hence each describes a substantially larger area than would be affected during any single spill event. The modelling does not take into consideration any of the spill prevention, mitigation and response capabilities that Jadestone propose to have in place during the campaign to reduce volumes and/or prevent hydrocarbons from reaching sensitive areas.

Table 7-3: Summary of the threshold values applied for the Social and Ecological EMBAs in the impact assessment of the hydrocarbon spill modelling

	Floating oil (g/m^2)		Shoreline oil (g/m^2)		Entrained oil (ppb)		DAHs (ppb)	
Social EMBA	1	Low (approximates range of socio-economic effects and establishes planning area for scientific monitoring)*	10	Low (loading predicts oil is likely to be visible)*	100	High (as appropriate given oil characteristics for informing risk evaluation)*	50	Medium (approximates potential toxic effects)*
Ecological EMBA	10	Moderate (approximates lower limit for harmful exposures to birds and marine mammals)*	100	Moderate (approximates lower limit for harmful exposures to wildlife and vegetated habitats)*				

** - NOPSEMA Bulletin #1 classification*

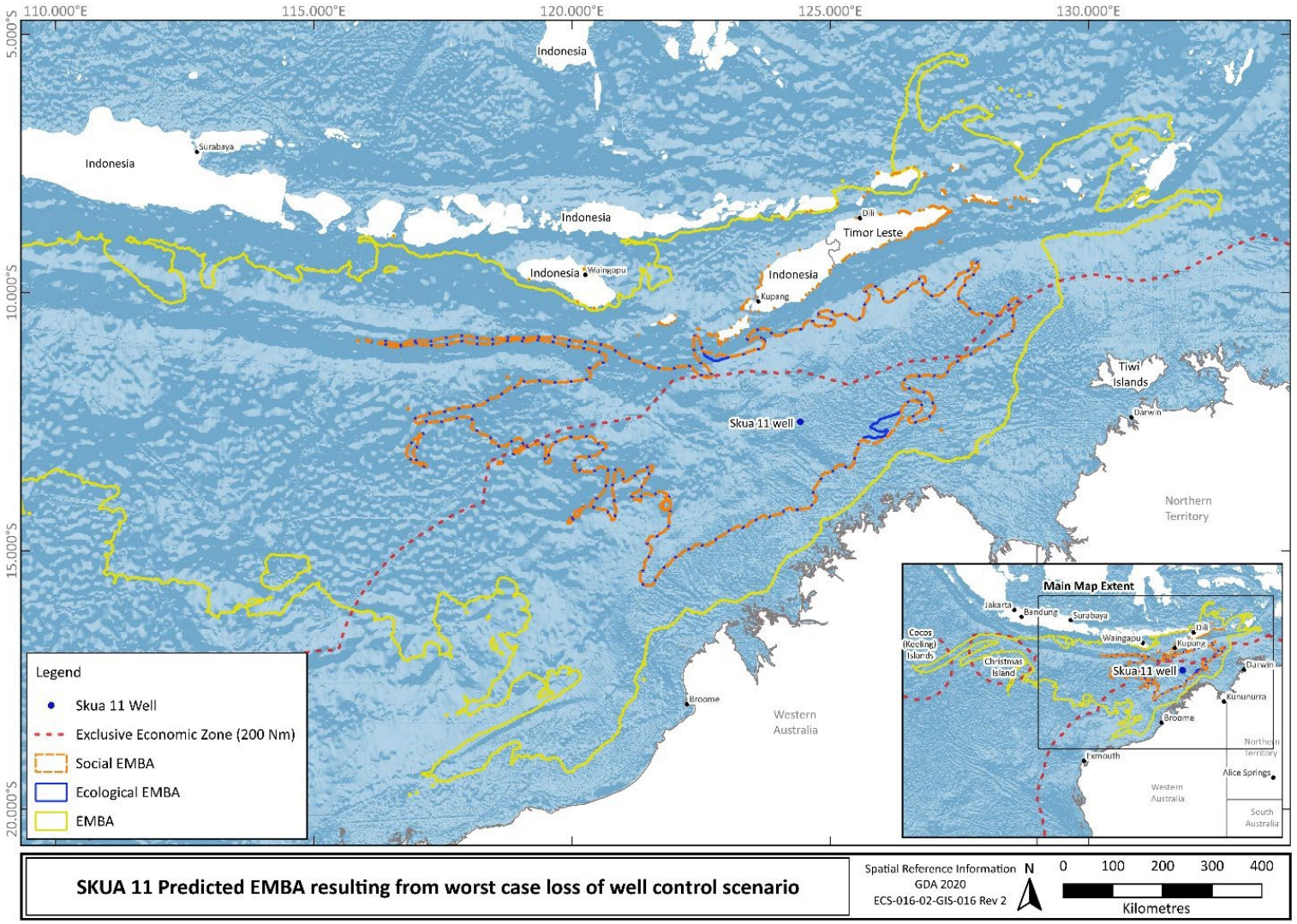


Figure 7-2: Predicted EMBA resulting from worst case loss of well control scenario

Table 7-4: Worst case loss of well control modelling results summary

Scenario	Skua Crude (68,047 m^3 over 90 days), Source: RPS 2024
Floating oil	Floating oil concentrations ≥1 g/m^2 (Social EMBA threshold) were forecast to extend up to 388 km during summer months. As the concentration thresholds increase to 10 g/m² and 50 g/m², these distances reduce to 193 km and 89 km, respectively both during the transitional season. During summer, transitional and winter conditions the highest probabilities of exposure at or above 1 g/m^2 (Social EMBA threshold) were forecast for Vulcan Shoal RSB (58%), Vulcan Shoal RSB (83%), and Greater Frigatebird – Breeding BIA (77%), respectively. The minimum times before exposure to any receptor were 56 hours (Carbonate bank and terrace system of the Sahul Shelf KEF) and 55 hours (Volcan Shoal) during summer and transitional conditions, respectively, and 35 hours (Greater Frigate – Breeding) during winter conditions. **Submerged Banks, Shoals and Reefs** Floating oil exposure above a concentration of >10 g/m^2 (Ecological EMBA threshold) has been predicted at the following submerged banks, shoals and reef receptors (maximum probability and minimum time to exposure); • Barracouta Shoal (18% / 103 hours) • Eugene McDermott Shoal (5% / 164 hours) • Goeree Shoal (6% / 62 hours) • Johnson Bank (1% / 179 hours) • Vulcan Shoal (21% / 59 hours). **KEFs (all submerged)** Floating oil exposure at the Ecological EMBA threshold (>10 g/m^2) (probability / minimum time to exposure) was predicted at Ashmore Reef, Cartier Island and surrounding Commonwealth Waters (1% / 268 hours), Carbonate bank and terrace system of the Sahul Shelf (5% / 270 hours) and Ancient coastline at 125 m depth contour (1% / 268 hours). **Australian Marine Parks** Floating oil exposure at or above the Social EMBA threshold (>1 g/m^2) (probability / minimum time to exposure) was predicted at Ashmore Reef AMP (16% / 388 hours), Cartier Island AMP (18% / 242 hours) and Oceanic Shoals AMP (9% / 373 hours). The Australian Marine Parks with probability of exposure to floating oil at a concentration of >10 g/m^2 (moderate 'ecological' threshold) (probability / minimum time to exposure) were Ashmore Reef AMP (1% / 181 hours) and Oceanic Shoals AMP (2% / 533 hours). **BIAs** Floating oil exposure above a concentration of 10 g/m^2 (Ecological EMBA threshold) has been predicted at the following BIAs (maximum probability and minimum time to exposure). • Greater Frigatebird – Breeding (24%, 39 hours) • Brown Booby – Breeding (1%, 127 hours) • Green Turtle – Internesting Buffer (2%, 180 hours) • Flatback Turtle – Foraging (1%, 549 hours) • Green Turtle – Nesting (3%, 177 hours) • Loggerhead Turtle – Foraging (1%, 549 hours) • Olive Ridley Turtle – Foraging (1%, 549 hours) • Hawksbill Turtle – Internesting Buffer (1%, 181 hours) • Lesser Frigatebird – Breeding (12%, 44 hours) • Pygmy Blue Whale – Distribution (6%, 59 hours) • Pygmy Blue Whale – Migration (1%, 126 hours) • Red-footed Booby – Breeding (16%, 39 hours) • Roseate Tern – Breeding (1%, 173 hours)

- Little Tern – Resting (1%, 181 hours)
- Wedge-tailed Shearwater – Breeding (14%, 44 hours)
- White-tailed Tropicbird – Breeding (12, 98 hours).

Figure 7-2 shows the locations of potential floating oil above the Social EMBA threshold of 1 g/m^2 and Ecological EMBA threshold of 10 g/m^2.

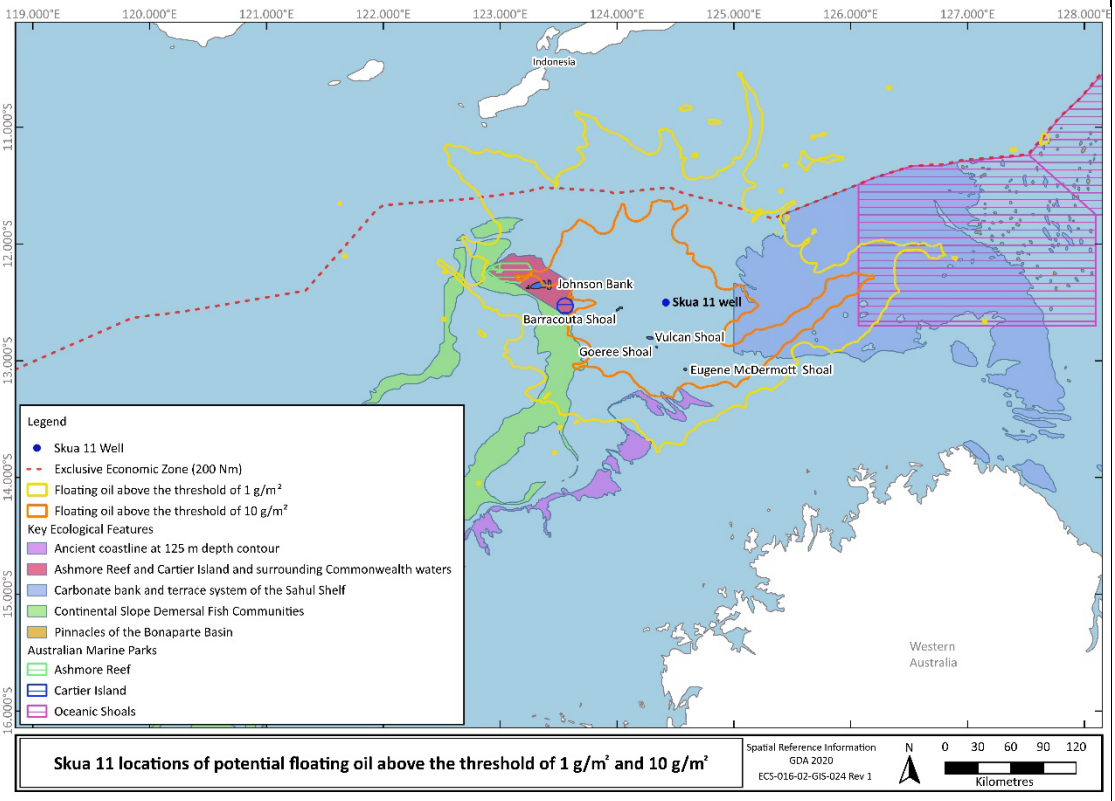


Figure 7-3: Locations of potential floating oil above the threshold of 1 g/m^2 and 10 g/m^2

Shoreline

Shoreline oil accumulation at, or above 10 g/m^2 (Social EMBA threshold) was predicted for Ashmore Reef (67%), Belu South (2%), Browse Island (6%), Cartier Island (98%), Hibernia Reef (52%), Kupang (3%), Lombok (1%), Pulau (multiple areas) (5%), Sandy Islet (1%); Scott Reef North (5%), Scott Reef South (6%), Seringapatam Reef (8%); Sumba Barat (1%), Sumba Timur (1%) and Timor-Leste (6%).The minimum time before shoreline accumulation at 10 g/m^2 was 6.6 days (Ashmore Reef).

During summer conditions the highest probability of shoreline accumulation at, or above 100 g/m^2 (Ecological EMBA threshold) was 15%, recorded for Cartier Island, with a maximum accumulated volume in the worst replicate simulation of 102 m^3. Contrastingly, during transitional and winter seasons, the probabilities increased to 42% and 48%, respectively, for the same receptor.

The minimum time before shoreline accumulation at 100 g/m^2 was 6.7 days (Ashmore Reef). The following sensitive receptors had the maximum accumulated volumes (m^3) on shorelines in the worst replicate simulation:

Receptor	Probability (%) of shoreline oil on receptors at ≥ 100 g/m²	Max accumulated volume (m³on shoreline in worst-case replicate)
Ashmore Reef	20	479
Cartier Island	48	312
Hibernia Reef	18	114

Figure 7-3 shows the locations of potential shoreline contact above the Social EMBA threshold of 10 g/m^2 and the Ecological EMBA threshold of 100 g/m^2.

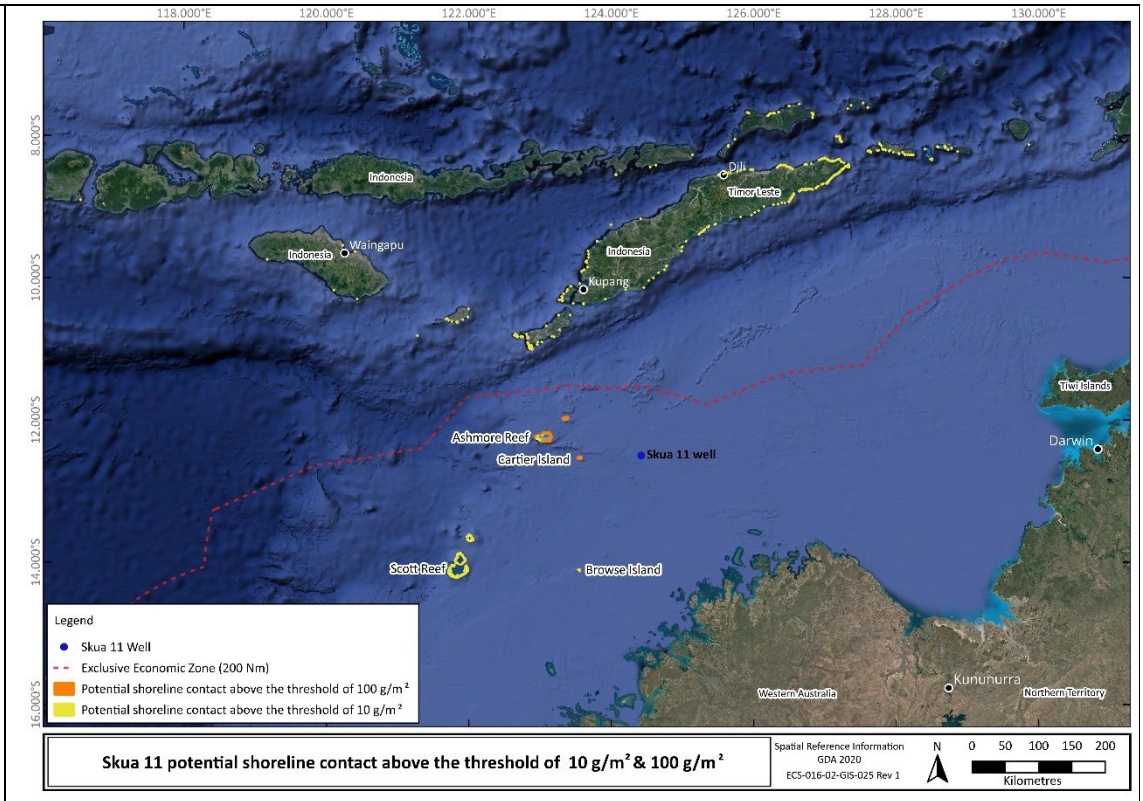


Figure 7-4: Locations of potential shoreline contact above the threshold of 10 g/m² 100 g/m²

Entrained

Entrained hydrocarbon concentrations exceeding 100 ppb (Social and Ecological EMBA threshold) may potentially occur up to 949 km (transitional) from the release location, with the distance reducing to 648 km (winter) and 529 km (summer).

Submerged Banks, Shoals and Reefs

The shoal, bank and reef areas with the highest probability of entrained hydrocarbon exposure exceeding 100 ppb (probability and minimum time before exposure) include:

- Barracouta Shoal (96%, 38 hours)
- Eugene McDermott Shoal (48%, 193 hours)
- Goeree Shoal (81%, 34 hours)
- Jabiru Shoals (52%, 94 hours)
- Johnson Bank (47%, 134 hours)
- Heywood Shoal (26%, 311 hours)
- Mangola Shoal (42%, 120 hours)
- Pee Shoal (44%, 98 hours)
- Vulcan Shoal (91%, 28 hours)
- Woodbine Bank (53%, 117 hours).

Probabilities at other shoals, reefs and banks are ≤ 25%.

KEFS

Key ecological features with the highest probability of entrained hydrocarbon exposure exceeding 100 ppb (high threshold) (probability and minimum time before exposure) include;

- Ancient coastline at 125 m depth contour (52%, 154 hours)
- Ashmore Reef and Cartier Island and surrounding Commonwealth waters (79%, 104 hours)
- Carbonate bank and terrace system of the Sahul Shelf (73%, 49 hours)
- Continental Slope Demersal Fish Communities (80%, 103 hours).

	Probabilities at the other KEFs were ≤ 25%. **BIAs** The BIAs with the highest probability of entrained hydrocarbon exposure exceeding 100 ppb (probability and minimum time before exposure) include; • Brown Booby – Breeding (63%, 130 hours) • Greater Frigatebird – Breeding (100%, 37 hours) • Green Turtle – Internesting Buffer (87%, 86 hours) • Green Turtle – Nesting (87%, 84 hours) • Hawksbill Turtle – Internesting Buffer (47%, 190 hours) • Lesser Crested Tern – Breeding (49%, 186 hours) • Lesser Frigatebird – Breeding (99%, 47 hours) • Little Tern – Resting (39%, 191 hours) • Pygmy Blue Whale – Distribution (63%, 59 hours) • Pygmy Blue Whale – Migration (100%, 37 hours) • Red-footed Booby – Breeding (100%, 37 hours) • Roseate Tern – Breeding (49%, 187 hours) • Wedge-tailed Shearwater – Breeding (99%, 47 hours) • White-tailed Tropicbird – Breeding (97%, 51 hours). All other BIAs had a probability of exposure ≤ 25%. **Australian Marine Parks** The Australian Marine Parks with the highest probability of entrained hydrocarbon exposure exceeding 100 ppb (probability and minimum time before exposure) include; • Ashmore Reef (37%, 191 hours) • Cartier Island (79%, 104 hours). Probabilities at other AMPs (Argo-Rowley Terrace, Kimberley and Oceanic Shoals) were ≤ 25%. **State Marine and National Parks** No state marine and national parks were predicted to be contacted by entrained hydrocarbon exceeding 100 ppb. **Exclusive Economic Zones** The Indonesian Exclusive Economic Zone (70% probability) and the East Timorese Exclusive Economic Zone (16% probability) were predicted to be contacted by entrained hydrocarbon exceeding 100 ppb, with a minimum time before exposure of 74 hours and 230 hours (respectively). Figure 7-4 shows the zones of potential entrained oil exposure at ≥100 ppb (Ecological and Social EMBA) threshold.

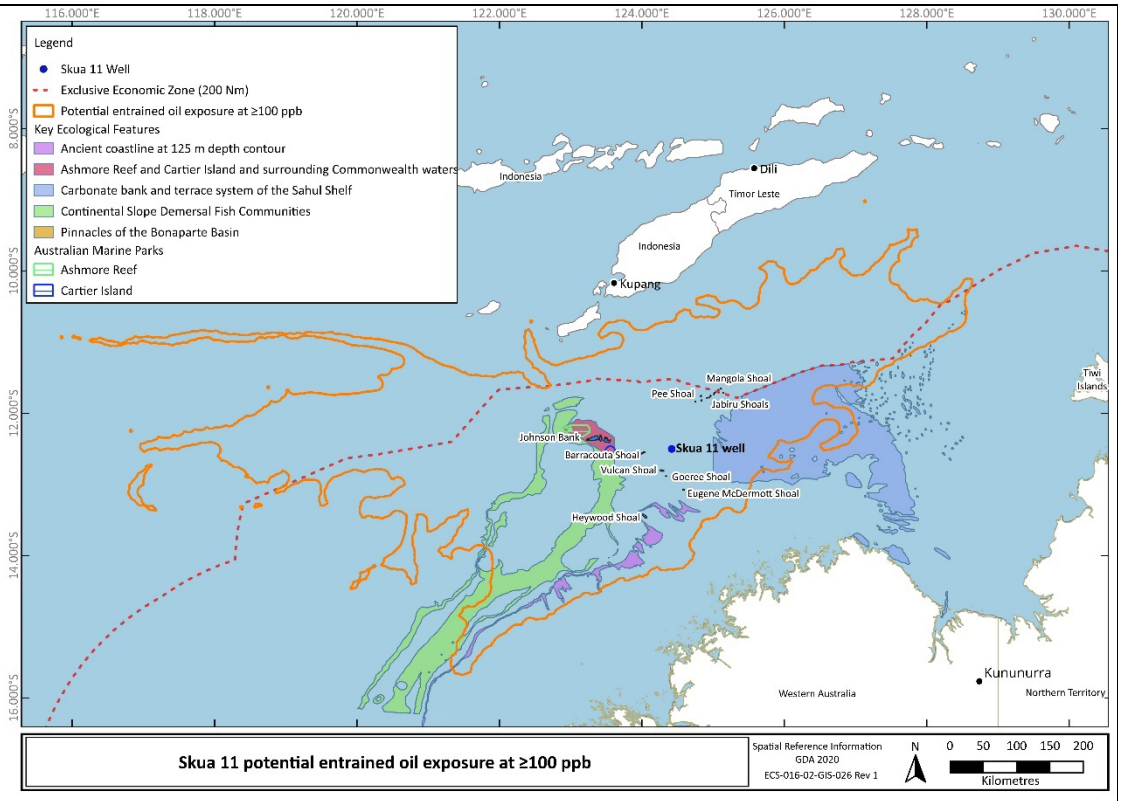


Figure 7-5: Zones of potential entrained oil exposure at ≥100 ppb (Social and Ecological EMBA) threshold

Dissolved

Across all three seasons, the highest probabilities of exposure to dissolved hydrocarbons at concentrations above 50 ppb (Social and Ecological EMBA threshold) were predicted at multiple receptors, including BIAs, Indonesian EEZ, multiple KEFs and reefs, banks and shoals, all at probabilities below <25%.

Submerged Banks, Shoals and Reefs

The shoal, bank and reef areas with a predicted probability of dissolved hydrocarbon exposure ≥50ppb are Vulcan Shoal (6%), Barracouta Shoal (5%) Goeree Shoal (2%), Eugene McDermott Shoal (1%) Jabiru Shoal (1%) and Pee Shoal (1%). The predicted maximum dissolved hydrocarbon concentration for the worst simulation was 254ppb at Vulcan Shoal.

KEFS

At two percent probability, three KEFs (Carbonate bank and terrace system of the Sahul Shelf, Ashmore Reef and Cartier Island and surrounding Commonwealth waters and Continental Slope Demersal Fish Communities) had the highest probability of exposure to dissolved hydrocarbons ≥50ppb. The maximum predicted dissolved hydrocarbon concentration for the worst simulation was 141ppb at the Continental Slope Demersal Fish Communities KEF.

BIAs

The BIAs with the highest predicted probability of exposure to dissolved hydrocarbon ≥50ppb was the Greater Frigatebird – Breeding and Red-footed Booby – Breeding BIAs, at 6% probability. The maximum predicted dissolved hydrocarbon concentration for the worst simulation was 307ppb at both the Greater Frigatebird – Breeding and Red-footed Booby – Breeding BIAs.

Australian MPs

The only probability of exposure to dissolved hydrocarbon ≥50ppb at any AMP was a 2% probability at Cartier Island AMP in the Winter Season, with a maximum predicted dissolved hydrocarbon concentration for the worst simulation of 132ppb.

Figure 7-5 shows the zones of potential dissolved aromatic exposure ≥ the 50 ppb medium threshold.

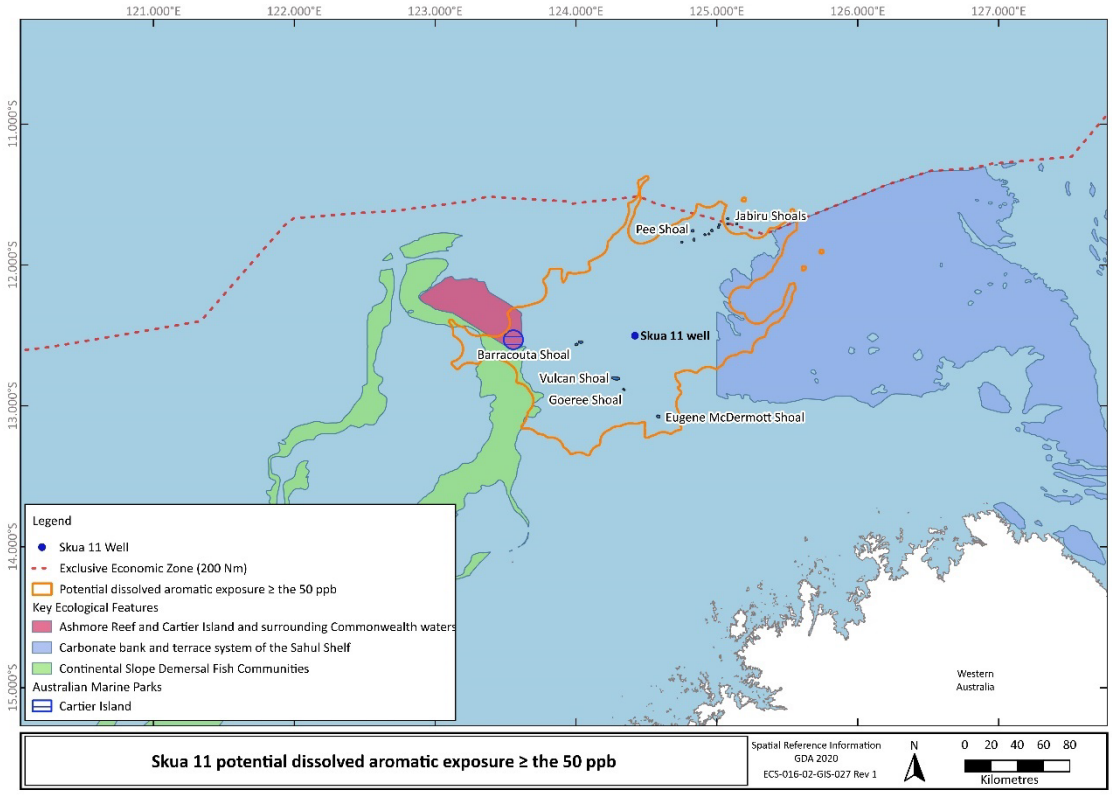


Figure 7-6: Zones of potential dissolved aromatic exposure ≥ the 50 ppb (Social and Ecological EMBA) threshold

7.6.4 Impacts and risks

The maximum worst-case credible scenario was used to determine the nature and scale of impacts to sensitive receptors. The environmental consequences of a loss of well control are highly variable, dependent 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 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 (including 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; and
- Socio-economic, human health impacts and reputational damage.

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.

7.6.5 Level of Impact on Sensitive Receptors

Impact pathways and impact threshold concentrations are detailed below for surface (floating) oil, entrained oil and dissolved aromatic hydrocarbons (DAHs). The impact assessment is completed against crude oil, however, it is recognised that gas (methane) could be released in the event of a ruptured gas lift line.

In the event of a gas lift line rupture, the pressurised gas plume will rise rapidly to the surface, with some gas being dissolved in seawater as the plume rises. This dissolved gas is expected to disperse rapidly, and small gas cloud would likely result above the sea surface. Potential changes to water quality as a result of dissolved gas could occur with shorter term consequence than crude oil. Limited changes to air quality are also expected to be short term (days) and limited to within hundreds of metres of the release location which could temporarily impact air breathing fauna in the vicinity. Physical properties indicate that petroleum gases will rapidly volatilise from the aquatic environment and that acute and chronic effects would not be observed in practice (Shell, 2019).

A dry gas release is unlikely to have widespread ecological effects, given the nature of the product, short duration and the limited volume that could be released, and the transient nature of marine fauna in this area. Therefore, it is not considered to have the potential for significant impacts to marine fauna species at the population level. Potential impacts to the physical environment (water and air quality) and marine fauna are considered to be lower than those from a crude oil spill described below.

Given the 500 m PSZ that will be in force around the MODU, excluding other sea users, subsequent impacts to socioeconomic receptors including commercial fishing and other marine users are not anticipated. It is recognised that the potential gas release from a rupture gas lift line could result in an emission of 13.2 tonnes of gas to the atmosphere which could contribute to the GHG emissions contributing to climate change.

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 potential unplanned release of gas and climate change impacts to specific ecological receptors. Further detail on the potential impact of GHG emissions are provided in Section 6.4.2.

Table 7-5 lists key potential impacts to sensitive receptors present within both the Social EMBA (when describing social-economic impacts) and Ecological EMBA (when describing ecological impacts).

Table 7-5: Potential impacts to sensitive receptors present in the Social and Ecological EMBAs

Shoreline habitats (excluding Mangroves)
In the event of a gas lift line rupture, it is not considered credible that gas released would reach shoreline habitats. Below describes the potential impacts from a loss of crude oil. **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 CoastAdapt Shoreline Explorer website, with data set sourced from Geoscience Australia. **Floating**

Shoreline habitats which have the potential to be smothered by stranded oil include intertidal coral reefs, cays, sandy shorelines, 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 (discussed below). 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 Section 3, and could be impacted by surface or entrained and dissolved oil throughout the EMBA. Shoreline oil accumulation within the Ecological EMBA is restricted to Ashmore Reef, Cartier Island and Hibernia Reef.

Timeframe to recovery	Similar to benthic habitats (discussed below), 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 ***Moderate*** given the localised effect to Ashmore Reef, Cartier Island and Hibernia Reef.

Mangroves and saltmarsh

In the event of a gas lift line rupture, it is not considered credible that gas released would reach mangroves and saltmarsh. Below describes the potential impacts from a loss of crude oil.

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 may 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 2014). This is in addition to impacts to the marine organisms utilising mangrove habitat (invertebrates, fish, birds).

Potential impact from modelled event

Mangroves have been identified as natural values within the North Kimberley Marine Park Management Plan, which could be impacted (although no mainland shoreline exposure has been predicted for the North Kimberley Marine Park).

Timeframe to recovery	Depending upon the level of impact, recovery to affected mangrove areas can be on the scale of years to decades (NOAA 2014).
Consequence	The consequence of a major hydrocarbon spill event on mangroves and saltmarshes was assessed as ***Moderate*** given impacts are predicted to be constrained to localised communities.

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. In the event of a gas lift line rupture, gas would dissolve in the water in the immediate vicinity of the release. Dissolved gas is expected to dissipate rapidly but could result in a temporary decrease in water quality within the gas plume to the sea surface.

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 and 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 any changes within the range of natural ecosystem variability. Variations in the temporal scale of oceanographic processes typical of the ecosystem were considered to 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 Ecological EMBA. The Ecological EMBA has the potential to overlap with spawning of some fish species given the year round spawning of some species and the potential for the activity to occur at any time of the year. 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 or gas plume.

Timeframe to recovery	Reproduction by survivors or dispersion from unaffected areas (via sea surface currents) would be likely to rapidly replenish any losses of 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.

Coral monitoring was conducted five and 15 months following the 2009 Montara well spill. The main findings were that there were no differences in coral cover and composition between reefs closest to the discharge point and control reefs, suggesting that any effects of hydrocarbons reaching these reefs were minor, transitory or sub-lethal and not detectable with the sampling methods used (Westera, 2016). 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).

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 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.

In the event of a gas lift line rupture, gas would dissolve in the water in the immediate vicinity of the release. Dissolved gas is expected to dissipate rapidly but could result in a temporary decrease in water quality within the gas plume to surface in the waters in the immediate vicinity. Any seabed disturbance impacts (e.g. scouring due to the release) are expected to be limited to the immediate vicinity of a pipeline rupture. Given the mobile nature of sediments and short-term release before seawater ingress occurs, the seabed is expected to return to near its original state over time – no substantial changes to seabed features are anticipated.

Potential impact from modelled event	
All areas and species	Benthic habitats in the Ecological 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. Below describes the potential impacts from a loss of crude oil. In the event of a gas lift line rupture, a gas cloud may potentially impact air-breathing marine reptiles in the immediate vicinity of the release. Impacts could include asphyxiation or death from inhalation. However, given the potential area of impact from a gas plume would be small and the gas would rapidly disperse, marine reptiles are unlikely to be affected.

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 turtle nesting beaches or within shallow waters adjacent to nesting beaches. Contact might also occur within foraging areas.

Depending on species, adult female turtles 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 sea snakes may be affected by oil through tainted food source or by absorption through the skin. Turtle hatchlings and turtle/sea snake 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 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 oil may result in harm to internal anatomy if ingested, irritation or damage to sensitive external features such as eyes and skin.

Dissolved

The majority of publicly-available information detailing potential impacts to turtles and sea snakes 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 1992). 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 sea snakes 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.

Potential impact from modelled event

Threatened and migratory marine reptile species may occur within the Ecological 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 Ecological EMBA overlaps with the BIAs (nesting, internesting and foraging) for turtle species including Hawksbill, Green and Flatback turtles and therefore there is the risk of contact of 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. 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.

Pelagic free-swimming fish and sharks are not expected to suffer long-term damage from oil spill exposure because dissolved/entrained hydrocarbons are typically insufficient to cause harm (ITOPF, 2014b). Pelagic species are also generally highly mobile and as such would not suffer extended exposure (e.g., >48–96 hours) at concentrations that would lead to chronic effects due to their patterns of movement. Fish that have been exposed to dissolved hydrocarbons can eliminate the toxicants once placed in clean water; hence, individuals exposed to a spill are

expected to recover (King *et al*, 1996). Marine fauna with gill-based respiratory systems, including Whale Sharks, are expected to have higher sensitivity to exposures of entrained oil.

In the event of a gas lift line rupture, gas would dissolve in the water in the immediate vicinity of the release. Dissolved gas is expected to dissipate rapidly but could result in a temporary decrease in water quality within the gas plume to surface which could affect fish and sharks in the immediate vicinity.

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 having economic consequences, to containing toxic levels above recommended human consumption guidelines.

Potential impact from modelled event

Whale sharks foraging BIA interacts with the Ecological EMBA, with peak foraging activity predicted to occur in spring 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. Fish assemblages within the Ecological EMBA include those in protected areas such as AMPs, 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. 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). Similar to cetaceans, inhalation of volatile compounds evaporating from a spill may also result in physiological impacts to dugongs. In the event of a gas lift line rupture, a gas cloud may potentially impact air-breathing marine mammals in the immediate vicinity of the release. Impacts could include asphyxiation or death from inhalation. However, given the potential area of impact from a gas plume would be small and the gas would rapidly disperse, marine mammals are unlikely to be affected. **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. **Dissolved** Marine mammals that may occur within the Ecological EMBA for DAHs include pygmy blue whales and dugongs. 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 with BIAs present within the Ecological EMBA include dugongs and pygmy blue whales. The activity may be undertaken at any time within the year, which may overlap with the pygmy blue whale migration and calving as well as dugong calving and breeding, therefore crude oil may contact pygmy blue 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 (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). In the event of a gas lift line rupture, a gas cloud may potentially impact air-breathing avifauna in the immediate vicinity of the release. Impacts could include asphyxiation or death from inhalation. However, given the potential area of impact from a gas plume would be small and the gas would rapidly disperse, avifauna are unlikely to be affected. **Entrained and dissolved** Seabirds may come into contact with entrained or dissolved 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 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
The Ecological EMBA intercepts with breeding and foraging BIAs for several migratory species of seabird, including the Brown Booby, Red-footed Booby, White-tailed Tropicbird, Greater Frigatebird, Lesser Frigatebird. 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 of individuals could 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 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, cultural heritage, 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.

Many of the protected areas have 'wilderness' and 'seascapes' identified as a value, and these would be compromised by the presence of any oil.

A dry gas cloud could form an explosive mix that, if ignited, could result in injury, death or property damage. This could affect the health and safety of other marine users (including fishers and tourism). Given the PSZ in place around the MODU, other users will not be in the vicinity of a gas plume released and an unplanned release instigates an emergency response to advise other users of the hazard and to avoid the area.

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

Several sensitive social-economic receptors intersect with the Social EMBA, including shorelines, Australian Marine Parks, Commonwealth Heritage Places and commercial fisheries. 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

In the event of a gas lift line rupture, it is not considered credible that gas released would reach protected areas. Below describes the potential impacts from a loss of crude oil.

Floating

Surface oil and/or shoreline loading (at the low threshold) has been predicted at some AMPs affecting shoreline habitats and intertidal zones. Surface or shoreline oil accumulation at the low threshold (≥1 g/m^2 and ≥10 g/m^2 respectively) is expected to be visible and therefore has the potential to impact nature-based activities (such as tourism or recreational use) via a reduction in aesthetics. Surface or shoreline oil accumulation at the moderate threshold (≥10 g/m^2 and ≥100 g/m^2 respectively) is potentially harmful to wildlife (including invertebrates, birds, fur-bearing aquatic mammals and marine reptiles) and may potentially impact vegetated habitats (such as saltmarsh and mangroves).

Entrained and dissolved

Entrained and dissolved hydrocarbons will or may impact the coral and seagrass habitats, as well as other marine park values fauna including dugongs, turtles and sea snakes (protected), fish and other marine mammals. Impacts to these receptors are described above.

Potential impact from modelled event

AMPs	The AMPs intersecting with the Social EMBA include Cartier Island AMP, Kimberley AMP, Ashmore Reef AMP, Oceanic Shoals AMP and Argo-Rowley Terrace AMP. The same AMPs also intersect with the Ecological EMBA. Predicted impact from floating oil at a

	concentration of >10 g/m^2 has been predicted to occur at Ashmore Reef AMP (1%) and Oceanic Shoals AMP (2%). Entrained hydrocarbons above 100ppb have been predicted to intersect with all of the AMPS listed above. The highest entrained oil concentrations are expected at Ashmore Reef and Cartier Island AMPs, with lesser concentrations at other AMPs. Entrained hydrocarbons could therefore impact on the potential values and sensitivities of these AMPs, as outlined within Section 3 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 may 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 no state or territory marine parks within the Social or Ecological EMBAs. The following Western Australian Reserves were identified within both the Social and Ecological EMBAs; • Browse Island Nature Reserve (protected area ID WA_22697) • Scott Reef Nature Reserve (protected area ID 379) • Unnamed WA41775 (protected area ID WA_41775). Values associated with these reserves 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.
World, National and Commonwealth Heritage Places	There are no World Heritage properties within the Social or Ecological EMBAs.
Threatened Ecological Communities	There are no threatened ecological communities in the Ecological EMBA.
Wetlands of International Importance	One wetland of international importance (Ashmore reef) was identified within the Ecological EMBA. 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 associated higher diversity in fish communities or increase in nutrient availability. There are nine KEFs that are overlapped by the Ecological 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, Pinnacles of the Bonaparte Basin and Carbonate bank and terrace system of the Van Diemen Rise. 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

7.6.6 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 monitor and evaluate and 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, Cartier Island and Hibernia Reef have been determined as a Protection Priority (refer Section) for spill response based on the modelling results for both crude and diesel spills. For additional information on protection prioritisation, refer to Section 5.7.3, and Section 4.4 of the Skua-11 ST1 Well Drilling OPEP (TM-50-PLN-I-00006).

7.6.7 Environmental performance

Environmental Risk		Unplanned release of crude oil or gas		
Overall Performance Outcome		**No reportable spill of hydrocarbon to the marine environment.**		
I.D	**Management controls**	**Performance Standards**	**Measurement Criteria**	**Responsibility**
Unplanned release of Skua Crude or gas due to MODU collision with subsurface infrastructure				
53	MODU move procedure	• Functioning positioning equipment (DGPS) on MODU • Preload method as per underwriter and drilling contractor's Marine Operating Manual (MOM) • Position of infrastructure (pipelines, subsea wellheads) marked into positioning software • Surveyor on board MODU during MODU move in • Wells (Skua 10 and 11) shut in for rig approach and positioning	MODU move procedure reviewed and approved by JSE, drilling contractor and surveying company Realtime display and logging	MODU OIM
54	Fit for purpose tow equipment	Tow equipment certified as fit for purpose Tow equipment visually inspected by Rig Mover / Tow Master prior to commencement of tow	Evidence inspection record	Tow Master
55	MODU move conducted as per Marine Operating Manual (MOM)	Minimum bollard pull requirements for support vessel met or exceeded. Weather window acceptable for tow and pre-load phase Tow vessels inspected by Tow Master prior to commencement of tow	MOM checklist	MODU OIM
56	Tow Master present during MODU move	Experienced tow master to move the MODU and on board for all transits and positioning	Master Mariner qualifications and experience	Drilling Superintendent
Well Integrity				
57	Implementation of the Jadestone Drilling Management System –	Barrier verification pressure testing and well barrier analysis undertaken	Records of well barrier verification and pressure testing maintained and reported in daily drilling report and end of well report	Drilling Superintendent

Environmental Risk		Unplanned release of crude oil or gas		
Overall Performance Outcome		**No reportable spill of hydrocarbon to the marine environment.**		
I.D	**Management controls**	**Performance Standards**	**Measurement Criteria**	**Responsibility**
58	Well Integrity Manual (JS-50-MN-W-00002)	Crews will be adequately experienced, trained in well control techniques and supervised	Drilling Superintendent	Drilling Superintendent
59		Well control drills undertaken prior to entering the reservoir	Well control drills records	Drilling Superintendent
60		Blowout preventor will be installed, regularly maintained and tested every 21 days	Records of Preventative Maintenance Management System	Drilling Superintendent
61	Implementation of the Jadestone Drilling Management System – Well Operations Management Plan	Overall well activity management processes and life cycle activities undertaken including well integrity performance monitoring and well integrity incidents excursion management in accordance with the NOPSEMA accepted WOMP	Records of well integrity performance monitoring and well integrity incidents maintained and reported in daily drilling report and end of well report	Drilling Superintendent
62			Completed Well Handover Data Books in Preventative Maintenance Management System	Drilling Superintendent
63	Wellhead valves installed and tested in accordance with the Well integrity Manual	Wellhead Valves are installed/maintained/tested and found fit for purpose	Installation and testing records in the Well Handover Data pack provided with the completed Well to Production	Drilling Superintendent
64	Permit to Work Procedure implemented	A Permit to Work (PTW) system is implemented to assure competent personnel and implementation of relevant procedures during activities	Completed PTW documentation	Drilling Superintendent
65	Well control equipment on MODU serviced and maintained as per MODU safety case	MODU machinery is maintained in accordance with the MODU PMS	Pre-start inspection records shows maintenance is scheduled and completed	Drilling Superintendent
66	Implementation of the Jadestone Blowout Contingency Plan (JS-70-PLN-D-00001)	Intervention actions undertaken in accordance with the Blowout Contingency Plan	Records confirm the Blowout Contingency Plan was implemented	Drilling Superintendent

Environmental Risk		Unplanned release of crude oil or gas		
Overall Performance Outcome		**No reportable spill of hydrocarbon to the marine environment.**		
I.D	**Management controls**	**Performance Standards**	**Measurement Criteria**	**Responsibility**
67	Implementation of the SIMOPs Plan	An interfacing alarm and shut down system will be employed to assist with the safe management of the activities. Communications system will be available between the MODU and the Montara facilities. A copy of the Simultaneous Operations Plan must be available to all personnel on the MODU and Montara facilities All valves isolated in accordance with the Jadestone Isolation Standard (JS-70-STD-F-00032).	Approved SIMOPs Plan in place and available to all personnel on MODU and Montara facilities.	MODU OIM Montara Venture (MV) OIM
68	Implementation of the Well Control Bridging Document includes kick stand requirements	The Well Control Bridging Document includes requirements for crossovers/water bushings to ensure compatibility with all non-shearable tool joints/connections and kick stand connection to ensure the kick stand is functional during drilling and implemented in the event of an issue with 'non-shearables' across the BOP. Kick drills undertaken prior to drilling out each new casing shoe	Compliance with Well Control Bridging Document ensures compatibility of kick stand Daily Drilling Log records kick drills	Drilling Superintendent MODU OIM
83	Valve isolation testing undertaken	Valve isolation testing is undertaken as scheduled on the Montara Venture. This includes periodic Shut Down Valve Function Testing, and leak testing as per the Jadestone Standard (MV-14-WP-E-00020).	Pressure monitoring records and testing records in CMMS	Montara Venture (MV) OIM
84	Implementation of the Matrix of Permitted Operations (MOPO)	Matrix of Permitted Operations (MOPO) mandates the following during the activity including requirements during SIMOPs - pressure and operations in both the gas lift line and flowline during all stages of MODU activities - restrictions in place on cranes, including that outboard lifts using the port aft crane is only to be used when the gas lift	Approved MOPO in place and available to all personnel on MODU and Montara facilities.	MODU OIM Montara Venture (MV) OIM

Environmental Risk		Unplanned release of crude oil or gas		
Overall Performance Outcome		**No reportable spill of hydrocarbon to the marine environment.**		
I.D	**Management controls**	**Performance Standards**	**Measurement Criteria**	**Responsibility**
		line is depressurised to 110 bar and production flow line at 40 bar - requirements for Skua-10 well to be shut in and SSSV closed before certain activities - Vessels only permitted within 500m with a permit from the MODU OIM		
Oil Spill Response				
69	Implement Skua-11 ST1 Well Drilling Oil Pollution Emergency Plan (TM-50-PLN-I-00006)	In the event of a tier 2 or tier 3 oil spill implement the Skua-11 ST1 Well Drilling OPEP to reduce environmental impacts due to spill	Incident Log	IMT Lead
70	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
71	Source control – relief well	Jadestone is a signatory to the AEP (formerly APPEA) MOU for mutual aid to facilitate and expedite the mobilisation of a relief well	AEP MOU for mutual aid	IMT lead
45	MODU and vessel lifting procedures align with Montara Lifting Operations Procedure (MV-00-PR-F-00006) to prevent dropped loads	All personnel involved with lifting equipment operations and maintenance receive adequate training and are competent appropriate to their level of responsibility.	MODU training records and Competency matrix	MODU OIM Vessel Masters
46		JSA completed for all lifts under PTW system, and all lifts completed with certified lifting equipment rated for the task.	Completed PTW documentation	
47		A Lift Plan completed for Complex and/or Engineered Lifts.	Approved Lift Plan	

7.6.8 ALARP assessment

Table 7-6 ALARP assessment for increasing the level of resourcing in the OPEP for spill response strategies

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 MODU and support vessels beyond a Level 1 response (as well as the Montara FPSO capabilities in the vicinity of Skua-11 Well) Section 12 of OPEP	Reduce volume or speed of spill entering marine environment.	Significant cost would be incurred for Jadestone to alter the contractual arrangements to increase capability with consideration for equipment, storage, maintenance, crew training and safety of crew when deploying gear.	It is consistent with the National Plan that the MODU and vessels have a level 1 spill response capability. The MODU and vessel have the response capability as described in the SOPEPs and geared towards a Level 1 incident. The SOPEP is to provide shipboard notification and response procedures for stopping or minimising the unexpected discharge of oil from a rig vessel without compromising the safety of the crew, the MODU/vessel or the environment. Unexpected discharge includes the discharge of oil during MODU/vessel operations, or MODU/vessel casualty. For Jadestone to increase the response capability (MODU/vessel) or the Montara FPSO, 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. Therefore, there is no value in supplementing the vessels' SOPEP capability, and therefore the arrangements described in the OPEP are considered ALARP.	No
Source Control – Monitor external drilling programs for MODU availability	Potentially reducing the time to drill the relief well, resulting in less hydrocarbons to the environment.	Accepted industry standard as aided by AEP MOU.	Jadestone can select, obtain conceptual agreement with owners or operators of MODUs prior to risk activities. During the Blowout exposure times of the campaign, Jadestone will monitor availability of selected feasible MODUs. This is described in further detail in the Blowout Contingency Plan. This assures MODU availability within	Yes

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 response time for a relief well as stated in this document (Section 7.5.3).	
Source control – Monitor status of Registered Operators/Approved Safety cases for rigs	Potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment.	Part of the process of planning for the relief well options.	Jadestone can, as part of the above selection process, monitor the status of Registered Operators for rigs operating within Australia, and those outside of Australia. This allows for a prioritised selection of rigs in the event of a response with priority given to those with an existing safety case for working in Australia.	Yes
Source control – standby MODU available in-field during drilling operations instead of having to source and deploy at the time of loss of containment	Potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment in the event of a loss of well control.	If adopted this cost is paid regardless if there is a loss of containment event or not.	A MODU on standby close to the well location for the duration of the EP in readiness to drill a relief well may reduce the time to drill a relief well. However, the MODU would be required to be on standby 24/7 over the entire activity duration. This is not considered feasible. The additional MODU would introduce additional impacts (e.g. light, noise, atmospheric emissions and operational discharges) and risks. The costs, safety concerns and complexity of having a MODU and maintaining this arrangement for the duration of the EP is grossly disproportionate to the environmental benefit gained.	No
Source Control – Acquire shear and seal (KBOS) system to ensure non-shearables present in the BOP can be cut and the well sealed reducing the LOWC volume and duration	Potentially reducing the duration and volume of oil released during a loss of well control incident.	Technology that is relevant for the proposed MODU is predominantly designed for deepwater applications, predominantly for dynamically positioned rigs where a risk exists that the rig loses station while non-shearable tubulars are across the BOP. This risk does not exist on a Jackup rig that is fixed in place.	The Valaris 247 has a surface BOP (18 ¾" 10 Ksi), which will be placed on top of a high pressure riser, connecting it to the well. The only technologies that exist to shear all tubulars that may be run through the BOP, is a subsea BOP called K-BOS, which has a pyro-mechanical gate valve to shear and seal. Alternatively, a KBOS unit could possibly be installed at the base of the high pressure riser, however the wellhead and tree system installed on Skua-11 are 13 5/8" (not 18 ¾") and were never designed to withstand the loads and fatigue cycles that would result. Installing this equipment could weaken the well	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?
		Additionally, this device is not compatible with the well control equipment on the proposed MODU (Valaris 247).	ultimately leading to structural failure and a loss of containment. The cost to install and integrate the K-BOS system would likely result in an online installation of > $3,000,000 USD, including equipment with an 18 month lead time for equipment and regulatory approval. Oil Spill reduction would be minimized with this technology but only if a leak occurred between the BOP and HXT connection. A Surface BOP does offer a significant advantage over subsea BOPs while running non-shearable tubulars through the BOP, specifically the BOP is very close below the rig floor. Defined within the Well Control Bridging document [under development] will be a requirement to keep a 'Kick Stand' racked back. In the event of a well control problem, with 'non-shearables' across the BOP, the kick stand will be picked up, stripped into the well, through the annular, placing drill pipe across the BOP and another sealing ram closed. If the annular BOP and two pipe rams failed to seal on the drill pipe, then the pipe could be sheared. This is a common approach with Jack-Up wells. Ultimately, the non-shearable string could be released into the well which would then fall below the BOP shear rams which could then be closed. In summary, the use of a 'shear and seal' technology is technically extremely difficult and costly to employ and is not designed for the well control equipment in use. It could result in damage to the well, and results in minimal	

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?
			reduction in risk. Pursuing this technology for Skua-11 is grossly disproportionate to the risk reduction and therefore Jadestone believes this is not ALARP.	
The swift manifold has a flowline valve which can isolate an individual subsea infield flowline leg from the rest of the field during MODU positioning or heavy lifts	To reduce the potential volume of hydrocarbon release in the event the flowline is ruptured. Potential hydrocarbon inventory volume (mix of hydrocarbons and water) reduced from ~1700m^3 to ~220m^3.	Additional costs would be incurred through hire of a separate vessel and ROV to replace the SCM during a single campaign rather than during planned intervention activities.	The Swift Manifold valves were designed into the Montara subsea system to allow routing of the individual flowline legs through a Multi-Phase Flow Meter (MPFM). As such the valves have never been designed into the Montara subsea system as isolation valves. There is no automatic shutdown response attached to the valves or the Swift Manifold sensors. The Swift Manifold Subsea Control Module (SCM) is currently compromised with a card failure inside the Subsea Electronics Module (SEM). The current failure affects the valve status feedback and therefore the operators on the FPSO do not have real time position indication for the valves. There is also no guarantee that the already failing SEM would not deteriorate further to a point where the valves are no longer operable from the FPSO. Therefore, the manifold valves have been manually overridden into the open position and therefore are not currently available for routing the individual flowline legs through the MPFM or completely isolating an individual subsea infield flowline leg. This manual override has been managed via the Jadestone MoC system and executed by an ROV and ROV support vessel. The intent is for these valves to remain in this position until after the Skua 11 campaign when a spare SCM can be allocated to the Swift Manifold. This SCM will then be changed out during the next planned subsea intervention campaign. Timing for this has not yet been confirmed as it will be completed as a	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?
			campaign with other scopes that are currently being developed and reviewed for approval. Undertaking a separate campaign prior to MODU arrival to replace the SCM and allow the valve to be closed is estimated at a cost of ~$2million USD. Isolating the swift manifold would reduce the potential loss of oil by approximately 2% due to the subsea hydrostatic pressure and considering fluid composition and peaks and troughs in the line. As described in Section 7.6.1.1, the potential worst-case volume is approximately 9.5m^3 of oil mixed with water and gas, therefore undertaking the separate campaign to replace the SCM would result in a potential reduction in volume of oil by <0.2m^3. The cost is therefore considered grossly disproportionate to the minimal reduction in potential volume released and the low likelihood of occurrence. Given the low likelihood of a dropped object occurring and the control measures in place, separation distances of subsea infrastructure (see below), the subsea pipeline routing (Figure 7-1) and dropped object measures to prevent damage to the flowlines, the additional cost to plan and execute this was deemed grossly disproportionate.	
Cease production and/or depressurise (partially or full) the flowlines during the higher risk components of this activity, such as entry and exit of the MODU into the	To reduce the potential volume of hydrocarbon release in the event the flowline is ruptured due to no flow subsea and reduced pressure in the flowline.	Significant costs relating to reduced production	Part of the inherently safer design feature of the layout of the subsea infrastructure located at the Skua location, allows for 'separation' between the source of dropped objects and the subsea infrastructure. Whilst it is not possible to separate the source of all dropped objects, the field layout does provide for wide separation between the MODU cranes and the subsea gas lift lines and flow lines.	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?
field and where activities that could result in a significant dropped object are occurring above the flowlines.	Although the flowline rupture scenarios would change depending on the pressure of the flowline and no flow subsea, the assumed worst case volume released in the event of a flowline rupture remains the same (1700m^3) as the worst case scenario assumes full inventory is lost to sea. However, it is likely that the water ingress into the flowline would be the final result rather than a continuous seep to the environment, and the total volume lost could potentially be less if pressures are lower in the flowline when a rupture occurs.		This inherent engineered separation design of the Skua field has been exploited by the preferential positioning of the MODU at the location and the selection of specific cranes for outboard lifts. The calculated drop cone radius for the worst-case heavy lift at a crane extends to 13 m for 68.2% of dropped objects or to 26 m for 95.4% of all dropped objects. The minimum separation distance between MODU cranes used for marine vessel lifts to a subsea target is approximately 60 m, thus demonstrating the effectiveness of this inherent engineered separation design control measure. Hence, lifts can occur from these cranes without any shut-in or depressurisation being required. Consideration of depressurisation has been compared for several scenarios to understand the potential environmental and safety risks and benefits, as well as the costs, this included partial and full depressurisation of the Gaslift Line (GLL) and/or Production Flowline. A. No shut-in of gas lift line (GLL 210 Bar) or production flow line (40 PFL) and no de-pressurisation for the whole period of the campaign (70 days). B. Partial de-pressurisation of GLL (110 bar), no depressurisation of PFL (40 Bar), for whole period of campaign (70 days). C. Full de-pressurisation of both GLL and PFL to 8 bar for whole period of campaign (70 days). D. Partial de-pressurisation GLL to 110 bar (no change to PFL pressure 40 Bar) as dictated by SIMOPS activities (26.4 days) + 6 days for turn down / up.	

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?
			E. Full de-pressurisation of both GLL and PLF (NFFS to 8 bar) as dictated by SIMOPS activities (26.4 days) + 12 days for turn down / up. Note that pressure in both Production flowline (PFL) and Gaslift line (GLL) will be isolated by HXT valves at atmospheric pressure (8 bar), as the MODU is brought into location until sufficient barriers have been proven at the HXT. Positive testing and inflow testing will only happen once the rig is on station and connected to the HXT. Once barriers are proven, energy (pressure) will be introduced and managed according to the MOPO document. **Option A** was not considered further as this is the inherent safety and environmental risk and is not considered acceptable. **Option B and C** show no credible safety hazard remains, but requires venting from the subsea system resulting in additional emissions (~0.5mmscf/d – 1.2mmscf/d) during the campaign. This option comes at considerable cost (~$20Million USD) as production would not occur during the campaign. **Option D** consequence analysis is similar to Option E with no credible safety risk and some venting required, but venting would be completed in cycles (4 times during the campaign) and production would continue when the gas lift lines are pressurised. The cost impact of this was estimated at ~$7.3Million USD. *This option was selected to reduce the potential risks to ALARP.* **Option E** consequence analysis shows no credible safety hazard remains, but comes at a cost in terms of increased	

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?
			time to bleed down, resulting in less production and more gas venting (~4.5mmscf/d). Production can continue in this scenario, but due to the longer duration for start-up and depressurisation, has an impact of ~$9 Million USD. Although the likelihood of GFL or PFL rupture during the activity is considered low due to the separation distance and other control measures in place to manage dropped objects (refer also Section 7.3), the full field will be shut in and GLL partially depressurised to 110 bar as dictated by the Matrix of Permitted Operations (MOPO) during SIMOPS activities to reduce the potential risk to ALARP. At other times during the campaign (with the high pressure riser installed and no lifts allowed with the Aft crane, refer EPS-84) the risk of a dropped object severing the GLL or PFL is not deemed to be credible and production from Skua-10 is allowed with the PFL and GLL at working pressure. Depressurisation of the GLL is carried out to eliminate the potential for a Major Accident Event. This is assured at 110 barg and further depressurisation offers no reduction in safety risk. Since liquids are virtually incompressible, in the PFL, the total fixed volume of liquid within the flowlines remains constant, regardless of the final partial depressurization pressure. Consequently, in the event of a flowline rupture, the total worst-case volume of oil released would be the same whether the pressure in the PFL is 40 barg or below the hydrostatic pressure at the water depth. Once 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?
			pressure in the PFL drops below the hydrostatic pressure, heavier sea water will displace oil from the pipeline. Therefore, the associated risk is unaffected by depressuring below 110 barg for GLL and 40 barg for PFL and risks are reduced to ALARP through the isolation of the system, as described below. The MOPO mandates the pressure and operations in both the gas lift line and production flowline. In summary both production Flowline (PFL) and Gaslift lines (GLL) are isolated with the following valves, at the commencement of operations, as the rig is brought into location as both lines are depressurised to hydrostatic pressure and isolated at the HXT on Skua11: • Subsea SCSSSV (all) and • Subsea HXT (all) PMV, PWV (production flowline) • WHP Production Riser and Gas Lift SDVs [Hard Isolation] All valves will be isolated using the procedural controls outlined in the Jadestone Isolation Standard (JS-70-STD-F-00032 Rev 7). The effectiveness of the isolation of valves is demonstrated by positive pressure tests, inflow tests, periodic SDV function and leak testing: Pressures are also monitored across the subsea system. After the MODU has arrived at Skua 11, the Gas Isolation ROV operable Valve (GIV-0220) and Production Isolation	

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?
			ROV operable valve (PIV-0214) will be closed, unless reopened temporarily to flush into the production flow line. All applicable HXT valves will be positively pressure tested to 3100psi. PIV and GIV will be inflow tested by energising both the GLL and PFL. Once tested, pressures in the GLL will be managed as per the MOPO. During SIMOPS operations, where the gas lift line pressure is reduced to 110 bar, this is done by isolating the GLL at the wellhead platform shut down valve (SDV) and bleeding the gas pressure down through a XOV, on a subsea tree, into the flowline. Wells are isolated at each HXT, and flow line the PFL is shut in at the FPSO. If there was an event leading to a rupture of either the gas lift line or flowline during this period, the emergency would trigger an ESD0 from the FPSO, which would constrain the inventory to the subsea infrastructure.	
Aerial surveillance – additional dedicated aircraft and observers	Limited environmental benefit by having additional dedicated resources -increase identification of marine fauna presence.	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 units are 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

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?
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 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. Tracker buoys require maintenance which can be scheduled as part of the spill response equipment maintenance program.	Additional tracking buoys are available through AMSA and AMOSC within days. There is no additional upfront cost for accessing these secondary buoys.	Tracking buoys are one tactic in the operational monitoring strategy. One tracking buoy will be located on the MODU for immediate use, and another two are available on the Montara FPSO. The number of buoys immediately available is sufficient to cover tracking of oil given the other response activities that will be undertaken.	Yes
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 (dependant on the parameters to be measured).	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
Chemical dispersant application – additional resources to that in the OPEP	Potential for further reduction of surface oil and shoreline loading (reducing/eliminating further environmental impacts – clean-up	Additional resources include: Dispersant costs of $10,000 per m^3.	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,	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 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.	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. Purchasing dispersant stock and maintenance in Darwin $400,000 p.a. Purchasing dispersant vessel and application equipment $300,000.	volume of surface 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. The results of the capability evaluation for dispersant application is described in the Surface Chemical Dispersant Application Strategy, as detailed in the OPEP, shows that Jadestone has access to sufficient dispersant through national and international stockpiles. Jadestone is able to begin dispersant spraying on Day 2, ramp up and also meet and exceed the dispersant need for this activity by Day 3. **Application of Chemical Dispersant from the MODU**. Storing sufficient resources for dispersant application on the MODU or support vessels to spray on the spill at source could result in faster dispersant application at source. 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 LOWC or vessel collision capable of causing a spill to the marine environment may result in the MODU being evacuated except for personnel essential to undertake damage repairs and tasks described in the OPEP or SOPEP which, from a safety and operational perspective, would be significantly hindered if dispersant spraying was undertaken from the MODU or support vessels. The MODU and support vessels do 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	

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?
			allocate to dispersant spraying in the event of a collision. Therefore, Jadestone consider that the Surface Chemical Dispersant Strategy described in the OPEP (Section 15) is ALARP. **Storing Chemical Dispersant on the Montara FPSO**. Storing sufficient resources for dispersant application on the FPSO to transfer to support vessels in the event of a spill could result in faster dispersant application at source, until the resources listed in the OPEP 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. The FPSO does not have the capacity to appropriately store/maintain sufficient dispersant stocks and application equipment, the skilled personnel to undertake the spraying. In the event of a spill event, the support vessels in the vicinity may not have the capacity to immediately take on the role of dispersant application. Therefore, Jadestone consider that the Chemical Dispersant Strategy described in the OPEP (Section 15) 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 in the vicinity of Skua-11 well operations could begin applying 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 dispersant application resources listed in the OPEP are deployed. In the event of the worst-case spill, the priority is to ensure safety of	

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?
			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 MODU has 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 Skua-11 well for the duration of drilling operations creates an unnecessary safety risk to vessel crew and is grossly disproportionate to the environmental risk. Therefore, Jadestone consider that the Surface Chemical Dispersant Strategy described in the OPEP (Section 15) is ALARP. **Aircraft or vessels on 24/7 standby.** Aircraft or vessels (leased or owned) permanently on standby for the duration of the activity, with dedicated crew would result in a faster chemical dispersant implementation time (application could begin within 2 days). Aircraft and vessels used for spill response and dispersant application are normally 317involved in activities such as crop dusting, firefighting and marine services, and adapted for dispersant application when required. Jadestone would require equipped vessels and supporting resources (crew, maintenance, berthing etc) and 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	

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?
			being grossly disproportionate to the environmental risk. In essence, Jadestone would be replicating the FWADC which has been established for industry as a cost effective and fit for purpose preparedness measure. Therefore, Jadestone consider that the Surface Chemical Dispersant Strategy described in the OPEP (Section 15) 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 at source outside the dispersant operations, and near shorelines on the trajectory of the spill. Operations will focus on the priority receptors (as the most commonly contacted and environmentally valued locations across all modelled scenarios) and the need is met by the access to resources as described in the OPEP Section 14. Jadestone undertook an evaluation to determine the most effective resource capability to reduce the environmental risk from a worst-case spill event (refer Section 14 of OPEP). Jadestone has the ability to mobilise up to 8 containment and recovery systems (16 vessels) within seven days of the spill. This is based on the deterministic spill modelling release volume and duration of floating oil present at the sea surface at >50 g/m^2 (minimum thickness for effective containment and recovery). Deterministic spill modelling results predicted that the floating oil surface area ≥50 g/m^2 would only be present until day 10, meaning that it is predicted that containment and recovery would only be effective until this time. For Jadestone to purchase and maintain suitable vessels and equipment to be on standby for the duration of 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?
			activity 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 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 decreasing nature of the release and the absence of floating concentrations of hydrocarbons >50 g/m^2 after day 10, 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 have 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 16). Jadestone determined the resources required based upon the priority receptors estimated worst-case shoreline volumes and timeframes to contact.	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?
			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. 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 for the duration of the activity, 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 6.25 days at Cartier Island and Jadestone has time to utilise this Guidance to prepare a response for the remaining receptors. Given the remoteness of the locations with shoreline contact modelled and drilling activities only short term, there is considered limited benefit for pre-deployment of	

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?
			resources as this would create unnecessary 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 environmental 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.	
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	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 17 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.	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?
	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, including 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 responders, cause physical damage and could be a negative impact.		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. Given the remoteness of the locations with shoreline contact modelled and short-term nature of drilling activities, there is considered no benefit for pre-deployment of resources as this would create unnecessary 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 environmentally 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 the need as it allows flexibility in response operations and surge capacity; as not all locations will be contacted in a single spill event.	

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 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 (e.g. 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 (personnel, experts, facilities, plans etc).	Jadestone undertook an evaluation to determine the most effective resource capability to reduce the environmental risk from a worst-case spill event (refer Section 18 of the 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; • Jadestone to commission additional training of Australian based OWR personnel to increase numbers of competent OWR personnel; and • 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, this represents the best-oiled wildlife response plans that Jadestone can utilise. The cost for Jadestone to:	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?
			• purchase/hire OWR equipment and pre-set up facilities at Darwin and/or Broome; • have OWR expert personnel on standby; and • 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.	
Waste Management – additional resources to that described in Section 19 of 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 can 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

7.6.9 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 8 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 4), including engagement with the Director of National Parks, State and National response agencies of DoT and AMSA, Northern Territory government, commercial and recreational fishing industry bodies and fishers. Stakeholders have raised concerns regarding impacts from a spill to marine receptors, through implementation of control measures and a specific OPEP for the activity the likelihood of a significant event occurring is significantly reduced and response plans are in place. This has led to concerns from relevant persons being addressed adequately. 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 scenario is from a loss of well containment (68,047 m^3 over 90 days m^3 of Skua crude) and the worst case subsea spill is 1,700 m^3 of crude from a ruptured flowline (noting the actual volume is likely less than this due to the sub-hydrostatic pressure and fluid composition). While some response strategies (e.g. application of chemical dispersants and booming operations) pose 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. The mutual interests of responding and protecting sensitive receptors from further impact due to response activities is managed through the use of the net environmental benefit analysis during response strategy planning in preparedness arrangements as well as during a response.
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. 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 predicted to potentially be impacted by crude above threshold levels have been identified as Priority receptors (Section 5.7.3). 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 threat.** 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 *Calidris*	The Conservation advice for the curlew sandpiper identifies **Marine pollution as a threat:** The advice requires the risk of oil spill impact to nest locations and, if required, appropriate

***ferruginea* (Curlew sandpiper)**	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 threat:** 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 Advice for *Charadrius leschenaultii* (Greater sand plover)	The Conservation advice for the Greater Sand Plover identifies **Marine pollution as a threat:** 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 threat:** 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 acuminata* (sharp-tailed sand piper)	The Conservation advice for the Sharp-tailed Sand Piper identifies **Marine pollution as a threat:** 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 *Fregata andrewsi* (Christmas Island frigatebird)	The Conservation advice for the Christmas Island Frigate does not identify **Marine pollution as a threat:** This section and the proposed controls are consistent with this advice
Approved Conservation Advice for the *Phaethon lepturus fulvus* (Christmas Island white-tailed tropicbird)	The Conservation advice for the Christmas Island White-tailed Tropicbird identifies **marine oil pollution as a threat:** Measures to protect the Christmas Island White-tailed Tropicbird are set out in the Christmas Island National Park Management Plan 2014-2024. This section and the proposed controls are consistent with this advice.
Approved Conservation Advice for *Tringa nebularia* (common greenshank)	The Conservation advice for the Common Greenshank identifies **marine oil pollution as a threat:** 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 *Limnodromus semipalmatus* (Asian dowitcher)	The Conservation advice for the Asian dowitcher identifies **marine oil pollution as a threat:** 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 *Pristis*	The Conservation advice for largetooth sawfish identifies **Habitat degradation** and **Marine debris as risks**: The advice requires measures to reduce adverse impacts of habitat

***pristis* (largetooth sawfish)**	degradation and/or modification to be considered; and to reduce marine debris likely to impact on largetooth sawfish.
Approved conservation advice for *Pristis zijsron* (Green sawfish)	The Conservation advice for the Green sawfish identifies **Habitat degradation through coastal development as a threat**: The advice lists habitat loss as a regional priority action. This section and the proposed controls are consistent with this advice.
Approved Conservation Advice for *Glyphis garricki* (Northern river shark)	In a loss of crude oil scenario, habitat important for the Northern river shark would be identified and given high priority for protection. Any spill response activities that generate marine debris are also managed to reduce further potential environmental impacts. This is consistent with the conservation advice.
Approved Conservation Advice for *Pristis clavata* (Dwarf sawfish)	The approved conservation advice for Dwarf Sawfish lists habitat degradation due to increasing human developments in northern Australia. None of the regional priority actions listed are relevant in the event of a loss of crude scenario.
Approved Conservation Advice for *Glyphis glyphis* (Speartooth shark)	The approved conservation advice for Speartooth shark includes habitat degradation as a threat. Listed priority actions include implementing measures to reduce adverse impacts of habitat degradation and/or modification. This section and the proposed controls are consistent with this advice.
Approved Conservation advice *Rhincodon typus* (Whale shark)	The approved conservation advice for Whale Shark lists habitat disruption from mineral exploration, production and transport as a threat. Listed conservation actions include "Minimise offshore developments and transit time of large vessels in areas close to marine features likely to correlate with whale shark aggregations (Ningaloo Reef, Christmas Island and the Coral Sea) and along the northward migration route that follows the northern Western Australian coastline along the 200 m isobath". This section and the proposed controls are consistent with this advice.
Approved conservation advice for *Dermochelys coriacea* (Leatherback turtle)	The approved conservation advice for Leatherback turtle lists degradation of foraging areas and changes to breeding sites as a threat. Listed priority actions include measures to minimise habitat loss, disturbance and modification. This section and the proposed controls are consistent with this advice.
Approved Conservation Advice for *Aipysurus apraefrontalis* (Short-nosed Sea Snake)	The approved conservation advice for the Short-nosed sea snake lists the coral mortality at Ashmore Reef as a threat and notes the decline in this species has coincided with oil and gas exploration, including seismic surveys and exploration drilling. Listed regional priority actions includes ensuring there is no anthropogenic disturbance in areas where the Short-nosed Sea Snake occurs. This section and the proposed controls are consistent with this advice.
Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake)	The approved conservation advice for the Leaf-scaled sea snake lists degradation of reef habitat (including Ashmore Reef) as a threat. Listed regional priority actions includes measures to prevent habitat loss and disturbance. This section and the proposed controls are consistent with this advice.
Wildlife conservation plan seabirds (CoA 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 6.8) 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 plans 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 eight AMPs within the EMBA, including: • Cartier Island AMP • Kimberley AMP • Ashmore Reef AMP • Oceanic Shoals AMP • Mermaid Reef AMP • Argo-Rowley Terrace AMP • Christmas Island AMP • Cocos (Keeling) Island 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 of National Parks 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 National Parks of the proposed Activity was completed as part of the Consultation process (Section 4). 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 8). As such this EP is consistent with the Australian Marine Park Management plans.
ALARP	The residual risk has been demonstrated to be ALARP.

7.7 Worst Case Diesel Spill

7.7.1 Description of hazard

Diesel spill	This section considers three spill scenarios resulting in the release of marine diesel to the marine environment: • Release of marine diesel may occur from a support vessel fuel tank rupture due to collision. The maximum worst-case credible spill volume of diesel has been calculated as 250 m^3 based on the largest single fuel tank volume (250 m^3); • Due to a MODU refuelling event (5 m^3); or • Due to poor handling and storage of hydrocarbons, equipment failure, refuelling of machinery from day tank (500 L).

A HAZID was undertaken for the Skua-11 ST1 drilling activities and the below credible scenarios resulting in a marine diesel spill were identified (Table 7-7).

Table 7-7: Credible diesel releases to the marine environment

Scenario	Maximum Credible Spill	Release duration	Credibility justification
Release of diesel due to vessel collision	Based on AMSA (2015) 'other vessel collision' 250 m^3	6 hours	The volume of largest fuel tank for typical operations and drilling support vessels is 80 m^3 – 250 m^3. As a conservative approach, Jadestone have considered the highest volume within this bracket.
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	15 min	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.
Handling and storage of hydrocarbons, equipment failure, refuelling of machinery from day tank	500 L	Instantaneous	Handling and storage of hydrocarbons, equipment failure, refuelling of machinery from day tank.

The HAZID identified scenarios where the event leading to a marine diesel release would not occur, or, where due to the small volumes did not result in the marine diesel being released into the marine environment. These included:

1. Release marine diesel to the marine environment from a leak or rupture to the bunkering hose during marine diesel transfer from vessel to vessel – this is considered not credible for vessel-to-vessel transfers, as no marine diesel bunkering/refuelling within the Operational Area occurs for support vessels.
2. Release of marine diesel to the marine environment due to collision with the MODU – the MODU will be undertaking drilling activities in the "jack up" mode, whereby the working height is approximately 35 m above sea level. Given this, it's not considered credible that the bulk storage tank could be damaged by collision with other vessels, resulting in a release to the marine environment.
3. Release of marine diesel to the marine environment due to vessel grounding – A release of hydrocarbon due to vessel grounding and subsequent fuel tank rupture resulting from a loss of propulsion or due to navigational error resulting in a vessel running aground in shallow areas was not considered a credible scenario for the Skua-11 ST1 activity as the operational area is situated in deep water (approximately 80 m) and there are no charted reefs or islands that pose a grounding hazard. This is confirmed by seabed surveys in the operational area and surrounds.

7.7.2 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, the degree and location of tank damage and tank volume. 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 – 250 m^3 for typical support vessels, and 5 m^3 during transfer of diesel between support vessels/MODU (transfer rate x 15 minutes of flow). For the purposes of determining potential impacts, the larger volume of 250 m^3 has been used as it is considered a conservatively worst case and subsumes the 5 m^3 and 500 L scenarios.

7.7.3 Marine Diesel characteristics

Marine diesel is typically a mixture of volatile and persistent hydrocarbons. For the purpose of modelling the characteristics of Marine Gas Oil (MGO) was used, which has a low percentage of volatiles (6%) and with the greater proportion having moderate to very low volatility (89%). The aromatic content is approximately 3%. Viscosity is 4.0cP (at 25°C) and density of approximately 829.1kg/m^3 at 25°C.

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;
- Marine diesel will entrain under the water surface particularly when wind speed and resultant wave action increase; and
- The evaporation rate of diesel will increase in warmer air and sea temperatures such as those at the Skua-11 well OA.

The oil is categorised as a group II oil (light-persistent) according to the International Tankers Owners Pollution Federation (ITOPF, 2020) and US EPA/USCG classifications. The classification is based on the specific gravity of hydrocarbons in combination with relevant boiling point ranges.

7.7.4 Modelling Approach

A diesel spill scenario of 250 m^3 was modelled by RPS (RPS 2024) for a spill at the location of the Skua-11 well, within the Operational Area (i.e. where most vessel traffic will occur) to determine the dispersion behaviour of the released hydrocarbon within the marine environment. The modelling considered all seasons of the year (summer, winter and transitional) 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 250 m^3 diesel spill are as per those described in Section 7.6.2 with respect to Skua crude oil spill modelling.

Provided below are details specific to the diesel spill modelling scenario:

1. Stochastic approach: stochastic modelling was carried out with 100 replicate simulations for each season (summer, winter and transitional) totalling 300 simulations.
2. Probability contours: the results were presented in terms of statistical probability maps based on 300 simulations.
3. Completion of modelling: each of the 300 simulations was run for a period of 30 days allowing for the fate of dispersed hydrocarbons to be evaluated.

Threshold concentrations for each of the hydrocarbon phases were developed and applied to the modelling outputs to define the EMBA. The EMBA is denoted by the lowest hydrocarbon exposure thresholds to indicate all receptors that may be contacted by hydrocarbons of any phase from any scenario. However, for the purposes of hydrocarbon impact assessment, higher exposure thresholds are applied to indicate the receptors that could be affected (rather than just contacted). Separate thresholds are applied to denote areas where ecological impacts and socio-economic impacts may result, which are defined as;

- **Ecological EMBA** – the area in which the petroleum activity may result in environmental impacts.
- **Social EMBA** – the area in which the petroleum activity may result in socio-economic impacts.

The rationale for the selection of the thresholds is described in Section 7.6.3 and a summary of the threshold values applied to the Ecological and Social EMBAs is provided in Table 7 5.

The Ecological and Social EMBAs are derived from the seasonal stochastic modelling results (i.e. results from all 300 replicates), hence describes a substantially larger area than would be affected during any single spill event. The modelling does not take into consideration any of the spill prevention, mitigation and

response capabilities that Jadestone propose to have in place during the campaign to reduce volumes and/or prevent hydrocarbons from reaching sensitive areas.

7.7.5 Marine Diesel Modelling Results

The spatial extent of predicted areas of exposure at the low, moderate and high thresholds, following a vessel tank rupture at Skua-11 well is presented in Figure 7-3, with the summary data for exposure to receptors presented in Table 7-8.

Surface oil results

Results of the stochastic modelling indicated that surface sheens of oil (>1 g/m^2 – Social EMBA threshold) may interact with the following receptors:

- Vulcan Shoal after 60-91 hours (0-2% probability)
- Greater Frigatebird – Breading BIA after 42-82 hours (1-2% probability)
- Lesser Frigatebird – Breeding BIA after 60 hours (0-2% probability)
- Pygmy Blue Whale – Distribution after 59 hours (0-1% probability)
- Red-footed Booby – Breading BIA after 83 hours (2% probability)
- Wedge-tailed Shearwater – Breeding BIA after 59 hours (0-2% probability)
- White-tailed Tropicbird – Breeding BIA after 62 hours (0-1% probability)
- Indonesian EEZ – After 45 hours (0-2% probability)

Note, floating oil will not accumulate on submerged features and at open ocean locations.

Surface oil at concentrations of > 10 g/m^2 (Ecological EMBA threshold) were not predicted to reach any of the sensitive receptors (Table 7-8).

Entrained Oil results

Results of the stochastic modelling indicated that entrained oil concentrations greater than 100 ppb (Social and Ecological EMBA threshold) were predicted to reach the following locations (highest predicted concentrations):

- Vulcan Shoals (136 ppb) (0-2% probability)
- Barracouta Shoals (188 ppb) (0-1% probability)
- Greater Frigatebird – Breading BIA (132pbb) (0-2% probability)
- Lesser Frigatebird – Breeding BIA (122pbb) (0-1% probability)
- Red-footed Booby – Breading BIA (132pbb) (0-2% probability)
- Wedge-tailed Shearwater – Breeding (122pbb) (0-1% probability)
- White-tailed Tropicbird – Breeding BIA (106pbb) (0-1% probability)

Shoreline Oil Accumulation

No shoreline accumulation was predicted during summer and transitional conditions. Ashmore Reef and Hibernia Reef were predicted to experience shoreline accumulation at or above the 10 g/m^2 (Social EMBA) threshold with probabilities of 1%, denoting that 1 out of 100 simulations had reached the shorelines. The oil accumulation was predicted to occur 174 hours (7.25 days) after the spill commencement for Ashmore Reef and the maximum volume of oil ashore was 2 m^3 during the spill simulation.

No shoreline accumulation was predicted above the 100 g/m^2 (Ecological EMBA) threshold for any season (Table 7-8).

Dissolved Hydrocarbon Results

Dissolved hydrocarbons at concentrations of 100 ppb or greater (Social and Ecological EMBA threshold) were not predicted to contact any sensitive receptors during any season (Table 7-8).

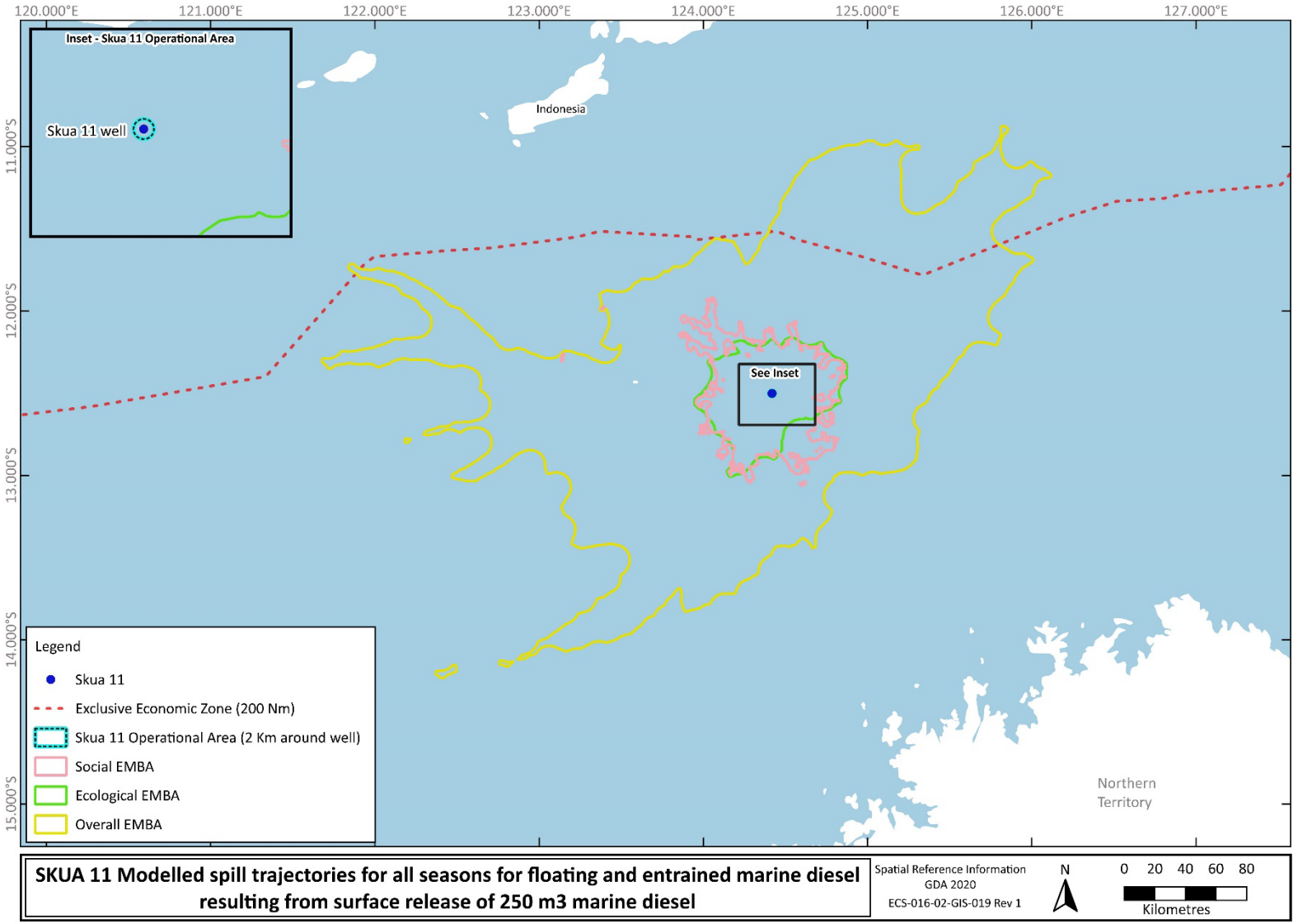


Figure 7-7: Modelled spill trajectories for all seasons for floating and entrained marine diesel resulting from surface release of 250 m^3 marine diesel

Table 7-8 Skua-11 Marine diesel spill modelling (surface release of 250 m^3) receptor exposure summary

Receptor	Name	Surface^		In-water (dissolved)^	In-water (entrained)^	Shoreline^	
		≥1 g/m^2	≥10 g/m^2	≥50 ppb	≥100 ppb	≥10 g/m^2	≥100 g/m^2
		(probability of exposure, minimum time to exposure)		(probability of exposure)	(probability of exposure)	(probability of exposure, minimum time to exposure, mean length of shoreline)	
BIA	Greater Frigatebird – Breeding	1-2%, 42-83 hours	—	—	0-2%	—	—
	Lesser Frigatebird – Breeding	0-2% 60 hours	—	—	0-1%	—	—
	Pygmy Blue Whale – Distribution	0-1% 59 hours	—	—	—	—	—
	Red-footed Booby – Breeding	2% 42-83 hours	—	—	0-2%	—	—
	Wedge-tailed Shearwater – Breeding	***8-*** 2% 59 hours	—	—	0-1%	—	—
	White-tailed Tropicbird – Breeding	0-1% 62 hours	—	—	0-1%	—	—
EEZ	Indonesian	0-2% 45 hours	—	—	—	—	—
RSB	Vulcan Shoal	0-2% 60-91 hours	—	—	0-2%	—	—
	Barracouta Shoal			—	0-1%		
Shoreline/AMP	Ashmore Reef	—	—	—	—	0-1%, 174 hours, 5 km	—
Shoreline	Hibernia Reef	—	—	—	—	0-1%, 325 hours, 2 km	—

^ Ranges in values shown are due to the different results between seasons.

7.7.6 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 7-9. For further information on the habitats, marine organisms and socio-economic receptors refer Section 3.

Table 7-9: Potential Impacts to sensitive receptors from a 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 Ecological 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 Ecological 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, 2008). 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.	
	Impact assessment to receptors within the Ecological EMBA There are two shoals within the Ecological EMBA for the worst-case diesel spill: 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.		

Receptors	Potential Impacts from a diesel spill		
	Floating and/or shoreline	**Entrained**	**Dissolved**
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, 1990). 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; and • Toothed whales are also less susceptible to impacts owing to gulp feeding behaviour (Geraci and St. Aubin, 1990).	
	Impact assessment to receptors within the Ecological EMBA Marine mammals that maybe present within the Ecological EMBA include threatened and migratory whales and dolphins, although no marine mammal BIAs intersect the Ecological EMBA. However, given the rapid evaporation of diesel it is unlikely that significant numbers would be impacted. The absence 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	*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.	

Receptors	Potential Impacts from a diesel spill		
	Floating and/or shoreline	**Entrained**	**Dissolved**
	accidental ingestion of hydrocarbons or result in the coating of sensitive epidermal surfaces.		
	Impact assessment to receptors within the Ecological EMBA Threatened and migratory marine reptile species may occur within the Ecological EMBA as turtles are widely dispersed at low densities across the region although no marine turtles BIAs intersects with the Ecological EMBA. In the unlikely event of a diesel spill occurring, individuals traversing open water may come into contact with water column or surface diesel.		
Fish (including Sharks and 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). 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.	
	Impact assessment to receptors within the Ecological EMBA		

Receptors	Potential Impacts from a diesel spill		
	Floating and/or shoreline	**Entrained**	**Dissolved**
	The whale shark BIA intersects with the Ecological 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 North West Shelf of Western Australia supports a diverse assemblage of fish and shark species, particularly in shallower water near islands and shoals. No KEFs occur within the Ecological EMBA. 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.		
Avifauna	*Potential impacts from surface oil* Estimates for the minimum thickness of surface 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 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 thermoregulate 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.	*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.	

Receptors	Potential Impacts from a diesel spill		
	Floating and/or shoreline	**Entrained**	**Dissolved**
	This may result in chemical impacts to feathers and exposed skin from the diesel.		
	Impact assessment to receptors within the Ecological EMBA Threatened and migratory seabirds and shorebirds that may have foraging, feeding, breeding and or nesting habitat in the vicinity of the Ecological EMBA. The Ecological EMBA intercepts with the outer extent of breeding BIAs for five seabird species (Wedge-tailed Shearwater, Greater Frigatebird, Lesser Frigatebird, Red-footed Booby and White-tailed Tropicbird). 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.		
AMPs	*Potential impacts from shoreline accumulation within the Social and Ecological EMBAs* There is one AMP within Social EMBA (Ashmore Reef AMP) where shoreline accumulation of 13g/m^2 was predicted with at a 1% probability. This is below the 100g/m^2 threshold where ecological affects are likely, but above the low threshold (10g/m^2) where socio-economic impact could be triggered.		
State Marine Parks	There are no State Marine Parks within the Social and Ecological EMBAs.		
World, National and Commonwealth Heritage Places	There are no World, National and Commonwealth Heritage Places within the Social or Ecological EMBAs.		
Threatened Ecological Communities	There are no threatened ecological communities within the Social or Ecological EMBAs.		
Wetlands of International Importance	There are no wetlands of international importance within the Social or Ecological EMBAs.		
KEFs	There are no KEFs within the Social or Ecological EMBAs.		

Receptors	Potential Impacts from a diesel spill		
	Floating and/or shoreline	Entrained	Dissolved
Consequence	**Likelihood**		**Ranking**
Minor	Unlikely – Heard of in the exploration and production industry. ITOPF has calculated that for the last 50 years the average number of incidents involving medium sized (7-700 tonnes) oil spills from vessels globally has decreased by over 90% and since 2009 stands at a yearly average of 6.6 spills per year globally. With the controls that are in place as detailed in this EP, the likelihood of a significant collision resulting in hydrocarbon release is therefore considered *unlikely*.		Low

7.7.7 Environmental performance

Environmental Risk		Unplanned release of diesel		
Performance Outcome		**No spill of diesel to the marine environment**		
I.D	**Management controls**	**Performance Standards**	**Measurement Criteria**	**Responsibility**
72	Compliance with MODU refuelling procedure ensures risks of spills during refuelling are reduced	All hoses are fitted with dry-break couplings and are buoyant or fitted with floats.	Bunkering checklist confirms preventative actions are undertaken	MODU OIM Vessel Master
		Visual inspection of dry break couplings and hoses prior to marine diesel transfer.		
		Permit-to-work documentation is complete and signed off to ensure refuelling is undertaken in accordance with the refuelling procedure.		
		One person on watch during refuelling.		
		Vessels maintain station by DP during refuelling procedure.		
		Radio communication maintained during refuelling between MODU and vessel.		
73	HSE equipment inspection	Bunding/drip trays under marine diesel powered equipment and potential leak sources on MODU are inspected prior to drilling activity.	Pre-start inspection report	Drilling Superintendent

Environmental Risk		Unplanned release of diesel		
Performance Outcome		**No spill of diesel to the marine environment**		
I.D	**Management controls**	**Performance Standards**	**Measurement Criteria**	**Responsibility**
74	Vessel planned maintenance system (PMS)	Documented maintenance program is in place for equipment including DP systems, engines and machinery on vessels that provides a status on the maintenance of equipment.	Records from vessel vetting process confirm PMS schedule adhered to.	Drilling Superintendent
75	Speed restrictions within the PSZ	Vessels operating within the PSZ must not exceed a speed of five (5) knots.	Project induction material for Vessel Masters and First Mates includes an environmental requirements section that details speed limit requirements.	Logistics Superintendent Drilling Superintendent
76	Shipboard Oil Pollution Emergency Plan requires: • Valid SOPEP/SMPEP • Spill kits available • Timely exercises undertaken	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/SMPEP	MODU OIM Vessel Master
77		Vessels to have stocks of onboard spill response kits/bins available and accessible onboard to respond to a spill as per their SOPEP.	Pre-mobilisation inspection records spill response bins/kits are readily available and stocked	MODU OIM Vessel Master
78		Drills undertaken as per SOPEP.	Exercise records	MODU OIM Vessel Master
79	Implement Skua -11 ST 1 Well Oil Pollution Emergency Plan (OPEP) (TM-50-PLN-I-00006)	In the event of a tier 2 or tier 3 oil spill, implement to reduce environmental impacts.	Incident Log	IMT Lead
80	Activity vessels equipped and crewed in accordance with Australian maritime requirements	Vessels will be equipped and crewed in accordance with the *Navigation Act 2012* (Cwlth) (as applicable for vessel size, type and class), including implementing: • Marine Order 21 (Safety and emergency procedures)	A Minimum Safe Manning Certificate is in place and identifies minimum crew qualifications to meet the STCW requirements (as	Logistics Superintendent Drilling Superintendent

Environmental Risk		Unplanned release of diesel		
Performance Outcome		**No spill of diesel to the marine environment**		
I.D	**Management controls**	**Performance Standards**	**Measurement Criteria**	**Responsibility**
		○ safety measures such as manning and watchkeeping. • Marine Order 27 (Safety of navigation and radio equipment), including: ○ radio equipment and communications ○ navigation safety measures and equipment ○ danger, urgency and distress signals and messages. • Marine Order 30 (Prevention of Collisions), including: ○ lights and signals as applicable to vessel class per COLREGS requirements. • Marine Order 71 (Masters and Deck Officers), including: ○ all master, mate and watchkeeper officer duties undertaken by crew certified as applicable to vessel class per International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 (STCW) requirements.	applicable for vessel size, type and class). Records of vessel crew STCW qualifications align with the Minimum Safe Manning Certificate (as applicable for vessel size, type and class). A Vessel Cargo Ship Safety Equipment Certificate demonstrates the vessel has lights, shapes and means of making sound signals and distress signals in accordance with COLREGS requirements (as applicable for vessel size, type and class).	
81	All support vessels requiring entry within the 500 m PSZ shall adhere to the MODU permit to work procedures	A 500 m PSZ has been established for the Skua-11 well and the same safety zone will be in place for the proposed Skua-11 ST1 drilling activities.	Gazette Notice to Mariners. Records of reporting of unauthorised entry into the safety zone.	MODU OIM Vessel Master

7.7.8 ALARP assessment

Vessel activities are required to support the drilling activity and cannot be eliminated. The use of marine diesel for the Skua-11 ST1 activity is necessary as the main fuel supply on vessels and the MODU. Vessel presence is implicit in the drilling activity to transfer supplies/equipment, offload equipment and waste, perform inspection and maintenance. Therefore, the risk of a marine diesel release cannot be completely eliminated from the Operational Area. The use of marine diesel by support vessels is standard industry practice. Marine diesel is considered a more environmentally friendly fuel than heavier fuel oils such as Heavy Fuel Oil (HFO) or Intermediate Fuel Oil (IFO) which have a greater persistence in the marine environment should a spill occur.

For vessels engaged in drilling activities, procedures provide controls, such as speed restrictions within the Operational Area to reduce the risk of collision during the drilling activity. Communication is established between the MODU and support vessels before they enter the Operational Area to ensure proposed activities are safe to proceed and to reduce the potential for vessel collision during simultaneous operations.

Controls are in place (refer Section 7.7.7) which reduce the likelihood of spill events. No further controls have been identified that could provide a net benefit in reducing the likelihood or consequence of a marine diesel release to the marine environment and thus the risk and impacts are considered to have been reduced to ALARP.

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
Use alternative energy sources	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	Engineering	N/A	N/A	Machinery is designed for using marine 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 hoses, no further administrative controls were identified.

7.7.9 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 & management system compliance	Jadestone's HSE Policy objectives are met. Section 8 demonstrates that Jadestone's HSE Management System is capable of continuously reviewing and updating activities and practices during the Drilling Activities, including spill response arrangements.
Stakeholder & reputation	Stakeholder consultation has been undertaken (see (Section 4), including engagement with the State and National response agencies of DoT and AMSA, commercial and recreational fishing industry bodies and fishers. Stakeholders have raised concerns regarding impacts from a spill to marine receptors, through implementation of control measures and a specific OPEP for the activity the likelihood of a significant event occurring is significantly reduced and response plans are in place. This has led to concerns from relevant persons being addressed adequately. 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.
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 (the National Plan) (AMSA, 2020) • AMOSPlan (AMOSC, 2021) • ITOPF (2014a) Technical Information Paper 7 (TIP 7) Clean-up of oil from shorelines • IPIECA (2008) Oil Spill Preparedness and Response Report Series • IPIECA (2015) A Guide to Shoreline Clean-up Techniques • IPIECA (2015) Contingency planning for oil spill on water: Good practice guidelines for the development of an effective spill response capability.
Environmental context & 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 Vulcan Shoals. Entrained oil is predicted to contact Vulcan and Barracuda Shoals. 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 • North-West Bioregional Plan • Principles of 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.
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. There is one AMPs (Ashmore Reef AMP) within the Social or Ecological EMBA. 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). 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 of National Parks 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 National Parks when the proposed response activities is completed as part of the Consultation process (Section 4). 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 8). As such this EP is consistent with the Australian Marine Park Management Plans.
ALARP	The residual risk has been demonstrated to be ALARP

8. 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; and
- 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 8.1);
- Key roles and responsibilities (Section 8.2);
- Training, competencies and ongoing awareness (Section 8.2.3);
- Monitoring, auditing, management of non-conformance and review (Sections 8.3 and 8.4);
- Incident response including Oil Pollution Emergency Plan (Section 8.5 and OPEP);
- Record keeping (Section 9); and
- Stakeholder consultation (see Section 4).

Jadestone is responsible for ensuring that activities within the Operational Area are managed in accordance with the EP, the implementation strategy and the Jadestone HSE 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.

8.1 Jadestone Business Management System (BMS).

Jadestone applies an integrated BMS 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 BMS ensures alignment between company objectives and the activities associated with operation of the Montara facilities in a structure that is illustrated by Figure 8-1.

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, 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 8-2).

Figure 8-1: Business management system structure

Figure 8-2: 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; and
- 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.

8.1.1 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, are captured, evaluated and disseminated for future implementation.

The Operational Excellence function is a continuous process and is summarised in Figure 8-3.

The Operational Excellence function addresses the key points of:

- Capturing of lessons learnt;
- Review of lessons learnt; and
- Incorporation of knowledge in future work.

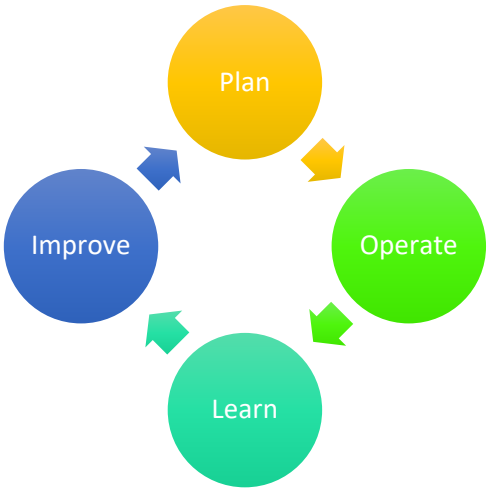


Figure 8-3: Operational and excellence business functions

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; and
- Prior experience.

Processes, procedures and systems are improved based on the historical lessons learnt and applied in subsequent phases.

8.1.2 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.

8.1.3 People

The Jadestone 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 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; and
- All contractors with personnel in the field are prequalified in accordance with the Contractor Management Framework.

Jadestone 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.

Jadestone will ensure that Contractor personnel (including key contractors related to environmental matters e.g. Drilling Contractor and Vessel Supplier personnel) meet the requirements as stipulated in their Company competency matrices (e.g. well control certificates, rigging and crane operator certificates etc.).

8.1.4 Risk Management

Jadestone has an integrated approach to risk management to cover all its business activities.

The HSE function provides a view of risk management 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 8.4.2.

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 8.4).

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.

8.1.5 Production Operations

The Production delivers safe and reliable operations as well as environmental performance. The Production 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. The Production function is responsible for asset optimisation, reliability, integrity and maintaining compliance. It thus interacts with most functions.

The Production function delivers environmental management at the activity level via detailed work instructions and tasks allowing the activity to meet the environmental performance requirements of operations Eps. 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.

8.1.6 Drill

The Drill function plans wells, manages drilling and completions activities for new wells and supports well operations. The Drill function works closely with the production function which governs the well acceptance and handover process.

8.1.7 HSE Performance

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.

8.2 Key Roles and Responsibilities

As per Regulations 22(3) and 22(4), 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 8.2.1 Organisational Chart**: outlines the key roles involved in operation of the activity;
- **Section 8.2.2 Communication requirements**: outlines how personnel fulfilling key roles are made aware of their responsibilities as described in the EP; and
- **Section 8.2.3 Assessment of Competency and Training**: outlines how Jadestone assesses and evaluates the competencies and training requirements of personnel responsible for achieving the commitments with this EP.

8.2.1 Organisational Structure and Responsibilities

The organisational structure for the activity is presented in Figure 8-4.

Each position has a position description outlining their HSE role and responsibilities, accountabilities and reporting lines (Table 8-1). It is the responsibility of all personnel to ensure that the requirements of the Jadestone HSE Policy are applied in their area of responsibility and that personnel are suitably trained and competent in their respective roles.

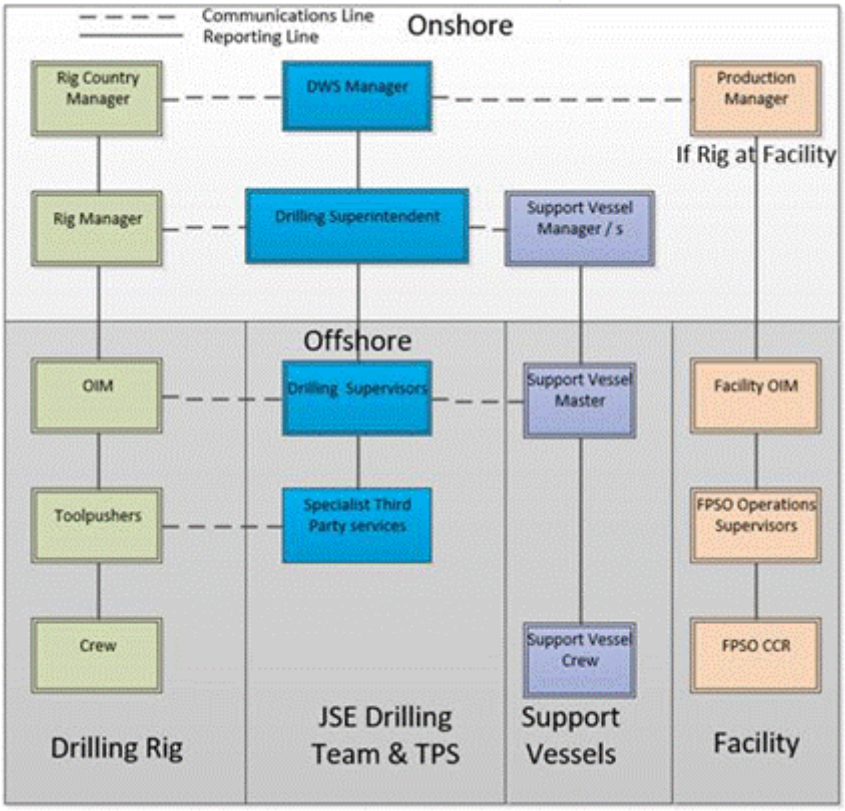


Figure 8-4: Drilling Operations organisation chart

Table 8-1: Responsibilities of Key Roles

Role	Key Responsibilities
Country Manager	• Ensures that activities are conducted in accordance with the Jadestone's HSE Policy. • 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.
Drilling and Completions Manager	• Responsible for ensuring that JSE policies, management principles and standards are followed in the well design and operational phases. • Responsible for ensuring that best practices are used in the planning and execution of wells during the campaign. This includes ensuring that lessons learned in previous campaigns are applied to this current campaign. • Ensure that the requirements of this EP are implemented.
Drilling Superintendent	• Responsible for offshore well construction operations meeting environmental performance and compliance requirements of the EP. • Coordinate all drilling and associated activities are undertaken by Company personnel and its contractors in accordance with approved programmes and appropriate legislation as detailed in this EP. • Ensure that all operational, technical and environmental incidents during well construction operations are reported to the Drilling and Completions Manager. • Responsible for regular reporting through daily reporting formats. • Manage HSE hazards and risks related to drilling maintenance activities by ensuring procedures and risk reduction processes have been employed for all activities under their control.
Senior Drilling Supervisor	• Responsible for offshore well construction operations meeting environmental performance and compliance requirements of the EP. • Responsible for ensuring correct drilling procedures and practices are followed. • Providing daily instructions to well operations, including well control procedures, or • Other relevant information, and implementing the well control kill method which will be agreed upon with the OIM.

Role	Key Responsibilities
	• Responsible for HSE and operational support for all phases of MODU operations. • Ensures the Activity is executed in compliance with JSE policies and is communicated, verbally and in writing, to the appropriate representatives on board the MODU. • Acts as JSE's senior representative and manages all JSE contractors on board the MODU. • Reports directly to the JSE Drilling Superintendent on all matters. • Provides support to the MODU OIM during emergencies. • Supports communication between the MODU OIM and the Montara Venture OIM
Logistics Coordinator	• Overall responsibility for implementation of the contractor management framework, including communication of EP requirements to contractors at the appropriate stages of contract management cycle.
MODU Offshore Installation Manager (OIM)	• The OIM is responsible for overall safety of the personnel on-board the MODU. • The OIM ensures the MODU's equipment is fit for purpose and maintained as such. • The OIM must ensure that those he appoints to positions with responsibility for well control are trained, competent, and familiar with those responsibilities and well control equipment. • The OIM ensures that risk management processes are employed to manage HSE hazards and risks at the MODU. • Overall responsibility for emergency response management on the MODU. • Liaises with Montara Venture OIM on daily basis and during emergencies. • Ensures all relevant HSE incidents are reported in accordance with JSE incident reporting and investigation procedures as captured in the bridging documentation. • Ensure regular drills and exercises are conducted and all personnel actively participate.
Montara Venture OIM	• Approve access / egress of the MODU into the field. • Ensuring appropriate well barriers are in place to facilitate MODU operations prior to handing over operational control of the well to Drilling. • Acting as on-scene Commander in the event of an environmental incident.
Drilling HSE Advisor (or delegate)	• Ensures review of daily, weekly and monthly reporting, as applicable, from MODU and support vessels. • Ensures environmental department liaison with the Drilling Manager, OIM and Vessel Masters to deliver compliance with all aspects of this EP. • Plans and schedules environmental inspections of the MODU and Vessels.

Role	Key Responsibilities
	• 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.
All personnel	• 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.

8.2.2 Communication of Responsibilities

The primary mechanism for ensuring personnel involved in the drilling activities are aware of the environmental commitments as listed in this EP are via: provision of environmental performance commitments lists; management of service providers and suppliers and online induction prior to mobilising to the site.

All personnel are required to complete an online induction that contains environmental components prior to arrival at the facility. 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; and
- Direction on where to find copies of the EP and OPEP.

8.2.3 Competencies and Training

Jadestone'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.

Competencies and training arrangements for personnel involved in oil pollution response are detailed in the OPEP and records maintained in EDMS.

8.3 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 6 and 7 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 inspection programs, auditing and exercising of response arrangements. In particular, routine commitments in the EP have been developed into a project commitments register. 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 this Section 8.3.3.

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.

8.3.1 Routine Monitoring

The purpose of monitoring and inspections is to record performance data and routinely check conformance with environmental performance standards and achievement of environmental performance outcomes defined by the EP. Routine inspection activities are scheduled and records kept in the project commitments register.

Emissions and discharges to the environment are monitored to assess the environmental performance of the operation on an ongoing basis. Table 8-2 details the quantitative records that are maintained for all emissions and discharges during routine or emergencies within the Operational Area as per Regulation 22(6) of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023*.

Table 8-2: Summary of routine monitoring

Measurement	Frequency	Monitoring Strategy	Record
Ballast water discharges	Intermittently – discharge events recorded as they occur.	Discharges determined from ballast water record log.	Ballast water records
Volumes of the following waste types are recorded: • general and putrescible waste; • hazardous waste; • timber/wood; • recyclables; • cardboard/paper; • metal; • plastic; • batteries	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.	Manifest documents Oil Record Book Garbage Record Book
Oily water	Intermittently – discharge events recorded as they occur.	Discharges determined from oil record book (or equivalent).	Oil record book
Garbage (food scraps)	Intermittently – discharge events recorded as they occur.	Discharges determined from garbage record book (or equivalent).	Garbage record book
Sewage	Intermittently – discharge events recorded as they occur.	Discharges determined from sewage record book (or equivalent).	Sewage record book
Volume of drilling discharges	Daily .	Volumes used determined from change in inventory.	Daily report
Cuttings discharge	Daily.	Onboard cuttings management system.	Daily mud report
Brine discharge stream OIW	Intermittently – discharge events recorded as they occur.	Oily water monitor on waste stream.	Daily drilling report

Measurement	Frequency	Monitoring Strategy	Record
Barite does not exceed concentrations of the following metals: Mercury – maximum 1 mg/kg dry weight; Cadmium – maximum 3 mg/kg dry weight; Lead – maximum 1000 mg/kg dry weight	As purchased.	Purchase records confirm that the stock barite in drilling fluids do not exceed maximum concentrations.	Purchase records
Cement and drilling fluid used	Daily.	Mud and Cementing Engineers monitor fluid and cement used/discharged.	Daily Drilling Report
Unplanned discharges of solid objects, hazardous liquids or hydrocarbons	In the event of an incident.	Incident only.	Incident log
GHG Emissions from fuel use and cold venting	At end of campaign	Assumption of Vessel/MODU/helicopter emissions based on fuel used Assumption of vented gas volume based on known annulus volume and pressures	Fuel records detail fuel use on MODU, helicopters and vessels Records of venting assume 274m^3 released to atmosphere

8.3.2 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.

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.

At least one audit ('pre-start inspection') of the MODU by Jadestone's Drilling HSE Advisor or delegate will be completed prior to commencement of the activity.

8.3.3 Inspections

During the drilling activity, weekly HSE inspections will be conducted to identify hazards, incidents and EP non-conformances. During the activity, Jadestone representatives will be conducting EP compliance inspections to check compliance against all of the environmental performance objectives and standards of this EP. This is managed through a commitments register which details all commitments and the records required to evidence compliance. Some tasks will be completed prior to activity commencement, whilst others will be completed on daily/weekly basis depending on the task. Inspections will be recorded on a standardised checklist. Compliance with the EP will be reported as per Table 8-3.

Any in-field opportunities for improvement or corrective actions will be discussed during the inspection with the work area supervisor and/or crew. Inspection reports will be distributed to relevant personnel (e.g. operations manager, OIM, Drilling manager, Jadestone onboard representatives) and HSE Department representatives for review.

8.3.4 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 Drilling HSE Advisor until closed.

Opportunities for improvement and corrective actions from daily operations, reviews, audits, inspections, monitoring and testing activities are documented and tracked to closure.

8.3.5 Reporting

Table 8-3 details the approach to routine environmental performance reporting to the Regulator. Reporting activities relating to reportable and recordable incidents will be as per Regulations 47, 48, 49 and 50.

8.4 Continuous Improvement (Operational Excellence)

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 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).

Any opportunities for improvements identified through the risk assessment (i.e. new controls adopted) will be evaluated via a Management of Change process (Section 8.4.1) prior to the EP, procedures or processes being modified.

Table 8-3: Summary of reporting requirements

Regulation	Requirement	Required Information	Timing	Type	Recipient
Before the Activity					
Regulation 54 – Notifying start and end of activity	NOPSEMA must be notified that the Activity is to commence.	Complete NOPSEMA's Start or End of Activity Notification form for both notifications.	At least 10 days before the Activity commences.	Written	NOPSEMA
During the Activity					
Regulation 47 – Notifying Reportable Incident	NOPSEMA must be notified of any reportable incidents The OPGGS(Environment) Regulations 2023defines a reportable incident 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 9-1.	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; and • 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;	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 corrective action that has been taken, or is proposed to be taken, to stop, control or remedy the reportable incident; and • The action that has been taken, or is proposed to be taken, to prevent a similar incident occurring in the future.			
Regulation 50 – Reporting 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
End of Activity					
Regulation 54 – Notifying start and end of activity	NOPSEMA must be notified that the Activity is completed.	Complete NOPSEMA's Start or End of Activity Notification form for both notifications.	Within 10 days after finishing.	Written	NOPSEMA
Regulation 51 – Reporting 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 Start and End of Activity 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 notification.	Written	NOPSEMA

8.4.1 Management of Change and Revisions of the Environment Plan

Division 5 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 submit a revised environment plan under section 26 to include a new activity under the title (rather than submit a separate plan for the 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 under the title before, or as soon as practicable after, the occurrence of:
(a)	Any significant new environmental impact or risk, or significant increase in an existing environmental impact or risk, of the activity that is not provided for in the environment plan in force for the activity; or
(b)	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 of the activity;
	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 Triggered the requirements of Regulation 38, which may result in a revision and resubmission of an EP to NOPSEMA. This process is described in the Jadestone's Management of Change Procedure (MoC) (JS-90-PR-G-00017). The MoC describes a system for identifying, tracking, responding, progressing and closing out change requests or queries raised by any party involved in the Activity. It also directs and instructs activity owners on external drivers of change including the environmental regulatory and stakeholder requirements, including (but not limited to):

- Changes to legislation;
- Provision of new or now relevant technical/scientific information;
- Changes in the management arrangements/plans for protected areas or species; or
- Receipt of new information from relevant persons relating to a proposed or existing activity.

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 38;

- 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 (GA-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 Document Control requirements. If the change meets any of the criteria detailed by Regulation 38, 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.

8.4.2 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; and
- Reportable and recordable incident reports.

8.5 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 the 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 MODU and support Vessels and are made accessible to all personnel. The relevant incident response procedures and manuals are detailed in the OPEP.

The Montara Emergency Response Plan (MV-70-PLN-F-00001), Incident Management Team Response Plan (IMTRP) (JS-70-PLN-F-00008) and associated 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 IMTRP sets out the structure, organisation and activation, or trigger processes for responding to an incident as well as detailing the schedule for exercising and testing the major hazard incidents and OPEP response and preparedness. The IMTRP also includes as an appendix the Oil Spill Response Arrangements (OSRA). The OSRA sets out the initial actions, notifications and responses once the IMT has triggered an oil spill response.

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 project specific commitments register.

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 BASSnet 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; and
- significant findings or any requirements from after-action review of drills or incidents.

9. Reporting

9.1 Routine Reporting

Table 9-1 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.

9.2 Incident Reporting

Table 9-1 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 Jadestone Incident and Hazard Reporting Procedure (JS-60-PR-F-00016) incorporates reporting timeframes for incidents depending on their environmental impacts, is provided to the MODU and support vessels, and reviewed on an annual basis.

Table 9-1: Routine and incident reporting requirements

Requirements	Timing
Routine Reporting	
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 below). The monthly report will include the following: • Circumstances and material facts concerning the incident; • Actions taken to avoid or mitigate any adverse environmental impacts; • Corrective action taken to prevent recurrence.	Not later than 15 days after the end of each calendar month.
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 litres to the marine environment; • Introduction of an IMS; • Harm or mortality to an EPBC listed marine fauna; • Gaseous releases of more than 300kg (~255 m^3 at Standard Ambient Temperature and Pressure); and • 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).
AMSA Oil pollution incidents in Commonwealth waters must be reported to AMSA.	Within 2 hours of incident having been identified: Tel: 1800-641-792

Requirements	Timing
Department of Climate Change, Energy, the Environment and Water (DCCEEW) DCCEEW will be notified of the following incidents: • Harm or mortality to Commonwealth EPBC Act Listed Marine Fauna (attributable to the operations activity). • Spills of hydrocarbons or environmentally hazardous chemicals more than 80 litres 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 7 days of becoming aware of the incident Tel: 1800-110-395 Tel: 02-6274-1111 environment.compliance@dcceew.gov.au EPBC.Permits@environment.gov.au
Reportable Incidents: Written Reports	
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; and • 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. Written report (Part 2) to NOPSEMA is required within 30 days.

* Refer to Section 9 of the Skua-11 ST1 Well Drilling OPEP for additional details in relation to external notifications and reporting associated with spills.

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APPENDIX A JADESTONE 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

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 B RELEVANT LEGISLATION

COMMONWEALTH LEGISLATION

Offshore Petroleum and Greenhouse Gas Storage Act 2006

The *OPGGSA 2006* (OPGGSA) entered into force 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 Commonwealth OPGGSA and its regulations, including but not limited to the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (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 Energy and Resources is advised by the Commonwealth Department of Industry, Innovation and Science (DIIS).

Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGS (E) Regulations)

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 NOPSEMA, who administers the regulations.

Environment Protection (Sea Dumping) Act 1981

This Act relates to the waters surrounding Australia's coastlines are protected from wastes and pollution dumped at sea by the *Environment Protection (Sea Dumping) Act 1981* (the Sea Dumping Act). The Sea Dumping Act regulates the loading and dumping of waste at sea. The Act fulfils Australia's international obligations under the London Protocol to prevent marine pollution by dumping of wastes and other matter

Environment Protection and Biodiversity Conservation Act 1999

While the Environment Regulations under the OPGGS Act (see below) manage day to day petroleum activities and apply to any activity that may have an impact on the environment, the EPBC Act (Chapter 4) 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, Water, Heritage and the Arts. 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.

Schedule 8 of the EPBC Regulations outlines the Australian IUCN Reserve Management Principles. Jadestone shall have regard to these principles. 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; and
- Great Barrier Reef Marine Park.

Australian Maritime Safety Authority Act 1990

This Act specifies that the Australian Maritime Safety Authority's (AMSA) role includes protection of the marine environment from pollution from ships and other environmental damage caused by shipping. AMSA is responsible for administering the Marine Orders in Commonwealth waters.

This Act specifies that the Australian Maritime Safety Authority's (AMSA) role includes protection of the marine environment from pollution from ships and other environmental damage caused by shipping. AMSA is responsible for administering the Marine Orders in Commonwealth waters.

Biosecurity Amendment (Ballast Water and Other Measures) Bill 2017 and Quarantine Regulations 2000

The Biosecurity Amendment and Quarantine Regulations are designed to prevent the introduction, establishment, and/or spread within Australia, of human, animal or plant pests and diseases.

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.

The Act gives clarity to the present and ongoing jurisdictional arrangements for protecting and managing Australia's underwater cultural heritage in line with the 2010 Australian Underwater Cultural Heritage Intergovernmental Agreement.

The Act ensures Australia's underwater cultural inheritance is protected for future generations. It is aligned with the UNESCO 2001 Convention, facilitating Australia to be part of the global community's response to illegal salvaging, looting and trafficking of underwater cultural heritage.

Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007

This Act implements the requirements of MARPOL 73/78 Annex VI for shipping in Commonwealth waters.

National Greenhouse and Energy Reporting Act 2007

This Act establishes the legislative framework for the NGER Scheme which is a national framework for reporting greenhouse gas emissions, greenhouse gas projects and energy consumption and production by corporations in Australia. Several legislative instruments sit under the NGER Act, providing greater detail about corporations' obligations.

Navigation Act 2012

This Act requires that ships carrying oil and chemical tankers conform to relevant Regulations in Annex I of the MARPOL convention for the Prevention of Pollution from Ships. Marine Orders are a body of delegated legislation made pursuant to the Navigation Act 2012 and the Protection of the Sea (Prevention of Pollution from Ships) Act 1983.

Ozone Protection and Synthetic Greenhouse Gas Management Act 1989

This Act regulates the import, export and manufacture of ozone depleting substances such as firefighting equipment and refrigerants.

Protection of the Sea (Harmful Antifouling Systems) Act 2006

This Act relates to the protection of the sea from the effects of harmful anti-fouling systems. It prohibits the use of harmful organotins in anti-fouling paints used on ships.

Protection of the Sea (Prevention of Pollution from Ships) Act 1983

This Act gives effect to the International Convention for the Prevention of Pollution from Ships 1973/78 (MARPOL 73/78/97 and Annexes). It provides for penalties of up to AUD 10 million for not complying with the MARPOL. Marine Orders are a body of delegated legislation made pursuant to the Navigation Act 2012 and the Protection of the Sea (Prevention of Pollution from Ships) Act 1983.

INTERNATIONAL LEGISLATION

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.

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.

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.

Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention) (1979)

This Convention was concluded in 1979 and came into force on 1 November 1983. The Convention arose from a recommendation of the United Nations Conference on the Human Environment (Stockholm, 1972), and aims to conserve terrestrial, marine and avian species over the whole of their migratory range. It commits “Range States” to take action to conserve migratory species, especially those under threat. It is an umbrella agreement under which subsidiary regional agreements are established.

International Convention for the Protection of Pollution from Ships (1973) and Protocol (1978)

This Convention and Protocol (together known as MARPOL) build on earlier conventions in the same area. MARPOL is concerned with operational discharges of pollutants from ships. It contains five Annexes, dealing respectively with oil, noxious liquid substances, harmful packaged substances, sewage and garbage. Detailed rules are laid out as to the extent to which (if at all) such substances can be released in different sea areas. The legislation giving effect to MARPOL in Australia is the Protection of the Sea (Prevention of Pollution from Ships) Act 1983, the Navigation Act 2012 and several Parts of Marine Orders made under this legislation.

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 Cases of Oil Pollution Casualties (1969)

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.

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.

Minamata Convention on Mercury (2017)

The Minamata Convention on Mercury is an international treaty that seeks to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. Australia ratified the Convention in December 2021.

Article 9 of the Convention concerns controlling, and where feasible, reducing releases of mercury or mercury compounds to land and water. Article 11 of the Convention concerns disposal of mercury contaminated waste.

OTHER APPLICABLE STANDARDS, CODES AND GUIDELINES

Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000

These guidelines include limits for common contaminants and water quality parameters in marine and fresh water.

Australian Ballast Water Management Requirements (DAWE 2020)

These guidelines state the mandatory ballast water requirements and provide information on ballast pump tests, ballast water reporting and ballast water exchange calculations.

National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (2009)

Guidance document provides generic approach to a biofouling risk assessment and practical information on managing biofouling on hulls and niche areas.

National Occupational Health and Safety Commission (NOHC) Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008 (2004)]

Provides the mandatory criteria for determining whether a substance is hazardous based on its health effects, and optional criteria for determining whether a substance is hazardous based on its ecotoxicological and physicochemical properties

APPENDIX C 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. Given the visible nature of oil at this threshold it was determined appropriate to determine the Social EMBA for this study. 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. As such, 10 g/m^2 for floating oil has been determined as the appropriate threshold to determine the Ecological EMBA for this study, 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/m^2 and above based on NOPSEMA (2019). This threshold can also be used to inform response planning (RPS APASA, 2023).

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 Social EMBA for this study.

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, a 100 g/m^2 threshold has been selected to define the Ecological EMBA for this study.

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. On that basis, the 100 ppb entrained oil threshold has been selected to define both the Social and Ecological EMBAs for this study.

Thresholds of 10 ppb and 100 ppb were applied over a 1-hour time exposure , 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.

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. On this basis, the 50 ppb dissolved aromatic hydrocarbon threshold has been selected to define both the Social and Ecological EMBA for this study. 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).

APPENDIX D PROTECTED MATTERS SEARCH TOOL REPORTS

1. Skua 11 Operational Area PMST Report
2. Skua 11 EMBA PMST Report
3. Skua 11 Social EMBA PMST Report
4. Skua 11 Ecological EMBA PMST Report
5. Skua 11 Operational area with 20 km buffer (light and noise) PMST Report

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: 30-Jan-2024

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:	24
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:	63
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:	10
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
Commonwealth Marine Areas (EPBC Act)

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 acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	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

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	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		
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 Sea Snake, 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

Scientific Name	Threatened Category	Presence Text
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		
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

Scientific Name	Threatened Category	Presence Text
[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
[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

Scientific Name	Threatened Category	Presence Text
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
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

Scientific Name	Threatened Category	Presence Text
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 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]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	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

Scientific Name	Threatened Category	Presence Text
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]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	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

Scientific Name	Threatened Category	Presence Text
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
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

Scientific Name	Threatened Category	Presence Text
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
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

Scientific Name	Threatened Category	Presence Text
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 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

Scientific Name	Threatened Category	Presence Text
[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
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
[Aipysurus duboisii](#) Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
[Aipysurus fuscus](#) Dusky Sea Snake [1119]		Species or species habitat may occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		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

Scientific Name	Threatened Category	Presence Text
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		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 coggeri Cogger's Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platurus as Pelamis platurus Yellow-bellied Sea Snake [93517]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweiffei as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
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

Current Scientific Name	Status	Type of Presence
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
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

Current Scientific Name	Status	Type of Presence
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
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			
PTTEP AA Floating LNG Facility	2011/6025	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 survey	2009/5076	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Referral decision			
2D Marine Seismic Survey	2008/4623	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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Protected Matters Search Tool

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Matters of National Environment Significance	Count
World Heritage Properties	0
National Heritage Places	1
Wetlands of International Importance (Ramsar Wetlands)	3
Great Barrier Reef Marine Park	0
Commonwealth Marine Area	?
Listed Threatened Ecological Communities	0
Listed Threatened Species	51
Listed Migratory Species	62

Other Matters Protected by the EPBC Act	Count
Commonwealth Lands	109
Commonwealth Heritage Places	33
Listed Marine Species	122
Whales and Other Cetaceans	31
Critical Habitats	0
Commonwealth Reserves Terrestrial	1
Australian Marine Parks	23
Habitat Critical to the Survival of Marine Turtles	3

Extra Information	Count
State and Territory Reserves	0
Regional Forest Agreements	0
Nationally Important Wetlands	4
EPBC Act Referrals	??
Key Ecological Features	12
Biologically Important Areas	50
Bioregional Assessments	0
Geological and Bioregional Assessments	0

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 and is accurate at the time of generation.
Please see the caveat for interpretation of information provided here.
Consider carefully the age of information for decision making.

Report Metadata	Caveat

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World Heritage Places

[Resource Information]

Place ID	Place Name	State	Legal Status	Natural Values	Cultural Values	Website

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National Heritage Places [Resource Information]

Place ID	Place Name	State	Heritage Class	Legal Status	Website
106063	The West Kimberley	WA	Natural	Listed place	Australian Heritage Database

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Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site No.	Ramsar Site Name	Proximity	Website
40	HOSNIES SPRING	Within Ramsar site	Australian Wetlands
61	THE DALES	Within Ramsar site	Australian Wetlands
58	ASHMORE REEF NATIONAL NATURE RESERVE	Within Ramsar site	Australian Wetlands Database

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Great Barrier Reef Marine Park [Resource Information]

Zone ID	Zone Type	State	Permit Description	IUCN

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Commonwealth Marine Area [Resource Information]

Feature Name
Commonwealth Marine
Commonwealth Marine
Commonwealth Marine
Commonwealth Marine
Commonwealth Marine
Commonwealth Marine
Commonwealth Marine

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Listed Threatened Ecological Communities

[Resource Information]

				Presence	
Community ID	**Community Name**	**Threatened Category**	**Website**	**Rank**	**Text**

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Listed Threatened Species

Species ID	Scientific Name	Common Name	Class
847	*Numenius madagascariensis*	Eastern Curlew, Far Eastern Curlew	Bird
855	*Calidris canutus*	Red Knot, Knot	Bird
856	*Calidris ferruginea*	Curlew Sandpiper	Bird
874	*Calidris acuminata*	Sharp-tailed Sandpiper	Bird
877	*Charadrius leschenaultii*	Greater Sand Plover, Large Sand Plover	Bird
1011	*Fregata andrewsi*	Christmas Island Frigatebird, Andrew's	Bird
26021	*Phaethon lepturus fulvus*	Christmas Island White-tailed Tropicbird,	Bird
59297	*Papasula abbotti*	Abbott's Booby	Bird
66671	*Ninox natalis*	Christmas Island Hawk-Owl, Christmas	Bird
67030	*Chalcophaps indica natalis*	Christmas Island Emerald Dove, Emerald Dove	Bird
67122	*Turdus poliocephalus erythropleurus*	Christmas Island Thrush	Bird
82408	*Accipiter hiogaster natalis*	Christmas Island Goshawk	Bird
88994	*Hypotaenidia philippensis andrewsi*	Buff-banded Rail (Cocos (Keeling) Islands),	Bird
91824	*Phaethon rubricauda westralis*	Red-tailed Tropicbird (Indian Ocean), Indian	Bird
832	*Tringa nebularia*	Common Greenshank, Greenshank	Bird
843	*Limnodromus semipalmatus*	Asian Dowitcher	Bird
26000	*Anous tenuirostris melanops*	Australian Lesser Noddy	Bird
77037	*Rostratula australis*	Australian Painted Snipe	Bird
82950	*Sternula nereis nereis*	Australian Fairy Tern	Bird
86432	*Limosa lapponica menzbieri*	Northern Siberian Bar-tailed Godwit, Russkoye	Bird

[Resource Information]

Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status
May	Species or species	Critically Endangered	Migratory	Migratory Wetlands	Listed
May	Species or species	Vulnerable	Migratory	Migratory Wetlands	Listed - overfly marine
Known	Species or species	Critically Endangered	Migratory	Migratory Wetlands	Listed - overfly marine
Known	Species or species	Vulnerable	Migratory	Migratory Wetlands	Listed
Known	Species or species	Vulnerable	Migratory	Migratory Wetlands	Listed
Known	Breeding known to	Endangered	Migratory	Migratory Marine Birds	Listed
Known	Species or species	Endangered			Listed
Known	Species or species	Endangered			Listed
Known	Species or species	Vulnerable			
Known	Species or species	Endangered			
Likely	Species or species	Endangered			
Known	Species or species	Endangered			
Known	Species or species	Endangered			
Known	Breeding known to	Endangered			
May	Species or species	Endangered	Migratory	Migratory Wetlands	Listed - overfly marine
Known	Species or species	Vulnerable	Migratory	Migratory Wetlands	Listed - overfly marine
Known	Breeding known to	Vulnerable			Listed
May	Species or species	Endangered			Listed - overfly marine
May	Species or species	Vulnerable			
Known	Species or species	Endangered			

Cetacean Status	Website
	Species Profile and
	Species Profile and
	Species Profile and
	Species Profile and
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	Species Profile and
	Species Profile and
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Listed Migratory Species

Species ID	Scientific Name	Common Name
825	*Anous stolidus*	Common Noddy
847	*Numenius madagascariensis*	Eastern Curlew, Far Eastern Curlew
855	*Calidris canutus*	Red Knot, Knot
856	*Calidris ferruginea*	Curlew Sandpiper
858	*Calidris melanotos*	Pectoral Sandpiper
874	*Calidris acuminata*	Sharp-tailed Sandpiper
877	*Charadrius leschenaultii*	Greater Sand Plover, Large Sand Plover
994	*Phaethon rubricauda*	Red-tailed Tropicbird
1011	*Fregata andrewsi*	Christmas Island Frigatebird, Andrew's Frigatebird
1012	*Fregata ariel*	Lesser Frigatebird, Least Frigatebird
1013	*Fregata minor*	Great Frigatebird, Greater Frigatebird
1014	*Phaethon lepturus*	White-tailed Tropicbird
1021	*Sula dactylatra*	Masked Booby
1022	*Sula leucogaster*	Brown Booby
1023	*Sula sula*	Red-footed Booby
1077	*Calonectris leucomelas*	Streaked Shearwater
59309	*Actitis hypoleucos*	Common Sandpiper
82849	*Sternula albifrons*	Little Tern
84292	*Ardenna pacifica*	Wedge-tailed Shearwater
678	*Apus pacificus*	Fork-tailed Swift
808	*Hydroprogne caspia*	Caspian Tern
817	*Sterna dougallii*	Roseate Tern
832	*Tringa nebularia*	Common Greenshank, Greenshank
843	*Limnodromus semipalmatus*	Asian Dowitcher
844	*Limosa lapponica*	Bar-tailed Godwit
59570	*Acrocephalus orientalis*	Oriental Reed-Warbler
82845	*Onychoprion anaethetus*	Bridled Tern
83000	*Thalasseus bergii*	Greater Crested Tern

[Resource Information]

	Presence				
Class	**Rank**	**Text**	**Threatened Category**	**Migratory Status**	**Migratory Category**
Bird	Likely	Species or species		Migratory	Migratory Marine Birds
Bird	May	Species or species	Critically Endangered	Migratory	Migratory Wetlands
Bird	May	Species or species	Vulnerable	Migratory	Migratory Wetlands
Bird	Known	Species or species	Critically Endangered	Migratory	Migratory Wetlands
Bird	May	Species or species		Migratory	Migratory Wetlands
Bird	Known	Species or species	Vulnerable	Migratory	Migratory Wetlands
Bird	Known	Species or species	Vulnerable	Migratory	Migratory Wetlands
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	Known	Breeding known to	Endangered	Migratory	Migratory Marine Birds
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	Likely	Species or species		Migratory	Migratory Marine Birds
Bird	Known	Species or species		Migratory	Migratory Wetlands
Bird	Known	Congregation or		Migratory	Migratory Marine Birds
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	Likely	Species or species		Migratory	Migratory Marine Birds
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	May	Species or species	Endangered	Migratory	Migratory Wetlands
Bird	Known	Species or species	Vulnerable	Migratory	Migratory Wetlands
Bird	Known	Species or species		Migratory	Migratory Wetlands
Bird	Known	Species or species		Migratory	Migratory Wetlands
Bird	Known	Breeding known to		Migratory	Migratory Marine Birds
Bird	Known	Breeding known to		Migratory	Migratory Wetlands

Marine Status	Cetacean Status	Website
Listed		Species Profile and
Listed		Species Profile and
Listed - overfly marine		Species Profile and
Listed - overfly marine		Species Profile and
Listed - overfly marine		Species Profile and
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Listed (as Sterna		Species Profile and
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Listed - overfly marine		Species Profile and
Listed (as Sterna		Species Profile and
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Listed - overfly marine		Species Profile and
Listed (as Sterna		Species Profile and
Listed (as Sterna bergii)		Species Profile and

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Commonwealth Lands

[Resource Information]

Commonwealth Land	Commonwealth Land	Agency	State
94208	Commonwealth Land -	Unknown	CI
94207	Commonwealth Land -	Unknown	CI
94206	Commonwealth Land -	Unknown	CI
94205	Commonwealth Land -	Unknown	CI
94103	Commonwealth Land -	Environment and	CI
94209	Commonwealth Land -	Unknown	CI
94204	Commonwealth Land -	Unknown	CI
94203	Commonwealth Land -	Unknown	CI
94202	Commonwealth Land -	Unknown	CI
94201	Commonwealth Land -	Unknown	CI
96015	Commonwealth Land -	Unknown	CKI
96016	Commonwealth Land -	Unknown	CKI
96020	Commonwealth Land -	Unknown	CKI
96011	Commonwealth Land -	Unknown	CKI
96012	Commonwealth Land -	Unknown	CKI
96017	Commonwealth Land -	Unknown	CKI
96010	Commonwealth Land -	Unknown	CKI
96019	Commonwealth Land -	Unknown	CKI
96013	Commonwealth Land -	Unknown	CKI
96018	Commonwealth Land -	Unknown	CKI
94276	Commonwealth Land -	Unknown	CI
94277	Commonwealth Land -	Unknown	CI
94274	Commonwealth Land -	Unknown	CI
94275	Commonwealth Land -	Unknown	CI
94272	Commonwealth Land -	Unknown	CI
94273	Commonwealth Land -	Unknown	CI
94270	Commonwealth Land -	Unknown	CI
94271	Commonwealth Land -	Unknown	CI
94241	Commonwealth Land -	Unknown	CI
94279	Commonwealth Land -	Unknown	CI
94242	Commonwealth Land -	Unknown	CI
94250	Commonwealth Land -	Unknown	CI
94240	Commonwealth Land -	Unknown	CI

94243	Commonwealth Land -	Unknown	CI
94248	Commonwealth Land -	Unknown	CI
94249	Commonwealth Land -	Unknown	CI
94105	Commonwealth Land -	Environment and	CI
94104	Commonwealth Land -	Environment and	CI
94246	Commonwealth Land -	Unknown	CI
94247	Commonwealth Land -	Unknown	CI
94244	Commonwealth Land -	Unknown	CI
94245	Commonwealth Land -	Unknown	CI
94101	Commonwealth Land -	Environment and	CI
94102	Commonwealth Land -	Environment and	CI
94219	Commonwealth Land -	Unknown	CI
94218	Commonwealth Land -	Unknown	CI
94217	Commonwealth Land -	Unknown	CI
94216	Commonwealth Land -	Unknown	CI
94215	Commonwealth Land -	Unknown	CI
94214	Commonwealth Land -	Unknown	CI
94212	Commonwealth Land -	Unknown	CI
94213	Commonwealth Land -	Unknown	CI
94210	Commonwealth Land -	Unknown	CI
94211	Commonwealth Land -	Unknown	CI
94251	Commonwealth Land -	Unknown	CI
94253	Commonwealth Land -	Unknown	CI
94252	Commonwealth Land -	Unknown	CI
94255	Commonwealth Land -	Unknown	CI
94254	Commonwealth Land -	Unknown	CI
94256	Commonwealth Land -	Unknown	CI
94257	Commonwealth Land -	Unknown	CI
94258	Commonwealth Land -	Unknown	CI
94259	Commonwealth Land -	Unknown	CI
94278	Commonwealth Land -	Unknown	CI
94280	Commonwealth Land -	Unknown	CI
94237	Commonwealth Land -	Unknown	CI
96007	Commonwealth Land -	Unknown	CKI
96003	Commonwealth Land -	Unknown	CKI
96004	Commonwealth Land -	Unknown	CKI

96005	Commonwealth Land -	Unknown	CKI
96006	Commonwealth Land -	Unknown	CKI
96008	Commonwealth Land -	Unknown	CKI
96009	Commonwealth Land -	Unknown	CKI
96001	Commonwealth Land -	Unknown	CKI
96002	Commonwealth Land -	Unknown	CKI
94232	Commonwealth Land -	Unknown	CI
94231	Commonwealth Land -	Unknown	CI
94230	Commonwealth Land -	Unknown	CI
94233	Commonwealth Land -	Unknown	CI
94234	Commonwealth Land -	Unknown	CI
94236	Commonwealth Land -	Unknown	CI
94238	Commonwealth Land -	Unknown	CI
94235	Commonwealth Land -	Unknown	CI
94261	Commonwealth Land -	Unknown	CI
94239	Commonwealth Land -	Unknown	CI
94227	Commonwealth Land -	Unknown	CI
94226	Commonwealth Land -	Unknown	CI
94225	Commonwealth Land -	Unknown	CI
94224	Commonwealth Land -	Unknown	CI
94228	Commonwealth Land -	Unknown	CI
94229	Commonwealth Land -	Unknown	CI
94222	Commonwealth Land -	Unknown	CI
94223	Commonwealth Land -	Unknown	CI
94220	Commonwealth Land -	Unknown	CI
94221	Commonwealth Land -	Unknown	CI
94269	Commonwealth Land -	Unknown	CI
94268	Commonwealth Land -	Unknown	CI
94260	Commonwealth Land -	Unknown	CI
94266	Commonwealth Land -	Unknown	CI
94267	Commonwealth Land -	Unknown	CI
96014	Commonwealth Land -	Unknown	CKI
94262	Commonwealth Land -	Unknown	CI
94263	Commonwealth Land -	Unknown	CI
94264	Commonwealth Land -	Unknown	CI
94265	Commonwealth Land -	Unknown	CI
52278	Commonwealth Land -	Unknown	ACI
52277	Commonwealth Land -	Unknown	ACI
52276	Commonwealth Land -	Unknown	ACI

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Commonwealth Heritage Places [Resource Information]

Place ID	Place Name	State	Heritage Class	Legal Status	Website
105358	Direction Island (DI)	EXT	Historic	Listed place	Australian Heritage
105337	Administrators House	EXT	Historic	Listed place	Australian Heritage
105339	Drumsite Industrial Area	EXT	Historic	Listed place	Australian Heritage
105356	Administration Building	EXT	Historic	Listed place	Australian Heritage
105359	West Island Elevated	EXT	Historic	Listed place	Australian Heritage
105402	Malay Kampong Group	EXT	Historic	Listed place	Australian Heritage
105357	Type 2 Residences	EXT	Historic	Listed place	Australian Heritage
105353	RAAF Memorial	EXT	Historic	Listed place	Australian Heritage
105315	Settlement Christmas	EXT	Historic	Listed place	Australian Heritage
105236	Oceania House and	EXT	Historic	Listed place	Australian Heritage
105408	Type T Houses Precinct	EXT	Historic	Listed place	Australian Heritage
105409	Old Co-op Shop	EXT	Historic	Listed place	Australian Heritage
105246	Industrial and	EXT	Historic	Listed place	Australian Heritage
105363	Home Island Foreshore	EXT	Historic	Listed place	Australian Heritage
105362	Early Settlers Graves	EXT	Historic	Listed place	Australian Heritage
105360	Government House	EXT	Historic	Listed place	Australian Heritage
105220	Home Island Industrial	EXT	Historic	Listed place	Australian Heritage
105355	Home Island Cemetery	EXT	Historic	Listed place	Australian Heritage
105354	Qantas Huts (former)	EXT	Historic	Listed place	Australian Heritage
105222	Six Inch Guns	EXT	Historic	Listed place	Australian Heritage
105221	Slipway and Tank	EXT	Historic	Listed place	Australian Heritage
105433	Malay Kampong	EXT	Historic	Listed place	Australian Heritage
105223	West Island Housing	EXT	Historic	Listed place	Australian Heritage
105361	Captain Ballards Grave	EXT	Historic	Listed place	Australian Heritage
105186	South Point Settlement	EXT	Historic	Listed place	Australian Heritage
105187	Christmas Island	EXT	Natural	Listed place	Australian Heritage
105185	Poon Saan Group	EXT	Historic	Listed place	Australian Heritage
105219	West Island Mosque	EXT	Historic	Listed place	Australian Heritage
105297	Phosphate Hill Historic	EXT	Historic	Listed place	Australian Heritage
105480	Scott Reef and Surrounds - Commonwealth Area	EXT	Natural	Listed place	Australian Heritage Database
105218	Ashmore Reef National Nature Reserve	EXT	Natural	Listed place	Australian Heritage Database
105255	Mermaid Reef - Rowley Shoals	WA	Natural	Listed place	Australian Heritage Database

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Listed Marine Species

[Resource Information]

				Presence			
Species ID	**Scientific Name**	**Common Name**	**Class**	**Rank**	**Text**	**Threatened Category**	**Migratory Status**
642	*Motacilla cinerea*	Grey Wagtail	Bird	Known	Species or species		Migratory
644	*Motacilla flava*	Yellow Wagtail	Bird	Known	Species or species		Migratory
662	*Hirundo rustica*	Barn Swallow	Bird	Known	Species or species		Migratory
678	*Apus pacificus*	Fork-tailed Swift	Bird	Likely	Species or species		Migratory
808	*Hydroprogne caspia*	Caspian Tern	Bird	Known	Breeding known to		Migratory
817	*Sterna dougallii*	Roseate Tern	Bird	Known	Breeding known to		Migratory
824	*Anous minutus*	Black Noddy	Bird	Known	Breeding known to		
825	*Anous stolidus*	Common Noddy	Bird	Likely	Species or species		Migratory
832	*Tringa nebularia*	Common Greenshank,	Bird	May	Species or species	Endangered	Migratory
843	*Limnodromus*	Asian Dowitcher	Bird	Known	Species or species	Vulnerable	Migratory
844	*Limosa lapponica*	Bar-tailed Godwit	Bird	Known	Species or species		Migratory
847	*Numenius*	Eastern Curlew, Far	Bird	May	Species or species	Critically Endangered	Migratory
855	*Calidris canutus*	Red Knot, Knot	Bird	May	Species or species	Vulnerable	Migratory
856	*Calidris ferruginea*	Curlew Sandpiper	Bird	Known	Species or species	Critically Endangered	Migratory
858	*Calidris melanotos*	Pectoral Sandpiper	Bird	May	Species or species		Migratory
874	*Calidris acuminata*	Sharp-tailed Sandpiper	Bird	Known	Species or species	Vulnerable	Migratory
877	*Charadrius*	Greater Sand Plover,	Bird	Known	Species or species	Vulnerable	Migratory
994	*Phaethon rubricauda*	Red-tailed Tropicbird	Bird	Known	Breeding known to		Migratory
1011	*Fregata andrewsi*	Christmas Island	Bird	Known	Breeding known to	Endangered	Migratory
1012	*Fregata ariel*	Lesser Frigatebird,	Bird	Known	Breeding known to		Migratory
1013	*Fregata minor*	Great Frigatebird,	Bird	Known	Breeding known to		Migratory
1014	*Phaethon lepturus*	White-tailed Tropicbird	Bird	Known	Breeding known to		Migratory
1021	*Sula dactylatra*	Masked Booby	Bird	Known	Breeding known to		Migratory
1022	*Sula leucogaster*	Brown Booby	Bird	Known	Breeding known to		Migratory
1023	*Sula sula*	Red-footed Booby	Bird	Known	Breeding known to		Migratory
1077	*Calonectris leucomelas*	Streaked Shearwater	Bird	Likely	Species or species		Migratory
26000	*Anous tenuirostris*	Australian Lesser	Bird	Known	Breeding known to	Vulnerable	
26021	*Phaethon lepturus*	Christmas Island White-	Bird	Known	Species or species	Endangered	
59297	*Papasula abbotti*	Abbott's Booby	Bird	Known	Species or species	Endangered	
59309	*Actitis hypoleucos*	Common Sandpiper	Bird	Known	Species or species		Migratory
59570	*Acrocephalus orientalis*	Oriental Reed-Warbler	Bird	Known	Species or species		Migratory
66546	*Thalasseus*	Lesser Crested Tern	Bird	Known	Breeding known to		
77037	*Rostratula australis*	Australian Painted	Bird	May	Species or species	Endangered	
80610	*Cecropis daurica*	Red-rumped Swallow	Bird	Known	Species or species		Migratory
82845	*Onychoprion*	Bridled Tern	Bird	Known	Breeding known to		Migratory
82849	*Sternula albifrons*	Little Tern	Bird	Known	Congregation or		Migratory
83000	*Thalasseus bergii*	Greater Crested Tern	Bird	Known	Breeding known to		Migratory
84292	*Ardenna pacifica*	Wedge-tailed	Bird	Known	Breeding known to		Migratory

Migratory Category	Marine Status	Cetacean Status	Website
Migratory Terrestrial	Listed - overfly marine		Species Profile and
Migratory Terrestrial	Listed - overfly marine		Species Profile and
Migratory Terrestrial	Listed - overfly marine		Species Profile and
Migratory Marine Birds	Listed - overfly marine		Species Profile and
Migratory Marine Birds	Listed (as Sterna		Species Profile and
Migratory Marine Birds	Listed		Species Profile and
	Listed		Species Profile and
Migratory Marine Birds	Listed		Species Profile and
Migratory Wetlands	Listed - overfly marine		Species Profile and
Migratory Wetlands	Listed - overfly marine		Species Profile and
Migratory Wetlands	Listed		Species Profile and
Migratory Wetlands	Listed		Species Profile and
Migratory Wetlands	Listed - overfly marine		Species Profile and
Migratory Wetlands	Listed - overfly marine		Species Profile and
Migratory Wetlands	Listed - overfly marine		Species Profile and
Migratory Wetlands	Listed		Species Profile and
Migratory Wetlands	Listed		Species Profile and
Migratory Marine Birds	Listed		Species Profile and
Migratory Marine Birds	Listed		Species Profile and
Migratory Marine Birds	Listed		Species Profile and
Migratory Marine Birds	Listed		Species Profile and
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Migratory Marine Birds	Listed		Species Profile and
Migratory Marine Birds	Listed		Species Profile and
	Listed		Species Profile and
	Listed		Species Profile and
	Listed		Species Profile and
Migratory Wetlands	Listed		Species Profile and
Migratory Wetlands	Listed - overfly marine		Species Profile and
	Listed (as Sterna		Species Profile and
	Listed - overfly marine		Species Profile and
Migratory Terrestrial	Listed - overfly marine		Species Profile and
Migratory Marine Birds	Listed (as Sterna		Species Profile and
Migratory Marine Birds	Listed (as Sterna		Species Profile and
Migratory Wetlands	Listed (as Sterna bergii)		Species Profile and
Migratory Marine Birds	Listed (as Puffinus		Species Profile and

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Whales and Other Cetaceans [Res

				Presence	
Species ID	**Scientific Name**	**Common Name**	**Class**	**Rank**	**Text**
29	*Stenella longirostris*	Long-snouted Spinner	Mammal	May	Species or species
52	*Stenella coeruleoalba*	Striped Dolphin,	Mammal	May	Species or species
46	*Orcinus orca*	Killer Whale, Orca	Mammal	May	Species or species habitat may occur within area
47	*Peponocephala electra*	Melon-headed Whale	Mammal	May	Species or species habitat may occur within area
34	*Balaenoptera borealis*	Sei Whale	Mammal	Likely	Foraging, feeding or related behaviour likely to occur within area
41	*Lagenodelphis hosei*	Fraser's Dolphin, Sarawak Dolphin	Mammal	May	Species or species habitat may occur within area
74	*Mesoplodon densirostris*	Blainville's Beaked Whale, Dense-beaked Whale	Mammal	May	Species or species habitat may occur within area
72	*Indopacetus pacificus*	Longman's Beaked Whale	Mammal	May	Species or species habitat may occur within area
78900	*Tursiops aduncus (Arafura/Timor Sea populations)*	Spotted Bottlenose Dolphin (Arafura/Timor Sea populations)	Mammal	Likely	Species or species habitat likely to occur within area
48	*Pseudorca crassidens*	False Killer Whale	Mammal	Likely	Species or species habitat likely to occur within area
87942	*Sousa sahulensis*	Australian Humpback Dolphin	Mammal	Known	Breeding known to occur within area
59	*Physeter macrocephalus*	Sperm Whale	Mammal	May	Species or species habitat may occur within area
57	*Kogia breviceps*	Pygmy Sperm Whale	Mammal	May	Species or species habitat may occur within area
56	*Ziphius cavirostris*	Cuvier's Beaked Whale, Goose-beaked Whale	Mammal	May	Species or species habitat may occur within area

51	*Stenella attenuata*	Spotted Dolphin, Pantropical Spotted Dolphin	Mammal	May	Species or species habitat may occur within area
52	*Stenella coeruleoalba*	Striped Dolphin, Euphrosyne Dolphin	Mammal	May	Species or species habitat may occur within area
29	*Stenella longirostris*	Long-snouted Spinner Dolphin	Mammal	May	Species or species habitat may occur within area
62	*Globicephala macrorhynchus*	Short-finned Pilot Whale	Mammal	May	Species or species habitat may occur within area
60	*Delphinus delphis*	Common Dolphin, Short-beaked Common Dolphin	Mammal	May	Species or species habitat may occur within area
61	*Feresa attenuata*	Pygmy Killer Whale	Mammal	May	Species or species habitat may occur within area
64	*Grampus griseus*	Risso's Dolphin, Grampus	Mammal	May	Species or species habitat may occur within area
68417	*Tursiops truncatus s. str.*	Bottlenose Dolphin	Mammal	May	Species or species habitat may occur within area
35	*Balaenoptera edeni*	Bryde's Whale	Mammal	Likely	Species or species habitat likely to occur within area
38	*Megaptera novaeangliae*	Humpback Whale	Mammal	Known	Breeding known to occur within area
68418	*Tursiops aduncus*	Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin	Mammal	Likely	Species or species habitat likely to occur within area
59564	*Mesoplodon ginkgodens*	Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale	Mammal	May	Species or species habitat may occur within area
37	*Balaenoptera physalus*	Fin Whale	Mammal	Likely	Foraging, feeding or related behaviour likely to occur within area
36	*Balaenoptera musculus*	Blue Whale	Mammal	Known	Migration route known to occur within area

30	*Steno bredanensis*	Rough-toothed Dolphin	Mammal	May	Species or species habitat may occur within area
81322	*Orcaella heinsohni*	Australian Snubfin Dolphin	Mammal	Known	Breeding known to occur within area
85043	*Kogia sima*	Dwarf Sperm Whale	Mammal	May	Species or species habitat may occur within area

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Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
				Cetacean	Species Profile and
				Cetacean	Species Profile and
	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
Vulnerable	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
	Migratory (as Sousa chinensis)	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)

				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)
Vulnerable	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
Endangered	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)

				Cetacean	Species Profile and Threat Database (SPRAT)
	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
				Cetacean	Species Profile and Threat Database (SPRAT)

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Critical Habitats

[Resource Information]

Critical Habitat ID	Critical Habitat Name	Presence	Website

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Commonwealth Reserves Terrestrial [Resource Information]

Protected Area ID	Protected Area Name	Reserve Type	State	Jurisdiction	Environment
CWTH_05	Christmas Island	National Park	EXT	Commonwealth	Terrestrial

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Australian Marine Parks [Resource Information]

Zone ID	Park Name	Zone & IUCN	Network
nwartmuz03	Argo-Rowley Terrace	Multiple Use Zone	North-west
nwartmuz02	Argo-Rowley Terrace	Multiple Use Zone	North-west
ckinpz01	Cocos (Keeling) Islands	National Park Zone	Indian Ocean Territories
ckinpz02	Cocos (Keeling) Islands	National Park Zone	Indian Ocean Territories
ckinpz03	Cocos (Keeling) Islands	National Park Zone	Indian Ocean Territories
cinpz01	Christmas Island	National Park Zone	Indian Ocean Territories
ckihpz01	Cocos (Keeling) Islands	Habitat Protection Zone	Indian Ocean Territories
nwartnpz01	Argo-Rowley Terrace	National Park Zone	North-west
cihpz01	Christmas Island	Habitat Protection Zone	Indian Ocean Territories
nwashsan01	Ashmore Reef	Sanctuary Zone (IUCN Ia)	North-west
noocshpz02	Oceanic Shoals	Habitat Protection Zone (IUCN IV)	North
noocsspt04	Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)	North
nwkimhpz04	Kimberley	Habitat Protection Zone (IUCN IV)	North-west
nwkimhpz03	Kimberley	Habitat Protection Zone (IUCN IV)	North-west
nwashruz02	Ashmore Reef	Recreational Use Zone (IUCN IV)	North-west
nwmernpz01	Mermaid Reef	National Park Zone (IUCN II)	North-west
nwkimmuz01	Kimberley	Multiple Use Zone (IUCN VI)	North-west
nwcaisan01	Cartier Island	Sanctuary Zone (IUCN Ia)	North-west
nwkimnpz02	Kimberley	National Park Zone (IUCN II)	North-west
nwembmuz01	Eighty Mile Beach	Multiple Use Zone (IUCN VI)	North-west
nwartspt04	Argo-Rowley Terrace	Special Purpose Zone (Trawl) (IUCN VI)	North-west
noocsmuz03	Oceanic Shoals	Multiple Use Zone (IUCN VI)	North
noocsmuz05	Oceanic Shoals	Multiple Use Zone (IUCN VI)	North

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Habitat Critical to the Survival of Marine Turtles

Species ID	Scientific Name	Common Name	Behaviour	Presence	Season	Website
1765	Chelonia mydas	Green Turtle	Nesting	Known to occur	Dec - Jan	Species Profile and
1767	Lepidochelys olivacea	Olive Ridley Turtle	Nesting	Known to occur	May - Jul	Species Profile and Threat Database (SPRAT)
59257	Natator depressus	Flatback Turtle	Nesting	Known to occur	Aug - Sep	Species Profile and Threat Database (SPRAT)

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State and Territory Reserves

[Resource Information]

Protected Area ID	Protected Area Name	Reserve Type	State	Jurisdiction	Environment

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Regional Forest Agreements

[Resource Information]

RFA Region	State	Website

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Nationally Important Wetlands

[Resource Information]

Reference Code	Wetland Name	State	Website
EXT008	"The Dales", Christmas	EXT	Australian Wetlands
EXT004	Hosine's Spring,	EXT	Australian Wetlands
EXT001	Ashmore Reef	EXT	Australian Wetlands Database
EXT007	Mermaid Reef	EXT	Australian Wetlands Database

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EPBC Act Referrals [Resource Information]

Reference Number	Title of referral	Jurisdiction	Industry Type	Stage	Stage Description	Referral Outcome	Website
2000/43	Exploration for Mineable	CI	Exploration (mineral, oil	Completed	Withdrawn	Controlled Action	EPBC Referral List
2001/152	WA-295-P Kerr-McGee	CM	Exploration (mineral, oil	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2001/237	Boat Ramp	CI	Transport - Water	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2001/395	Lily Beach Recreational	CI	Tourism and Recreation	Post-Approval	Approval Decision	Controlled Action	EPBC Referral List
2001/400	Lily Beach Rock Pool	CI	Tourism and Recreation	Completed	Withdrawn	Controlled Action	EPBC Referral List
2001/434	Christmas Island Airport	CI	Transport - Air and	Post-Approval	Approval Decision	Controlled Action	EPBC Referral List
2001/435	Christmas Island Port	CI	Transport - Water	Post-Approval	Approval Decision	Controlled Action	EPBC Referral List
2001/436	Road	CI	Transport - Land	Post-Approval	Approval Decision	Controlled Action	EPBC Referral List
2001/487	East Christmas Island	CI	Mining	Completed	Approval Decision	Controlled Action	EPBC Referral List
2001/510	Nava-1 Cable System	CM	Telecommunications	Completed	Withdrawn	Controlled Action	EPBC Referral List
2002/694	Construction of mobile	CI	Telecommunications	Completed	Withdrawn	Controlled Action	EPBC Referral List
2002/718	Mobile Radio	CI	Telecommunications	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2002/722	Crazy Ant Aerial Baiting	CI	Natural Resources	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2002/844	Red-footed booby bird	CKI	Agriculture and Forestry	Referral Decision	S89 - Awaiting	Controlled Action	EPBC Referral List
2003/1177	Construction of a Power	CKI	Energy Generation and	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2003/1217	Salvage, transport and	CI	Mining	Post-Approval	Approval Decision	Controlled Action	EPBC Referral List
2003/1239	Public Ferry Hovercraft	CKI	Transport - Water	Post-Approval	Approval Decision	Controlled Action	EPBC Referral List
2003/1279	Community Recreation	CI	Tourism and Recreation	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1487	Housing and Garden	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1538	Building of a carport	WA	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1561	Christmas	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1564	Extension of a	CI	Commercial	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1735	Realignment of Gaze	CI	Transport - Land	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1799	Light Industrial	CI	Commercial	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1801	Lot 1056 Extensions	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1807	Internal and external	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1837	Dwelling demolition,	CI	Commercial	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1887	Buffett Close	CKI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2004/1895	Breeding, husbandry,	CKI	Agriculture and Forestry	Completed	Withdrawn	Controlled Action	EPBC Referral List
2004/1919	Garage and Office	CI	Commercial	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2005/1958	Translocation of T.gigas	CKI	Aquaculture	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2005/1970	Verandah Extension to	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2005/2203	Rocky Point Dwelling	CI	Residential	Referral Decision	S76 - Awaiting	Referral Decision	EPBC Referral List
2005/2269	Water supply upgrade	CI	Water Management and	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2005/2315	Addition of Verandah to	CI	Residential	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2005/2447	upgrade of House 11,	CKI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2006/2515	Supermarket	CI	Commercial	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral Detail
2006/2632	96-108 Gaze Road -	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List

2006/2728	Upgrade of Residence,	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2006/2803	courtyard shower &	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2006/2811	renovate free-standing	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2006/2903	Upgrade of House 16	CKI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2006/2992	Identification of	CI	Commonwealth	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2007/3260	Deep Water Northwest	WA	Exploration (mineral, oil	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2007/3295	Residential upgrade, 2	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2007/3312	Swimming Pool	CI	Tourism and Recreation	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2007/3338	Hydroponics Research	CI	Agriculture and Forestry	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2007/3390	Infrasound Monitoring	CKI	Science and Research	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2007/3568	Cultural Appearance	CI	Tourism and Recreation	Completed	Lapsed	Controlled Action	EPBC Referral List
2008/4111	Development of Browse	CM	Energy Generation and	Completed	Withdrawn	Controlled Action	EPBC Referral List
2008/4230	Subdivision of Lot 571	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2008/4383	Baiting Efficacy Trial of	CI	Natural Resources	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2009/4685	Power Station Diesel	CI	Energy Generation and	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2009/4763	Trials of a bait delivery	CI	Natural Resources	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2009/4851	Subdivision of Part 7 of	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2009/4873	Asbestos Removal from	CI	Commonwealth	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2009/4887	Asbestos Removal from	CKI	Commonwealth	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2009/4933	Maintenance of Tai Jin	CI	Commonwealth	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2009/4969	Home Island slipway &	CKI	Commonwealth	Completed	Withdrawn	Controlled Action	EPBC Referral List
2009/5016	Helicopter baiting of	CI	Commonwealth	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2009/5039	Alterations and	CI	Commonwealth	Completed	Withdrawn	Referral Decision	EPBC Referral List
2010/5306	Proposed Community	CKI	Tourism and Recreation	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2010/5387	External Upgrade of	CKI	Commonwealth	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2010/5393	Offshore Canning Multi	WA	Exploration (mineral, oil	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2010/5511	Home Island Slipway	CKI	Transport - Water	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2010/5749	Eco quad tours for West	CKI	Tourism and Recreation	Completed	Withdrawn	Controlled Action	EPBC Referral List
2011/5856	Residential	CKI	Residential	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2011/5935	Kingtree & Ironstone-1	CM	Exploration (mineral, oil	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2011/6056	New Housing Program	CI	Commonwealth	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2011/6127	Australia to Singapore	WA	Telecommunications	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2011/6172	Mariner Non-Exclusive	WA	Exploration (mineral, oil	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2012/6284	Development of a small	CKI	Tourism and Recreation	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2012/6353	Refurbishment and	CI	Residential	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2012/6438	Aerial Baiting of Yellow	CI	Natural Resources	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2012/6454	Christmas Island Fuel	CI	Commonwealth	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2012/6463	Westralia SPAN Marine	CM	Exploration (mineral, oil	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2012/6653	Phosphate Mining in	CI	Mining	Post-Approval	Approval Decision	Controlled Action	EPBC Referral List
2012/6658	Repsol 3d & 2D Marine	CM	Exploration (mineral, oil	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2012/6675	Commonwealth	CI	Transport - Water	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2013/6833	Installation of a	CKI	Water Management and	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2013/6836	Yellow Crazy Ant	CI	Commonwealth	Post-Approval	Approval Decision	Controlled Action	EPBC Referral List
2013/6851	Replacement of	CI	Private	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List

2013/7009	Placement of bitumen/	CI	Mining	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2013/7102	APX-West Fibre-optic	WA	Telecommunications	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2014/7140	Cocos (Keeling) Islands	CKI	Transport - Water	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2014/7332	Laying a submarine	CM	Telecommunications	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2016/7779	Proposed exploration	CI	Mining	Completed	Approval Decision	Controlled Action	EPBC Referral List
2017/7996	INDIGO Marine Cable	CM	Telecommunications	Post-Approval	Referral Decision Made	Not Controlled Action	EPBC Referral List
2017/8126	INDIGO West	IW	Telecommunications	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2018/8220	Proposed sale or lease	CI	Commonwealth	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral Detail
2019/8467	Stormwater	CI	Water Management and	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2019/8492	Aerial Baiting, Yellow	CI	Natural Resources	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2020/8616	Flying Fish Cove	CI	Commonwealth	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2020/8731	Oman Australia Cable -	CM	Telecommunications	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2021/8922	Oman Australia Cable	CM	Telecommunications	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2021/8924	Flying Fish Cove	CI	Commonwealth	Completed	Referral Decision Made	Not Controlled Action	EPBC Referral List
2022/09409	Cocos West Island	CKI	Water Management and	Completed	Referral Decision Made		EPBC Referral List
2022/9153	Cocos West Island	CKI	Water Management and	Referral Publication	Referral Published	Referral Decision	EPBC Referral List

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Key Ecological Features [Resource Information]

Name	Region	Website
Carbonate bank and terrace system of the Van Diemen Rise	North	Key Ecological Feature Website
Carbonate bank and terrace system of the Sahul Shelf	North-west	Key Ecological Feature Website
Shelf break and slope of the Arafura Shelf	North	Key Ecological Feature Website
Ancient coastline at 125 m depth contour	North-west	Key Ecological Feature Website
Pinnacles of the Bonaparte Basin	North-west	Key Ecological Feature Website
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	North-west	Key Ecological Feature Website
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	North-west	Key Ecological Feature Website
Glomar Shoals	North-west	Key Ecological Feature Website
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	North-west	Key Ecological Feature Website
Pinnacles of the Bonaparte Basin	North	Key Ecological Feature Website
Canyons linking the Argo Abyssal Plain with the Scott Plateau	North-west	Key Ecological Feature Website
Continental Slope Demersal Fish Communities	North-west	Key Ecological Feature Website

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Biologically Important Areas

Species ID	Scientific Name	Common Name	Species Group	Behaviour	Presence	Website
1014	Phaethon lepturus	White-tailed Tropicbird	Seabirds	Breeding	Known to occur	Species Profile and
82850	Sternula albifrons	Little Tern	Seabirds	Resting	Known to occur	Species Profile and
66680	Rhincodon typus	Whale Shark	Sharks	Foraging	Known to occur	Species Profile and
81317	Balaenoptera musculus	Pygmy Blue Whale	Whales	Distribution	Known to occur	Species Profile and
81317	Balaenoptera musculus	Pygmy Blue Whale	Whales	Migration	Known to occur	Species Profile and
81322	Orcaella heinsohni	Australian Snubfin	Dolphins	Breeding	Known to occur	Species Profile and
81322	Orcaella heinsohni	Australian Snubfin	Dolphins	Calving	Known to occur	Species Profile and
81322	Orcaella heinsohni	Australian Snubfin	Dolphins	Foraging	Known to occur	Species Profile and
81322	Orcaella heinsohni	Australian Snubfin	Dolphins	Foraging (high density	Known to occur	Species Profile and
81322	Orcaella heinsohni	Australian Snubfin	Dolphins	Resting	Known to occur	Species Profile and
50	Sousa chinensis	Indo-Pacific Humpback	Dolphins	Calving	Known to occur	Species Profile and
50	Sousa chinensis	Indo-Pacific Humpback	Dolphins	Foraging	Likely to occur	Species Profile and
50	Sousa chinensis	Indo-Pacific Humpback	Dolphins	Foraging	Known to occur	Species Profile and
50	Sousa chinensis	Indo-Pacific Humpback	Dolphins	Significant habitat -	Likely to occur	Species Profile and
28	Dugong dugon	Dugong	Dugong	Breeding	Known to occur	Species Profile and
28	Dugong dugon	Dugong	Dugong	Calving	Known to occur	Species Profile and
28	Dugong dugon	Dugong	Dugong	Foraging	Known to occur	Species Profile and
28	Dugong dugon	Dugong	Dugong	Foraging (high density	Known to occur	Species Profile and
28	Dugong dugon	Dugong	Dugong	Nursing	Known to occur	Species Profile and
1763	Caretta caretta	Loggerhead Turtle	Marine Turtles	Foraging	Known to occur	Species Profile and
1765	Chelonia mydas	Green Turtle	Marine Turtles	Foraging	Likely to occur	Species Profile and
1765	Chelonia mydas	Green Turtle	Marine Turtles	Foraging	Known to occur	Species Profile and
1765	Chelonia mydas	Green Turtle	Marine Turtles	Internesting	Likely to occur	Species Profile and
1765	Chelonia mydas	Green Turtle	Marine Turtles	Internesting	Known to occur	Species Profile and
1765	Chelonia mydas	Green Turtle	Marine Turtles	Internesting buffer	Known to occur	Species Profile and
1765	Chelonia mydas	Green Turtle	Marine Turtles	Internesting buffer	Likely to occur	Species Profile and
1765	Chelonia mydas	Green Turtle	Marine Turtles	Mating	Likely to occur	Species Profile and
1765	Chelonia mydas	Green Turtle	Marine Turtles	Nesting	Known to occur	Species Profile and
1765	Chelonia mydas	Green Turtle	Marine Turtles	Nesting	Likely to occur	Species Profile and
1766	Eretmochelys imbricata	Hawksbill Turtle	Marine Turtles	Foraging	Likely to occur	Species Profile and
1766	Eretmochelys imbricata	Hawksbill Turtle	Marine Turtles	Internesting buffer	Known to occur	Species Profile and
1766	Eretmochelys imbricata	Hawksbill Turtle	Marine Turtles	Internesting buffer	Likely to occur	Species Profile and

1766	Eretmochelys imbricata	Hawksbill Turtle	Marine Turtles	Nesting	Likely to occur	Species Profile and
1766	Eretmochelys imbricata	Hawksbill Turtle	Marine Turtles	Nesting	Known to occur	Species Profile and
1767	Lepidochelys olivacea	Olive Ridley Turtle	Marine Turtles	Foraging	Known to occur	Species Profile and
59257	Natator depressus	Flatback Turtle	Marine Turtles	Foraging	Known to occur	Species Profile and
59257	Natator depressus	Flatback Turtle	Marine Turtles	Internesting buffer	Known to occur	Species Profile and
84292	Ardenna pacifica	Wedge-tailed	Seabirds	Breeding	Known to occur	Species Profile and
1012	Fregata ariel	Lesser Frigatebird	Seabirds	Breeding	Known to occur	Species Profile and
1013	Fregata minor	Greater Frigatebird	Seabirds	Breeding	Known to occur	Species Profile and
817	Sterna dougallii	Roseate Tern	Seabirds	Breeding	Known to occur	Species Profile and
1022	Sula leucogaster	Brown Booby	Seabirds	Breeding	Known to occur	Species Profile and
1023	Sula sula	Red-footed Booby	Seabirds	Breeding	Known to occur	Species Profile and
66546	Thalasseus bengalensis	Lesser Crested Tern	Seabirds	Breeding	Known to occur	Species Profile and
81317	Balaenoptera musculus	Pygmy Blue Whale	Whales	Foraging	Known to occur	Species Profile and
38	Megaptera	Humpback Whale	Whales	Calving	Known to occur	Species Profile and
38	Megaptera	Humpback Whale	Whales	Migration	Known to occur	Species Profile and
38	Megaptera	Humpback Whale	Whales	Migration (north and	Known to occur	Species Profile and
38	Megaptera	Humpback Whale	Whales	Nursing	Known to occur	Species Profile and
38	Megaptera	Humpback Whale	Whales	Resting	Known to occur	Species Profile and

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Bioregional Assessments

SubRegion	BioRegion	Website

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Geological and Bioregional Assessments

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Report Metadata

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Request Category	jasper studio
Request Parameters	json
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Caveat

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation (EPBC) Act 1999. The report provides the mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species, listed threatened ecological communities and other information could be useful as an indicator of potential habitat value. The mapped locations have been collated from a range of data sources at various resolutions as acknowledged at the end of this report.

Not all species listed under the EPBC Act have been mapped (see below) and therefore this report is a general guide only. Where data is available to support mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information to inform a referral may need to consider the qualifications below and may need to seek and consider other information sources.
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery, thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps, thematic spatial data and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived 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 point locations and environmental data layers.

Where very little information is available for species or a large number of maps are required in a short time-frame, maps are derived or supplemented either with 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

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered vagrants
- some recently listed species and ecological communities – as there may be a delay of several days in the mapping being made available for reporting after a listing event
- some terrestrial species that overfly the Commonwealth marine area
- some listed migratory and listed marine species, which are not listed as threatened species
- migratory species that are very widespread, vagrant, or only occur 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, may only have been mapped for recorded breeding sites
- seals which may 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.

Nationally Important Wetlands are not a Matter of National Environmental Significance and do not have protection under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). They may however provide habitat and support other listed species that are protected under the EPBC Act.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

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: 23-Feb-2024

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	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	12
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	46
Listed Migratory Species:	60

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:	15
Commonwealth Heritage Places:	4
Listed Marine Species:	109
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	1
Australian Marine Parks:	9
Habitat Critical to the Survival of Marine Turtles:	1

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	3
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	153
Key Ecological Features (Marine):	9
Biologically Important Areas:	34
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity
Ashmore reef national nature reserve	Within Ramsar site
Hosnies spring	Within 10km of 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
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
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Commonwealth Marine Areas (EPBC Act)
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Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

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

Scientific Name	Threatened Category	Presence Text
BIRD		
Accipiter hiogaster natalis Christmas Island Goshawk [82408]	Endangered	Species or species habitat known to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	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
Fregata andrewsi Christmas Island Frigatebird, Andrew's Frigatebird [1011]	Endangered	Foraging, feeding or related behaviour known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Ninox natalis Christmas Island Hawk-Owl, Christmas Boobook [66671]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
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
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Breeding 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
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
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
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Crocidura trichura		
Christmas Island Shrew [86568]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Pteropus natalis](#) Christmas Island Flying-fox, Christmas Island Fruit-bat [87611]	Critically Endangered	Species or species habitat known to occur within area
PLANT		
[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		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, 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	Foraging, feeding or related behaviour 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
[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	Foraging, feeding or related behaviour likely 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	Foraging, feeding or related behaviour 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

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
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
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	Foraging, feeding or related behaviour 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

Scientific Name	Threatened Category	Presence Text
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
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]		Congregation or aggregation 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 may 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

Scientific Name	Threatened Category	Presence Text
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour 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 known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour 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	Foraging, feeding or related behaviour likely 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

Scientific Name	Threatened Category	Presence Text
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
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	Foraging, feeding or related behaviour known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat may 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

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
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		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 likely 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

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	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
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
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	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
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
Environment and Heritage	
Commonwealth Land - Christmas Island National Park [94105]	CI

Commonwealth Land Name	State
Commonwealth Land - Christmas Island National Park [94102]	CI
Unknown	
Commonwealth Land - [52277]	ACI
Commonwealth Land - [52278]	ACI
Commonwealth Land - [94276]	CI
Commonwealth Land - [94277]	CI
Commonwealth Land - [94274]	CI
Commonwealth Land - [94275]	CI
Commonwealth Land - [94272]	CI
Commonwealth Land - [94273]	CI
Commonwealth Land - [94270]	CI
Commonwealth Land - [94279]	CI
Commonwealth Land - [94278]	CI
Commonwealth Land - [52276]	ACI
Commonwealth Land - [94280]	CI

Commonwealth Heritage Places		[Resource Information]
Name	State	Status
Historic		
South Point Settlement Remains	EXT	Listed place
Natural		
Ashmore Reef National Nature Reserve	EXT	Listed place
Christmas Island Natural Areas	EXT	Listed place
Scott Reef and Surrounds - Commonwealth Area	EXT	Listed place

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
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
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
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

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Fregata andrewsi Christmas Island Frigatebird, Andrew's Frigatebird [1011]	Endangered	Foraging, feeding or related behaviour 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
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]	Vulnerable	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
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
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]		Congregation or aggregation 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
Thalasseus bergii as Sterna bergii		
Greater Crested Tern [83000]		Breeding known to occur within area
Fish		

Scientific Name	Threatened Category	Presence Text
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
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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
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 macrorhynchus Whiskered Pipefish, Ornate Pipefish [66222]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 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
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

Scientific Name	Threatened Category	Presence Text
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
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		

Scientific Name	Threatened Category	Presence Text
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Aipysurus fuscus Dusky Sea Snake [1119]		Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		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	Foraging, feeding or related behaviour 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	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		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 Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platurus as Pelamis platurus Yellow-bellied Sea Snake [93517]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweiffei as Enhydrina schistosa Australian Beaked Sea Snake [93514]		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
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to 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

Current Scientific Name	Status	Type of Presence
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
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

Current Scientific Name	Status	Type of Presence
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]		Species or species habitat may 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
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat may 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

Current Scientific Name	Status	Type of Presence
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 likely 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)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Ashmore Reef	Recreational Use Zone (IUCN IV)
Ashmore Reef	Sanctuary Zone (IUCN Ia)
Cartier Island	Sanctuary Zone (IUCN Ia)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Dec - Jan		

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Browse Island	Nature Reserve	WA
Scott Reef	Nature Reserve	WA
Unnamed WA41775	5(1)(h) Reserve	WA

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Ashmore 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		Post-Approval
Project Crux Cable Lay and Operation	2022/09441		Completed
Project Fitzroy Expansion Offshore Cable Lay	2023/09674		Referral Decision
Controlled action			
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Audacious Oil Field Standalone Development	2001/407	Controlled Action	Completed
Browse FLNG Development, Commonwealth Waters	2013/7079	Controlled Action	Post-Approval
Conduct an exploration drilling campaign	2010/5718	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
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 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
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
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
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
Yellow Crazy Ant Biological Control	2013/6836	Controlled Action	Post-Approval
Not controlled action			
3D marine seismic survey in WA 314P and WA 315P	2004/1927	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Adele Trend TQ3D Seismic Survey	2001/252	Not Controlled Action	Completed
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
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
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
Dwelling demolition, maintenance and carpark/carport/storage shed	2004/1837	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action works			
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
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
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
P30 Hydrocarbon Exploration Well	2001/293	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	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
Saucepan 1 Exploration Well ACP23	2000/2	Not Controlled Action	Completed
Skua and Swift Oilfields	2006/3195	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Strumbo-1 Gas Exploration Well Permit Area WA-288-P	2002/884	Not Controlled Action	Completed
Supermarket Extensions	2006/2515	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 Manner)	Post-Approval
2D and 3D Seismic Survey WA-405-P	2009/5104	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D Seismic Survey WA-405-P	2008/4133	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 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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D Seismic Survey - Petroleum Exploration Area NT/P68, Eastern Bonaparte Basin	2006/2922	Not Controlled Action (Particular Manner)	Post-Approval
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, 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, 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 of AC/P4, AC/P17 and AC/P24	2006/2857	Not Controlled Action (Particular Manner)	Post-Approval
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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
Bonaparte 2D & 3D marine seismic survey	2011/5962	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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 Manner)	Post-Approval
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
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	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
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
Kingtree & Ironstone-1 Exploration Wells	2011/5935	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Mariner Non-Exclusive 2D Seismic Survey	2011/6172	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 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
Petrel MC2D Marine Seismic Survey	2010/5368	Not Controlled Action (Particular Manner)	Post-Approval
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
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Water supply upgrade	2005/2269	Not Controlled Action (Particular Manner)	Post-Approval
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
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
Pilot Appraisal Well - Torosa South-1	2008/3985	Referral Decision	Completed
Puffin South-West Development of Oil Reserves	2007/3834	Referral Decision	Completed
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

Name	Region
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
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

Biologically Important Areas		
Scientific Name	Behaviour	Presence
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

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Internesting	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Likely to occur
Chelonia mydas Green Turtle [1765]	Mating	Likely to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
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
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
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

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: 23-Feb-2024

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	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	11
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	32
Listed Migratory Species:	59

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:	3
Commonwealth Heritage Places:	2
Listed Marine Species:	96
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	8
Habitat Critical to the Survival of Marine Turtles:	1

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	3
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	124
Key Ecological Features (Marine):	9
Biologically Important Areas:	34
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Ashmore reef national nature reserve	Within 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
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

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	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	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
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	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 may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Breeding known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
FISH		

Scientific Name	Threatened Category	Presence Text
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
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
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
REPTILE		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, 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	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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Lepidochelys olivacea		
Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known 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
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		

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Breeding known 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 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
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]		Congregation or aggregation 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

Scientific Name	Threatened Category	Presence Text
[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 may 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
[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	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
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	Foraging, feeding or related behaviour likely 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
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 likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat may 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]		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 likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
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]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	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
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
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
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
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
Unknown	
Commonwealth Land - [52277]	ACI
Commonwealth Land - [52278]	ACI
Commonwealth Land - [52276]	ACI

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Ashmore Reef National Nature Reserve	EXT	Listed place
Scott Reef and Surrounds - Commonwealth Area	EXT	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
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

Scientific Name	Threatened Category	Presence Text
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
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
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 may 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

Scientific Name	Threatened Category	Presence Text
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
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]	Vulnerable	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
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
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 may 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]		Congregation or aggregation 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
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

Scientific Name	Threatened Category	Presence Text
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
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

Scientific Name	Threatened Category	Presence Text
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
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
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
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		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
[Aipysurus fuscus](#) Dusky Sea Snake [1119]		Species or species habitat known to occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Aipysurus tenuis](#) Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		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	Foraging, feeding or related behaviour 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	Foraging, feeding or related behaviour likely to occur within area
[Emydocephalus annulatus](#) Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platurus as Pelamis platurus Yellow-bellied Sea Snake [93517]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweiffei as Enhydrina schistosa Australian Beaked Sea Snake [93514]		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
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to 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

Current Scientific Name	Status	Type of Presence
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
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

Current Scientific Name	Status	Type of Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat may 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
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat may 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

Current Scientific Name	Status	Type of Presence
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely 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

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Ashmore Reef	Recreational Use Zone (IUCN IV)
Ashmore Reef	Sanctuary Zone (IUCN Ia)
Cartier Island	Sanctuary Zone (IUCN Ia)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Dec - Jan		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Browse Island	Nature Reserve	WA
Scott Reef	Nature Reserve	WA
Unnamed WA41775	5(1)(h) Reserve	WA

Nationally Important Wetlands

[Resource Information]

Wetland Name	State
Ashmore Reef	EXT

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Browse			
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Northern Endeavour Phase 1 Decommissioning	2022/09327		Post-Approval
Project Crux Cable Lay and Operation	2022/09441		Completed
Project Fitzroy Expansion Offshore Cable Lay	2023/09674		Referral Decision
Controlled action			
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Audacious Oil Field Standalone Development	2001/407	Controlled Action	Completed
Browse FLNG Development, Commonwealth Waters	2013/7079	Controlled Action	Post-Approval
Conduct an exploration drilling campaign	2010/5718	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 Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Montara 4, 5, and 6 Oil Production Wells, and Montara 3 Gas Re-Injection Well	2002/755	Controlled Action	Post-Approval
Prelude Floating Liquefied Natural Gas Facility and Gas Field Development	2008/4146	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
PTTEP AA Floating LNG Facility	2011/6025	Controlled Action	Completed
Torosa South Initial Appraisal Drilling	2007/3500	Controlled Action	Completed
Not controlled action			
3D marine seismic survey in WA 314P and WA 315P	2004/1927	Not Controlled Action	Completed
Adele Trend TQ3D Seismic Survey	2001/252	Not Controlled Action	Completed
AEC International Hydrocarbon Well Puffin 6	2000/36	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
Buffalo In-Fill Production Wells	2001/475	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
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Exploration Well AC/P23	2001/234	Not Controlled Action	Completed
Kaleidoscope exploration well	2001/182	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
P30 Hydrocarbon Exploration Well	2001/293	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Puffin Oil wells 7, 8 & 9 development	2005/2336	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
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 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 or 3D Marine Seismic Survey in Petroleum Permit Area AC/P35	2009/4864	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 - Petroleum Exploration Area NT/P68, Eastern Bonaparte Basin	2006/2922	Not Controlled Action (Particular Manner)	Post-Approval
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, 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, 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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
3D Seismic Survey (NT/P68)	2008/4121	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey of AC/P4, AC/P17 and AC/P24	2006/2857	Not Controlled Action (Particular Manner)	Post-Approval
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
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
Bassett 3D Marine Seismic Survey	2010/5538	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 2D & 3D marine seismic survey	2011/5962	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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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
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 Manner)	Post-Approval
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	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
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
Ichthys 3D Marine Seismic Survey	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	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
Mariner Non-Exclusive 2D Seismic Survey	2011/6172	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 Fibre Optic Cable Network Construction & Operation, Port Hedland WA to	2014/7223	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Darwin NT		Manner)	
Offshore Gas Exploration Drilling Campaign	2012/6384	Not Controlled Action (Particular Manner)	Post-Approval
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
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
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 Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
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
Pilot Appraisal Well - Torosa South-1	2008/3985	Referral Decision	Completed
Puffin South-West Development of Oil Reserves	2007/3834	Referral Decision	Completed
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
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

Biologically Important Areas		
Scientific Name	Behaviour	Presence
Dugong		
Dugong dugon		
Dugong [28]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
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]	Internesting	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known 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

Scientific Name	Behaviour	Presence
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
Natator depressus Flatback Turtle [59257]	Foraging	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
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

Scientific Name	Behaviour	Presence
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
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

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: 23-Feb-2024

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:	24
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:	63
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	Buffer Status
Commonwealth Marine Areas (EPBC Act)	In feature area

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	Buffer Status
BIRD			
Anous tenuirostris melanops			
Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Papasula abbotti			
Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Phaethon rubricauda westralis](#) Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area	In feature area
MAMMAL			
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area
SHARK			
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area	In feature area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat may occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area	In feature area
Migratory Marine Species			
[Anoxypristis cuspidata](#) Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area	In feature area
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area	In feature area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area	In feature area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area	In feature area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area	In feature area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area	In feature area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
[Physeter macrocephalus](#) Sperm Whale [59]		Species or species habitat may occur within area	In feature area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
[Pristis zijsron](#) Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anous stolidus			
Common Noddy [825]		Species or species habitat may occur within area	In feature area
Anous tenuirostris melanops			
Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat may occur within area	In feature area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Papasula abbotti](#) Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area	In feature area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area	In feature area
Fish			
[Bhanotia fasciolata](#) Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area	In feature area
[Campichthys tricarinatus](#) Three-keel Pipefish [66192]		Species or species habitat may occur within area	In feature area
[Choeroichthys brachysoma](#) Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area	In feature area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In feature area
[Corythoichthys amplexus](#) Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area	In feature area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area	In feature area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area	In feature area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area	In feature area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area	In feature area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area	In feature area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area	In feature area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area	In feature area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area	In feature area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area	In feature area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area	In feature area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area	In feature area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In feature area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area	In feature area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area	In feature area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area	In feature area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area	In feature area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area	In feature area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area	In feature area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In feature area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In feature area
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area	In feature area
Reptile			
[Aipysurus duboisii](#) Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area	In feature area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Aipysurus fuscus](#) Dusky Sea Snake [1119]		Species or species habitat may occur within area	In feature area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Hydrophis coggeri Cogger's Sea Snake [25925]		Species or species habitat may occur within area	In feature area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area	In feature area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area	In feature area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area	In feature area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area	In feature area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area	In feature area
Hydrophis platurus as Pelamis platurus Yellow-bellied Sea Snake [93517]		Species or species habitat may occur within area	In feature area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area	In feature area
Hydrophis zweiffei as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area	In feature area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area	In feature area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area	In feature area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area	In feature area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area	In feature area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area	In feature area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area	In feature area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat may occur within area	In feature area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area	In feature area

Extra Information

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Montara 4, 5, and 6 Oil Production Wells, and Montara 3 Gas Re-Injection Well	2002/755	Controlled Action	Post-Approval	In buffer area only
PTTEP AA Floating LNG Facility	2011/6025	Controlled Action	Completed	In feature area
Not controlled action				
AEC International Hydrocarbon Well Puffin 6	2000/36	Not Controlled Action	Completed	In buffer area only
Montara-3 Offshore Hydrocarbon Exploration Well Permit Area AC/RL3	2001/489	Not Controlled Action	Completed	In buffer area only
Puffin Oil wells 7, 8 & 9 development	2005/2336	Not Controlled Action	Completed	In buffer area only
Skua and Swift Oilfields	2006/3195	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
2 (3D) Marine Seismic Surveys	2009/4994	Not Controlled Action (Particular Manner)	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
2D Seismic Marine Survey	2001/363	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
3D Marine Seismic Survey	2008/4437	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Cartier East and Cartier West 3D Marine Seismic Surveys	2009/5230	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Tow West Atlas wreck from present location to boundary of EEZ	2010/5652	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Zeppelin 3D Seismic Survey	2011/6148	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed	In feature area
Puffin South-West Development of Oil Reserves	2007/3834	Referral Decision	Completed	In buffer area only

Biologically Important Areas			
Scientific Name	Behaviour	Presence	Buffer Status
Sharks			
Rhincodon typus			
Whale Shark [66680]	Foraging	Known to occur	In feature area

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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APPENDIX E SKUA-11 STI STAKEHOLDER CONSULTATION DOCUMENTATION

Table 1 PBC Summary

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	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. Email received on 14.03.24 confirming information has been received.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Email received 14.03.24 and passing onto another contact. Follow up for Skua-11 Drilling EP sent on 18.04.24. Follow up 21.03.24. Further follow up email 08.05.24. Follow up email 13.06.24.	No	N/A	North East Kimberley - 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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make presentation to Directors. 14.03.2024 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	First contact for Skua-11 Drilling EP on 13.03.2024. Follow ups x 3. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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 submission, 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.
Bardi Jawi Niimidiman Aboriginal Corporation	Email has not bounced back. Email received on 03.05.24 confirming information has been received.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Follow up for Skua-11 Drilling EP sent on 18.04.24. Further follow up email 08.05.24. Email received 09.05.24 with PBC protocol for	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.	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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make presentation to Directors. 14.03.2024 Email sent requesting information on	First contact for Skua-11 Drilling EP on 13.03.2024. Follow ups x 4. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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. JSE have presented to WAC in lieu direct response from PBC.	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.

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
		completion and execution. 13.06.24 email sent with amended Consultation Agreement for PBC consideration.			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. Brue Reef is culturally important to PBC.	OPEP includes an EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	community engagement sessions be passed onto members of the PBC and with invitation to attend		Offer to attend community 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.	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 submission, 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.
Gogolanyngor Aboriginal Corporation	Emails have not bounced back. Email received on 10.04.24 confirming information has been received.	Initial email for Skua-11 Drilling EP sent on 13.03.24. 10.04.24 Follow up email for Skua-11 Drilling EP. Response received on 10.04.24 indicating GAC consider they will not be affected and therefore consultation is not required. Follow up email 13.06.24.	N/A	N/A	Middle Dampier Peninsula Sea country	N/A	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make presentation to Directors. 14.03.2024 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 for Skua-11 Drilling EP on 13.03.2024. Follow ups x 1. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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.

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
Karajarri Traditional Owners Aboriginal Corporation	Emails have not bounced back.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Follow up for Skua-11 Drilling EP sent on 19.04.24. Further follow up email 08.05.24. Follow up email 13.06.24.	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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make presentation to Directors. 14.03.2024 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	First contact for Skua-11 Drilling EP on 13.03.2024. Follow ups x 2. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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 have been given multiple times. Offer to attend community 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 the intertidal zone along the southwest Kimberely Coast, 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 submission, 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.
Kariyarra Aboriginal Corporation	Email has not bounced back.	Initial email for Skua-11 Drilling EP sent on 14.03.24. Follow up for Skua-11 Drilling EP sent on 19.04.24. 03.07.24 - email received from legal adviser indicating KAC engaging in-house legal adviser who will contact Jadestone.	No	N/A	Whelk shells and stone shards were used to create engravings in limestone ridges, often depicting hunting methods for dugongs, turtles and fish.	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	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make presentation to Directors.	First contact for Skua-11 Drilling EP on 14.03.2024. Follow ups x 1. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested through meetings with KAC. In lieu of receiving information from the PBC, JSE has undertaken research to inform themselves of any areas of significance. JSE have presented to KAC in lieu direct response from PBC. Offers to present to PBC Directors and Elders have been sent multiple times.	In the event of a change in the activity which could lead to a significant increase in risk or impact around Port Hedland, 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

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
						significant spill moving towards WA coastline.			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.	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 submission, 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 YMAC and relevant land council to confirm contact.
Mayala Inninalang Aboriginal Corporation	Email has not bounced back.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Follow up for Skua-11 Drilling EP sent on 18.04.24. Further follow up email 08.05.24. Follow up email 13.06.24.	No	N/A	Overlaps EMBA. 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. Brue Reef is culturally important to PBC.	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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make presentation to Directors. 14.03.2024 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	First contact for Skua-11 Drilling EP on 13.03.2024. Follow ups x 2. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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. 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 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 submission, reach out to PBC contact to confirm: • Contact name • Contact details • JSE contact details

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
										• 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.
Ngarluma Aboriginal Corporation	Email has not bounced back. Email received on 14.03.24 confirming information has been received.	Initial email for Skua-11 Drilling EP sent on 14.03.24. 14.03.24 Ngarluma emailed response acknowledging email of 14.03.24 and welcoming opportunity to present to Ngarluma Board of Directors. Follow up for Skua-11 Drilling EP sent on 19.04.24. Further follow up email 09.05.24.	No	N/A	River systems and coastline of the west Pilbara including Burrup Peninsula and islands of the Dampier Archipelago. The Ngarluma People have several culturally significant "totem species" that may have been identified in the PMST search. Their animal totems include dugong, turtle, dolphin, hammerhead shark and manta ray.	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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make presentation to Directors. 14.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make presentation to Directors.	First contact for Skua-11 Drilling EP on 14.03.2024. Follow ups x 2. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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 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 submission, 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.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Follow up for Skua-11 Drilling EP sent on 18.04.24.	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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make	First contact for Skua-11 Drilling EP on 13.03.2024. Follow ups x2. Response requested by 31.05.2024, whilst indicating responses	**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	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

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
		Further follow up email 08.05.24. Follow up email 14.06.24.					presentation to Directors. 14.03.2024 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	received at any time will be received and considered.	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.	• 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 submission, 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.
Nyangumarta Karajarri Aboriginal Corporation	Emails have not bounced back. Email received on 14.03.24 confirming the information has been received.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Emails to arrange meeting sent on: 21.03.24 25.03.24 03.04.24 04.04.24 09.04.24 Meeting minutes sent 09.05.2024 Follow up email 14.06.24.	Meeting held 10.04.24	Presentation meeting notes sent on 09.05.24. JSE to inform PBC if a spill occurs. WAC to provide any further questions and feedback to JSE and confirm when like to	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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make presentation to Directors. 14.03.2024 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend. Meeting held on 10.04.2024.	First contact for Skua-11 Drilling EP on 13.03.2024. Follow ups x >5. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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. 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 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	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 submission, reach out to PBC contact to confirm:

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
				meet JSE again.					• 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. If unavailable reach out to KRED and relevant land council to confirm contact.
Nyangumarta Warrarn Aboriginal Corporation	Emails have not bounced back. Email received 29.04.24 confirming the information has been received.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Follow up for Skua-11 Drilling EP sent on 19.04.24. 07.05.24 email to organise meeting. 24.05.24 email sent with meeting minutes.	Meeting held on 23.05.24 in Perth.	Meeting notes sent on 24.05.24. JSE to inform PBC if a spill occurs. PBC to confirm the names of the Directors and Elders that attended.	Recognise Eighty Mile Beach for significant ecological values including migratory birds and flatback turtle populations. They are the traditional custodians of the land to the east of Port Hedland.	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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP 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. 23.05.24 Meeting held with PBC.	First contact for Skua-11 Drilling EP on 13.03.2024. Follow-ups x 2 Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**Consultation considered complete** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested through meeting with NWAC. 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 Eighty 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 submission, 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.
Nyul Nyul Aboriginal Corporation	Emails have not bounced back.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Follow up email 13.06.24.	Yes. Meeting held on 22.02.24. JSE participa	Presentation meeting notes sent on 08.03.24.	The Nyul Nyul Directors emphasized that the Lacepede Islands are one of the most significant places to their culture and	None required. EP assesses the potential impact on fish, turtles and other marine communities in general in the EP. The Lacepede Islands are	Meeting held on 22.02.2024. 13.03.2024 Initial email, with Invitation for Consultation document	First contact for Skua-11 Drilling EP on 13.03.2024. Response requested by 31.05.2024, whilst indicating responses	**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	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.

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
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			ted via Teams due to airlines strike.	Nyul Nyul to issue invitation to JSE to meet on country, including a visit to Lacepede Islands.	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.	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.	for Skua-11 Drilling EP 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.	received at any time will be received and considered.	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 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.	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 submission, 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.
Walalakoo Aboriginal Corporation	Emails have not bounced back. Email received on 14.03.24 confirming information has been received.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Continued email correspondence March – May 2024 – re Consultation Protocol. Request for further information (meeting attendees and location of Brue Reef) following meeting: 20.03.2024 21.03.2024 10.04.2024.	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	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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP 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 for Skua-11 Drilling EP on 13.03.2024. Follow-ups x >5. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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	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

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
		19.04.24 follow up email re location of Brue Reef. 13.05.24 email received with further updated consultation protocol. Follow up email 13.06.24.		meet JSE again. PBC still to advise the names of the 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.	Meeting held on 14.03.2024.		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.	trajectory confirmation (verbal or written). Every 6 months from EP submission, 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.
Wanjina Wunggurr Aboriginal Corporation	Emails have not bounced back.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Follow up for Skua-11 Drilling EP sent on 18.04.24. Further follow up email 08.05.24. Follow up email 13.06.24.	No	N/A	Overlaps 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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP 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 for Skua-11 Drilling EP on 13.03.2024. Follow ups x 2. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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	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).

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
									• control measures and mitigation measures in place for the activity • Full EP available online at JSE website.	Every 6 months from EP submission, 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.
Wanparta Aboriginal Corporation	Emails have not bounced back. Email received on 04.04.24 confirming information has been received.	Initial email for Skua-11 Drilling EP sent on 13.03.24. 04.04.24 Wanparta emailed response acknowledging email of 13.03.24 and prior emails in relation to Stag Operations EP. 15.04.24 Wanparta emailed to follow up on JSE attendance at May Board meeting. Follow up for Skua-11 Drilling EP sent on 19.04.24. Further follow up email 09.05.24. 13.05.24 JSE request consideration of shorter consultation opportunity at next Directors meeting. 14.08.24 Wanparta Board request meeting with JSE by end of year, request availability for meeting 13. November. 15.08.24	No	N/A	Land and waters in adjacent eastern portion of the 80 Mile Beach Marine Park. The WAC allocate particular importance to their totem species – the octopus, stingray, spiny bream fish and kestrel. The spiritual connection to sea country and the protection and management of marine life plays a significant role in the practice of lore, culture and customs for the WAC.	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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make presentation to Directors. 14.03.2024 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	First contact for Skua-11 Drilling EP on 13.03.24. Follow ups x 2. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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. 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 east of Port Hedland, 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 submission, 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		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
		JSE confirm attendance and request for cost estimate. 19.08.24 email received will provide cost estimate as soon as possible.								
Warrwa People Aboriginal Corporation	Emails have not bounced back.	Initial email for Skua-11 Drilling EP sent on 13.03.24. Follow up for Skua-11 Drilling EP sent on 18.04.24. Further follow up email 08.05.24. Follow up email 13.06.24.	No	N/A	Eastern shores of King Sound.	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.	13.03.24 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP 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 for Skua-11 Drilling EP on 13.03.2024. Follow ups x >5. Response requested by 31.05.2024, whilst indicating responses received at any time will be received and considered.	**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 submission, 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.
Yawuru Native Title Holders Aboriginal Corporation	Emails have not bounced back. Email received on 22.03.24 confirming information	Initial email for Skua-11 Drilling EP sent on 13.03.24. Emails to organise meeting: 21.03.24 22.03.24	Meeting held 10.04.24 at Broome.	Presentation meeting notes sent on 09.05.24. JSE to inform	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.	13.03.2024 Initial email, with Invitation for Consultation document for Skua-11 Drilling EP attached, seeking opportunity to make	First contact for Skua-11 Drilling EP on 13.03.2024. Follow-ups x 4 Response requested by 31.05.2024, whilst indicating responses received at any time will	**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.	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

PBC	Relevant PBC Info		Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation	Effort	Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
	has been received.	09.04.24 Follow up post meeting: 07.05.24. Meeting minutes sent 09.05.2024. Follow up email 13.06.24.		PBC if a spill occurs. PBC to provide any further questions and feedback to JSE and confirm when like to meet JSE again.		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.	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 10.04.2024.	be received and considered.	All queries were closed in the PBC meeting on JSE side. 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.	• 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 submission on 10 April 2024, 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.

Relevant Persons' engagement log - current consultation Skua 11

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)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	4-Apr-24	RECEIVED	How: Email	ACMA	Email received advising proposed activities are not in vicinity of any existing protection zones declared by ACMA. Encourage Jadestone to contact owners of submarine cables in the vicinity. Do not require additional consultation.	Jadestone to reach out to forthcoming submarine cable projects.
	3-May-24	SENT	How: Email	ACMA	Acknowledgement email. Jadestone will contact submarine cable owners.	No further action. Include in ongoing consultation.
Australian Fisheries Management Authority (AFMA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	22-Mar-24	RECEIVED	How: Email	AFMA	Acknowledgement of receipt, no comments on Skua activities, however encourage engage directly with operators in the relevant fisheries.	Noted
	26-Mar-24	SENT	How: Email	AFMA	Jadestone can confirm have engaged directly with CFA and commercial licence holders in the relevant fisheries.	No further action. Include in ongoing consultation.
Australian Hydrographic Office (AHO)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	18-Apr-24	RECEIVED	How: Email	AHO	Email received informing that the data supplied will be processed to update the National Charting products.	Awaiting response
	18-Apr-24	RECEIVED	How: Email	AHO_1	Email received advising that AHO has no concerns with the EP.	No further action
	22-Apr-24	RECEIVED	How: Email	AHO_2	Email received confirming AHO has no concerns regarding the activity and asking for clarification about the cautionary area around Skua-11 and if it needs to be added to AHO products.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	6-May-24	SENT	How: Email	AHO_2	Email sent advising no update required at this stage. Jadestone will notify AHO 4 weeks prior to commencement of the activity of required changes to charts.	No further action. Include in ongoing consultation.
Australian Maritime Safety Authority (AMSA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	30-Apr-24	PLACED	How: Call	N/A	Called AMSA to confirm receipt of information package. Information has been received and passed on to appropriate person to respond. Following up response.	Awaiting response
	3-Sep-24	PLACED	How: Call	N/A	Further follow up phone call to see if information package received. AMSA asked for information package to be resent.	Information package resent
	3-Sep-24	SENT	How: Email	AMSA	Further follow up email sent with information package.	Awaiting response
	2-Oct-24	RECEIVED	How: Email	AMSA	Email received with notification requirements.	Noted. EP updated to include notifications.
	30-Oct-24	SENT	How: Email	AMSA	Acknowledgment email.	No further action. Include in ongoing consultation.
Department of Agriculture, Fisheries & Forestry (DAFF)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	DAFF	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	19-Apr-24	RECEIVED	How: Email	DAFF	Email received informing that depending on the type of vessel used Jadestone may need to consider managing ballast water and biofouling of the hull(s) and legs of the MODU and then provided some links with information about it.	Jadestone to respond.
	6-May-24	SENT	How: Email	DAFF	Acknowledgement email and confirming that biofouling management is covered under Jadestone's Marine Biosecurity Manual. Email advising Jadestone do not require further advice.	No further action. Include in ongoing consultation.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Department of Defence (DOD)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	30-Apr-24	PLACED	How: Call	N/A	Left a message asking DOD to call Jadestone to confirm if information package was received and provide any feedback.	Awaiting return phone call
	3-May-24	RECEIVED	How: Email	DOD	Acknowledgement email apologising for delay, will forward onto appropriate person for response by 17 May.	Awaiting response
	3-May-24	RECEIVED	How: Email	DOD	Email asking to disregard previous email and will provide response by 31 May.	Awaiting response
	30-May-24	RECEIVED	How: Email	DOD_1	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
	24-Jun-24	SENT	How: Email	DOD_1	Acknowledgement email.	No further action. Include in ongoing consultation.
Department of Foreign Affairs and Trade (DFAT)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	28-Mar-24	PLACED	How: Call	N/A	Call to follow up if email received. Spoke with Timor Leste Branch of DFAT who advised Invitation for Consultation has been received, however no resources available to respond.	Noted. No further action
	24-May-24	RECEIVED	How: Email	DFAT	Email received recommending Jadestone consult with the Government of Timor-Leste. Request for contact details to remain confidential.	Noted. Jadestone will consult with Government of Timor-Leste.
	24-Jun-24	SENT	How: Email	DFAT	Acknowledgment of email. Jadestone have reached out to Government of Timor-Leste as recommended and contact details will be kept confidential.	No further action. Include in ongoing consultation.
Department of Industry, Science & Resources (DISR)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	30-Apr-24	PLACED	How: Call	N/A	Called DISR to confirm receipt of information package. Unable to confirm if received, suggested emailing again asking DISR to call Jadestone.	Resend email
	30-Apr-24	SENT	How: Email	DISR	Further follow up email sent requesting DISR call Jadestone.	No further action. Include in ongoing consultation.
Director of National Parks (DNP), Parks Australia, part of the Department of Climate Change, Energy, the Environment and Water (DCCEEW)	26-Mar-24	SENT	How: Email	DNP	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Additional information as required under 'updated Parks and NOPSEMA guidance note', including shape files sent to DNP.	Awaiting response
	18-Apr-24	SENT	How: Email	DNP_1	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	3-May-24	PLACED	How: Call	N/A	Called DNP to confirm receipt of information package. Information has been received and will call Jadestone if have any questions.	Awaiting response
	13-May-24	RECEIVED	How: Email	DNP_2	Acknowledgement of receipt and provision of notification requirements.	Refer to Assessment of Merit table. EP updated to include notifications.
	24-Jun-24	SENT	How: Email	DNP_2	Acknowledgement of email.	No further action. Include in ongoing consultation.
Maritime Border Command (MBC), part of Australian Border Force (ABF), part of the Department of Home Affairs (DHA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	30-Apr-24	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.
	9-May-24	SENT	How: Email	MBC	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.	No further action. Include in ongoing consultation.
NT Government department or agency						

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Aboriginal Areas Protection Authority (AAPA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	19-Mar-24	RECEIVED	How: Email	AAPA	Email received confirming AAPA not an interested person for Skua activities but would like to be updated on broader Montara project.	Noted
	26-Mar-24	SENT	How: Email	AAPA	Acknowledgement email. Jadestone will not contact AAPA in relation to Skua activities, but will keep AAPA updated on broader Montara project.	No further action.
Department of Chief Minister and Cabinet (NT)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called CM to confirm receipt of information package. Unsure if package received, confirming and will have appropriate person call Jadestone.	Awaiting return phone call
	1-May-24	RECEIVED	How: Email	DCMCNT	Acknowledgement of receipt and no comments or concerns.	Noted
	6-May-24	SENT	How: Email	DCMCNT	Acknowledgement email.	No further action. Include in ongoing consultation.
Department of Environment, Parks and Water Security (DEPWS)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	18-Apr-24	RECEIVED	How: Email	DEPWS	Email informing a response will be given on or before 30th of April if they feel is necessary.	No further action. Include in ongoing consultation
	18-Apr-24	RECEIVED	How: Email	DEPWS_1	Email received encouraging Jadestone to review listed legislation and to consider how the statutory requirements of these Acts may apply to the proposed project.	Noted. Jadestone preparing response
	8-May-24	SENT	How: Email	DEPWS_1	Acknowledgement email advising Jadestone includes reference to relevant legislation in OPEP, including contacting DEPWS in the event of a spill.	No further action. Include in ongoing consultation.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Department of Industry Tourism and Trade (DITT)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Email	N/A	Called DITT to confirm receipt of information package. Information package received. Will respond to email.	No further action. Include in ongoing consultation.
Marine Safety Branch - Department of Transport (DOT) (NT), part of the Department of Infrastructure, Planning and Logistics (DIPL)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	30-Apr-24	PLACED	How: Call	N/A	Called MSB to confirm receipt of information package. Package received. Asked to send through again to alternative contact for review.	Information package resent to alternative email
	30-Apr-24	SENT	How: Email	MSB	Email with information package resent to alternative email.	No further action. Include in ongoing consultation.
Northern Territory Environment Protection Authority (NTEPA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	18-Apr-24	RECEIVED	How: Email	NTEPA	Email received encouraging Jadestone to review listed legislation and to consider how the statutory requirements of these Acts may apply to the proposed project.	Noted. Jadestone preparing response
	8-May-24	SENT	How: Email	NTEPA	Acknowledgement email advising Jadestone includes reference to relevant legislation in OPEP, including contacting DEPWS in the event of a spill.	No further action. Include in ongoing consultation.
Northern Territory Gas Taskforce	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	30-Apr-24	PLACED	How: Call	N/A	Called to confirm receipt of information package. Package received and thought had responded already. Asked to resend.	Information package resent
	1-May-24	RECEIVED	How: Email	NT Gas Taskforce	Acknowledgement of receipt and no comments or concerns.	Noted
	6-May-24	SENT	How: Email	NT Gas Taskforce	Acknowledgment email	No further action. Include in ongoing consultation.
WA government department or agency						
Department of Biodiversity, Conservation and Attractions (DBCA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	27-Mar-24	RECEIVED	How: Email	DBCA	Email received with advice in relation to EMBA and baseline data and Incidents and Emergency Response.	Noted. Jadestone preparing response
	8-May-24	SENT	How: Email	DBCA	Email sent with response to DBCA queries.	No further action. Include in ongoing consultation.
Department of Mines, Industry Regulation and Safety (DMIRS)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Called DMIRS 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
	2-May-24	SENT	How: Email	DMIRS	Email with information package resent to alternative email.	Awaiting response
	3-May-24	RECEIVED	How: Email	DMIRS	Email forwarded onto appropriate contact internally at DMIRS.	No further action. Include in ongoing consultation.
Department of Planning, Lands & Heritage (DPLH)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Called to confirm receipt of information package. Package received and following up with appropriate person to call Jadestone back.	No further action. Include in ongoing consultation.
Department of Primary Industries and Regional Development (DPIRD)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	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
	2-May-24	RECEIVED	How: Email	DPIRD	Email confirming the information package was received and informing that DPIRD has no additional comments on the EP.	Noted
	6-May-24	SENT	How: Email	DPIRD	Acknowledgment email.	No further action. Include in ongoing consultation.
Department of Transport (DOT) (WA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	28-Mar-24	RECEIVED	How: Email	WA DOT	Provision of relevant guidance note details.	Noted
	10-Apr-24	SENT	How: Email	WA DOT	Acknowledgement of receipt.	No further action.
	13-Jun-24	SENT	How: Email	WA DOT OPEP	Skua OPEP, EP and OSM transmittal to DOT.	Awaiting comments from DOT.
	14-Jun-24	SENT	How: Email	WA DOT OPEP	Further transmittal with DOT Consultation document sent.	Awaiting comments from DOT.
	25-Jul-24	RECEIVED	How: Email	WA DOT OPEP_1	Email received from DOT with comments on OPEP.	Jadestone to respond to comments.
	16-Sep-24	SENT	How: Email	WA DOT OPEP_2	Email advising comments from DOT have been incorporated into OPEP.	No further action. Include in ongoing consultation.
	2-Oct-24	SENT	How: Email	WA DOT OPEP_2	Email providing updated OPEP and link to EP and OSM-BIP.	No further action.
Department of Water & Environmental Regulation (DWER)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Called to confirm receipt of information package. Package received and following up with appropriate person to call Jadestone back.	No further action. Include in ongoing consultation.
Local Government Authorities						
Shire of Derby / West Kimberley	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	26-Apr-24	RECEIVED	How: Email	Shire of Derby	Acknowledgement of receipt and no comments.	Noted
	6-May-24	SENT	How: Email	Shire of Derby	Acknowledgement email.	No further action. Include in ongoing consultation.
Shire of Wyndham / East Kimberley	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	23-Apr-24	RECEIVED	How: Email	Shire of Wyndham	Acknowledgement of receipt and no comments.	Noted
	6-May-24	SENT	How: Email	Shire of Wyndham	Acknowledgement email.	No further action. Include in ongoing consultation.
West Daly Regional Council	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	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.	No further action. Include in ongoing consultation.
Oil and Gas Industry						

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Australian Maritime Oil Spill Centre (AMOSC)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	19-Mar-24	RECEIVED	How: Email	AMOSC	Acknowledgement of receipt and request to keep updated once activities commence.	Noted. No further action
	25-Mar-24	RECEIVED	How: Email	AMOSC_1	Acknowledgement of receipt. Require a copy of the EP and OPEP prior to submission to NOPSEMA. Requests 2 weeks to review the plans.	Noted
	27-Mar-24	SENT	How: Email	AMOSC_1	Acknowledgement email. Jadestone will provide EP and OPEP to AMOSC in draft form once finalised.	Jadestone to provide AMOSC EP and OPEP
	26-Apr-24	SENT	How: Email	AMOSC_1	Email sent with draft EP and OPEP for review.	Awaiting AMOSC review of EP and OPEP
	30-Apr-24	RECEIVED	How: Email	AMOSC_1	Letters of confirmation of consultation provided.	Noted. EP and OPEP updated
	3-May-24	SENT	How: Email	AMOSC_1	Acknowledgement email.	No further action. Include in ongoing consultation.
Carnarvon Energy	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Called Carnarvon to confirm receipt of information package. Unsure if package received, confirming and will have appropriate person respond to email or call Jadestone.	Awaiting response
	2-May-24	RECEIVED	How: Email	Carnarvon Energy	Acknowledgement of receipt and no comments.	Noted
	6-May-24	SENT	How: Email	Carnarvon Energy	Acknowledgement email.	No further action. Include in ongoing consultation.
Eni Australia	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person 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
	30-Apr-24	PLACED	How: Call	N/A	Called to confirm receipt of information package. Package received and passed onto appropriate person for response.	Awaiting response
	12-Jul-24	RECEIVED	How: Email	Eni	Acknowledgement of receipt and no concerns.	Noted.
	16-Jul-24	SENT	How: Email	Eni	Acknowledgement email.	No further action. Include in ongoing consultation.
Inpex	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	30-Apr-24	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.	No further action. Include in ongoing consultation.
Melbana Energy	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	19-Mar-24	RECEIVED	How: Email	Melbana	Acknowledgement of receipt and no objections to proposed work.	Noted
	26-Mar-24	SENT	How: Email	Melbana	Acknowledgement email.	No further action. Include in ongoing consultation.
Oil Spill Response Limited (OSRL)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	18-Apr-24	RECEIVED	How: Email	OSRL	Acknowledgement of receipt and no comments on the proposed activity at this stage.	Noted.
	22-Apr-24	SENT	How: Email	OSRL	Acknowledgement email.	No further action. Include in ongoing consultation.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Santos	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	30-Apr-24	PLACED	How: Call	N/A	Called Santos 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
	30-Apr-24	SENT	How: Email	Santos	Email with information package resent to alternative email.	Awaiting response
	1-May-24	RECEIVED	How: Email	Santos	Email informing that the information was forwarded to the relevant department.	No further action. Include in ongoing consultation.
Shell	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	30-Apr-24	PLACED	How: Call	N/A	Called Shell to confirm receipt of information package. Unsure if package received, confirming and will have appropriate person contact Jadestone.	Awaiting return phone call
	2-May-24	RECEIVED	How: Email	Shell	Acknowledgment of receipt and no further comments.	Noted
	6-May-24	SENT	How: Email	Shell	Acknowledgement email.	No further action. Include in ongoing consultation.
NT Commercial fishers and fishing associations						
Amateur Fishermens Association of the Northern Territory (AFANT)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	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

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	2-May-24	SENT	How: Email	AFANT	Called AFANT and unable to leave voice message. 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.	No further action. Include in ongoing consultation.
Aquarium Fish/ Display Fishery (NT)	14-Mar-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	23-Apr-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Coastal Line Fishery (NT)	14-Mar-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	23-Apr-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Demersal Fishery (NT)	14-Mar-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	23-Apr-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Individual mud crab fishermen	14-Mar-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	23-Apr-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Northern Territory Guided Fishing Industry Association (NTGFIA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person 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
	1-May-24	PLACED	How: Call	N/A	Left a message asking NTGFIA to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Northern Territory Seafood Council (NTSC)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called NTSC to confirm receipt of information package. Unsure if package received, confirming and will have appropriate contact respond.	No further action. Include in ongoing consultation.
Offshore Net & Line Fishery (NT)	14-Mar-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	23-Apr-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Pearl Oyster Fishery (NT)	14-Mar-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	23-Apr-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Spanish Mackerel Fishery (NT)	14-Mar-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	23-Apr-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Timor Reef Fishery (NT)	14-Mar-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	23-Apr-24	SENT	How: Mail	Refer to SIR *Consolidated commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
WA Commercial fishers and fishing associations						

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Broome Prawn Fishery (WA)	26-Apr-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	7-Jun-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Kimberley Crab Fishery (WA)	26-Apr-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	7-Jun-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Kimberley Gillnet & Barramundi Fishery (WA)	26-Apr-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	7-Jun-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Kimberley Prawn Fishery (WA)	26-Apr-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	7-Jun-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Mackerel Fishery (WA)	26-Apr-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	7-Jun-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Nickol Bay Prawn Fishery (WA)	26-Apr-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	7-Jun-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Northern Demersal Scalefish Fishery (WA)	26-Apr-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	7-Jun-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Specimen Shell (WA)	26-Apr-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	7-Jun-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Western Australian Fishing Industry Council (WAFIC)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	20-Mar-24	RECEIVED	How: Email	WAFIC	Acknowledgement email offering fee for service to consult with individual licence holders.	Awaiting response
	28-Mar-24	SENT	How: Email	WAFIC	Acknowledgement email. Based on previous advice from WAFIC that consultation with Western Australian commercial fishery licence holders is necessary only should a significant unplanned event occur (published on WAFIC website in February 2023) Jadestone won't be consulting with individual licence holders.	No further action.
	2-Apr-24	RECEIVED	How: Email	WAFIC	Email received confirming WAFIC's preferred approach on significant unplanned events and that WAFIC still considers it relevant to consult with commercial licence holders impacted by the operational area of oil and gas facility.	Awaiting response
	18-Apr-24	SENT	How: Email	WAFIC_1	Email sent with wording from current EP chapter, for review by WAFIC.	Awaiting response
	19-Apr-24	RECEIVED	How: Email	WAFIC_1	Due to additional vessel movements in and around marine environment WAFIC considers consultation with industry relevant.	Noted
	22-Apr-24	SENT	How: Email	WAFIC_1	Acknowledgement email.	N/A
	2-May-24	SENT	How: Email	WAFIC_2	Jadestone has undertaken a mail out to individual commercial fishing licence holders in WA fisheries that overlap Operational Area.	No further action. Include in ongoing consultation.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
West Coast Deep Sea Crustacean Managed Fishery	26-Apr-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	7-Jun-24	SENT	How: Mail	Refer to SIR *WA commercial fishery licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Commonwealth Commercial fishers and fishing associations						
Commonwealth Fisheries Association (CFA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Left a message asking CFA to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Northern Prawn Fishery	14-Mar-24	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	23-Apr-24	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action
Northern Prawn Fishing Industry Pty Ltd	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Left a message asking NPF to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
North West Slope Trawl Fishery	14-Mar-24	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Letter sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	23-Apr-24	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Follow up letter sent to Relevant Person to try and elicit a response as required by the regulations.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Pearl Producers Association (PPA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	SENT	How: Email	PPA	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.	No further action. Include in ongoing consultation.
Seafood Industry Australia (SIA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Left a message asking SIA to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Tuna Australia	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	23-Apr-24	RECEIVED	How: Email	Tuna Australia	Email reiterating that Tuna Australia has offered to work with Jadestone and should wish to progress a services agreed to let them know.	Noted
	9-May-24	SENT	How: Email	Tuna Australia	Acknowledgement email, services provided by Tuna Australia not currently required.	No further action.
	17-May-24	RECEIVED	How: Email	Tuna Australia	Email with industry position statement attached again for convenience.	Noted. No further action. Include in ongoing consultation.
Recreational fishing associations						

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Recfishwest (WA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	26-Mar-24	RECEIVED	How: Email	Recfishwest	Email advising Recfishwest has no concerns based on the information provided.	Noted
	27-Mar-24	SENT	How: Email	Recfishwest	Acknowledgement email.	No further action. Include in ongoing consultation.
First Nations peoples						
Balanggarra Aboriginal Corporation	13-Mar-24	SENT	How: Email	Balanggarra	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors to seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	RECEIVED	How: Email	Balanggarra	Acknowledgement email. Have cc'd Chair of Balanggarra and they will make contact to organise opportunity for presentation to board.	Awaiting response
	14-Mar-24	SENT	How: Email	Balanggarra_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	21-Mar-24	SENT	How: Email	Balanggarra	Follow up email with Chair on opportunity to present to directors.	Awaiting response
	18-Apr-24	SENT	How: Email	Balanggarra_2	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	8-May-24	SENT	How: Email	Balanggarra_2	Further follow up email.	Awaiting response
	13-Jun-24	SENT	How: Email	Balanggarra_3	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	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
Bardi Jawi Niimidiman Aboriginal Corporation	13-Mar-24	SENT	How: Email	Bardi Jawi Niimidiman	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Bardi Jawi Niimidiman_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	18-Apr-24	SENT	How: Email	Bardi Jawi Niimidiman	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	19-Apr-24	SENT	How: Email	Bardi Jawi Niimidian_2	Following advice from WAC follow up email sent.	Awaiting response
	8-May-24	SENT	How: Email	Bardi Jawi Niimidiman	Further follow up email.	Awaiting response
	9-May-24	RECEIVED	How: Email	Bardi Jawi Niimidiman	Email received with PBC consultation protocol for completion and execution.	Jadestone to review protocol
	29-May-24	SENT	How: Email	Bardi Jawi Niimidiman	Acknowledgement email. Will review protocol.	Jadestone to review budget
	13-Jun-24	SENT	How: Email	Bardi Jawi Niimidiman	Amended Consultation Agreement sent to PBC for consideration and notifying PBC of Montara Operations EP acceptance by NOPSEMA.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Gogolanyngor Aboriginal Corporation	13-Mar-24	SENT	How: Email	Gogolanyngor	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Gogolanyngor_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	10-Apr-24	SENT	How: Email	Gogolanyngor	Follow up email.	Awaiting response
	10-Apr-24	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
	10-Apr-24	SENT	How: Email	Gogolanyngor	Acknowledgement email.	No further action
	13-Jun-24	SENT	How: Email	Gogolanyngor_2	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Karajarri Traditional Owners Aboriginal Corporation	13-Mar-24	SENT	How: Email	Karajarri	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Karajarri_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	19-Apr-24	SENT	How: Email	Karajarri	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	8-May-24	SENT	How: Email	Karajarri	Further follow up email.	Awaiting response
	13-Jun-24	SENT	How: Email	Karajarri_2	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Kariyarra Aboriginal Corporation	14-Mar-24	SENT	How: Email	Kariyarra	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	19-Apr-24	SENT	How: Email	Kariyarra	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	3-Jul-24	RECEIVED	How: Email	Kariyarra_1	Email received from legal adviser indicating KAC engaging in-house legal adviser who will contact Jadestone.	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
Kimberley Land Council (KLC)	14-Mar-24	SENT	How: Email	KLC	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them, in particular receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	18-Mar-24	SENT	How: Email	KLC	Email requesting brief meeting with KLC while Jadestone are in Broome for community sessions if opportunity presents.	Awaiting response
	18-Mar-24	SENT	How: Email	KLC	Acknowledgement email. Currently interstate so unable to attend meeting.	Noted
	19-Apr-24	SENT	How: Email	KLC_1	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	14-Jun-24	SENT	How: Email	KLC_2	Email sent notifying of Montara Operations EP acceptance by NOPSEMA.	No further action. Include in ongoing consultation.
Mayala Inninalang Aboriginal Corporation	13-Mar-24	SENT	How: Email	Mayala Inninalang	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Mayala Inninalang_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	18-Apr-24	SENT	How: Email	Mayala Inninalang	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	8-May-24	SENT	How: Email	Mayala Inninalang	Further follow up email.	Awaiting response
	13-Jun-24	SENT	How: Email	Mayala Inninalang_2	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	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
Ngarluma Aboriginal Corporation	14-Mar-24	SENT	How: Email	Ngarluma	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	RECEIVED	How: Email	Ngarluma	Acknowledgement email. Welcome request for meeting, will revert as soon as possible on next steps.	Awaiting response
	19-Apr-24	SENT	How: Email	Ngarluma_1	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	9-May-24	SENT	How: Email	Ngarluma_1	Further follow up email.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Nimanburr Aboriginal Corporation	13-Mar-24	SENT	How: Email	Nimanburr	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Nimanburr_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	18-Apr-24	SENT	How: Email	Nimanburr	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	8-May-24	SENT	How: Email	Nimanburr	Further follow up email.	Awaiting response
	9-May-24	RECEIVED	How: Email	Nimanburr	Acknowledgement email, email has been forwarded to relevant corporation executives.	Awaiting response
	14-Jun-24	SENT	How: Email	Nimanburr_2	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	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
Nyangumarta Karajarri Aboriginal Corporation	13-Mar-24	SENT	How: Email	Nyangumarta Karajarri	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors to discuss Montara project and Stag project and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	RECEIVED	How: Email	Nyangumarta Karajarri	Acknowledgement email. Have forward to directors and will revert back once have instructions from board.	Awaiting response
	14-Mar-24	SENT	How: Email	Nyangumarta Karajarri_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	21-Mar-24	RECEIVED	How: Email	Nyangumarta Karajarri_2	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_2	Email advising Jadestone would like to attend and length of presentation.	Awaiting meeting confirmation
	25-Mar-24	RECEIVED	How: Email	Nyangumarta Karajarri_2	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_2	Jadestone request budget.	Awaiting budget
	27-Mar-24	RECEIVED	How: Email	Nyangumarta Karajarri_3	Request for agenda items, presentations and print outs.	Awaiting response
	28-Mar-24	RECEIVED	How: Email	Nyangumarta Karajarri_2	Budget provided.	Jadestone to review budget
	3-Apr-24	SENT	How: Email	Nyangumarta Karajarri_3	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_2	Budget accepted and invoicing details provided.	Noted
	4-Apr-24	RECEIVED	How: Email	Nyangumarta Karajarri_2	Invoice will be prepared by KLC.	N/A
	4-Apr-24	SENT	How: Email	Nyangumarta Karajarri_2	Please pass on invoicing details to KLC.	N/A
	4-Apr-24	RECEIVED	How: Email	Nyangumarta Karajarri_2	Acknowledgement email.	N/A
	9-Apr-24	SENT	How: Email	Nyangumarta Karajarri_4	Email sent with powerpoint slides for tomorrows presentation.	N/A
	10-Apr-24	MEETING	How: In person, Broome	Nyangumarta Karajarri_4 Nyangumarta Karajarri_5 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_5	Draft meeting minutes issued.	Meeting minutes issued. Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
	9-May-24	SENT	How: Email	Nyangumarta Karajarri_5	Updated meeting minutes issued.	N/A

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	14-Jun-24	SENT	How: Email	Nyangumarta Karajarri_6	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Nyangumarta Warrarn Aboriginal Corporation	13-Mar-24	SENT	How: Email	Nyangumarta Warrarn	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors to discuss Montara project and Stag project following meeting with EMT in August 2023 and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Nyangumarta Warrarn_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	19-Apr-24	SENT	How: Email	Nyangumarta Warrarn	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	29-Apr-24	RECEIVED	How: Email	Nyangumarta Warrarn_2	Email notifying that date has opened up for meeting Board of Directors and asking if Jadestone would like to present. Apology for late notice.	Awaiting response
	7-May-24	SENT	How: Email	Nyangumarta Warrarn_2	Email confirming Jadestone would like to take the opportunity to meet the Directors this Thursday.	Awaiting response
	23-May-24	MEETING	How: In Person, Perth	Nyangumarta Warrarn_3	Meeting minutes to be finalised and sent to attendees for approval.	Meeting minutes to be issued.
	24-May-24	SENT	How: Email	Nyangumarta Warrarn_3	Email sent with draft meeting minutes for comment.	Meeting minutes issued. Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Northern Australian Indigenous Land & Sea Management Alliance (NAILSMA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Email	N/A	Left a message asking NAILSMA to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Northern Land Council (NLC)	14-Mar-24	SENT	How: Email	NLC	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them, in particular receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	19-Apr-24	SENT	How: Email	NLC	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	14-Jun-24	SENT	How: Email	NLC_1	Email sent notifying of Montara Operations EP acceptance by NOPSEMA.	N/A
	4-Sep-24 6-Sep-24	PLACED	How: Call	N/A	Left a message asking NLC to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Nyul Nyul Aboriginal Corporation	22-Feb-24	MEETING	How: Teams	Nyul Nyul Nyul Nyul_1	Meeting minutes to be finalised and sent to attendees for approval.	Meeting minutes to be issued
	23-Feb-24	SENT	How: Email	Nyul Nyul_1	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	Draft meeting minutes issued. Request to update attendee list of Directors.	Meeting minutes issued. Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
	13-Mar-24	SENT	How: Email	Nyul Nyul_2	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors to discuss Montara project and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Nyul Nyul_3	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	13-Jun-24	SENT	How: Email	Nyul Nyul_4	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	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
Thamarrurr Development Corporation (TDC), including the Thamarrurr Rangers	13-Mar-24	SENT	How: Email	TDC	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors to discuss Montara project and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	19-Apr-24	SENT	How: Email	TDC	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	8-May-24	SENT	How: Email	TDC	Further follow up email.	Awaiting response
	8-May-24	RECEIVED	How: Email	TDC	Acknowledgement email, will be in touch.	Noted.
	14-Jun-24	SENT	How: Email	TDC_1	Email sent notifying of Montara Operations EP acceptance by NOPSEMA.	No further action. Include in ongoing consultation.
Walalakoo Aboriginal Corporation	13-Mar-24	SENT	How: Email	Walalakoo	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors to discuss Montara project and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Walalakoo_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	14-Mar-24	RECEIVED	How: Email	Walalakoo_2	Follow up email re meeting contribution.	Awaiting response
	14-Mar-24	SENT	How: Email	Walalakoo_2	Costs confirmed.	Noted
	14-Mar-24	MEETING	How: In person, Derby	Walalakoo_5 PBC Presentation	Meeting minutes to be finalised and sent to attendees for approval.	Meeting minutes to be issued
	15-Mar-24	RECEIVED	How: Email	Walalakoo_2	Invoice and payment details attached.	Awaiting response
	20-Mar-24	SENT	How: Email	Walalakoo_3	Email requesting names of Directors and Elders who attended Jadestone presentation.	Awaiting response
	21-Mar-24	SENT	How: Email	Walalakoo_3	Email requesting location of Brue Reef.	Awaiting response
	21-Mar-24	SENT	How: Email	Walalakoo_2	Request for details in order to undertake payment.	Awaiting response
	21-Mar-24	RECEIVED	How: Email	Walalakoo_2	Requested details provided.	Awaiting payment
	28-Mar-24	RECEIVED	How: Email	Walalakoo_4	Further revised draft of Consultation Resourcing Protocol following meeting with WAC board.	Awaiting Jadestone review

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	28-Mar-24	RECEIVED	How: Email	Walalakoo_3	Acknowledgement email will try to find information.	Noted
	5-Apr-24	RECEIVED	How: Email	Walalakoo_4	Follow up on Consultation Resourcing Protocol.	Awaiting response
	9-Apr-24	RECEIVED	How: Email	Walalakoo_4	Further follow up email in relation to Consultation Resourcing Protocol.	Awaiting response
	10-Apr-24	SENT	How: Email	Walalakoo_5	Email sent with the minutes of the meeting and seeking the names of the directors who attended the meeting.	Meeting minutes issued. Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
	14-Apr-24	SENT	How: Email	Walalakoo_4	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_6	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_7	Email passing on contact to confirm location of Brue Reef.	Awaiting response
	19-Apr-24	SENT	How: Email	Walalakoo_7	Further follow up email.	Awaiting response
	30-Apr-24	RECEIVED	How: Email	Walalakoo_6	Email notifying that need consent to share names of Directors, next meeting at end of May.	Noted
	13-May-24	RECEIVED	How: Email	Walalakoo_4	Email received with further updated resourcing protocol.	Awaiting response
	17-May-24	SENT	How: Email	Walalakoo_4	Jadestone has accepted most recent draft and preparing document for execution. Request for WAC notice details.	Awaiting response
	17-May-24	RECEIVED	How: Email	Walalakoo_4	Details for insertion provided.	Noted
	22-May-24	RECEIVED	How: Email	Walalakoo_4	Following up on execution version.	Awaiting response
	22-May-24	SENT	How: Email	Walalakoo_4	JSE legal sent signed Resourcing Protocol Agreement.	Awaiting response
	22-May-24	RECEIVED	How: Email	Walalakoo_4	Following up with WAC to sign and date.	Noted
	13-Jun-24	SENT	How: Email	Walalakoo_8	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Wanjina-Wunggurr Aboriginal Corporation	5-Mar-24	RECEIVED	How: Email	Wanjina-Wunggurr	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	Asked for date of next board meeting.	Awaiting response
	5-Mar-24	RECEIVED	How: Email	Wanjina-Wunggurr	Next meeting likely early May.	Noted

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	5-Mar-24	SENT	How: Email	Wanjina-Wunggurr	Due to time contraint Jadestone will wait for May meeting to present to board of Directors.	Awaiting date of May board meeting.
	13-Mar-24	SENT	How: Email	Wanjina-Wunggurr_1	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors to discuss Montara project and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Wanjina-Wunggurr_2	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	18-Apr-24	SENT	How: Email	Wanjina-Wunggurr_1	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	18-Apr-24	SENT	How: Email	Wanjina-Wunggurr_1	Follow up email - forwarded on to another contact, previous contact on leave.	Awaiting response
	8-May-24	SENT	How: Email	Wanjina-Wunggurr_1	Further follow up email.	Awaiting response
	13-Jun-24	SENT	How: Email	Wanjina-Wunggurr_3	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Wanparta Aboriginal Corporation	13-Mar-24	SENT	How: Email	Wanparta	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors to discuss Montara project and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Wanparta_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	4-Apr-24	RECEIVED	How: Email	Wanparta	Email inviting Jadestone to attend Directors meeting in May. Cost estimate provided.	Awaiting response
	15-Apr-24	RECEIVED	How: Email	Wanparta	Follow up email after phone call. Board requires confirmation of Jadestone's attendance as soon as possible for May meeting.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	19-Apr-24	SENT	How: Email	Wanparta_2	Follow up email - Acknowledging meeting request in May and trying to elicit a response as required by the regulations.	Awaiting response
	9-May-24	SENT	How: Email	Wanparta_2	Further follow up email.	Awaiting response
	13-May-24	SENT	How: Email	Wanparta_3	Apologies for delay, cost of workshop significant. Requests Wanparta's consideration of shorter consultation opportunity at next ordinary scheduled Directors meeting.	Awaiting response
	14-Aug-24	RECEIVED	How: Email	Wanparta_3	Email received, Wanparta Board requesting to meet JSE by end of year. Checking JSE availability to meet with board November 13. Cost will be shared with several proponents.	Awaiting response
	15-Aug-24	SENT	How: Email	Wanparta_3	Acknowledgement of receipt and confirmation JSE can attend. Request for cost estimate.	Awaiting response
	19-Aug-24	RECEIVED	How: Email	Wanparta_3	Acknowledgement of receipt. Will provide cost estimate as soon as possible.	Awaiting cost estimate. Jadestone to attend meeting November 13. Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Warrwa People Aboriginal Corporation	13-Mar-24	SENT	How: Email	Warrwa	Email sent to PBC with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors to discuss Montara project and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Warrwa_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	18-Apr-24	SENT	How: Email	Warrwa	Follow up email - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	8-May-24	SENT	How: Email	Warrwa	Further follow up email.	Awaiting response
	13-Jun-24	SENT	How: Email	Warrwa_2	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	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
Yawuru Native Title Holders Aboriginal Corporation	13-Mar-24	SENT	How: Email	Yawuru	Email sent with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them. Also seeking opportunity to meet with Directors to discuss Montara project and seek advice on the most appropriate means of undertaking consultation and receiving advice on the sensitive cultural and environmental places along the coast, near shore and in sea country that should be prioritised for protection.	Awaiting response
	14-Mar-24	SENT	How: Email	Yawuru_1	Email sent to Relevant Person notifying them of upcoming community consultation information sessions.	No further action
	21-Mar-24	SENT	How: Email	Yawuru_2	Follow up re Jadestone presenting at April meeting and requesting meeting time.	Awaiting response
	22-Mar-24	RECEIVED	How: Email	Yawuru_2	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_2	Request for an hour to present.	Awaiting response
	2-Apr-24	RECEIVED	How: Email	Yawuru_2	Email confirming meeting time.	Noted
	9-Apr-24	SENT	How: Email	Yawuru_3	Email sent with powerpoint slides for tomorrows presentation.	N/A
	10-Apr-24	MEETING	How: In person, Broome	Yawuru_3 Yawuru_6 PBC presentation	Meeting minutes to be finalised and sent to attendees for approval.	Meeting minutes to be issued
	7-May-24	SENT	How: Email	Yawuru_4	Email following up on names of Yawuru attendees to finalise meeting minutes.	Awaiting response
	9-May-24	SENT	How: Email	Yawuru_5	Draft meeting minutes issued.	Meeting minutes issued. Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
	9-May-24	RECEIVED	How: Email	Yawuru_5	Acknowledgement email providing names of Directors who attended.	Noted
	9-May-24	SENT	How: Email	Yawuru_6	Updated meeting minutes issued.	N/A
	13-Jun-24	SENT	How: Email	Yawuru_7	Email sent notifying PBC of Montara Operations EP acceptance by NOPSEMA.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Port Authorities						
Kimberley Ports Authority	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person 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
	1-May-24	PLACED	How: Email	N/A	Left a message asking KPA to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	1-May-24	RECEIVED	How: Email	Kimberley Ports	Acknowledgement of receipt and no comments.	Noted
	6-May-24	SENT	How: Email	Kimberley Ports	Acknowledgement email.	No further action. Include in ongoing consultation.
Pilbara Ports Authority	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	19-Apr-24	RECEIVED	How: Email	Pilbara Ports	Acknowledgement of receipt. Pilbara Ports has no feedback in relation to the drilling activities.	Noted.
	9-May-24	SENT	How: Email	Pilbara Ports	Acknowledgement email.	No further action. Include in ongoing consultation.
Wyndham Port WA Cambridge Gulf Ltd	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	18-Apr-24	RECEIVED	How: Email	CGLTD	Acknowledgement of receipt and no issues with the proposal.	Noted
	3-May-24	SENT	How: Email	CGLTD	Acknowledgement email.	No further action. Include in ongoing consultation.
Tourism and Business Associations/ Tour Operators						
Absolute Ocean Charters	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called AOC to confirm receipt of information package. Unsure if information package received. Asked to send through again.	Information package resent

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	1-May-24	SENT	How: Email	AOC	Email resent with information package.	Awaiting response
	1-May-24	RECEIVED	How: Email	AOC	Acknowledgment of receipt and no comments.	Noted
	6-May-24	SENT	How: Email	AOC	Acknowledgement email.	No further action. Include in ongoing consultation.
APT Kimberley Coast Cruises	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Left a message asking APT to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Archipelago Adventures	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called Archipelago Adventures 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
	1-May-24	SENT	How: Email	Archipelago	Email resent with information package.	No further action. Include in ongoing consultation.
Australia's North West	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called ANW to confirm receipt of information package. Unsure if package received, will confirm and pass onto most appropriate person to review and provide feedback.	Awaiting response
	3-May-24	RECEIVED	How: Call	ANW	Acknowledgement of receipt and no comments or further questions.	Noted
	6-May-25	SENT	How: Email	ANW	Acknowledgement email.	No further action. Include in ongoing consultation.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Broome Tours	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called Broome Tours to confirm receipt of information package. Unsure if information package received. Asked to send through again and will review.	Information package resent
	1-May-24	SENT	How: Email	Broome Tours	Email resent with information package.	Awaiting response
	1-May-24	RECEIVED	How: Email	Broome Tours	Email confirming information was received.	No further action. Include in ongoing consultation.
Broome Whale Watching	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called BWW to confirm receipt of information package. Unsure if information package received. Asked to send through again and will review.	Information package resent
	1-May-24	SENT	How: Email	Broome Whale Watching	Email resent with information package.	No further action. Include in ongoing consultation.
Cannon Charters	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Email	N/A	Left a message asking Cannon Charters to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Coral Expeditions	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called Coral Expeditions to confirm receipt of information package. Unsure if information package received. Appropriate person will call Jadestone back.	No further action. Include in ongoing consultation.
HeliSpirit Luxury Kimberley Helicopter Safari	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called HeliSpirit to confirm receipt of information package. Unsure if information package received. Operations Manager will call Jadestone back.	No further action. Include in ongoing consultation.
Kimberley Cruise Centre	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Called KCC to confirm receipt of information package. Unable to confirm if package received. Asked to resend.	Information package resent
	2-May-24	SENT	How: Email	KCC	Email resent with information package.	No further action. Include in ongoing consultation.
Kimberley Expeditions	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Email	N/A	Left a message asking Kimberley Expeditions to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Kimberley Pearl Charters	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called KPC to confirm receipt of information package. Unable to confirm if package received. Asked to resend to different email.	Information package sent to updated email
	1-May-24	SENT	How: Email	KPC	Email sent to updated address with information package.	No further action. Include in ongoing consultation.
Kimberley Quest	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called Kimberley Quest to confirm receipt of information package. Package received and no comments or further information required at this time.	Noted. No further action. Include in ongoing consultation
Kuri Bay Sport Fishing & Adventures	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	3-May-24	PLACED	How: Call	N/A	Left a message asking Kuri Bay to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Lady M Luxury Cruises	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person 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
	1-May-24	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.	No further action. Include in ongoing consultation.
Monsoon Aquatics	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	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.	No further action. Include in ongoing consultation.
Ocean Dream Charters	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called Ocean Dream to confirm receipt of information package. Unsure if information package received. Will confirm and pass onto appropriate person and have them call Jadestone if any questions.	No further action. Include in ongoing consultation.
Oolin Sunday Island Cultural Tours	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Left a message asking Oolin Sunday Island to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
One Tide Charters	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called One Tide to confirm receipt of information package. Unsure if information package received. Asked to send through again and will pass onto appropriate person for comment.	Information package resent
	1-May-24	SENT	How: Email	One Tide	Email resent with information package.	No further action. Include in ongoing consultation.
Ponant Luxury Expeditions	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	3-May-24	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
	3-May-24	SENT	How: Email	Ponant	Email with information package resent to alternative email.	No further action. Include in ongoing consultation.
Seaestar Boat Charters	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	PLACED	How: Call	N/A	Called Seaestar to confirm receipt of information package. Package received and no comment or questions at this stage.	Noted. No further action. Include in ongoing consultation
Silversea Cruises	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Called Silversea to confirm receipt of information package. Unable to confirm if package received. Asked to resend.	Information package resent
	2-May-24	SENT	How: Email	Silversea	Email resent with information package.	No further action. Include in ongoing consultation.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
The Great Escape Charter Company	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	18-Apr-24	RECEIVED	How: Email	Great Escape	Acknowledgment of receipt. Great Escape Company have no comments.	Noted
	3-May-24	SENT	How: Email	Great Escape	Acknowledgement email.	No further action. Include in ongoing consultation.
Tourism Top End	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	1-May-24	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
	1-May-24	SENT	How: Email	Tourism Top End	Called Tourism Top End and unable to leave voice message. 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.	No further action. Include in ongoing consultation.
True North	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	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.	No further action. Include in ongoing consultation.
Willie Pearl Lugger Cruises	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	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.	No further action. Include in ongoing consultation.
Environmental Conservation Groups/ eNGOs						
Australian Marine Conservation Society (AMCS)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Email	N/A	Left a message asking AMCS to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Conservation Council of Western Australia (CCWA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Called CCWA to confirm receipt of information package. Package received and do not have the capacity to comment right now.	Noted. No further action Include in ongoing consultation
Environment Centre Northern Territory (ECNT)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Left a message asking ECNT to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Environs Kimberley	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Called Environs to confirm receipt of information package. Package passed onto appropriate person and would have responded by now if had comment.	Noted. No further action Include in ongoing consultation
Greenpeace	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Called Greenpeace to confirm receipt of information package. Package received and passed on to appropriate person to respond. Following up response.	No further action. Include in ongoing consultation.
Save the Kimberley	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	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.	No further action. Include in ongoing consultation.
The Wilderness Society (WA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person 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
	22-Apr-24	RECEIVED	How: Email	The Wilderness Society	Email received informing that will not provide feedback at this time and asked to be updated as the activity progresses and feedback may be provided into the future.	Noted
	6-May-24	SENT	How: Email	The Wilderness Society	Acknowledgement email.	Noted. No further action Include in ongoing consultation.
World Wildlife Fund	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Left a message asking WWF to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Other Associations						
Australian Council of Prawn Fisheries	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	SENT	How: Email	ACPF	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.	No further action. Include in ongoing consultation.
Broome Visitor Centre	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Left a message asking BVC to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
BW Digital	3-May-24	SENT	How: Web form	BW Digital	On advice from ACMA contacted Vocus to inform them of Montara Skua-11 Drilling EP.	Awaiting response
	14-Aug-24	SENT	How: Web form	BW Digital_1	Follow up web form sent to BW Digital. No phone number available to undertake follow up phone call.	Awaiting response
	15-Aug-24	RECEIVED	How: Email	BW Digital_2	Email received providing contact details to send information package.	Send information package to updated contact
	15-Aug-24	SENT	How: Email	BW Digital_2	Information package sent to updated contact.	Awaiting response
	15-Aug-24	RECEIVED	How: Email	BW Digital_3	Auto Reply email received.	Noted
	6-Sep-24	PLACED	How: Call	N/A	Left a message asking BW to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Government of Timor-Leste	4-Jun-24	SENT	How: Email	Govt Timor Leste	As recommended by DFAT email sent to Government of Timor-Leste with Invitation for Consultation.	Awaiting response
	12-Aug-24	SENT	How: Email	Govt Timor Leste	Follow up email sent.	No further action. Include in ongoing consultation.
Inligo	3-May-24	SENT	How: Email	Inligo	On advice from ACMA contacted Inligo to inform them of Montara Project.	Awaiting response
	12-Aug-24	SENT	How: Email	Inligo	Follow up email sent reattaching information package.	Awaiting response
	3-Sep-24	PLACED	How: Call	N/A	Left a message asking Inligo to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Marine Tourism Association of Western Australia (MTWA)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	2-May-24	PLACED	How: Call	N/A	Left a message asking MTWA to call Jadestone to confirm if consultation package was received and provide any feedback.	No further action. Include in ongoing consultation.
Vocus	3-May-24	SENT	How: Web form	Vocus	On advice from ACMA contacted Vocus to inform them of Montara Skua-11 Drilling EP.	No further action
	3-May-24	RECEIVED	How: Email	Vocus_1	Email providing enquiry number based on web form submission.	N/A
	3-May-24	RECEIVED	How: Email	Vocus_2	Email acknowledging web form and asking for information package to be sent.	Information package sent

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	3-May-24	SENT	How: Email	Vocus_2	Email sent providing Skua-11 Initiation for Consultation.	Awaiting response
	12-Aug-24	SENT	How: Email	Vocus_2	Follow up email sent.	Awaiting response
	3-Sep-24	PLACED	How: Call	N/A	Called Vocus to confirm receipt of information package. Information has been received and passed on to appropriate person to respond. Following up response.	Awaiting return phone call
	4-Sep-24	RECEIVED	How: Email	Vocus_3	Email received apologising for delay and requesting coordinates of wellhead.	Awaiting response
	4-Sep-24	SENT	How: Email	Vocus_3	Email sent providing coordinates of wellhead as requested.	Awaiting response
	5-Sep-24	RECEIVED	How: Email	Vocus_3	Email confirming activity is more than 80 km from Vocus and thus have no comments on operation.	Noted
	5-Sep-24	SENT	How: Email	Vocus_3	Acknowledgement email.	No further action. Include in ongoing consultation.
Academic and Research Organisations						
Australian Institute of Marine Science (AIMS)	18-Mar-24	SENT	How: Email	G1	Email sent to Relevant Person with attached information package on Skua-11 drilling activities EP outlining activities and associated risks and impacts and details on why they have been engaged and what is required from them.	Awaiting response
	17-Apr-24	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to Relevant Person to try and elicit a response as required by the regulations.	Awaiting response
	19-Apr-24	RECEIVED	How: Email	AIMS	Email received seeking confirmation of the date the activity would commence and finish so they can know how it is going to impact their operation.	Awaiting response
	6-May-24	SENT	How: Email	AIMS	Email sent providing indicative dates of activities, depending on approvals and equipment availability.	Awaiting response
	14-May-24	RECEIVED	How: Email	AIMS	Acknowledgement of receipt. AIMS confirmed proposal will not interfere with AIMS operations.	Noted. No further action. Include in ongoing consultation.
Other*						
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
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

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
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

* Following community sessions these stakeholders requested additional information, however are not considered Relevant Persons

Jadestone Energy

Invitation for Consultation
Skua-11 Well Drilling Activities

Invitation for Consultation

Jadestone Energy (Jadestone) is the operator of the Skua-11 subsea production well, within the existing Montara development in the Timor Sea. Jadestone is preparing an Environment Plan (EP) for assessment by the Commonwealth regulatory authority, the National Offshore Petroleum Regulatory Authority (NOPSEMA).

The EP is for drilling activities of the existing Skua-11 well.

Jadestone invites comments for its consideration during the period of preparation of this 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. Contact details for Jadestone's Australian Operations are provided at the end of this document.

What is an Environment Plan (EP)?

The purpose of an 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.

Jadestone is developing the Skua-11 drilling EP in accordance with legislation (administrated by NOSPEMA). The EP will not be accepted by NOPSEMA until they are satisfied that it meets the requirements of the legislation.

Skua-11 Drilling Activities Overview

The existing Skua-11 subsea production well requires plugging and abandoning to facilitate a sidetrack to the well. This will result in additional access to the Skua reservoir to maintain production. A jack-up MODU will be utilized to undertake the activity adjacent to the existing wellhead located 23 km from the existing Montara wellhead platform.

Location

The Skua-11 well is located within the Montara development, in the Timor Sea, approximately 706 km west of Darwin. The permit area, AC/L8, is in Commonwealth waters. The water depth at the Skua-11 well is ~80 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 Skua-11
Ashmore AMP	131 km
Cartier AMP	89 km
Kimberley AMP	134 km
Oceanic Shoals AMP	183 km

All planned Skua-11 well drilling activities will be contained within the Operational Area (OA) in permit area AC/L8. The OA extends 2 kms around the well.

In addition, a PSZ, which will remain in place for the duration of the drilling activities, extends 500 m around the Skua-11 well.

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 Petroleum Safety Zone (PSZ), or 500m radius from Mobile Offshore Drill Unit (MODU) infrastructure.

A cautionary zone of 2.5 NM radius is also maintained around the Montara infrastructure, including the Skua-11 well, and will remain in place for the drilling activities. The Montara Facility is 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.

In the unlikely event of a significant unplanned event, e.g., hydrocarbon spill, the values and sensitivities in the Environment that May Be Affected (EMBA) (habitats and locations), having been identified in the EP, will be prioritised for prompt protection activities.

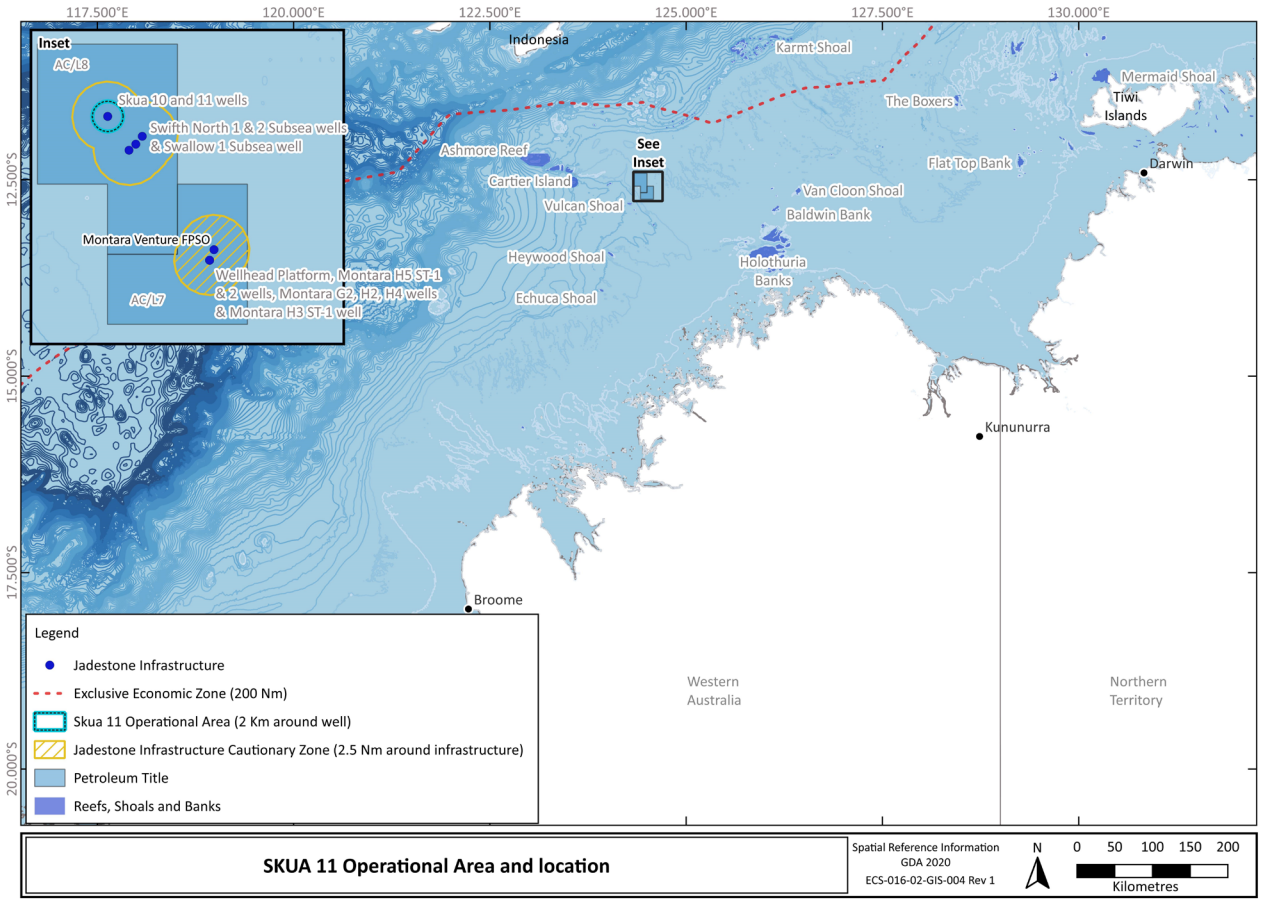


FIGURE 1: SKUA-11 OPERATIONAL AREA AND LOCATION IN THE TIMOR SEA

Why are you being engaged?

Jadestone has identified that you or your organisation are a 'relevant person' under the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 because of your functions, activities, or interests within the EMBA for the Skua-11 well drilling activities. This is defined as the area that might be affected by planned activities that will occur within the OA or unplanned events that could extend beyond the OA 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

Figure 2 shows the EMBA for the Skua-11 well drilling activities that has been based on a loss of well control during drilling. This scenario is considered the worst-case credible spill scenario for the Skua-11 well drilling activities. The EMBA has been presented to inform relevant persons why they are being consulted.

What do we do with information provided?

In line with the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, 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 the correspondence will not be published on NOPSEMA's or Jadestone's websites.

Please notify Jadestone of any correspondence that we receive from you or your organisation that you wish to be confidential.

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 development is available on our website https://www.jadestone-energy.com/assets/australia-portfolio/montara/

Following the submission of the EP to NOPSEMA it will be available on Jadestone's website.

NOPSEMA have also published a brochure on consultation requirements for consultation and how to effectively participate in the process. This is available here:

https://www.nopsema.gov.au/sites/default/files/documents/Consultation

What does 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 development or the Skua-11 well.
You may have already provided feedback on the Montara Operations, and this will be included in this EP, however if you have comments specific to this Skua-11 drilling activity, this is your opportunity to provide feedback.

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.

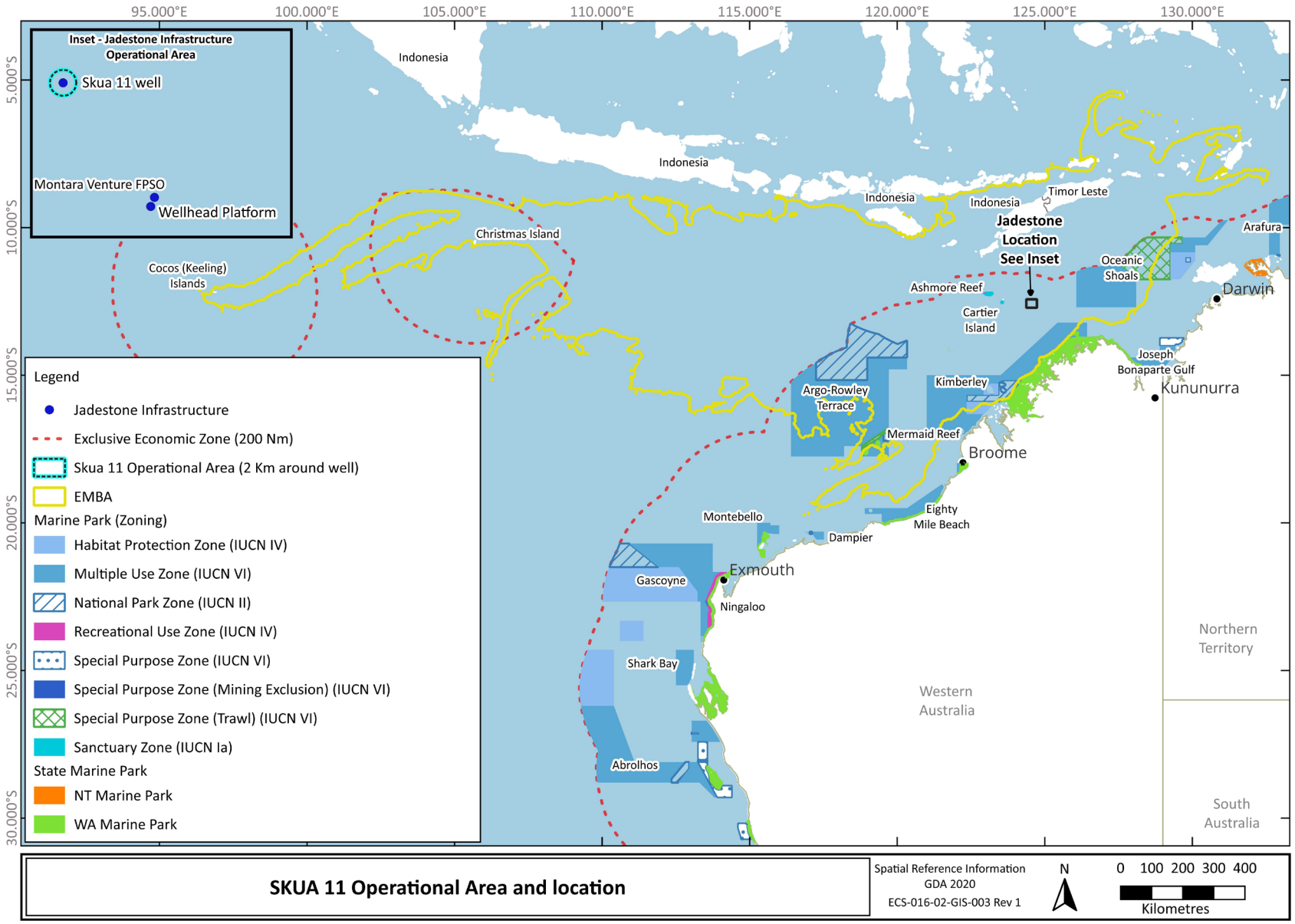


FIGURE 2: **SKUA-11 WELL DRILLING ENVIRONMENT THAT MAY BE AFFECTED (EMBA) IN THE EVENT OF A LOSS OF HYDROCARBONS INCLUDING A LOSS OF WELL CONTROL.**

Potential Impacts and Risks and Management

A summary of potential impacts and risks from the planned Skua-11 well drilling activities to relevant persons who may have functions, activities or interests within the EMBA, are provided below. For each impact and risk the associated management measures are summarised in Table 2 and Table 3 respectively.

TABLE 2: POTENTIAL IMPACTS AND MITIGATION/MANAGEMENT MEASURES FROM PLANNED ACTIVITIES

Potential Aspects & Impacts	Mitigation and /or Management Measures

Light emissions
- Potential temporary and localised impacts to marine fauna, via:
  o Disorientation, attraction and repulsion
  o Behavioural disturbance
  o Disturbance to predator-prey dynamics
	- No significant sensitive receptors for lighting are assessed as occurring within 20 km of the OA, as defined in the National Light Pollution Guidelines for Wildlife (Commonwealth of Australia 2023)
	- MODU and vessel navigation lights are compliant with the *Navigation Act 2012*
	- Procedures for well cleanup to manage flaring (if flaring is required)

Noise emissions
- Potential localised impacts to marine fauna, via:
  o Injury to hearing or other organs
  o Behavioural disturbance
  o Masking or interfering with biologically important sounds.
	- Vessels and helicopters comply with relevant parts of Environment Protection and Biodiversity Conservation (EPBC) Regulation (2000) Part 8
	- Preventative Maintenance System (PMS) in place for vessels and machinery

Atmospheric emissions - Negligible and localised reduction in air quality - Temporary behavioural impacts to birds - Contribution to climate change effects	- International Air Pollution Prevention (IAPP) certificate, including measures to prevent ozone-depleting substance (ODS) emissions, are in place for vessels - PMS in place for vessels and machinery - Procedures for well cleanup to manage flaring emissions (if flaring is required)

Operational discharges
- Potential temporary and localised impacts to marine fauna, via:
  o Reduction in water quality
  o Disturbance to predator-prey dynamics
	- Emissions and discharges of solid and 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
	- Routine vessel discharges (e.g. treated sewage) are, in accordance with the *Navigation Act 2012* (Cth), *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth) and Marine Order 96 (Marine Pollution Prevention – Sewage)

Drilling discharges
- Potential localised impacts to marine fauna and habitat via:
  o Reduction in water quality and increase in turbidity
  o Smothering or alteration of the seabed
  o Toxicity and oxygen depletion of water and sediment
	- Chemical selection, evaluation and approval process for materials in place
	- Process for inventory control to minimise leftover bulk product at campaign completion
	- Cuttings management system in place to manage drilling muds
	- Water-based drilling muds to be used (no synthetic based muds to be used)

Interaction with other users - Localised and temporary disruption to commercial activities	- A pre-existing 500 m PSZ is in place around the Skua-11 well and will remain in place for the duration of operations under the proposed EP. No vessels are permitted to enter this zone unless authorised by Jadestone - Marine notifications will be made to relevant stakeholders, describing the location of the activity and a 500 m PSZ is present to prevent the risk of collisions and marked on charts - Commercial fishers and other marine users 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 500 m PSZ, as long as it is safe to do so - Consultation is undertaken with all relevant persons

Physical disturbance
- Potential localised impacts to marine fauna and habitat via:
  o Increase in turbidity
  o Smothering or alteration of the seabed
  o Avoidance or attraction to infrastructure
	- No anchoring is planned within the OA
	- Surveys of seabed undertaken prior to activity
	- MODU (Jack-up rig) movement and positioning procedures to minimise the direct footprint

In addition to the impacts outlined in Table 2, the risks that are associated with events that are not expected to occur during normal activities are outlined in Table 3 (below).

TABLE 3: POTENTIAL RISKS AND MITIGATION/MANAGEMENT MEASURES ASSOCIATED ONLY WITH UNPLANNED EVENTS

Potential Risks	Mitigation and /or Management Measures

Introduced Marine Species (IMS)
- Potential introduction and establishment of an IMS, causing;
  o Competition, predation or displacement of native species
  o Alteration of natural ecological processes
  o Reduction and/or competition with commercial fish species
	- IMS management will meet legislative 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
	- Vessels and MODU will be sourced from Australian waters where practicable

Interaction with fauna - Physical disturbance or displacement of marine fauna	- Vessels operating within the 500m PSZ must not exceed a speed of five (5) knots - Induction includes information on speed limits and requirements for interacting with marine fauna - Vessels and helicopters comply with relevant parts of Environment Protection and Biodiversity Conservation (EPBC) Regulation (2000) Part 8

Unplanned discharges (Non-hydrocarbon)
- Potential localised impacts to marine fauna and habitat via:
  o Reduction in water or sediment quality
  o Bioaccumulation
  o Direct physical contact or ingestion
	- No release of non-hazardous / hazardous solid wastes or non-hydrocarbon hazardous liquids to the marine environment
	- Integrity and preventative maintenance program
	- Dropped object prevention and lifting procedures implemented
	- 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 - Reduction in water quality - Direct/indirect toxic or physiological effects on marine biota - Direct/indirect loss/disturbance of habitat, shoals, banks, reefs and islands	- Marine notifications will be made to relevant stakeholders, describing the location of the activity and a 500m PSZ is present to prevent the risk of collisions - Vessels operating within the PSZ must not exceed a speed of five (5) knots - Simultaneous operations (SIMOPS) plan in place to interface between the Montara facility and MODU during drilling - Navigation lights installed and maintained - Vessels within the OA will adhere to the navigation safety requirements contained within the Convention on the International Regulations for Preventing Collisions at Sea (COLREGS) and *Navigation Act 2012*
Hydrocarbon release - Reduction in water quality - Direct/indirect toxic or physiological effects on marine biota - Direct/indirect loss/disturbance of habitat, shoals/banks, reefs, islands and shorelines	- NOPSEMA accepted Oil Pollution Emergency Plan (OPEP) and Well Operations Management Plan (WOMP) - Procedures in place on MODU to prevent hydrocarbon release to sea during drilling - Preventative maintenance system and integrity checks and inspections - Appropriate vessel/MODU 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

For clarification of any of the information in this Invitation for Consultation, or to obtain further information please contact Jadestone at your earliest opportunity.

If you wish to comment on the proposed activities outlined in this Invitation for Consultation, please provide that comment by 31 May 2024.

Email: consult@jadestone-energy.com **Phone: 08 9486 6600**

The Atrium, Level 2, 168 St Georges Terrace, Perth WA 6000

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.

IHSA chief executive Dr Christian Verdicchio emphasised the organisation's commitment to addressing health disparities by extending support to regional areas such as Broome.

"We are proud to support local communities across Australia to lessen the gap in health outcomes for non-Indigenous and Indigenous Australians as well as the gap between remote Australia and major cities when it comes to heart health," he said.

By providing a platform for individuals to share experiences and guidance from peers who understand their journey, the program aims to reduce the strain on healthcare resources by minimising hospitalisations and GP visits.

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

Services Australia, the Australian Tax Office and Home Affairs have joined the Community and Public Sector Union and Civil Service Association's call to overhaul pay and conditions for regional public sector workers in a bid to tackle the regional staff retention crisis.

Last week the CPSU/CSA began bargaining for a replacement of the Public Sector Civil Service Association Agreement 2022.

The sought-after changes include receiving annual leave travel concessions as a lump sum, obtaining an inconvenience allowance for overnight stays away from home, and having the flexibility to use travelling allowances for purchasing groceries and pre-prepared meals.

CPSU/CSA branch secretary Rikki Henden said the change would help address the urgent regional attraction and retention crisis.

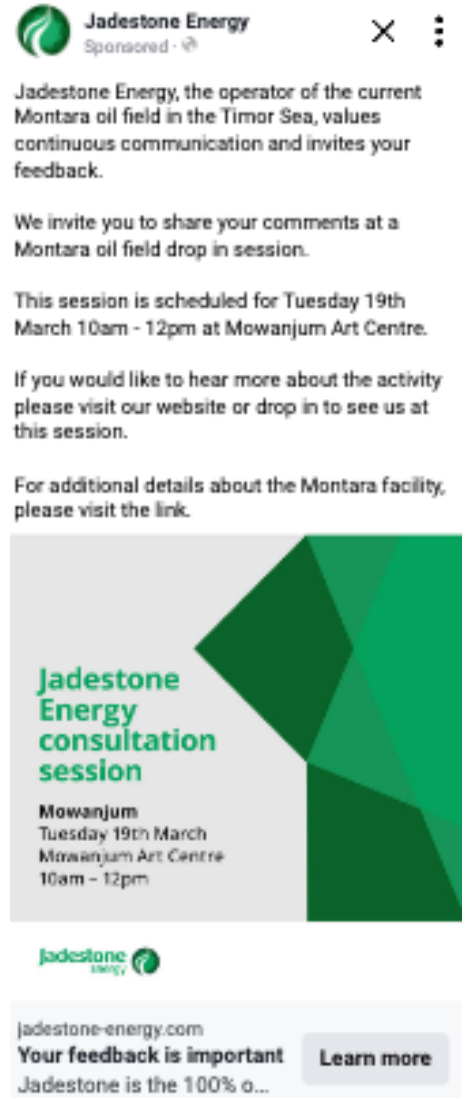
"The Government needs to offer pay and conditions that inspire people to live and work delivering public services in regional WA, and keep them there for the long term," she said.

"Accessible, reliable, locally delivered public services underpin the capacity to live a better life in regional WA, but this is being undermined by persistent difficulties attracting and retaining skilled staff to do the work."

The union will also aim to address issues concerning district allowance and the regional officers housing scheme following extensive consultations with more than 1000 regional public sector workers across regional WA.

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

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- Readership: 14,474

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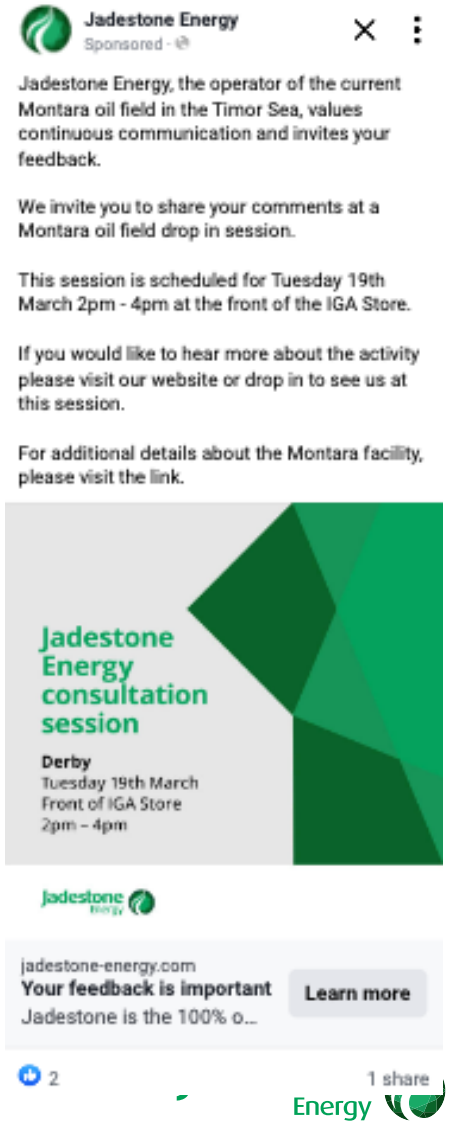
SOCIAL ADVERT

- 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

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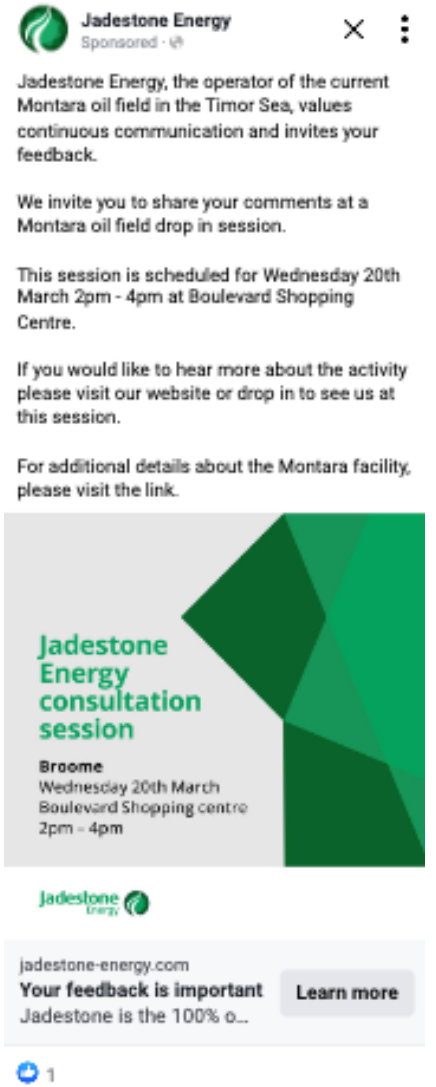
SOCIAL ADVERT

- 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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Last week the CPSU/CSA began bargaining for a replacement of the Public Sector Civil Service Association Agreement 2022.

The sought-after changes include receiving annual leave travel concessions as a lump sum, obtaining an inconvenience allowance for overnight stays away from home, and having the flexibility to use travelling allowances for purchasing groceries and pre-prepared meals.

CPSU/CSA branch secretary Rikki Henden said the change would help address the urgent regional attraction and retention crisis.

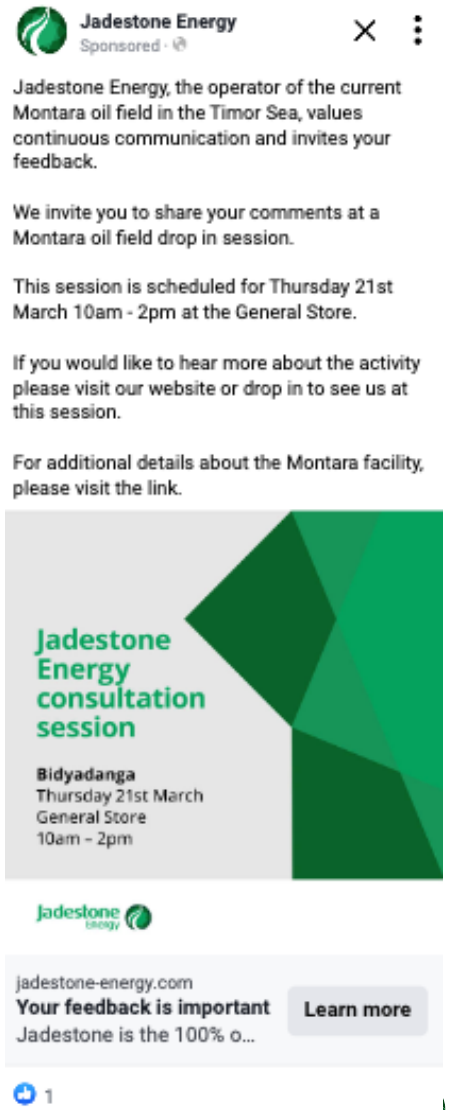
"The Government needs to offer pay and conditions that inspire people to live and work delivering public services in regional WA, and keep them there for the long term," she said.

"Accessible, reliable, locally delivered public services underpin the capacity to live a better life in regional WA, but this is being undermined by persistent difficulties attracting and retaining skilled staff to do the work."

The union will also aim to address issues concerning district allowance and the regional officers housing scheme following extensive consultations with more than 1000 regional public sector workers across regional WA.

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

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.

HSA chief executive Dr Christian Verdicchio emphasised the organisation's commitment to addressing health disparities by extending support to regional areas such as Broome.

"We are proud to support local communities across Australia to lessen the gap in health outcomes for non-Indigenous and Indigenous Australians as well as the gap between remote Australia and major cities when it comes to heart health," he said.

By providing a platform for individuals to share experiences and guidance from peers who understand their journey, the program aims to reduce the strain on healthcare resources by minimising hospitalisations and GP visits.

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

Union support for better pay & conditions

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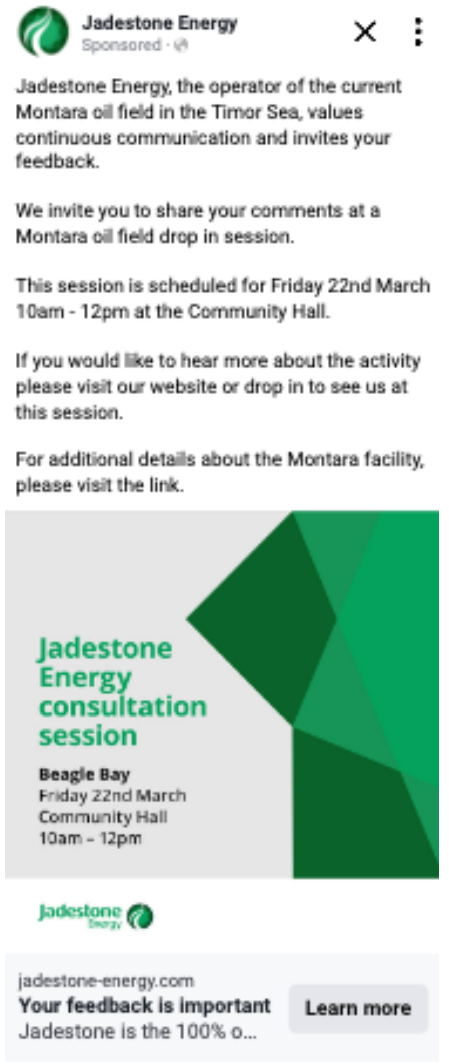
SOCIAL ADVERT

- 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

Vital support on path towards heart health

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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

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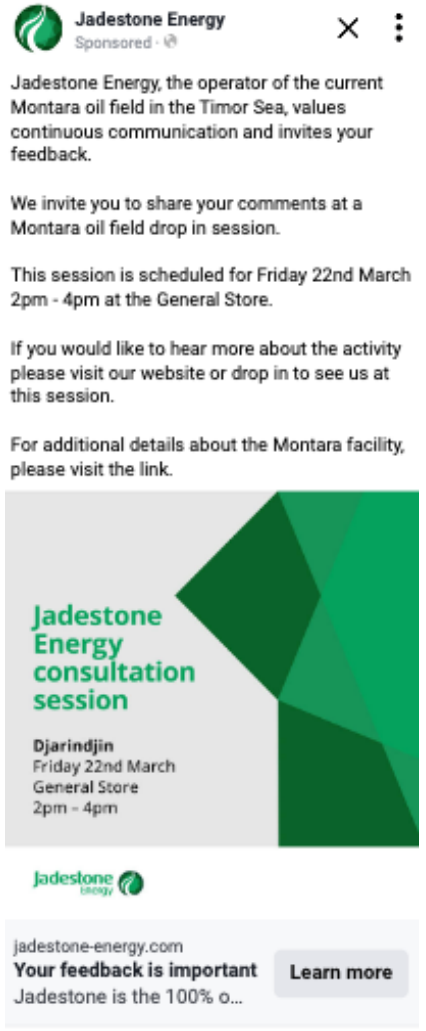
SOCIAL ADVERT

- 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.

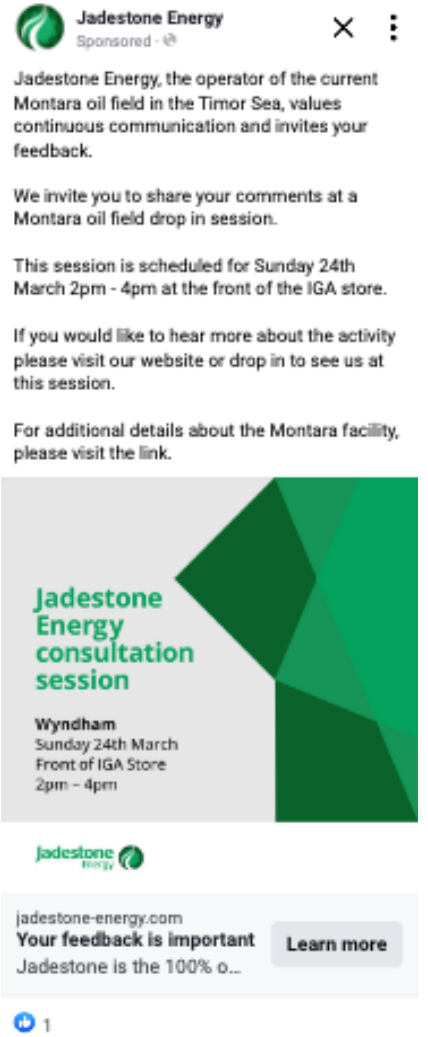
However, the Government is still considering how to act on them and may not have a response ready the May Budget.

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
Jadestone is the 100% o...
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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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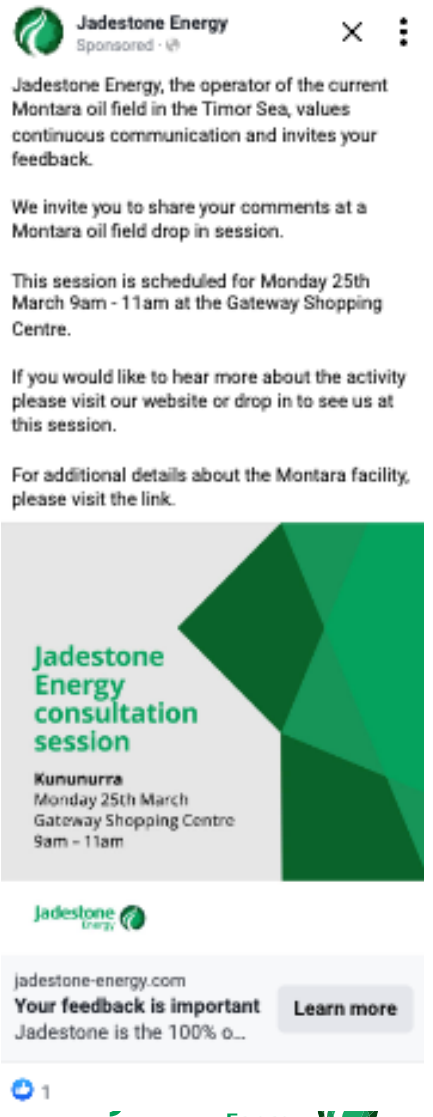
SOCIAL ADVERT

- 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



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 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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Your feedback is important
Jadestone is the 100% o...
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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

If you would like to hear more about the activity please visit our website, or drop in to see us as the session.

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.

APPENDIX F MONTARA OPERATIONS STAKEHOLDER CONSULTATION DOCUMENTATION

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:

MAJOR PRIZE WINNERS
R West, 0810

MINOR PRIZE WINNERS
N Cronin 2037; M Cheney 4218; J Brealey 5086; A Gourley 3977; LHong Chua 2142; H Phillipe 4873; O Daysh 5260; H Nazzari 3166; B Richard 2210; A Lassig 4670; M Troiano 5031; K Fleming 3910; A Ishak 2176; R Da Costa 4173; J Grech 5038; T Hocking 3550; J Cabarrus 2250; A McFarlane 4000; H Eldridge 5169; D Leigh 3150; D Goldman 2036; D Kleidon 4214; L Thessalonikeous 5037; S Roberts 3218; L Waterson 2232; B Prior 4810; E STEWART 5011; T Rode 3805; S Tapp 2234; S Hickson 4507; D White 5074; R Dunne 3340; P Fornasier 2137; P Townend 4070; J Reddock 5016; C Williams 3809; B Forward 2750; S Gleeson 4352; G Troiano 5031; R Bowlen 3939; J Schafer 2671; K Kroll 4133; D Allen 5127; T Haintz 3230; M Winney 2223; S Foley 4503; G Sanderson 810; J Wilson 3337; K Anderson 2261; E Watts 4562; J Craft 0832; K Rowswell 3191; A Edwards 2261; H Watts 4070; E Dean 836; W Driscoll 3978.

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

www.theaustralian.com.au

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
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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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INTRODUCTIONS

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Personal

GENERAL

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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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Commercial Opps

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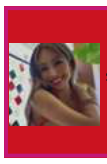
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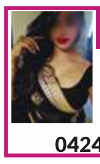
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Notices

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
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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