

Appendix A WOODSIDE ENVIRONMENT AND RISK MANAGEMENT POLICIES

WOODSIDE POLICY



Environment and Biodiversity Policy

OBJECTIVE

Woodside recognises the intrinsic value of nature and the importance of conserving biodiversity and ecosystem services to support the sustainable development of our society. We are committed to doing our part. We understand and embrace our responsibility to undertake activities in an environmentally sustainable way.

PRINCIPLES

Woodside commits to:

- Implementing a systematic approach to the management of the impacts and risks of our operating activities on an ongoing basis, including emissions and air quality, discharge and waste management, water management, biodiversity and protected areas.
- Applying the mitigation hierarchy principle (avoid, minimise, restore) and a continuous improvement approach to ensure we maintain compliance, improve resource use efficiency and reduce our environmental impacts.
- Embedding environmental and biodiversity management, and opportunities, in our business planning and decision making processes.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Not undertaking new exploration or development of hydrocarbons within the boundaries of natural sites on the UNESCO World Heritage List (as specified at 1 December 2022). Existing activity may continue if compatible with maintenance of the listed outstanding universal values.
- Not undertaking new exploration or development of hydrocarbons within IUCN Protected Areas (as specified at 1 December 2022) unless compatible with management plans in place for the area. Existing activity may continue if compatible with management plans in place for the area.
- Achieving net zero deforestation¹ associated with new projects that take a Final Investment Decision (FID) after 1 December 2022.
- Developing Biodiversity Action Plans for all new major projects (CAPEX >USD\$2 billion) that take a FID after 1 December 2022.
- Supporting positive biodiversity outcomes in regions and areas in which we operate.
- Setting targets and publicly reporting on our environmental and biodiversity performance.

APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Approved by the Woodside Energy Group Ltd Board in December 2022.

¹ Definition of Forest: 'trees higher than 5 meters and a canopy cover of more than 10 percent on the land to be cleared'

Health and Safety Policy

OBJECTIVES

At Woodside we believe that process and personal safety related incidents, and occupational illnesses are preventable. We strive to be an industry leader in health and safety and are committed to managing our activities to minimise adverse health and safety risk related impacts.

PRINCIPLES

Woodside will achieve this by:

- Implementing a systematic approach to health, personal safety, and process safety risk management.
- Maintaining a culture in which everybody is aware of their health and safety obligations and are empowered to speak up and intervene on health and safety issues.
- Identifying current and emerging hazards across the value chain activities to reduce risks to as low as reasonably practicable.
- Embedding health and safety management in our business planning and decision-making processes.
- Integrating health, personal safety and process safety requirements when designing, purchasing, constructing, and modifying equipment and facilities including requiring our contractors to comply with our HSE expectations in a mutually beneficial manner.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Setting targets and publicly reporting on our health and safety performance to help us continually improve.

APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside leaders are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Revised by the Woodside Energy Group Ltd Board in December 2022

Risk Management Policy

OBJECTIVES

Woodside recognises that risk is inherent in our business and the effective management of risk is vital to deliver our strategic objectives, continued growth and success. We are committed to managing risks in a proactive and effective manner as a source of competitive advantage.

Our approach protects us against potential negative impacts, enables us to take risk for reward and improves our resilience against emerging risks. The objective of our risk management framework is to provide a single consolidated view of risks across the company to understand our full risk exposure and prioritise risk management and governance.

The success of our approach lies in the responsibility placed on everyone at all levels to proactively identify, assess and treat risks relating to the objectives they are accountable for delivering.

PRINCIPLES

Woodside achieves these objectives by:

- Applying a structured and comprehensive framework for the identification, assessment and treatment of current risks and response to emerging risks;
- Ensuring line of sight of financial and non-financial risks at appropriate levels of the organisation;
- Demonstrating leadership and commitment to integrating risk management into our business activities and governance practices;
- Recognising the value of stakeholder engagement, best available information and proactive identification of potential changes in external and internal context;
- Embedding risk management into our critical business processes and control framework;
- Understanding our exposure to risk and tolerance for uncertainty to inform our decision making and assure that Woodside is operating with due regard to the risk appetite endorsed by the Board; and
- Evaluating and improving the effectiveness and efficiency our approach.

APPLICABILITY

The Managing Director of Woodside is accountable to the Board of Directors for ensuring this Policy is effectively implemented.

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Reviewed by the Woodside Energy Group Ltd Board in December 2022.

Appendix B RELEVANT REQUIREMENTS

The table below refers to Commonwealth Legislation related to the project.

Commonwealth Legislation	Legislation Summary
<p><i>Air Navigation Act 1920</i> Air Navigation Regulations 1947 Air Navigation (Aerodrome Flight Corridors) Regulations 1994 Air Navigation (Aircraft Engine Emissions) Regulations 1995 Air Navigation (Aircraft Noise) Regulations 1984 Air Navigation (Fuel Spillage) Regulations 1999</p>	<p>This Act relates to the management of air navigation.</p>
<p><i>Australian Maritime Safety Authority Act 1990</i></p>	<p>This Act establishes a legal framework for the Australian Maritime Safety Authority (AMSA), which represents the Australian Government and international forums in the development, implementation and enforcement of international standards including those governing ship safety and marine environment protection. AMSA is responsible for administering the Marine Orders in Commonwealth waters.</p>
<p><i>Australian Radiation Protection and Nuclear Safety Act 1998</i></p>	<p>This Act relates to the protection of the health and safety of people, and the protection of the environment from the harmful effects of radiation.</p>
<p><i>Biosecurity Act 2015</i> Quarantine Regulations 2000 Biosecurity Regulation 2016 Australian Ballast Water Management Requirements 2017</p>	<p>This Act provides the Commonwealth with powers to take measures of quarantine, and implement related programs as are necessary, to prevent the introduction of any plant, animal, organism or matter that could contain anything that could threaten Australia's native flora and fauna or natural environment. The Commonwealth's powers include powers of entry, seizure, detention and disposal.</p> <p>This Act includes mandatory controls on the use of seawater as ballast in ships and the declaration of sea vessels voyaging out of and into Commonwealth waters. The Regulations stipulate that all information regarding the voyage of the vessel and the ballast water is declared correctly to the quarantine officers.</p>
<p><i>Environment Protection and Biodiversity Conservation Act 1999</i> Environment Protection and Biodiversity Conservation Regulations 2000</p>	<p>This Act protects matters of national environmental significance (NES). It streamlines the national environmental assessment and approvals process, protects Australian biodiversity and integrates management of important natural and culturally significant places.</p> <p>Under this Act, actions that may be likely to have a significant impact on matters of NES must be referred to the Commonwealth Environment Minister.</p>
<p><i>Environment Protection (Sea Dumping) Act 1981</i> Environment Protection (Sea Dumping) Regulations 1983</p>	<p>This Act provides for the protection of the environment by regulating dumping matter into the sea, incineration of waste at sea and placement of artificial reefs.</p>
<p><i>Industrial Chemicals (Notification and Assessment Act) 1989</i> Industrial Chemicals (Notification and Assessment) Regulations 1990</p>	<p>This Act creates a national register of industrial chemicals. The Act also provides for restrictions on the use of certain chemicals which could have harmful effects on the environment or health.</p>
<p><i>National Environment Protection Measures (Implementation) Act 1998</i></p>	<p>This Act and Regulations provide for the implementation of National Environment Protection Measures (NEPMs) to protect, restore and enhance the quality of the environment in</p>

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Commonwealth Legislation	Legislation Summary
National Environment Protection Measures (Implementation) Regulations 1999	Australia and ensure that the community has access to relevant and meaningful information about pollution. The National Environment Protection Council has made NEPMs relating to ambient air quality, the movement of controlled waste between states and territories, the national pollutant inventory, and used packaging materials.
<i>National Greenhouse and Energy Reporting Act 2007</i> National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015	This Act and associated Rule establishes the legislative framework for the NGER scheme for reporting greenhouse gas emissions and energy consumption and production by corporations in Australia.
<i>Navigation Act 2012</i> Marine order 12 – Construction – subdivision and stability, machinery and electrical installations Marine order 30 - Prevention of collisions Marine order 47 - Mobile offshore drilling units Marine order 57 - Helicopter operations Marine order 60 - Floating offshore facilities Marine order 91 - Marine pollution prevention—oil Marine order 93 - Marine pollution prevention—noxious liquid substances Marine order 94 - Marine pollution prevention—packaged harmful substances Marine order 96 - Marine pollution prevention—sewage Marine order 97 - Marine pollution prevention—air pollution	This Act regulates navigation and shipping including Safety of Life at Sea (SOLAS). The Act will apply to some activities of the MODU and project vessels. This Act is the primary legislation that regulates ship and seafarer safety, shipboard aspects of marine environment protection and pollution prevention.
<i>Offshore Petroleum and Greenhouse Gas Storage Act 2006</i> Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009	This Act is the principal Act governing offshore petroleum exploration and production in Commonwealth waters. Specific environmental, resource management and safety obligations are set out in the Regulations listed.
<i>Ozone Protection and Synthetic Greenhouse Gas Management Act 1989</i> Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995	This Act provides for measures to protect ozone in the atmosphere by controlling and ultimately reducing the manufacture, import and export of ozone depleting substances (ODS) and synthetic greenhouse gases, and replacing them with suitable alternatives. The Act will only apply to Woodside if it manufactures, imports or exports ozone depleting substances.
<i>Protection of the Sea (Powers of Intervention) Act 1981</i>	This Act authorises the Commonwealth to take measures for the purpose of protecting the sea from pollution by oil and other noxious substances discharged from ships and provides legal immunity for persons acting under an AMSA direction.
<i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i> Protection of the Sea (Prevention of Pollution from Ships) (Orders) Regulations 1994 Marine order 91 - Marine pollution prevention—oil Marine order 93 - Marine pollution prevention—noxious liquid substances	This Act relates to the protection of the sea from pollution by oil and other harmful substances discharged from ships. Under this Act, discharge of oil or other harmful substances from ships into the sea is an offence. There is also a requirement to keep records of the ships dealing with such substances. The Act applies to all Australian ships, regardless of their location. It applies to foreign ships operating between 3 nautical miles (nm) off the coast out to the end of the Australian Exclusive Economic Zone (200 nm). It also applies

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Commonwealth Legislation	Legislation Summary
<p>Marine order 94 - Marine pollution prevention—packaged harmful substances</p> <p>Marine order 95 - Marine pollution prevention—garbage</p> <p>Marine order 96 - Marine pollution prevention—sewage</p> <p>Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007</p> <p>MARPOL Convention</p>	<p>within the 3 nm of the coast where the State/Northern Territory does not have complementary legislation.</p> <p>All the Marine Orders listed, except for Marine Order 95, are enacted under both the Navigation Act 2012 and the Protection of the Sea (Prevention of Pollution from Ships) Act 1983.</p> <p>This Act is an amendment to the Protection of the Sea (Prevention of Pollution from Ships) Act 1983. This amended Act provides the protection of the sea from pollution by oil and other harmful substances discharged from ships.</p>
<p><i>Protection of the Sea (Harmful Antifouling Systems) Act 2006</i></p> <p>Marine order 98—(Marine pollution prevention—anti-fouling systems)</p>	<p>This Act relates to the protection of the sea from the effects of harmful anti-fouling systems. It prohibits the application or reapplication of harmful anti-fouling compounds on Australian ships or foreign ships that are in an Australian shipping facility.</p>
<p><i>Underwater Cultural Heritage Act 2018</i></p>	<p>This act relates to the identification, protection and conservation of Australia's underwater heritage and enables the implementation of national and international maritime heritage responsibilities.</p> <p>There is currently draft guidelines for working in the near and offshore environment to protect underwater heritage with the aim to provide direction on addressing the Act obligations for developments and to promote best practice for identifying, assessing and protecting underwater cultural heritage.</p>

Appendix C EPBC ACT PROTECTED MATTERS SEARCH REPORTS

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Australian Government

Department of Climate Change, Energy,
the Environment and Water

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: 16-Jan-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

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:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	27
Listed Migratory Species:	43

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:	68
Whales and Other Cetaceans:	30
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	3
Habitat Critical to the Survival of Marine Turtles:	3

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:	98
Key Ecological Features (Marine):	4
Biologically Important Areas:	9
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area

[\[Resource Information \]](#)

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name

EEZ and Territorial Sea

Extended Continental Shelf

Listed Threatened Species

[\[Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name

Threatened Category

Presence Text

BIRD

[Calidris canutus](#)

Red Knot, Knot [855]

Endangered

Species or species habitat may occur within area

[Calidris ferruginea](#)

Curlew Sandpiper [856]

Critically Endangered

Species or species habitat may occur within area

[Macronectes giganteus](#)

Southern Giant-Petrel, Southern Giant Petrel [1060]

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

[Phaethon lepturus fulvus](#)

Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]

Endangered

Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may 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
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat may occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to 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 likely to 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
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Migratory Marine Birds

[Anous stolidus](#)

Common Noddy [825]		Species or species habitat may occur within area
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[Ardenna carneipes](#)

Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may occur within area
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[Calonectris leucomelas](#)

Streaked Shearwater [1077]		Species or species habitat likely to occur within area
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[Fregata ariel](#)

Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
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[Fregata minor](#)

Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
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[Macronectes giganteus](#)

Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
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[Phaethon lepturus](#)

White-tailed Tropicbird [1014]		Species or species habitat may occur within area
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[Thalassarche carteri](#)

Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
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[Thalassarche impavida](#)

Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
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Migratory Marine Species

[Anoxypristis cuspidata](#)

Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
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[Balaenoptera bonaerensis](#)

Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
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Scientific Name	Threatened Category	Presence Text
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 likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat 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	Congregation or aggregation known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to 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
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to 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
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	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
Pandion haliaetus Osprey [952]		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 White-tailed Tropicbird [1014]		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
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		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 latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Halicampus brocki Brock's Pipefish [66219]		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 nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribbioned Pipehorse, Ribbioned 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
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		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
Reptile		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Chitulia ornata as Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Leioselasma czeblukovi as Hydrophis czeblukovi Fine-spined Seasnake, Geometrical Seasnake [87374]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans [[Resource Information](#)]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Current Scientific Name	Status	Type of Presence
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	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 as Kogia simus 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]		Species or species habitat 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
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area

Current Scientific Name	Status	Type of Presence
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
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Multiple Use Zone (IUCN VI)
Gascoyne	National Park Zone (IUCN II)

Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Nov - May		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

EPBC Act Referrals [\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
Construct and operate LNG & domestic gas plant including	2008/4469	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
onshore and offshore facilities - Wheatston			
Develop Jansz-10 deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Development of Coniston/Novara fields within the Exmouth Sub-basin	2011/5995	Controlled Action	Post-Approval
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development	2003/1294	Controlled Action	Post-Approval
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Not controlled action			
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed
Cazadores 2D seismic survey	2004/1720	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
Agrippina 3D Seismic Marine Survey	2009/5212	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular Manner)	Completed
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Leopard 2D marine seismic survey	2005/2290	Not Controlled Action (Particular Manner)	Post-Approval
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Rydal-1 Petroleum Exploration Well, WA	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval
Salsa 3D Marine Seismic Survey	2010/5629	Not Controlled Action (Particular Manner)	Post-Approval
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular Manner)	Post-Approval
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

Referral decision

Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	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
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west

Biologically Important Areas

Scientific Name	Behaviour	Presence
Marine Turtles		
Caretta caretta		
Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Chelonia mydas		
Green Turtle [1765]	Internesting buffer	Known to occur
Natator depressus		
Flatback Turtle [59257]	Internesting buffer	Known to occur

Seabirds

Scientific Name	Behaviour	Presence
Ardena pacifica Wedge-tailed Shearwater [84292]	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
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	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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Australian Government

Department of Climate Change, Energy,
the Environment and Water

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: 25-Jan-2023

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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:	14
Listed Migratory Species:	26

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:	17
Whales and Other Cetaceans:	25
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:	26
Key Ecological Features (Marine):	1
Biologically Important Areas:	2
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area

[\[Resource Information \]](#)

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name

EEZ and Territorial Sea

Listed Threatened Species

[\[Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name

Threatened Category

Presence Text

BIRD

[Calidris canutus](#)

Red Knot, Knot [855]

Endangered

Species or species habitat may occur within area

[Macronectes giganteus](#)

Southern Giant-Petrel, Southern Giant Petrel [1060]

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

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

Migration route known to occur within area

Scientific Name	Threatened Category	Presence Text
-----------------	---------------------	---------------

Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
---	------------	--

REPTILE

Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
---	------------	--

Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
---	------------	--

Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
--	------------	--

Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
---	------------	--

Natator depressus Flatback Turtle [59257]	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
--	------------	--

Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat may 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
--	--	--

Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area
---	--	--

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Migratory Marine Species		
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to 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	Migration route known 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	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat 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
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		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
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus White-tailed Tropicbird [1014]		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
Reptile		
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		

Current Scientific Name	Status	Type of Presence
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to 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	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Kogia sima as Kogia simus 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]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		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
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

Current Scientific Name	Status	Type of Presence
Steno bredanensis Rough-toothed Dolphin [30]		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
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Not controlled action			
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Cazadores 2D seismic survey	2004/1720	Not Controlled Action	Completed
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Not controlled action (particular manner)			

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D marine seismic survey	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Leopard 2D marine seismic survey	2005/2290	Not Controlled Action (Particular Manner)	Post-Approval
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

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
Exmouth Plateau	North-west

Biologically Important Areas

Scientific Name	Behaviour	Presence
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	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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Appendix D OIL SPILL PREPAREDNESS AND RESPONSE STRATEGY SELECTION AND EVALUATION

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Oil Spill Preparedness and Response Mitigation Assessment for the Scarborough 4D Baseline 1 (B1) Marine Seismic Survey (MSS)

Corporate HSE

Hydrocarbon Spill Preparedness

June 2023

Revision 0b

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EXECUTIVE SUMMARY

Woodside Energy Ltd (Woodside) has developed its oil spill preparedness and response position for the Scarborough 4D Baseline 1 (B1) Marine Seismic Survey (MSS), hereafter known as the Petroleum Activities Program (PAP).

This document demonstrates that the risks and impacts from an unplanned hydrocarbon release, and the associated response operations, are controlled to As Low as Reasonably Practicable (ALARP) and Acceptable levels. It achieves this by evaluating response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the Environment Plan (EP). This document then outlines Woodside’s decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness.

A summary of the key facts and references to additional detail within this document are presented below.

Table 0-1: Summary of the key details for assessment

Key details of assessment	Summary	Reference to additional detail				
Worst Case Credible Scenario	<p>Credible Scenario-01 (CS-01): Hydrocarbon release caused by vessel collision</p> <p>Instantaneous surface release of 250 m³ of marine diesel ¹</p>	Section 2.2				
Hydrocarbon Properties	<p>Under constant 5 kn wind conditions approximately 45% of the oil is predicted to evaporate within 24 hours. The majority of remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes.</p> <p>Under variable wind conditions where winds are of a greater strength, more entrainment of oil into the water column is predicted (about 45% after 24 hours). A further 35% is forecast to evaporate, leaving only a small proportion of the oil floating on the water surface (<1%).</p> <p>It is predicted only 12.5 m³ of product would remain after weathering from the marine diesel scenario and there is no predicted shoreline contact or accumulation.</p>	<p>Section 6.7.1.1 of the EP</p> <p>Appendix A of the First Strike Plan</p>				
Modelling Results	<p>A quantitative, stochastic assessment has been undertaken for the credible worst case spill scenario to help assess the environmental risk of a hydrocarbon spill.</p> <p>A total of 100 replicate simulations were completed for the scenarios to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter.</p> <p>The stochastic modelling did not predict the threshold concentrations required to trigger deterministic modelling. Deterministic modelling was therefore not undertaken and stochastic modelling has been used to scale the response.</p>	Section 2.3				
	<table border="1"> <tr> <td>Minimum time to shoreline contact (above 100 g/m²)</td> <td>No contact at threshold</td> </tr> <tr> <td>Largest volume ashore at any single Response Priority Area (RPA) (above 100 g/m²)</td> <td>No contact at threshold</td> </tr> </table>	Minimum time to shoreline contact (above 100 g/m ²)	No contact at threshold	Largest volume ashore at any single Response Priority Area (RPA) (above 100 g/m ²)	No contact at threshold	
Minimum time to shoreline contact (above 100 g/m ²)	No contact at threshold					
Largest volume ashore at any single Response Priority Area (RPA) (above 100 g/m ²)	No contact at threshold					

¹ Modelling for an MDO release caused by vessel collision 17 km south of the centre of the Scarborough B1 4D Marine Seismic Survey Operational Area, was undertaken in 2019 using NOPSEMA’s contemporary modelling thresholds. Scarborough B1 4D Marine Seismic Survey credible spill scenario is expected to be the same size as the surrogate modelling (250 m³) and is the same hydrocarbon type (MDO). Given that spill parameters and geographic location fall within the envelope of the activity, the existing modelling is an appropriate surrogate and therefore additional modelling was not required.

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Key details of assessment	Summary		Reference to additional detail
	Largest total shoreline accumulation (above 100 g/m ²) all shorelines	No contact at threshold	
Net Environmental Benefit Analysis	Monitor and evaluate, source control via vessel SOPEP and oiled wildlife response, are all identified as potentially having a net environmental benefit (dependent on the actual spill scenario) and carried forward for further assessment.		Section 4
ALARP evaluation of selected response techniques	The evaluation of the selected response techniques shows the proposed controls reduced the risk to an ALARP and Acceptable level for the risk presented in Section 2 , without the implementation of considered additional, alternative or improved control measures.		Section 6

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1 INTRODUCTION

1.1 Overview

Woodside Energy Ltd (Woodside) has developed its oil spill preparedness and response position for the Scarborough 4D B1 MSS, hereafter known as the PAP. This document outlines Woodside's decisions and techniques for responding to a hydrocarbon loss of containment event and the process for determining its level of hydrocarbon spill preparedness.

1.2 Purpose

This document, together with the documents listed below, meet the requirements of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Environment Regulations) relating to hydrocarbon spill response arrangements.

- The Scarborough 4D B1 MSS Environment Plan (EP)
- Oil Pollution Emergency Arrangements (OPEA) (Australia)
- The Scarborough 4D B1 MSS Oil Pollution Emergency Plan (OPEP) including
 - First Strike Response Plan (FSP)
 - Relevant Operations Plans
 - Relevant Tactical Response Plans (TRPs)
 - Relevant Supporting Plans
 - Data Directory.

The purpose of this document is to demonstrate that the risks and impacts from an unplanned hydrocarbon release and the associated response operations are controlled to As Low as Reasonably Practicable (ALARP) and Acceptable levels.

1.3 Scope

This document demonstrates that the risks and impacts from an unplanned hydrocarbon release, and the associated response operations, are controlled to ALARP and Acceptable levels. It achieves this by evaluating response options to address the potential environmental risks and impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the EP. This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness. It should be read in conjunction with the documents listed in **Table 1-1**. The location of the PAP is shown in Figure 3-1 of the EP.

1.4 Oil spill response document overview

The documents outlined in **Table 1-1** and **Figure 1-1** are collectively used to manage the preparedness and response for a hydrocarbon release.

The Oil Pollution First Strike Response Plan (FSP) (Woodside ID: 1401752711) contains a pre-operational Net Environmental Benefit Analysis (NEBA) summary, outlining the selected response techniques for this PAP. Relevant Operational Plans to be initiated for associated response techniques are identified in the FSP and relevant forms to initiate a response are appended to the FSP.

The process to develop an Incident Action Plan (IAP) begins once the Oil Pollution FSP is underway. The IAP includes inputs from the Monitor and Evaluate (ME) operations and the operational NEBA (**Section 4**). Planning, coordination and resource management are initiated by the Incident Management Team (IMT). In some instances, technical specialists may be utilised to provide expert advice. The planning may also involve liaison officers from supporting government agencies.

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During each operational period, field reports are continually reviewed to evaluate the effectiveness of response operations. In addition, the operational NEBA is continually reviewed and updated to ensure the response techniques implemented continue to result in a net environmental benefit (**Section 4**).

The response will continue as described in **Section 5** until the response termination criteria have been met.

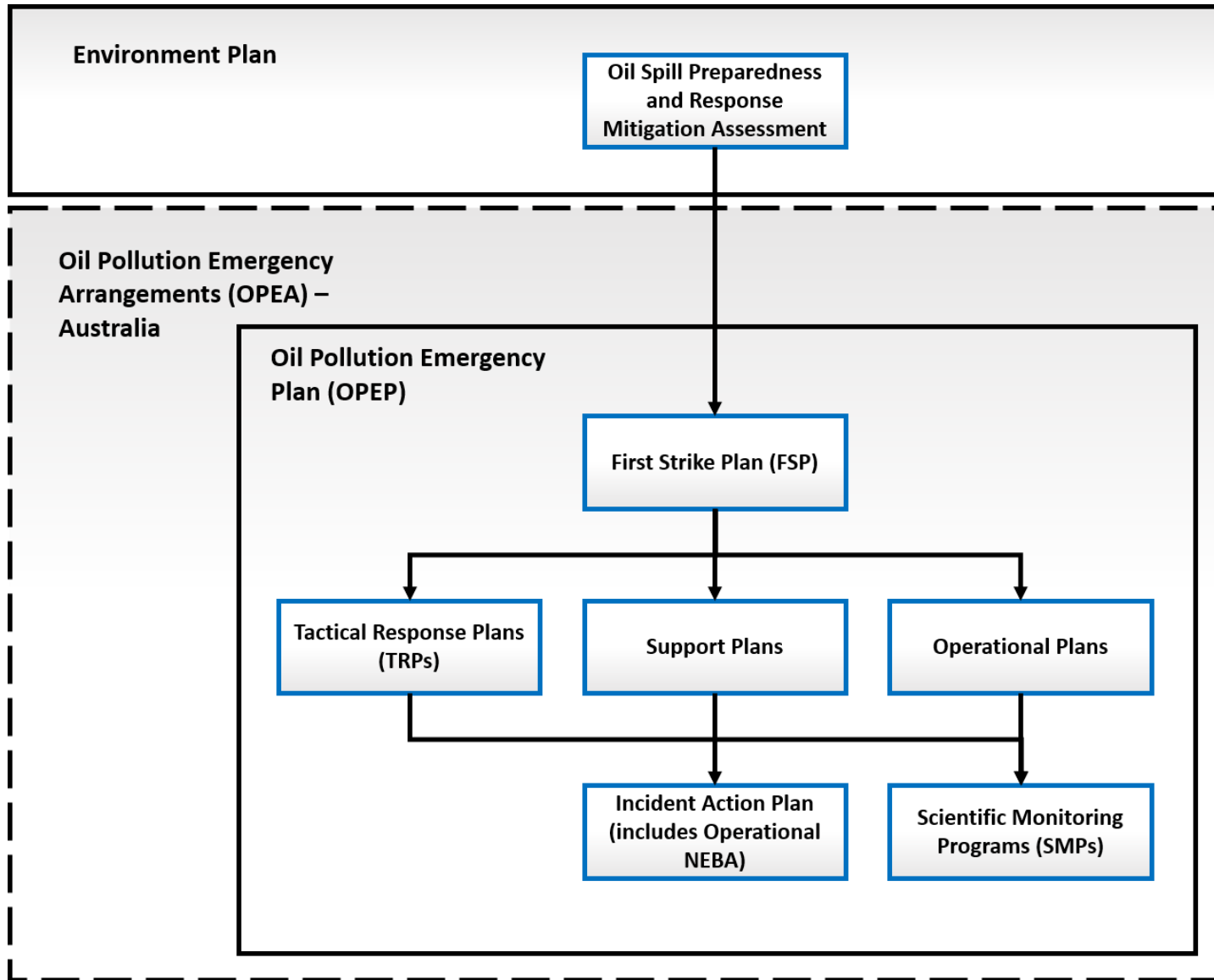


Figure 1-1: Woodside hydrocarbon spill document structure

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Table 1-1: Hydrocarbon spill preparedness and response – document references

Document	Document overview	Stakeholders	Relevant information	Document name/reference
Scarborough 4D B1 MSS EP	Demonstrates that potential adverse impacts on the environment associated with the Scarborough 4D B1 MSS (during both routine and non-routine operations) are mitigated and managed to ALARP and will be of an acceptable level.	NOPSEMA Woodside internal	EP Section 6 (Identification and evaluation of environmental risks and impacts, including credible spill scenarios) EP Section 7 (Implementation strategy – including emergency preparedness and response) EP Section 7 (Reporting and compliance) EP Section 6 (Performance outcomes, standards and measurement criteria)	
Oil Pollution Emergency Arrangements (OPEA) Australia	Describes the arrangements and processes adopted by Woodside when responding to a hydrocarbon spill from a petroleum activity.	Regulatory agencies Woodside internal	All	
Oil Spill Preparedness and Response Mitigation Assessment for the Scarborough 4D B1 MSS (this document)	Evaluates response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the EP.	Regulatory agencies Corporate Incident Management Team (CIMT): Control function in an ongoing spill response for activity-specific response information.	All Performance outcomes, standards and measurement criteria related to hydrocarbon spill preparedness and response are included in this document.	
Scarborough 4D B1 MSS Oil Pollution First Strike Response Plan	Facility specific document providing details and tasks required to mobilise a first strike response. Primarily applied to the first 24 hours of a response until a full IAP specific to the event is developed. Oil Pollution First Strike Response Plans are intended to be the first document used to provide immediate guidance to the	Site-based IMT for initial response, activation and notification. CIMT for initial response, activation and notification. CIMT: Control function in an ongoing spill response for activity-specific response information.	Initial notifications and reporting required within the first 24 hours of a spill event. Relevant spill response options that could be initiated for mobilisation in the event of a spill. Recommended pre-planned tactics. Details and forms for use in immediate response. Activation process for oil spill	

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Document	Document overview	Stakeholders	Relevant information	Document name/reference
	responding Incident Management Team (IMT).		trajectory modelling, aerial surveillance and oil spill tracking buoy details.	
Operational Plans	<p>Lists the actions required to activate, mobilise and deploy personnel and resources to commence response operations.</p> <p>Includes details on access to equipment and personnel (available immediately) and steps to mobilise additional resources depending on the nature and scale of a release.</p> <p>Relevant operational plans will be initially selected based on the Oil Pollution First Strike Plan; additional operational plans will be activated depending on the nature and scale of the release.</p>	<p>CIMT: Operations and Logistics functions for first strike activities.</p> <p>CIMT: Planning Function to help inform the IAP on resources available.</p>	<p>Locations from where resources may be mobilised.</p> <p>How resources will be mobilised.</p> <p>Details of where resources may be mobilised to and what facilities are required once the resources arrive.</p> <p>Details on how to implement resources to undertake a response.</p>	<p>Operational Monitoring Plan</p> <p>Vessel Shipboard Oil Pollution Emergency Plan (SOPEP)</p> <p>Oiled Wildlife</p>
Tactical Response Plans	<p>Provides options for response techniques in selected RPAs.</p> <p>Provides site, access and deployment information to support a response at the location.</p>	<p>CIMT: Planning Function to help develop IAPs, and Logistics Function to assist with determining resources required.</p>	<p>Indicative response techniques.</p> <p>Access requirements and/or permissions.</p> <p>Relevant information for undertaking a response at that site.</p> <p>Where applicable, may include equipment deployment locations and site layouts.</p>	<p>For full list of relevant Tactical Plans for the Scarborough 4D B1 MSS oil spill response, refer to ANNEX E: Tactical Response Plans.</p>
Support Plans	<p>Support Plans detail Woodside's approach to resourcing and the provision of services during a hydrocarbon spill response.</p>	<p>CIMT: Operations, Logistics and Planning functions.</p>	<p>Technique for mobilising and managing additional resources outside of Woodside's immediate preparedness arrangements.</p>	<p>Marine</p> <p>Logistics</p> <p>People & Global Capability Surge</p> <p>Labour Requirement Plan</p> <p>Health & Safety</p> <p>Aviation</p> <p>IT Response Plan</p> <p>Communications Response Plan</p> <p>Stakeholder Engagement</p>

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Document	Document overview	Stakeholders	Relevant information	Document name/reference
				Accommodation & Catering Waste Management Guidance for Oil Spill Claims Management Security Support Plan Hydrocarbon Spill Responder Health Monitoring Guideline

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2 RESPONSE PLANNING PROCESS

This document details Woodside's process for identifying potential response options for the hydrocarbon release scenarios, identified in the EP. **Figure 2-1** outlines the interaction between Woodside's response, planning/preparedness and selection process.

This structure has been used because it shows how the planning and preparedness activities inform a response and provides indicative guidance on what activities would be undertaken, in sequential order, if a real event were to occur. The process also evaluates alternative, additional and/or improved control measures specific to the PAP.

The Scarborough 4D B1 MSS First Strike Response Plan then summarises the outcome of the response planning process and provides initial response guidance and a summary of ongoing response activities, if an incident were to occur.

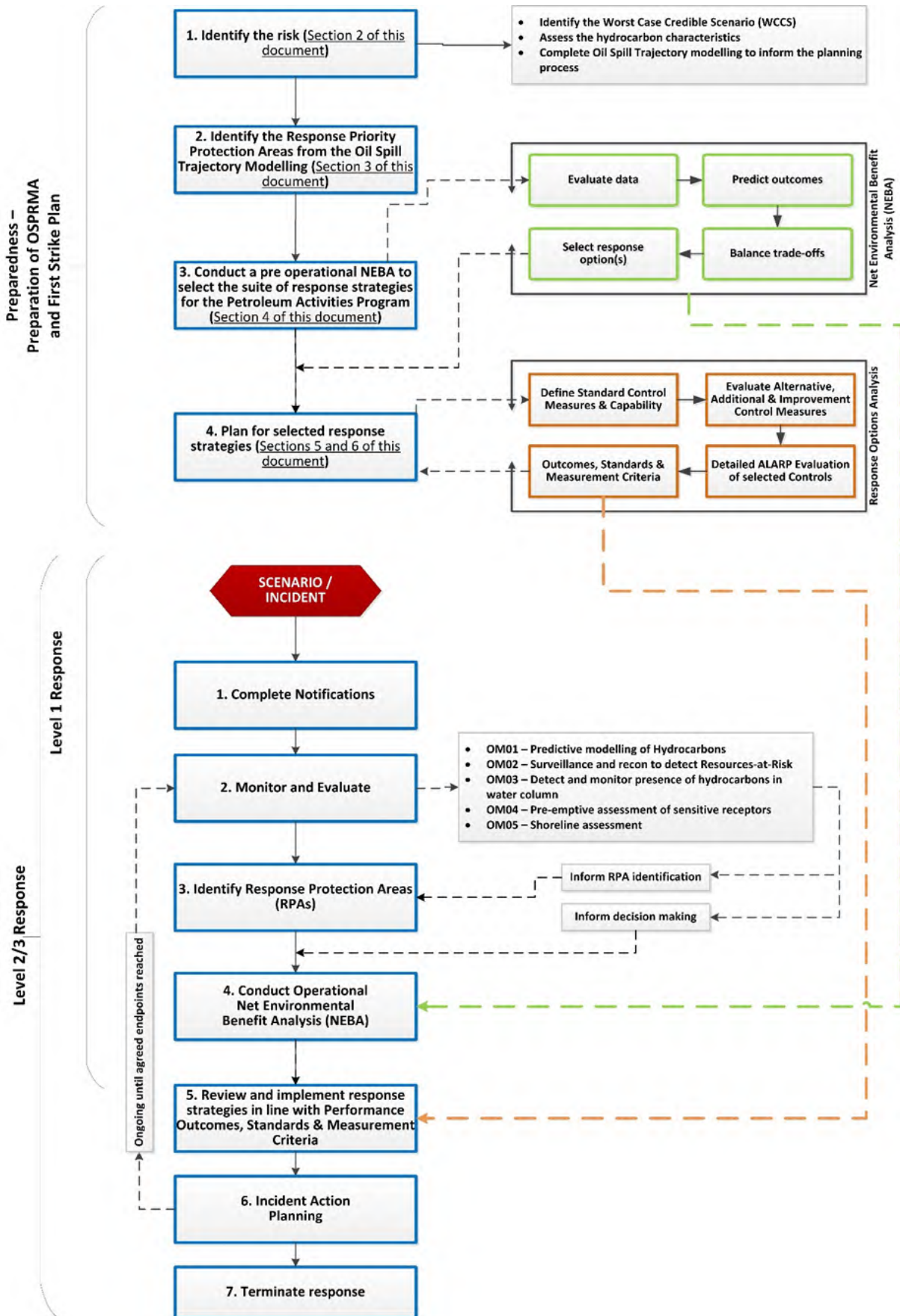


Figure 2-1: Response planning and selection process

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2.1 Response planning process outline

This document is expanded below to provide additional context on the key steps in determining capability, evaluating ALARP and hydrocarbon spill response requirements.

- Section 1. INTRODUCTION
- Section 2. RESPONSE PLANNING PROCESS
 - identification of worst-case credible scenario(s) (WCCS)
 - spill modelling for WCCS.
- Section 3. IDENTIFY RESPONSE PROTECTION AREAS (RPAs)
 - areas predicted to be contacted at concentration >100g/m².
- Section 4. NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)
 - pre-operational NEBA (during planning/ALARP evaluation): this must be reviewed during the initial response to an incident to ensure its accuracy
 - selected response techniques prioritised and carried forward for ALARP assessment.
- Section 5. HYDROCARBON SPILL ALARP PROCESS
 - determines the response need based on predicted consequence parameters.
 - details the environmental performance of the selected response options based on need.
 - sets the environmental performance outcomes, environmental performance standards and measurement criteria.
- Section 6. ALARP EVALUATION
 - evaluates alternative, additional, and improved options for each response technique to demonstrate the risk has been reduced to ALARP.
 - provides a detailed ALARP assessment of selected control measure options against:
 - predicted cost associated with implementing the option
 - predicted change to environmental benefit
 - predicted effectiveness / feasibility of the control measure.
- Section 7. ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES
 - evaluation of impacts and risks from implementing selected response options.
- Section 8. ALARP CONCLUSION
- Section 9. ACCEPTABILITY CONCLUSION

2.1.1 Response Planning Assumptions

For the purpose of defining terms related to response planning and timing, the following definitions have been developed.

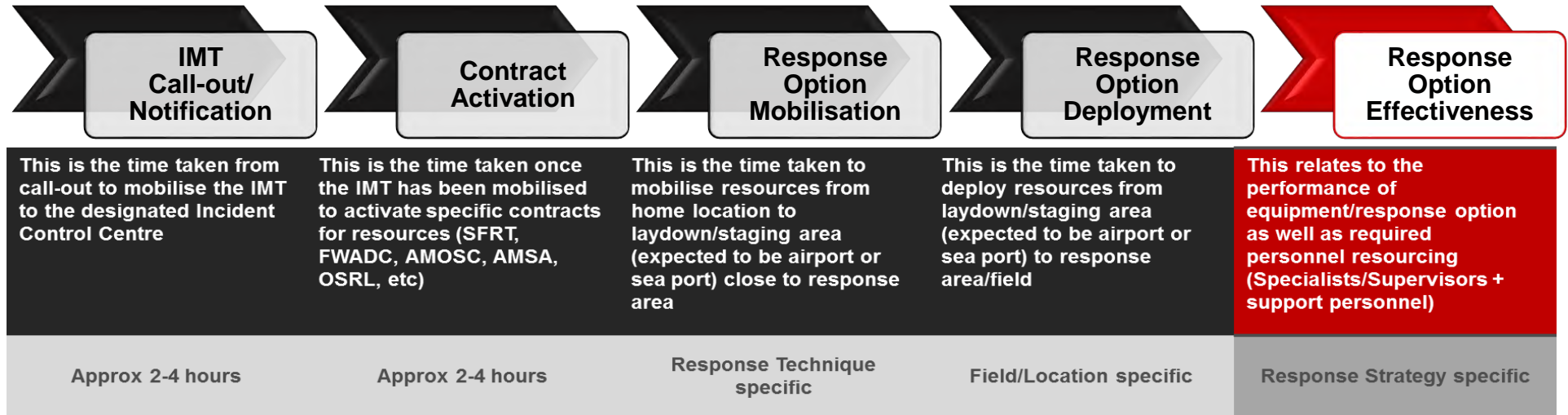


Figure 2-2: Response Planning Assumption - Timing, Resourcing and Effectiveness

2.2 Environment plan risk assessment (credible spill scenarios)

Potential hydrocarbon release scenarios from the PAP have been identified during the risk assessment process (Section 6 of the EP). Further descriptions of risk, impacts and mitigation measures (which are not related to hydrocarbon preparedness and response) are provided in Section 6 of the EP. Three unplanned events or credible spill scenarios for the PAP have been selected as representative across types, sources and incident/response levels, up to and including the WCCS.

Table 2-1 presents the credible scenarios for the PAP. The WCCS for the activity is then used for response planning purposes, as all other scenarios are of a lesser scale and extent. By demonstrating capability to manage the response to the WCCS, Woodside assumes other scenarios that are smaller in nature and scale can also be managed by the same capability. Response performance measures have been defined based on a response to the WCCS.

The surface release of marine diesel caused by vessel collision (Credible Scenario-01; CS-01) has been modelled and considered for response planning purposes. Credible Scenario-03 (CS-03) has significantly smaller marine diesel release volumes and is considered to be within the risk profile and spill response capability requirements of CS-01.

CS-01 is therefore selected for response planning purposes.

Table 2-1: Petroleum Activities Program credible spill scenarios

Credible Spill Scenarios	Scenario selected for planning purposes	Scenario description	Maximum credible volume released (liquid m ³) ¹	Incident Level	Hydrocarbon (HC) type	Residual proportion	Residual volume (liquid m ³)
Credible Scenario-01 (Worst Case)	Yes	Hydrocarbon release due to vessel collision	Instantaneous release of 250 m ³ marine diesel ^{2 3}	2	Marine diesel	5%	12.5 m ³
Credible Scenario-03	No	Marine Fuel Loss during bunkering	Instantaneous release of 8 m ³ marine diesel	1	Marine diesel	5%	0.4 m ³

³ Modelling for an MDO release caused by vessel collision 17 km south of the centre of the Scarborough B1 4D Marine Seismic Survey Operational Area, was undertaken in 2019 using NOPSEMA's contemporary modelling thresholds. Scarborough B1 4D Marine Seismic Survey credible spill scenario is expected to be the same size as the surrogate modelling (250 m³) and is the same hydrocarbon type (MDO). Given that spill parameters and geographic location fall within the envelope of the activity, the existing modelling is an appropriate surrogate and therefore additional modelling was not required.

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2.2.1 Hydrocarbon characteristics

Hydrocarbon characteristics, including modelled weathering data and ecotoxicity, are included in Section 6 of the EP.

Marine Diesel

Marine Diesel Oil is typically classed as an International Tanker Owners Federation (ITOPF) Group I/II oil.

Marine diesel is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. Under constant 5 kn wind conditions, approximately 45% of the oil is predicted to evaporate within 24 hours. Under these calm conditions the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes. Under variable wind conditions where winds are of a greater strength, more entrainment of oil into the water column is predicted (about 45% after 24 hours). A further 35% is forecast to evaporate, leaving only a small proportion of the oil floating on the water surface (<1%).

The heavier (low volatility) components of the oil have a tendency to entrain into the upper water column due to wind-generated waves but can subsequently resurface if wind-waves abate. Therefore, the heavier components of this oil can remain entrained or on the sea surface for an extended period, with associated potential for dissolution of the soluble aromatic fraction. It is predicted only 12.5 m³ of product would remain after weathering from the marine diesel scenario and there is no predicted shoreline contact or accumulation.

2.3 Hydrocarbon spill modelling

Oil spill trajectory modelling tools are used for environmental impact assessment and during response planning to understand spatial scale and timeframes for response operations. Woodside recognises that there is a degree of uncertainty related to the use of modelling data and has subsequently utilised conservative approaches to volumes, weathering, spatial areas, timing and response effectiveness to scale capability to need.

The Oil Spill Model and Response System (OILMAP) and Integrated Oil Spill Impact Model System (SIMAP) models are used for stochastic modelling. They have been developed over three decades of planning, exercises, actual responses, several peer reviews, and validation studies. OILMAP was originally derived from the United States Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Type A model (French et al. 1996), for assessing marine transport, biological impact and economic impact that was also used under the United States Oil Pollution Act 1990 Natural Resource Damage Assessment (NRDA) regulations. Notable spills where the model has been used and validated against actual field observations include, Exxon Valdez (French McCay 2004), North Cape Oil Spill (French McCay 2003), along with an assessment of 20 other spills (French McCay and Rowe, 2004). In addition, test spills designed to verify fate, weathering and movement algorithms have been conducted regularly and in a range of climate conditions (French and Rines 1997; French et al. 1997; Payne et al. 2007s, 2007b; French McCay et al. 2007).

Further to this, the algorithms have been updated using the latest findings from the Macondo/Deepwater Horizon well blowout in the Gulf of Mexico and validated according to the Deepwater Horizon (DWH) oil spill in support of the Natural Resource Damage Assessment (NRDA) (Spaulding et al. 2015; French McCay et al. 2015, 2016). Finally, the OILMAP and SIMAP models have been used extensively in Australia to prosecute pollution offences, predict discharge locations and likely spill volumes based on weathering and surveillance observations, and has been used as expert witness evidence in Australian court proceedings, aiding the prosecution to determine spill quantum estimates.

2.3.1 Stochastic modelling

A quantitative, stochastic assessment has been undertaken for the credible spill scenario to help assess the environmental consequences of a hydrocarbon spill.

A total of 100 replicate simulations were completed for the scenario to test for trends and variations in the trajectory and weathering of the spilled oil over an annual period, with an even number of replicates completed using samples of metocean data that commenced within each month. Further details relating to the assessments for the scenario can be found in Section 6 of the EP.

2.3.1.1 Environmental impact thresholds – EMBA and hydrocarbon exposure

The outputs of the stochastic spill modelling are used to assess the potential environmental impact from the credible scenarios. The stochastic modelling results are used to delineate areas of the marine and shoreline environment that could be exposed to hydrocarbon levels exceeding environmental impact threshold concentrations. The summary of all the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as Environment that May Be Affected (EMBA) and is discussed further in Section 4 of the EP. As the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, a different EMBA is presented for each fate within the EP.

A conservative approach – adopting accepted contact thresholds for impacts on the marine environment – is used to define the EMBA. These hydrocarbon thresholds are presented in **Table 2-2** below and described in Section 6 of the EP.

Table 2-2: Summary of thresholds applied to the stochastic hydrocarbon spill modelling of marine diesel to determine the EMBA and environmental impacts

Threshold (marine diesel)	Description
10 g / m ²	Surface hydrocarbon
100 ppb	Entrained hydrocarbon (ppb)
50 ppb	Dissolved aromatic hydrocarbon (ppb)
100 g / m ²	Shoreline accumulation

2.3.2 Deterministic Modelling

Deterministic modelling is undertaken where initial stochastic modelling has indicated that floating oil is present at an impact threshold of 50 g/m² and/or where there is shoreline accumulations at an impact threshold of 100 g/m². The deterministic modelling outputs are then used to scale the required capability for the offshore (containment and recovery and dispersant) and/or shoreline responses.

The selected stochastic modelling used as a representative of the WCCS for this PAP did not predict the threshold concentrations required to trigger the undertaking of deterministic modelling. Deterministic modelling was therefore not undertaken for CS-01 and stochastic modelling has been used to scale the response.

2.3.3 Response Planning Thresholds for Surface and Shoreline Hydrocarbon Exposure

Thresholds to determine the EMBA are used to predict and assess environmental impacts and inform the SMP, however they do not appropriately represent the thresholds at which an effective response can be implemented. Additional response thresholds are used for response planning and to determine areas where response techniques would be most effective. The spill modelling results are then used to assess the nature and scale of a response.

In the event of an actual response, existing modelling would be reviewed for suitability and additional modelling would be conducted using real-time data and field information to inform Incident Management Team decisions.

The spill modelling outputs are presented at response planning thresholds for surface hydrocarbons for the WCCS. Surface spill concentrations are expressed as grams per square metre (g/m²) (**Section 2.2**). The thresholds used are derived from oil spill response planning literature and industry guidance and are summarised below.

2.3.4 Surface Hydrocarbon Concentrations

Table 2-3: Surface hydrocarbon thresholds for response planning

Surface hydrocarbon concentration (g/m ²)	Description	Bonn Agreement Oil Appearance Code (BAOAC)	Mass per area (g/m ²)
>10	Predicted minimum threshold for commencing operational monitoring ⁴	Code 3 – Dull metallic colours	5 - 50

⁴ Operational monitoring will be undertaken from the outset of a spill whether or not this threshold has been reached. Monitoring is needed throughout the response to assess the nature of the spill, track its location and inform the need for any additional monitoring and/or response techniques. It also informs when the spill has entered State Waters and control of the incident passes to Western Australia Department of Transport (WA DoT).

Surface hydrocarbon concentration (g/m ²)	Description	Bonn Agreement Oil Appearance Code (BAOAC)	Mass per area (g/m ²)
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application ⁵	Code 4 – Discontinuous true oil colour	50 - 200
100	Predicted optimum floating oil threshold for containment and recovery and surface dispersant application	Code 5 – Continuous true oil colour	>200
Shoreline hydrocarbon concentration (g/m ²)	Description	National Plan Guidance on Oil Contaminated Foreshores	Mass per area (g/m ²)
100	Predicted minimum shoreline accumulation threshold for shoreline assessment operations	Stain	>100
250	Predicted minimum threshold for commencing shoreline clean-up operations	Level 3 - Thin Coating	200 - 1000

The surface thickness of oil at which dispersants are typically effective is approximately 100 g/m². However, substantial variations occur in the thickness of the oil within the slick. Additionally, the recommended rate of application for surface dispersant is typically 1-part dispersant to 20 or 25 parts of spilled oil. These figures assume a 0.1 mm slick thickness, averaged over the thickest part of the spill, to calculate a litres/hectare application rate from vessels and aircraft. In practice, this can be difficult to achieve as it is not possible to accurately assess the thickness of the floating oil.

Some degree of localised over-dosage and under-dosage is inevitable in dispersant response. An average oil layer thickness of 0.1 mm is often assumed, although the actual thickness can vary over a wide range (from less than 0.0001 mm to more than 1 mm) over short distances (International Petroleum Industry Environment Conservation Association [IPIECA] 2015).

Guidance from AMSA (AMSA, 2015) indicates that spreading of spills of Group II or III products will rapidly decrease slick thickness over the first 24 hours of a spill resulting in the potential requirement of up to a ten (10) fold increase in capability on day 2 to achieve the same level of performance.

Further guidance from the European Maritime Safety Authority (EMSA) states that spraying the 'metallic' looking area of an oil slick (Bonn Agreement Oil Appearance Code [BAOAC] 3, approx. 5 – 50 µm) with dispersant from spraying gear designed to treat an oil layer 0.1 mm (100 µm) thick, will inevitably cause dispersant over-treatment by a factor of 2 to 20 times (EMSA 2012).

Therefore, dispersant application should be concentrated on the thickest areas of an oil slick and Woodside intends on applying surface dispersants to only BAOAC 4 and 5. Spraying areas of oil designated as BAOAC Code 4 (Discontinuous true oil colour) with dispersant will, on average, deliver approximately the recommended treatment rate of dispersant.

Spraying areas of oil designated as BAOAC Code 5 with dispersant (Continuous true oil colour and more than 0.2 mm thick) will, on average, deliver approximately half the recommended treatment rate of dispersant. Repeated application of these areas of thicker oil, or increased dosage ratios, will be required to achieve the recommended treatment rate of dispersant (EMSA 2012).

Guidance from the National Oceanic and Atmospheric Administration (NOAA) in the United States is found in the document: *Characteristics of Response Techniques: A Guide for Spill Response Planning in Marine Environments 2013* (NOAA 2013). This guide outlines advice for response

⁵ At 50g/m², containment and recovery and surface dispersant application operations are not expected to be particularly effective. This threshold represents a conservative approach to planning response capability and containing the spread of surface oil.

planning across all common techniques, including surface dispersant spraying and containment and recovery. It states that oil thickness can vary by orders of magnitude within distinct areas of a slick, thus the actual slick thickness and oil distribution of target areas are crucial for determining response method feasibility. Further to this, ITOPF also states that in terms of oil spill response, sheen can be disregarded as it represents a negligible quantity of oil, cannot be recovered or otherwise dealt with to a significant degree by existing response techniques, and is likely to dissipate readily and naturally (ITOPF, 2014).

Figure 2-3 below from AMSA’s Identification of Oil on Water – Aerial Observation and Identification Guide (AMSA, 2014) shows expected percent coverage of surface hydrocarbons as a proportion of total surface area. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

From this information and other relevant sources (Allen and Dale, 1996, EMSA, 2012, Spence, 2018) the surface threshold of 50g/m² was chosen as an average / equilibrium thickness (50g/m² is an average is 50% coverage of 0.1mm Bonn Agreement Code 4 - discontinuous true oil colour, or 25% coverage of 0.2mm Bonn Agreement Code 5 – continuous true oil colour which would represent small patches of thick oil or wind-rows).

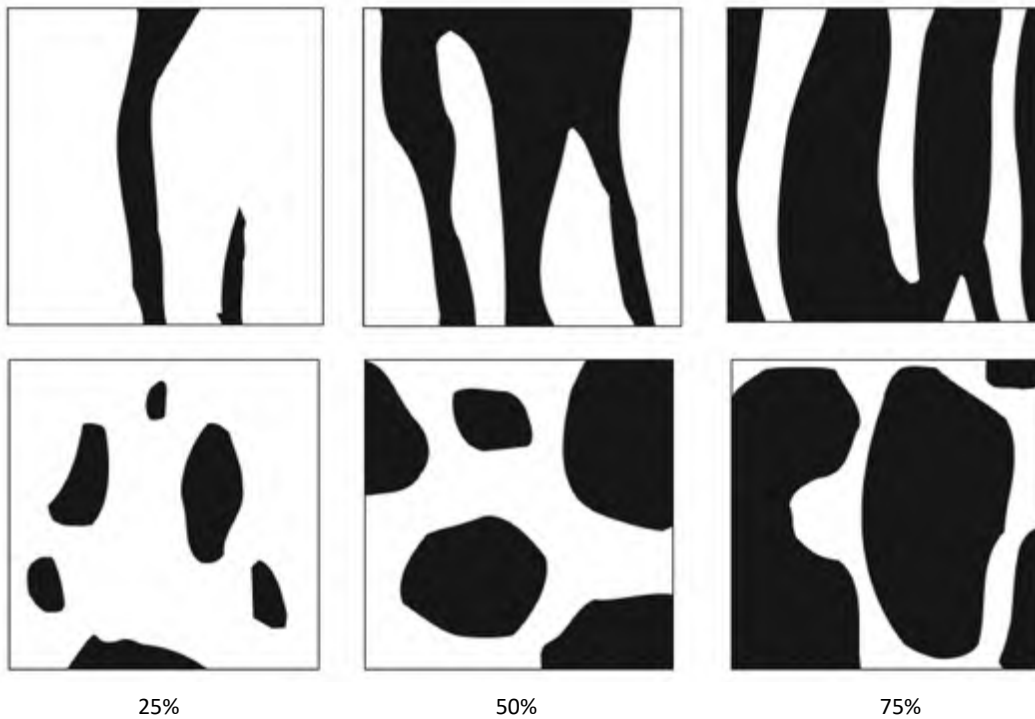


Figure 2-3: Proportion of total area coverage (AMSA, 2014)

Figure 2-4 illustrates the general relationships between on-water response techniques and slick thickness. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

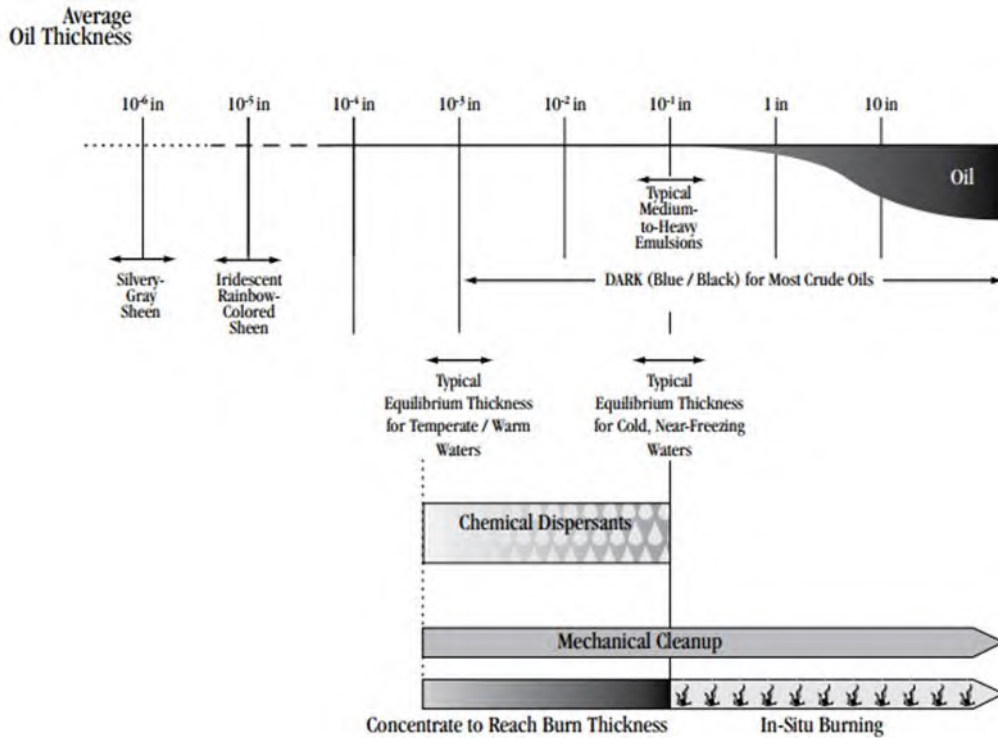


Figure 2-4: Oil thickness versus potential response options (from Allen and Dale 1996)

Wind and waves influence the feasibility of mechanical clean-up operations, dropping the effectiveness significantly because of entrainment and/or splash-over as short period waves develop beyond two to three feet (0.6–0.9m) in height. Waves and wind can also be limiting factors for the safe operation of vessels and aircraft. There is also potential secondary contamination of unimpacted areas and waste issues associated with mechanical dispersion of slicks (Table 4-2 and Section 4.2.3.3).

2.3.5 Surface Hydrocarbon Viscosity

Table 2-4: Surface hydrocarbon viscosity thresholds

Surface viscosity (cSt)	Description	European Maritime Safety Authority (EMSA)	Viscosity at sea temperature (cSt)
5,000	Predicted optimum viscosity for surface dispersant operations	Generally possible to disperse	500-5000
10,000	Predicted maximum viscosity for effective surface dispersant operations	Sometimes possible to disperse	5,000-10,000

Further to the required thickness for surface dispersant application and containment and recovery to be deployed effectively as outlined above, changes to viscosity will also limit the treatment of offshore response techniques. As outlined in the EMSA Manual on the Applicability of Oil Spill Dispersants (EMSA, 2012), guidance around changes to viscosity and likely effectiveness of surface dispersant application is provided.

This includes the following statements: “It has been known for many years that it is more difficult to disperse a high viscosity oil than a low or medium viscosity oil. Laboratory testing had shown that the effectiveness of dispersants is related to oil viscosity, being highest for modern “Concentrate, UK Type 2/3” dispersants at an oil viscosity of about 1,000 or 2,000 mPa.s (1,000 – 2,000 cSt) and then declining to a low level with an oil viscosity of 10,000 mPa.s (10,000 cSt). It was considered that some generally applicable viscosity limit, such as 2,000 or 5,000 mPa.s (2,000 – 5,000 cSt), could be applied to all oils.”

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However, modern oil spill dispersants are generally effective up to an oil viscosity of 5,000 mPa.s (5,000 cSt) or more, and their performance gradually decreases with increasing viscosity; oils with a viscosity of more than 10,000 are, in most cases, no longer dispersible. Guidance from CEDRE (EMSA, 2012) also indicates that products with a range of 500 – 5,000 cSt at sea temperature are generally possible to disperse, while 5,000 – 10,000 cSt at sea temperature above pour point are sometimes possible to disperse, with products beyond 10,000 cSt at sea temperature below pour point are generally impossible to disperse. The potential use of dispersants is evaluated in **Table 4-2**.

To support decision making and response planning, a threshold of 10,000 cSt at sea temperature was chosen as a conservative estimate of maximum viscosity for surface dispersant spraying operations.

The thresholds described above are compared with the modelling results for the WCCS (**Table 2-5**).

2.3.6 Spill modelling results

Details of the scenario and modelling inputs are included along with results in **Table 2-5**.

The selected results used to represent the WCCS are based on response thresholds:

- Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a threshold of 100 g/m²).
- Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a threshold of 10 g/m²).
- Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor.
- Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (including those contacted at <100 g/m² accumulation concentration).
- Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb/50 ppb).

The volumes as presented in **Table 2-5** are the worst case volumes resulting from the selected stochastic modelling and have been used to determine appropriate level of response.

Table 2-5: Worst case credible scenario modelling results

Response parameter	Modelled result
	Marine diesel release caused by vessel collision
Maximum instantaneous liquid hydrocarbon release rate and duration	Modelled instantaneous surface release of 250 m ³ marine diesel ⁶
Maximum residual surface hydrocarbon after weathering	12.5 m ³
Modelling results	
Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a threshold of 100 g/m ²)	No contact at threshold
Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a threshold of 10 g/m ²)	No contact at threshold
Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor	No contact at threshold
Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (including those contacted at <100 g/m ² accumulation concentration)	No contact at threshold
Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb/50 ppb)	55 hours at Gascoyne AMP

The stochastic modelling results for the WCCS have been used as the basis for response planning and are included in **Section 4.2**.

The stochastic modelling results for Credible Scenario-01 are summarized as follows:

- Surface hydrocarbon concentrations greater than 10 g/m² may occur up to 52 km from the release location.
- Floating oil at the 10 g/m² threshold is not predicted at any RPA for the duration of the spill.
- No shoreline receptors are predicted to be contacted by floating oil concentrations at any of the assessed thresholds.
- No accumulation of oil on shorelines is predicted.
- The Gascoyne AMP is predicted to receive entrained oil concentrations at the 100 ppb threshold with a probability of 4% after 55 hours.
- Spreading and weathering of the surface oil occurs rapidly due to the loss of light, volatile components and the spreading. Dispersant application and containment and recovery are not appropriate for use on spills of marine diesel due to these weathering characteristics.

⁶ Modelling for an MDO release caused by vessel collision 17 km south of the centre of the Scarborough B1 4D Marine Seismic Survey Operational Area, was undertaken in 2019 using NOPSEMA's contemporary modelling thresholds. Scarborough B1 4D Marine Seismic Survey credible spill scenario is expected to be the same size as the surrogate modelling (250 m³) and is the same hydrocarbon type (MDO). Given that spill parameters and geographic location fall within the envelope of the activity, the existing modelling is an appropriate surrogate and therefore additional modelling was not required.

3 IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

In a response, operational monitoring programs – including trajectory modelling and vessel/aerial observations – would be used to predict RPAs that may be impacted. For the purposes of planning and appropriately scaling a response, modelling has been used to identify RPAs as outlined below in **Figure 3-1**.

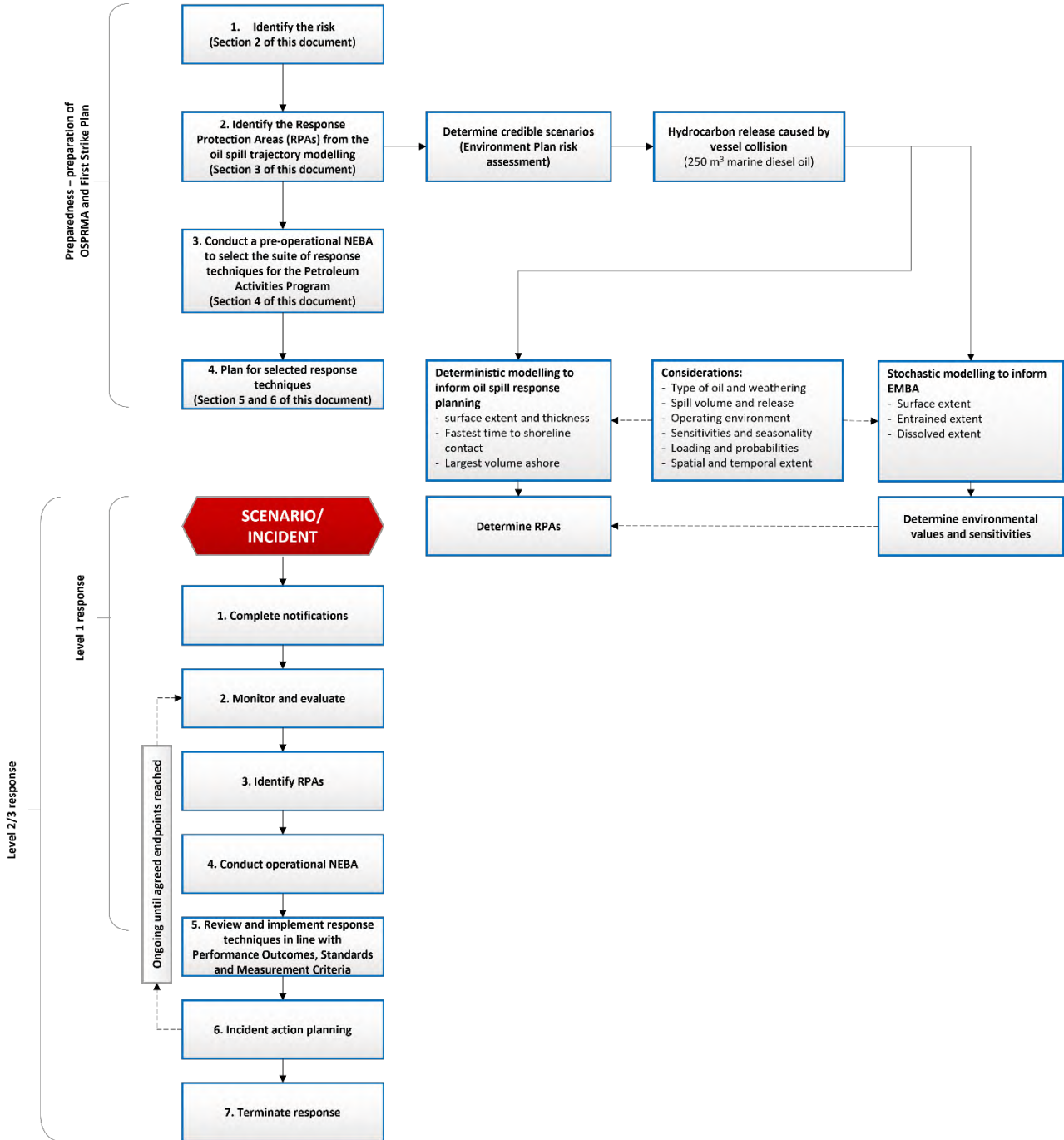


Figure 3-1: Identify Response Protection Areas (RPAs) flowchart

3.1 Identified sensitive receptor locations

Section 6 of the EP includes the list of sensitive receptor locations that have been identified by stochastic modelling as meeting the requirements outlined below:

- receptors with the potential to incur surface, entrained or shoreline accumulation contact above environmental impact thresholds
- receptors within the EMBA which meet the following:
 - a number of priority protection criteria/categories
 - International Union of Conservation of Nature IUCN marine protected area categories
 - high conservation value habitat and species
 - important socio-economic/heritage value.

3.2 Identify Response Protection Areas (RPAs)

From the identified sensitive receptors described in Section 6 of the EP, only those which a shoreline response could feasibly be conducted (accumulation > 100g/m² for shoreline assessment and/or contact with surface slicks >10 g/m² for operational monitoring⁷) have been selected for response planning purposes.

3.2.1 Response Protection Areas (RPAs)

RPAs are selected on the basis of their environmental ecological, social, economic, cultural and heritage values and sensitivities and the ability to conduct a response based on the minimum response thresholds (**Section 2.3.3**). The Gascoyne AMP is predicted to receive entrained oil concentrations at the 100 ppb threshold with a probability of 4% after 55 hours. The maximum entrained oil concentration is forecast as 998 ppb within the Gascoyne AMP.

No shoreline receptors are predicted to be contacted by floating oil concentrations at any of the assessed thresholds. Additionally, modelling shows there is no accumulation of oil on shorelines is predicted.

During a spill event, operational monitoring techniques (OM01, OM02, OM03, OM04 and OM05) would be deployed from the outset of the spill to track the spill trajectory and deduce if any RPAs are at risk of impact. TRPs will be drafted in advance for any RPAs with a contact time of <14 days.

Any additional sensitive receptors are presented in the existing environment description (Section 4 of the EP) and impact assessment section (Section 6 of the EP) for the spill scenario. The pre-operational NEBA (**Section 4**) considers the results from the stochastic modelling to ensure all feasible response techniques are considered in the planning phase, therefore additional receptors are also included in the pre-operational NEBA.

⁷ Operational monitoring will be undertaken from the outset of a spill whether or not this threshold has been reached. Monitoring is needed throughout the response to assess the nature of the spill, track its location and inform the need for any additional monitoring and/or response techniques. It also informs when the spill has entered State Waters and/or control of the incident passes to statutory authorities e.g. WA DoT or AMSA.

4 NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

A Net Environmental Benefit Analysis (NEBA) is a structured process to consider which response techniques are likely to provide the greatest net environmental benefit.

The NEBA process typically involves four key steps outlined in **Figure 4-1**: evaluate data, predict outcomes, balance trade-offs, and select response options. These steps are followed in the planning/preparedness process and would also be followed in a response.

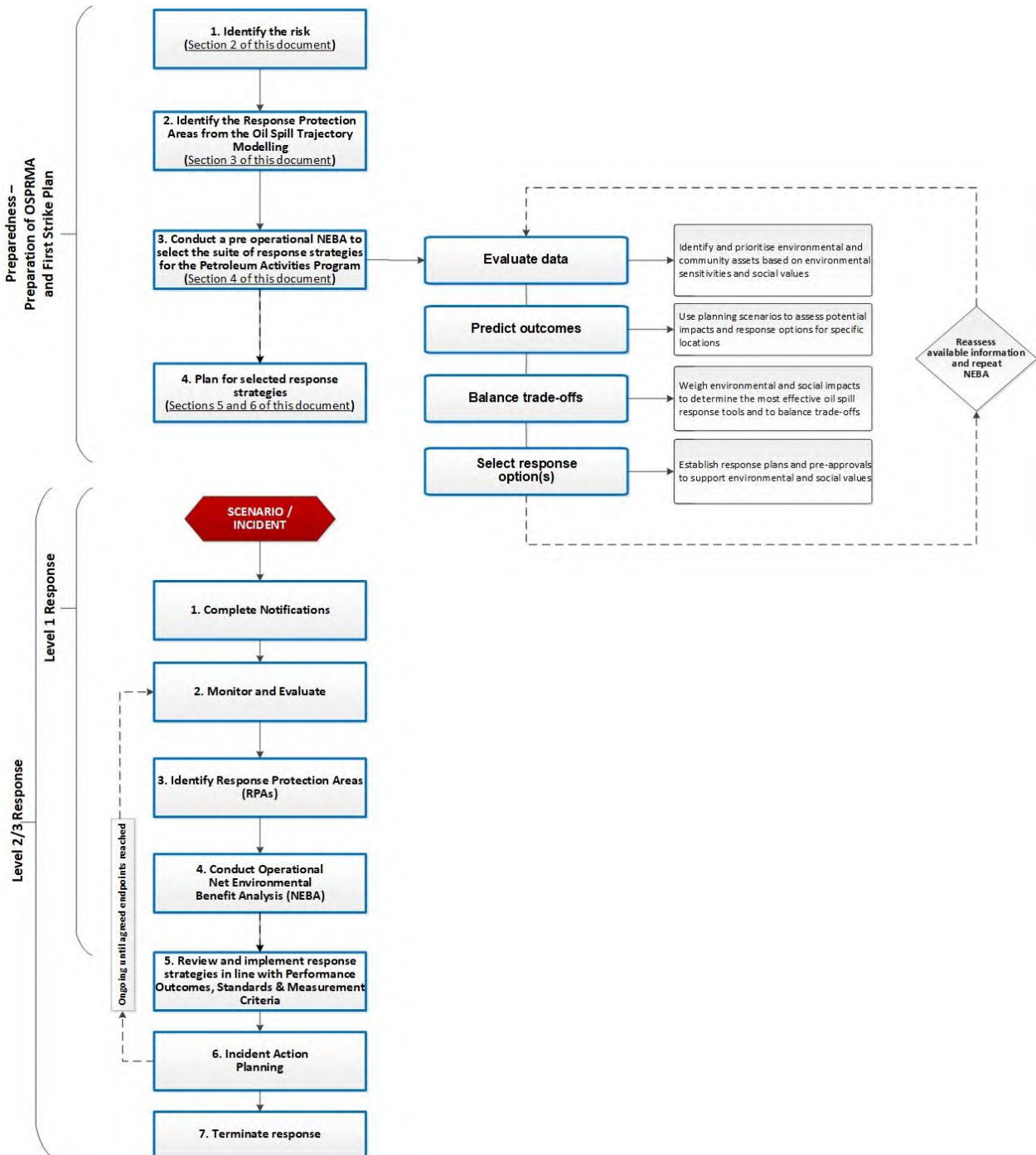


Figure 4-1: Net Environmental Benefit Analysis (NEBA) flowchart

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4.1 Pre-operational / Strategic NEBA

The pre-operational NEBA identifies positive and negative impacts to sensitive receptors from implementing the response techniques. Feasibility is considered by assessing the receptors potentially impacted above response thresholds (**Section 2.3.1.1**) and the surface concentrations from the modelling.

Completing a pre-operational NEBA is a key response planning control that reduces the environmental risks and impacts of implementing the selected response techniques. Comprehensive details of the pre-operational NEBA for this PAP are contained in **ANNEX A: Net Environmental Benefit Analysis** detailed outcomes.

4.2 Stage 1: Evaluate data

Woodside identifies and prioritises environmental and community assets based on environmental sensitivities and social values, informed through the use of trajectory modelling. Interpretation of stochastic oil spill modelling determines the EMBA for the release, which defines the spatial area that may be potentially impacted by the PAP activities.

4.2.1 Define the scenario(s)

Woodside uses scenarios identified from the risk assessment in the EP to assess potential impacts and response options for specific locations. Modelling of the WCCS is then used for this pre-operational NEBA. Outlier locations with potential environmental impacts, selected from the stochastic modelling may also be included for assessment. Response thresholds and modelling results are then used to assess the feasibility/effectiveness and scale of the response.

Table 4-1: Scenario summary information (WCCS)

Scenario summary information (WCCS– Credible scenario-01)	
Scenario	Hydrocarbon release caused by marine vessel collision
Location	Lat: 19° 46' 01.00"S Long: 113° 15' 00.00" E
Oil Type	Marine diesel
Volume and duration of release	Instantaneous release of 250 m ³ ⁸

4.2.1.1 Hydrocarbon characteristics

Marine Diesel

Marine Diesel is typically classed as an International Tanker Owners Pollution Federation (ITOPF) Group I/II oil.

Marine diesel is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. Under constant 5 kn wind conditions, about 6% of the oil mass is predicted to evaporate within the first 12 hours (BP < 180 °C); a further 35% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 54% should evaporate over several days (265 °C < BP < 380 °C). Approximately 5% of the oil is shown to be persistent. The aromatic content of the oil is approximately 3%. Under variable wind conditions where winds are of a greater strength, more entrainment of oil into the water column is predicted (about 45% after 24 hours). A further 35% is forecast to evaporate, leaving only a small proportion of the oil floating on the water surface (<1%).

⁸ Modelling for an MDO release caused by vessel collision 17 km south of the centre of the Scarborough B1 4D Marine Seismic Survey Operational Area, was undertaken in 2019 using NOPSEMA's contemporary modelling thresholds. Scarborough B1 4D Marine Seismic Survey credible spill scenario is expected to be the same size as the surrogate modelling (250 m³) and is the same hydrocarbon type (MDO). Given that spill parameters and geographic location fall within the envelope of the activity, the existing modelling is an appropriate surrogate and therefore additional modelling was not required.

The heavier (low volatility) components of the oil have a tendency to entrain into the upper water column due to wind-generated waves but can subsequently resurface if wind-waves abate. Therefore, the heavier components of this oil can remain entrained or on the sea surface for an extended period, with associated potential for dissolution of the soluble aromatic fraction.

Stochastic modelling results for WCCS Credible Scenario-01	
Minimum time to shoreline contact (above 100 g/m ²)	No contact at threshold
Largest volume ashore at any single RPA (above 100 g/m ²)	No contact at threshold
Largest total shoreline accumulation (above 100 g/m ²)	No contact at threshold

4.2.2 Determining potential response options

The available response techniques based on current technology can be summarised under the following headings:

- Monitor and evaluate (including operational monitoring)
- Source control
 - vessel source control
 - remotely operated vehicle (ROV) intervention
 - debris clearance and/or removal
 - capping stack
 - containment dome
 - relief well drilling
- Surface dispersant application:
 - aerial dispersant application
 - vessel dispersant application
- Containment and recovery
- Mechanical dispersion
- In-situ burning
- Shoreline protection and deflection
- Shoreline clean-up:
 - Phase 1 – Mechanical clean-up
 - Phase 2 – Manual clean-up
 - Phase 3 – Final polishing
- Oiled wildlife response (including hazing)
- Waste management
- Post spill monitoring/scientific monitoring

An assessment of which response options are feasible for the scenarios is included below in **Table 4-2**. These options are evaluated against each scenario’s parameters including oil type, volume and characteristics, prevailing weather conditions, logistical support, and resource availability to determine their deployment feasibility.

A shortlist of the feasible response options is then carried forward for the ALARP assessment with a justification for the exclusion of other response techniques included in **Section 4.2.3**. This assessment will typically result in a range of available options, that are deployed at different areas (at-source, offshore, nearshore and onshore) and times through the response. The NEBA process assists in prioritising which options to use where and when and timings throughout the response.

Table 4-2: Response technique evaluation – Surface Release

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: Marine Diesel				
Monitor and Evaluate	Will be effective in tracking the location of the spill, predicting potential impacts and triggering further monitoring and response techniques as required. Monitoring techniques include: <ul style="list-style-type: none"> OM01 Predictive modelling of hydrocarbons – used throughout spill. ‘Ground-truthed’ using the outputs of all other monitoring techniques. OM02 Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of spill. OM03 Monitoring of hydrocarbon presence, properties, behaviour and weathering in water – from outset of spill. OM04 Pre-emptive assessment of sensitive receptors at risk – triggered once OM01, OM02 and OM03 inform likely RPAs at risk. OM05 Shoreline assessment – once OM02, OM03 and OM04 inform which RPAs have been impacted. 	Monitoring of a Marine Diesel spill is a feasible response technique and outputs will be used to guide decision making on the use of other monitoring/response techniques and providing information to regulatory agencies including AMSA and WA DoT.	Yes	Monitoring the spill will be necessary to: <ul style="list-style-type: none"> Validate trajectory and weathering models Determine the behaviour of the oil in water Determine the location and weathering condition of the slick Provide forecasts of spill trajectory Determine appropriate response techniques Determine effectiveness of response techniques Confirm impact pathways to receptors
Source Control (vessel)	Controlling the spill of diesel at source would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	A spill of diesel from a vessel collision will be instantaneous and source control will be limited to what the vessel can achieve whilst responding to the incident.	Yes	Ability to stop the spill at source will be dependent upon the specific spill circumstances and whether or not it is safe for response personnel to access/isolate the source of the spill.
Surface Dispersant Application	Dispersants are not considered effective when applied on thin surface films such as marine diesel as the dispersant droplets tend to pass through the surface films without binding to the hydrocarbon.	Marine diesel is prone to rapid spreading and evaporation thus the use of dispersant would be deemed an unnecessary response technique.	No	The application of dispersant to marine diesel is unnecessary as the diesel will rapidly evaporate and would thus unnecessarily introduce additional chemical substances to the marine environment. The additional entrainment would also increase exposure of subsea species and habitats to hydrocarbons.
Containment and Recovery	Containment and recovery has an effective recovery rate of 5-10% when a hydrocarbon encounter rate of 25-50% is achieved at BAOAC 4 and 5. Containment and recovery requires a spill to be BAOAC 4 or 5 with a 50-100% coverage of 100 g/m ² to 200 g/m ² .	Marine diesel is prone to rapid spreading and evaporation thus reducing the feasibility of containment and recovery as a response technique.	No	Containment and recovery would be an inappropriate response technique as the coverage requirements would not be achieved by a marine diesel spill. In addition, most of the spilled diesel would have been subject to rapid evaporation and entrainment prior to the commencement of containment and recovery operations.
Mechanical dispersion	Mechanical dispersion involves the use of a vessel’s prop wash and/or fire hose to target surface hydrocarbons to achieve dispersion into the water column. However, this technique is of limited benefit in an open ocean environment where wind and wave action are likely to deliver similar advantages.	Although the technique is feasible, highly volatile hydrocarbons are likely to weather, spread and evaporate quickly. The volatile nature of the oil is also likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. Additionally, any vessel used for mechanical dispersion activities would be contaminated by the hydrocarbon and could potentially cause secondary contamination of unimpacted areas when exiting the spill area. The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.	No	Given the limited benefit of mechanical dispersion over natural wind and wave action, secondary contamination and waste issues, and the associated safety risk of implementing the response for this activity, this strategy is deemed unsuitable.
In-situ Burning	In-situ burning is only effective where minimum slick thickness can be achieved.	Use of in-situ burning as a response technique for marine diesel is unfeasible as the minimum slick thickness cannot be attained due to rapid spreading. In addition, there is a limited window of opportunity in which this technique can be applied (prior to evaporation of the volatiles) which is unlikely to be achieved. Furthermore, entering a volatile environment to undertake this technique would be unsafe for response personnel.	No	Diesel characteristics are not appropriate for the use of in-situ burning as the minimum thickness will not be attained due to rapid spreading. Furthermore, it would unnecessarily cause an increase in the release of atmospheric pollutants.
Shoreline Protection and Deflection	Shoreline protection and deflection can be effective at preventing contamination of at-risk areas.	Use of shoreline protection and deflection for a spill of marine diesel is unlikely to provide any significant environmental benefit as the diesel will be subject to rapid spreading and evaporation prior to contact with any sensitive areas. The modelling undertaken predicts no shoreline receptors are to be contacted by floating oil concentrations at any of the assessed thresholds and no accumulation of oil on	No	The modelling undertaken predicts that no shorelines will be impacted thus it is unlikely that this technique would be required.

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
		shorelines, therefore shoreline protection and deflection does not require consideration.		
Shoreline Clean up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m ² .	<p>A marine diesel spill would be prone to rapid spreading and evaporation prior to impacting any sensitive receptors. Operational monitoring will, however, be deployed from the outset of a spill to track the spill location and fate in real-time.</p> <p>The modelling undertaken predicts no shoreline receptors are to be contacted by floating oil concentrations at any of the assessed thresholds and no accumulation of oil on shorelines, therefore shoreline protection and deflection does not require consideration.</p>	No	The modelling undertaken predicts that no shorelines will be impacted thus it is unlikely that this technique would be required.
Oiled Wildlife	Oiled wildlife response is an effective response technique for reducing the overall impact of a spill on wildlife. This is mostly achieved through hazing to prevent additional wildlife from being contaminated and through rehabilitation of those already subject to contamination.	Due to the likely volatile atmospheric conditions surrounding a diesel spill, response options would be limited to hazing to ensure the safety of response personnel. In addition, any rehabilitation could only be undertaken by trained specialists.	Potentially	The modelling undertaken predicts that no sensitive areas will be impacted thus it is unlikely that this technique would be required. However, in the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken as and where required.

4.2.3 Exclusion of response techniques

Response techniques that are not feasible for the worst case scenario (Credible Scenario-01) for the Scarborough 4D B1 MSS are detailed in the subsections below and are excluded from further assessment within this document.

4.2.3.1 Surface Dispersant Application

Marine diesel is prone to rapid spreading and evaporation thus the use of dispersant would be deemed an unnecessary response technique. The application of dispersant to marine diesel is unnecessary as the diesel will rapidly evaporate and would thus unnecessarily introduce additional chemical substances to the marine environment. The additional entrainment would also increase exposure of subsea species and habitats to hydrocarbons.

4.2.3.2 Containment and Recovery

Marine diesel is prone to rapid spreading and evaporation thus reducing the feasibility of containment and recovery as a response technique. Furthermore, entering a volatile environment to undertake this technique would be unsafe for response personnel. Although this scenario results in surface oil of BAOAC 4, this only occurs within the first few hours during which time volatile levels would be very high and unsafe for response personnel.

4.2.3.3 Mechanical Dispersion

Mechanical dispersion involves the use of a vessel's prop wash and/or fire hose to target surface hydrocarbons to achieve dispersion into the water column. However, this technique is of limited benefit in an open ocean environment where wind and wave action are likely to deliver similar advantages. The volatile nature of the oil is likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. There are also secondary contamination and waste issues to consider.

4.2.3.4 In-situ Burning

This technique requires calm sea state conditions as is required for containment and recovery operations, which limits its feasibility in the offshore waters of the Operational Area. Optimum weather conditions are <20 knot wind speed and waves <1 to 1.5 m with oil collected to a minimum 3mm thick layer. Due to the conditions in Operational Area it is expected that the ability to contain oil may be limited as the sea state may exceed the optimum conditions. It is preferable that oil is fresh and does not emulsify to maximise burn efficiency and reduce residue thickness.

There are health and safety risks for response personnel associated with the containment and subsequent burning of hydrocarbons. It is also suggested that the residue from attempts to burn would sink, thereby posing a risk to the environment. The longer-term effects of burn residues on the marine environment are not fully understood and therefore, no assessment of the potential environmental impact can be determined. Furthermore, it is unlikely that MDO would achieve the required thickness for in-situ burning, rendering this an unsuitable method.

Until further operational and environmental information becomes available, Woodside will not consider this option.

4.2.3.5 Shoreline Protection and Deflection and Clean Up

No shoreline surface contact is predicted (above thresholds), according to the modelling of a hydrocarbon spill conducted for this PAP. Therefore, shoreline protection and deflection is not considered feasible.

4.3 Stage 2: Predict Outcomes

Woodside uses planning scenarios to assess potential impacts and response options for specific locations. Locations with potential environmental impacts, selected from the stochastic modelling are

included for assessment. Response thresholds and modelling results are then used to assess the feasibility/effectiveness of a response.

4.4 Stage 3: Balance trade-offs

Woodside considers environmental impacts and response effectiveness/feasibility to determine the most effective oil spill response tools and balance trade-offs, using an automated NEBA tool. The tool considers potential benefits and impacts associated with a response at sensitive receptors and then considers the effectiveness/feasibility of the response to select the response techniques carried forward to the ALARP assessment. The NEBA can be found in **ANNEX A: Net Environmental Benefit Analysis** detailed outcomes.

4.5 Stage 4: Select Best Response Options

To select the response technique, all the other stages in the NEBA process are considered and used to establish response plans and any pre-approvals to support protection of identified environmental and social values.

The response techniques implemented may vary according to a particular spill. The hydrocarbon type released and the sensitivities of the receptors (both ecological and socio-economic) may influence the response. The pre-operational NEBA broadly evaluates each response technique and supports decisions on whether they are feasible and of net environmental benefit. Response techniques that are not feasible or beneficial are rejected at this stage and not progressed to planning.

Further risks and impacts from implementing these selected response options are outlined in **Section 7**.

Table 4-3: Selection and prioritisation of response techniques

Response planning scenario	Key characteristics for response planning (times are minimum times to contact for first receptor and/or shoreline contacted above response threshold)	Feasibility of response techniques									Outline response technique	
		Monitor and evaluate	Source control (vessel)	Surface dispersant application	Containment and recovery	Mechanical dispersion	In situ burning	Shoreline protection and deflection	Shoreline clean-up	Oiled wildlife response		
Credible Scenario-01: Release of up to 250 m ³ marine diesel from a vessel collision	No shoreline contact predicted. The Gascoyne AMP is predicted to receive entrained oil concentrations at the 100 ppb threshold with a probability of 4%	Yes	Yes	No	No	No	No	No	No	No	Yes	Monitor and evaluate. Initiate vessel source control if feasible. Plan for oiled wildlife response and implement if oiled wildlife is observed.

From the NEBA undertaken on the WCCS identified the primary response techniques are;

- Monitor and evaluate
- Source control on the vessel
- Oiled wildlife response

Support techniques may include:

- Waste management
- Scientific monitoring

5 HYDROCARBON SPILL ALARP PROCESS

Woodside's hydrocarbon spill ALARP process is aligned with guidance provided by NOPSEMA in *Oil Spill Risk Management Guidance Note N-04750-GN1488* (2021) and is set out in the 'Woodside Hydrocarbon Spill Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) Development Guidelines'.

From the identified response planning need and pre-operational NEBA/SIMA, Woodside conducts a structured, semi-quantitative hydrocarbon spill process which has the following steps:

1. considers the Response Planning Need identified in terms of surface area (km²) and available surface hydrocarbon volumes (m³) against existing Woodside capability
2. considers alternative, additional, and improved options for each response technique/control measure by providing an initial and, if required, detailed evaluation of:
 - predicted cost associated with adopting the control measure
 - predicted change/environmental benefit
 - predicted effectiveness/feasibility of the control measure.
3. evaluates the risks and impacts of implementing the proposed response techniques, and any further control measures with associated environmental performance to manage these additional risks and impacts.

Woodside considers the risks and impacts from a hydrocarbon spill to have been reduced to ALARP when:

1. a structured process for identifying and considering alternative, additional, and improved options has been completed for each selected response technique
2. the analysis of alternate, additional, and improved control measures meets one of the following criteria:
 - all identified, reasonably practicable control measures have been adopted; or
 - no identified reasonably practicable additional, alternative and/or improved control measures would provide further overall increased proportionate environmental benefit; or
 - no reasonably practical additional, alternative, and/or improved control measures have been identified.
3. where an alternative, additional and/or improved control measure is adopted, a measurable level of environmental performance has been assigned
4. higher order impacts/ risks have received more comprehensive alternative, additional, and improved control measure evaluations and do not just compare the cost of the adopted control measures to the costs of an extreme or clearly unreasonable control measure
5. cumulative effects have been analysed when considered in combination across the whole activity.

The response technique selection is based on the risk assessment conducted in the EP. The risk assessment identifies the type of oil, volume of release, duration of release, predicted fate, weathering and the EMBA (along with other requirements such as time to impact and predicted volumes ashore). Modelling is then used to inform the NEBA and the prioritisation of suitable response options. The scale of the response techniques selected in the pre-operational NEBA is informed through the assessment of results from modelling.

For the purpose of the ALARP assessment, the following terms and definitions have been used:

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- Response techniques are considered the control measures that reduce consequences from hydrocarbon spill events. The terms 'response technique' and 'control measure' are used interchangeably.
- Cost is defined as the time, effort and/or trouble taken in financial, safety, design/storage/installation, capital/lease, and/or operations/maintenance terms to adopt a control measure.
- Where the predicted change to environmental impact is compared against standard environmental values and sensitivities impacts using positive or negative criteria from the NEBA Impact Ranking Classification Guidance in Annex A.

5.1 Monitor and Evaluate (including operational monitoring)

Monitor and evaluate includes the gathering and evaluation of data to inform the oil spill response planning and operations. It includes fate and trajectory modelling, spill tracking, weather updates and field observations. This response option is deployed in some capacity for every event.

Table 5-1 below provides the operations monitoring plans that support the successful execution of this response technique.

Table 5-1: Description of supporting operational monitoring plans

ID	Title
OM01	Predictive modelling of hydrocarbons to assess resources at risk
OM02	Surveillance and reconnaissance to detect hydrocarbons and resources at risk
OM03	Monitoring of hydrocarbon presence, properties, behaviour and weathering in water
OM04	Pre-emptive assessment of sensitive receptors at risk
OM05	Shoreline assessment

Woodside maintains an *Operational Monitoring Operational Plan*. If shoreline contact is predicted, RPAs will be identified and assessed before contact. If shorelines are contacted, a shoreline assessment survey will be completed to guide effective shoreline clean-up operations. This plan includes the process for the IMT to mobilise resources depending on the nature and scale of the spill.

The proximity of Exmouth, Onslow and Karratha to the spill event location means that multiple logistical options are available to monitor the spill in relatively short timeframes. The primary mobilisation base for initial monitoring activities would be Exmouth. However, in the unlikely event of an extended spill with potential to impact receptors further afield, monitoring activities may also be mobilised from Onslow and Karratha.

5.1.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- No floating oil is predicted at $>10 \text{ g/m}^2$ for the duration of the spill.
- No shoreline receptors are predicted to be contacted by floating oil concentrations at any of the assessed thresholds.
- No accumulation of oil on shorelines is predicted.
- The time to contact for oil at concentrations of entrained hydrocarbons greater than 100 ppb at shoreline receptors is 63 hours at the Gascoyne AMP.
- Arrangements for support organisations who provide specialist services or resources should be tested regularly.
- Plans, procedures and support documents need to be in place for Operational and Support functions. These should be reviewed and updated regularly.

5.1.2 Environmental performance based on need

Table 5-2: Environmental Performance – Monitor and Evaluate

Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.	
Control measure		Performance Standard	Measurement Criteria
1	Oil spill trajectory modelling	1.1	Initial modelling available within 6 hours using the Rapid Assessment Tool
		1.2	Detailed modelling available within 4 hours of RPS receiving information from Woodside
		1.3	Detailed modelling service available for the duration of the incident upon contract activation
2	Tracking buoy	2.1	Tracking buoy located on facility/vessel and ready for deployment 24/7
		2.2	Deploy tracking buoy from facility within 2 hours as per the First Strike Plan.
		2.3	Contract in place with service provider to allow data from tracking buoy to be received 24/7 and processed.
		2.4	Data received to be uploaded into Woodside COP daily to improve the accuracy of other monitor and evaluate techniques.
3	Satellite imagery	3.1	Contract in place with 3 rd party provider to enable access and analysis of satellite imagery. Imagery source/type requested on activation of service.
		3.2	3rd party provider will confirm availability of an initial acquisition within 2 hours.
		3.3	First image received with 24 hours of Woodside confirming to 3rd party provider its acceptance of the proposed acquisition plan.
		3.4	3rd party provider to submit report to Woodside per image. Report is to include a polygon of any possible or identified slick(s) with metadata.
		3.5	Data received to be uploaded into Woodside COP daily to improve accuracy of other monitor and evaluate techniques.
		3.6	Satellite Imagery services available and employed during response.
4	Aerial surveillance	4.1	At least 2 trained aerial observers available to be deployed by day 1 from resource pool.
		4.2	1 aircraft available for two sorties per day, available for the duration of the response from day 1
		4.3	Observer to compile report during flight as per first strike plan. Observers report available to the IMT within 2 hours of landing after each sortie.
		4.4	Unmanned Aerial Vehicles/Systems (UAV/UASs) to support pre-emptive assessments as contingency if required.
5	Hydrocarbon detections in water	5.1	Activate 3rd party service provider as per first strike plan. Deploy resources within 3 days: <ul style="list-style-type: none"> • 3 specialists in water quality monitoring • 2 monitoring systems and ancillaries • 1 vessel for deploying the monitoring systems with a dedicated winch, A-frame or Hiab and ancillaries to deploy the equipment.
		5.2	Water monitoring services available and employed during response.
		5.3	Preliminary results of water sample as per contractor's implementation plan within 7 days of receipt of samples at the accredited lab.

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Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		Performance Standard		Measurement Criteria
		5.4	Daily fluorometry reports as per service provider's implementation plan will be provided to IMT to validate modelling and monitor presence/absence of entrained hydrocarbons.	
		5.5	Use of Autonomous Underwater Vehicles (AUVs) for hydrocarbon presence and detection may be used as a contingency if the operational NEBA confirms conventional methods are unsafe or not possible.	1, 2, 3C, 4
6	Pre-emptive assessment of sensitive receptors	6.1	10 days prior to any predicted impact, in agreement with WA DoT (for Level 2/3 incidents), deployment of 2 specialists from resource pool in establishing the status of sensitive receptors.	1, 2, 3B, 3C, 4
		6.2	Daily reports provided to IMT on the status of the receptors to prioritise Response Protection Areas (RPAs) and maximise effective utilisation of resources.	1, 3B, 4
7	Management of environmental impact of the response risks	7.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified.	1

The control measures and capability of Woodside and its third-party service providers are shown to support Monitor and Evaluate activities up to and including the identified WCCS. This is demonstrated by the following:

- Woodside has a documented, structured and tested capability for Monitor and Evaluate operations including internal trajectory modelling capabilities, tracking buoys located offshore and contracted aerial observation platforms with access to trained observers.
- Woodside and its third-party service providers ensure there is sufficient capability for the duration of the response.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in **Section 6.1**.
- The health and safety, financial, capital and operations/maintenance costs of implementing the alternative, additional or improved control measures identified and not carried forward are considered grossly disproportionate to the environmental benefit gained and/or not reasonably practicable for this PAP.
- The Monitor and Evaluate capability outlined in this section is part of the response developed to manage potential risks and impacts associated with the scenarios to ALARP, and there are no further additional, alternative and improved control measures other than those implemented that would provide further benefit.

5.2 Source Control via Vessel SOPEP

Vessel source control will be conducted, where feasible and in accordance with MARPOL 73/78 Annex I, by the Vessel Master under the Shipboard Oil Pollution Emergency Plan (SOPEP) triggered by any loss of containment from the PAP vessels.

The SOPEP provides guidance to the Master and Officers on board the vessel with respect to the extra steps to be taken when an unexpected pollution incident has occurred or is likely to occur. The SOPEP contains all information and operational instructions required by IMO Resolution MEPC.54 (32) adopted on 6 March 1992, as amended by resolution MEPC.86 (44) adopted on 13 March 2000.

Its purpose is to set in motion the necessary actions to stop or minimise oil discharge and mitigate its effects and outlines responsibilities, pollution reporting requirements, procedures and resources needed in the event of a hydrocarbon spill from vessel activities.

In the event of a potential vessel collision, the vessel master may engage precautionary marine manoeuvres to avoid collision or commence pumping operations to transfer marine diesel and thus minimise the release.

5.2.1 Environmental performance based on need

Woodside has established control measures, environmental performance outcomes, performance standards and measurement criteria to be used for vessel-source oil spill response during the PAP which are detailed in Section 6.7 of the EP. The vessel master's roles and responsibilities are described in EP Section 7.3.

Performance standards for each contracted PAP vessel are detailed in the vessel's specific SOPEP.

These standards ensure that sufficient resources are available and are adequately tested to ensure implementation of the SOPEP in the event of a hydrocarbon spill.

5.3 Oiled wildlife response (including hazing)

Woodside would implement a response in accordance with the Western Australian *Oiled Wildlife Operational Plan* (WA OWRP). This plan includes the process for the IMT to mobilise resources depending on the nature and scale of the spill. Oiled wildlife operations would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA.

Oiled wildlife response is undertaken in accordance with the Western Australian Oiled Wildlife Response Plan to ensure it is conducted in accordance with legislative requirements under the Animal Welfare Act 2002.

If there is a net environmental benefit, oiled wildlife operations will be conducted 24 hours per day to reduce the time for rehabilitation and release of oiled wildlife. Hazing and pre-emptive capture techniques to keep non-oiled animals away from contaminated habitat in instances where it is deemed appropriate will be conducted in accordance with the Western Australian Oiled Wildlife Response Plan, specifically vessels used in hazing/pre-emptive capture will approach fauna at slow speeds to ensure animals are not directed towards the oil and deterrence/hazing and pre-emptive capture will only be conducted if Woodside has licensed authority from DBCA and approval from the Incident Controller.

Shoreline access will be considered as part of the operational NEBA. Vehicular access would be restricted on dunes, turtle nesting beaches and in mangroves. Woodside retains specialist personnel to support and manage oiled wildlife operations, including trained and competent responders in Exmouth and Onslow. Additional personnel would be sourced through Woodside's arrangements to support an oiled wildlife response as required.

5.3.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- No shoreline contact is predicted.
- No floating oil is predicted at $>10 \text{ g/m}^2$ for the duration of the spill.
- The offshore location of the release site is expected to result in low numbers of at-risk or impacted wildlife.

Table 5-3: Key at-risk species potentially in Priority Protection Areas and open ocean

Species	Open ocean
Marine turtles (including foraging and inter-nesting areas and significant nesting beaches)	✓
Whale sharks (migration to and from waters at Ningaloo)	✓
Seabirds and/or migratory shorebirds	✓
Cetaceans – migratory whales	✓
Cetaceans – dolphins and porpoises	✓
Sea snakes	✓

The oiled wildlife response technique targets key wildlife populations at risk within Commonwealth open waters and the nearshore waters. Responding to oiled wildlife consists of eight key stages, as described in **Table 5-4** below.

Table 5-4: Oiled wildlife response stages

Stage	Description
Stage 1: Wildlife first strike response	Gather situational awareness including potential wildlife assets at risk.
Stage 2: Mobilisation of wildlife resources	Resources include personnel, equipment and facilities.

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Stage	Description
Stage 3: Wildlife reconnaissance	Reconnaissance to identify potentially affected animals.
Stage 4: IAP wildlife sub-plan development	The IAP includes the appropriate response options for oiled wildlife, including wildlife priorities for protection from oiling; deterrence measures (see below); and recovery and treatment of oiled wildlife; resourcing of equipment and personnel. It includes consideration of deterrence practices such as 'hazing' to prevent fauna from entering areas potentially contaminated by spilled hydrocarbons, as well as dispersing, displacing or relocating fauna to minimise/prevent contact and provide time for clean-up.
Stage 5: Wildlife rescue and staging	This includes the different roles of finding oiled wildlife, capturing wildlife, and holding and/or transportation of wildlife to oiled wildlife facilities.
Stage 6: Establishment of an oiled wildlife facility	Treatment facilities would be required for the first-aid, cleaning and rehabilitation of affected animals. A vessel-based 'on-water' facility would likely need to be established to enable stabilisation of oiled wildlife before transport to a suitable treatment facility. Suitable staging sites in Exmouth and Onslow have been identified in the draft Regional OWROP, should a land-based site be required.
Stage 7: Wildlife rehabilitation	Considerations include a suitable rehabilitation centre and personnel, wildlife housing, record keeping and success tracking.
Stage 8: Oiled wildlife response termination	Once a decision has been made to terminate operations, the Incident Controller will stand down individual participating and supporting agencies.

Reconnaissance and primary response would be done during operational monitoring and surveillance activities. Where marine fauna are observed on water or transiting near or within the spill area, observations would be recorded through surveillance records.

Staging sites may be established as forward bases for vessel-based field teams. Once recovered to a staging site, wildlife would be transported to the designated oiled wildlife facility or a temporary holding centre (before being transported to the oiled wildlife facility). Temporary holding centres are required when there is significant distance between a staging site and the oiled wildlife facility, to enable stabilisation of oiled animals. The oiled wildlife facility is the primary location where animals would be housed and treated. Sites proposed for staging a regional oiled wildlife response in Exmouth and Onslow have been identified.

To deploy a response that is appropriate to the nature and scale of the event, as well as scalable over time, Woodside would implement an oiled wildlife response in consultation with DBCA and use the capability outlined in the WA OWRP, with additional capability if required (e.g. volunteers) accessible through Woodside's *People and Global Capability Surge Labour Requirement Plan*.

The WA OWRP provides indicative oiled wildlife response levels (**Table 5-5**) and the resources likely to be needed at each increasing level of response.

Table 5-5: Indicative oiled wildlife response level (adapted from the WA OWRP, 2014)

OWR Level	Indicative personnel numbers	Indicative duration	Indicative number of birds (non-threatened species)	Indicative number of birds (threatened species)	Turtles (hatchlings, juveniles, adults)	Cetaceans
Level 1	6	< 3 days	1–2/day < 5 total	None	None	None
Level 2	26	> 4–14 days	1–5/day < 20 total	None	< 20 hatchlings No juv/adults	None
Level 3	59	> 4–14 days	5–10/day	1–5/day < 10 total	< 5 juv/adults < 50 hatchlings	None
Level 4	77	> 4–14 days	5–10/day < 200 total	5–10/day	< 20 juv/adults < 500 hatchlings	< 5, or known habitats affected
Level 5	116	> 4–14 days	10–100/day > 200 total	10–50/day	> 20 juv/adults > 500 hatchlings	< 5 dolphins
Level 6	122	> 4–14 days	> 100/day	10–50/day	> 20 juv/adults > 500 hatchlings	> 5 dolphins

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5.3.2 Environmental performance based on need

Table 5-6: Environmental Performance – Oiled Wildlife Response

Environmental Performance Outcome		Oiled Wildlife Response is conducted in accordance with WA OWRP to ensure it is conducted in accordance with legislative requirements to house, release or euthanise fauna under the Animal Welfare Act 2002.		
Control Measure		Performance Standard		Measurement Criteria
8	Wildlife response equipment	8.1	Contracted capability to treat 100 individual fauna for immediate mobilisation to Response Priority Areas (RPAs)	1, 3A, 3B, 3C, 4
		8.2	Contracted capability to treat up to an additional 250 individual fauna within a five-day period.	
		8.3	National plan access to additional resources under the guidance of the DoT (up to a Level 5 oiled wildlife response as specified in the WA OWRP), with the ability to treat about 600 individual fauna.	1, 3C, 4
		8.4	Vessels used in hazing/pre-emptive capture will approach fauna at slow speeds to ensure animals are not directed towards the hydrocarbons.	1, 3A, 3B, 4
		8.5	Facilities for the rehabilitation of oiled wildlife are operational 24/7 as per WA OWRP.	1, 3A, 4
9	Wildlife responders	9.1	2 wildlife divisional commanders to lead the oiled wildlife operations who have completed an Oiled Wildlife Response Management course	1, 2, 3B
		9.2	Wildlife responders to be accessed through resource pool and additional agreements with specialist providers	1, 2, 3A, 3B, 3C, 4
		9.3	Oiled wildlife operations (including hazing) would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA.	1
		9.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s)	1, 3A, 3B

The resulting wildlife response capability has been assessed against the WCCS.

Under optimal conditions, during the surface release the capability available meets the need identified. It indicates that, the wildlife response capability has the following expected performance:

- Mobilisation and deployment of approximately two wildlife collection teams within the first 5 days of the incident (if required) which may provide an oiled wildlife response in offshore waters.
- Mobilisation and deployment of two central wildlife treatment and rehabilitation locations at Exmouth and Onslow in accordance with WA OWRP.

No additional capability will be required for this activity, given the oiled wildlife response will be limited to open water.

Recovered wildlife from open water would be transported to a central treatment location at Exmouth or Onslow.

5.4 Waste Management

Waste management is considered a support technique to oiled wildlife response, containment and recovery and shoreline clean-up. For the purposes of this OSPRMA, waste management may be required to support wildlife response. Waste generated and collected during the response that will require handling, management and disposal may consist of:

- Liquids (hydrocarbons and contaminated liquids) collected during wildlife response, and/or
- Solids/semi-solids (oily solids, garbage, contaminated materials) and debris collected during wildlife response.

Expected waste volumes during an event are likely to vary depending on oil type, volume released, response techniques employed and extent of weathering of hydrocarbons. Waste management, handling and capacity should be scalable to ensure continuous response operations can be maintained.

All waste management activities will follow the Environment Protection (Controlled Waste) Regulations 2004 and the waste will be managed to minimise final disposal volumes. Waste treatment techniques will consider contaminated solids treatment to allow disposal to landfill and solids with high concentrations of hydrocarbon will be treated and recycled where possible or used in clean fill if suitable.

The waste products would be transported from response locations to the nearest suitable staging area/waste transfer station for treatment, disposal or recycling. Waste will be transferred with appropriately licensed vehicles. Containers will be available for temporary waste storage and will be:

- labelled with the waste type
- provided with appropriate lids to prevent waste being blown overboard
- banded if storing liquid wastes.
- processes will be in place for transfers of bulk liquid wastes and include:
 - inspection of transfer hose undertaken prior to transfer
 - watchman equipped with radio visually monitors loading hose during transfer
 - tank gauges monitored throughout operation to prevent overflow

The *Oil Spill Preparedness Waste Management Support Plan* details the procedures, capability and capacity in place between Woodside and its primary waste services contractor (Veolia Waste Management) to manage waste volumes generated from response activities.

5.4.1 Response Need Based on Predicted Consequence Parameters

Table 5-7: Response Planning Assumptions – Waste Management

Response planning assumptions: Waste management	
Waste loading per m³ oil recovered (multiplier)	Oiled wildlife response – approx. 1m ³ of oily liquid waste generated for each wildlife unit cleaned

5.4.2 Environmental Performance Based on Need

Table 5-8: Environmental Performance – Waste Management

Environmental Performance Outcome		To minimise further impacts, waste will be managed, tracked and disposed of in accordance with laws and regulations.		
Control Measure		Performance Standard		Measurement Criteria
10	Waste Management	10.1	Contract with waste management services for transport, removal, treatment and disposal of waste.	1, 3A, 3B, 3C, 4
		10.2	Access to at least 50 m ³ of solid and liquid waste storage available within 1 week upon activation of 3 rd party contract.	
		10.3	Recovered hydrocarbons and wastes will be transferred to licensed treatment facility for reprocessing or disposal.	
		10.4	Teams will segregate liquid and solid wastes at the earliest opportunity.	
		10.5	Waste management provider support staff available year-round to assist in the event of an incident with waste management as detailed in contract.	
		10.6	Open communication line to be maintained between IMT and waste management services to ensure the reliable flow of accurate information between parties.	1, 3A, 3B
		10.7	Waste management to be conducted in accordance with Australian laws and regulations.	1, 3A, 3B, 3C, 4
		10.8	Waste management services available and employed during response.	
11	Management of environmental impact of the response risks	11.1	All oiled wildlife response sites zoned and marked before operations commence to prevent secondary contamination and minimise the mixing of clean and oiled waste.	

The resulting waste management capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to waste management from oiled wildlife response.

It indicates that the waste management capability has the following expected performance:

- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures.
- The waste management requirements of all credible spill scenarios are well within Woodside's and its service providers existing capacity.
- No further control measures that may result in an increased environmental benefit that involve moderate to significant cost and/or dedication of resources have been adopted as the requirements of this technique does not justify the excessive costs of identified alternate, improved or additional controls.

5.5 Scientific monitoring

A scientific monitoring program (SMP) would be activated following a Level 2 or 3 unplanned hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors. This would consider receptors at risk (ecological and socio-economic) for the entire predicted Environment that Maybe Affected (EMBA) and in particular, any identified Pre-emptive Baseline Areas (PBAs) for the credible spill scenario(s) or other identified unplanned hydrocarbon releases associated with the activity (refer to Table 2 1 Activity credible spill scenarios).

The outputs of the stochastic hydrocarbon spill modelling were used to assess the environmental risk of the hydrocarbon affected area as delineated by the ecological impact EMBA and social-cultural EMBA based on exceedance of environmental and social-cultural hydrocarbon threshold concentrations (refer to Table 2 2, Section 2.3.1.1 and see Section 4 and 6 of the EP for further information on applicable thresholds and the EMBA's). The Petroleum Activities Program vessel collision marine diesel spill (CS-01) has been modelled and considered to determine the WCCS for the SMP planning purposes and is the basis of the SMP approach presented in this section.

It should be noted that the resulting SMP receptor locations may differ from the Response Protection Areas (RPAs) presented and as discussed in Section 3 of this document due to the applicability of different hydrocarbon threshold levels. The SMP would be informed by the data collected via the operational monitoring program (OMP) studies, however, it differs from the OMP in being a long-term program independent of, and not directing, the operational oil spill response or monitoring of impacts from response activities (refer to Section 5.1 Monitor and Evaluate) for the operational monitoring overview.

Key objectives of the Woodside oil spill scientific monitoring program are:

- Assess the extent, severity and persistence of the environmental impacts from the spill event.
- Monitor subsequent recovery of impacted key species, habitats and ecosystems.

The SMP comprises ten targeted environmental monitoring programs to assess the condition of a range of physical-chemical (water and sediment) and biological (species and habitats) receptors including Environment Protection and Biodiversity Conservation Act (EPBC Act 1999) listed species, environmental values associated with protected areas and socio-economic values, such as fisheries. The ten SMPs are as follows:

- SM01 – Assessment of the presence, quantity and character of hydrocarbons in marine waters (linked to OM01 to OM03)
- SM02 – Assessment of the presence, quantity and character of hydrocarbons in marine sediments (linked to OM01 and OM05)
- SM03– Assessment of impacts and recovery of subtidal and intertidal benthos
- SM04 – Assessment of impacts and recovery of mangroves/saltmarsh habitat
- SM05 – Assessment of impacts and recovery of seabird and shorebird populations
- SM06 – Assessment of impacts and recovery of nesting marine turtle populations
- SM07 – Assessment of impacts to pinniped colonies including haul-out site populations
- SM08 – Desktop assessment of impacts to other non-avian marine megafauna
- SM09 – Assessment of impacts and recovery of marine fish (linked to SM03)
- SM10 – Assessment of physiological impacts to important fish and shellfish species (fish health and seafood quality/safety) and recovery.

These SMPs have been designed to cover all key tropical and temperate habitats and species within Australian waters and broader, if required. A planning area for scientific monitoring is also identified to acknowledge potential hydrocarbon contact below the environmental threshold concentrations and beyond the EMBA. This planning area has been set with reference to the entrained low exposure value of 10 ppb detailed in NOPSEMA Bulletin #1 Oil Spill Modelling (2019), as shown in Figure 5-1.

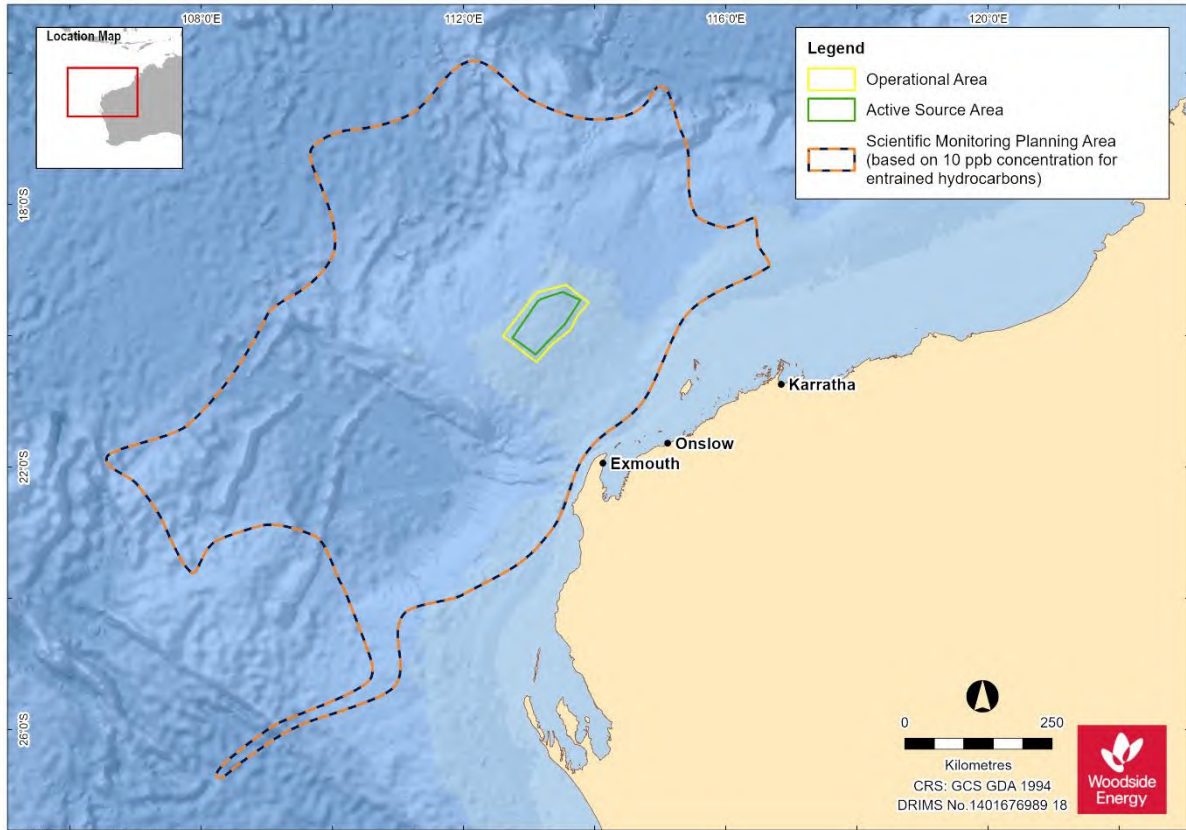


Figure 5-1: The planning area for scientific monitoring based on the area potentially contacted by the low (below ecological impact) entrained hydrocarbon threshold of 10 ppb in the event of the credible spill scenario (CS-01).

NOTE: Figure 5-1 represents the overall combined extent of the oil spill model outputs based on a total of 200 replicate simulations over an annual period for CS-01 and therefore represents the largest spatial boundaries of 200 CS-01 oil spill combinations, and not the spatial extent of a single CS-01 spill.

5.5.1 Scientific Monitoring Deployment Considerations

Scientific Monitoring Deployment Considerations	
Existing baseline studies for sensitive receptor locations predicted to be affected by a spill	<p>Pre-emptive Baseline Areas (PBAs) of the following two categories:</p> <ul style="list-style-type: none"> PBAs within the predicted < 10-day hydrocarbon contact time prediction: As part of this assessment, the approach was to conduct a desktop review of available and appropriate baseline data for key receptors for locations (if any) that are potentially impacted within ten days of a spill (based on the EMBA). Then investigate the need to conduct baseline data collection to address data gaps and demonstrate spill response preparedness (refer to Annex D). In the scenario, that baseline data needs are identified, planning for baseline data acquisition is typically commenced pre-PAP and execution of studies undertaken with consideration of weather, receptor type, seasonality and temporal assessment requirements. PBAs predicted > 10 days' time to predicted hydrocarbon contact in the event of an unplanned hydrocarbon release (for the worse case spill scenario). As part of this assessment, a desktop review is conducted of available and appropriate baseline data for key receptors for locations (if any) that are potentially impacted >10 days' time of a hydrocarbon spill event and documented (refer to Section 5.5.2). In the event of a spill, the SMP activation (as per the Scarborough 4D Marine Seismic Survey First Strike Plan) directs the SMP team to follow the steps outlined in the SMP Operational Plan. The steps include: checking the availability and type of existing baseline data, with particular reference to any Pre-emptive Baseline Areas (PBAs) identified as >10 days to hydrocarbon contact. Such information is used to identify response phase PBAs and plan for the activation of SMPs for pre-emptive (i.e. pre-hydrocarbon contact) baseline assessment.
Pre-emptive Baseline in the event of a spill	Activation of SMPs in order to collect baseline data at sensitive receptor locations with predicted hydrocarbon contact time > 10 days (refer to Section 5.5.2) and the process (as documented in ANNEX C: Oil Spill Scientific monitoring Program.
Survey platform suitability and availability	In the event of the SMP activation, suitable survey platforms are available and can support the range of equipment and data collection methodologies to be implemented in nearshore and offshore marine environments.
Trained personnel to implement SMPs suitable and available	Access to trained personnel and the sampling equipment contracted for scientific monitoring via a dedicated scientific monitoring program standby contract.
Met-ocean conditions	<p>The following met-ocean conditions have been identified as the field operational limits for implementing SMPs:</p> <ul style="list-style-type: none"> waves < 1 m for nearshore systems waves < 1.5 m for offshore systems winds < 20 knots daylight operations only. <p>SMP implementation will be planned and managed according to HSE risk reviews and the met-ocean conditions on a day-to-day basis by SMP operations.</p>

5.5.2 Response planning assumptions

Response Planning Assumptions	
Pre-emptive Baseline Areas (PBAs)	<p>Pre-emptive Baseline Areas (PBAs) identified through the application of defined hydrocarbon impact thresholds during the Quantitative Spill Risk Assessment process and a consideration of the minimum time to contact at receptor locations fall into two categories:</p> <ul style="list-style-type: none"> PBAs for which baseline data exist or are planned for and data collection may commence pre-PAP (≤ 10 days minimum time to contact). PBAs (> 10 days minimum time to contact) for which baseline data may be collected in the event of an unplanned hydrocarbon release. In the event of a spill, response phase PBAs are prioritised for SMP activities based on vulnerability (i.e. time to contact and

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	<p>environmental sensitivity) to potential impacts from hydrocarbon contact and as well as the identified need to acquire baseline data.</p> <p>Time to hydrocarbon contact of >10 days has been identified as a minimum timeframe within which it is feasible to plan and mobilise applicable SMPs and commence collection of baseline (pre-hydrocarbon contact) data, in the event of an unplanned hydrocarbon release from the Scarborough 4D Marine Seismic Survey operations.</p> <p>Pre-emptive Baseline Areas for the Scarborough 4D Marine Seismic Survey operations are identified and listed in ANNEX D, Table D-1. The PBAs together with the situational awareness (from the operational monitoring) are the basis for the response phase SMP planning and implementation.</p>
Pre-Spill	<p>Scarborough 4D Marine Seismic Survey operations:</p> <p>A review of existing baseline data for receptor locations (refer to Annex D) with potential to be contacted entrained hydrocarbons at environmental thresholds within ≤ 10 days, relating to the credible hydrocarbon release for Scarborough 4D Marine Seismic Survey has identified the offshore open waters of the Commonwealth Marine Environment (MNES) but no submerged or shoreline sensitive receivers contacted by the hydrocarbon release.</p> <p>Australian Marine Parks (AMPs) potentially affected includes:</p> <ul style="list-style-type: none"> • Gascoyne AMP <p>All the Australian Marine Parks (AMPs) are located in offshore waters where hydrocarbon exposure is possible on surface waters and in the upper layers of the water column.</p>
In the Event of a Spill	<p>Receptor locations with >10 days to hydrocarbon contact, as well as the wider area, will be investigated and identified by the SMP team (in the Environment Unit of the CIMT) as the spill event unfolds and as the situational awareness provided by the OMPs permits delineation of the spill affected area (for example, updates to the spill trajectory tracking). Based on the PAP worst case credible spill CS-01 (Table 2-1), the hydrocarbon spill affected area remains offshore (within the Commonwealth Marine Environment) with expanding hydrocarbon exposure in the upper water column of the Gascoyne AMP.</p> <p>The unfolding spill affected area predictions and confirmation of appropriate baseline data will determine the selection of receptor locations and SMPs to be activated in order to gather pre-emptive (pre-hydrocarbon contact) data. Refer to ANNEX C for further details on scientific monitoring plan implementation and delivery). The timing of SMP activation and mobilisation of the individual SMPs to undertake data collection will be decided and documented by the Woodside SMP team following the process outlined in the SMP Operational Plan.</p> <p>In the event key receptors within geographic locations that are potentially impacted after 10 days following a spill event or commencement of the spill and where adequate and appropriate baseline data are not available, there will be a response phase effort to collect baseline data for the following purposes:</p> <ol style="list-style-type: none"> i. Priority will be given to the collection of baseline data for receptors predicted to be within the spill affected area prior to hydrocarbon contact. The process is initiated with the investigation of available baseline and time to hydrocarbon contact (>10 days which is sufficient time to mobilise SMP teams and acquire data before hydrocarbon contact). No receptor locations have been identified at this time for the Scarborough 4D MSS operations. ii. Highly sensitive and/or valued habitats and communities in coastal waters will be prioritised for pre-emptive baseline surveys over open water areas of AMPs. iii. Collect baseline data for receptors predicted to be outside the spill affected area so reference datasets for comparative analysis with impacted receptor types can be assessed post-spill.
Baseline Data	<p>A summary of the spill affected area and receptor locations as defined by the EMBA for the activity WCCS CS-01 are presented in Section 6 of the Scarborough 4D B1 MSS Environment Plan.</p> <p>The key receptors at risk by location and corresponding SMPs based on the EMBA for the PAP are presented in ANNEX D, as per credible spill event scenario(s). This matrix maps</p>

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	<p>the receptors at risk with their location and the applicable SMPs that may be triggered in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors. Receptor locations and applicable SMPs are colour coded to highlight possible time to contact based on receptor types and locations.</p> <p>The status of baseline studies relevant to the PAP are tracked by Woodside through the maintenance of a Corporate Environment Environmental Baseline Database (managed by the Woodside Environmental Science team), as well as accessing external databases such as the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA)^[1] (refer to ANNEX C: Oil Spill Scientific Monitoring Program).</p>
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5.5.3 Summary – scientific monitoring

The resulting scientific monitoring capability has been assessed against the PAP credible spill scenario. The range of techniques provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of impacts. All known reasonably practicable control measures have been adopted with the cost and organisational complexity of these options determined to be moderate and the overall delivery effectiveness determined to be medium. The SMP’s main objectives can be met, with no additional, alternative or improved control measures providing further benefit.

5.5.4 Response planning: need, capability and gap – scientific monitoring

The receptor locations identified in Annex D provide the basis of the SMPs likely to be selected and activated. Once the Woodside SMP Delivery team and the SMP standby contractor have been stood up and the exact nature and scale of the spill becomes known, the SMPs to be activated will be confirmed as per the process set out in the SMP Operational Plan.

Scope of SMP Operations in the event of a hydrocarbon spill

Receptor locations of interest for the SMP during the response phase are:

- Gascoyne AMP

The SMP approach in the response phase would still deploy SMP teams to maximise the opportunity to collect pre-emptive baseline data at sensitive receptor locations, not immediately contacted by hydrocarbons. As the exact locations where hydrocarbon contact occurs may be unpredictable, SM01 would be mobilised as a priority to be able to detect hydrocarbons and track the leading edge of the spill to verify where hydrocarbon contact occurs which will assist with where SMP resources are a priority need to obtain pre-emptive baseline data.

The ALARP assessment for the SMP (Section 6.5) considers alternate, additional, and/or improved control measures on each selected response technique.

^[1] <https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort>

5.5.5 Environmental performance based on need

Table 5-9: Scientific monitoring

Environmental Performance Outcome		Woodside can demonstrate preparedness to stand up the SMP to quantitatively assess and report on the extent, severity, persistence and recovery of sensitive receptors impacted from the spill event		
Control measure		Performance Standard		Measurement Criteria
12	<ul style="list-style-type: none"> Woodside has an established and dedicated SMP team comprising the Environmental Science Team and additional Environment Advisers within the HSE Function. 	12.1	SMP team comprises a pool of competent Environment Advisers (stand up personnel) who receive training regarding the SMP, SMP activation and implementation of the SMP on an annual basis	<ul style="list-style-type: none"> Training materials Training attendance registers Process that maps minimum qualification and experience with key SMP role competency and a tracker to manage availability of competent people for the SMP team including redundancy and rostering
13	<ul style="list-style-type: none"> Woodside has contracted SMP service provider to provide scientific personnel to resource a base capability of one team per SMP (SM01-SM10, see ANNEX C Table C-2) as detailed in Woodside's SMP standby contractor Implementation Plan, to implement the oil spill scientific monitoring programs. The availability of relevant personnel is reported to Woodside on a monthly basis via a simple report on the base-loading availability of people for each of the SMPs comprising field work for data collection (SMP resourcing report register). In the event of a spill and the SMP is activated, the base-loading availability of scientific personnel will be provided by SMP standby contractor for the individual SMPs and where gaps in resources are identified, SMP standby contractor/Woodside will seek additional personnel (if needed) from other sources including Woodside's Environmental Services Panel. 	13.1	<p>Woodside maintains the capability to mobilise personnel required to conduct scientific monitoring programs SM01 – SM10 (except desktop based SM08):</p> <ul style="list-style-type: none"> Personnel are sourced through the existing standby contract with SMP standby contractor, as detailed within the SMP Implementation Plan. Scientific Monitoring Program Implementation Plan describes the process for standing up and implementing the scientific monitoring programs. SMP team stand up personnel receive training regarding the stand up, activation and implementation of the SMP on an annual basis 	<ul style="list-style-type: none"> OSPU Internal Control Environment tracks the quarterly review of the Oil Spill Contracts Master. SMP resource report of personnel availability provided by SMP contractor on monthly basis (SMP resourcing report register). Training materials Training attendance registers Competency criteria for SMP roles SMP annual arrangement testing and reporting
14	<ul style="list-style-type: none"> Roles and responsibilities for SMP implementation are captured in Table C-1 (ANNEX C) and the SMP team (as per the organisational structure of the CIMT) is outlined in SMP Operational Plan. Woodside has a defined Crisis and Incident Management structure including Source Control, Operations, Planning and Logistics functions to manage a loss of well containment response. SMP Team structure, interface with SMP standby contractor and linkage to the CIMT is presented in Figure C-1, ANNEX C. Woodside has a defined Command, Control and Coordination structure for Incident and Emergency Management that is based on the AIIMS framework utilised in Australia. Woodside utilises an online Incident Management System (IMS) to coordinate and track key incident management functions. This includes specialist modelling programs, geographic information systems (GIS), as well as communication flows within the Command, Control and Coordination structure. SMP activated via the FSP. Step by step process to activation of individual SMPs provided in the SMP Operational Plan. All decisions made regarding SMP logged in the online IMS (SMP team members trained in using Woodside's online Incident Management System). SMP component input to the CIMT IAP as per the identified CIMT timed sessions and the SMP IAP logged on the online IMS. Woodside Environmental Science Team provides awareness training on the activation and stand-up of the Scientific Monitoring Programme (SMP) for the Environment Advisers in Woodside who are listed on the SMP team on an annual basis. Woodside Environmental Science Team provides awareness training on the activation and stand-up of the Scientific Monitoring Program (SMP) for the SMP Standby provider. Woodside Environmental Science Team co-ordinates an annual SMP arrangement testing exercise performed by the SMP standby contractor. SMP standby contractor and the SMP arrangements (people and equipment availability) tested annually since 2016. 	14.1	<ul style="list-style-type: none"> Woodside have established an SMP organisational structure and processes to stand up and deliver the SMP. 	<ul style="list-style-type: none"> SMP Oil Spill Scientific Monitoring Operational Plan SMP Implementation Plan SMP annual arrangement testing and reporting

15	<ul style="list-style-type: none"> Chartered and mutual aid vessels. Suitable vessels would be secured from the Woodside support vessels, regional fleet of vessels operated by Woodside and other operators and the regional charter market. Vessel suitability will be guided by the need to be equipped to operate grab samplers, drop camera systems and water sampling equipment (the individual vessel requirements are outlined in the relevant SMP methodologies (refer to Table C-2, ANNEX C). Nearshore mainland waters could use the same approach as for open water. Smaller vessels may be used where available and appropriate. Suitable vehicles and machinery for onshore access to nearshore SMP locations would be provided by Woodside's transport services contract and sourced from the wider market. Dedicated survey equipment requirements for scientific monitoring range from remote towed video and drop camera systems to capture seabed images of benthic communities to intertidal/onshore surveying tools such as quadrats, theodolites and spades/trowels, cameras and binoculars (specific survey equipment requirements are outlined in the relevant SMP methodologies (refer to Table C-2, ANNEX C)). Equipment would be sourced through the existing SMP standby contract with Standby SMP contractor for SMP resources and if additional surge capacity is required this would be available through the other Woodside Environmental Services Panel Contractors and specialist contractors. Standby SMP contractor can also address equipment redundancy through either individual or multiple suppliers. MoUs are in place with marine sampling equipment suppliers and analytical laboratories (SMP resourcing report register). Availability of SMP equipment for offshore/onshore scientific monitoring team mobilisation is within one week to ten days of the commencement of a hydrocarbon release. This meets the SMP mobilisation lead time that will support meeting the response objective of 'acquire, where practicable, the environmental baseline data prior to hydrocarbon contact required to support the post-response SMP. 	15.1	<p>Woodside maintains standby SMP capability to mobilise equipment required to conduct scientific monitoring programs SM01 – SM10 (except desktop based SM08):</p> <ul style="list-style-type: none"> Equipment are sourced through the existing standby contract with SMP standby contractor as detailed within the SMP Implementation Plan. 	<ul style="list-style-type: none"> Hydrocarbon Spill Preparedness Team Internal Control Environment tracks the quarterly review of the Oil Spill Contracts Master. SMP standby monthly resource reports of equipment availability provided by SMP contractor (SMP resourcing report register). SMP annual arrangement testing and reporting.
16	<p>Woodside's SMP approach addresses the pre-PAP acquisition of baseline data for Pre-emptive Baseline Areas (PBAs) with ≤10 days if required following a baseline gap analysis process.</p> <p>Woodside maintains knowledge of Environmental Baseline data through:</p> <ul style="list-style-type: none"> Documentation annual reviews of the Woodside Baseline Environmental Studies Database, and specific activity baseline gap analyses. Accessing external databases such as the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA) (refer to ANNEX C: Oil Spill Scientific Monitoring Program). 	16.1	<ul style="list-style-type: none"> Annual reviews of environmental baseline data PAP specific Pre-emptive Baseline Area baseline gap analysis 	<ul style="list-style-type: none"> Annual review/update of Woodside Baseline Environmental Studies Database. Desktop review to assess the environmental baseline study gaps completed prior to EP submission. Accessing baseline knowledge via the SMP annual arrangement testing.

Environmental Performance Outcome		SMP plan to acquire response phase monitoring targeting pre-emptive baseline data achieved		
Control measure		Performance Standard		Measurement Criteria
17	<p>Woodside's SMP approach addresses:</p> <ul style="list-style-type: none"> Scientific data acquisition for PBAs >10 days to hydrocarbon contact and activated in the response phase and Transition into post-response SMP monitoring. 	17.1	<p><u>Pre-emptive Baseline Area (PBA) baseline data acquisition in the response phase</u></p> <p>If baseline data gaps are identified for PBAs predicted to have hydrocarbon contact in >10 days, there will be a response phase effort to collect baseline data. Priority in implementing SMPs will be given to receptors where pre-emptive baseline data can be acquired or improved.</p> <p>SMP team (within the Environment Unit of the CIMT) contribute SMP component of the CIMT Planning Function in development of the IAP.</p>	<ul style="list-style-type: none"> Response SMP plan Woodside's online Incident Management System Records SMP component of the Incident Action Plan (IAPs).
		17.2	<p><u>Post Spill contact</u></p> <p>For the receptors contacted by the spill in where baseline data are available, SMPs programs to assess and monitor receptor condition will be implemented post spill (i.e. after the response phase).</p>	<ul style="list-style-type: none"> SMP planning document SMP Decision Log Incident Action Plans (IAPs)

Environmental Performance Outcome		Implementation of the SMP (response and post-response phases)		
Control measure		Performance Standard		Measurement Criteria
18	<ul style="list-style-type: none"> Scientific monitoring will address quantitative assessment of environmental impacts of a level two or three spill or any release event with the potential to contact sensitive environmental receptors. The SMP comprises ten targeted environmental monitoring programs. SMP supporting documentation: (1) Oil Spill Scientific Monitoring Operational Plan; (2) SMP Implementation Plan and (3) SMP Process and Methodologies Guideline. The Oil Spill Scientific Monitoring Operational Plan details the process of SMP selection, input to the Incident Action Plan (IAP) to trigger operational logistic support services. Methodology documents for each of the ten SMPs 	18.1	<p><u>Implementation of SM01</u></p> <p>SM01 will be implemented to assess the presence, quantity and character of hydrocarbons in marine waters during the spill event in nearshore areas</p>	<p>Evidence SM01 has been triggered:</p> <ul style="list-style-type: none"> Documentation as per requirements of the SMP Operational Plan Woodside's online Incident Management System Records. SMP component of the IAP SMP data records from field

	<p>are accessible detailing equipment, data collection techniques and the specifications required for the survey platform support.</p> <ul style="list-style-type: none"> The SMP standby contractor holds a Woodside SMP implementation plan detailing activation processes, linkage with the Woodside SMP team and the general principles for the planning and mobilisation of SMPs to deliver the individual SMPs activated. Monthly resourcing report are issued by the SMP standby contractor (SMP resourcing report register). All SMP documents and their status are tracked via SMP document register. 	18.2	<p>Implementation of SM02-SM10 SM02-SM10 will be implemented in accordance with the objectives and activation triggers as per Table C-2 of Annex C.</p>	<p>Evidence SMPs have been triggered:</p> <ul style="list-style-type: none"> Documentation as per requirements of the SMP Operational Plan Woodside's online Incident Management System Records. SMP component of the IAP SMP Data records from field
		18.3	<p>Termination of SMP plans The Scientific Monitoring Program will be terminated in accordance with termination triggers for the SMP's detailed in Table C-2 of Annex C, and the Termination Criteria Decision-tree for Oil Spill Environmental Monitoring (Figure C-3 of Annex C):</p>	<p>Evidence of Termination Criteria triggered:</p> <ul style="list-style-type: none"> Documentation and approval by relevant persons/ organisations to end SMPs for specific receptor types.

5.6 Incident Management System

The Incident Management System (IMS) is both a control measure and a measurement criteria. As a control measure the IMS function is to prompt, facilitate and record the completion of three key response planning processes detailed below. As a measurement criteria, the IMS records the evidence of the timeliness of all response actions included in the environmental performance standards and the plans used of the PAP.

As the IMS does not directly remove hydrocarbons spilt into the marine environment there is no direct relationship to the response planning need.

5.6.1 Incident action planning

The CIMT will be required to collect and interpret information from the scene of the incident to determine support requirements to the site-based IMT, develop an incident action plan (IAP) and assist the IMT with the execution of that plan. The site-based IC may request the CIMT to complete notifications internally within Woodside, to persons/ organisations and government agencies as required. Depending on the type and scale of the incident either the CIMT DM or IC will be responsible for ensuring the development of the IAP. Incident Action Planning is an ongoing process that involves continual review to ensure techniques to control the incident are appropriate to the situation at the time.

5.6.2 Operational NEBA process

In the event of a response Woodside will confirm that the response techniques adopted at the time of Environment Plan/Oil Pollution Emergency Plan (EP/OPEP) acceptance remain appropriate to reduce the consequences of the spill. This process verifies that there is a continuing net environmental benefit associated with continuing the response technique through the operational NEBA process. This process manages the environmental risks and impacts of response techniques during the spill response, an operational NEBA will be undertaken throughout the response, for each operational period.

The operational NEBA will consider the risks and benefits of conducting and response activity. For example, if vessels are required for access to nearshore or onshore areas, anchoring locations will be selected to minimise disturbance to benthic habitats. Vessel cleanliness would be commensurate with the receiving environment. The operational NEBA will consider the risks and benefits of conducting other response techniques.

The operational NEBA process is also used to terminate a response. Using data from operational and scientific monitoring activities the response to a hydrocarbon spill will be terminated in accordance with the termination process outlined in the Oil Pollution Emergency Arrangements (Australia). In effect the operational NEBA will determine whether there is net environmental benefit to continue response operations.

5.6.3 Consultation engagement process

Woodside will ensure persons/ organisations are engaged during the spill response in accordance with internal standards as outlined in **Table 5-10**. This process requires that Woodside will:

- Undertake all required notifications (including government notifications) for persons/ organisations in the region (identified in the First-Strike Response Plan). This includes notification to mariners to communicate navigational hazards introduced through response equipment and personnel.
- In the event of a response, identify and engage with relevant persons/ organisations and continually assess and review.

5.6.4 Environmental performance based on need

Table 5-10: Environmental Performance – Incident Management System

Environmental Performance Outcome		To support the effectiveness of all other control measures and monitor/record the performance levels achieved.		
Control measure		Performance Standard		Measurement Criteria
19	Operational NEBA	19.1	Confirm that the response techniques adopted at the time of acceptance remain appropriate to reduce the consequences of the spill within 24 hours.	
		19.2	Record the evidence and justification for any deviation from the planned response activities.	
		19.3	Record the information and data from operational and scientific monitoring activities used to inform the NEBA.	
20	Stakeholder engagement	20.1	Prompt and record all notifications (including government notifications) for persons/ organisations in the region are made	1, 3A
		20.2	In the event of a response, identification of relevant persons/ organisations will be re-assessed throughout the response period.	
		20.3	Undertake communications in accordance with: <ul style="list-style-type: none"> • Woodside Crisis Management Functional Support Team Guideline – Reputation • External Communication and Continuous Disclosure Procedure • External Stakeholder Engagement Procedure 	
21	Personnel required to support any response	21.1	Action planning is an ongoing process that involves continual review to ensure techniques to control the incident are appropriate to the situation at the time.	1, 3B
		21.2	A duty roster of trained and competent people will be maintained to ensure that minimum manning requirements are met all year round.	3C
		21.3	Immediately activate the IMT with personnel filling one or more of the following roles: <ul style="list-style-type: none"> • Operations Duty Manager • D&C Duty Manager • Operations Coordinator • Deputy Operations Coordinator • Planning Coordinator • Logistics (materials, aviation, marine and support positions) • Management Support • Health and Safety Advisor • Environment duty Manager • People Coordinator • Public Information Coordinator • Intelligence Coordinator • Finance Coordinator. 	1, 2, 3B, 3C, 4
		21.4	Collect and interpret information from the scene of the incident to determine support requirements to the site-based IMT, develop an Incident Action Plan (IAP) and assist with the execution of that plan.	
		21.5	S&EM advisors will be integrated into CIMT to monitor performance of all functional roles.	
		21.6	Continually communicate the status of the spill and support Woodside to determine the most appropriate response by delivering on the responsibilities of their role.	
		21.7	Follow the OPEA, Operational Plans, FSPs, support plans and the IAPs developed.	
		21.8	Contribute to Woodside’s response in accordance with the aims and objectives set by the Duty Manager.	1, 2, 3B, 3C, 4

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5.7 Measurement criteria for all response techniques

Woodside ensures compliance with environmental performance outcomes and standards through four primary mechanisms. The aforementioned performance tables identify which of these four mechanisms monitors the readiness and records the effectiveness and performance of the control measures adopted.

1. The Incident Management System

The Incident Management System (IMS) supports the implementation of the Emergency and Crisis Management Procedure. The IMS provides a near real-time, single source of information for monitoring and recording an incident and measuring the performance of those control measures.

The Emergency and Crisis Management Procedure defines the management framework, including roles and responsibilities, to be applied to any size incident (including hydrocarbon spills). The organisational structure required to manage an incident is developed in a modular fashion and is based on the specific requirements of each incident. The structure can be scaled up or down.

The Incident Action Plan (IAP) process formally documents and communicated the:

- Incident objectives
- Status of assets
- Operational period objectives
- Response techniques (defined during response planning)
- The effectiveness of response techniques.

The information captured in the IMS (including information from personal logs and assigned tasks/close outs) confirms the response techniques implemented remain appropriate to reduce the consequences of the spill. The system also records all information and data that can be used to support the site-based IMT, development and the execution of the IAP.

2. The S&EM Competency Dashboard

The S&EM competency dashboard records the number of trained and competent responders that are available across Woodside, and some external providers, to participate in a response.

This number varies dependent on expiry of competency certificates, staff attrition, internal rotations, leave and other absences. As such the Dashboard is designed to identify the minimum manning requirements and to identify sufficient redundancy to cater for the variances listed above.

Figure 5-2 shows the minimum manning numbers for the different hydrocarbon spill response roles and the number of qualified persons against those roles.

Woodside's pool of trained responders is composed of but not limited to personnel from the following organisations:

- Woodside internal
- Australian Marine Oil Spill Centre (AMOSC) core group
- AMOSC
- Oil Spill Response Limited (OSRL)
- Marine Spill Response Corporation (MSRC)
- AMSA
- Woodside contracted workforce

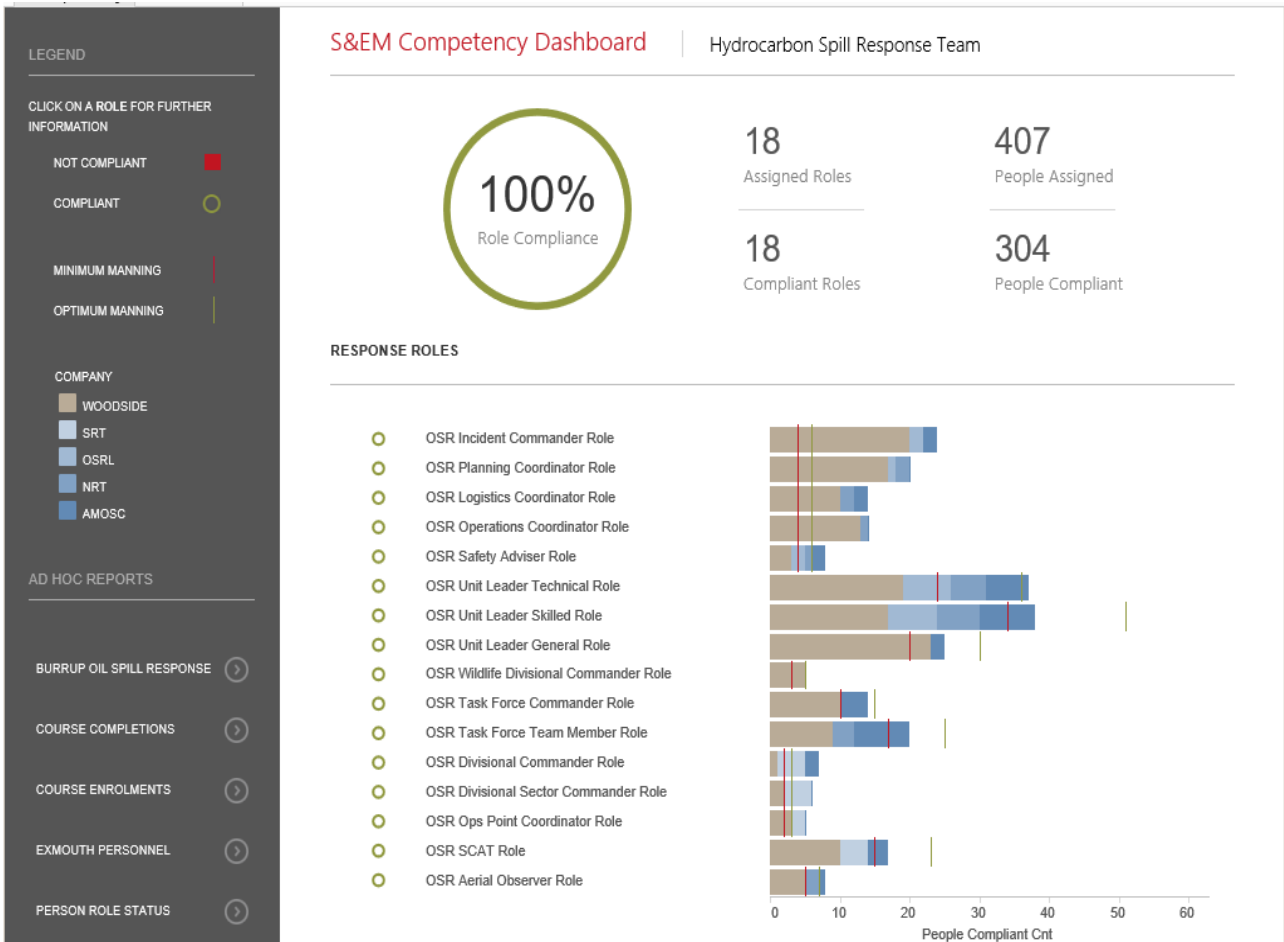


Figure 5-2: Example screen shot of the HSP competency dashboard

The Dashboard is one of Woodside’s key means of monitoring its readiness to respond. It also shows that Woodside can meet the requirements of the environmental performance standard that relate to filling certain response roles.

Figure 5-3 shows deeper dive into the Ops Point Coordinator role and the training modules required to show competence.

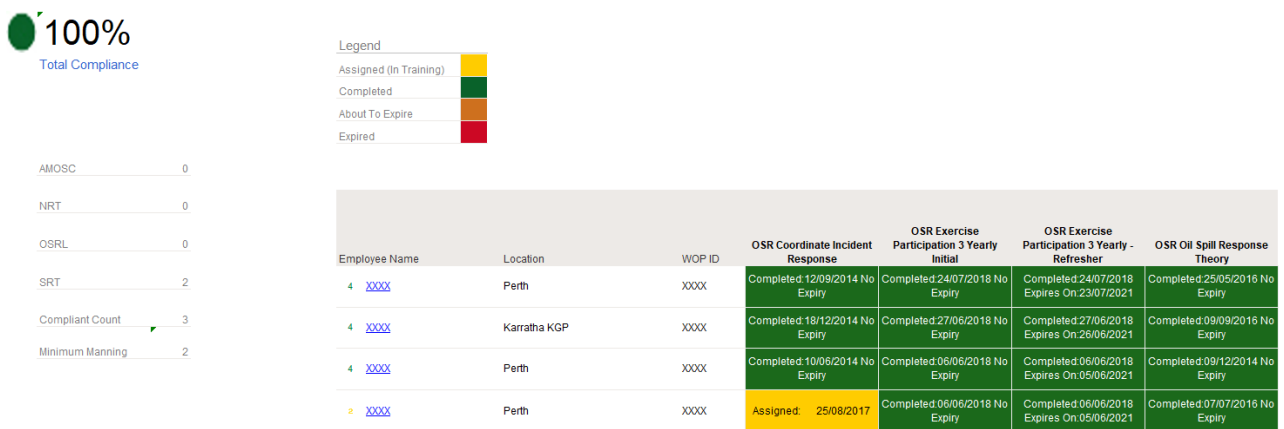


Figure 5-3: Example screen shot for the Ops Point Coordinator role

3. The Hydrocarbon Spill Preparedness ICE Assurance Process

The Hydrocarbon Spill Response Team has developed a Hydrocarbon Spill Preparedness and Response Internal Control Environment (ICE) process to align and feed into the Woodside Management System Assurance process for hydrocarbon spill. The process tracks compliance over four key control areas:

- a) **Plans** – Ensures all plans (including: Oil Pollution Emergency Arrangements, first strike response plans, operational plans, support plans and tactical response plans) are current and in line with regulatory and internal requirements.
- b) **Competency** – Ensures the competency dashboard is up to date and there are the minimum competency numbers across CIMT, CMT and hydrocarbon spill response roles. The hydrocarbon spill training plan and exercise schedule, including testing of arrangements is also tracked. The Testing of Arrangements (TOA) register tracks the testing of all hydrocarbon spill response arrangements, key contracts and agreements in place with internal and external parties to ensure compliance.
- c) **Capability** – Tracks and monitors capability that could be required in a hydrocarbon incident, including but not limited to: integrated fleet⁹ vessel schedule, dispersant availability, rig/vessels monitoring, equipment stockpiles, tracking buoy locations and the CIMT duty roster.
- d) **Compliance and Assurance** – Ensures all regulator inspection outcomes are actioned and closed out, the global legislation register is up to date and that the key assurance components are tracked and managed. Assurance activities (including Audits) conducted on memberships with key Oil Spill Response Organisations (OSROs) including AMOSC and OSRL are also tracked and recorded in the ICE.

The ICE assurance process records how each commitment listed in the performance tables above is managed to ensure ongoing compliance monitoring. The level of compliance can be reviewed in real time and is reported on a monthly basis through the S&EM Function.

The completion of the assurance checks (over and above the ICE process) is also applied via the Woodside Integrated Risk and Compliance System (WiRCs) and subject to the requirements of Woodside's Provide Assurance Procedure.

4. The Hydrocarbon Spill Preparedness and Response Procedure

This procedure sets out how to plan and prepare for a liquid hydrocarbon spill to the marine environment. (Note, this procedure does not apply to scenarios relating to gas releases in the marine environment).

This procedure details the:

- Requirement for an Oil Pollution Emergency Plan (OPEP) to be developed, maintained, reviewed, and approved by appropriate regulators (where applicable) including:
 - Defining how spill scenarios are developed on an activity specific basis
 - Developing and maintaining all hydrocarbon spill related plans
 - Ensuring the ongoing maintenance of training and competency for personnel
 - Developing the testing of spill response arrangements
 - Maintaining access to identified equipment and personnel.
- Planning for hydrocarbon spill response preparedness
- Accountabilities for hydrocarbon spill response preparedness
- Spill training requirements
- Requirements for spill exercising / testing of spill response arrangements
- Spill equipment and services requirements.

⁹ The Integrated fleet consists of vessels from multiple operators that have been contracted to Woodside to undertake a number of duties including hydrocarbon spill response.

The procedure also details the roles and responsibilities of the dedicated Woodside Hydrocarbon Spill Preparedness team. This team is responsible for:

- Assuring that Woodside hydrocarbon spill responders meet competency requirements.
- Establishing the competency requirements, annual training schedule and a training register of trained personnel.
- Establishing and maintaining the total numbers of trained personnel required to provide an effective response to any hydrocarbon spill incident.
- Ensuring equipment and services contracts are maintained
- Establishing OPEPs
- Establishing OPEAs
- Priority response receptor determination
- ALARP determination
- Ensuring compliance and assurance is undertaken in accordance with external and internal requirements.

6 ALARP EVALUATION

This section should be read in conjunction with Section 5 which is the capability planned for this activity.

6.1 Monitor and evaluate – ALARP assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.1.1 Monitor and evaluate – control measure options analysis

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, re-fuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.1.1.1 Alternative control measures

Alternative Control Measures considered					
<i>Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control</i>					
Option considered	Environmental consideration	Feasibility	Approx. Cost	Assessment conclusions	Implemented
Aerostat (or similar inflatable observation platform) for localised aerial surveillance.	Lead time to Aerostat surveillance is disproportionate to the environmental benefit. The system also provides a very limited field of visibility around the vessel it is deployed from.	Long lead time to access (>10 days). Each system would require an operator to interpret data and direct vessels accordingly.	Purchase cost per system approx. A\$300,000.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	No
Alternate analysis technologies and methods such as gravimetric, colorimetric, infra-red and UV absorption for OM03.	Due to time, limitations on sampling, equipment, methodology and analysis, the technique does not provide an environmental benefit compared to alternative available technologies.	<ul style="list-style-type: none"> Gravimetric (Involves lab analysis so cannot be done on location, maybe completed with field samples in laboratory), Colorimetric (requires chemical addition and catalysts no standard method, needs specialist training), Infra-red (droplet size too small for infra-red analysis). Hydrocarbons need to be extracted from water for test, therefore requires a laboratory test), and UV absorption (Similar technology to fluorometers which are more widely available in Australia) were evaluated but all have limitations that do not improve the environmental benefit. 	NA	This strategy is not considered feasible, therefore no further ALARP assessment is conducted.	No

6.1.1.2 Additional control measures

Additional Control Measures considered					
<i>Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures</i>					
Option considered	Environmental consideration	Feasibility	Approx. Cost	Assessment Conclusions	Implemented
Additional personnel trained to use systems for OM01.	Current arrangement provides an environmental benefit in the availability of trained personnel facilitating access to monitoring data used to inform all other response techniques. No improvement required.	No improvement can be made, all personnel in technical roles e.g. intelligence unit are trained and competent on the software systems. Personnel are trained and exercised regularly. Use of the software and systems forms part of regular work assignments and projects.	Cost for training in-house staff would be approx. A\$25,000.	This option is not adopted as the current capability meets the need.	No
Additional satellite tracking buoys to enable greater area coverage.	Increased capability does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	Tracking buoy will be on vessel, additional needs are met from Woodside owned stocks in King Bay Supply Facility (KBSF) and Exmouth or can be provided by service provider in a timely manner.	Cost for an additional satellite tracking buoy would be A\$200 per day or A\$6,000 to purchase.	This option is not adopted as the current capability meets the need, but additional units are available if required.	No
Additional trained aerial observers.	Current capability meets need. WEL has access to a pool of trained, competent observers at strategic locations to ensure timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL.	Current capability meets need. WEL has a pool of trained, competent observers at strategic locations to ensure timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL Aviation standards and guidelines ensure all aircraft crews are competent for their roles. WEL maintains a pool of trained and competent aerial observers with various home base locations to be called upon at the time of an incident. Regular audits of oil spill response organisations ensure training and competency is maintained.	Cost for additional trained aerial observers would be A\$2,000 per person per day.	This option is not adopted as the current capability meets the need, but additional observers are available via response contractors if required.	No

6.1.1.3 Improved control measures

Improved Control Measures considered

Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approx. Cost	Assessment conclusions	Implemented
Faster turnaround time from modelling contractor.	Improved control measure does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	External contractor on CIMT roster to be called as soon as required. However initial information needs to be gathered by CIMT team to request an accurate model. External contractor has person on call to respond from their own location.	Modelling service with a faster activation time would be achieved via membership of an alternative modelling service at an annual cost of A\$50,000 for 24-hour access plus an initial A\$5,000 per modelling run.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	No
Night-time aerial surveillance.	The risk of undertaking the aerial observations at night is disproportionate to the limited environmental benefit. The images would be of low quality and no visual cross reference verification is possible and as such the variable is not adopted.	Flights will only occur when deemed safe by the pilot. The risk of night operations is disproportionate to the benefit gained, as images from sensors (IR, UV, etc.) will be low quality. Flight time limitations will be adhered to.	No improvement can be made without risk to personnel health and safety and breaching Woodside's golden rules.	This option is not adopted as the safety considerations outweigh any environmental benefit gained.	No
Faster mobilisation time (for water quality monitoring).	Due to the restriction on accessing the spill location on day 1 there is no environmental benefit in having vessels available from day 1. The cost of having dedicated equipment and personnel is disproportionate to the environmental benefit. The availability of vessels and personnel meets the response need.	Operations are not feasible on day 1 as volatility has potential to cause health and safety concerns within the first 24 hours of the response. Current Woodside arrangements allow for water quality monitoring to commence by day 3. Shortening the timeframes for vessel availability would require dedicated response vessels on standby in Darwin and would accelerate the initiation of monitoring by 1 day.	Cost for purchase of equipment approx. A\$200,000. Ongoing costs per annum for cost of hire and pre-positioning for life of asset/activity would be larger than the purchase cost. Dedicated equipment and personnel, living locally and on short notice to mobilise. The cost would be approx. A\$1 million per annum, which is disproportionate to the incremental benefit this would provide, assets are already available on day 1. 2 integrated fleet vessels are available from day 1; however, these could be tasked with other operations.	This option is not adopted as the area could not be accessed earlier due to safety considerations. Additionally, the cost and complexity of implementation outweighs the benefits.	No

6.1.2 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the activity.

- Alternative
 - None selected
- Additional
 - None selected
- Improved
 - None selected

6.2 Source Control via Vessel SOPEP – ALARP Assessment

Alternative, Additional and Improved options have been assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.2.1 Source Control via Vessel SOPEP – Control Measure Options Analysis

6.2.1.1 Alternative control measures

Alternative Control Measures considered

Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approx. Cost	Implemented
No reasonably practical alternative control measures identified.				N/A

6.2.1.2 Additional Control Measures

Additional Control Measures considered

Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approx. Cost	Implemented
No reasonably practical alternative control measures identified.				N/A

6.2.1.3 Improved Control Measures

Improved Control Measures considered

Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approx. Cost	Implemented
No reasonably practical alternative control measures identified.				N/A

6.2.1.4 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the activity.

- Alternative
 - None selected
- Additional
 - None selected
- Improved
 - None selected

6.3 Oiled wildlife response – ALARP assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.3.1 Existing capability – wildlife response

Woodside’s existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, re-fuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside’s direct control.

6.3.2 Wildlife response – control measure options analysis

6.3.2.1 Alternative control measures

Alternative Control Measures considered <i>Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control</i>					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Direct contracts with service providers	This option duplicates the capability accessed through AMOSC and OSRL and would compete for the same resources. Does not provide a significant increase in environmental benefit.	These delivery options provide increased effectiveness through more direct communication and control of specialists. However, no significant net benefit is anticipated.	Duplication of capability – already subscribed to through contracts with AMOSC and OSRL	This option is not adopted as the existing capability meets the need.	No

6.3.2.2 Additional control measures

Additional Control Measures considered <i>Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures</i>					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Additional wildlife treatment systems	The selected delivery options provide access to call-off contracts with selected specialist providers. The agreements ensure these resources can be mobilised to meet the required response objectives, commensurate with the progressive nature of environmental impact and the time available to monitor hydrocarbon plume trajectories. Provides response equipment and personnel by Day 3. The additional cost in having a dedicated oiled wildlife response (equipment and personnel) in place is disproportionate to environmental benefit. These selected delivery options provide capacity to carry out an oiled wildlife response if contact is predicted and to scale up the response if required to treat widespread contamination. Current capability meets the needs required and there is no additional environmental benefit in adopting the improvements.	Although hydrocarbon contact above threshold concentrations with offshore waters is expected from day one, given the low likelihood of such an event occurring and the low environmental benefit of an offshore response, the cost of implementing measures to reduce the mobilisation time is considered disproportionate to the benefit. Additionally, the remote offshore location of the release site with no predicted contact of shoreline receptors provides sufficient opportunity for the ongoing monitoring and surveillance operations to inform the scale of the response. Numbers of oiled wildlife are expected to be low in the remote offshore setting of the oiled wildlife response, given the distance from known aggregation areas. Oiled wildlife response capacity would be addressed for open Commonwealth waters through the AMOSC arrangements, as informed by operational monitoring. The cost and organisational complexity of this approach is moderate, and the overall delivery effectiveness is high.	Additional wildlife response resources could total A\$1,700 per operational site per day.	This option is not adopted as the existing capability meets the need.	No
Additional trained wildlife responders	Current numbers meet the needs required and additional personnel are available through existing contracts with oil spill response organisations and environmental panel contractors. Numbers of oiled wildlife are expected to be low in the remote offshore setting of the oiled wildlife response, given the distance from known aggregation areas. The potential environmental benefit of training additional personnel is expected to be low.	The capability provides the capacity to treat approximately 600 wildlife units (primarily avian fauna) by day six, with additional capacity available from OSRL. Additional equipment and facilities would be required to support ongoing response, depending on the scale of the event and the impact to fauna. Materials for holding facilities, portable pools, enclosures and rehabilitation areas would be sourced as required.	Additional wildlife response personnel cost A\$2,000 per person per day.	This option is not adopted as the existing capability meets the need.	No

6.3.2.3 Improved control measures

Improved Control Measures considered

Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Faster mobilisation time for wildlife response.	<p>Response time is limited by specialist personnel mobilisation time. Current timing is sufficient for expected first shoreline impact.</p> <p>This control measure provides increased effectiveness through faster mobilisation of specialists. However, no significant net environmental benefit is expected due to shoreline stranding times.</p> <p>The cost of having dedicated equipment and personnel available to respond faster is considered grossly disproportionate to the environmental benefit.</p>	<p>Pre-positioning vessels or equipment would reduce mobilisation time for oiled wildlife response activities. However, given the effectiveness of an oiled wildlife response is expected to be generally low, an earlier response would provide a marginal increase in environmental benefit.</p> <p>The selected delivery options provide the capacity to mobilise an oiled wildlife response capable of treating up to 600 wildlife from at least Day 6 and exceeds the maximum estimated Level three OWR response thought to be applicable. This delivery option provides the maximum expertise pooled across the participating operators, backed up by the international resources provided by OSRL.</p> <p>The availability of vessels and personnel meets the response need.</p>	Wildlife response packages to preposition at vulnerable sites identified through the deterministic modelling cost A\$700 per package per day.	This option is not adopted as the existing capability meets the need.	No

6.3.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the activity.

- Alternative
 - None selected
- Additional
 - None selected
- Improved
 - None selected

6.4 Waste management – ALARP assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.4.1 Existing capability – waste management

Woodside’s existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, re-fuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside’s direct control.

6.4.2 Waste management – control measure options analysis

6.4.2.1 Alternative control measures

Alternative Control Measures considered					
<i>Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control</i>					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified.					

6.4.2.2 Additional control measures

Additional Control Measures considered					
<i>Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures</i>					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Increased waste storage capability	The procurement of waste storage equipment options on the day of the event will allow immediate response and storage of collected waste. The environmental benefit of immediate waste storage is to reduce ecological consequence by safely securing waste, allowing continuous response operations to occur.	Access to Veolia’s storage options provides the resources required to store and transport sufficient waste to meet the need. Access to waste contractors existing facilities enables waste to be stockpiled and gradually processed within the regional waste handling facilities. Additional temporary storage equipment is available through existing third-party contracts and arrangements with OSRL. Existing arrangements meet identified need for the activity.	Cost for increased waste disposal capability would be approximately A\$1,300 per m ³ . Cost for increased onshore temporary waste storage capability would be approximately A\$40 per unit per day.	This option is not adopted as the existing capability meets the need.	No

6.4.2.3 Improved control measures

Improved Control Measures considered					
<i>Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility</i>					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Faster response	The environmental benefit from successful waste storage will reduce pressure on the treatment and disposal facilities reducing ecological consequences by safely securing waste. In addition, waste storage and transport will allow continuous response operations to occur. This delivery option would increase known available storage, eliminating the risk of additional resources not being available at the time of the event. However, the environmental benefit of Woodside procuring additional waste storage is considered minor as the risk of additional storage not being available at the time of the event is considered low and existing arrangements provide adequate storage to support the response.	The credible scenario for this activity does not predict any shoreline impact and at-sea response is not appropriate for a spill of Marine Diesel thus waste storage needs will be minimal. Woodside already maintains an equipment stockpile in Exmouth to enable shorter response times to incidents. This stockpile includes temporary waste storage equipment. Woodside has access to stockpiles of waste storage and equipment in Dampier and Exmouth through existing contracts and arrangements.	The incremental benefit of having a dedicated local Woodside owned stockpile of waste equipment and transport is considered minor and cost is considered disproportionate to the benefit gained given there is no predicted shoreline impact.	This option is not adopted as the existing capability meets the need.	No

6.4.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the activity.

- Alternative
 - None selected

- Additional
 - None selected
- Improved
 - None selected

6.5 Scientific Monitoring – ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.5.1 Existing Capability – Scientific Monitoring

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, re-fuelling/re-stocking provisions, and other similar logistic and operational limitations that are beyond Woodside's direct control.

6.5.2 Scientific Monitoring – Control Measure Options Analysis

6.5.2.1 Alternative control measures

Alternative Control Measures considered					
Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control					
Ref	Control Measure Category	Option considered	Implemented	Environmental Consideration	Feasibility / Cost
SM01	System	Analytical laboratory facilities closer to the likely spill affected area	No	SM01 water quality monitoring requires water samples to be transported to National Association of Testing Authorities (NATA) rated laboratories in Perth or interstate. Consider the benefit of laboratory access and transportation times to deliver water samples and complete lab analysis. There is a time lag from collection of water samples to being in receipt of results and confirming hydrocarbon contact to sensitive receptors). The environmental consideration of having access to suitable laboratory facilities in Exmouth or Karratha to carry out the hydrocarbon analysis would provide faster turnaround in reporting of results only by a matter of days (as per the time to transport samples to laboratories).	Laboratory facilities and staff available at locations closer to the spill affected area can reduce reporting times only to a moderate degree (days) with associated high costs of maintaining capability do not improve the environmental benefit.
SM01	System	Dedicated contracted SMP vessel (exclusive to Woodside)	No	Would provide faster mobilisation time of scientific monitoring resources, environmental benefit associated with faster mobilisation time would be minor compared to selected options.	Chartering and equipping additional vessels on standby for scientific monitoring has been considered. The option is reasonably practicable but the sacrifice (charter costs and organisational complexity) is significant, particularly when compared with the anticipated availability of vessels and resources within in the required timeframes. The selected delivery provides capability to meet the scientific monitoring objectives, including collection of pre-emptive data where baseline knowledge gaps are identified for receptor locations where spill predictions of time to contact are >10 days. The effectiveness of this alternative control (weather dependency, availability and survivability) is rated as very low The cost and organisational complexity of employing a dedicated response vessel is considered disproportionate to the potential environmental benefit by adopting these delivery options.

6.5.2.2 Additional control measures

Additional Control Measures considered					
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures					
Ref	Control Measure Category	Option considered	Implemented	Environmental Consideration	Feasibility / Cost
SM01	System	Determine baseline data needs and provide implementation plan in the event of an unplanned hydrocarbon release	Yes	Address resourcing needs to collect post spill (pre-contact) baseline data as spill expands in the event of a loss of well containment from the PAP activities.	Woodside relies on existing environmental baseline for receptors which have predicted hydrocarbon contact (above environment threshold) <10 days and acquiring pre-emptive data in the event of a loss of well containment from the PAP activities based on receptors predicted to have hydrocarbon contact >10 days. Ensure there is appropriate baseline for key receptors for all geographic locations that are potentially impacted <10 days of spill event, where practicable. Address resourcing needs to collect pre-emptive baseline as spill expands in the event of an instantaneous marine diesel spill from the activities.

6.5.3 Improved Control Measures

Improved Control Measures considered – No reasonably practicable improved Control Measures identified.

6.5.4 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
 - None selected
- Additional
 - Determine baseline data needs and activate SMPs for any identified PBAs in the event of an unplanned hydrocarbon release
- Improved
 - None selected

6.5.5 Operational Plan

Key actions from the Scientific Monitoring Program Operational Plan for implementing the response are outlined in **Table 6-1**.

Table 6-1: Scientific monitoring program operational plan actions

Responsibility	Action
Activation	
CIMT Planning (CIMT Planning – Environment Unit)	Mobilise SMP Lead/Manager and SMP Coordinator to the CIMT Planning function.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager and SMP Coordinator)	Constantly assess all outputs from OM01, OM02 and OM03 (Section 5 and ANNEX B: Operational Monitoring Activation and Termination Criteria to determine receptor locations and receptors at risk. Confirm sensitive receptors likely to be exposed to hydrocarbons, timeframes to specific receptor locations and which SMPs are triggered. Review baseline data for receptors at risk.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager and SMP Coordinator)	SMP co-ordinator stands up the SMP contractor. Stands up subject matter experts, if required.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager SMP Coordinator, SMP standby contractor SMP manager)	Establish if, and where, pre-contact baseline data acquisition is required. Determine practicable baseline acquisition program based on predicted timescales to contact and anticipated SMP mobilisation times. Determine scope for preliminary post-contact surveys during the Response Phase. Determine which SMP activities are required at each location based on the identified receptor sensitivities.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP	If response phase data acquisition is required, stand up the contractor SMP teams for data acquisition and instruct them to standby awaiting further details for mobilisation from the CIMT.

Responsibility	Action
standby contractor SMP manager)	
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP standby contractor SMP manager)	SMP contractor, SMP standby contractor to prepare the Field Implementation Plan. Prepare and obtain sign-off of the Response Phase SMP work plan and Field Implementation Plan. Update the IAP.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator SMP standby contractor SMP manager)	Liaise with CIMT Logistics, and determine the status and availability of aircraft, vessels and road transportation available to transport survey personnel and equipment to point of departure. Engage with SMP standby contractor SMP Manager and CIMT Logistics to establish mobilisation plan, secure logistics resources and establish ongoing logistical support operations, including: <ul style="list-style-type: none"> • Vessels, vehicles and other logistics resources • Vessel fit-out specifications (as • Detailed in the Scientific Monitoring Program Operational Plan • Equipment storage and pick-up locations • Personnel pick-up/airport departure locations • Ports of departure • Land based operational centres and forward operations bases Accommodation and food requirements.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP standby contractor (SMP manager)	Confirm communications procedures between Woodside SMP team, SMP contractor SMP Duty Manager, SMP Team Leads and Operations Coordinator (CIMT).
Mobilisation	
CIMT Logistics	Engage vessels and vehicles and arrange fitting out as specified by the mobilisation Plan Confirm vessel departure windows and communicate with the SMP contractor SMP Duty Manager. Agree SMP mobilisation timeline and induction procedures with the Operations Coordinator (CIMT).
CIMT Logistics	Coordinate with SMP contractor SMP Duty Manager to mobilise teams and equipment according to the logistics plan and Sector induction procedures.
SMP Survey Team Leads	SMP Survey Team Leader(s) coordinate on-ground/on-vessel mobilisations and support services with the Operations Coordinator (CIMT).

6.5.6 ALARP and Acceptability Summary

ALARP and Acceptability Summary		
Scientific Monitoring		
ALARP Summary	X	All known reasonably practicable control measures have been adopted
	X	Additional Measures: Determine baseline data needs and activate SMPs for any identified PBAs in the event of an unplanned hydrocarbon release
		No reasonably practical additional, alternative, and/or improved control measure exists
	<p>The resulting scientific monitoring capability has been assessed against the worst-case credible spill scenarios. The range of strategies provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of impacts.</p> <p>All known reasonably practicable control measures have been adopted with the cost and organisational complexity of these options determined to be Moderate and the overall delivery effectiveness considered Medium. The SMP's main objectives can be met, with the addition of one alternative control measures to provide further benefit.</p>	
Acceptability Summary	<ul style="list-style-type: none"> • The control measures selected for implementation manage the potential impacts and risks to ALARP. • In the event of a hydrocarbon spill for the PAP, the control measures selected, meet or exceed the requirements of Woodside Management System and industry best-practice. • Throughout the PAP, relevant Australian standards and codes of practice will be followed to evaluate the impacts from an unplanned hydrocarbon release. • The level of impact and risk to the environment has been considered with regard to the principles of Environmentally Sustainable Development (ESD); and risks and impacts from a range of identified scenarios were assessed in detail. The control measures described consider the conservation of biological and ecological diversity, through both the selection of control measures and the management of their performance. The control measures have been developed to account for the worst-case credible case scenario, and uncertainty has not been used as a reason for postponing control measures. 	
<p>On the basis from the ALARP impact assessment above and in Section 6 of the EP Woodside considers the adopted controls discussed, manage the impacts and risks associated with implementing scientific monitoring activities to a level that is ALARP and acceptable.</p>		

7 ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

The implementation of response techniques may modify the impacts and risks identified in the EP and response activities can introduce additional impacts and risks from response operations themselves. Therefore, it is necessary to complete an assessment to ensure these impacts and risks have been considered and specific measures are put in place to continually review and manage these further impacts and risks to ALARP and Acceptable levels. A simplified assessment process has been used to complete this task which covers the identification, analysis, evaluation and treatment of impacts and risks introduced by responding to the event.

7.1 Identification of impacts and risks from implementing response techniques

Each of the control measures can modify the impacts and risks identified in the EP. These impacts and risks have been previously assessed within the scope of the EP. Refer to the EP for details regarding how these risks are being managed. They are not discussed further in this document.

- Atmospheric emissions
- Routine and non-routine discharges
- Physical presence, proximity to other vessels (shipping and fisheries)
- Routine acoustic emissions vessels
- Lighting for night work/navigational safety
- Invasive marine species
- Collision with marine fauna
- Disturbance to Seabed

Additional impacts and risks associated with the control measures not included within the scope of the EP include:

- Vessel operations and anchoring
- Additional stress or injury caused to wildlife
- Waste generation

7.2 Analysis of impacts and risks from implementing response techniques

The table below compares the adopted control measures for this activity against the environmental values that can be affected when they are implemented.

Table 7-1: Analysis of risks and impacts

	Environmental Value						
	Soil and Groundwater	Marine Sediment Quality	Water Quality	Air Quality	Ecosystems/Habitat	Species	Socio-Economic
Monitor and evaluate		✓	✓		✓	✓	
Source control		✓	✓	✓	✓	✓	✓
Oiled Wildlife					✓	✓	
Scientific Monitoring		✓	✓		✓	✓	✓
Waste Management	✓			✓	✓	✓	✓

7.3 Evaluation of impacts and risks from implementing response techniques

7.3.1 Vessel operations

During the implementation of response techniques, where water depths allow, it is possible that response vessels will be required to anchor (e.g. during shoreline surveys). The use of vessel anchoring will be minimal and likely to occur when the impacted shoreline is inaccessible via road. Anchoring in the nearshore environment of sensitive receptor locations will have the potential to impact coral reef, seagrass beds and other benthic communities in these areas. Recovery of benthic communities from anchor damage depends on the size of anchor and frequency of anchoring. Impacts would be highly localised (restricted to the footprint of the vessel anchor and chain) and temporary, with full recovery expected.

7.3.2 Additional stress or injury caused to wildlife

Additional stress or injury to wildlife could be caused through the following phases of a response:

- Capturing wildlife
- Transporting wildlife
- Stabilisation of wildlife
- Cleaning and rinsing of oiled wildlife
- Rehabilitation (e.g. diet, cage size, housing density)
- Release of treated wildlife

Inefficient capture techniques have the potential to cause undue stress, exhaustion or injury to wildlife, additionally pre-emptive capture could cause undue stress and impacts to wildlife when there are uncertainties in the forecast trajectory of the spill. During the transportation and stabilisation phases there is the potential for additional thermoregulation stress on captured wildlife. Additionally, during the cleaning process, it is important personnel undertaking the tasks are familiar with the relevant techniques to ensure that further injury and the removal of water proofing feathers are managed and mitigated. Finally, during the release phase it's important that wildlife is not released back into a contaminated environment.

7.3.3 Waste generation

Implementing the selected response techniques will result in the generation of the following waste streams that will require management and disposal:

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- Liquids (recovered oil/water mixture), recovered from oiled wildlife response operations
- Semi-solids/solids (oily solids), collected during oiled wildlife response operations
- Debris collected during oiled wildlife response.

If not managed and disposed of correctly, wastes generated during the response have the potential for secondary contamination, impacts to wildlife through contact with or ingestion of waste materials and contamination risks if not disposed of correctly onshore.

7.4 Treatment of impacts and risks from implementing response techniques

In respect of the impacts and risks assessed the following treatment measures have been adopted. It must be recognised that this environmental assessment is seeking to identify how to maintain the level of impact and risks at levels that are ALARP and of an acceptable level rather than exploring further impact and risk reduction. It is for this reason that the treatment measures identified in this assessment will be captured in Operational Plans, Tactical Response Plans, and/or First Strike Response Plans.

7.4.1 Vessel operations and access to the nearshore environment

- If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified (PS 7.1).

7.4.2 Additional stress or injury caused to wildlife

- Oiled wildlife operations (including hazing) would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA. (PS 9.3).

7.4.3 Waste generation

- All oiled wildlife response sites zoned and marked before operations commence to prevent secondary contamination and minimise the mixing of clean and oiled waste (PS 11.1).

8 ALARP CONCLUSION

An analysis of alternative, additional and improved control measures has been undertaken to determine their reasonableness and practicability. The tables in **Section 6** document the considerations made in this evaluation. Where the costs of an alternative, additional, or improved control measure have been determined to be clearly disproportionate to the environmental benefit gained from its adoption it has been rejected. Where this is not considered to be the case the control measure has been adopted.

The risks from a hydrocarbon spill have been reduced to ALARP because:

- Woodside has a significant hydrocarbon spill response capability to respond to the WCCS through the control measures identified.
- New and modified impacts and risks associated with implementing response techniques have been considered and will not increase the risks associated with the activity.
- A consideration of alternative, additional, and improved control measures identified any other control measures that delivered proportionate environmental benefit compared to the cost of adoption for this activity ensuring that:
 - All known, reasonably practicable control measures have been adopted.
 - No additional, reasonably practicable alternative and/or improved control measures would provide further environmental benefit.
 - No reasonably practical additional, alternative, and/or improved control measure exists.
- A structured process for considering alternative, additional, and improved control measures was completed for each control measure.
- The evaluation was undertaken based on the outputs of the WCCS so that the capability in place is sufficient for all other scenario from this activity.
- The likelihood of the WCCS spill has been ignored in evaluating what was reasonably practicable.

9 ACCEPTABILITY CONCLUSION

Following the ALARP evaluation process, Woodside deems the hydrocarbon spill risks and impacts have been reduced to an acceptable level by meeting all of the following criteria:

- Techniques are consistent with Woodside's processes and relevant internal requirements including policies, culture, processes, standards, structures and systems.
- Levels of risk/ impact are deemed acceptable by relevant persons/ organisations and are aligned with the uniqueness of, and/or the level of protection assigned to the environment, its sensitivity to pressures introduced by the activity, and the proximity of activities to sensitive receptors, and have been aligned with Part 3 of the EPBC Act.
- Selected control measures meet requirements of legislation and conventions to which Australia is a signatory (e.g. MARPOL, the World Heritage Convention, the Ramsar Convention, and the Biodiversity Convention etc.). In addition to these, other non-legislative requirements met include:
 - Australian IUCN reserve management principles for Commonwealth marine protected areas and bioregional marine plans.
 - National Water Quality Management Strategy and supporting guidelines for marine water quality).
 - Conditions of approval set under other legislation.
 - National and international requirements for managing pollution from ships.
 - National biosecurity requirements.
- Industry standards, best practices and widely adopted standards and other published materials have been used and referenced when defining acceptable levels. Where these are inconsistent with mandatory/ legislative regulations, explanation has been provided for the proposed deviation. Any deviation produces the same or a better level of environmental performance (or outcome).

10 REFERENCES

- ANZECC / ARMCANZ (2000). Australian and New Zealand guidelines for fresh and marine water quality. Volume 1, The guidelines / Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand.
- Australian Maritime Safety Authority. The National Plan Oil Spill Control Agents List. Available from: <https://www.amsa.gov.au/environment/maritime-environmental-emergencies/national-plan/General-Information/control-agents/list/index.asp> [Accessed 23 June 2014]
- Department of Water and Environmental Regulation (WA) (2020) Index of Marine Surveys for Assessment (IMSA)
<https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort>.
- Edwards v National Coal Board (1949). 1 All ER 743 CA
- French-McCay, D.P. (2003). Development and application of damage assessment modeling: Example assessment for the North Cape oil spill. *Mar. Pollut. Bull.* 47(9-12), 341-359.
- French-McCay, D.P. (2004). Oil spill impact modeling: development and validation. *Environ. Toxicol. Chem.* 23(10), 2441-2456.
- French, D., Reed, M., Jayko, K., Feng, S., Rines, H., Pavignano, S. (1996). The CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments (NRDAM/CME), Technical Documentation, Vol. I - Model Description, Final Report. Office of Environmental Policy and Compliance, U.S. Department of the Interior. Washington, D.C.: Contract No. 14-0001-91-C-11
- French, D.P., H. Rines and P. Masciangioli (1997). Validation of an Orimulsion spill fates model using observations from field test spills. In: Proceedings of the 20th AMOP Technical Seminar, Environment and Climate Change Canada, Ottawa, ON, Canada, 20, 933-961.
- French, D.P. and H. Rines (1997). Validation and use of spill impact modeling for impact assessment. *International Oil Spill Conference Proceedings*, Vol. 1997, No. 1, pp. 829-834. [<https://doi.org/10.7901/2169-3358-1997-1-829>]
- French-McCay, D.P. and J.J. Rowe (2004). Evaluation of bird impacts in historical oil spill cases using the SIMAP oil spill model. In Proceedings of the 27th AMOP Technical Seminar, Environment and Climate Change Canada, Ottawa, ON, Canada, 27, 421-452.
- French-McCay, D.P, C. Mueller, K. Jayko, B. Longval, M. Schroeder, J.R. Payne, E. Terrill, M. Carter, M. Otero, S. Y. Kim, W. Nordhausen, M. Lampinen, and C. Ohlmann (2007). Evaluation of Field-Collected Data Measuring Fluorescein Dye Movements and Dispersion for Dispersed Oil Transport Modeling. In: Proceedings of the 30th Arctic and Marine Oil Spill Program (AMOP) Technical Seminar, Emergencies Science Division, Environment Canada, Ottawa, ON, Canada, pp.713-754.
- French McCay, D.P, K. Jayko, Z. Li, M. Horn, Y. Kim, T. Isaji, D. Crowley, M. Spaulding, L. Decker, C. Turner, S. Zamorski, J. Fontenault, R. Shmookler, and J.J. Rowe (2015). Technical Reports for Deepwater Horizon Water Column Injury Assessment – WC_TR14: Modeling Oil Fate and Exposure Concentrations in the Deepwater Plume and Cone of Rising Oil Resulting from the Deepwater Horizon Oil Spill. DWH NRDA Water Column Technical Working Group Report. Prepared for National Oceanic and Atmospheric Administration by RPS ASA, South Kingstown, RI, USA. September 29, 2015. Administrative Record no. DWH-AR0285776.pdf [<https://www.doi.gov/deepwaterhorizon/adminrecord>]

- French-McCay, D.P, Z. Li, M. Horn, D. Crowley, M. Spaulding, D. Mendelsohn, and C. Turner (2016). Modeling oil fate and subsurface exposure concentrations from the Deepwater Horizon oil spill. In: Proceedings of the 39th AMOP Technical Seminar, Environment and Climate Change Canada, Ottawa, ON, Canada, 39, 115-150.
- National Offshore Petroleum Safety and Environmental Management Authority (2019) Bulletin #1 Oil Spill Modelling <https://www.nopsema.gov.au/assets/Bulletins/A652993.pdf>.
- National Offshore Petroleum Safety and Environmental Management Authority. 2021. Oil Pollution Risk Management, Guidance Note N-04750-GN1488, Perth, WA.
- Payne, J.R., E. Terrill, M. Carter, M. Otero, W. Middleton, A. Chen, D. French-McCay, C. Mueller, K. Jayko, W. Nordhausen, R. Lewis, M. Lampinen, T. Evans, C. Ohlmann, G.L. Via, H. Ruiz-Santana, M. Maly, B. Willoughby, C. Varela, P. Lynch and P. Sanchez (2007a). Evaluation of Field-Collected Drifter and Subsurface Fluorescein Dye Concentration Data and Comparisons to High Frequency Radar Surface Current Mapping Data for Dispersed Oil Transport Modeling. In: Proceedings of the Thirtieth Arctic and Marine Oil Spill Program (AMOP) Technical Seminar, Emergencies Science Division, Environment Canada, Ottawa, ON, pp. 681-711.
- Payne, J.R., D. French-McCay, C. Mueller, K. Jayko, B. Longval, M. Schroeder, E. Terrill, M. Carter, M. Otero, S.Y. Kim, W. Middleton, A. Chen, W. Nordhausen, R. Lewis, M. Lampinen, T. Evans, and C. Ohlmann (2007b). Evaluation of Field-Collected Drifter and In Situ Fluorescence Data Measuring Subsurface Dye Plume Advection/Dispersion and Comparisons to High Frequency Radar-Observation System Data for Dispersed Oil Transport Modeling, Draft Final Report 06-084, Coastal Response Research Center, NOAA/University of New Hampshire, Durham, NH, 98 p. plus 8 appendices. Available at <http://www.crrc.unh.edu/>
- Simpson SL, Batley GB and Chariton AA (2013). Revision of the ANZECC/ARMCANZ Sediment Quality Guidelines. CSIRO and Water Science Report 08/07. Land and Water, pp. 132.
- Spaulding, M.S., D. Mendelsohn, D. Crowley, Z. Li, and A. Bird (2015). Draft Technical Reports for Deepwater Horizon Water Column Injury Assessment: WC_TR.13: Application of OILMAP DEEP to the Deepwater Horizon Blowout. DWH NRDA Water Column Technical Working Group Report. Prepared for National Oceanic and Atmospheric Administration by RPS ASA, South Kingstown, RI 02879. Administrative Record no. DWH-AR0285366.pdf [<https://www.doi.gov/deepwaterhorizon/adminrecord>]
- [WAOWRP] Department of Parks and Wildlife and Australian Marine Oil Spill Centre (2014). Western Australian Oiled Wildlife Response Plan.

11 GLOSSARY AND ABBREVIATIONS

11.1 Glossary

Term	Description / Definition
ALARP	Demonstration through reasoned and supported arguments that there are no other practicable options that could reasonably be adopted to reduce risks further.
Availability	The availability of a control measure is the percentage of time that it is capable of performing its function (operating time plus standby time) divided by the total period (whether in service or not). In other words, it is the probability that the control has not failed or is undergoing a maintenance or repair function when it needs to be used.
Control	The means by which risk from events is eliminated or minimised.
Control effectiveness	A measure of how well the control measures perform their required function.
Control measure (risk control measure)	The features that eliminate, prevent, reduce or mitigate the risk to environment associated with PAP.
Credible spill scenario	A spill considered by Woodside as representative of maximum volume and characteristics of a spill that could occur as part of the PAP.
Dependency	The degree of reliance on other systems in order for the control measure to be able to perform its intended function.
Environment that may be affected	The summary of quantitative modelling where the marine environment could be exposed to hydrocarbons levels exceeding hydrocarbon threshold concentrations.
Incident	An event where a release of energy resulted in or had (with) the potential to cause injury, ill health, damage to the environment, damage to equipment or assets or company reputation.
Performance outcome	A statement of the overall goal or outcome to be achieved by a control measure
Performance standard	The parameters against which [risk] controls are assessed to ensure they reduce risk to ALARP. A statement of the key requirements (indicators) that the control measure has to achieve in order to perform as intended in relation to its functionality, availability, reliability, survivability and dependencies.
Preparedness	Measures taken before an incident in order to improve the effectiveness of a response
Reasonably practicable	... a computation ... made by the owner, in which the quantum of risk is placed on one scale and the sacrifice involved in the measures necessary for averting the risk (whether in money, time or trouble) [showing whether or not] that there is a gross disproportion between them ... made by the owner at a point of time anterior to the accident. (Judgement: Edwards v National Coal Board [1949])
Receptors at risk	Physical, biological and social resources identified as at risk from hydrocarbon contact using oil spill modelling predictions.
Receptor areas	Geographically referenced areas such as bays, islands, coastlines and/or protected area (WHA, Commonwealth or State marine reserve or park) containing one or more receptor type, e.g., Gascoyne AMP.
Receptor Sensitivities	This is a classification scheme to categorise receptor sensitivity to an oil spill. The Environmental Sensitivity Index (ESI) is a numerical classification of the relative sensitivity of a particular environment (particularly different shoreline types) to an oil spill. Refer to the Woodside Oil Pollution Emergency Arrangements (Australia) for more details.
Regulator	NOPSEMA are the Environment Regulator under the Environment Regulations.
Reliability	The probability that at any point in time a control measure will operate correctly for a further specified length of time.

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Term	Description / Definition
Response technique	The key priorities and objectives to be achieved by the response plan. Measures taken in response to an event to reduce or prevent adverse consequences.
Survivability	Whether or not a control measure is able to survive a potentially damaging event is relevant for all control measures that are required to function after an incident has occurred.
Threshold	Hydrocarbon threshold concentrations applied to the risk assessment to evaluate hydrocarbon spills. These are defined as: surface hydrocarbon concentration – ≥ 10 g/m ² , dissolved – ≥ 50 ppb and entrained hydrocarbon concentrations – ≥ 100 ppb.

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11.2 Abbreviations

Abbreviation	Meaning
ADIOS	Automated Data Inquiry for Oil Spills
AIIMS	Australasian Inter-Service Incident Management System
ALARP	As low as reasonably practicable
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
APASA	Asia Pacific ASA
BAOAC	Bonn Agreement Oil Appearance Code
CIMT	Corporate Incident Management Team
DM	Duty Manager
DoT	Western Australia Department of Transport
DBCA	Western Australia Department of Biodiversity, Conservation and Attractions (former Western Australian Department of Parks and Wildlife)
EMBA	Environment that May Be Affected
EP	Environment Plan
Environment Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009
ESI	Environmental Sensitivity Index
ESD	Ecologically Sustainable Development
ESP	Environmental Services Panel
FSP	First Strike Response Plan
GIS	Geographic Information System
GPS	Global Positioning System
HSP	Hydrocarbon Spill Preparedness
IAP	Incident Action Plan
IMT	Incident Management Team
IPIECA	International Petroleum Industry Environment Conservation Association
ITOPF	International Tanker Owners Pollution Federation
IUCN	International Union for Conservation of Nature
KBSF	King Bay Supply Facility
KIMC	Karratha Incident Management Centre
KSAT	Kongsberg Satellite
ME	Monitor and Evaluate
MoU	Memorandum of Understanding
NEBA	Net Environmental Benefit Analysis
NOAA	National Oceanic and Atmospheric Administration
NRT	National Response Team
OILMAP	Oil Spill Model and Response System
OPEA	Oil Pollution Emergency Arrangements

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Abbreviation	Meaning
OPEP	Oil Pollution Emergency Plan
OPGGSA	Offshore Petroleum and Greenhouse Gas Storage Act
OSMP	Operational and Scientific Monitoring Program
OSRL	Oil Spill Response Limited
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response
OWRP	Oiled Wildlife Response Plan
OWROP	Regional Oiled Wildlife Response Operational Plan
PAP	Petroleum Activities Program
PBA	Pre-emptive Baseline Areas
PPA	Priority Protection Area
PPB	Parts per billion
PPM	Parts per million
PS	Performance standard
RPA	Response Protection Area
SIMAP	Integrated Oil Spill Impact Model System
SMP	Scientific monitoring program
SOP	Standard Operating Procedure
TRP	Tactical Response Plan
WHA	World Heritage Area
Woodside/ WEL	Woodside Energy Limited
WCC	Woodside Communication Centre
WCCS	Worst Case Credible Scenario

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ANNEX A: NET ENVIRONMENTAL BENEFIT ANALYSIS DETAILED OUTCOMES

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A NEBA has been conducted to assess the net environmental benefit of different response techniques to selected receptors in the event of an oil spill from the PAP for marine diesel. The complete list of potential receptor locations within the EMBA for the PAP is included in Section 6 of the EP.

The NEBA was conducted for open Commonwealth waters and the Gascoyne AMP (identified as an RPA). The EMBA was not predicted by modelling to overlap any RPAs above the surface threshold of >1 g/m² or the shoreline accumulation threshold of >10 g/m². However, the Gascoyne AMP was predicted to be contacted by hydrocarbons above the entrained threshold of 100 ppb (prior to day 14).

The detailed NEBA assessment outcomes are shown below.

The full NEBA assessments are available here ([Link](#)).

Table A-1: NEBA assessment technique recommendations for a surface release due to a vessel tank rupture of marine diesel (Credible Scenario-01)

Receptor	Monitor and Evaluate	Containment and Recovery	Dispersant application: > 20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled Wildlife Response	In situ burning	Mechanical dispersion	Source Control
Open Commonwealth waters (Operational Area)	Yes	No	No	No	No	No	No	Potentially	No	No	Yes
Gascoyne AMP	Yes	No	No	No	No	No	No	Potentially	No	No	Yes

Overall assessment

Sensitive receptor (Sites identified in EP)	Monitor and Evaluate	Containment and Recovery	Dispersant application: > 20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled Wildlife Response	In situ burning	Mechanical dispersion	Source Control
Is this response Practicable?	Yes	No	No	No	No	No	No	Potentially	No	No	Yes
NEBA identifies Response potentially of Net Environmental Benefit?	Yes	No	No	No	No	No	No	Potentially	No	No	Yes

NEBA Impact Ranking Classification Guidance

To reduce variability between assessments, the following ranking descriptions have been devised to guide the workshop process:

		Degree of impact		Potential duration of impact	Equivalent Woodside Corporate Risk Matrix Consequence Level
Positive	3P	Major	Likely to prevent: <ul style="list-style-type: none"> behavioural impact to biological receptors behavioural impact to socio-economic receptors e.g. changes to day-to-day business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches) or regulatory designations. 	Decrease in duration of impact by > 5 years	N/A
	2P	Moderate	Likely to prevent: <ul style="list-style-type: none"> significant impact to a single phase of reproductive cycle of biological receptors detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors. 	Decrease in duration of impact by 1–5 years	N/A
	1P	Minor	Likely to prevent impacts on: <ul style="list-style-type: none"> significant proportion of population or breeding stages of biological receptors socio-economic receptors such as: <ul style="list-style-type: none"> significant impact to the sensitivity of protective designation; or significant and long-term impact to business/industry. 	Decrease in duration of impact by several seasons (< 1 year)	N/A
	0	Non-mitigated spill impact	No detectable difference to unmitigated spill scenario.		
Negative	1N	Minor	Likely to result in: <ul style="list-style-type: none"> behavioural impact to biological receptors behavioural impact to socio-economic receptors e.g. changes to day-to-day business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches), or regulatory designations. [Note 1]	Increase in duration of impact by several seasons (< 1 year)	Increase in risk by one sub-category, without changing category (e.g. Minor (E) to Minor (D))
	2N	Moderate	Likely to result in: <ul style="list-style-type: none"> significant impact to a single phase of reproductive cycle for biological receptors; or detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors. This level of negative impact is recoverable and unlikely to result in closure of business/industry in the region. 	Increase in duration of impact by 1–5 years	Increase in risk by one category (e.g. Minor (D) to Moderate (C or B))
	3N	Major	Likely to result in impacts on: <ul style="list-style-type: none"> significant proportion of population or breeding stages of biological receptors socio-economic receptors resulting in either: <ul style="list-style-type: none"> significant impact to the sensitivity of protective designation; or significant and long-term impact to business/industry. 	Increase in duration of impact by > 5 years or unrecoverable	Increase in risk by two categories (e.g. Minor (E) to Major (A))

NOTE 1: the maximum likely impact should be considered; for example, if a spill were to directly impact the behaviour that results in an impact to reproduction and/or the breeding population (such as fish failing to aggregate to spawn), then the score should be a 2 or 3 rather than a 1. Similarly, if a change in behaviour resulted in an increased risk of mortality of a population, then it should be scored as a 2 or 3.

ANNEX B: OPERATIONAL MONITORING ACTIVATION AND TERMINATION CRITERIA

Table B-1: Operational monitoring objectives, triggers and termination criteria

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
<p>Operational Monitoring Operational Plan 1 (OM01) Predictive Modelling of Hydrocarbons to Assess Resources at Risk</p>	<p>OM01 focuses on the conditions that have prevailed since a spill commenced, as well as those that are forecasted in the short term (1–3 days ahead) and longer term. OM01 utilises computer-based forecasting methods to predict hydrocarbon spill movement and guide the management and execution of spill response operations to maximise the protection of environmental resources at risk.</p> <p>The objectives of OM01 are to:</p> <ul style="list-style-type: none"> • Provide forecasting of the movement and weathering of spilled hydrocarbons • Identify resources that are potentially at risk of contamination • Provide simulations showing the outcome of alternative response options (booming patterns etc.) to inform on-going Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP 	<p>OM01 will be triggered immediately following a level 2/3 hydrocarbon spill.</p>	<p>The criteria for the termination of OM01 are:</p> <ul style="list-style-type: none"> • The hydrocarbon discharge has ceased • Response activities have ceased • Hydrocarbon spill modelling (as verified by OM02 surveillance observations) predicts no additional natural resources will be impacted

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
<p>Operational Monitoring Operational Plan 2 (OM02)</p> <p>Surveillance and reconnaissance to detect hydrocarbons and resources at risk</p>	<p>OM02 aims to provide regular, on-going hydrocarbon spill surveillance throughout a broad region, in the event of a spill.</p> <p>The objectives of OM02 are:</p> <ul style="list-style-type: none"> • Verify spill modelling results and recalibrate spill trajectory models (OM01) • Understand the behaviour, weathering and fate of surface hydrocarbons • Identify environmental receptors and locations at risk or contaminated by hydrocarbons • Inform ongoing Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP • To aid in the subsequent assessment of the short- to long-term impacts and/or recovery of natural resources (assessed in SMPs) by ensuring that the visible cause and effect relationships between the hydrocarbon spill and its impacts to natural resources have been observed and recorded during the operational phase. 	<p>OM02 will be triggered immediately following a level 2/3 hydrocarbon spill.</p>	<p>The termination triggers for the OM02 are:</p> <ul style="list-style-type: none"> • 72 hours has elapsed since the last confirmed observation of surface hydrocarbons • Latest hydrocarbon spill modelling results (OM01) do not predict surface exposures at visible levels
<p>Operational Monitoring Operational Plan 3 (OM03)</p> <p>Monitoring of hydrocarbon presence, properties, behaviour and weathering in water</p>	<p>OM03 will measure surface, entrained and dissolved hydrocarbons in the water column to inform decision-making for spill response activities.</p> <p>The specific objectives of OM03 are as follows:</p> <ul style="list-style-type: none"> • Detect and monitor for the presence, quantity, properties, behaviour and weathering of surface, entrained and dissolved hydrocarbons • Verify predictions made by OM01 and observations made by OM02 about the presence and extent of hydrocarbon contamination <p>Data collected in OM03 will also be used for the purpose of longer-term water quality monitoring during SM01.</p>	<p>OM03 will be triggered immediately following a level 2/3 hydrocarbon spill.</p>	<p>The criteria for the termination of OM03 are as follows:</p> <ul style="list-style-type: none"> • The hydrocarbon release has ceased • Response activities have ceased • Concentrations of hydrocarbons in the water are below available ANZECC/ ARMCANZ (2000) trigger values for 99% species protection.

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Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
<p>Operational Monitoring Operational Plan 4 (OM04)</p> <p>Pre-emptive assessment of sensitive receptors at risk</p>	<p>OM04 aims to undertake a rapid assessment of the presence, extent and current status of shoreline sensitive receptors prior to contact from the hydrocarbon spill, by providing categorical or semi-quantitative information on the characteristics of resources at risk.</p> <p>The primary objective of OM04 is to confirm understanding of the status and characteristics of environmental resources predicted by OM01 and OM02 to be at risk, to further assist in making decisions on the selection of appropriate response actions and prioritisation of resources.</p> <p>Indirectly, qualitative/semi-quantitative pre-contact information collected by OM04 on the status of environmental resources may also aid in the verification of environmental baseline data and provide context for the assessment of environmental impacts, as determined through subsequent SMPs.</p>	<p>Triggers for commencing OM04 include:</p> <ul style="list-style-type: none"> • Contact of a sensitive habitat or shoreline is predicted by OM01, OM02 and/or OM03 • The pre-emptive assessment methods can be implemented before contact from hydrocarbons (once a receptor has been contacted by hydrocarbons it will be assessed under OM05) 	<p>The criteria for the termination of OM04 at any given location are:</p> <ul style="list-style-type: none"> • Locations predicted to be contacted by hydrocarbons have been contacted • The location has not been contacted by hydrocarbons and is no longer predicted to be contacted by hydrocarbons (resources should be reallocated as appropriate)

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Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
<p>Operational monitoring operational plan 5 (OM05)</p> <p>Monitoring of contaminated resources</p>	<p>OM05 aims to implement surveys to assess the condition of fauna and habitats contacted by hydrocarbons at sensitive habitat and shoreline locations.</p> <p>The primary objectives of OM05 are:</p> <ul style="list-style-type: none"> Record evidence of oiled fauna (mortalities, sub-lethal impacts, number, extent, location) and habitats (mortalities, sub-lethal impacts, type, extent of cover, area, hydrocarbon character, thickness, mass and content) throughout the response and clean-up at locations contacted by hydrocarbons to inform and prioritise clean-up efforts and resources, while minimising the potential impacts of these activities. <p>Indirectly, the information collected by OM05 may also support the assessment of environmental impacts, as determined through subsequent SMPs.</p>	<p>OM05 will be triggered when a sensitive habitat or shoreline is predicted to be contacted by hydrocarbons by OM01, OM02 and/or OM03.</p>	<p>The criteria for the termination of OM05 at any given location are:</p> <ul style="list-style-type: none"> No additional response or clean-up of fauna or habitats is predicted Spill response and clean-up activities have ceased <p>OM05 survey sites established at sensitive habitat and shoreline locations will continue to be monitored during SM02.</p> <p>The formal transition from OM05 to SM02 will begin on cessation of spill response and clean-up activities.</p>

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ANNEX C: OIL SPILL SCIENTIFIC MONITORING PROGRAM

Oil Spill Environmental Monitoring

The following provides some further detail on Woodside's oil spill scientific monitoring Program and includes the following:

- The organisation, roles and responsibilities of the Woodside oil spill scientific monitoring team and external resourcing.
- A summary table of the ten scientific monitoring programs as per the specific focus receptor, objectives, activation triggers and termination criteria.
- Details on the oil spill environmental monitoring activation and termination decision-making processes.
- Baseline knowledge and environmental studies knowledge access via geo-spatial metadata databases.
- An outline of the reporting requirements for oil spill scientific monitoring programs.

Oil Spill Scientific Monitoring – Delivery Team Roles and Responsibilities

Woodside Oil Spill Scientific Monitoring Delivery Team

The Woodside science team are responsible for the delivery of the oil spill scientific monitoring. The roles and responsibilities of the Woodside scientific monitoring delivery team are presented in Table C-1 and the organisational structure and Corporate Incident Management Team (CIMT) linkage provided in Figure C-1.

Woodside Oil Spill Scientific monitoring program - External Resourcing

In the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors, scientific monitoring personnel and scientific equipment to implement the appropriate SMPs will be provided by SMP Standby contractor who hold a standby contract for SMP via the Woodside Environmental Services Panel (ESP). In the event that additional resources are required other consultancy capacity within the Woodside ESP will be utilised (as needed and may extend to specialist contractors such as research agencies engaged in long-term marine monitoring programs). In consultation with the SMP Standby Contractor and/or specialist contractors, the selection, field sampling and approach of the SMPs will be determined by the nature and scale of the spill.

Table C-1: Woodside and Environmental Service Provider – Oil Spill Scientific Monitoring Program Delivery Team Key Roles and Responsibilities

Role	Location	Responsibility
Woodside Roles		
SMP Lead/Manager	Onshore	<ul style="list-style-type: none"> • Approves activated the SMPs based on operational monitoring data provided by the Planning Function • Provides advice to the CIMT in relation to scientific monitoring • Provides technical advice regarding the implementation of scientific monitoring • Approves detailed sampling plans prepared for SMPs • Directs liaison between statutory authorities, advisors and government agencies in relation to SMPs.
SMP Co-Ordinator	Onshore	<ul style="list-style-type: none"> • Activates the SMPs based on operational monitoring data provided by the Planning Function • Sits in the Planning function of the CIMT. • Liaises with other CIMT functions to deliver required logistics, resources and operational support from Woodside to support the Environmental Service Provider in delivering on the SMPs. Acts as the conduit for advice from the SMP Lead/Manager to the Environmental Service Provider • Manages the Environmental Service Provider’s implementation of the SMPs • Liaises with the Environmental Service Provider on delivery of the SMPs • Arranges all contractual matters, on behalf of Woodside, associated with the Environmental Service Provider’s delivery of the SMPs.

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Role	Location	Responsibility
Environmental Service Provider Roles		
SMP standby contractor: SMP Duty Manager/Project Manager	Onshore	<ul style="list-style-type: none"> • Coordinates the delivery of the SMPs • Provides costings, schedule and progress updates for delivery of SMPs • Determines the structure of the Environmental Service Provider's team to necessitate delivery of the SMPs • Verifies that HSE Plans, detailed sampling plans and other relevant deliverables are developed and implemented for delivery of the SMPs • Directs field teams to deliver SMPs • Arranges all contractual matters, on behalf of Environmental Service Provider, associated with the delivery of the SMPs to Woodside • Manages sub-consultant delivery to Woodside • Provides required personnel and equipment to deliver the SMPs
SMP Field Teams	Offshore – Monitoring Locations	<ul style="list-style-type: none"> • Delivers the SMPs in the field consistent with the detailed sampling plans and HSE requirements, within time and budget. • Early communication of time, budget, HSE risks associated with delivery of the SMPs to the Environmental Service Provider – Project Manager • Provides start up, progress and termination updates to the Environmental Service Provider – Project Manager (will be led in-field by a party chief).

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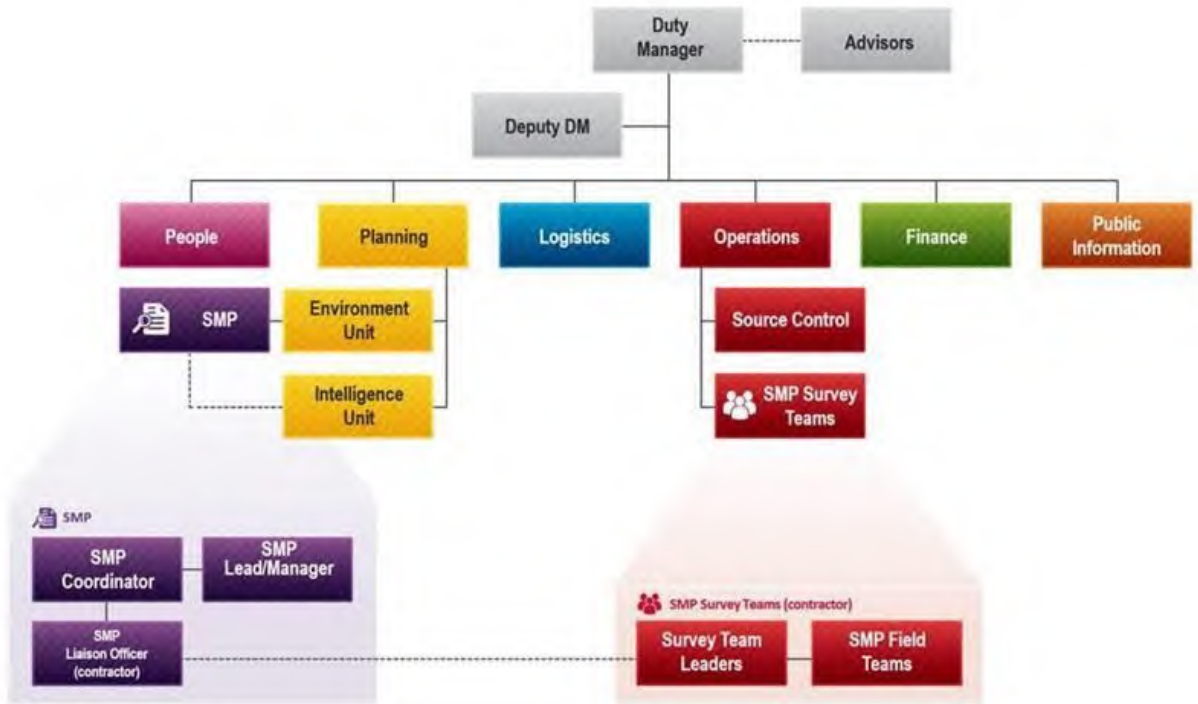


Figure C-1: Woodside Oil Spill Scientific Monitoring Program Delivery Team and Linkage to Corporate Incident Management Team (CIMT) organisational structure.

Table C-2: Oil Spill Environmental Monitoring: Scientific Monitoring Program - Objectives, Activation Triggers and Termination Criteria

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
Scientific monitoring program 1 (SM01) Assessment of Hydrocarbons in Marine Waters	SM01 will detect and monitor the presence, extent, persistence and properties of hydrocarbons in marine waters following the spill and the response. The specific objectives of SM01 are as follows: <ul style="list-style-type: none"> Assess and document the extent, severity and persistence of hydrocarbon contamination with reference to observations made during surveillance activities and / or in-water measurements made during operational monitoring; and Provide information that may be used to interpret potential cause and effect drivers for environmental impacts recorded for sensitive receptors monitored under other SMPs. 	SM01 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors	SM01 will be terminated when: <ul style="list-style-type: none"> Operational monitoring data relating to observations and / or measurements of hydrocarbons on and in water have been compiled, analysed and reported; and The report provides details of the extent, severity and persistence of hydrocarbons which can be used for analysis of impacts recorded for sensitive receptors monitored under other SMPs. SMP monitoring of sensitive receptor sites: <ul style="list-style-type: none"> Concentrations of hydrocarbons in water samples are below NOPSEMA guidance note (2019¹⁰) concentrations of 1 g/m² for floating, 10 ppb for entrained and dissolved; and Details of the extent, severity and persistence of hydrocarbons from concentrations recorded in water have been documented at sensitive receptor sites monitored under other SMPs.
Scientific monitoring program 2 (SM02) Assessment of the Presence, Quantity and Character of Hydrocarbons in Marine Sediments	SM02 will detect and monitor the presence, extent, persistence and properties of hydrocarbons in marine sediments following the spill and the response. The specific objectives of SM02 are as follows: <ul style="list-style-type: none"> Determine the extent, severity and persistence of hydrocarbons in marine sediments across selected sites where hydrocarbons were observed or recorded during operational monitoring; and Provide information that may be used to interpret potential cause and effect drivers for environmental impacts recorded for sensitive receptors monitored under other SMPs. 	SM02 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: <ul style="list-style-type: none"> Response activities have ceased; and Operational monitoring results made during the response phase indicate that shoreline, intertidal or sub-tidal sediments have been exposed to surface, entrained or dissolved hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation). 	SM02 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: <ul style="list-style-type: none"> Concentrations of hydrocarbons in sediment samples are below ANZECC/ ARMCANZ (2013¹¹) sediment quality guideline values (SQGVs) for biological disturbance; and Details of the extent, severity and persistence of hydrocarbons from concentrations recorded in sediments have been documented.
Scientific monitoring program 3 (SM03) Assessment of Impacts and Recovery of Subtidal and Intertidal Benthos	The objectives of SM03 are: <ul style="list-style-type: none"> Characterize the status of intertidal and subtidal benthic habitats and quantify any impacts to functional groups, abundance and density that may be a result of the spill; and Determine the impact of the hydrocarbon spill and subsequent recovery (including impacts associated with the implementation of response options). Categories of intertidal and subtidal habitats that may be monitored include: <ul style="list-style-type: none"> Coral reefs Seagrass Macro-algae Filter-feeders SM03 will be supported by sediment contamination records (SM02) and characteristics of the spill derived from OMPs.	SM03 will be activated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: <ul style="list-style-type: none"> As part of a pre-emptive assessment of PBAs of receptor locations identified by time to hydrocarbon contact >10 days, to target receptors and sites where it is possible to acquire pre-hydrocarbon contact baseline; and Operational monitoring identified shoreline potential contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) for subtidal and intertidal benthic habitat. 	SM03 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: <ul style="list-style-type: none"> Overall impacts to benthic habitats from hydrocarbon exposure have been quantified. Recovery of impacted benthic habitats has been evaluated. Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 4 (SM04) Assessment of Impacts and Recovery of Mangroves / Saltmarsh	The objectives of SM04 are: <ul style="list-style-type: none"> Characterize the status of mangroves (and associated salt marsh habitat) at shorelines exposed/contacted by spilled hydrocarbons; Quantify any impacts to species (abundance and density) and mangrove/saltmarsh community structure; and Determine and monitor the impact of the hydrocarbon spill and potential subsequent recovery (including impacts associated with the implementation of response options). SM04 will be supported by sediment sampling undertaken in SM02 and characteristics of the spill derived from OMPs.	SM04 will be activated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: <ul style="list-style-type: none"> As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; and 	SM04 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: <ul style="list-style-type: none"> Impacts to mangrove and saltmarsh habitat from hydrocarbon exposure have been quantified. Recovery of impacted mangrove/saltmarsh habitat has been evaluated.

¹⁰ NOPSEMA (2019) Bulletin #1 – Oil spill modelling – April 2019, <https://www.nopsema.gov.au/assets/Bulletins/A652993.pdf>

¹¹ Simpson SL, Batley GB and Chariton AA (2013). Revision of the ANZECC/ARMCANZ Sediment Quality Guidelines. CSIRO and Water Science Report 08/07. Land and Water, pp. 132.

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
Scientific monitoring program 5 (SM05) Assessment of Impacts and Recovery of Seabird and Shorebird Populations	<p>The Objectives of SM05 are to:</p> <ul style="list-style-type: none"> Collate and quantify impacts to avian wildlife from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population level; and Undertake monitoring to quantify and assess impacts of hydrocarbon exposure to seabirds and shorebird populations at targeted breeding colonies / staging sites / important coastal wetlands where hydrocarbon contact was recorded. 	<ul style="list-style-type: none"> Operational monitoring identified shoreline potential contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) for mangrove/saltmarsh habitat. <p>SM05 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows:</p> <ul style="list-style-type: none"> As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; Operational monitoring predicts shoreline contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) at important bird colonies / staging sites / important coastal wetland locations; or Records of dead, oiled or injured bird species made during the hydrocarbon spill or response. 	<ul style="list-style-type: none"> Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill. <p>SM05 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of:</p> <ul style="list-style-type: none"> Impacts to seabird and shorebird populations from hydrocarbon exposure have been quantified. Recovery of impacted seabird and shorebird populations has been evaluated. Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 6 (SM06) Assessment of Impacts and Recovery of Nesting Marine Turtle Populations	<p>The objectives of SM06 are to:</p> <ul style="list-style-type: none"> To quantify impacts of hydrocarbon exposure or contact on marine turtle nesting populations (including impacts associated with the implementation of response options); Collate and quantify impacts to adult and hatchling marine turtles from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population levels (including impacts associated with the implementation of response options); .and Undertake monitoring to quantify and assess impacts of hydrocarbon exposure to nesting marine turtle populations at known rookeries (including impacts associated with the implementation of response options). 	<p>SM06 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring has:</p> <ul style="list-style-type: none"> As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; Predicted shoreline contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) at known marine turtle rookery locations; or Records of dead, oiled or injured marine turtle species made during the hydrocarbon spill or response. 	<p>SM06 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of:</p> <ul style="list-style-type: none"> Impacts to nesting marine turtle populations from hydrocarbon exposure have been quantified. Recovery of impacted nesting marine turtle populations has been evaluated. Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 7 (SM07) Assessment of Impacts to Pinniped Colonies including Haul-out Site Populations	<p>The objectives of SM07 are to:</p> <ul style="list-style-type: none"> Quantify impacts on pinniped colonies and haul-out sites as a result of hydrocarbon exposure/contact. Collate and quantify impacts to pinniped populations from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population levels. 	<p>SM07 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring has:</p> <ul style="list-style-type: none"> As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; Identified shoreline contact of hydrocarbons ((at or above 0.5 g/m² surface, ≥5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) at known pinniped colony or haul-out site(s) (i.e. most northern site is the Houtman Abrolhos Islands); or Records of dead, oiled or injured pinniped species made during the hydrocarbon spill or response. 	<p>SM07 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of:</p> <ul style="list-style-type: none"> Impacts to pinniped populations from hydrocarbon exposure have been quantified. Recovery of pinniped populations has been evaluated. Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 8 (SM08) Desk-Based Assessment of Impacts to Other Non-Avian Marine Megafauna	<p>The objective of SM08 is to provide a desk-based assessment which collates the results of OM02 and OM05 where observations relate to the mortality, stranding or oiling of mobile marine megafauna species not addressed in SM06 or SM07, including:</p> <ul style="list-style-type: none"> Cetaceans; Dugongs; Whale sharks and other shark and ray populations; Sea snakes; and Crocodiles. 	<p>SM08 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring reports records of dead, oiled or injured non-avian marine megafauna during the spill/ response phase.</p>	<p>SM08 will be terminated when the results of the post-spill monitoring have quantified impacts to non-avian megafauna.</p> <ul style="list-style-type: none"> Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
	The desk-based assessment will include population analysis to infer potential impacts to marine megafauna species populations.		
Scientific monitoring program 9 (SM09) Assessment of Impacts and Recovery of Marine Fish associated with SM03 habitats	The objectives of SM09 are: <ul style="list-style-type: none"> • Characterise the status of resident fish populations associated with habitats monitored in SM03 exposed/contacted by spilled hydrocarbons; • Quantify any impacts to species (abundance, richness and density) and resident fish population structure (representative functional trophic groups); and • Determine and monitor the impact of the hydrocarbon spill and potential subsequent recovery (including impacts associated with the implementation of response options). 	SM09 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented with SMO3.	SM09 will be undertaken and terminated concurrent with monitoring undertaken for SM03, as per the SMP termination criteria process <ul style="list-style-type: none"> • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 10 (SM10) SM10 - Assessment of physiological impacts important fish and shellfish species (fish health and seafood quality/safety) and recovery	SM10 aims to assess any physiological impacts to important commercial fish and shellfish species (assessment of fish health) and if applicable, seafood quality/safety. Monitoring will be designed to sample key commercial fish and shellfish species and analyse tissues to identify fish health indicators and biomarkers, for example: <ul style="list-style-type: none"> • Liver Detoxification Enzymes (ethoxyresorufin-O-deethylase (EROD) activity) • PAH Biliary Metabolites • Oxidative DNA Damage • Serum SDH • Other physiological parameters, such as condition factor (CF), liver somatic index (LSI), gonado-somatic index (GSI) and gonad histology, total weight, length, condition, parasites, egg development, testes development, abnormalities. • Seafood tainting may be included (where appropriate) using applicable sensory tests to objectively assess targeted finfish and shellfish species for hydrocarbon contamination. Results will be used to make inferences on the health of commercial fisheries and the potential magnitude of impacts to fishing industries.	SM10 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring (OM01, OM02 and OM05) indicates the following: <ul style="list-style-type: none"> • The hydrocarbon spill will or has intersected with active commercial fisheries or aquaculture activities. • Commercially targeted finfish and/or shellfish mortality has been observed/recorded. • Commercial fishing or aquaculture areas have been exposed to hydrocarbons (≥ 0.5 g/m² surface and ≥ 5 ppb for entrained/dissolved hydrocarbons); and • Taste, odour or appearance of seafood presenting a potential human health risk is observed. 	SM10 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: <ul style="list-style-type: none"> • Physiological impacts to important commercial fish and shellfish species from hydrocarbon exposure have been quantified. • Recovery of important commercial fish and shellfish species from hydrocarbon exposure has been evaluated. • Impacts to seafood quality/safety (if applicable) have been assessed and information provided to the relevant persons/ organisations and regulators for the management of any impacted fisheries. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.

Activation Triggers and Termination Criteria

Scientific monitoring program Activation

The Woodside oil spill scientific monitoring team will be stood up immediately with the occurrence of a hydrocarbon spill (actual or suspected) Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors via the first strike plan for the petroleum activity programme. The presence of any level of hydrocarbons in the marine environment triggers the activation of the oil spill scientific monitoring program (SMP). This is to ensure the full range of eventualities relating to the environmental, socio-economic and health consequences of the spill are considered in the planning and execution of the SMP. The activation process also takes into consideration the management objectives, species recovery plans, conservation advices and conservations plans for any World Heritage Area (WHA), CMRs, State Marine Parks, other protected area designations (e.g., State nature reserves) and Matters of National Environmental Significance (including listed species under part 3 of the EPBC Act) potentially exposed to hydrocarbons. With the first 24-48 hours of a spill event, such information will be sourced and evaluated as part of the SMP planning process guided by Appendix D (identified receptors vulnerable to hydrocarbon contact), the information presented in the Existing Environment section of the EP as well as other information sources such as the Woodside Baseline Environmental Studies Database ([Link](#)).

The starting point for decision-making on what SMPs are activated and spatial extent of monitoring activities will be based on the predictive modelling results (OM01) in the first 24-48 hours until more information is made available from other operational monitoring activities such as aerial surveillance and shoreline surveys. Pre-emptive Baseline Areas (WHA, CMRs and State Marine Parks encompassing key ecological and socio-economic values) are a key focus of the SMP activation decision-making process, particularly, in the early spill event/response phase. As the operational monitoring progresses and further situational awareness information becomes available, it will be possible to understand the nature and scale of the spill. The SMP activation and implementation decision-making will be revisited on a daily basis to account for the updates on spill information. One of the priority focus areas in the early phase of the incident will be to identify and execute pre-emptive SMP assessments at key receptor locations, as required. The SMP activation and implementation decision tree is presented in Figure C-2.

Scientific monitoring Program Termination

The basis of the termination process for the active SMPs (SMPs 1-10) will include quantification of impacts, evaluation of recovery for the receptor at risk and consultation with relevant authorities, persons and organisations. Termination of each SMP will not be considered until the results (as presented in annual SMP reports for the duration of each program) indicate that the target receptor has returned to pre-spill condition.

Once the SMP results indicate impacted receptor(s) have returned to pre-spill condition (as identified by Woodside) a termination decision-making process will be triggered and a number of steps will be undertaken as follows:

- Woodside will engage expert opinion on whether the receptor has returned to pre-spill condition (based on monitoring data). Subject Matter Expert (SMEs) will be engaged (via the Woodside SME scientific monitoring terms of reference ([Link](#)) to review program outcomes, provide expert advice and recommendations for the duration of each SMP.
- Where expert opinion agrees that the receptor has returned to pre-spill condition, findings will then be presented to the relevant authorities, persons and organisations (as defined by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulation 11A). Identification of, planning and engagement with relevant persons/ organisations will be managed by Woodside's Reputation Functional Support Team (FST) and follow the stakeholder management FST ([Link](#)). These guidelines outline the FST roles and responsibilities, competencies, communications and planning processes. An assessment of the merits of any objection to termination will be documented in the SMP final report.

- Woodside will decide on termination of SMP based on expert opinion and merits of any relevant persons/ organisations' objections. The final report following termination will include: monitoring results, expert opinion and consultation including merits of any objections.
- Termination of SMPs will also consider applicable management objectives, species recovery plans, conservation advices and conservations plans for any World Heritage Area (WHA), CMRs, State Marine Parks, other protected area designations (e.g., State nature reserves) and Matters of National Environmental Significance (including listed species under part 3 of the EPBC Act).

The SMP termination decision-making process will be applied to each active SMP and an iterative process of decision steps continued until each SMP has been terminated (refer to decision-tree diagram for SMP termination criteria, Figure C-3).



SMP ACTIVATION & IMPLEMENTATION DECISION PROCESS

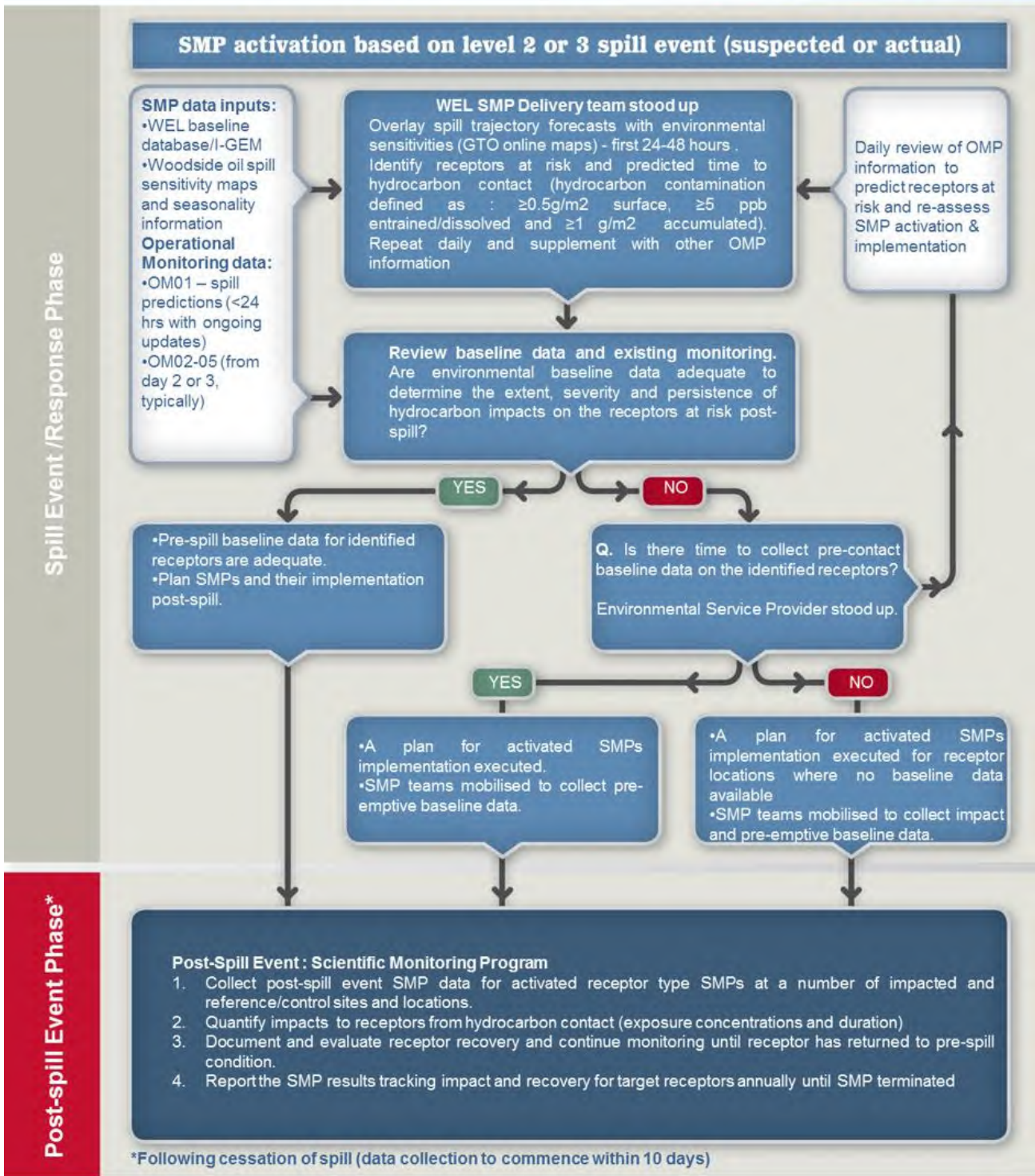


Figure C-2: Activation and Implementation Decision-tree for Oil Spill Environmental Monitoring

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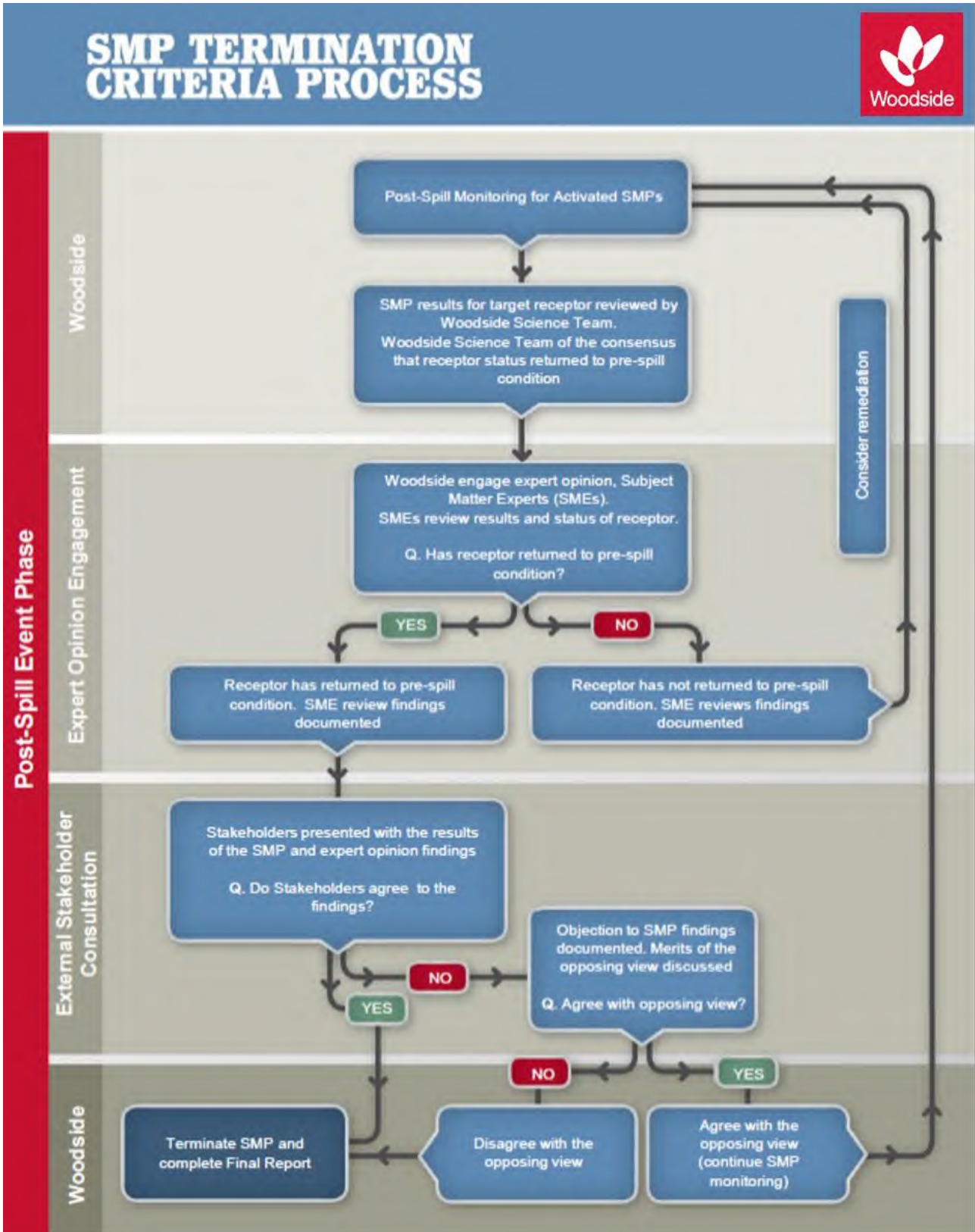


Figure C-3: Termination Criteria Decision-tree for Oil Spill Environmental Monitoring

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Receptors at Risk and Baseline Knowledge

In order to assess the baseline studies available and suitability for oil spill scientific monitoring, Woodside maintains knowledge of environmental baseline studies through the upkeep and use of its Environmental Knowledge Management System.

Woodside's Environmental Knowledge Management System is a centralised platform for scientific information on the existing environment, marine biodiversity, Woodside environmental studies, key environmental impact topics, key literature and web-based resources. The system comprises a number of data directories and an environmental baseline database, as well as folders within the 'Corporate Environment' server space. The environmental baseline database was set up to support Woodside's SMP preparedness and as a SMP resource in the event of an unplanned hydrocarbon spill. The environmental baseline database is subject to updates including annual reviews completed as part of SMP standby contract. This database is accessed pre-PAP to identify Pre-emptive Baseline Areas (PBAs) where hydrocarbon contact is predicted to occur <10 days.

In addition to Woodside's Environmental Knowledge Management System, it is acknowledged that many relevant baseline datasets are held by other organisations (e.g. other oil and gas operators, government agencies, state and federal research institutions and non-governmental organisations). In order to understand the present status of environmental baseline studies a spatial environmental metadata database for Western Australia (Industry-Government Environmental Metadata, I-GEM) was established. IGEM is a collaboration comprising oil and gas operators (including Woodside), government and research agencies and other organisations. IGEM held data were integrated into the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA)¹² in 2020. The Index of Marine Surveys for Assessments (IMSA) is an online portal for information about marine-based environmental surveys in Western Australia. IMSA is a project of the Department of Water and Environmental Regulation (the department) for the systematic capture and sharing of marine data created as part of an environmental impact assessment (EIA).

In the event of an unplanned hydrocarbon release, Woodside intends to interrogate the information on baseline studies status as held by the various databases (e.g. Woodside Environmental Knowledge Management System, IMSA and other sources of existing baseline data) to identify Pre-emptive Baseline Areas (PBAs), i.e., receptors at risk where hydrocarbon contact is predicted to be >10 days, and baseline data can be collected before hydrocarbon contact.

Reporting

For the scientific monitoring program relevant regulators will be provided with:

- Annual reports summarising the SMPs deployed and active, data collection activities and available findings; and
- Final reports for each SMP summarising the quantitative assessment of environmental impacts and recovery of the receptor once returned to pre-spill condition and termination of the monitoring program.

The reporting requirements of the scientific monitoring program will be specific to the individual SMPs deployed and terms of responsibilities, report templates, schedule, QA/QC and peer-review will be agreed with the contractors engaged to conduct the SMPs. Compliance and auditing mechanisms will be incorporated into the reporting terms.

¹² <https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort>

ANNEX D: MONITORING PROGRAM AND BASELINE STUDIES FOR THE PETROLEUM ACTIVITIES PROGRAM

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Table D-1: Oil Spill Environmental Monitoring – scientific monitoring program scope for the Petroleum Activities Program based on worst case credible spill CS-01 for Scarborough 4D B1 Marine Seismic Survey

Note: The Commonwealth Marine Environment and Gascoyne AMP are the predicted sensitive receptors to be exposed to hydrocarbons.

Receptor Areas - Potential Impact and Reference Scientific Monitoring Sites (marked X)																																																	
Receptors to be Monitored	Applicable SMP	Kimberley AMP	Agro-Rowley Terrace AMP	Montebello AMP	Dampier AMP	Carnarvon Canyon AMP	Ningaloo AMP	Gascoyne AMP	Shark Bay Open Ocean (including AMP)	Abrolhos AMP	Jurien AMP	Two Rocks AMP	Perth Canyon AMP	Geographe AMP	South-west Corner AMP	Ashmore Reef and AMP	Seringapatam Reef	Scott Reef (North and South)	Mermaid Reef and AMP	Clerke Reef and State Marine Park	Imperieuse Reef and State Marine Park	Rankin Bank	Glomar Shoals	Rowley Shoals (including Sate Marine Park)	Fantome Shoal	Adele Island	Lacepede Islands	Montebello Islands (including State Marine Park)	Lowendal Islands (including State Nature Reserves)	Barrow Island (including State Nature Reserves, State Marine Park and Marine Management Area)	Muiron Islands (WHA, Marine Management Area)	Pilbara Islands - Southern Island Group (Serrurier, Thevenard and Bessieres Islands - State Nature Reserves)	Pilbara Islands - Northern Island Group (Sandy Island Passage Islands - State nature reserves)	Abrolhos Islands	Kimberley Coast	Dampier Peninsula	Northern Pilbara Shoreline	Ningaloo Coast (North/North West Cape, Middle and South) (WHA, and State Marine Park)	Shark Bay - Open Ocean Coast	Shark Bay (WHA, State Marine Park)	Ngari Capes State Marine Park								
		Habitat																																															
Water Quality	SM01	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							
Marine Sediment Quality	SM02	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
Coral Reef	SM03	X		X												X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Seagrass / Macro-Algae	SM03	X									X					X	X	X										X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
Deeper Water Filter Feeders	SM03	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																						
Mangroves and Saltmarsh	SM04																											X																					
Species																																																	
Sea Birds and Migratory Shorebirds (significant colonies / staging sites / coastal wetlands)	SM05	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Marine Turtles (significant nesting beaches)	SM06	X	X	X	X		X	X								X	X	X	X	X	X	X							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Pinnipeds (significant colonies / haul-out sites)	SM07									X	X	X				X																																X	
Cetaceans - Migratory Whales	SM08	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Oceanic and Coastal Cetaceans	SM08	X	X	X	X		X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Dugongs	SM08	X							X							X													X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sea Snakes	SM08	X		X	X				X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Whale Sharks	SM08			X			X	X										X											X	X	X	X																X	
Other Shark and Ray Populations	SM08, SM09	X	X	X	X		X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fish Assemblages	SM09	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Socio-economic																																																	
Fisheries - Commercial	SM10		X	X	X	X	X	X	X	X	X												X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Fisheries - Traditional	SM10															X	X	X											X																				X
Tourism (incl. recreational fishing)	SM10	X		X			X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Receptor areas identified as Pre-emptive Baseline Areas (based on criteria of surface contact and/or entrained hydrocarbon contact ≤10 days (Offshore Australian Marine Parks contacted by hydrocarbons in this timeframe also noted)																																															
		Receptor areas identified as Pre-emptive Baseline Areas in the response phase >10 days (based on criteria of surface contact and/or entrained hydrocarbon contact >10 days)																																															
		Receptor areas that may be identified as impact or reference sites in the event of major hydrocarbon release and would be identified as part of the SMP planning process																																															

Table D-2 is not presented given the Commonwealth Marine Environment and Gascoyne AMP are the predicted sensitive receptors to be exposed to hydrocarbons no baseline studies for applicable SMPs are documented. SM01 water quality and hydrocarbon detection would be activated in the response phase of an unplanned spill event.

ANNEX E: TACTICAL RESPONSE PLANS

TACTICAL RESPONSE PLANS
Exmouth
Mangrove Bay
Turquoise Bay
Yardie Creek
Muiron Islands
Jurabi to Lighthouse Beaches Exmouth
Ningaloo Reef - Refer to Mangrove/Turquoise bay and Yardie Creek
Exmouth Gulf
Shark Bay Area 1: Carnarvon to Wooramel
Shark Bay Area 2: Wooramel to Petite Point
Shark Bay Area 3: Petite Point to Dubaut Point
Shark Bay Area 4: Dubaut Point to Herald Bight
Shark Bay Area 5: Herald Bight to Eagle Bluff
Shark Bay Area 6: Eagle Bluff to Useless Loop
Shark Bay Area 7: Useless Loop to Cape Bellefin
Shark Bay Area 8: Cape Bellefin to Steep Point
Shark Bay Area 9: Western Shores of Edel Land
Shark Bay Area 10: Dirk Hartog Island
Shark Bay Area 11: Bernier and Dorre Islands
Abrohlos Islands: Pelseart Group
Abrohlos Islands: Wallabi Group
Abrohlos Islands: Easter Group
Dampier
Rankin Bank and Glomar Shoals
Barrow and Lowendal Islands
Pilbara Islands - Southern Island Group
Montebello Is - Stephenson Channel Nth
Montebello Is Champagne Bay and Chippendale channel
Montebello Is - Claret Bay
Montebello Is - Hermite/Delta Is Channel
Montebello Is - Hock Bay
Montebello Is - North and Kelvin Channel
Montebello Is - Sherry Lagoon Entrance
Withnell Bay
Holden Bay
King Bay
No Name Bay / No Name Beach
Enderby Is -Dampier
Rosemary Island - Dampier
Legendre Is - Dampier
Karratha Gas Plant

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KGP to Whitnell Creek
KGP to Northern Shore
KGP Fire Pond and Estuary
KGP to No Name Creek
Broome
Sahul Shelf Submerged Banks and Shoals
Clerke Reef (Rowley Shoals)
Imperieuse Island (Rowley Shoals)
Mermaid Reef (Rowley Shoals)
Scott Reef
Oiled Wildlife Response
Exmouth
Dampier region
Shark Bay

Appendix E NOPSEMA REPORTING FORMS

NOPSEMA Recordable Environmental Incident monthly Reporting Form

<https://www.nopsema.gov.au/assets/Forms/A198750.doc>

Report of an accident, dangerous occurrence or environmental incident

<https://www.nopsema.gov.au/assets/Forms/N-03000-FM0831-Report-of-an-Accident-Dangerous-Occurrence-or-Environmental-Incident-Rev-8-Jan-2015-MS-Word-2010.docx>

Appendix F CONSULTATION

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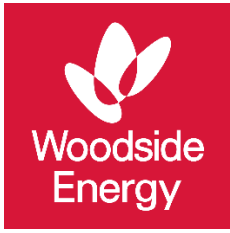
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Woodside ID: 1401760303

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Uncontrolled when printed. Refer to electronic version for most up to date information.



**Scarborough 4D B1 Marine Seismic Survey Environment Plan
Table 1, 2 and Appendix F**

Date: October 2023

Revision: 9

Table 1: Consultation report with relevant persons or organisations.

Commonwealth and WA State Government Departments or Agencies – Marine		
Australian Border Force (ABF)		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> On 13 May 2021, Woodside emailed ABF advising of the proposed activity (Appendix F, reference 1.2) and provided a Consultation Information Sheet. On 27 January 2023, Woodside emailed ABF with an update on the proposed activity (Appendix F, reference 1.52) and provided an updated Consultation Information Sheet. On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.76). 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	Woodside has addressed maritime security-related issues in Section 6 of this EP based on previous offshore activities. No additional measures or controls are required.
Australian Fisheries Management Authority (AFMA)		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> On 13 May 2021, Woodside emailed AFMA advising of the proposed activity (Appendix F, reference 1.3) and provided a Consultation Information Sheet, a fisheries map and a list of previous seismic surveys. On 4 June 2021, AFMA responded, advising it was unable to provide comment on specific proposals, and directed Woodside to continue consulting with all fishers who have entitlements to fish within the proposed area via the relevant fishing industry associations or directly with fishers who hold entitlements in the area. On 3 February 2023, Woodside emailed AFMA with an update on the proposed activity (Appendix F, reference 1.71) and provided an updated Consultation Information Sheet and fisheries maps. On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.77). 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls

<p>AFMA has requested Woodside consult with operators who have entitlements to fish within the proposed area. Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside has provided information to relevant fishery licence holders as well as representative organisations on behalf of Commonwealth fishery licence holders who have entitlements to fish within the proposed area.</p> <p>Woodside has addressed AFMA's feedback, including confirming that Woodside had provided information to relevant fishery licence holders as well as representative organisations on behalf of Commonwealth fishery licence holders who have entitlements to fish within the proposed area.</p> <p>Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP.</p> <p>Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP.</p> <p>No additional measures or controls are required.</p>
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Australian Hydrographic Office (AHO) / Australian Hydrographic Service (AHS)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed the AHO advising of the proposed activity (Appendix F, reference 1.4) and provided a Consultation Information Sheet, and shipping lanes map (Appendix F, reference 1.5).
- On 27 January 2023, Woodside emailed AHO with an update on the proposed activity (Appendix F, reference 1.53 and provided an updated Consultation Information Sheet and fisheries maps.
- Woodside confirmed it would make available a shipping lane map as soon as possible.
- On 30 January 2023, the AHO responded and acknowledged receipt of Woodside's consultation email.
- On 28 February 2023, Woodside emailed AHO and provided an updated shipping lane map (Appendix F, reference 1.106).
- On 1 March 2023, the AHO responded and acknowledged receipt of Woodside's consultation email.
- On 9 March 2023 Woodside emailed AHO with a corrected version of the shipping lane map (Appendix F, reference 1.106).
- On 10 March 2023, the AHO responded and acknowledged receipt of Woodside's consultation email.

<p>Summary of Feedback, Objection or Claim</p>	<p>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</p>	<p>Environment Plan Controls</p>
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<p>No feedback, objections or claims received despite follow up.</p>	<p>AHO has acknowledged receipt of Woodside's consultation emails.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside will notify the AHO no less than four working weeks before operations commence, as referenced as a C 1.1 in this EP.</p> <p>No additional measures or controls are required.</p>
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Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed AMSA advising of the proposed activity (Appendix F, reference 1.6) and provided a Consultation Information Sheet, and shipping lanes map (Appendix F, reference 1.5).
- On 18 May 2021, AMSA emailed Woodside requesting:
 - The AHO be contacted no less than four working weeks before operations commence for the promulgation of related notices to mariners.
 - AMSA's Joint Rescue Coordination Centre (JRCC) be notified at least 24–48 hours before operations commence
 - Provide updates to the AHO and JRCC should there be changes to the activity.
 - Vessels exhibit appropriate lights and shapes to reflect the nature of operations and comply with the International Rules of Preventing Collisions at Sea.
 - AMSA provided advice on obtaining vessel traffic plots, including digital datasets and maps.
- On 22 July 2021, Woodside responded to AMSA's feedback and confirmed it would address AMSA's requests.
- On 27 January 2023, Woodside emailed AMSA with an update on the proposed activity (Appendix F, reference 1.53) and provided an updated Consultation Information Sheet and fisheries maps.
 - Woodside confirmed it would make available a shipping lane map as soon as possible.
- On 31 January 2023, AMSA emailed Woodside requesting:
 - Additional information relating to moorings and their potential impact on shipping traffic.
 - Woodside to confirm its current GIS data so that AMSA can map it and assess navigation safety.
 - Woodside to send its updated Shipping Lane figures.
- On 10 February 2023, AMSA emailed Woodside and reiterated its 31 January 2023 request for additional information.
- On 15 February 2023, AMSA emailed Woodside and reiterated its 31 January 2023 and 10 February 2023 request for additional information.
- On 16 February 2023, Woodside received a phone message from AMSA requesting digital data regarding the proposed activity.
- On 17 February 2023, Woodside had a phone conversation with AMSA to clarify the data required and was advised that AMSA would like the operational area polygons in shapefile format for the proposed activity.
- On 17 February 2023, Woodside emailed AMSA the operational area polygons in shapefile format for the proposed activity.
- On 21 February 2023, AMSA emailed Woodside:
 - Provided a vessel traffic plot showing AIS data and an updated vessel traffic plot for the Scarborough area of interest.
 - AMSA reiterated its 31 January 2023 request.
- On 28 February 2023, Woodside emailed AMSA:
 - Provided additional information relating to the moorings (Appendix F, reference 1.105).
 - Provided an updated shipping lane map (Appendix F, reference 1.106).
- On 3 March 2023 AMSA emailed Woodside:
 - Requested clarification on the vessel traffic plots provided and how the Environment that May Be Affected (EMBA) areas will actually be affected by working vessels, support craft and associated activities.
 - AMSA commented that the EMBA's are quite large unique areas, so AMSA is curious about the extent of vessel traffic and activity within these areas and lines of traffic and chartered shipping fairways.

- On 8 March 2023 Woodside emailed AMSA advising (Appendix F, reference 1.108):
 - The environment that may be affected (EMBA) is the largest spatial extent where the Petroleum Activities Program could potentially have an environmental consequence (direct or indirect impact).
 - The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this Environment Plan (EP) is determined by a highly unlikely release of marine diesel to the environment as a result of vessel collision.
 - The EMBA does not represent the extent of predicted impact of the highly unlikely marine diesel release. Rather, the EMBA represents the merged area of many possible paths a highly unlikely hydrocarbon release could travel depending on the weather and ocean conditions at the time of the release. This means in the highly unlikely event a hydrocarbon release does occur, the entire EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release.
 - Woodside also provided an updated version of the shipping lane map noting there was an error on the previous version.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>AMSA has provided feedback relating to:</p> <ul style="list-style-type: none"> • Notification requirements • Update requirements • Vessel light and shapes <p>AMSA requested further information relating to:</p> <ul style="list-style-type: none"> • Moorings and their potential impact on shipping traffic • GIS data • Shipping Lane figures • Digital data • Vessel traffic plots and how the EMBA will be affected by working vessels, support craft and associated activities. 	<p>Woodside has addressed AMSA's requests and provided additional information (see above and within the relevant response contained within Appendix F).</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside will notify AMSA's JRCC at least 24–48 hours before operations commence, as referenced as C 1.2 in this EP.</p> <p>Woodside will notify AHO no less than four working weeks before operations commence, as referenced as a C 1.1 in this EP.</p> <p>Woodside considers the measures and controls in the EP are appropriate.</p>

Australian Maritime Safety Authority (AMSA) – Marine Pollution

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed AMSA advising of the proposed activity (Appendix F, reference 1.7) and provided a Consultation Information Sheet, and shipping lanes map (Appendix F, reference 1.5).
- On 6 July 2021, Woodside emailed AMSA and provided the First Strike Plan (Appendix F, reference 1.25).
- On 27 January 2023, Woodside emailed AMSA with an update on the proposed activity (Appendix F, reference 1.52) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.76).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	Woodside has addressed oil spill preparedness and response strategy planning in Appendix D . No additional measures or controls are required.
Department of Climate Change, Energy, the Environment and Water Agriculture (DCCEE) / Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries (formerly DAWE)		

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed DAWE advising of the proposed activity considering biosecurity matters (Appendix F, reference 1.8) and provided a Consultation Information Sheet, and fisheries map (Appendix F, reference 1.9).
- On 25 May 2021, DAWE responded noting the information required and requested Woodside communicate future developments with the AFMA and the relevant fishing industry representation organisations.
- On 17 December 2021, Woodside emailed DAWE (prompted by Woodside to seek overall clarification):
 - Woodside sought clarification around the Blue Whale CMP, the Department’s Guideline and NOPSEMA’s FAQ in relation to the definition of, and Woodside’s interpretation of BIAs.
 - Woodside requested clarification of its understanding of the documents on the DAWE website, (Blue Whale CMP) which state that “BIAs are not defined under the EPBC Act, but they are areas that are particularly important for the conservation of protected species and where aggregations of individuals display biologically important behaviour such as calving, foraging, resting or migration. BIAs have been identified using expert scientific knowledge about species’ distribution abundance and behaviour”.
 - Woodside clarified that consequently, distribution in itself, is not a BIA (for blue whales); whereas areas where biologically important behaviour such as calving, foraging, resting or migration clearly are BIAs.
- On 20 December 2021, DAWE emailed Woodside:
 - DAWE advised that the definition provided is the agreed working definition of BIAs and this interpretation is correct, BIAs are not defined or described under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). They are however a geospatial tool used to inform regulatory decision-making given the biologically critical behaviours that they represent.
 - DAWE advised that the assumption is correct, that the entire distribution of the blue whale is not considered a BIA. The ‘distribution BIA’ for the blue whale, as designated in the National Conservation Values Atlas (NCVA) does not constitute a BIA (that represents an area where biologically important behaviour is displayed, such as foraging and migration for the blue whale). DAWE believe the distribution BIA was included in the NCVA following development of the Conservation Management Plan for the Blue Whale (CMP) to flag the importance of their range.
- On 30 March 2022, Woodside emailed DCCEEW to ensure DCCEEW was aware NOPSEMA had requested correspondence between DCCEEW and Woodside which must be complied with regarding blue whale distribution and BIAs. Woodside advised details of the correspondence would be included for NOPSEMA’s assessment of this EP.
- On 30 March 2022, DCCEEW thanked Woodside for the advice and that DCCEEW had been in contact with NOPSEMA and were aware of this requirement.
- On 3 February 2023, Woodside emailed DCCEEW / DAFF - Fisheries with an update on the proposed activity (Appendix F, reference 1.54) and provided an updated Consultation Information Sheet and fisheries maps.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.92).

Summary of Feedback, Objection or Claim	Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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<p>In the course of preparing this and other Woodside EPs, DCCEEW has provided clarification around the Blue Whale CMP, the Department's Guideline and NOPSEMA's FAQ in relation to the definition of, and Woodside's interpretation of BIAs.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside notes DCCEEW clarification around the Blue Whale CMP, the Department's Guideline and NOPSEMA's FAQ in relation to the definition of BIAs. Woodside's interpretation of the Blue Whale CMP advice has been applied in the EP, see Section 4.6.3.1.</p> <p>Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>The Environment Plan demonstrates that the proposed activities are outside the boundaries of a proclaimed Commonwealth Marine Park and identifies that there are no credible impacts to the values of any Commonwealth Marine Parks as a result of planned activities (Section 4.9). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of an incident, as demonstrated in Section 6.7.2 and Section 6.7.3.</p> <p>The Environment Plan demonstrates that there are no known underwater heritage sites or shipwrecks within the Petroleum Activities Area and identifies that there are no credible impacts as a result of planned activities (Section 4.10.1). While impacts to underwater heritage sites or shipwrecks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of an incident, as demonstrated in Section 6.7.2 and Section 6.7.3.</p> <p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP.</p> <p>Woodside has addressed maritime biosecurity issues in Section 6.7 of this EP based on previous offshore activities.</p> <p>No additional measures or controls are required.</p>
<p>Department of Defence (DoD)</p>		

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed DoD advising of the proposed activity (Appendix F, reference 1.10) and provided a Consultation Information Sheet, and defence map (Appendix F, reference 1.11).
- On 15 May 2021, DoD emailed Woodside:
 - DoD advised that the activity area is located within the North West Exercise Area (NWXA) and restricted airspace and unexploded ordnance (UXO) may be present on and in the sea floor within the NWXA. All activities in the area are conducted at Woodside's own risk.
 - DoD advised that the Commonwealth of Australia, represented by the Department of Defence, takes no responsibility for:
 - Reporting the location and type of UXO that may be in the areas.
 - Identifying or removing any UXO from these areas.
 - Any loss or damage suffered or incurred by Woodside Energy or any third party arising out of, or directly related to, UXO in the area.
 - DoD require the following notifications:
 - DoD - five weeks prior to the commencement of activities.
 - Airservices Australia (if Notice to Airmen notification is required for activities in Restricted Airspace).
 - AHO - three weeks prior to the commencement of activities.
- On 4 August 2021, Woodside emailed DoD:
 - Woodside responded to DoD's feedback and noted the advice provided regarding risks and notification requirements. Woodside confirmed it will notify the DoD at least five weeks prior to the commencement of activities.
- Woodside requested DoD provide shape files or further specific detail in relation to the mentioned UXO so that Woodside can then map it against the proposed activity.
- On 4 August 2021, DoD responded and provided a link to its mapping system which identifies UXO locations within the NWXWA.
- On 10 May 2022 Woodside emailed DoD to clarify the potential risk of UXOs in the Scarborough Development Operational Area.
- On 13 May 2022 DoD emailed Woodside:
 - DoD noted that the UXO risk data has been updated. Currently the UXO webmap has one historical location but it falls outside of the proposed pipeline route. It is reasonable to assess the risk of UXO in the Operational Area to be negligible.
- On 13 May 2022, Woodside thanked DoD for their email of the same date and the information provided.
- On 25 August 2022, Woodside emailed DoD:
 - Woodside noted DoD had previously confirmed there are no specific UXO records for activities in the North West Exercise Area (NWXA) and it is reasonable to assess the risk to be negligible. Woodside asked for clarification as to whether the advice that there are no specific records of UXO in the area means that no categorisation is required and so no further advice is required.
- On 23 September 2022, Woodside followed up on its 25 August 2022 email.
- On 23 September 2022, DoD emailed Woodside:
 - DoD confirmed that the area of the NWXA would be classed as Remote in accordance with its land counterpart. The risk of encountering UXO is Very Low, but not absent.
- On 27 January 2023, Woodside emailed DoD with an update on the proposed activity (Appendix F, reference 1.55) and provided an updated Consultation Information Sheet.

- Woodside asked DoD for access to sufficient data or a map of Defence Restricted and Prohibited Areas to inform Woodside's development of defence zone maps and figures for DoD's use.
- On 20 February 2023, DoD responded thanking Woodside for its email and reiterated previous advice provided on 15 June 2021. DoD also provided Woodside with a figure outlining its restricted airspace and Defence Training Areas off the WA Coast.
- On 13 March 2023, Woodside emailed DoD and provided an updated defence zone map (Appendix F, reference 1.110).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>DoD has provided feedback relating to:</p> <ul style="list-style-type: none"> • The location of the activity in proximity to the NWXA and the potential presence of UXO. • Notification requirements. <p>DoD has provided advice relating to:</p> <ul style="list-style-type: none"> • Details of its restricted airspace and Defence Training Areas off the WA Coast. 	<p>Woodside has reviewed the proposed activity and the location of the NWXA and UXOs to understand the potential for UXOs to be within the Operational Area. The Learmonth Air Weapons Range (AWR) practice area is approximately 20 km south of the operational area and the location of any UXOs (known to occur) are near Bessieres Island which is located 190 km from the Operational Area. Based on the locations of the proposed activity and advice from DOD, UXO risk in the Operational Area is considered negligible / remote and it was determined there is no credible risk from UXOs for the proposed activity.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has addressed DoDs expectations on notifications – Defence, restricted air space and AHO (C 1.1 and C 1.5, Table 7-2). AHO have been engaged for the activity and are included in Woodside's activity notification protocols. AHO will be notified four weeks prior to the start of activities.</p> <p>Woodside considers the measures and controls in the EP are appropriate.</p>

Department of Primary Industries and Regional Development (DPIRD)

- Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.
- Summary of information provided and record of consultation:**
- On 14 May 2021, Woodside emailed DPIRD (Appendix F, reference 1.24) advising of the proposed activity and provided a Consultation Information Sheet, fisheries map and list of previous seismic surveys.
 - On 3 February 2023, Woodside emailed DPIRD with an update on the proposed activity (Appendix F, reference 1.67) and provided an updated Consultation Information Sheet and fisheries maps.
 - On 17 February 2023, DPIRD responded noting that as the activity is proposed for waters unlikely to influence fishing activities it has no further comments at this time.
 - On 24 February 2023, Woodside emailed DPIRD thanking it for its feedback and confirming that Woodside has consulted state commercial fishery licence holders and recreational fishery licence holders that are active within the EMBA for the proposed activity (Appendix F, reference 1.100).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>DPIRD has provided feedback that the activity is proposed for waters unlikely to influence fishing activities and it has no further comments at this time.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside confirmed with DPIRD it has consulted state commercial fishery licence holders and recreational fishery licence holders that are active within the EMBA for the proposed activity. (See this Consultation Report with Commonwealth and State Fisheries.)</p> <p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation.</p> <p>Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP.</p> <p>No additional measures or controls are required.</p>
<p>Department of Transport (DoT)</p>		

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed DoT advising of the proposed activity (Appendix F, reference 1.15) and provided a Consultation Information Sheet.
- On 18 May 2021, DoT emailed Woodside:
 - Requested that if there is a risk of a spill impacting State waters from the proposed activities, to ensure that DoT is consulted as outlined in the Department of Transport Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020).
- On 18 August 2021, Woodside responded to DoT’s feedback and confirmed that if there is a risk of a spill impacting State waters, the Department of Transport will be consulted.
- On 8 July 2021, Woodside emailed DoT and provided a copy of the First Strike Plan (Appendix F, reference 1.26).
- On 9 July 2021, DoT responded and advised it will review.
- On 11 August 2021, DoT responded with comments for review, which sought clarification on priorities, estimates of waste quantities and marine response options.
- On 12 August 2021, Woodside responded to DoT’s feedback:
 - Providing feedback on responses priorities.
 - Provided feasible response thresholds.
 - Advised that this EP has a diesel-only scenario.
- On 19 August 2021, DoT emailed Woodside:
 - DoT advised it didn’t have any further comments.
 - DoT requested a copy of the final version of the First Strike Plan once accepted.
- On 19 August 2021, Woodside responded and confirmed that it will send DoT a copy of the First Strike Plan once approved.
- On 27 January 2023, Woodside emailed DoT with an update on the proposed activity (Appendix F, reference 1.52) and provided an updated Consultation Information Sheet.
- On 7 February 2023, DoT responded restating its advice from 18 May 2021.
- On 22 February 2023, Woodside responded confirming that if there is a risk of a spill impacting State waters, the Department of Transport will be consulted.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<p>DoT has provided feedback relating to:</p> <ul style="list-style-type: none"> • Consultation requirements in the event of a spill impacting State waters from any of the proposed activities. • The draft Oil Pollution First Strike Plan and a request for a final accepted version of the plan when available. <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside has addressed DoT's feedback regarding the Oil Pollution First Strike Plan and incorporated referenced changes based on feedback.</p> <p>Woodside will send DoT a copy of the First Strike Plan once accepted.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside will provide DoT with a copy of the accepted Oil Pollution First Strike Plan (Appendix I), as referenced in the OSPRMA (Appendix D).</p> <p>Woodside will consult DoT if there is a spill impacting State waters from the proposed activity, as referenced in the OSPRMA (Appendix D).</p> <p>No additional measures or controls are required.</p>
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Commonwealth and WA State Government Departments or Agencies – Environment

Director of National Parks (DNP)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed DNP advising of the proposed activity considering potential risks to Australian marine Parks (Appendix F, reference 1.13), and provided a Consultation Information Sheet.
- On 5 July 2021, DNP responded, noting it has no claims or objections.
- On 27 January 2023, Woodside emailed DNP with an update on the proposed activity (Appendix F, reference 1.52) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.76).
- On 24 February 2023, DNP emailed Woodside:
 - DNP noted they have no further comment or objections and claims on the proposed activity. DNP noted that comments on the proposed activity were previously provided to Woodside on 5 July 2021.
 - DNP requested clarification on the Operational Area (OA).
 - The Director of National Parks considers the OA to encompass operational activities such as line turns / repositioning, equipment maintenance, deployment and recovery, crew change and resupply.
 - These are offshore petroleum activities and Commonwealth environment regulatory matters and, as such, should be included in the EP so relevant risks are assessed and effective mitigation applied.
- On 8 March 2023, Woodside emailed DNP (Appendix F, reference 1.107):
 - Woodside acknowledged the comments already provided by DNP previously on each of the relevant EPs and that DNP has no further comment or objections and claims.
 - Copies of DNP's previous responses have been received and have been addressed where relevant within each of the proposed EPs.
 - Woodside provided clarification that the Operational Area includes both the Active Source Area and a surrounding buffer for the purpose of vessel line turns and other vessel manoeuvres. The seismic source will not be discharged within this buffer.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>DNP provided feedback about the Operational Area and that it has no comment on the proposed activity.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside has addressed DNP's feedback and provided additional information on the operational area.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>The Environment Plan demonstrates that the proposed activities are outside the boundaries of a proclaimed Commonwealth Marine Park and identifies that there are no credible impacts to the values of any Commonwealth Marine Parks as a result of planned activities (Section 4.9). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of an incident, as demonstrated in Section 6.7.2 and Section 6.7.3.</p> <p>Woodside will ensure DNP is made aware of any incidences within a marine park for the activity, as per the commitment in the Oil Pollution First Strike Plan (Appendix I; Table 7-4).</p> <p>No additional measures or controls are required.</p>
Department of Biodiversity, Conservation and Attractions (DBCA)		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> • On 13 May 2021, Woodside emailed DBCA advising of the proposed activity and provided a Consultation Information Sheet (Appendix F, reference 1.17). • On 24 May 2021, DBCA emailed Woodside: <ul style="list-style-type: none"> - DBCA advised that based on the documentation provided for review and other readily available information, DBCA has no comments in relation to its responsibilities under the Conservation and Land Management Act 1984 and Biodiversity Conservation Act 2016. • On 27 January 2023, Woodside emailed DBCA with an update on the proposed activity (Appendix F, reference 1.52) and provided an updated Consultation Information Sheet. • On 8 February 2023, DBCA emailed Woodside: <ul style="list-style-type: none"> - DBCA advised that based on the documentation provided for review and other readily available information, DBCA has no comments in relation to its responsibilities under the Conservation and Land Management Act 1984 and Biodiversity Conservation Act 2016. 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls

<p>DCBCA provided feedback that it has no comment on the proposed activity.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside acknowledges that DBCA had no comment on the proposed activities.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation.</p> <p>Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>The Environment Plan demonstrates that the proposed activities are outside the boundaries of a proclaimed State Marine Park and identifies that there are no credible impacts to the values of any State Marine Parks as a result of planned activities (Section 4.9).</p> <p>While impacts to State Marine Parks are not expected in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.7.2 and Section 6.7.3.</p> <p>No additional measures or controls are required.</p>
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Commonwealth and State Government Departments or Agencies – Industry

Department of Industry, Science and Resources (DISR) (formerly DISER)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed DISR advising of the proposed activity (Appendix F, reference 1.12) and provided a consultation Information Sheet.
- On 27 January 2023, Woodside emailed DISR with an update on the proposed activity (Appendix F, reference 1.52) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.76).

Summary of Feedback, Objection or Claim

Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response

Environment Plan Controls

No feedback, objections or claims received despite follow up.

Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.7**).

No additional measures or controls are required.

Department of Mines, Industry Regulation and Safety (DMIRS)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed DMIRS advising of the proposed activity (Appendix F, reference 1.14) and provided a Consultation Information Sheet.
- On 27 January 2023, Woodside emailed DMIRS with an update on the proposed activity (Appendix F, reference 1.52) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.76).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	Woodside will provide notifications to DMIRS prior to the commencement and at the end of the activity, as referenced in Table 7-2 in this EP. No additional measures or controls are required.
Commonwealth Commercial fisheries and representative bodies		
Western Deepwater Trawl Fishery		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> • On 13 May 2021, Woodside emailed licence holders advising of the proposed activity and provided a Consultation Information Sheet and fisheries map (Appendix F, reference 1.18) • On 3 February 2023, Woodside emailed licence holders with an update on the proposed activity (Appendix F, reference 1.65) and provided an updated Consultation Information Sheet and fisheries map. • On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.86). • 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP.</p> <p>Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP</p> <p>No additional measures or controls are required.</p>
North West Slope and Trawl Fishery		

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside emailed licence holders on the proposed activity (Appendix F, reference 1.65) and provided a Consultation Information Sheet and fisheries map.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.86).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP.</p> <p>Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP.</p> <p>No additional measures or controls are required.</p>
<p>Commonwealth Fisheries Association (CFA)</p>		

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed the CFA advising of the proposed activity (Appendix F, reference 1.19) and provided a Consultation Information Sheet, fisheries map and list of previous seismic surveys.
- On 3 February 2023, Woodside emailed CFA on the proposed activity (Appendix F, reference 1.65) and provided an updated Consultation Information Sheet and fisheries map.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.86).
- On 22 February 2023, CFA emailed Woodside:
 - CFA advised it is not resourced to give feedback on Woodside’s Environment Plan.
 - CFA requested to direct enquiries to the associations that represent the directly affected fisheries/fishers.
 - CFA noted that the increasing volume of requests for consultation on EP from oil and gas and more recently windfarm proposals are beyond the capacity of most associations.
 - For this reason, please be prepared to engage those associations on a fee for service basis.
- On 15 March 2023, Woodside emailed CFA:
 - Woodside confirmed it has provided consultation information directly to fishery licence holders that it has assessed as ‘relevant persons’ for the proposed EP, as well as to their fishery representative bodies.
 - As per Woodside’s ongoing consultation approach, feedback continues to be assessed and responded to, as required, through the life of an EP.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
<p>CFA provided feedback that it is not resourced to give feedback on Woodside’s Environmental Plan and that it should consult with fishery license holders directly. Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside has addressed the CFA’s feedback, including confirming it has provided consultation information directly to licence holders it has assessed as ‘relevant persons’ for the proposed EP as well as their fishery representative bodies.</p> <p>Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP.</p> <p>Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP.</p> <p>No additional measures or controls are required.</p>

State Commercial fisheries and representative bodies

Marine Aquarium Managed Fishery

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside sent a letter to the Marine Aquarium Managed Fishery on the proposed activity (Appendix F, reference 1.66) and provided a Consultation Information Sheet and fisheries map.
- On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 1.82).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP. No additional measures or controls are required.

Mackerel Managed Fishery (Area 2 and 3)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside sent a letter to the Mackerel Managed Fishery (Area 2 and 3) on the proposed activity (Appendix F, reference 1.81) and provided a Consultation Information Sheet and fisheries map.
- On 22 February 2023 Woodside sent a follow up letter (Appendix F, reference 1.97).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls

<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP.</p> <p>Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP.</p> <p>No additional measures or controls are required.</p>
<p>West Coast Deep Sea Crustacean Managed Fishery</p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> On 3 February 2023, Woodside sent a letter to the West Coast Deep Sea Crustacean Managed Fishery on the proposed activity (Appendix F, reference 1.66) and provided a Consultation Information Sheet and fisheries map. On 22 February 2023 Woodside sent a follow up letter (Appendix F, reference 1.82). 		
<p>Summary of Feedback, Objection or Claim</p>	<p>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</p>	<p>Environment Plan Controls</p>
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP.</p> <p>Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP.</p> <p>No additional measures or controls are required.</p>
<p>Pilbara Line Fishery</p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> On 3 February 2023, Woodside emailed to the Pilbara Line Fishery on the proposed activity (Appendix F, reference 1.72) and provided a Consultation Information Sheet and fisheries map. On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.81). 		

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP.</p> <p>Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP.</p> <p>No additional measures or controls are required.</p>
<p>Western Australian Fishing Industry Council (WAFIC)</p>		

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed WAFIC advising of the proposed activity (Appendix F, reference 1.20) and provided a Consultation Information Sheet, fisheries map and list of previous seismic surveys.
- On 16 June 2021, WAFIC thanked Woodside for the information.
 - WAFIC noted the following risks:
 - Mobile invertebrates – Moderate
 - Immobile invertebrates – Low
 - Finfish demersal – Moderate
 - Pelagic – Negligible
 - WAFIC noted that commercial fishers have advised them that they are encountering a significant change in catchability of mackerel species following seismic survey activity, so fish behaviour and distribution are changing which is having a direct impact on the economic viability of commercial fishers and potential fish stocks for those species. There is an opportunity for further research into this indirect impact to fully understand the effect.
 - WAFIC also noted notwithstanding the above, risk mitigation and control measures should be implemented to ensure all impacts are managed and detailed evidence-based analysis has considered the timing of the survey to minimise impacts to commercial fishing operations and the ecological impacts to fish species.
- On 23 August 2021, Woodside responded, thanking WAFIC for the feedback and confirmed the receptors outlined, and impact of seismic surveys will be considered in the EP, and control measures implemented where relevant.
- On 3 February 2023, Woodside emailed WAFIC on the proposed activity (Appendix F, reference 1.68) and provided an updated Consultation Information Sheet and fisheries map.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.78).
- On 5 May 2023, Woodside had a phone call with WAFIC to follow up on a number of EPs, including the activities proposed under this EP, and to request any further feedback. Woodside committed to providing WAFIC with a consolidated email outlining all the EPs Woodside is currently consulting WAFIC on for ease of feedback.
- On 5 May 2023, Woodside sent an email to WAFIC providing the status of feedback on a number of EPs, including the activities proposed under this EP. Woodside advised it would soon be submitting the EP for assessment and requested any further feedback.
- On 19 May 2023, Woodside had a phone call with WAFIC to follow up on a number of EPs, including the activities proposed under this EP and to request any feedback.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<ul style="list-style-type: none"> WAFIC provided feedback about risks and communicated advice from commercial fisheries about changes to fish behaviour and distribution, particularly the catchability of mackerel species following seismic survey activity. WAFIC also commented on the implementation of risk mitigation and control measures to minimise impacts. Whilst feedback has been received, there were no objections or claims. 	<ul style="list-style-type: none"> Woodside has addressed WAFIC's feedback and confirmed that the receptors outlined, and impact of seismic surveys will be considered in the EP, and control measures implemented where relevant including application of EPBC controls (Section 6). Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7). 	<ul style="list-style-type: none"> Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-2 and Control 1.3 in Section 6.6.1 of this EP. No additional measures or controls are required.
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Recreational marine users and representative bodies

Exmouth Recreational Marine Users

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside emailed Exmouth Recreational Marine Users on the proposed activity (Appendix F, reference 1.69) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.79).

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Review process (see Section 7.7).</p>	No additional measures or controls are required.

Gascoyne Recreational Marine Users

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 6 February 2023, Woodside sent a letter to Gascoyne Recreational Marine Users on the proposed activity (Appendix F, reference 1.73) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.83).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	<ul style="list-style-type: none"> • Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. • Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7). 	<ul style="list-style-type: none"> • No additional measures or controls are required.

Recfishwest

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Recfishwest advising of the proposed activity (Appendix F, reference 1.56) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.87).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	<p>Woodside has responded to and incorporated feedback from Recfishwest on other Scarborough EPs.</p> <p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	No additional measures or controls are required.

Marine Tourism Association WA		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> On 27 January 2023, Woodside emailed Marine Tourism Association WA advising of the proposed activity (Appendix F, reference 1.56) and provided a Consultation Information Sheet. On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.87). 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	No additional measures or controls are required.
WA Game Fishing Association (WAGFA)		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> On 27 January 2023, Woodside emailed WAGFA advising of the proposed activity (Appendix F, reference 1.56) and provided a Consultation Information Sheet. On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.87). 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	No additional measures or controls are required.
Titleholders and Operators		
Chevron Australia / Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA Gorgon		

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed Chevron Australia advising of the proposed activity (Appendix F, reference 1.16) and provided a Consultation Information Sheet, and Titleholder map (Appendix F, reference 1.21).
- On 27 January 2023, Woodside emailed Chevron Australia advising of the proposed activity (Appendix F, reference 1.58) and provided an updated Consultation Information Sheet. Woodside requested that Chevron forward the consultation information to Chevron’s Joint Venture partners Osaka Gas Gorgon, Tokyo Gas Gorgon and JERA Gorgon for feedback.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.88).
- On 22 March 2023, Chevron emailed Woodside:
 - Chevron advised it was actively reviewing a list of 10 of Woodside’s EP submissions.
 - Chevron advised the current forecast is for the list to be completed by mid-April at the latest, although it has prioritised a list of five EPs to be completed sooner.
 - Chevron requested for Woodside to advise if there is a particular EP that is of higher urgency so that it can prioritise its review accordingly. Once this initial backlog is clear Chevron anticipates being in a position to respond within 30 days.
 - Chevron requested to assist in its review of the potential effect on its interests and activities, could Woodside please provide GIS shape files for the EPs listed (including this proposed activity).
- On 29 March 2023, Chevron emailed Woodside:
 - Chevron advised it had reviewed five of Woodside’s EPs that were submitted to Chevron and have captured initial feedback on each.
 - In addition to the previously requested GIS shape files, Chevron requested for Woodside to confirm that the area of seismic data collection and operations have not changed since the Seismic Ingress Agreements executed in 2022.
- On 3 April 2023, Woodside emailed Chevron:
 - Woodside provided GIS shapefiles for a list of 10 Woodside EPs, including this proposed activity.
 - Woodside advised it would respond to Chevron’s feedback dated 29 March 2023 separately.
- On 6 April 2023, Woodside emailed Chevron:
 - Woodside re-attached the GIS shapefiles provided on 3 April 2023 and advised it has provided the requested shapefiles for the Scarborough Seismic activity on 3 April 2023.
 - Woodside confirmed that the survey area as described in the EP and associated Ingress Agreement has not changed. The Agreement will expire in Oct 2023 however Woodside are currently planning to acquire seismic under the Scarborough EP in June 2023 – it is a three-month campaign. If this timeframe cannot be achieved, Woodside will engage Chevron to renegotiate the Ingress Agreement.

Summary of Feedback, Objection or Claim	Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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<p>Chevron has requested:</p> <ul style="list-style-type: none"> • GIS shapefiles for the proposed activity. • Confirm that the area of seismic data collection and operations have not changed since the Seismic Ingress Agreements executed in 2022. 	<p>Woodside has provided GIS shapefiles to Chevron for the Scarborough Seismic activity.</p> <p>Woodside confirmed that the survey area as described in the EP and associated Ingress Agreement has not changed.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Section 6.7.6 of the EP was updated to include cumulative underwater noise impact assessment, should the Chevron 4D MSS be carried out at the same time as Scarborough Trunkline installation (within the 4D MSS Operational Area).</p> <p>Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Chevron's functions, interests or activities.</p> <p>No additional measures or controls are required.</p>
<p><i>Exxon Mobil Australia</i></p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> • On 13 May 2021, Woodside emailed Exxon Mobil Australia advising of the proposed activity Appendix F, reference 1.16) and provided a Consultation Information Sheet, and Titleholder map (Appendix F, reference 1.21). • On 27 January 2023, Woodside emailed Exxon Mobil Australia advising of the proposed activity (Appendix F, reference 1.57) and provided an updated Consultation Information Sheet. • On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.89). 		
<p><i>Summary of Feedback, Objection or Claim</i></p>	<p><i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i></p>	<p><i>Environment Plan Controls</i></p>
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
<p><i>Finder Energy</i></p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> • On 27 January 2023, Woodside emailed Finder Energy advising of the proposed activity (Appendix F, reference 1.57) and provided an updated Consultation Information Sheet. • On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.89). 		
<p><i>Summary of Feedback, Objection or Claim</i></p>	<p><i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i></p>	<p><i>Environment Plan Controls</i></p>

No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.
KUFPEC		
Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below. Summary of information provided and record of consultation:		
<ul style="list-style-type: none"> On 27 January 2023, Woodside emailed KUFPEC advising of the proposed activity (Appendix F, reference 1.57) and provided an updated Consultation Information Sheet. On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.89). 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.
Western Gas		
Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below. Summary of information provided and record of consultation:		
<ul style="list-style-type: none"> On 13 May 2021, Woodside emailed Western Gas advising of the proposed activity (Appendix F, reference 1.16) and provided a Consultation Information Sheet, and Titleholder map (Appendix F, reference 1.21). On 27 January 2023, Woodside emailed Western Gas advising of the proposed activity (Appendix F, reference 1.57) and provided an updated Consultation Information Sheet. On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.89). 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.
Shell Australia		

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed title holder advising of the proposed activity (Appendix F, reference 1.22) and provided a Consultation Information Sheet, and Titleholder map (Appendix F, reference 1.21).
- On 27 January 2023, Woodside emailed Shell Australia advising of the proposed activity (Appendix F, reference 1.57) and provided an updated Consultation Information Sheet.
- On 7 February 2023, Shell emailed advising it has no comments on the proposed activity.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
Shell advised it has no feedback on the proposed activity. Whilst feedback has been received, there were no objections or claims.	Woodside notes Shell's advice that it has no feedback on the proposed activity. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.

Santos

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Santos advising of the proposed activity (Appendix F, reference 1.57) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.89).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.

Eni Australia

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Eni Australia advising of the proposed activity (Appendix F, reference 1.59) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.94).
- On 23 February 2023, Eni Australia emailed Woodside advising it has no comments and that it requested to remain updated on the proposed activity.
- On 23 February 2023, Woodside emailed Eni Australia to advise that it will provide commencement and cessation of activity notifications relating to the proposed activities (Appendix F, reference 1.99).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>Eni Australia has provided feedback that it has no comment on the proposed activity.</p> <p>Eni Australia has requested to remain updated on the proposed activity.</p>	<ul style="list-style-type: none"> • Woodside notes Eni Australia's feedback that it has no comment on the proposed activity. • Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7). 	<ul style="list-style-type: none"> • Woodside has consulted Eni Australia in the course of preparing this EP. Woodside has assessed the claims or objections raised by Eni Australia. • An additional measure was put in place- Woodside will notify Eni Australia prior to the commencement and at the end of the activity, as referenced as C1.3 in this EP. • Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Eni Australia's functions, interests or activities.

OMV Australia / Sapura OMV Upstream (WA)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed OMV Australia / Sapura OMV Upstream (WA) advising of the proposed activity (Appendix F, reference 1.57) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.89).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>

JX Nippon Oil & Gas Exploration Corporation

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed JX Nippon advising of the proposed activity (Appendix F, reference 1.59) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside emailed JX Nippon via its website to obtain more up to date contact details for providing the EP Consultation Information (Appendix F, reference 1.94).
- On 23 February 2023, Woodside also sent a letter to JX Nippon advising of the proposed activity (Appendix F, reference 1.97). Woodside also sent an email advising of the proposed activity (Appendix F, reference 1.98).
- On 24 February 2023, JX Nippon emailed Woodside seeking confirmation of the location and topic of the activity so as to obtain the correct contact to provide feedback.
- On 24 February 2023, Woodside emailed JX Nippon to advise on the location of the specific proposed activity and resent the consultation information.
- On 24 February 2023 JX Nippon emailed Woodside and copied in the appropriate contact for reviewing the consultation information.
- On 28 February 2023, Woodside emailed JX Nippon to advise it has updated its stakeholder distribution list.
- On 10 March 2023, Woodside followed up with JX Nippon via email (Appendix F, reference 1.109).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.

BP Developments Australia (BP)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed BP advising of the proposed activity (Appendix F, reference 1.59) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.94).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.

Carnarvon Energy

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Carnarvon Energy advising of the proposed activity (Appendix F, reference 1.59) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.94).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.

PE Wheatstone (PEW)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed PEW advising of the proposed activity (Appendix F, reference 1.59) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.94).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.

Kyushu Electric Wheatstone (KEW)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed KEW advising of the proposed activity (Appendix F, reference 1.59) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.94).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls

No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.
Fugro Exploration		
Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below. Summary of information provided and record of consultation:		
<ul style="list-style-type: none"> On 27 January 2023, Woodside emailed Fugro Exploration advising of the proposed activity (Appendix F, reference 1.59) and provided an updated Consultation Information Sheet. On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.94). 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.
INPEX Alpha		
Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below. Summary of information provided and record of consultation:		
<ul style="list-style-type: none"> On 27 January 2023, Woodside emailed INPEX Alpha advising of the proposed activity (Appendix F, reference 1.60) and provided an updated Consultation Information Sheet. On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.95). 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.
Peak Industry Representative bodies		
APPEA		

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 13 May 2021, Woodside emailed APPEA advising of the proposed activity (Appendix F, reference 1.23) and provided a Consultation Information Sheet.
- On 27 January 2023, Woodside emailed APPEA advising of the proposed activity (Appendix F, reference 1.52) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.76).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.

• **Traditional Custodians**

Ngarluma Aboriginal Corporation (NAC)

NAC is established under the Native Title Act 1993 by the Ngarluma people to represent the Ngarluma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with NAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5 of the EP. Specifically:

Sufficient Information:

- Woodside Sought direction on NAC's preferred method of consultation. This resulted in a face-to-face meeting being coordinated at the location of NAC's choosing, with NAC nominated representatives. This meeting included information that was readily accessible and appropriate.
- Provided Consultation Information Sheets and Consultation Summary Sheets to NAC
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Set out in detail what was being sought through consultation.
- Suggested that information and request for feedback be distributed to members as required.
- Provided NOPSEMA's guidelines and brochure on consultation.
- Provided response to questions asked about the activity through consultation.
- Advised that NAC can request that particular information provided in the consultation not be published (to align with 11A(2)(4))

Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to NAC on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to NAC over 9 months, demonstrating a "reasonable period" of consultation.

Woodside asked NAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via a meeting and written exchanges to further understand the environment in which the activity will take place. NAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NAC's functions, interests or activities.

Summary of information provided and record of consultation:

- On 20 January 2023, Woodside emailed NAC advising of the proposed activity (Appendix F, reference 1.42) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. Woodside made it clear it was prepared to consult in the manner and location preferred by NAC and resource the meeting appropriately. Woodside requested that the information be forwarded to NAC members as required.
- On 26 January 2023, Woodside and NAC representatives met to discuss the proposed activity in more detail.
- On 3 February 2023, Woodside and NAC representatives met in Roebourne to discuss how best to consult on the proposed activity.
- On 17 February 2023, Woodside spoke with NAC representatives to discuss the proposed activity and to plan further engagement on a range of Woodside EPs. NAC representatives stated there would be opportunity at the NAC March Board meeting for further engagement.
- On 24 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity and following on from the 17 February 2023 meeting (Appendix F, reference 1.101). Woodside noted it was seeking NAC's feedback as soon as possible on the proposed activity. Woodside made it clear it was prepared to consult in the manner and location preferred by NAC and resource the meeting appropriately.

- On 24 February 2023, NAC emailed Woodside acknowledging receipt of Woodside's emails noting that it was yet to attend to the emails and would do so following the w/c 27 February 2023.
- On 9 March 2023, Woodside emailed NAC and also left a phone message to follow up on the email received 24 February 2023. Woodside advised it was seeking opportunity for Woodside to present to the NAC board with an EP overview and asked if there had been any progress in terms of securing a preferred day and timeslot.
- On 9 March 2023, NAC emailed Woodside to advise that the contact at NAC was unavailable to meet on 30 March 2023.
- On 9 March 2023, Woodside emailed NAC:
 - Woodside noted that during a previous meeting, NAC had advised its next board meeting would be held on 29 and 30 March 2023 and that Woodside would be potentially assigned time on the agenda to present to the NAC Board on either one of those days.
 - Woodside advised that this is an important opportunity to ensure that NAC board have the opportunity to provide feedback on the Environmental Plans and note if they have interests in the environment that may be affected (EMBA).
 - Woodside welcomed the suggestion of alternative days/times or ways that it can provide an overview to the NAC Board.
- On 10 March 2023, NAC emailed Woodside to advise that its March Board Meeting was full with overflows from January and February and at this stage will need to leave the Environmental Plan consultation until the April meeting.
- On 14 March 2023, Woodside emailed NAC to request the dates for the April board meeting and to confirm what time Woodside might be allocated to present at NAC's earliest convenience.
- On 14 March 2023, NAC emailed Woodside to advise that the Board meeting is tentatively set for 29th April 2023. NAC advised this needs to be confirmed with its Board before it can commit to a time or date.
- On 17 April, Woodside emailed NAC noting there had been no confirmation of an April meeting and seeking advice on whether NAC have feedback in relation to the proposed activities. The email explained that Woodside's plan to submit the EP and was seeking pre-submission feedback, noting that feedback could be provided for the life of the EP. Woodside sought an email supporting the approach and also looked forward to meeting in future.
- On 20 April 2023, NAC emailed Woodside acknowledging receipt of the materials and asked questions of an unrelated EP.
 - On 20 April 2023, NAC emailed Woodside noting that the next board meeting would be 26 April 2023 and asking if Woodside still would like to attend.
- On 20 April 2023, Woodside emailed NAC confirming that Woodside would appreciate time to present at the Board meeting.
- On 20 April 2023, NAC emailed Woodside requesting any documentation for the board meeting packs.
- On 21 April 2023, NAC advised that there was no time for Woodside on the April agenda but time would be set aside for May, with a tentative date of 17 May 2023.
- On 21 April 2023, Woodside thanked NAC for their response.
- On 26 April 2023, Woodside emailed NAC with an information sheet on another activity and responded to some queries about spill response which generated from a phone discussion and NAC's email of 20 April 2023.
- On 28 April 2023 Woodside emailed NAC advising that the next step was for the EP to be submitted but no feedback had been received to date. Stated that before Woodside submits, Woodside sought to understand whether there were any issues or concerns with the proposed activities that needed to be reflected in the EP.
- **(2)** On 10 May 2023, NAC replied to Woodside stating that they were supportive of submission of the EP and looked forward to ongoing consultation.
- On 12 May 2023, NAC emailed Woodside to notify that Woodside had been allocated a one-hour window in the NAC Board Meeting of 17 May.
- On 17 May 2023, Woodside presented to the NAC Board of Directors in Karratha:
 - Woodside opened the meeting with introductions
 - Woodside thanked the Ngarluma Aboriginal Corporation (NAC) for inviting Woodside Energy to speak with them and provided Acknowledgement of Country
 - Woodside talked through agenda and reasons for consultation
 - Woodside introduced the regulations we need to comply with and the role of NOPSEMA.

- Woodside explained that many of our activities could impact Ngarluma country in the highly unlikely event of an oil spill, and some activities like Scarborough could have a more direct impact
- Woodside referred to an example EMBA and described how it is comprised of many replicates of a single spill
- Woodside explained that we are consulting with many people up and down the coastline including multiple Aboriginal Corporations
- Woodside proposed what consultation outcomes it would like to meet with NAC, including understanding
 - How the activities could impact cultural values, functions, interests or activities
 - Whether protecting the environment is enough to protect these things
 - What NAC's concerns are about the proposed activities and what NAC thinks we should do about it
 - If there's anything NAC would like included in EPs
- Woodside noted that feedback will be welcomed throughout the life of all Environment Plans
- Woodside provided a high-level overview of the Scarborough project
- Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video showing the general process of drilling and completions which was designed for public audience.
- NAC asked when these activities are proposed to happen, Woodside responded later this year pending government approvals
- Woodside asked if there was any further feedback or questions about these activities, none were received
- Woodside described the planned and unplanned environmental impacts and risks of the activities described in the meeting and proposed controls, in accordance with the Information Sheets
- Woodside asked whether there are any questions on the environmental risks and impacts, none were received
- Woodside noted that any questions or considerations can be directed through Shanine, or the Quarterly Heritage Meetings which NAC has a standing invite to. This is also an opportunity to discuss job opportunities and other matters
- Woodside left hard copies of Information Sheets and Plain Language Summaries for each discussed activity with NAC attendees.
- On 18 July 2023, Woodside emailed NAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that NAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.
- On 26 July 2023, Woodside emailed NAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 2 August 2023, Woodside emailed NAC regarding the acceptance of this EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether NAC was aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 9 August 2023, Woodside emailed NAC again seeking feedback and information relating to this EP stating the conditions of acceptance:
 - if NAC were aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
 - if there was any information, they wished wish to provide on cultural features and/or heritage values.
 - the email gave the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement.
 - the email also described the purpose of consultation.

- On 10 August 2023, NAC emailed Woodside to express limited capacity and notify an alternate contact who would be handling EP consultation.
- On 10 August 2023, Woodside emailed NAC apologising for the influx of emails and confirming contact details.
- On 11 August 2023, Woodside held a web meeting with NAC to discuss plans for consultation. NAC requested a list of EPs for which Woodside would seek input from NAC. NAC indicated that it would establish a Working Group which would hold bi-monthly engagements with Woodside. It also noted ongoing capacity issues.
- On 16 Aug 2023, Woodside emailed NAC seeking to re-establish a regular meeting cadence and proposing to commence in the following week.
- **(3)** On 18 September 2023, NAC emailed Woodside proposing:
 - establishment of Joint Working Group.
 - Woodside to provide draft agreement.
 - Working group meeting commence in October with monthly meetings.
 - Noting arrangements would cover future scope of consultations with NAC.
- On 28 September 2023, NAC representative emailed Woodside requesting a phone discussion about consultations with NAC.
- **(3)** On 28 September 2023, Woodside had a phone discussion with NAC representative, they were following up on Woodside consultation requests and wished to progress a consultation meeting with NAC Working Group in October. They requested Woodside:
 - Propose date/s to meet.
 - Confirm they would cover cost.
 - Provide any relevant information prior to the meeting.
 - Advise which Eps Woodside would like to consult with NAC on.
 - Woodside agreed to follow up on the above and looked forward to meeting with the Working Group in October.
- On 10 October 2023, Woodside emailed NAC in response to their email of 18 September 2023, with in principle support of NAC's proposal for ongoing consultation through a Working Group. Woodside requested meeting dates and confirmed that Woodside would provide a first draft of the agreement.

Quarterly Heritage Meetings:

- Woodside convenes a quarterly meeting of Traditional Custodian representatives from the Representative Aboriginal Corporations involved in historical native title claims over the Burrup Peninsula, including NAC. Individual attendees are nominated by their representative Aboriginal Corporations. These meetings are summarised separately in this table.
- NAC did not nominate attendees to quarterly meetings in 2021 or the first half of 2022 but were provided with copies of the slides used which included overviews of the Scarborough Project.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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<p>(1) NAC emailed Woodside on 10 May 2023, supporting submission of this EP and looking forward to ongoing consultation.</p> <p>(2) NAC proposed establishing a Joint Working Group to engage in meetings with Woodside for ongoing consultation. NAC noted they have capacity issues and require resourcing to cover costs of meeting</p>	<p>(1) NAC is supportive of this EP submission.</p> <p>(2) Separate from consultation under Reg 11A, Woodside will establish an agreement with NAC to work with the NAC Working Group. The agreement and Working Group would be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, a face-to-face meeting with appropriate material (pictures, maps, video) and project attendance allowing opportunity to ask questions and seek further understanding.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>(1) & (2) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environmental plans referenced as PS 17.1.1 in this EP. This includes continued engagement through the proposed Framework Agreement which will be applied to ongoing consultation.</p>
<p><i>Murujuga Aboriginal Corporation (MAC)</i></p> <p>MAC is established under the Burrup and Maitland Industrial Estates Agreement and is the representative body for the Traditional Custodians for Murujuga being the Ngarluma, the Mardudhunera, the Yaburara, the Yindjibarndi, and the Wong-Goo-Tt-Oo peoples (collectively Ngarda-Ngarli). MAC is the cultural authority for Murujuga and is responsible for the management and protection of its cultural values.</p>		

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with MAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5 of the EP. Specifically:

Sufficient Information:

- Woodside Sought direction on MAC's preferred method of consultation. This resulted in face-to-face meetings being coordinated at the location of MAC's choosing, with MAC nominated representatives. These meetings included information that was readily accessible and appropriate.
- Provided Consultation Information Sheets and Consultation Summary Sheets to MAC
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Set out in detail what was being sought through consultation.
- Suggested that information and request for feedback be distributed to members as required.
- Provided NOPSEMA's guidelines and brochure on consultation.
- Provided response to questions asked about the activity through consultation.
- Advised that MAC can request that particular information provided in the consultation not be published (to align with 11A(2)(4))

Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Woodside first met with MAC to discuss the activity in August 2020
- Consultation information provided to MAC on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to MAC over three years, demonstrating a "reasonable period" of consultation.

Woodside asked MAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. MAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on MAC's functions, interests or activities.

Summary of information provided and record of consultation:

Historical Engagement

- On 25 August 2020, Woodside CEO and MAC Board met in person at the MAC office on Murujuga about several issues including high-level summary of Scarborough project.
- MAC members expressed a positive opinion of Woodside and a desire to work together in partnership to achieve future ambitions.
- On 2 October 2020, Woodside email MAC to request advice on progressing a Scarborough ethnographic survey, to be completed by MAC with a final report provided to Woodside.
- On 5 October 2020, MAC called Woodside to discuss way forward with the proposed Scarborough ethnographic survey.
- On 6 October 2020, Woodside emailed MAC to confirm arrangements and request an updated quote.

- On 8 October 2020, Woodside finalised the requested scope of works for the ethnographic survey to identify heritage values known to exist in the nearshore or offshore footprints of the Scarborough project or surrounding seascape.
- From 20-22 October 2020 members of MAC's Circle of Elders participated in an on-country ethnographic survey with both male and female heritage consultants, consistent with industry standard practice. The heritage consultants were selected by MAC, who also coordinated the survey and guided the consultations. The resulting report is owned by MAC and was approved by the Circle of Elders prior to being provided to Woodside. This survey included the entire Scarborough Project development area, including the Operational Area for this EP. This survey was undertaken at a landscape level. Due to the distance of the Operational Area from onshore and coastal areas where the participants are known to hold rights and interests it was not practical to limit the scope of this assessment to a defined boundary. Additionally, in areas of open water beyond the Ancient Landscape that would have been occupied by ancestral people, the relevant values are not expected to have clearly defined or discrete distributions. Therefore, participants were provided with a map of the Scarborough development and asked to identify any values in the surrounding landscape. Consistent with the understanding that cultural values cannot be extrapolated over long distances offshore beyond any native title claims, determinations or ILUAs, no cultural values were identified in the Operational Area or EMBA (McDonald and Phillips 2021). Recommendations of the report related to onshore, nearshore islands and the Ancient Landscape outside the Operational Area of this EP.
- On 10 March 2021, Woodside provided an overview of the Scarborough project to MAC's CEO. No feedback was received on the proposed activity.
- On 19 and 20 May 2021, Woodside provided an overview of the Scarborough project to MAC's Circle of Elders. No feedback was received on the proposed activity.
- On 7 July 2021, a meeting was held with a presentation and discussion about submerged heritage assessments completed to date and mitigations proposed.
- On 11 November 2021, MAC provided Woodside a presentation/position about intangible heritage values.
- On 15 December 2021, Woodside met with MAC Board and Circle of Elders to provide a project overview.
- (3) On 9 January 2022, Woodside sent a letter to MAC clarifying roles, composition, funding and milestones around the Heritage Management Committee.
- (1 & 2) On 2 February 2022, Woodside proposed to MAC the establishment of a Heritage Management Committee (HMC) whose role would be to consider the necessary mitigation measures required to address any new heritage information arising following certain milestones related to the Scarborough Project and advise Woodside where any additional mitigation measures are recommended and of any other actions MAC or Woodside should consider.
- On 25 February 2022, an all day meeting was held between MAC and Woodside on heritage management and on 28 February 2022 an email of action items from meeting held on 25 February was sent to MAC.
- On 18 May 2022, Woodside sent a letter to MAC requesting clarity from MAC on whether the Phase II ethnographic survey for Scarborough is still supported by MAC.
- (3) On 15 June 2022, Woodside held a meeting with MAC to discuss the scope, purpose and composition of the Heritage Management Committee (HMC). MAC committed to providing feedback on the HMC in writing.
- On 28 June 2022, MAC provided a letter to Woodside reconfirming their commitment to carry out the Phase II survey.
 - Woodside remains committed to supporting MAC to conduct the Phase II works at the earliest date convenient to MAC and their preferred consultant but will also respect any decision by MAC not to proceed.
 - Woodside believes it has taken all reasonable steps to progress this work and is committed to support this additional ethnographic survey work to be undertaken, subject to MAC undertaking the works.
 - Available bathymetric and other geophysical data is depicted in UWA 2021 and was provided to MAC on 18 May 2021 after the survey but prior to receiving McDonald and Phillips 2021.
- (2) On 20 September 2022, Woodside sent an email to MAC seeking permission to share ethnographic survey results with NOPSEMA.
- (3) On 9 January 2023, Woodside sent a letter to MAC regarding the proposed Heritage Management Committee.

Ensuring Sufficient Information and Reasonable Period of Time

- On 20 January 2023, Woodside emailed MAC advising of the proposed activity (Appendix F, reference 1.44) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. Woodside also outlined:

- In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).
- Woodside is seeking to understand the nature of the interests that Murujuga Aboriginal Corporation (MAC) and its members may have in the 'Environment that May Be Affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet that was attached.
- Woodside advised that it understands that it will be attending the MAC board meeting on 24 January 2023 to discuss this and information relating to a separate Woodside activity.
- Woodside advised it would be pleased to speak with MAC members in addition to the MAC Board / office holders.
- **(5)** On 25 January 2023, Woodside presented to the MAC Board on the status of the proposed Seismic activity. The meeting included the following topics relating to the proposed activity and the broader Scarborough Project:
 - EMBA map explained and left with MAC for information
 - Plain English fact sheets provided (Appendix F, reference 1.41 and 1.40)
 - MAC reiterated role of Board v Circle of Elders in consultation processes.
 - Local content outcomes continue to be a priority for MAC and its members.
- Woodside was scheduled to meet with MAC on 16 February, but due to last minute unavailability of the MAC consultant, the meeting was postponed until 20 February 2023. While awaiting the postponed meeting, Woodside proceeded to meet with MAC's CEO to discuss the project including the proposed activity. No feedback was received.
- **(2)** On 20 February 2023, Woodside presented to the MAC CEO and consultant to discuss the project including the Seismic EP. The meeting focused on scope and results of an ethnographic survey conducted in 2020, in context of the proposed activity and the broader Scarborough Project.
- On 24 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity and following on from the 20 February 2023 meeting. Woodside noted it is seeking MAC's feedback as soon as possible on the proposed activity.
- On 7 March 2023, Woodside spoke with MAC to follow up on the material provided and sought meetings with the Board and Circle of Elders if required.
- On 30 March 2023, Woodside spoke with MAC and followed up on the material provided.
- On 3 April 2023, MAC emailed Woodside asking for a list of outstanding issues that Woodside would like to progress
- On 5 April 2023, Woodside responded to MAC via email with a list of open topics, which included the request for feedback on the proposed activity. Woodside requested advice from MAC on:
 - How the activity could impact cultural values
 - If MAC proposes anything to be included in the EP prior to submission
 - If MAC would like a meeting to discuss the activity
 - Whether MAC does not intend to provide advice prior to EP submission.
- On 12 April 2023, Woodside spoke with MAC regarding a number of topics including feedback on the proposed activity. MAC responded that their Board of Directors are meeting soon and that Woodside can expect a forward plan on EP consultation.
- On 5 June 2023, MAC emailed Woodside to confirm the Board and Elders meeting date and noted they would send a quote for costs shortly.
- **(1)** On 22 June 2023, Woodside met with the MAC Board and Circle of Elders:
 - Woodside described the Environment Plan framework, referring to the offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations. NOPSEMA's role as regulator and general contents of Environment Plans.
 - Woodside encouraged MAC to raise anything which they felt was missing in the information provided during the meeting.

- Woodside displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
- Woodside provided an overview of the broader Scarborough Project.
- Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline installation and Subsea infrastructure installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of the video showing the general process of drilling and completions which was designed for public audience.
- Woodside described planned and unplanned environmental risks and impacts in accordance with tables provided in the information sheets for the activity emphasising that unplanned risks are not expected to occur and are unlikely.
- The EMBA for each proposed Scarborough activity was displayed, and the individual worst-case loss of containment scenarios identified knowing that they are all diesel fuel releases which would only be caused by vessel collisions.
- On 18 July 2023, Woodside emailed MAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that MAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.
- (6) On 21 July 2023, MAC emailed a letter to Woodside. The letter confirmed that MAC have no concerns at this time with regards to this EP. MAC confirmed their desire for ongoing engagement and appreciated Woodside's commitment to this.
- On 26 July 2023, Woodside emailed MAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 2 August 2023, Woodside emailed MAC regarding the acceptance of this EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether MAC is aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 9 August 2023, Woodside emailed MAC again seeking feedback and information relating to the activity, stating the conditions of acceptance:
 - if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
 - if there is any information you wish to provide on cultural features and/or heritage values
 - the email gave the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement.
 - the email also described the purpose of consultation.
- (6) On 15 Aug 2023, MAC emailed Woodside stating that it had been consulted and its input considered in the development of the EP.
- On 21 August 2023, Woodside emailed MAC seeking MAC's cultural clarifications about information in relation to Songlines, Elder status and whether cultural information about Murujuga can be held by individuals and not known to others.
- On 1 September 2023, MAC emailed a letter to Woodside noting the following:
 - In response to Woodside's email of 21 August, MAC consulted with women appointed to their Circle of Elders
 - MAC is comfortable that the women in the Circle of Elders are the right people to be consulted about these matters.
 - MAC notes that it would be extremely unusual for knowledge to be held by an individual without surrounding groups knowing about it.
 - The Circle of Elders themselves represent the Ngarda-Ngarli; the collective term for the Traditional Custodians who look after Murujuga Country.
- On 15 September 2023, Woodside emailed MAC advising of the planned start date for Scarborough activity unrelated to this EP, and once again requesting if MAC is aware of any other people with whom Woodside should consult, if there is any information MAC wish to provide on cultural features and/or heritage values. The email requested this information prior to 28 September 2023, but reiterated that Woodside will take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached (Appendix F, reference 1.30.1). No response was received to this email.

- On 4 October 2023, Woodside phoned MAC to discuss the cultural appropriateness of a proposed visit to Rosemary Island, requested by a self-identifying Traditional Custodian. Woodside was advised not to undertake the trip due to cultural safety concerns.
- On 4 October 2023, MAC emailed Woodside thanking them for the call and informing Woodside that it is MAC's expectation that Woodside continues to request advice regarding cultural safety prior to such trips being undertaken.
- On 4 October 2023, Woodside emailed MAC thanking them for their advice, confirming the trip had been cancelled and that Woodside would continue to seek MAC's advice on similar matters in future.

Summary of Feedback, Objection or Claim

Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response

Environment Plan Controls

<p>(1) MAC have provided significant valuable input into the management of known and potential heritage values in the broader Scarborough Project footprint. During face-to-face engagements related to this activity and others, MAC requested further information on topics related to this proposed activity which were responded to in correspondence and during the meetings:</p> <p>This EP does not account for indirect impacts as a result of the broader Scarborough Project (e.g. potential impacts to Murujuga from onshore emissions associated with processing Scarborough gas)</p> <ul style="list-style-type: none"> • (2) Uncertainty over the results of further ethnographic surveys, as new heritage values identified may require further mitigations • (3) MAC's input has helped shape the structure and operation of the HMC, including their advice: <ul style="list-style-type: none"> ○ That recommendations of the HMC need not be unanimous, ○ That the HMC include MAC staff in addition to MAC Board, executive and Circle of Elders, and ○ That developments in regards to the World Heritage listing of the Murujuga Cultural Landscape not trigger any meeting of the HMC <p>(4) MAC directed that consultation be undertaken with both the board and the Circle of Elders, which was implemented.</p> <p>(5) On 21 July 2023 and 15 Aug 2023, MAC sent a letter to Woodside acknowledging the consultation on 22nd June and stating they had no concerns with this EP at this time.</p>	<p>(1) Woodside responded to MAC's request for further information during face-to-face engagement, and in writing, no further information was requested on these topics.</p> <p>The EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program. The extraction of Scarborough gas for onshore processing is not included in the Petroleum Activities Program for this EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of this Petroleum Activities Program but will be evaluated in future Scarborough EPs as appropriate.</p> <p>(2) The completed ethnographic surveys, which align with industry practice, have not identified any heritage risks. Woodside remains committed to the further ethnographic surveys planned for the Scarborough project which go beyond industry standards and is ready to progress these at MAC's earliest availability. The results of these surveys will be addressed through the Heritage Management Committee.</p> <p>(3) Woodside has agreed to the matters advised by MAC regarding the HMC with regards to the requirement for unanimous recommendations, membership of the HMC and the appropriate triggers for HMC meetings.</p> <p>(4) Woodside continues to engage with MAC on the Scarborough project generally and has committed to ongoing consultation with MAC Board and Elders.</p> <p>(5) MAC is supportive of this EP submission</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and,</p>	<p>(1) Existing controls considered sufficient as described in Section 6. Woodside recognises that whales and other species of totemic importance need to be protected, including their populations and migration patterns (Section 4.10.1). As assessed in Section 6.9, Woodside considers that when the impacts and risks to marine species, including potential totemic species, have been reduced to ALARP and an acceptable level in offshore areas, the potential impacts and risks to cultural values associated with coastal Indigenous connection with, or traditional uses of marine species and associated ecosystems in nearshore coastal waters are also reduced to ALARP and an acceptable level.</p> <p>(2) & (3) Woodside and MAC have established the Heritage Management Committee (HMC). Recommendations of the HMC will be implemented where they (independently or in conjunction with other actions) lower the risk of impacts to heritage to ALARP. New heritage information, where applicable to this proposed activity, will be addressed as part of ongoing consultation (PS 18.1.1) No additional measures or controls have been put in place in this EP (Refer to Scarborough Seabed Intervention and Trunkline Installation EP for controls relating to HMC).</p> <p>(4) And (5) Not required.</p>
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	where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	
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Wirrawandi Aboriginal Corporation (WAC)

WAC is established under the Native Title Act 1993 by the Mardudhunera and Yaburara people to represent the Mardudhunera and Yaburara people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with WAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5 of the EP. Specifically:

Sufficient Information:

- Woodside Sought direction on WAC's preferred method of consultation. This resulted in two face-to-face meetings being coordinated at the location of WAC's choosing, with WAC nominated representatives. These meetings included information that was readily accessible and appropriate.
- Provided Consultation Information Sheets and Consultation Summary Sheets to WAC.
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Set out in detail what was being sought through consultation.
- Suggested that information and request for feedback be distributed to members as required.
- Provided NOPSEMA's guidelines and brochure on consultation.
- Provided response to questions asked about the activity through consultation.
- Advised that WAC could request the particular information provided in the consultation not be published (to align with 11A(2)(4))

Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to WAC on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to WAC over 9 months, demonstrating a "reasonable period" of consultation.

Woodside asked WAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. WAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on WAC's functions, interests or activities.

Summary of information provided and record of consultation:

- On 20 January 2023 Woodside emailed WAC advising of the proposed activity (Appendix F, reference 1.46) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. The email requested information on the interests that WAC and its members may have within the EMBA, information on how WAC would like to engage, and requested that WAC provide information to members as required.
- On 27 January 2023 Woodside placed a phone call and emailed WAC to follow up on the information provided (Appendix F, reference 1.61) and information sought.
- Woodside noted the upcoming opportunity to meet with WAC on 21 February while it was in Karratha and would send a proposed time to meet to discuss the information Woodside has provided on a number of Woodside activities and EMBA's, including this proposed activity.
- Woodside requested it would like to gain an understanding on best way to progress if the WAC Board wish to have further discussions in relation to this information and also on how they prefer Woodside to engage for any future information shares.
- On 21 February 2023, Woodside spoke with WAC to discuss the proposed activity and plan a consultation meeting.
- On 24 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity and following on from the 21 February 2023 meeting (Appendix F, reference 1.102). Woodside noted it is seeking WAC's feedback as soon as possible on the proposed activity.

- Woodside also requested confirmation of the opportunity to meet with the WAC Board when they are next due to meet in Perth in March.
- Further details and associated costs will be discussed once the meeting has been confirmed, in discussion with Woodside.
- On 24 February 2023 WAC emailed Woodside:
- WAC acknowledged receiving the EP information and the meeting with proposed for the Elders and Directors in March, but that the meeting is still yet to be finalised.
- Further details and associated costs will be discussed once the meeting has been confirmed, in discussion with Woodside.
- On 7 March 2023, WAC emailed Woodside to advise a draft agenda has been set and Woodside has been allotted Thursday 23 March 2023 for presentation.
- On 7 March 2023, Woodside emailed WAC welcoming this opportunity and advised it was looking forward to receiving further information in relation to timing and location.
- On 8 March 2023, WAC agreed by phone to meet with Woodside and a full meeting of the Board and Elders on 23 March 2023 in Perth.
- On 8 March 2023, Woodside phoned WAC and agreed to proceed with the meeting.
- On 9 March 2023, Robe River Kuruma Aboriginal Corporation (RRKAC) emailed Woodside (and copied in the CEO of WAC) and advising it has discussed the proposed activity with the Robe River Kuruma Heritage Advisory Committee and they have recommended that the interests of Robe River Kuruma people are best served through the joint Heritage Advisory Committee that is required under Yaburara Mardudhunera and Kuruma Marthudunera Indigenous Land Use Agreement.
- RRKAC also suggested that WAC is required to facilitate this Committee and noted there is an emerging need to deal with other proponent matters, so there is an opportunity to link the engagement from a meeting efficiency perspective. Since the separate meeting with WAC had already been arranged, Woodside decided to proceed with both meetings.
- On 15 March 2023, Woodside emailed WAC to follow up on details relating to the meeting of the Board and Elders on 23 March 2023 in Perth.
- On 15 March 2023, WAC emailed Woodside:
 - WAC advised the 23 March 2023 meeting has been scheduled and arranged.
 - WAC advised that as discussed previously the intention is to present to WAC Directors and Elders on information requires WAC feedback.
 - Woodside has continued to engage WAC on the proposed activity and in relation to presenting at the upcoming Board and Elders meeting.
- **(1) (2)** On 23 March 2023, Woodside presented to a meeting of the WAC Board and Elders in Perth:
 - Woodside described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
 - Woodside encouraged WAC to raise anything which they feel is missing in the information provided during the meeting, or any issues or concerns.
 - Woodside displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
 - Woodside provided an overview of the broader Scarborough Project and overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation), and including the process of the seismic survey, that a vessel will send sound through the seabed which will be reflected back and measured to help understand the reservoir. A summary of both planned and unplanned impacts and associated controls was provided.
 - **(1) (2)** WAC asked a number of questions relevant to the broader Scarborough Project which were responded to in the meeting:
 - Emergency preparedness
 - The relevance of the EMBA to consultation
 - Whether activities stop during whale migration.
 - Potential impact of noise on whale communication.

- Whether a diesel spill would only be on the surface.
- How long diesel stays in the environment.
- What happens if something is dropped into the ocean.
- How soon is a spill responded to.
- Whether the turtle monitoring program is still in place.
- How the EMBA influences consultation
- Woodside responded to WAC's query about impacts on whale communication that this is a key potential impact, and that controls have been put in place to try to avoid it.
- Woodside stated that the seismic survey will generate some impulsive noise which has been modelled and controlled
- Woodside described planned and unplanned environmental risks and impacts in accordance with tables provided in the Information Sheets for the activities, emphasising that unplanned risks are not expected to occur and are unlikely.
- The EMBA for each proposed Scarborough activity was displayed, and the individual worst case loss of containment scenarios identified, noting that they are all diesel fuel releases which would only be caused by vessel collisions.
- **(1)** WAC asked how the EMBA influences consultation, Woodside responded that the EMBA has always been understood but it is now being used to identify people who may have an interest in the activity
- Woodside noted this concluded the Scarborough section of the meeting, and called for any further questions or feedback. None were received.
- WAC stated that this kind of information sharing is important, and that Woodside's time is appreciated. WAC asked whether this type of information is broadly available to the community, Woodside responded that there are a number of open community sessions available in the region where it could be discussed
- WAC indicated that since they are engaging with a number of energy industry operators they will consider the information provided and discuss internally before any further response.
- Woodside provided personal contact details for further feedback
- Woodside provided NOPSEMA contact details, should WAC desire to provide feedback directly to the regulator.
- On 31 March a consultation meeting was held in Karratha with WAC/RRKAC Heritage Advisory Committee. This meeting is recorded under Robe River Kuruma Aboriginal Corporation (RRKAC).
- On 3 May 2023, Woodside emailed a letter to WAC as a follow up to the 23 March meeting held in Perth with WAC Directors and Elders
 - Woodside thanked WAC for the careful consideration of matters
 - Acknowledge the WAC have interests in the EMBA
 - Woodside provided a response on matters raised at the meeting by WAC
- On 3 May 2023, Woodside emailed a letter to WAC regarding the meeting with the joint Robe River Kuruma and Wirrawandi Joint Heritage Advisory Committee (HAC) on 31 March:
 - Woodside thanked the HAC for the meeting, their careful consideration of the matters and feedback provided
 - Woodside acknowledged that the RRKAC have interests in the EMBA and noted that we want to ensure impacts are as minimal as reasonably practicable
 - A high level overview of presented topics was provided
 - Woodside provided responses to questions noted from the meeting that were not related to the proposed activity. Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA.
- On 21 June 2023, WAC emailed Woodside stating that the appropriate form of consultation was to fund and schedule a presentation to members.

- Between 21 June 2023 and 28 June 2023, emails were exchanged settling a date and time for Woodside to meet with the WAC Board. Woodside agreed to funding with the budget settled between WAC and Woodside.
- On 6 July 2023, Woodside reconfirmed the date with WAC by telephone.
- On 18 July 2023, Woodside emailed WAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that WAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.
- On 26 July 2023, Woodside emailed WAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 2 August 2023, Woodside emailed WAC regarding the acceptance of this EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether WAC is aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 3 August 2023, WAC emailed Woodside requesting a map of relevant Commonwealth and State EMBAS.
- On 9 August 2023, Woodside emailed WAC again seeking feedback and information relating to this EP, stating the conditions of acceptance:
 - if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
 - if there is any information you wish to provide on cultural features and/or heritage values.
- The email gave the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement.
- The email described the purpose of consultation.
 - On 10 August 2023, Woodside emailed WAC providing a list (as requested by WAC) of current and pending EP's.
 - On 10 August 2023, WAC emailed Woodside with thanks for the information and with a general query about EMBA's.
 - **(3)** On 10 August 2023, WAC emailed Woodside stating that it did not have any objections to this activity, based on understanding that it does not involve seabed disturbance, the EMBA is outside the general area that Yaburara and Mardudhunera people have interests and typically undertake activities. WAC also noted they would provide a formal written response to the 19 July 2023 meeting in relation to proposed ongoing consultation and to activities and Eps for which WAC may be considered relevant persons.
 - On 15 August 2023, Woodside emailed WAC providing an explanation of the query in relation to EMBA's and EMBA development.
 - On 15 August 2023, WAC emailed Woodside with thanks for the clarification and noting they would provide a formal response shortly.
 - **(3)** On 31 August 2023, WAC emailed a letter to Woodside proposing a framework agreement to provide a streamlined, formalised approach to consultation between WAC and Woodside. The agreement would articulate risk re activities to environment, sea-country, heritage and/or cultural activities.
 - **(3)** On 11 September 2023, WAC emailed Woodside with a copy of the letter of 31 August, and advising that WAC does not object to Woodside progressing environment plans for the activities outlined on the proviso that Woodside and WAC enter into a framework agreement to provide for ongoing meaningful consultation with WAC and YM members in relation to activities the subject of Eps, as outlined in the attached letter on terms suitable to both parties within a reasonable period (nominally within the next 2-3 months).
 - On 12 September 2023, Woodside emailed WAC confirming receipt of previous WAC email and said they would follow up and revert.

Quarterly Heritage Meetings:

- Woodside convenes a quarterly meeting of Traditional Custodian representatives from the Representative Aboriginal Corporations involved in historical native title claims over the Burrup Peninsula, including WAC. Individual attendees are nominated by their representative Aboriginal Corporations. These meetings are summarised separately in this table.
- Copies of slides are made available to representative Aboriginal Corporations for the general awareness of members who were not able to attend individual meetings.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>(1) During face-to-face engagements related to this activity and others, the WAC requested further information on topics related to this proposed activity which was responded to during the meeting:</p> <ul style="list-style-type: none"> - Emergency preparedness - The relevance of the EMBA to consultation - Whether activities stop during whale migration. - Potential impact of noise on whale communication. - Whether a diesel spill would only be on the surface. - How long diesel stays in the environment. - What happens if something is dropped into the ocean. - How soon is a spill responded to. - Whether the turtle monitoring program is still in place. - How the EMBA influences consultation. <p>(2) WAC expressed a general interest in whales. Woodside discussed controls protecting whales from an ecological perspective during meetings in which they were raised, no further feedback or comment was received on these topics.</p> <p>(3) WAC expressed that it does not object to Woodside progressing Scarborough Project EPs (including this activity) on the proviso that Woodside and WAC enter into a framework agreement to provide for ongoing meaningful consultation a desire for ongoing engagement and partnership through a Framework Agreement.</p>	<p>(1) Woodside responded to WAC's requests for further information during face-to-face engagements, and no further information was requested on these topics.</p> <p>(2) Woodside noted WAC's interest in whales</p> <p>(3) Separate from consultation under Reg 11A, Woodside will establish a framework agreement with WAC. The agreement would be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, a face-to-face meeting with appropriate material (pictures, maps, video) and project attendance allowing opportunity to ask questions and seek further understanding.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) Woodside updated Section 4.10.1 to record WAC's interests, including whales and assessed potential impact on these, including controls, in section 6.9.</p> <p>(3) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans referenced as PS 17.1.1 in this EP. This includes continued engagement regarding WAC's proposed Framework Agreement which will be applied to ongoing consultation. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix J.</p>

Yinggarda Aboriginal Corporation (YAC)

YAC is established under the Native Title Act 1993 by the Yinggarda people to represent the Yinggarda people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with YAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5 of the EP. Specifically:

- Sufficient Information:

- Woodside Sought direction on YAC's preferred method of consultation. This resulted in face-to-face meetings being coordinated at the location of YAC's choosing, with YAC nominated representatives. These meetings included information that was readily accessible and appropriate.
- Provided Consultation Information Sheets and Consultation Summary Sheets to YAC.
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Set out in detail what was being sought through consultation.
- Suggested that information and request for feedback be distributed to members as required.
- Provided NOPSEMA's guidelines and brochure on consultation.
- Provided response to questions asked about the activity through consultation.
- Advised that YAC could request the particular information provided in the consultation not be published (to align with 11A(2)(4))

- Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to YAC on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to YAC over 7 months, demonstrating a "reasonable period" of consultation.

Woodside asked YAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since February 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. YAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on YAC's functions, interests or activities.

Summary of information provided and record of consultation:

YMAC is the Native Title Representative Body (NTRB) for the Yamatji and Pilbara region which included YAC. NTRBs exist to provide assistance to native title claimants and holders in regard to their native title rights. No native title has been recognised over the Project Area, however YMAC is identified in the North-west Marine Parks Network Management Plan as the contact for identifying cultural values in nearby Australian Marine Parks.

- On 7 July 2022, Woodside met with YMAC to request advice on the appropriate cultural authorities for the Scarborough project area, including but not limited to the scope of this EP and nearby marine parks.
 - Woodside described the Scarborough Project and its footprint and gave an overview of indigenous parties consulted.
- Woodside noted that YMAC was identified in the North West Marine Parks Network Management Plan as the contact for identifying cultural values in nearby Australian Marine Parks. Woodside sought to understand if the cultural values of the nearby Gascoyne Marine Park may extend into the offshore Scarborough project areas.
- Woodside requested advice on how best (in addition to work completed) to identify any cultural values in the Marine Parks and in the broader project

- footprint.
- YMAC requested Woodside provide the relevant detailed information relating to the location and extent of the project.
- YMAC directed Woodside that consultation related to Scarborough Project would be best directed to Murujuga Aboriginal Corporation and Ngarluma Aboriginal Corporation
- YMAC did not direct Woodside to engage with YAC, however YAC was identified as a relevant person under methodology outlined in Section 5 and YMAC is listed as YAC's preferred contact on the ORIC website and is therefore Woodside's primary contact when engaging YAC.
- On 19 July 2022, YMAC responded to Woodside and stated the area Woodside has identified requires correspondence directed to Murujuga Aboriginal Corporation (MAC) and Ngarluma Aboriginal Corporation (NAC). No reference was made at that stage about consulting with YAC. YAC was identified through Woodside's own methodology.
- On 10 January 2023, Woodside emailed YAC/YMAC requesting to consult with YAC about work being planned for the Scarborough project, including a link to the NOPSEMA guidelines and advising that woodside would be sending further information on the project.
- On 20 January 2023 Woodside emailed YAC via the representative body Yamatji Marlpa Aboriginal Corporation (YMAC) advising of the proposed activity (Appendix F, reference 1.47) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. The email requested information on the interests that YAC and its members may have within the EMBA, information on how YAC would like to engage, and requested that YAC provide information to members as required.
- On 22 January 2023 YAC/YMAC emailed Woodside to advise it would make contact with Woodside once the consultation material had been reviewed.
- On 6 February 2023, Woodside called YAC/YMAC to follow up. YAC/YMAC said they would send an email that day inviting Woodside to meet with the group.
- On 22 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity (Appendix F, reference 1.80) and information sought. Woodside noted it is seeking YAC's feedback as soon as possible on the proposed activity. Woodside stated that it would be grateful to meet with YAC at the earliest convenience at location of YAC's preference, providing budget and resources.
- On 24 February 2023 Woodside followed up with YAC/YMAC via phone call. YAC/YMAC advised it would send an email on 24 February to discuss an invitation for Woodside to meet with YAC.
- On 17 March 2023, Woodside met with YAC's legal representatives to discuss consultation on the Scarborough Project, preferred method and locality of consultation meetings, and to note that they will assist groups with funding to hold meetings on an agreed basis.
- On 20 March 2023, Woodside emailed YMAC to follow up the discussed invitation for a face-to-face meeting with its Board of Directors and offered a phone discussion if YAC had any questions on the activities in the meantime
- On 23 March 2023, YMAC responded and proposed a meeting on 3 May 2023 in Carnarvon and provided an estimated of its proposed costs. The invitation was accepted and arrangements made for a pre-meeting with YMAC to coordinate details.
- On 23 March 2023, Woodside emailed YAC via YMAC to confirm a preference for face to face meeting and request budget proposal.
- On 24 March 2023, the YMAC lawyer emailed to arrange a pre-meet conversation on 31 April.
- On 24 March 2023, Woodside emailed to confirm the pre-meet conversation.
- On 27 March 2023, the YMAC lawyer emailed Woodside to confirm meeting details
- On 30 March 2023, the YMAC lawyer emailed to cancel the pre-meet conversation.
- On 19 April 2023, Woodside emailed YMAC/YAC following up with information offered at the meeting of 13 March 2023; management of emissions, organisations that may provide independent expertise and re-iterating they would like to meet with YAC.
- On 27 April, Woodside emailed the YMAC lawyer to confirm timing and location for the face-to-farce meeting on 3 May but the email bounced back requesting correspondence be forwarded to an alternate contact in YMAC
- On 27 April, Woodside forwarded the email seeking to confirm time and location for the planned meeting to the alternate contact in YMAC

- On 27 April, YMAC confirmed by email and phone call that they no longer represented Yinggara Aboriginal Corporation and that the meeting on 3 May had been cancelled. They informed Woodside that Gumala Aboriginal Corporation is now representing YAC and YMAC is in the process of hand over, including correspondence with Woodside
- On 27 April, Woodside acknowledged YMAC email re Gumala Aboriginal Corporation transition to new service provider.
- On 28 April, Woodside attempted to call Gumula Aboriginal Corporation and left a voicemail to establish connection, no response was received.
- On 28 April, Woodside emailed Gumula Aboriginal Corporation to establish contact and inform them of the prior context. Woodside stated that it is still interested in meeting with the YAC board if they are interested, no response was received.
- On 8 May, Woodside phoned Gumula Aboriginal Corporation to follow up the email, explaining that it is seeking to consult Yinggarda on the proposed activity and noted that a planned meeting had been cancelled. Gumula Aboriginal Corporation indicated that the email address previously contacted was correct and indicated that it would call back. No return call was received.
- On 1 June 2023, Woodside emailed and phoned Gumula Aboriginal Corporation to speak with someone about consulting YAC on Eps. Reception said they would have a member of the governance team call back.
- On 15 June 2023, Gumula Aboriginal Corporation emailed Woodside proposing attendance at a YAC Board meeting on 6 July for one hour to discuss Eps.
- On 19 June 2023, Woodside emailed Gumula Aboriginal Corporation accepting the invitation to attend the Board meeting, requesting a half day meeting with the board to allow YAC to ask questions and have time to consider information.
- On 21 June 2023, Gumula Aboriginal Corporation emailed Woodside inviting attendance at a half day Board meeting to discuss other EP matters.
- On 21 June 2023, Woodside emailed Gumula Aboriginal Corporation accepting the invite to attend the Board meeting of 5 July 2023 for a half day.
- **(1)** On 5 July 2023, Woodside presented to the YAC about several EPs including this EP. At the meeting Woodside:
 - Described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
 - Displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
 - Provided an overview of the broader Scarborough Project and overview of activities.
 - Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video showing the general process of drilling and completions which was designed for public audience.
 - Described the types of vessels involved.
 - Described planned and unplanned environmental risks and impacts in accordance with tables provided in the Information Sheets for the activities, emphasising that unplanned risks are not expected to occur and are unlikely.
 - Displayed and spoke to the EMBA for each proposed Scarborough activity, and the individual worst-case loss of containment scenarios identified, noting that they are all diesel fuel releases which would only be caused by vessel collisions.
 - Stated that Woodside wanted to understand how the functions, activities or interests of YAC and the people it represents may be impacted by any of those activities.
 - Specifically asked the following:
 - How could these activities impact your cultural values, interests, and activities – does protecting the environment do enough to protect your cultural values?
 - What are your concerns about the proposed activities and what do you think we should do about them?
 - Is there anything you would like included in the Eps before submission?
 - Is there anyone else Woodside should consult with about the activities?

- Advised that Woodside would continue to take feedback from YAC for the life of the EP.
- Provided personal contact details for further feedback. Woodside provided NOPSEMA contact details, should YAC desire to provide feedback directly to the regulator.
- **(1)** At the 5 July meeting YAC made mention of the following:
 - **(1)** YAC expressed sadness at the potential for environmental impact.
 - Response: Woodside explained that the potential impact from the unplanned activities is very low. For example, Woodside has been operating in the region for over 30 years and has not had a serious unplanned environmental event in that time. Importantly, if there is an unplanned event, the entire EMBA as shown on the maps will not be impacted. The area of the EMBA will be somewhere within the mapped area depending on factors such as wind, current and tide.
 - **(1)** YAC stated plants, animals and the environment are inexorably linked to their culture and asked: whether Woodside has undertaken environmental studies and whether these studies ongoing; and what environmental monitoring happens after the EPs are approved.
 - Response: Woodside has undertaken numerous environmental studies that form part of the EPs and has an ongoing commitment to environmental studies and research, some of which are set out on Woodside's website.
 - Environmental monitoring is an ongoing activity, and the nature and timing of environmental monitoring depends on the nature, possible consequences, and likelihood of the environmental risks. Importantly, Woodside commits to ongoing consultation with YAC and will be able to take feedback if any new information in relation to risks comes to light.
 - **(1)** YAC suggested that ranger programs could assist with environmental management and monitoring, and that YAC would likely write to Woodside about this suggestion and generally to discuss how YAC can be involved with / benefit from Woodside's activities.
 - Response: Woodside looks forward to discussing these opportunities with YAC further as part of our ongoing engagement. Woodside commits to ongoing consultation about the EPs and to building the relationship with YAC.
 - **1) (2)** YAC expressed concern about potential impacts to potential impact patterns of whales, and potential collisions. Woodside responded by explaining controls which would be in place to minimise impacts and risks to whales, and no further information was requested
- On 17 July, Woodside emailed YAC a letter summarising the 5 July meeting.
- On 19 July 2023, Woodside emailed YAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that YAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.
- On 19 July 2023, YAC emailed Woodside acknowledging receipt of Woodside's email of 19 July.
- On 26 July 2023, Woodside emailed YAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 2 August 2023, YAC lawyer emailed Woodside to indicate that they had been placed on a retainer by YAC to advise on NOPSEMA matters.
- On 3 August 2023, Woodside emailed YAC regarding the acceptance of the EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether YAC is aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 4 August, YAC emailed Woodside noting that:
 - YAC are willing to formally engage with Woodside on future NOPSEMA consultation.
 - **(3)** Woodside is invited to submit a consultation agreement for YAC's consideration and to layout out desired content within the agreement.
 - Resourcing would need to be provided by Woodside to facilitate the consultation.
- On 9 August 2023, Woodside emailed YAC again seeking feedback and information relating to this accepted EP, stating the conditions of acceptance:

- if YAC was aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
- if there is any information YAC wished to provide on cultural features and/or heritage values
- The email noted the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement. The email described the purpose of consultation.
- On 10 August 2023, YAC emailed Woodside, noting that:
- Woodside had provided a considerable volume of videos, complex materials, and presentations to the YAC board since 1 July 2023, covering multiple proposed activities. The YAC board is seeking advice about different documents and considering cultural and spiritual impacts of proposed activities.
- The YAC board has not yet concluded its investigations and provide feedback, and if Woodside has advanced plans with NOPSEMA it has different view of the role and capacity of TOs in the process as clarified by Santos v Tipakalippa.
- Requesting appropriate resources and time for YAC board to allow them to form a considered view, as requested on 4 August.
- YAC board intends to raise matters at a community meeting in Carnarvon in September, including Aboriginal community members who are not YAC members.
- On 11 August 2023, YAC emailed Woodside confirming formal resolution by the Board to retain their lawyer (Banks-Smith & Assoc (BSA)) to engage on NOPSEMA matters and providing a copy of the Board Resolution.
- On 11 August 2023, Woodside emailed YAC via BSA acknowledging the request for a draft consultation agreement, noting it would be attended to within a week or so and confirming the process for onboarding to receive payments.
- On 14 August 2023, YAC via BSA emailed Woodside stating that it looked forward to receiving the consultation agreement for consideration and agreeing arrangements for provision of resourcing.
- On 13 September 2023, YAC via BSA responded to Woodside advising that in the absence of a draft consultation agreement they were unable to respond in substance to the matters raised.
- **(3)** On 14 September 2023, Woodside emailed YAC via BSA with a proposed consultation framework.
- **(3)** On 14 September 2023, YAC via BSA confirmed receipt of the consultation framework and advised they would seek direction from the YAC board.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<p>(1) During face-to-face engagements related to this activity and others YAC requested further information on topics related to this proposed activity which was responded to during the meeting:</p> <ul style="list-style-type: none"> - Whether Woodside has undertaken environmental studies and whether these studies are ongoing. <p>YAC also expressed the following:</p> <ul style="list-style-type: none"> - Sadness at the potential for environmental impact - Ranger programs could assist with environmental management and monitoring. - Expressed concern about potential impacts to potential impact patterns of whales, and potential collisions <p>(2) YAC expressed a general interest in whales. Woodside discussed controls protecting whales from an ecological perspective during meetings in which they were raised, no further feedback or comment was received on these topics</p> <p>(3) Woodside has provided a draft Consultation Framework Agreement which includes suggested timeframes to settle the agreement and timeframes for ongoing consultation with the Board.</p>	<p>(1) Woodside responded to YAC's requests for further information during face-to-face engagements, and no further information was requested on these topics.</p> <p>(2) Woodside noted YAC's interest in whales.</p> <p>(3) Separate from consultation under Reg 11A, Woodside will establish a framework agreement with YAC. The agreement would be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, a face-to-face meeting with appropriate material (pictures, maps, video) and project attendance allowing opportunity to ask questions and seek further understanding.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) Woodside updated Section 4.10 to record WAC's interests and potential cultural values, including whales and assessed potential impact on these, including controls, in section 6.9.</p> <p>(3) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans, referenced as PS 17.1.1 in this EP. This includes the proposed Framework Agreement which will be applied to ongoing consultation. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix J.</p>
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Yindjibarndi Aboriginal Corporation

YAC is established under the Native Title Act 1993 by the Yindjibarndi people to represent the Yindjibarndi people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Yindjibarndi for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5 of the EP. Specifically:

Sufficient Information:

- Provided Consultation Information Sheet and Consultation Summary Sheets to Yindjibarndi
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Set out in detail what was being sought through consultation
- Suggested that information and request for feedback be distributed to members as required.

Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Yindjibarndi on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to Yindjibarndi over 7 months, demonstrating a “reasonable period” of consultation.

Woodside asked YAC it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Yindjibarndi functions, interests, or activities.

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

Summary of information provided and record of consultation:

- On 20 January 2023, Woodside emailed Yindjibarndi advising of the proposed activity (Appendix F, reference 1.48) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside’s website) as well as a summary overview fact sheet. The email requested information on the interests that Yindjibarndi and its members may have within the EMBA, information on how Yindjibarndi would like to engage, and requested that Yindjibarndi provide information to members as required.
- On 24 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity (Appendix F, reference 1.103), and information sought.
- **(1) (2)** On 26 February 2023, Yindjibarndi emailed Woodside. Yindjibarndi advised that it will not be providing any comment on the proposed activity, or broader Scarborough project and noted it respected the traditional owners whose land and sea lies adjacent to, and within the precinct of, the projects, and will leave any comment and advice to be provided by them.
- On 28 February 2023, Woodside emailed Yindjibarndi to thank them and noted the response.
- On 7 July 2023, Woodside called Yindjibarndi who reiterated that it would prefer that comments come from coastal Aboriginal Corporations and not themselves.
- On 18 July 2023, Woodside emailed Yindjibarndi NOPSEMA’s Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside’s request that Yindjibarndi advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.
- On 26 July 2023, Woodside emailed Yindjibarndi Woodside’s planned Program of Ongoing Engagement with Traditional Custodians.

- **(3)** On 1 August 2023, Yindjibarndi emailed Woodside in response to the Program of Ongoing Engagement from Woodside and asking that Oil and Gas matters relating to Yindjibarndi be directed to NYFL.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>(1) Yindjibarndi has provided a response and advised that it will not be providing any comment on the proposed activity.</p> <p>(2) Yindjibarndi expressed that they would prefer that traditional owner groups with land and sea adjacent to and within the precinct of the projects provide comment.</p> <p>(3) Yindjibarndi has instructed Woodside that it will be represented by NYFL in ongoing discussion about EP's.</p>	<p>(1) Woodside accepts Yindjibarndi's response.</p> <p>(2) Woodside agrees and respects Yindjibarndi's position that traditional owners whose land and sea are adjacent to or within the precinct of the projects should be able to provide comment.</p> <p>(3) Woodside will engage with NYFL on behalf of Yindjibarndi for ongoing consultation related to this activity, separate from consultation under Reg 11A.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>(1) Not required.</p> <p>(2) Not required.</p> <p>(3) Future correspondence will be sent through NYFL.</p> <p>Woodside has implemented a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, referenced as PS 17.1.1 in this EP.</p>

Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

BTAC is established under the Native Title Act 1993 by the Thalanyji people to represent the Thalanyji people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has consulted under Regulation 11A with BTAC by providing sufficient information, a reasonable period of time and opportunity for BTAC to make an informed assessment of the possible consequences of the activities on functions, interests or activities. Woodside has addressed each objection or claim made by BTAC. Woodside has included cultural values and controls relevant to Woodside's understanding of BTAC's functions, interests and activities in its environment plan and in response to topics raised during consultation by BTAC.

As demonstrated in the summary below and consultation record that follows, consultation with BTAC complies with Regulation 11A and is complete.

Summary

Sufficient Information:

- Woodside sought direction on BTAC's preferred method of consultation. This has not resulted in a face-to-face meeting with the Board, however, BTAC has exchanged multiple correspondence on the activity and telephone engagements with BTAC representatives. Woodside has offered to coordinate meetings at the location of BTAC's choosing, with BTAC nominated representatives. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 11A consultation.
- Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to BTAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format.
- Confirmed the purpose of consultation and set out in detail what was being sought through consultation.
- Suggested that information and request for feedback be distributed to members as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan"
- Provided response to questions asked about the activity through consultation. Through these questions, BTAC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.

Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Woodside commenced consultation with BTAC in January 2023. Woodside has since addressed and responded to BTAC queries over 9 months, demonstrating a "reasonable period" of consultation.

Woodside advised that BTAC could request the particular information provided in the consultation not be published (to align with 11A(2)(4))

Woodside asked BTAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via discussions and written exchanges to further understand the environment in which the activity will take place. BTAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on BTAC's functions, interests or activities

Summary of information provided and record of consultation:

Historical Engagement

- Prior to sending out the Consultation Information Sheets, Woodside spoke to BTAC on 4 January 2023 to discuss the best way forward to consult with BTAC. On 10 January 2023, Woodside emailed BTAC stating it would be very grateful for the opportunity to meet with BTAC in the second half of February as discussed, or sooner if possible. Woodside also offered to cover the reasonable costs of consultations. Specifically, in relation to this EP, Woodside stated they would like to discuss:

- BTAC's expectations for consultation - how can Woodside and BTAC best work together.
- BTAC's aspirations and plans - how can Woodside support BTAC regarding potential employment and contracting opportunities.
 - Environmental planning consultations about Woodside's Scarborough Project with gas fields planned to be located offshore, approximately 380km northwest of Karratha.
- In addition:
 - Woodside advised it would like to and is required to consult with BTAC about the nature of any interests BTAC have in the "environment that may be affected" (EMBA) by this work, and any concerns BTAC may have about potential environmental impacts, so these concerns can be addressed through the environmental planning and approvals process.
 - Woodside provided further information about government guidelines for these consultations and provided a link to <https://consultation.nopsema.gov.au/environment-division/consultation-guideline/>.
 - Woodside advised it would reach out in the next week with consultation information sheets.
- Woodside stated in the 10 January 2023 email that it would like to arrange a meeting between senior Woodside staff and BTAC's Board if BTAC felt that was appropriate and it would await guidance from BTAC.

Ensuring Sufficient Information and Sufficient Time

- On 20 January 2023, Woodside emailed BTAC advising of the proposed activity (Appendix F, reference 1.50) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. The email requested information on the interests that BTAC and its members may have within the EMBA, information on how BTAC would like to engage, and requested that BTAC provide information to members as required.
- On 23 January 2023, Woodside emailed BTAC with the consultation information noting it had previously sent an email to an incorrect email address (Appendix F, reference 1.51).
- On 24 January 2023, BTAC emailed Woodside acknowledging it had received the information.
- On 27 January 2023, Woodside placed a phone call and as there was no answer, left a voice message and emailed BTAC to follow up on the information provided on 23 January
- On 27 January 2023, BTAC emailed Woodside to acknowledge receipt of information and said they would be meeting within the week and would be in contact following their meeting.
- On 13 February 2023, BTAC representative called and spoke to Woodside asking what Woodside was proposing for next steps for consultation and whether Woodside would like to meet with the BTAC Board, the Council of Thalanyji Elders or present at a common law meeting. Woodside said they would be guided by BTAC, but suggested meeting initially with the BTAC Board. Following a suggestion by BTAC that the group may benefit from an anthropologist to articulate sea country values, Woodside said they would look at those sorts of requests on a case-by-case basis. Woodside also confirmed they are able to financially support consultation meetings. A BTAC representative said he would discuss Woodside EPs with BTAC and aim to respond by 20 February 2023
- On 20 February 2023, BTAC provided a letter to Woodside in relation to consultation on the broader Scarborough activities, including this proposed activity:
 - BTAC referred to the advertisements placed by Woodside regarding the proposed activity which sought feedback from persons or organisations who may hold interests in the EMBA by the activities.
 - **(1) (2)** BTAC confirmed that BTAC on behalf of Thalanyji people has interests and that the Thalanyji people have an enduring deep connection to sea country north of Onslow, extending out to islands off the Pilbara coast such as the Montebello islands, Barrow Island and the Mackerel Islands.
 - BTAC advised it was seeking the opportunity to engage with Woodside and NOPSEMA on the activity.
 - **(5)** BTAC advised it seeks support from Woodside to enable BTAC to define and articulate its values on Sea Country in a manner that could be more clearly understood by the offshore sector, government, and the community. This would enable BTAC and Woodside to collaborate to develop effective management plans that can provide adequate protection to sea country values.

- **(3)** BTAC advised the information in the consultation fact sheets is very general. BTAC seeks support from Woodside to obtain technical support to review the information and provide BTAC and its members with feedback on the project risks to Sea Country and help BTAC contemplate the potential management controls that could be developed to protect its values and interests.
- **(4)** BTAC requested that emergency response capability is developed and locally provided to be able to respond to potential activities/actions that may cause an impact in the EMBA. BTAC encouraged Woodside and industry to build capacity and capability in BTAC's ranger program so that it could participate in response planning and management activities.
- **(6)** BTAC noted that ongoing consultation with BTAC will be imperative and likely continuous given recent changes to consultation requirements and this will continue to be a burden on the organisation. BTAC requested that Woodside enter into a consultation or engagement framework to ensure BTAC can be properly resourced financially and intellectually to participate in the consultation and management planning processes for the activities.
- On 22 February 2023, Woodside emailed BTAC:
 - Woodside thanked BTAC for its 20 February 2023 correspondence regarding consultations about the Scarborough project.
 - Woodside advised it will respond to this correspondence in the coming days and would be most grateful for the opportunity to meet with BTAC to discuss the matters raised in its letter and Woodside's relationship more broadly.
- On 17 March 2023, Woodside emailed a letter to BTAC:
 - Woodside thanked BTAC for its feedback and it looks forward to working with BTAC.
 - Woodside advised it acknowledges and respects that BTAC on behalf of the Thalanyji People (Thalanyji) has interests in the EMBA by the Scarborough Activities and wants to ensure these values and interests are protected.
 - Woodside advised it also acknowledges that through BTAC's correspondence, BTAC has proposed several important risk mitigation and management measures.
 - Woodside agreed that the principles BTAC have outlined are important. To paraphrase, these principles are that:
 - Woodside and BTAC work in a structured way and on an ongoing basis to learn about, articulate and understand each other's values, aspirations and work, particularly to ensure BTAC understands how Woodside's activities may impact on Thalanyji values and interests.
 - **(2)** Arising from this consultation, Woodside and BTAC will continue to identify environmental risks and design and implement monitoring and management responses to these risks on an ongoing basis. This includes building on Woodside's knowledge base to understand Thalanyji values and interests. Woodside understands this work will also improve BTAC's capability and capacity to identify risks and address monitoring and management arrangements, including through BTAC's ranger program.
 - BTAC has requested that Woodside provides BTAC with the resources that are necessary to undertake this work, including through the provision of information and Woodside personnel to provide briefings, and independent expert anthropological and environmental management advice to BTAC.
 - **(3)** Woodside advised that in response to the provision of independent expert environmental management advice to BTAC, Woodside would be pleased to provide the resources necessary for BTAC to obtain and retain this advice on the basis that such advice is provided by an experienced and reputable oil and gas environmental management expert who is independent of Woodside, and who has the capacity to undertake this work to meet consultation schedules.
 - Woodside suggested a range of organisations for BTAC's consideration who are not working for Woodside.
 - **(4)** Woodside also advised it would also be pleased to support BTAC to acquire anthropological advice.
 - Woodside advised that it respects that BTAC has assessed the likelihood of unplanned events and impacts as possible, Woodside has assessed the likelihood of a major unplanned hydrocarbon release event as highly unlikely. By way of example the Scarborough Activities EMBA's are premised on an unmitigated diesel spill arising from the collision of large vessels, the piercing of fuel tank(s) from that collision causing all the fuel tank to leak out, and no control measures being enacted. Woodside has been operating for over 35 years and has never caused an unplanned event like this, however Woodside must plan for and consult about such events
 - Woodside advised that Woodside's target is to ship the first cargo of LNG from the Scarborough project in 2026, and to enable that:
 - Drilling and completions work is planned to occur anytime within a five-year window commencing in the second half of 2023, pending approvals.

- Seismic activities are planned to start in the first half of 2023, pending approvals, and will take place over a period of between 55 and 70 days.
 - Links to relevant consultation information sheets to the above activities were also provided to BTAC for the second time (first sent on 23 January).
 - Woodside noted that considering the above schedule, there is time for BTAC and Woodside to work together in the short, medium and longer term to identify, develop and refine management responses to environmental risk.
 - Woodside advised that with reference to the timeframes as described above, environmental protection and management associated with these activities is subject to an adaptive management approach. This means that consultation between Woodside and BTAC about environmental risk and management responses is ongoing, and changes can be made to improve environmental protection and management practices over time, including in the associated Environment Plans (EPs). Woodside proposed the following next steps:
 - Woodside will formalise the matters outlined in its correspondence between Woodside and BTAC by including in each of the Environment Plans statements along the following lines:
 - BTAC for and on behalf of Thalanyji has interests and values in the EMBA's and is concerned about the possible impact on these interests and values, including to Sea Country, arising from Woodside's proposed activities.
 - BTAC, with support from Woodside and through the provision of independent expertise, will on an ongoing basis:
 - **(5)** convey to Woodside the nature of Thalanyji interests and values, noting that BTAC would like to conduct work to articulate those values in a manner that Woodside understands.
 - provide information to Woodside about how those interests and values intersect with the EMBA's and how that should be managed.
 - **(4)** Woodside will engage in ongoing consultation with BTAC for the purposes of ongoing monitoring, management and emergency response associated with environmental risk.
 - Woodside and BTAC will work under an adaptive management approach as the understanding of each other's values and interests, activities, needs and aspirations grow during ongoing consultation. This means that Woodside's Environment Plans may be updated from time to time so they accurately reflect environmental risk as they relate to BTAC's interests and values, and the management measures that Woodside and BTAC will put in place to avoid and otherwise mitigate and manage environmental risk.
 - BTAC can at any time make direct representations to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) about the nature of BTAC's interests and how they may be affected by Woodside's activities.
 - Woodside proposed if BTAC considers it appropriate, that the principles discussed in its correspondence (this 17 March 2023 letter and BTAC's correspondence of 20 February 2023) apply to the various decommissioning and drilling EPs that Woodside has notified BTAC about. This will ensure these arrangements are formalised into regulatory processes and documentation. As per Woodside's ongoing consultation approach, feedback continues to be assessed through the life of the EPs.
 - Woodside advised BTAC that its letter of 20 February 2023 and this response will be included in the EP. Woodside requested that if their feedback is sensitive, please inform Woodside, and it will make this known to NOPSEMA upon submission of the Environment Plans to ensure this information remains confidential to NOPSEMA.
- On 30 March 2023, Woodside spoke with BTAC to follow up on correspondence described above. BTAC indicated that they desired a consultation agreement and intended to provide correspondence accordingly.
- **(1) (2)** On 17 April 2023, Woodside spoke with BTAC by telephone. The BTAC representative stated that they were aware that there were archaeological sites identified on nearshore islands and a cultural obligation to care for the environmental values of sea country. The BTAC representative stated there was in principle agreement to submission of current EPs while continuing to negotiate the collaboration agreement for support for rangers and support for recording of cultural values.
- On 18 April 2023, BTAC emailed a response regarding Woodside's Scarborough activities.
 - **(6)** BTAC agreed that subject to formalising arrangements, BTAC agrees in principle for Woodside to include the statements described in their letter dated 17 March
 - **(6)** BTAC proposed that a Collaboration Agreement would be an appropriate mechanism to provide ongoing feedback to Woodside regarding its activities

- BTAC invited Woodside to a board meeting to discuss Scarborough activities and other short, medium and longer term activities, discuss BTAC's strategic plan and details of a collaboration agreement
- On 19 April, Woodside emailed to accept an invitation from BTAC to attend their forthcoming board meeting and requesting half a day of the board's time, preferably before the first week of May.
- On 28 April 2023, Woodside emailed BTAC to follow up in relation to BTAC's proposed collaboration agreement and confirmed Woodside's intention to submit this EP on the understanding that BTAC is agreeable to this course of action, on the basis that we will progress the collaboration agreement. Woodside asked BTAC to identify if it had misinterpreted BTAC's position.
- On 4 May 2023, Woodside called BTAC. It was discussed that:
 - Woodside would be sending BTAC more EPs (for other activities) for consultation
 - **(6)** Woodside is working on draft key terms/principles for the collaboration agreement for BTAC's consideration
 - A meeting between Woodside and the BTAC board may be possible in June
 - Woodside intended to submit the Scarborough EPs (including this proposed activity) soon
- On 4 May 2023, BTAC emailed Woodside to continue discussion regarding a potential future meeting between Woodside and the BTAC board to discuss activities on Thalanyji Country, activities for which BTAC's ongoing consultation is sought, the collaboration agreement and other items not related to this proposed activity.
- (6) On 14 June 2023, Woodside emailed BTAC attaching a letter setting out draft framework for ongoing consultation which includes recording of sea country values, commitments to regular three-monthly meetings, support for BTAC's capacity to engage, a set of milestones for agreeing the framework and commencement of implementation.
- On the 6 July 2023, Woodside attempted to make contact via phone call, but BTAC did not answer.
- On the 7 July 2023, Woodside attempted to make contact via phone call, but BTAC did not answer.
- On the 10 July 2023, Woodside followed a phone call with BTAC with an email to seek further confirmation that BTAC did not object to Woodside's submission of a number Environmental Plans (including this one) that it is planning to submit to NOPSEMA. Woodside outlined a series of commitments to BTAC to ensure ongoing consultation and a positive working relationship continues.
- On 19 July 2023, Woodside emailed BTAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that BTAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.
- On 19 July 2023, Woodside emailed BTAC seeking a time to continue discussion regarding a draft presentation to meeting between Woodside and the BTAC Board about activities on Thalanyji country including other items not related to this proposed activity, and the collaboration principles.
- On 19 July 2023, BTAC emailed Woodside to organise a time for the discussion.
- On 20 July 2023, Woodside emailed BTAC a draft presentation for discussion.
- On 21 July, Woodside emailed BTAC a Teams meeting invite for 28 July 2023.
- On 21 July, BTAC accepted the meeting invite.
- On 26 July 2023, Woodside emailed BTAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 26 July 2023, Woodside emailed BTAC confirming the planned meeting for 28 July 2023, a presentation regarding consultation, and re-sent the draft presentation sent on 20 July 2023.
- On 28 July 2023, BTAC emailed Woodside with outcomes of the meeting, confirming Woodside had set aside funding for engagement, Woodside wish to meet with BTAC board (or sub-committee) as soon as available to discuss offshore activities/EPs. Woodside will prepare a draft framework agreement to address consultations in relation to NOPSEMA matters.

- On 31 July 2023, Woodside emailed BTAC noting that Woodside would be open to funding a special meeting with the board or sub-committee and requesting a cost estimate for such a meeting.
- On 31 July 2023, Woodside emailed 3 letters to BTAC, 1 of those letters related to the issue of a s91 license for an unrelated activity. The 2nd letter outlined support for an ethnographic assessment to:
 - **(2)** Identify sea country values generally sufficient to inform all Woodside EP's.
 - Any work necessary to clarify or define the offshore areas that are relevant to the Thalanyji People.
 - The delivery of interim reports if this will enable prioritising matters considered most critical by BTAC.
 - Woodside will be responsible for all reasonable costs to complete the assessment.
 - Confirm BTAC retains intellectual property.
- The 3rd letter related to a separate Scarborough activity
- To date, BTAC has not indicated that it desires to initiate the ethnographic assessment
- On 3 August 2023, Woodside emailed BTAC regarding the acceptance of this EP, and asking for information in accordance with conditions of acceptance of the EP, specifically whether BTAC is aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform management of the activity. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 9 August 2023, Woodside emailed BTAC again seeking feedback and information relating to the different Scarborough EP with the same EMBA, stating the conditions of acceptance of the EP:
 - if BTAC was aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
 - if there is any information they wish to provide on cultural features and/or heritage values
 - the email gave the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement.
 - the email also described the purpose of consultation.
- On 11 August 2023, BTAC emailed Woodside notifying that a response could be expected by the end of the week.
- On 14 August 2023, Woodside emailed BTAC to inform that the activity under this EP would not commence on 12 August and reiterating their commitment to building a relationship with BTAC.
- On 15 August 2023, Woodside emailed BTAC following up on correspondence provided on 31 July 2023, requesting to meet and discuss matters with BTAC.
- On 22 August 2023, BTAC emailed Woodside acknowledging correspondence and noting they would come back with a time to meet and progress matters, within the following weeks.
- On 23 August 2023, Woodside emailed BTAC requesting to meet for an initial discussion to layout the various matters that have been under discussion, including BTAC's capacity and priority areas previously identified by BTAC.
- (6) On 14 September 2023, BTAC emailed a letter to Woodside regarding a framework agreement with BTAC. The intent of the agreement would be to formalise a co-ordinated, streamlined approach to progressing meaningful ongoing engagement and consultation. The letter included areas the agreed framework could address, and confirmed that the agreed framework would allow BTAC to meaningfully comment on a range of issues including:
 - How/whether EP activities could impact cultural values, interests and customary or organisational activities and concerns and useful ways these could be addressed.
 - The content of EPs prior to submission to NOPSEMA.

- Appropriate ways for mitigating risk and ensuring ongoing social licence.
- A further letter was attached outlining a proposed cost recovery mechanism for consultation activities, and BTAC stated that it did not sanction or endorse any consultation occurring without cost recovery.
- On 20 September 2023, BTAC emailed Woodside requesting a response from Woodside about accepting the proposed costs acceptance letter which BTAC sent on 14 September 2023 and requesting a list of current and ongoing activities Woodside were seeking ongoing consultation for.
- On 20 September 2023, BTAC emailed Woodside further to their earlier email, requesting a response to BTAC's cost proposal, a list of Woodside activities for ongoing consultation and an update on the status of the framework agreement for BTAC's review.
- **(6)** On 22 September 2023, Woodside emailed BTAC accepting BTAC's proposed consultation fee structure, the list of activities that Woodside has consulted BTAC on and advising that the draft framework agreement was under internal review.
- On 26 September BTAC emailed Woodside acknowledging EP information received, signed costs and acceptance letter and that a draft agreement was currently under internal Woodside review. The email confirmed BTAC will be assisted with legal advice from Banks-Smith & Associates (BSA).
- On 27 September 2023, BSA emailed Woodside clarifying that they are instructed by BTAC on this matter.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<p>(1) BTAC stated that their interests include archaeological sites identified on nearshore islands including the Montebello Islands, Barrow Island and the Montebello Islands.</p> <p>(2) BTAC has a cultural obligation to care for the environmental values of sea country.</p> <p>(3) Requested Woodside supports BTAC in obtaining technical advice relating to the proposed activity which was sent to BTAC.</p> <p>(4) Expressed desire to be involved in local emergency response capability, potentially via an Indigenous Ranger Program.</p> <p>(5) BTAC has not specifically developed values regarding Sea Country into a format that could be articulated for consultation. BTAC sought support from Woodside to enable BTAC to define and articulate its values on Sea Country in a manner that could be more clearly understood by the offshore sector, government, and the community.</p> <p>(6) BTAC proposed a Collaboration Agreement as an appropriate mechanism to provide ongoing feedback to Woodside regarding its activities.</p> <p>(7) BTAC does not endorse any consultation without appropriate cost recovery</p>	<p>(1) The nearshore islands identified by BTAC do not fall within the EMBA and will not be impacted by any of the activities set out in the EP.</p> <p>(2) Woodside assessed BTAC's cultural obligation to care for environmental values of sea country to represent potential cultural values.</p> <p>(3) Woodside has offered financial support for technical advice and other support that has not been taken up (eg 17 March 23 letter).</p> <p>(4) Woodside will engage in ongoing consultation with BTAC for the purposes of ongoing monitoring, management and emergency response associated with environmental risk (eg 17 March letter).</p> <p>(5) Woodside agreed to support the articulation and recording of sea country values. Since Woodside formally offered to support BTAC undertake an ethnographic assessment in July 2023, BTAC has not indicated that it desires to initiate the activity. Completion of an ethnographic assessment is not required to undertake or complete consultation under Reg 11A. Opportunity to undertake this work continues under the proposed Collaboration Agreement (see 6) as part of ongoing engagement.. Woodside has been able to develop a robust understanding of Thalanyji Sea Country cultural values and features in absence of this assessment.</p> <p>(6) Separate from consultation under Reg 11A, Woodside will establish a Collaboration Agreement with BTAC. The agreement would be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including Consultation Information Sheets and a Summary Information Sheet developed by Indigenous staff members, and slide packs associated with offered face-to-face meetings.</p> <p>Woodside and BTAC have agreed on a Costs Acceptance Letter. Woodside has developed a Framework Agreement for ongoing consultation which is under internal review and will be forwarded to BTAC for their consideration in October 2023.</p>	<ul style="list-style-type: none"> - Not required - Woodside updated Section 4.10 to record BTAC's interests and potential cultural values and assessed potential impact on these, including controls, in section 6.9 - Not required - The Program for Ongoing Engagement with Traditional Custodians (Appendix J) includes commitments to social investment to support Indigenous Ranger programs, and support for Indigenous oil spill response capabilities. - Woodside has developed the Thalanyji Sea Country Management process described in the EP section 7.4 to develop a robust understanding of Thalanyji Sea Country cultural values and heritage features, in the absence of the ethnographic survey. Woodside has taken all reasonable steps to identify cultural features and heritage features of Thalanyji people within the EMBA. This is described in sections 4.10. The proposed Collaboration Agreement and PS 17.1.1 enables an ethnographic survey to be undertaken at a later date. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7). PS 18.1.1 ensures that potential impacts to newly identified cultural values is managed to ALARP and Acceptable levels. - and (7) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, referenced as PS 17.1.1 in this EP. This includes continued engagement regarding the Collaboration Agreement that Woodside seeks with BTAC, which could include support for BTAC to define and
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	<p>The agreement includes support for recording and articulation of Sea Country values.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p> <p>(7) Woodside assesses that the proposed Collaboration Agreement is an appropriate mechanism for addressing appropriate cost recovery for BTAC. Woodside has already offered BTAC support for technical advice (see 3), and informed BTAC that it would financially support consultation meetings (eg 13 Feb 23 discussion). As described in the summary above, Woodside has afforded sufficient information and reasonable time for BTAC to provide feedback in the course of preparing this EP.</p>	<p>articulate values, provision of ongoing feedback and cost recovery. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix J</p>
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Robe River Kuruma Aboriginal Corporation (RRKAC)

RRKAC is established under the Native Title Act 1993 by the Robe River Kuruma people to represent the Robe River Kuruma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with RRKAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5 of the EP. Specifically:

Sufficient Information:

- Woodside Sought direction on RRKAC's preferred method of consultation. This resulted in face-to-face meetings being coordinated at the location of RRKAC's choosing, with RRKAC nominated representatives. These meetings included information that was readily accessible and appropriate.
- Provided Consultation Information Sheets and Consultation Summary Sheets to RRKAC.
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Set out in detail what was being sought through consultation.
- Suggested that information and request for feedback be distributed to members as required.
- Provided NOPSEMA's guidelines and brochure on consultation.
- Provided response to questions asked about the activity through consultation.
- Advised that RRKAC could request the particular information provided in the consultation not be published (to align with 11A(2)(4))

Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to RRKAC on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to RRKAC over 9 months, demonstrating a "reasonable period" of consultation.

Woodside asked RRKAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. RRKAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on RRKAC's functions, interests or activities

Summary of information provided and record of consultation:

- On 20 January 2023, Woodside emailed RRKAC advising of the proposed activity (Appendix F, reference 1.49) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. The email requested information on the interests that RRKAC and its members may have within the EMBA, information on how RRKAC would like to engage, and requested that RRKAC provide information to members as required.
- On 31 January 2023, Woodside held a discussion with RRKAC representative to discuss the proposed activity and ways forward for consultation:
- RRKAC advised during the virtual meeting that the activity would need to be considered by their Heritage Advisory Committee scheduled for late February 2023.
- On 24 February 2023, Woodside emailed RRKAC to follow up on the information provided (Appendix F, reference 1.104) and the proposed February 2023 meeting. Woodside noted it is seeking RRKAC's feedback as soon as possible on the proposed activity.
- On 9 March 2023, RRKAC emailed Woodside (and copied in CEO of Wirrawandi Aboriginal Corporation (WAC)):

- RRKAC advised it has discussed the proposed activity with the Robe River Kuruma Heritage Advisory Committee and they have recommended that the interests of Robe River Kuruma people are best served through the joint Heritage Advisory Committee that is required under Yaburara Mardudhunera and Kuruma Marthudunera Indigenous Land Use Agreement.
- RRKAC also suggested that WAC is required to facilitate this Committee and noted there is an emerging need to deal with other proponent matters, so there is an opportunity to link the engagement from a meeting efficiency perspective.
- Between 15-17 March 2023, Woodside exchanged email correspondence with RRKAC (and WAC) and in relation to establishing a meeting with the joint Heritage Advisory Committee. The meeting was confirmed for 31 March 2023.
- On 15 March 2023, Woodside emailed RRKAC to ask when date of joint HAC would occur and how Woodside can support it.
- On 15 March 2023, RRKAC emailed Woodside regarding contacts for the proposed meeting.
- On 15 March 2023, Woodside emailed RRKAC to advise who from Woodside would lead the process.
- On 15 March 2023, RRKAC emailed Woodside to advise the joint HAC meeting was scheduled tentatively for 31 March 2023 but that this would depend on WAC's availability but that the RRKAC representatives are able to attend.
- **(1)** On 31 March 2023, Woodside met with the Robe River Kuruma and Wirrawandi Joint Heritage Advisory Committee (HAC) in Karratha:
 - Woodside described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
 - Woodside encouraged HAC to raise anything which they feel is missing in the information provided during the meeting, or any issues or concerns.
 - Woodside displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
 - Woodside provided an overview of the broader Scarborough Project and overview of activities.
 - Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video showing the general process of drilling and completions which was designed for public audience.
 - HAC asked a number of questions related to the broader Scarborough project
 - Woodside described the proposed seismic activity
 - Woodside showed a video example of a seismic survey
 - Woodside described planned and unplanned environmental risks and impacts in accordance with tables provided in the Information Sheets for the activities, emphasising that unplanned risks are not expected to occur and are unlikely.
 - The EMBA for each proposed Scarborough activity was displayed, and the individual worst case loss of containment scenarios identified, noting that they are all diesel fuel releases which would only be caused by vessel collisions.
 - HAC asked what response Woodside would implement for a diesel spill. Woodside responded that response arrangements are checked by NOPSEMA and since diesel rapidly evaporates and disperses response is mainly monitoring
 - Woodside noted this concluded the Scarborough section of the meeting, and called for any further questions or feedback. None were received.
 - Woodside provided personal contact details for further feedback
 - Woodside provided NOPSEMA contact details, should the HAC desire to provide feedback directly to the regulator.
- **(2) (3)** On 3 May 2023, Woodside contacted RRKAC by mail to summarise the information presented at the meeting on 31 March 2023 and the actions for Woodside to follow up:
 - Woodside thanked the HAC for the meeting, their careful consideration of the matters and feedback provided.
 - Woodside acknowledged that the RRKAC have interests in the EMBA and noted that we want to ensure impacts are as minimal as reasonably practicable.

- A high level overview of presented topics was provided.
- Woodside provided responses to questions noted from the meeting that were not related to the proposed activity.
- Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA.
- Woodside provided responses to questions noted from the meeting that were not related to the proposed activity.
- Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA.
- (3) On 19 July 2023, Woodside emailed RRKAC NOPSEMA’s Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside’s request that RRKAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.
- (3) On 26 July 2023, Woodside emailed RRKAC Woodside’s planned Program of Ongoing Engagement with Traditional Custodians.
- On 2 August 2023, Woodside emailed RRKAC regarding the acceptance of this EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether RRKAC is aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA’s publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 9 August 2023, Woodside emailed RRKAC again seeking feedback and information relating to this EP, stating the conditions of acceptance:
 - if RRKAC were aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
 - if there is any information they wish to provide on cultural features and/or heritage values
 - the email gave the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement.
- On 11 August 2023, RRKAC emailed Woodside in response to another matter and in addition requesting ongoing consultation and training opportunities for rangers to prepare rangers for caring for sea and coastal country.
- On 14 August 2023, Woodside emailed RRKAC thanking them for their response and requesting to meet to discuss training opportunities for rangers.
- On 14 August RRKAC emailed Woodside agreeing to a meeting and indicating they would arrange a suitable time for a discussion
- On 14 September 2023, Woodside emailed RRKAC acknowledging the previous email, advising of the planned start date for the activity, and once again requesting if RRKAC is aware of any other people with whom Woodside should consult, and if there is any information RRKAC wish to provide on cultural values. The email requested this information prior to 28 September 2023, but reiterated that Woodside will take feedback after the commencement of Scarborough activity unrelated to this EP as part of ongoing consultation. The Summary Information Sheet for this activity was attached.
- (3) On 15 September 2023, RRKAC emailed Woodside noting the compliance burden on industry and RRKAC, advising they have noted Woodside’s plans, and that they are not resourced to adequately respond, and would require Woodside to fund additional resources.
- (3) On 18 September 2023, Woodside emailed RRKAC confirming that Woodside will provide funding to enable groups to participate in consultations.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<p>(1) During face-to-face engagements, related to this activity and others, the RRKAC/HAC requested further information on topics related to this proposed activity which was responded to during the meeting:</p> <ul style="list-style-type: none"> - Emergency preparedness/ Spill response arrangements - The RRKAC/HAC raised feedback and request for further information on the Scarborough project more broadly which will be provided as part of ongoing engagement <p>(2) The HAC expressed a desire for ongoing engagement and partnership.</p> <p>(3) RRKAC noted that they are insufficiently resourced to fully engage and respond regarding EPs.</p>	<p>(1) Woodside responded to RRKAC/HAC's requests for further information during face-to-face engagements, and no further information was requested on these topics.</p> <p>(2) Woodside supports ongoing engagement and have responded to RRKACs advice about the limitations on their resources, Woodside has offered to support RRKAC in correspondence sent in May and September 2023, however these offers have not been taken up.</p> <p>(3) Woodside has assessed the Program of Ongoing Engagement with Traditional Custodians will support ongoing consultation with RRKAC and address appropriate support for resourcing, separate from consultation under Reg 11A, Sufficient information to allow informed assessment has already been provided by other means, including Consultation Information Sheets and a Summary Information Sheet developed by Indigenous staff members, and a face to face meeting on 15 March 2023 for which Woodside met RRKAC's costs, with appropriate material (pictures, maps, videos) and project attendance allowing opportunity to ask questions and seek further understanding</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) & (3) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans referenced as PS 17.1.1 in this EP. This includes addressing RRKAC's resourcing issue for ongoing consultation via a Framework Agreement.</p>
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Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)

NTGAC is established under the Native Title Act 1993 by the Baiyungu people to represent the Baiyungu people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has consulted under Regulation 11A with NTGAC by providing sufficient information, a reasonable period of time and opportunity for NTGAC to make an informed assessment of the possible consequences of the activities on functions, interests or activities. Woodside has addressed each objection or claim made by NTGAC. Woodside has included cultural values and controls relevant to Woodside's understanding of NTGAC's functions, interests and activities in its environment plan and in response to topics raised during consultation by NTGAC.

As demonstrated in the summary below and consultation record that follows, consultation with NTGAC complies with Regulation 11A and is complete.

Summary

- Sufficient Information:

- Woodside Sought direction on NTGAC's preferred method of consultation. This resulted in two face-to-face meetings being coordinated at location of NTGAC's choosing, with NTGAC nominated representatives. These meetings included Woodside presenting information in a format and style that was readily accessible and appropriate.
- Provided Consultation Information Sheet and Consultation Summary Sheets to NTGAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity in a digestible, plain English format.
- Articulated planned and unplanned environmental risks and impacts, with proposed controls to manage potential impacts to ALARP and acceptable levels.
- Confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Suggested that information and request for feedback be distributed to members as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan"
- Provided response to questions asked about the activity through consultation. Through these questions, NTGAC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.
- As per a request from NTGAC, Woodside funded YMAC's environmental scientist to attend two face-to-face meetings to support consultation and funded a YMAC lawyer to attend the August meeting with NTGAC. This assisted in ensuring any technical information was provided in a way which allowed NTGAC to make an informed assessment of the possible consequences of the activities on the functions, interests or activities.

- Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Woodside commenced consultation with NTGAC in January 2023. Woodside has since addressed and responded to NTGAC queries over 9 months, demonstrating a "reasonable period" of consultation.

Woodside advised that NTGAC can request that particular information provided in the consultation not be published (to align with 11A(2)(4))

Woodside asked NTGAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. NTGAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NTGAC functions, interests or activities.

Woodside does not agree with NTGAC's assertion that it has not yet completed consultation under regulation 11A for the activity. Woodside has assessed the claims and feedback raised by NTGAC, as detailed later in this section alongside Woodside's response to the claims. Woodside considers the measures and controls described in this

EP address the potential impact from the proposed activity on NTGAC's functions, interests, or activities.

Summary of information provided and record of consultation:

YMAC is the Native Title Representative Body (NTRB) for the Yamatji and Pilbara regions, which includes NTGAC. NTRBs exist to provide assistance to native title claimants and holders in regards to their native title rights. No native title has been recognised over the Project Area, however YMAC is identified in the North West Marine Parks Network Management Plan as the contact for identifying cultural values in nearby Australian Marine Parks.

- On 7 July 2022, Woodside met with YMAC to request advice on the appropriate cultural authorities for the Scarborough project area, including but not limited to the scope of this EP and nearby marine parks.
- Woodside described the Scarborough Project and its footprint and gave an overview of indigenous parties consulted.
- Woodside noted that YMAC was identified in the North-West Marine Parks Network Management Plan as contact for identifying cultural values in nearby Australian Marine Parks. Woodside sought to understand if cultural values of the nearby Gascoyne Marine Park may extend into the offshore Scarborough project areas.
- Woodside requested advice on how best (in addition to work completed) to identify any cultural values in the Marine Parks and the broader project footprint.
- YMAC requested Woodside provide the relevant detailed information relating to the location and extent of the project.
- YMAC directed Woodside that consultation related to Scarborough Project would be best directed to Murujuga Aboriginal Corporation and Ngarluma Aboriginal Corporation
 - YMAC did not direct Woodside to engage with NTGAC, however NTGAC was identified as a relevant person under methodology outlined in Section 5 and YMAC is listed as NTGAC's preferred contact on the ORIC website and is therefore Woodside's primary contact when engaging NTGAC
- On 6 January 2023, Woodside phoned NTGAC via the representative body Yamatji Marlpa Aboriginal Corporation (YMAC) for the purpose of introduction and to explain that Woodside will be sending information concerning EPs.
- On 20 January 2023, Woodside emailed NTGAC via the representative body YMAC advising of the proposed activity (Appendix F, reference 1.43) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet, asking what interests NTGAC and its members may have within the EMBA and whether they required any information to prepare for a meeting.
- On 27 January 2023 Woodside phoned and emailed NTGAC/YMAC to follow up on the information provided (Appendix F, reference 1.45), and information sought. Woodside requested if NTGAC required anything further ahead of a planned meeting with Woodside on 16 February 2023.
- On 1 February 2023, NTGAC/YMAC phoned Woodside to confirm the planned meeting for 16 February 2023. It was arranged to hold a subsequent phone discussion between key representatives on 10 February to discuss scope for the consultation meeting. Woodside said that it is anticipating feedback from the group on the proposed activity at this consultation meeting and asked for any specific families or individuals that Woodside should be engaging with to be invited. NTGAC/YMAC responded that consultation with NTGAC as the representative body is appropriate. Woodside respected NTGAC's response and supported all NTGAC's proposed attendees to attend the meeting.
- On 10 February 2023, Woodside phone NTGAC and described the proposed scope of the consultation meeting planned for 16 February.
- On 16 February 2023, Woodside presented to a meeting of the NTGAC Board and YMAC representatives:
 - Woodside described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
 - Woodside encouraged NTGAC to raise anything which they feel is missing in the information provided during the meeting.
 - Woodside displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
 - Woodside provided an overview of the broader Scarborough Project.

- Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video showing the general process of drilling and completions which was designed for public audience.
- Woodside described the proposed seismic survey, noting that the purpose is to understand the gas reservoirs below the seabed.
- Woodside provided an overview of the proposed activity and a summary of both planned and unplanned impacts and associated controls.
- Woodside described planned and unplanned environmental risks and impacts in accordance with tables provided in the Information Sheets for the activities, emphasising that unplanned risks are not expected to occur and are unlikely.
- **(1) (2)** NTGAC asked if Woodside could explain impacts on whales from noise.
- Woodside replied that there has been modelling work done and applied to understanding of thresholds for hearing and behavioural impacts. It shows that there will be no lasting effect on whales, however there could be short term hearing impacts. Measures have been taken like removing driven piling from the activities to reduce noise impacts
- Woodside further explained that there are not expected to be many turtles, dugongs or humpbacks offshore but there could be pygmy blue whales
- **(1)** YMAC asked how Woodside will monitor for whales
- Woodside explained that it will have dedicated marine fauna observers and systems which can listen for whale song on some vessels. Presence of whales can postpone activities. Woodside noted that noise impacts are time bound and that whale tagging and behaviour monitoring shows they are migrating and unlikely to stay around for hours, reducing the likelihood of impact from noise
- **(2)** While discussing another activity, NTGAC expressed interest in whale sharks
- The EMBA for each proposed Scarborough activity was displayed, and the individual worst case loss of containment scenarios identified, noting that they are all diesel fuel releases which would only be caused by vessel collisions.
- Woodside noted this concluded the Scarborough section of the meeting, and called for any further questions or feedback. None were received.
- Woodside stated that there is significant work and consultation coming up, and it hope to spend more time with NTGAC to understand expectations and desire of how Woodside can work with NTGAC
- YMAC expressed that they are being inundated with requests for consultation from oil and gas operators, and are working internally on processes and priorities for consultation
- Woodside welcomed the transparency and discussion on capacity
- NTGAC expressed that consulting on these type of activities is not viewed as wasting time, but consultation which gives nothing back to the community is not a priority. They are interesting in partnership programs and on-country engagements.
- Woodside stated that while all the big companies will have deadlines and need to get feedback to meet legal requirements, Woodside desires it to be a jointly held process and that NTGAC desires any support or assistance please request it.
- Woodside provided personal contact details for further feedback
- Woodside provided NOPSEMA contact details, should NTGAC desire to provide feedback directly to the regulator.
- On 21 February 2023, NTGAC/YMAC emailed Woodside to seek clarification of the attendee names at the 16 February 2023 Board meeting.
- On 21 February 2023, Woodside emailed NTGAC/YMAC the attendee names at the 16 February 2023 Board meeting and provided a copy of the presentation pack. Woodside followed up on request for any further feedback on the proposed activity.
- On 22 February 2023 NTGAC/YMAC emailed Woodside to thank Woodside for sending the relevant information.
- On 13 March 2023, Woodside met with NTGAC's legal representatives to discuss consultation on the Scarborough Project, preferred method and locality of consultation meetings, and to note that they will assist groups with funding to hold meetings on an agreed basis.
- On 22 March 2023, Woodside followed up by phone with NTGAC/YMAC on any feedback on the proposed activities. None was received.

- On 28 March 2023, YMAC followed up with Woodside on a Woodside action arising from the 16 February meeting to supply photos and diagrams in relation to the different activity.
- On 31 March 2023, Woodside followed up with the relevant photos and diagrams, noting contact details and welcoming any further feedback. Woodside thanked NTGAC for their work to date and requested that NTGAC reach out for any assistance. No further response was received to Woodside's request for feedback on the activity.
- **(3)** On 20 June 2023, in two separate emails NTGAC replied they would return to Woodside with a suitable date and sought confirmation that Woodside would again fund the attendance of the in-house environmental scientist.
- On 20 June 2023, Woodside replied they were happy to fund the in-house environmental scientist.
- On 21 June NTGAC/YMAC emailed Woodside confirming a full day workshop to cover all activities.
- On 21 June 2023, Woodside emailed NTGAC seeking a pre-meet to plan the workshop and offer further assistance.
- On 30 June 2023, NTGAC emailed Woodside with a budget estimate for the meeting in Exmouth.
- On 5 July 2023, Woodside replied confirming the date and that they would pay for the costs outlined in the budget.
- On 17 July 2023, YMAC emailed Woodside referring to the draft YMAC consultation framework for PBCs and asked that the workshop focus on strategic planning with additional funding.
- On 19 July 2023, Woodside emailed NTGAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. The email advised NTGAC that sensitive information will be managed carefully, and that relevant persons can request that information is not published. This email also reiterated Woodside's request that NTGAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.
- On 24 July 2023, Woodside agreed to the change of workshop focus and additional funding, proposed an agenda and a pre-meeting for joint planning.
- On 25 July 2023, Woodside emailed the YMAC CEO (and copied the NTGAC representatives) responding to the draft YMAC Framework for Consultation and emailing Woodside's planned Program of Ongoing Engagement with Traditional Custodians, noting that Woodside's Program would complement what is proposed in NTGAC's proposed Framework. The email proposed a meeting at YMAC's earliest convenience.
- On 28 July 2023, NTGAC confirmed availability for a pre meeting.
- On 31 July 2023, Woodside emailed NTGAC/YMAC to accept a pre meeting date.
- On 3 August 2023, Woodside emailed NTGAC/YMAC about the proposed activity and thanked YMAC for the pre meeting held on 2 August and confirmed the meeting with NTGAC on 15 August 2023. Woodside also provided links to NOPSEMA's consultation documents, including links to the Brochure, Guideline and Policy documents.
- On 9 August 2023, Woodside emailed NTGAC/YMAC requesting clarity around the meeting scheduled for 15 August 2023.
- On 9 August 2023, Woodside emailed NTGAC/YMAC again seeking feedback and information relating to this activity that had been accepted, stating the conditions of acceptance of the EP:
 - if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
 - if there is any information you wish to provide on cultural features and/or heritage values.
 - The email requested input before a specified date
 - The email described the purpose of consultation
- **(4)** On 11 August 2023, NTGAC/YMAC emailed Woodside stating that NTGAC had not yet been consulted regarding the activity, that the proposed time frame for consultation is not workable for NTGAC, that they would be raising this with NOPSEMA and wished to discuss further in the meeting planned for 15 August 2023.
- On 11 August 2023, Woodside emailed NTGAC/YMAC noting that the activity would no longer commence on the date previously notified. Woodside confirmed the attendees for the meeting on 14 August 2023.
- On 14 August 2023, NTGAC/YMAC emailed Woodside acknowledging the meeting to be held 15 August 2023.

- On 15 August 2023, Woodside presented to the NTGAC about several EPs including an update on this EP. At the meeting Woodside:
 - Described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
 - Displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
 - Provided an update on the Scarborough Project activities including the Marine Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Installation EPs.
 - Described the types of vessels involved.
 - Described planned and unplanned environmental risks and impacts in accordance with tables provided in the Information Sheets for the activities, emphasising that unplanned risks are not expected to occur and are unlikely.
 - Displayed and spoke to the EMBA for each proposed activity, and the individual worst-case loss of containment scenarios identified, noting that they are all diesel fuel releases which would only be caused by vessel collisions.
 - Described planned and unplanned risks and impacts of the activity, and discussed controls in place to manage risks/impacts to ALARP and acceptable levels
 - Stated that Woodside wanted to understand how the functions, activities, or interests of NTGAC and the people it represents may be impacted by any of those activities.
 - Specifically asked the following:
 - How could these activities impact your cultural values, interests, and activities – does protecting the environment do enough to protect your cultural values?
 - What are your concerns about the proposed activities and what do you think we should do about them?
 - Is there anything you would like included in the EPs before submission?
 - Is there anyone else Woodside should consult with about the activities?
 - Advised that Woodside will continue to take feedback from NTGAC for the life of the EP.
 - Provided personal contact details for further feedback. Woodside provided NOPSEMA contact details, should NTGAC desire to provide feedback directly to the regulator.
- At the 15 August meeting NTGAC/YMAC asked the following questions and gave the following feedback:
 - **(1)** YMAC asked about whale sightings and response.
 - Woodside responded that response depended on activity and controls, Marine Mammal Observers are implemented.
 - **(1)** NTGAC asked about ballast water discharges, Woodside responded by describing Invasive Marine Species requirements and controls.
 - **(5)** A proposed framework for consultation was discussed, involving Woodside funding General Project Reports to be written by an independent suitably qualified and experienced consultant, to be provided to NTGAC initially and then on to Woodside. The General Project Reports outline the nature of the activities for each phase of the project and the risks associated with each of the relevant activities.
 - Terms for ongoing engagement were discussed, including frequency, participation, and content in context of the proposed General Project Report
 - **(6)** NTGAC Strategic Plan and relation to potential Woodside social investment opportunities were explored.
 - NTGAC stated their consultation expectations (two-way dialogue preferred over one-way presentations and requested that consultation meetings cover whole projects or phases rather than single EP activities which is too time consuming).
 - NTGAC requested that a table of EPs be submitted by December with a timeline.
 - **(4)** NTGAC stated that they did not consider that they had been consulted on other EP's based on engagement to date, stating that the information provided had been too technical.

- On 31 August Woodside emailed NTGAC/YMAC to provide a copy of the presentation from 15 August and communicating Woodside's understanding of next actions:
 - YMAC to provide a first draft of a consultation agreement. Woodside offered to provide support or first draft if NTGAC desired, however this offer of support has not been accepted.
 - YMAC to prepare the first draft of a general report.
 - Woodside to provide a list of upcoming activities.
 - Agreed to continue discussions relating to key community focus areas highlighted by NTGAC.
 - Feedback from NTGAC on the appropriateness of the information given by Woodside (too technical) to enable NTGAC to provide feedback.
 - The email also noted that Woodside considers consultation has commenced and is ongoing, however Woodside will work with NTGAC to develop the process further.
- On 31 August 2023, NTGAC/YMAC emailed Woodside confirming they would respond shortly to the outcomes as assessed by Woodside and requesting response to queries in relation to another activity.
- Woodside will continue to pursue an ongoing two-way relationship with NTGAC under the Proposed Program of Ongoing Engagement with Traditional Custodians

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<p>(1) During face-to-face engagements on 16 Feb and 15 Aug 2023 related to this activity and others, the NTGAC requested further information on topics related to this proposed activity which was responded to during the meetings:</p> <ul style="list-style-type: none"> • How EMBA's are developed. • Ballast water discharges • Potential impacts of noise on whales • Whale monitoring arrangements • Whale sightings and response <p>(2) NTGAC have expressed a general interest in whales and whale sharks. Woodside discussed controls protecting whales and whale sharks from an ecological perspective during meetings in which they were raised, and no further feedback or comment was received on these topics.</p> <p>(3) NTGAC requested funding for YMAC's in-house environmental scientist.</p> <p>(4) NTGAC claimed that they have not been consulted about the activity to date, stating that they could not provide information on cultural values because the information provided has been too technical and timeframes were not sufficient.</p> <p>(5) NTGAC are developing the first draft of a Consultation Agreement, and General Report. The proposal for the General Report is that it would outline the nature of the activities for each phase of the project and the risks associated with each of the relevant activities. Woodside are awaiting receipt of the initial draft of the General Report.</p> <p>(6) NTGAC are interested in exploring social investment opportunities with Woodside which may support NTGAC's Strategic Plan.</p>	<p>(1) Woodside responded to NTGAC's requests for further information during face-to-face engagements in which they were raised, and no further information was requested on these topics.</p> <p>(2) Woodside noted NTGAC's interest in whales and whale sharks.</p> <p>(3) Woodside funded YMAC's environmental scientist to attend two face-to-face meetings on 16 Feb 2023 and 15 Aug 2023 to support consultation. No feedback was received from this activity. Woodside has also offered to financially support provision of independent, third party advice to NTGAC (19 April 23) which has not been taken up.</p> <p>(4) Woodside does not agree with NTGAC's claim that it has not yet been consulted on the activity, or that information provided has been too technical. Woodside met with NTGAC nominated representatives, at location of NTGAC's choice on 16 Feb and 15 Aug 2023 for multiple hour sessions where the activity was described face to face by Woodside project representatives, subject matter experts and First Nations relations advisers (see section 5 for approach). This included specifically developed "plain English" material developed by First Nations personnel in collaboration with technical experts, maps, pictures and a short video visually communicating the drilling process. During the meeting, NTGAC and YMAC representatives were encourage to control the pace of the engagement and seek clarification. NTGAC and YMAC asked questions about the activity (see point 1) which indicates that material was engaged with. Woodside has also funded YMAC's in-house environmental scientist to support consultation. Woodside has addressed and responded to NTGAC over 9 months, demonstrating a "reasonable period" of consultation</p> <p>(5) Separate from consultation under Reg 11A for this activity, Woodside will establish a Consultation Agreement with NTGAC. The Consultation Agreement and General Report/s would be used to</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) Woodside updated Section 4.10.1 to reflect NTGAC's interests and potential cultural values, including whales and whale sharks, and assessed potential impact on these, including controls, in section 6.9.</p> <p>(3) Not required</p> <p>(4) Not required</p> <p>(5) (6) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans, referenced as PS 17.1.1 in this EP. This includes continued engagement regarding NTGAC's proposed Consultation Framework which will be applied to ongoing consultation, and potential support for their Strategic Plan. This is described further in the Program of Ongoing Engagement with Traditional Custodians , Appendix J.</p>
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	<p>frame ongoing consultation to occur as part of Woodside's commitment to post Reg 11A consultation ongoing engagement. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, multiple face to face meetings with appropriate material (pictures, maps, videos) and project attendance allowing opportunity to ask questions and seek further understanding, and agreement to fund NTGAC/YMAC environmental scientist who was also present at the meetings.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p> <p>(6) Woodside is continuing to work with NTGAC regarding social investment opportunities. Woodside has assessed that the Framework for Ongoing Consultation with NTGAC is an effective mechanism for exploring opportunities for alignment with NTGAC's Strategic Plan</p>	
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Native Title Representative Bodies

Yamatji Marlpa Aboriginal Corporation (YMAC)

YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with YMAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.8 of the EP. Specifically:

Sufficient Information:

- Consultation Information Sheet publicly available on the Woodside website since July 2021, further updated and available from January 2023.
- Woodside published advertisements in a national, state, and relevant local newspapers in October 2022 and then again 18 and 20 January 2023 advising of the proposed activities and requesting comments or feedback.

Reasonable Period:

- Consultation information provided to YMAC on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to YMAC over a 12-month period, demonstrating a “reasonable period” of consultation.
- Woodside considers that the “reasonable period” of consultation for this EP has closed.

Summary of information provided and record of consultation:

Historical Engagement

- On 7 July 2022, Woodside met with YMAC to request advice on the appropriate cultural authorities for the Scarborough project area, including but not limited to the scope of this EP and nearby marine parks.
 - Woodside described the Scarborough Project and its footprint, and gave an overview of indigenous parties consulted.
 - Woodside noted that YMAC was identified in the North West Marine Parks Network Management Plan as the contact for identifying cultural values in nearby Australian Marine Parks. Woodside sought to understand if the cultural values of the nearby Gascoyne Marine Park may extend into the offshore Scarborough project areas.
 - Woodside requested advice on how best (in addition to work completed) to identify any cultural values in the Marine Parks and in the broader project footprint.
 - YMAC requested Woodside provide the relevant detailed information relating to the location and extent of the project.

Ensuring Sufficient Information and Sufficient Time

- On 8 July 2022, Woodside emailed YMAC providing the requested information including a link to the factsheet relevant to this EP.
 - Woodside advised it would like to establish a process to cross check its understanding of cultural and spiritual values associated with proposed offshore development and surrounding areas. We note that YMAC has been listed as the Native Title Representative body in the North West Marine Parks Network Management Plan for nearby Australian Marine Parks, and would therefore like to confirm cultural values of these marine parks don't extend into Woodside's areas of interest.
 - Woodside provided an extract from a related Scarborough EP which detailed further context and Woodside's current understanding of cultural and spiritual values associated with proposed offshore development and surrounding areas.
- On 19 July 2022, YMAC responded to Woodside:
 - YMAC stated the area Woodside has identified requires correspondence directed to Murujuga Aboriginal Corporation and Ngarluma Aboriginal Corporation.
 - The extent to which each corporation has interests specifically over the area of this EP was not advised, but both have been involved in assessments of cultural values as detailed below. YMAC does not act for either corporation.
- On 19 July 2022, Woodside sent a follow up email regarding finding a delegate for the above
- On 13 March 2023, Woodside emailed YMAC as to whether YMAC considers itself a 'relevant person' under sub regulation 11 A (1) of the Environment Regulations for the purposes of consultation on EPs and, if so, whether that relevance is limited to a facilitation function in its capacity as a representative of Traditional Owner groups/corporations that overlap or adjacent to the environment that may be affected (EMBA) of a particular activity.

- On 20 March 2023, YMAC replied to confirm that in its view it is a 'relevant person' under sub regulation 11 A (1) of the Environment Regulations for the purposes of consultation on EPs only in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation. YMAC does not intend to provide substantive comment on the content of EPs.
- On 20 March 2023, Woodside emailed YMAC to thank it for its reply and to advise that that this assessment would be included in Woodside's EPs.
- On 20 March 2023, YMAC emailed Woodside confirming that it is appropriate to use the assessment in the EPs.
 - YMAC is the representative for NTGAC and was the representative for Yinggarda Aboriginal Corporation until April 2023.
- On 12 June 2023, YMAC emailed Woodside on behalf of itself and its clients. The email attached:
 - A proposal to fund in-house expertise to support consultations and administration of the consultation framework.
 - A draft consultation framework.
- On 12 June 2023, Woodside responded to YMAC by email thanking them for the documents and that Woodside would respond shortly.
- On 25 July 2023, Woodside emailed YMAC:
 - Agreeing in principle to the draft consultation framework and funding proposal but seeking further discussion on details.
 - Stating that Woodside is open to considering an industry funded position at YMAC to support the work they are facilitating.
 - Attaching Woodside's Program for Ongoing Engagement with Traditional Custodians.
 - Seeking a meeting with YMAC in relation to the draft consultation framework at YMAC's earliest convenience.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<p>YMAC has advised that the most appropriate stakeholders for the Scarborough project generally are Murujuga Aboriginal Corporation and Ngarluma Aboriginal Corporation who are not represented by YMAC.</p> <p>YMAC has provided feedback that in its view it is a 'relevant person' under sub regulation 11 A (1) of the Environment Regulations for the purposes of consultation on EPs only in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation, and does not intend to provide substantive comment on the content of EPs.</p> <p>YMAC has provided feedback that it is seeking an industry funded position to support consultations for this and other activities.</p> <p>YMAC has provided a draft consultation framework to assist the consultation process.</p>	<p>YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate representing the cultural rights of a Traditional Custodian Community but exist to assist native title claimants and holders.</p> <p>YMAC is identified in the North-west Marine Parks Network Management Plan 2018 (DNP, 2018) as the Native Title Representative Body, noting no marine parks overlap the Operational Area.</p> <p>Woodside has approached YMAC to confirm the best approach to confirm additional cultural values (if any) within the Operational Area.</p> <p>Woodside has consulted with YMAC in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation, and it has responded that it does not intend to provide substantive comment on the content of EPs.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (refer to Section 7.7).</p> <p>Woodside is engaging with YMAC in relation to its request for an industry funded position and a draft consultation framework.</p>	<p>Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on YMAC's functions, interests or activities.</p> <p>Woodside will implement a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, referenced as PS 17.1.1 in this EP.</p> <p>Based on the engagement to date, no additional controls have been identified.</p>
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Self-identified First Nations Groups

Ngarluma Yindjibarndi Foundation Ltd (NYFL)

NYFL was created to act as Trustee for the Trust under the Northwest Shelf Agreement 1998 struck between the Ngarluma and Yindjibarndi registered native title claimants, the NWS JVs and Woodside, prior to the resolution of the Ngarluma and Yindjibarndi native title claim. Its purpose is to carry on the business of enterprise development, investment and social welfare.

In 1999 the Ngarluma and Yindjibarndi native title claim was settled with the Federal Court appointing, at the request of the common law native title holders, the Ngarluma Aboriginal Corporation (NAC) as PBC to represent the communal interests of the Ngarluma people and the Yindjibarndi Aboriginal Corporation (YAC) as PBC to represent the communal interests of the Yindjibarndi people. Woodside consulted both NAC and YAC as relevant persons in the course of preparing this EP.

NYFL self-identified and has advised it is relevant for this EP.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with NYFL for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5 of the EP. Specifically:

Sufficient Information:

- Sought direction on NYFL's preferred method of consultation. NYFL requested consultation material suitable for Traditional Custodian audience, which was developed and provided. NYFL and Woodside initially agreed to hold a face-to-face consultation meeting at location of NYFL's choosing with NYFL nominated representatives, however NYFL chose to postpone the engagement for an undefined time.
- Provided Consultation Information Sheet and Consultation Summary Sheets to NYFL
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Set out in detail what is being sought through consultation.
- Provided NOPSEMA's guidelines and brochure on consultation

Reasonable Period:

- Woodside published advertisements in a national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, North West Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Met with NYFL and described the activity in detail in September 2022
- Consultation information provided to NYFL on 27 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to NYFL over 12 months, demonstrating a "reasonable period" of consultation.

Woodside asked NYFL it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NYFL functions, interests, or activities.

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 23 September 2022, Woodside emailed NYFL advising of a related Scarborough activity and provided a Consultation Information Sheet and Consultation FAQs.
- On 26 September 2022, NYFL emailed Woodside and stated NYFL would like to understand more about Scarborough proposed activities and mitigations.

- On 27 September 2022, Woodside emailed and phoned NYFL seeking a time to meet. Woodside suggested it could then look to respond in detail in early October to give NYFL enough time to respond if there are further concerns.
- On 27 September NYFL emailed Woodside to schedule a meeting in Roebourne on Friday 30 September.
- On 30 September 2022, representatives of Woodside and NYFL discussed the activities in the EP in detail. NYFL explained that the current information sheets were difficult to understand. Woodside undertook to provide plain English materials that were in development.
- On 4 October 2022, NYFL emailed Woodside:
 - NYFL thanked Woodside for taking the time to talk through ways in which complex information such as that which relates to EPs can be appropriately communicated to NYFL and its TO board and members.
 - NYFL advised that as discussed, at present the language and communication approach in EPs, such as that sent to NYFL on 23 September 2022, is not appropriate for NYFL. As such NYFL cannot confidently say it is OK with the activity.
 - **(1)** NYFL also thanked Woodside for communicating to the business that NYFL is a 'relevant person' for the activity.
- Between October 2022 and March 2023, while Woodside and NYFL have weekly communications on other matters, there was a hiatus on communication due to changes to activity scheduling and description of the EMBA.
- On 30 November 2022, Woodside and NYFL held the Woodside NYFL NWS quarterly relationship meeting which is resourced by Woodside to enable meaningful participation by Traditional Custodians. There was a separate discussion about holding a separate meeting for EPs generally.
- On 27 January 2023, Woodside emailed NYFL as a member of the Karratha Community Liaison Group and provided a Consultation Information Sheet and Consultation FAQs (Appendix F, Reference 1.44).
- (2) On 14 February 2023, NYFL emailed Woodside to see if the accessible information for Traditional Custodians had been prepared.
- On 1 March 2023, Woodside and NYFL held the Woodside NYFL NWS quarterly relationship meeting which is resourced by Woodside to enable meaningful participation by Traditional Custodians. There was a separate discussion about holding a separate meeting for EPs generally.
- On 20 March 2023, Woodside emailed NYFL about all Scarborough activities activity providing further information (and provided a simplified Summary Information Sheet (developed with a Ngarluma Traditional Custodian for a Traditional Custodian audience) and including a link to the detailed information sheet on Woodside's website.
- On 20 March 2023, NYFL emailed Woodside thanking them for the information and stating they would discuss the information with the Board and members.
- On 20 March 2023, Woodside emailed NYFL offering a meeting to present to the Board in relation to this activity and other activities.
- (2) On 22 May 2023, the NYFL CEO replied saying that they were requesting information in an appropriate format for Traditional Custodians and saying that the language and approach was not appropriate for NYFL's members.
- On 24 May 2023, in response to the email on 22 May 2023, Woodside spoke to NYFL by phone, explained that the information sheets were developed with a Ngarluma Traditional Custodian but that the best way to understand the materials was to take Woodside up on our offer to present to NYFL. These presentations include images and videos, and the subject matter experts are on hand to answer questions. Presentations had been well received by other groups. Woodside had budget for consultation meetings and could provide support for the meetings to occur.
- On 8 June 2023, NYFL emailed Woodside about several matters including a request for "further information/culturally appropriate comms" for this activity.
- On 8 June 2023, Woodside reconfirmed previous offers to meet with NYFL in relation to the activity and other activities unrelated to this EP for the purpose face to face and consultation. Explained that these presentations have been well received from groups. Explained also that the summary information sheets provided were developed by Indigenous representatives for a Traditional Owner audience. Requested that if face to face consultation was not preferred by NYFL, whether they could provide some direction as to alternatives. Woodside reiterated they cover consultation costs and could meet in Roebourne, assuming that is preferred.
- On 28 June 2023, Woodside emailed NYFL confirming a consultation date of 20 July and requesting NYFL send through a quote for costs.
- On 28 June 2023, NYFL responded saying they would hold off on committing to a date while they had a change to digest the outcomes of the NOPSEMA Summit.

- On 29 June 2023, NYFL responded stating that they were waiting to agree to national framework for consultation between industry and First Nations to be resolved before they consult on Environment Plans. This email was referring to the NOPSEMA Summit.
- On 10 July 2023, Woodside emailed NYFL seeking clarity in relation to their request. Woodside stated they understood the outcomes of the NOPSEMA Summit were as recorded by the facilitator and communicated to all participants as:
 - It was agreed that:
 - There is a need for a National Summit of Indigenous Groups and Traditional Owners to consult together and agree what they require and what their collective and individual concerns may be.
 - Government (DISR) will assist by mapping and compiling a list of all traditional owner groups that should be invited to this Summit,
 - Kimberley Land Council and other PBCs will form a Steering Committee to draft the agenda for this Summit,
 - APPEA will seek membership approval to facilitate by funding this Summit, and the Summit will be independently facilitated.
 - APPEA to further consult with their members to get some agreement on priorities and next steps for Industry.
 - After the National Summit of Indigenous Groups, the first of several meetings will be held between a smaller representative Traditional Owners group and a smaller representative Industry group, the latter to be coordinated through APPEA; and
 - There will be ongoing parallel consultations in relation to current EPs, which will continue in accordance with what is required by Reg 11(A)(1)(d) of the OPGGSA Environment Regulations.
 - Woodside stated it is committed to supporting the National Summit of Traditional Owners and is committed to industry and Traditional Owners working together to agree consultation frameworks. Woodside noted, however, this will take time and necessarily must occur in parallel to ongoing consultation, with operators obliged to consult pursuant to Reg 11(A). Woodside also stated they were committing to a program of ongoing consultation for the life of the EP that would be happy to discuss that with NYFL.
- (3) On 10 July 2023, NYFL stated that they did not agree with the facilitators record of the NOPSEMA Summit, particularly that there will be parallel ongoing consultation in relation to current EPs prior to the proposed National Summit of Indigenous Groups and Traditional Owners
- On 19 July 2023, Woodside emailed NYFL NOPSEMA's Consultation Guideline, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also requested that NYFL advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.
- On 26 July 2023, Woodside emailed NYFL Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 26 July 2023, NYFL emailed Woodside in response to Woodside's planned Program of Ongoing Engagement with Traditional Custodians, noting it was a good start particularly with the inclusion of Traditional Owner feedback and indicating that assistance with resourcing and internal capacity would be required.
- On 2 August 2023, Woodside emailed NYFL regarding the acceptance of the EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether NYFL is aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 4 August 2023, NYFL emailed Woodside regarding notification about acceptance of the EP stating that they did not have sufficient resourcing to respond to EP matters. Requesting to meet to discuss a way forward.
- On 11 August NYFL emailed Woodside primarily in response to another matter. The email noted that :
 - NYFL look forward to progressing discussion with Woodside on the proposed program of consultation.
 - **(4)** NYFL is participating with other First Nations organisations and representative bodies to develop a framework for consultation.
 - **(5)** There may be people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the EMBA that have not yet been afforded the opportunity to provide information

- **(6)** There may be additional cultural or environmental values that relate to the area that have not been identified or communicated to Woodside
- On 15 August 2023, Woodside emailed NYFL thanking them for their correspondence and requesting availability to meet.
- On 18 August 2023 NYFL emailed Woodside noting a date of 30 August 2023 to meet to discuss next steps.
- On 18 August Woodside emailed NYFL accepting the proposed date to meet to discuss engagement processes.
- On 28 August 2023, Woodside emailed NYFL requesting a video link for a consultant to Woodside who will be involved in consultation and engagement going forward.
- On 28 August 2023, NYFL emailed through an agenda for the proposed meeting.
- On 28 August 2023, Woodside emailed NYFL acknowledging receipt of agenda and providing contact details for engagement.
- On 30 August 2023, Woodside met with NYFL to discuss a consultation process and engagement with NYFL and YAC, NYFL put forward the following:
 - **(7)** NYFL requested Woodside employ 3 traditional Owners who would engage/consult with NYFL members.
 - **(8)** NYFL stated that time frames must be longer than one month for consultation.
 - Woodside took the requests on notice.

NYFL is also consulted through its membership on the Karratha Community Liaison Group (KCLG) and the Quarterly Heritage Group.

Summary of Feedback, Objection or Claim	Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<ul style="list-style-type: none"> • NYFL self-identified and advised Woodside that they are a relevant person for this activity. Their feedback included a request for information sheets appropriate for a Traditional Custodian audience. • NYFL requested consultation material suitable to a Traditional Custodian audience. • NYFL wishes to pause consultation until after the First Nations national summit is held and a framework for consultation developed. Woodside understands that the First Nations national summit was tentatively scheduled for the end of August 2023, but may now take place in November 2023. • NYFL is working with other First Nations Organisations and representative Bodies to develop a framework for consultation. This has not yet been proposed to Woodside. • NYFL expressed that there may be people who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected who have not 	<ul style="list-style-type: none"> (1) Woodside has responded to NYFL’s self-identification and consulted with them as a relevant person. NYFL was created to act as Trustee for the Northwest Shelf Agreement 1998. NYFL’s membership is made up of Ngarluma people and Yindjibarndi people, membership is not open to any person who is not accepted as Ngarluma or Yindjibarndi. Woodside has also consulted with Ngarluma and Yindjibarndi Aboriginal Corporations individually. Ngarluma and Yindjibarndi Aboriginal Corporations were appointed by the Federal Court, at the request of the Ngarluma and Yindjibarndi common law native title holders as PBCs to represent the communal interests of the Ngarluma and Yindjibarndi people respectively. Ngarluma and Yindjibarndi Aboriginal Corporations are representative of all Ngarluma and Yindjibarndi people regardless of membership. (2) Woodside recognises that sufficient information must be provided in a form that is accessible and appropriate to the audience. In response to this request, Woodside developed and provided Summary information sheets developed with a 	<ul style="list-style-type: none"> - NYFL has been consulted with in accordance with the methodology described in Section 5 of the EP - Not required - Not required - Woodside is implementing a program to actively support Traditional Custodians’ capacity for ongoing engagement and consultation on environment plans, referenced as PS 17.1.1 in this EP. This includes continued engagement regarding NYFL’s proposed Framework Agreement which would be applied to ongoing consultation for this activity. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix J - Methodology described in Section 5 adequately addresses this claim - Description of cultural values and heritage features is included in Section 4.10 of the EP

<p>yet been afforded the opportunity to provide information.</p> <ul style="list-style-type: none"> • NYFL expressed that there may be additional cultural and environmental values that relate to the area that have not been communicated to Woodside. • NYFL requested that Woodside employ three Ngarluma/Yindjibarndi Traditional Owners who would consult with NYFL members. • NYFL stated that time frames must be longer than one month for consultation. 	<p>Ngarluma Traditional Custodian for a Traditional Custodian audience. Woodside offered face to face consultation meetings resourced by Woodside to enable meaningful Traditional Custodian consultation, which include visual aids and videos. NYFL was initially amenable to this, however later postponed the engagement for an undetermined period (see claim 7)</p> <p>(3) Woodside does not consider that the proposal that consultation be paused until the proposed First Nations National Summit is reasonable. Sufficient information and a reasonable period has already been provided prior to the Summit.</p> <p>(4) Separate from consultation under Reg 11A, Woodside is open to engaging with a joint First Nations framework for consultation, however, notes that this is not required to undertake and/or complete consultation in the course of preparing this EP. The framework would be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff. Woodside has an existing engagement framework in place with NYFL which enables regular (quarterly) communication about Woodside activities.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p> <p>(5) As described in Section 5 of the EP, Woodside's consultation methodology provided Traditional Custodians with the opportunity to be aware of the proposed activity and to participate in consultation. Woodside considers this methodology has afforded all people whose</p>	<ul style="list-style-type: none"> - The proposed Framework Agreement (see point 4) will address appropriate NYFL resourcing. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix J - Not required
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	<p>spiritual connection to the environment that may be affected a reasonable opportunity to consult. Consultation with NYFL has not identified any other groups or individuals relevant to communally held functions, activities or interests. NYFL have been provided with reasonable time to respond with this information since the email from Woodside of 18 July specifically requesting this information, but no response to this request has been received.</p> <p>Woodside has also consulted with Ngarluma and Yindjibarndi Aboriginal Corporations who are the Representative Aboriginal Corporations nominated by the Ngarluma and Yindjibarndi people respectively to represent the communally held interests of the Ngarluma and Yindjibarndi people.</p> <p>(6) Woodside has a robust understanding of the environment, cultural values and heritage features based on publicly available information and consultation with relevant persons. This is described in Section 4.10 of the EP</p> <p>(7) Woodside does not consider NYFL's request that Woodside employ three Ngarluma/Yindjibarndi traditional owners to consult with NYFL members a reasonable proposal. Woodside's consultation efforts are informed and undertaken by personnel with significant experience in First Nations relations, including Indigenous employees. Woodside assesses that the proposed Framework Agreement would be an effective mechanism to address resourcing for ongoing consultation.</p> <p>(8) Woodside has already provided NYFL with reasonable time to participate in consultation and has been engaging since September 2022.</p>	
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Local government and community representative groups or organisations

Karratha Community Liaison Group (KCLG)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside presented to the KCLG and provided consultation information on related petroleum activities for the Scarborough Project, which included reference to the proposed activities for this EP.
- On 27 January 2023, Woodside emailed the KCLG advising of the proposed activity and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.91).
- On 24 February 2023, the Pilbara Port Authority responded and noted that as the activity occurs outside of the Port waters it has no comments.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
<p>No feedback was received from the KCLG with the exception of the Pilbara Port Authority, which advised it had no comments on the proposed activity.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside notes that no feedback was received from the KCLG with the exception of the Pilbara Port Authority, which advised it had no comments on the proposed activities.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>

Exmouth Community Reference Group (ECRG)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 7 April 2022, Woodside presented to the ECRG and provided consultation information on related petroleum activities for the Scarborough Project, which included reference to the proposed activities for this EP.
- On 17 November 2022, Woodside presented an updated on its planned Scarborough activities which included a slide on the proposed Seismic activity (Appendix F, reference 1.38).
- On 1 February 2023, Woodside emailed the ECRG advising of the proposed activity (Appendix F, reference 1.64) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.93).
- On 3 March 2023, an Exmouth CRG representative emailed Woodside:
 - Provided comment on the proposed activity and requested information on the timeline for the activity and could it be for a continual period up to 70 days or intervals.
- On 17 March 2023, Woodside emailed the ECRG representative:
 - Advised that the planned duration for the survey is 80 days.
 - The planned duration includes a maximum of 70 days of seismic data acquisition, plus 10 days of contingency for potential vessel or equipment down time and adverse weather conditions.
 - The exact survey duration is dependent upon the final 4D activity scope.
 - The activity is planned to commence in Q2 or Q3 2023 with the earliest potential commencement date for the survey being upon EP acceptance.
 - The survey is planned to be continuous but may have intermittent periods to account for adverse weather conditions or potential vessel or equipment down time.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
<p>An Exmouth CRG representative queried about the timeline for the activity.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside has provided relevant information to address the ECRG representative's questions.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
Other non-government groups or organisations		
Conservation Council of WA (CCWA)		

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Conservation Council of WA (CCWA) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Summary of information provided and record of consultation:

- On 12 August 2021, CCWA emailed Woodside about the broader Scarborough Offshore Gas Project and upcoming draft Environmental Plans, and stating it wishes to be consulted as a relevant person.
- On 20 August 2021, Woodside emailed CCWA advising of the proposed activity and provided a Consultation Information Sheet.
- On 14 September 2021, CCWA emailed Woodside requesting:
 - Additional time to provide feedback
 - A copy of the draft EP's and other application documents including studies that will be submitted to the regulator in support of the EP's.
- On 17 September 2021, Woodside responded to CCWA's feedback..
- On 15 December 2021, Woodside received third-party correspondence via NOPSEMA in relation to a related Scarborough activity. Following assessment of the feedback, Woodside determined that the feedback from CCWA on [27 October 2021](#) had included the following feedback, claims and objections that could also be related to the proposed activity the subject of this EP. The feedback also included a number of additional third-party supporting documents:
 - CCWA asserted that impacts on the Dampier Archipelago National Heritage Place, from the development of the Scarborough gas field, need to be assessed in EPs for the Scarborough Project.
 - CCWA asserted its previous request for information on direct and indirect impact on the Murujuga Petroglyphs as it had not been met.
 - CCWA claimed that Woodside's consultation process has been restricted and consultation with a wider group of 'relevant' persons is required (particularly Indigenous groups (i.e., MAC) but also trade union groups, youth groups, health sector groups and government agencies).
- On 25 February 2022, Woodside responded to CCWA and attached a detailed table of responses to address specific claims and objections raised on the proposed activity, where appropriate (Appendix F, reference 1.29).
 - Woodside advised the purpose of the PAP is the appraisal of the offshore Scarborough gas fields to help inform the optimised management of the hydrocarbon reserves.
 - The EP assesses both direct and indirect environmental impact risks associated with the PAP, having regard to the nature and scale of the PAP.
 - The extraction of Scarborough gas for onshore processing is not included in the PAP for this EP.
 - Therefore, the impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP but will be evaluated in Scarborough EPs as appropriate. No changes have been made to the EP.
 - Woodside confirmed that consultation requirements set out in Reg 11A of the Environment Regulations have been complied with in relation to the consultation process for this EP.
 - Section 5 has been updated to clarify Woodside's consultation process, in line with the requirements of sub regulation 11A (1) of the Environment Regulations to identify relevant persons for the purposes of consultation on its EPs. Woodside provided criteria for the identification of relevant persons.
 - Woodside confirmed that for the broader Scarborough project, it has engaged closely with relevant stakeholders (including MAC and other relevant Traditional Owner groups) since 2018. This includes consultation on relevant Scarborough activities in Commonwealth waters during development of the Scarborough Offshore Project Proposal, and activities in State waters as part of the Scarborough Project Nearshore Component environmental review.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<p>CCWA provided feedback via NOPSEMA relating to:</p> <ul style="list-style-type: none"> • Impacts on the Dampier Archipelago National Heritage Place • Consultation requirements under the Regulations <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Feedback has been assessed on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate.</p> <p>Where an amendment has been made to the EP in relation to any of the claims or objections raised, a reference to the updated Section of the EP is shown in the relevant responses contained in Appendix F.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
<p>Greenpeace Australia Pacific (GAP)</p>		

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Greenpeace Australia Pacific (GAP) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Summary of information provided and record of consultation:

- On 8 April 2022 during the course of preparing this EP, GAP self-identified and requested to be consulted on this and other Woodside EPs. GAP also made requests for additional information relating to the proposed activity.
- On 29 April 2022, Woodside responded to GAP's feedback.
- On 1 June 2022, Woodside met with GAP representatives to discuss Woodside's broader business, including the Scarborough development.
- On 15 June 2022, Woodside emailed GAP:
 - Woodside advised it has further reviewed GAP's letter from 8 April 2022 and considers that GAP is a relevant person under Regulation 11A of the OPGGS Regulations, for the purposes of consultation on this EP.
 - Woodside attached a detailed statement of response to GAP's request for additional information.
- On 29 June 2022, GAP emailed Woodside (NOSEMA and NOPTA CC) and provided a letter containing feedback on the proposed activity with a number of claims/objections and requests for further information relating to the proposed activity.
 - GAP claim that Woodside has not consulted with all relevant persons and incorporated their feedback into the EP.
 - GAP requested Woodside consult with additional relevant persons (CCWA, AMCS, Indigenous stakeholders [and outline what engagement has taken place], marine tourism representatives [that operate not just in the OA but also in the vicinity of BIAs impacted within the EMBA]).
 - Disclosure of depth of experience of attendees of the Environmental Risk and Impact Identification Workshop.
 - GAP requests that Woodside provide the regulator with additional information about potential and actual conflicts of interest amongst the workshop participants to ensure the regulator and public can have confidence about the hazard identification and evaluation.
 - Routine acoustic emissions relating to seismic survey equipment and the avoidance of impacts. GAP also made a number of claims about the impacts of the activity and recommendations:
 - Additional information to explain why the activity (survey) needed to be repeated.
 - Requests that Woodside use lower impact technology alternatives in line with ALARP, and if they don't provide evidence as to why.
 - Woodside has failed to address direct impacts to fauna, particularly predator/prey interactions and how an increase in zooplankton mortality impacts whales.
 - Woodside assess and report on potential cumulative impacts from all activities (upstream and downstream) to be conducted at the Scarborough site as a whole, especially in relation to acoustic impacts, and considers interactive cumulative effects.
 - Woodside should commission additional modelling estimate the activity's impact on zooplankton.
 - Noise pollution exceeding the impact thresholds identified in the EP should be prohibited by Woodside during peak cetacean activities (April to July northern migration and November to December southern migration), and additional acoustic monitoring to be done.
 - Evidence about likely masking impacts and song interference with respect to cetaceans.
 - Distance modelling values in Tale 6-7 for all species be revisited.
 - Assess options to perform acoustic monitoring for cetaceans up to 60.7km away from the sound source.
 - Activities should cease immediately after malfunction of or damage to the passive acoustic monitoring system.
 - Full assessment of the displacement costs and impacts for cetaceans.
 - Before and after monitoring of marine mammal presence, density and distribution, plus submit a monitoring and mitigation plan.
 - Routine acoustic emissions relating to vessels and AUV. GAP recommends that Woodside includes modelling evidence to demonstrate the distance over which continuous noise levels could potentially impact cetacean behaviour, and factor results into its impact assessment.

- Accidental hydrocarbon release: vessel collision. GAP recommended that:
 - The EMBA be recalculated based on the amended worst-case scenario, and should it extend into the Ningaloo World heritage area or any of the marine protected areas following the recalculation, it should be taken into consideration in the EP.
 - Table 6-17 should be expanded to include the various BIA's that overlap with the EMBA and Montebello AMP. Additionally, information should be included as to the probability of hydrocarbon contact within each BIA.
 - Timing of the activities be restricted further to help reduce the likelihood of a spill impacting threatened species.
- Physical presence: vehicle collision/entanglement with marine fauna. GAP recommended that:
 - Woodside employ two additional marine fauna observers on each support vessel
 - All vessels operated by Woodside, its contractors or servicing the project be restricted to a maximum speed of 8 knots when in the operational area (except in the event of an emergency).
- GAP makes a number of claims that Woodside is not fit and proper to hold an Access Authority and Environmental Plan.
- GAP claim that until Woodside provides more information on the aspects raised in its letter, it's not possible for the regulator to assess whether impacts have been reduced to acceptable and ALARP levels. If GAP's concerns are not addressed, it recommends that the regulator does not accept the EP.
- GAP requested an updated version of the EP once it has been drafted.
- On 22 July 2022, Woodside emailed GAP and attached a detailed table of responses to address specific claims and objections raised on the proposed activity, where appropriate.
 - GAP has been provided with a reasonable level of information and a sufficient period to respond for the purposes of consultation on this EP.
 - Woodside has complied with the consultation requirements set out in Reg 11A of the Environment Regulations in relation to the consultation process for this EP.
 - This includes consultation with CCWA, and a summary of that consultation is provided in this EP (Section 5.7; Revision 3).
 - Woodside has followed requirements of sub-regulation 11A (1) of the Environmental Regulations to identify relevant persons for the purpose of consultation on its EPs.
 - Woodside has engaged with relevant stakeholders (including MAC and other relevant Traditional Owner groups) since 2018. This includes consultation on relevant Scarborough activities in Commonwealth waters during the development of the Scarborough Offshore Project Proposal, and activities in State waters as part of the Scarborough Project Nearshore Component environmental review.
 - Ongoing consultation can occur during the life of an EP and enables updates on activities and a continued understanding of stakeholder views. The EP has been updated (Section 5.8 and Section 7.9.2.1; Revision 3) to outline Woodside's ongoing consultation approach and engagements in accordance with Regulation 14 (9) of the Environmental regulations.
 - Woodside advised it welcomes ongoing feedback on its activities from stakeholders. Woodside also provided details of its publicly available Information sheets on Woodside's EPs.
 - Woodside confirmed the experience of the participants at the Environmental Risk and Impact identification workshop to address GAP's information request.
 - Woodside provided an explanation as to why the survey must be repeated, as no further uplift can be gained from the 2004, 2010 and 2018 data. Additionally, the original survey does not extend over the full Scarborough gas field or over the Jupiter gas field.
 - Woodside advised that the technical alternatives proposed by GAP are either yet to be developed commercially (marine vibroseis) or are not considered a lower impact technology (ROV deployed OBN).
 - The EP has been updated to include consideration of marine vibroseis in the ALARP assessment (Section 6.6.3; Revision 3). Due to not yet being commercially available, as described above, it has not been adopted.
 - Woodside confirmed that the risk assessment in the EP concludes that impacts to zooplankton are likely to be localised (>110m from the seismic source) and localised changes in zooplankton abundance are likely to be replenished and indistinguishable from natural levels and distributions within hours of a seismic survey vessel passing.

- The EP (Section 6.6.2, Revision 3) has been updated to include a statement that impacts to zooplankton are unlikely to result in impacts to higher order trophic levels.
- Woodside has assessed the cumulative impacts of the Petroleum Activities Program in relation to other petroleum activities which could realistically result in overlapping temporal and spatial extents. The potential cumulative impact of concurrent seismic activities is assessed in Section 6.6.1 (Physical presence) and Section 6.6.2 (Routine Acoustic Emissions: Seismic Survey Equipment) (Revision 3).
 - The EP was updated to acknowledge that Scarborough drilling and completion activities may be undertaken within WA-61-L however there will be no temporal overlap and therefore no cumulative impacts are predicted with this activity. This is outlined in Section 6.3 of the EP (Revision 3).
- Woodside advised that additional modelling over and above the mortality threshold (110m) for zooplankton is not warranted. Woodside also provided information about its involvement in the North West Shoals Research Program.
- Woodside explained its use of JASCO Animal Simulation Model Including Noise Exposure (JASMINE) to predict the exposure of animats (pygmy blue whales) to sound arising from the seismic activity. It is regarded as best practice for surveys taking place within or adjacent to pygmy blue whale migration and foraging BIAs.
 - Based on the animat modelling results, the conservative range for potential TTS effects in pygmy blue whales is ~22 km from the seismic source, compared with 60.7 km range predicted from the acoustic modelling. The closest point of approach from the Active Source Area and the migration BIA is ~30km, and therefore, pygmy blue whales will continue to utilise the migration BIA without injury, and therefore the activity is not inconsistent with the Conservation Management Plan for Blue Whale.
 - Woodside provided results from the Thums et al. (2022) and Double et al. (2014 satellite tracking studies on pygmy blue whale migration, which does not support GAP's hypothesis that the Active Source Area is frequently used by pygmy blue whales.
 - Woodside advised that it is highly unlikely that the activity would displace pygmy blue whales from any critical habitat, such as foraging location or resting area.
- Woodside advised that the EP (Section 6.6.2, Revision 3) has been updated to provide further information on masking impacts to pygmy blue whales.
- Woodside advised that individual pygmy blue whales are expected to pass through the ensonified area in less than 24 hours and are highly unlikely to have exposure times to cause TSS.
 - As impacts to whales are already reduced to ALARP and acceptable levels, acoustic monitoring for cetaceans up to ~60m from the sound source is considered disproportionate to any environmental benefits.
- Woodside advised that the adopted thresholds presented in Table 6-7 are based on the best data available published in peer-reviewed literature and represent conservative internationally accepted and applied impact evaluation thresholds.
 - Woodside provided additional information about the TSS threshold level and SPL in regard to the potential impact from acoustic emissions. Woodside advised there are multiple SEL threshold criteria that can be applied and the marine mammal behavioural threshold presented in Table 6-5 is based on current NOAA (2019) criterion for marine mammals. This is why the TSS onset range always considerably exceeds the behavioural response range in modelling studies of acoustic emissions from seismic surveys.
- Woodside confirmed that the TSS impacts to LF-cetaceans are predicted to be constrained to within ~22km (with a 24 hour exposure) of the seismic source (Table 6-7). Woodside reiterated information about the outcome of the tagging study of pygmy blue whales. Therefore, as impacts are already reduced to ALARP and acceptable levels, no TSS is predicted in pygmy blue whale migration and acoustic monitoring up to ~60km from the sound source is considered disproportionate to any environmental benefit.
- Woodside advised that the passive acoustic monitoring system (PAM) is engineered for multiple redundancy and a malfunction or failure due to catastrophic streamer damage is highly unlikely and is managed to ALARP, e.g. a number of conditions must be met to allow operations to continue without PAM, as described in the EP.
- Woodside advised that the Activity Source and Operational areas for the Scarborough 4D MSS, whilst within the distribution range for pygmy blue whales, are outside of the migration BIA, and also not in an area where foraging or resting is likely to take place. Additionally, the activity does not overlap BIA's for any other marine mammal species. Hence, dedicated pre-and post-survey monitoring of marine mammals is not warranted.
- Woodside advised that seismic source emissions are not regarded as continuous a noise source as they are brief and intermittent with rapid rise times and decay back to ambient levels (within a few seconds).

- Modelling and measurement studies have demonstrated that the threshold for behavioural responses in marine mammals from continuous noise sources would not be exceeded beyond a range of several kilometres from relatively small, slow-moving vessels such as a seismic survey vessel accompanied by a support vessel.
- Woodside advised that the worst-case scenario in the EP is based on collision, an impact between two moving vessels. Furthermore, no change has been made to the worst-case scenario as it is in line with calculating the maximum worst case spill, for a collision, based on the volume of the largest fuel tank. Woodside noted that collision relating sinking of a seismic survey vessel has never occurred in Australia in over 50 years of seismic operations.
- Woodside advised that the inclusion of the probability of hydrocarbon contact with the BIA has not been included as it is not considered to help inform the impact assessment and demonstration of ALARP and acceptability.
 - The impact and ALARP assessment in the EP has demonstrated that in the highly unlikely event that a spill occurs and that the plume reaches those BIAs, that the risk is ALARP acceptable.
 - The Montebello AMP was included in the EMBA in Section 4 conservatively, however modelling did not predict contact with the AMP ecological thresholds. Section 4 (Revision 3) has been updated to clarify.
- Woodside advised a number of controls that are planned to be implemented in order to reduce the risk of a collision. In the event of a worst-case spill, impacts would be limited to individual threatened species and are not expected to impact on the overall population viability of the species.
 - The risk has been managed to ALARP and acceptable level and no changes have been made to the EP.
- Woodside advised that the use of additional marine fauna observers on the support vessel (over and above two employed on the support vessel) is not warranted.
 - Woodside reiterated information provided about the Active Source and Operational areas of the Scarborough 4D MSS being outside the migration BIA, and accordingly, the likelihood of encountering the pygmy blue whale and other cetaceans is expected to be low.
 - The EP includes application of the EPBC Act Policy Statement 2.1 Part B.6 – Adaptive measures to minimise the potential impacts to pygmy blue whales from seismic noise, which will be triggered if encounters with pygmy blue whales are more frequent than suspected.
- Woodside confirmed that the seismic vessel maintains a constant upper speed of 5 knots when in operation to minimise the noise of movement of water over the seismic streamers. This largely dictates the speed of both the escorting support and chase vessel that accompanies the survey vessel.
 - Vessels adopt the go-slow buffers around marine fauna as per EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans (C14.1).
 - The EP has been updated to include consideration of vessel speed in the ALARP assessment (Section 6.7.6; Revision 3).
- Woodside has responded to Greenpeace’s concerns raised and updated the EP where indicated. Woodside considers the impacts have been reduced to ALARP and acceptable levels, as demonstrated in the EP. NOPSEMA will determine whether they are reasonably satisfied that the EP meets the acceptance criteria, including criteria 10A (b) ad (c).
- Full copies of draft EPs are not provided to stakeholders while they are being developed or under assessment. The EP has been revised through the NOPSEMA assessment process and the responses provided in this document reflect the information under assessment with NOPSEMA.
- On 2 August 2022, GAP provided correspondence to NOPSEMA (Woodside CC). GAP requested an additional two weeks to provide feedback.
- On 16 August 2022, GAP emailed Woodside (NOPSEMA CC):
 - GAP reiterated its feedback, objections and claims from 29 June 2022 relating to:
 - Consultation with all relevant persons
 - Evaluation of all impacts and risks
 - Demonstrating that the environmental impacts and risks will be reduced as low as reasonably practical
 - Demonstrated that the environmental impacts and risks will be of an acceptable level
 - The EP is inconsistent with Blue Whale Conservation Management
 - GAP provided additional information and literature to its claims.

- No new claims or objections were raised requiring additional specific mitigation measures or controls.
- Greenpeace request copies of specific documents cited in the Environment Plan.
- On 1 September 2022, GAP provided correspondence to NOPSEMA (Woodside CC) that contained a number of claims/objections relating to the proposed activity.
 - GAP requests that NOPSEMA not accept the EP as Woodside has not met its consultation obligations under reg 11A of the Environment Regulations nor demonstrated the criteria for acceptance of the Environment Plan in reg 10A.
 - GAP requests that, if necessary, the regulator should make a request to Woodside for further information under reg 10(1)(b) in relation to the additional information identified as being required by GAP.
- On 12 September 2022, Woodside responded to GAP and attached a detailed table of responses to address specific claims and objections raised on the proposed activity, where appropriate.
 - Woodside noted that correspondence dated 1 September 2022 relates to Woodside's incorporation of GAP's previous feedback in the Scarborough 4D B1 Marine Seismic Survey Environment Plan, and no new claims or objections have been raised.
 - Woodside added following further feedback and assessment the EP has been updated (Section 5, Revision 4) which includes an updated consultation approach and relevant person and additional person identification process (see Section 5.4). The update to the EP includes further clarification on the identification of a person whose functions, interests or activities may be affected by the activity.
 - Woodside provided details of the number of factors that inform the stakeholder consultation approach.
 - Woodside described its process to determine that the marine tourism representatives' function, interests and activities are not impacted by the proposed activity.
 - Woodside has updated the EP (Section 7.9.4.3, Revision 4) and the First Strike Plan (Appendix I, Revision 4) to provide additional guidance on its incident reporting approach.
 - Woodside advised and listed specific controls that are in the EP (Section 6.6.2, Revision 4) to manage risk to an ALARP and acceptable level, addressing GAP's specific claims.
 - Regarding the potential for acoustic emissions from the seismic source to mask calls between migrating pygmy blue whale mothers and calves, Woodside confirmed potential impacts are limited by a number of factors and masking between mother and calves is not expected. Further clarification has been included in Section 6.6.2 (Revision 4).
 - Woodside has responded to GAP's concerns raised and updated the EP where indicated. Woodside considers that the impacts have been reduced to ALARP and acceptable levels, as demonstrated in the EP. NOPSEMA will determine whether they are reasonably satisfied that the EP meets the acceptance criteria, including criteria 10A (b) and (c).
 - Woodside will review list of documents requested and determine if they can be provided, where appropriate.
 - Woodside advised the availability of the reports and findings of the North West Shoals to Shore Program on the AIMS website.
- On 6 December 2022, GAP provided correspondence to Woodside (NOPSEMA CC) that contained a number of claims/objections relating to the proposed activity.
 - GAP reiterated its feedback, objections and claims from 29 June 2022 relating to:
 - Consultation with all relevant persons
 - Evaluation of all impacts and risks
 - Demonstrating that the environmental impacts and risks will be reduced as low as reasonably practical
 - Demonstrated that the environmental impacts and risks will be of an acceptable level
 - The EP is inconsistent with Blue Whale Conservation Management
 - GAP asks that Woodside assesses (and provides to NOPSEMA) the tracking data underlying the pygmy blue whale movement research papers to justify its claim
 - GAP continues to contend that the EP is inconsistent with the Blue Whale Conservation Management Plan.

- GAP asks Woodside to provide comprehensive justification (beyond the EP and JASCO modelling) as to how animat modelling demonstrates compliance with requirement of the Blue Whale Conservation Management Plan.
 - GAP asks Woodside for justification for failing to base its impact assessment on the slowest pygmy blue whales in population.
 - GAP asks that Woodside provide information on the total number of tracked whales whose behaviour has been incorporated into the animat modelling, and what proportion of the population this number equates to.
 - GAP considers that the EP should not rely on animat modelling to define the area over which acoustic impacts will exceed the low frequency threshold values. The modelling is not sufficient to “demonstrate” the matters in reg 10A(b)-(c) of the Regulations.
- GAP requests that Woodside provides full and detailed justification (beyond what provided in the EP and Koessler et al 2021) for the use of assumptions and inputs that underlie the JASCO animat modelling.
 - GAP also makes specific information requests about animat movements in migration.
- GAP makes information requests about closest point of approach for pygmy blue whales, data summarising maximum distance relating to acoustic impacts and injury.
- GAP claims that Woodside is failing to adhere to the principles of ecological sustainable development outlined in NOPSEMA’s EP Decision Making Guideline, specifically “precautionary principle” and “biodiversity principle”.
- GAP contends that Woodside has not reduced acoustic risk and impact to pygmy blue whales to either an acceptable or ALARP level, therefore not meeting the criteria in reg 10A of the regulations.
- GAP urges Woodside to amend the impact assessment and the mitigation actions to address its concerns and ensure all pygmy blue whales can continue to use the migration BIA without injury.
- GAP urges Woodside to remove the animat modelling from the impact assessment.
 - GAP states that if Woodside continues to rely on animat modelling despite its concerns, it urges Woodside to amend the underlying inputs, assumptions and methodology to fully address the issues it has raised; and
 - GAP urges Woodside to provide the additional information it has requested.
- GAP requested full text for sections 5.8 and 7.9.2.1 of revision 5 of the EP so it can understand the changes to Woodside’s approach to ongoing consultation.
- GAP again asked for an updated version of the EP to see how its feedback had been incorporated.
- GAP reiterated its request from 16/8/22 for full texts for the references.
- On 17 March 2023, Woodside emailed GAP and attached a detailed table of responses to address specific claims and objections in the 1 September 2022 and 6 December 2022 correspondence regarding the proposed activity, where appropriate.
 - Woodside thanked GAP for its correspondence on the EP and advised it has revisited the available telemetry data (Thums et al., 2022) which has confirmed the track for one individual pygmy blue whale that travelled to the west of the migration BIA in the peak northbound migratory season (June 2022).
 - Woodside confirmed it has included a precautionary additional control (C4.6) (under the application of the EPBC Statement Policy 2.1, Part B.3) in section 6.6.2 of the latest revision of the Seismic EP.
 - The control will be implemented in the peak northbound migration season (May and June) and comprises a spotter vessel (with two Marine Fauna Observers onboard) ahead of the seismic vessel to observe for PBWs.
 - Woodside advised that based on the information provided throughout extensive consultation with GAP and set out within Attachment A of the email, Woodside believes it has provided GAP with sufficient information to allow GAP to provide Woodside with an outline of its claims, interests and activities as they relate to the proposed activity.
 - Woodside has also provided GAP with details of amendments made to the EP including additional controls, throughout consultation.
 - Given the well-informed feedback received together with the length of time the Seismic EP has been open for comment, any further feedback GAP provides on the Seismic EP will be accepted and considered as part of ongoing consultation.

- Woodside has undertaken a comprehensive assessment, including full justification of the impacts and risks for the regulator to assess in accordance with: Offshore Petroleum and greenhouse Gas Storage (Environment) Regulations 2009 (the Environment Regulations) and NOPSEMA Guidance Note (N-04750-GN1344 A339814) EP Content Requirement.
- Woodside advised that GAP's correspondence of 2 August 2022 and 16 August 2022 has been addressed by Woodside in its correspondence to GAP dated 12 September 2022.
 - This includes a response to JASCO's JASMINE modelling referenced in the 1 September letter.
 - Where an amendment has been made in the EP in relation to the claims or objections raised, a reference has been included in the table.
 - The accepted EP will be published by the regulator NOPSEMA after assessment and acceptance.
- Woodside advised that the data used as input for the behavioural profiles was collated from sources provided in the Kossler et al. 2021 report. The satellite tracking data used to determine travel speed was sourced specifically from Möller et al. (2020). Refer to section 6.6.2 (Revision 0) of the EP for the assessment of potential impacts to pygmy blue whales.
- Woodside confirmed that the proposed activities are not inconsistent with the Blue Whale Conservation Management Plan. Woodside referred to Table 6-21 and Demonstration of Acceptability in Section 6.6.3 (Revision 0) in the EP which provides the assessment of relevant activities against the Blue Whale Conservation Management Plan, including relevant Environmental Performance Outcomes.
- Woodside confirmed as set out in the EP (Revision 0), as part of the demonstration of acceptability, an assessment is undertaken to demonstrate that the PAP detailed in the EP are not inconsistent with relevant principles of ESD (refer Section 2.7.2).
 - For all impacts and risks assessed in Section 6 of the EP an assessment was conducted to determine if the PAP was consistent with relevant principles of ESD. It determined that the activity is consistent with principles of ESD a), b), c), and d). Principle e) is not relevant to the activity.
- Woodside referred to Section 6.5.3 for the potential impacts of underwater noise generated by seismic survey equipment assessment and Section 6.5.4 for vessels (Revision 0). Woodside advised the impact assessment s use peer-reviewed literature and scientific studies, supported by activity-specific underwater sound propagation modelling and applicant of internationally recognised thresholds.
 - The impact assessments consider a range of receptor groups including (but not limited to) pygmy blue whales.
 - The impact assessments determined highest potential consequence for these receptors to be 'D' (Minor, short-term impact) for noise from survey equipment and 'F' (No Lasting Effect, localised impact not significant to environmental receptors) for noise from project vessels.
 - Woodside referenced a list of controls in the EP (Section 6.5.3, Revision 0) to manage risk to an ALARP and acceptable level.
 - Woodside referenced the additional control (C 4.6) (under the application of the EPBC Statement Policy 2.1, Part B.3) in section 6.6.2 of the latest revision of the EP.
- Woodside advised the accepted EP will be published by the regulator NOPSEMA after assessment and acceptance. Woodside otherwise confirmed that the nature of the proposed seismic activity, as well as the location and description of the activity as set out in the Seismic EP and summary information documents, has not changed and remains the same as in the recently submitted versions of the EP.
- Woodside advised, where appropriate, it has provided GAP with details of amendments made to the EP including additional controls, throughout consultation.
- Woodside confirmed that the references requested by GAP are publicly available and provided the list of publicly available references.
- On 28 March 2023, GAP emailed NOPSEMA (and sent a copy of the email to Woodside) regarding this EP (originally submitted to NOPSEMA on 11 October 2021) and the additional information provided to GAP from by Woodside on 22 July 2022, 12 September 2022 and 17 March 2023.
 - GAP stated the information provided to GAP by Woodside and the consultation period fell short of the regulations and the EP did not meet the regulation criteria. Therefore, GAP urged NOPSEMA to not accept the EP.
 - GAP reaffirmed its relevant person status and provided a summary of consultation with Woodside to date.
 - GAP provided an explanation as to why consultation had not met minimum requirements.
 - GAP's 'relevant person' consultation with Woodside on the EP was insufficient; Woodside had failed to:

- adapt the consultation process to GAP's needs;
 - provide sufficient information;
 - provide sufficient time to consider additional information; and
 - meet the general principles for effective consultation.
- GAP concluded that Woodside's consultation did not meet the requirements of NOPSEMA's Consultation Guideline or the "Environment Plan decision making" guideline. Woodside had not met its consultation obligations under reg 11A of the Environment Regulations nor demonstrated the criteria for acceptance of the Environment Plan in reg 10A. GAP urged NOPSEMA to not accept the EP and requested Woodside undertake consultation with GAP as required by reg 11A of the Environment Regulations.
- On 24 April 2023, GAP emailed Woodside regarding this EP and the additional information sent to GAP on 22 July 2022, 12 September 2022 and 17 March 2023. GAP discussed Woodside's consultation process to date and provided further feedback on this EP and the additional information Woodside had provided on the above dates. GAP:
 - Reaffirmed its relevant person status and provided a summary of consultation with Woodside to date.
 - Provided an explanation as to why consultation had not met minimum requirements.
 - Detailed the form of information it required as per the Regulations and NOPSEMA's Consultation Guideline as Woodside had not provided GAP with sufficient detailed information.
 - Detailed GAP's expectation around the provision of sufficient time for consultation.
 - Provided a detailed summary of the outstanding additional information GAP required.
 - Concluded by stating that until Woodside provided more information on the aspects detailed in the letter, it was not possible for GAP to provide feedback on the impacts and risks of the activity, nor was it possible for the regulator to assess whether the EP met the criteria and could be accepted.
 - On 1 June 2023, Woodside emailed GAP in regard to its correspondence on this EP specifically referring to GAP's additional questions received in correspondence to NOPSEMA (cc. to Woodside) dated 28 March 2023 and Woodside's previous four responses regarding the Seismic EP.
 - Woodside stated that based on the information provided throughout extensive consultation with GAP since June 2022, Woodside has provided sufficient information and ample opportunity for GAP to review the information provided, provide input on the proposed activity, and respond to Woodside's consultation information.
 - Woodside pointed out that in GAP's correspondence on 28 March 2023, GAP stated "*... our functions, interests and activities demand a high level of participation in the consultation process in the Environment Plan. We have previously provided thorough interrogation of various complex and technical elements within the Environment Plan and will continue to do so.*" Woodside stated that GAP has clearly demonstrated it has extensively reviewed the material that Woodside has made available for the requirements of consultation, as well as the full draft EP. Should GAP have further comments on the material it has interrogated, it should provide these in writing to Woodside. Woodside confirms that all feedback relevant to the proposed activity received from GAP to date has been reviewed and incorporated where applicable into the EP. Where appropriate, Woodside has also provided GAP with details of amendments made to the EP, including any updated or additional controls, throughout consultation.
 - Woodside further stated it has followed the requirements of the Environment Regulations in providing consultation information and communication to all relevant persons including continuing to accept feedback on all of its activities during EP development and across the life of the EP.
 - Regarding GAP's claim they had not been provided with sufficient information to respond to Woodside's latest correspondence; had not been provided with the additional information requested, and that Woodside had discouraged two-way consultation, Woodside referred GAP to Woodside's email sent to GAP on 17 March 2023, which contained a detailed table of responses to address their previous specific claims and objections regarding the proposed activity, where appropriate.
 - In response to GAP's claim that Woodside has failed to demonstrate compliance with reg 11A (2), Woodside stated it has assessed the information in GAP's correspondence that describes GAP's functions, interests and activities and how these may be affected by the proposed activity, along with any objections or claims raised by GAP and that this has been assessed against the comprehensive impact and risk assessment undertaken for the proposed activity.
 - In response to GAP's statement that GAP requires a thorough understanding of the potential environmental risks and impacts posed by the proposed activities within the EP and the mitigation actions proposed by Woodside, Woodside stated where appropriate, Woodside had previously provided specific technical information at

GAP's request relating to impacts and risks and the management measures to allow GAP to make an informed assessment of the possible consequences of the proposed activity on its functions, interests or activities.

- Woodside responded to GAP's claims regarding to Jasco animat modelling.
- In response to GAP's request for a copy of the most recent version of the EP, Woodside stated it had provided GAP with the Consultation Information Sheet and a link to the full draft EP publicly available since October 2021 together with technical information relevant to GAP.
- Woodside stated it had followed the requirements of the Environmental Regulation and provided information where possible.
- On 25 July 2023, GAP emailed NOPSEMA (and sent a copy of the email to Woodside) regarding this EP. GAP stated it's relevant person status and summarised correspondence with Woodside to date; stated that information provided to GAP falls short of the consultation requirements; stated that it considered the consultation requirements under the regulations have not been adequately discharged; stated GAP's functions, interests or activities and that GAP requires additional information in relation to the EP to make an informed assessment of the possible consequences of the activities on its functions, interests or activities. GAP provided a list of additional information it claims Woodside has not provided that was previously requested.
 - GAP claimed:
 - the information provided to Greenpeace by the Proponent falls short of the consultation required in relation to the activities that are the subject of the Environment Plan under reg 25 of the Environment Regulations;
 - the Environment Plan is inconsistent with a recovery plan for a listed threatened species, rendering NOPSEMA unauthorised to accept the Environment Plan under its endorsed Program; and
 - the Environment Plan does not meet the criteria for acceptance in reg 34 of the Environment Regulations, specifically the criteria at reg 34(b), 34(c), 34(d) and 34(g).
 - GAP provided supporting information for it's claims and urged NOPSEMA to not accept the environment plan.
- On 1 August 2023, Woodside emailed GAP noting its correspondence to NOPSEMA on 7 August 2023 regarding this EP. Woodside highlighted the continued dialogue and significant exchange of information that has occurred between GAP and Woodside since 2018 and stated that GAP has acknowledged this established history of engagement with Woodside's projects.
 - Woodside referred to the original meeting held in 2018, and GAP launching its campaign against Woodside the day after the meeting with social media, web-based and other protest-based campaigns, including unlawful entry to safety exclusion zones and boarding of Woodside's decommissioned infrastructure.
 - Woodside has and continues to accommodate Greenpeace with requests for information.
 - Woodside referred to several opportunities provided by Woodside to Greenpeace to meet with Woodside's climate team and highlighted that Greenpeace has not made a request to meet about the Scarborough EPs nor has Greenpeace disclosed to Woodside on how it would prefer to be consulted.
 - Greenpeace has not provided Woodside the opportunity to consider Greenpeace's consultation expectations or needs. This is inconsistent for example with other 'relevant persons' that have prepared and disclosed clear statements regarding their consultation preferences to Woodside, which has provided a clear understanding of consultation expectations and formed the basis of general principles for effective two-way consultation.
 - Greenpeace continues to correspond with Woodside in writing only, and therefore Woodside continues to respond in written detail to Greenpeace's claims and objections. Woodside summarised an extensive exchange of emails and letters since 8 April 2022 where Woodside has supplied Information Sheets and responses to issues, both around consultation and technical matters, in relation to all four Scarborough Environment Plans.
 - Woodside acknowledged that GAP has shown a high level of technical awareness and understanding of the Scarborough Project and this demonstrates Greenpeace's comprehensive and detailed understanding of the potential environmental risks and potential impacts posed by the activities in the EPs as well as the mitigations proposed by Woodside.
 - Woodside highlighted its advertisements and social media activity to promote Community Information Sessions and stated that as evidenced by GAP's wide-ranging use of social media in its campaigns against Woodside, this social media format is well known and accessible to GAP. Woodside highlighted that other ENGOs have taken the opportunity to attend these Community Information Sessions and had two-way dialogue with Woodside.

- Woodside has made a genuine attempt to consult with GAP and has allowed GAP many opportunities to provide Woodside with its claims and objections as they relate to the proposed activities under the four Scarborough EPs.
- With regards to the Seismic EP (of which the full approved EP is available on NOPSEMA's website), Woodside continues to act in good faith and continues to accept feedback from GAP to allow Woodside to consider the potential impacts and risk of the activities on functions, interests and activities and to provide input on things Woodside can do to mitigate those potential impacts and risks.
- Given the length of time involved, the amount of information provided and the opportunity given to consult, Woodside is satisfied that an appropriate level of consultation has taken place with GAP to satisfy Reg 11A of the Environment Regulations.
- Woodside confirmed that information has been provided that describes in detail, the activity proposed to be undertaken in the Seismic EP, the location, the duration, the risks, impacts, and controls in place to minimise impacts and risks to ALARP.
- Woodside noted that a previous EP which included the seismic activity proposed to be undertaken in the current Seismic EP was submitted in June 2019 and accepted by NOPSEMA in December 2019.
- Woodside acknowledged that despite being concerned that the protracted engagement may be aimed at achieving outcomes other than to provide input into the Scarborough Project and other related EPs, Woodside remains open to consulting with Greenpeace further, and additional feedback GAP provides on these EPs will be considered as part of ongoing consultation.
- Woodside stated it considers it has satisfied the requirements of Regulation 11A of the Environment Regulations in accordance with the intended outcome of consultation.
- GAP sent a letter to Woodside on 5 October 2023, (however, it was dated 10 October 2023) regarding this EP. GAP provided an extensive history of its consultation with Woodside and reiterated its previous claims. An additional claim that this EP was inconsistent with a recovery plan for a listed threatened species rendering NOPSEMA unauthorised to accept this EP was also included however this claim has no merit as it is addressed by Woodside in the EP through the robust demonstration that the Seismic EP is not inconsistent with the recovery plan.

Under regulation 11A, Woodside considers consultation to have closed for the submission of this EP. Woodside will address GAP's letter as part of ongoing consultation.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<p>GAP has responded and:</p> <ul style="list-style-type: none"> • self-identified as a relevant person and requested to be consulted on this EP and other Woodside EPs. • requested more information on the activity. <p>GAP claims Woodside has not:</p> <ul style="list-style-type: none"> • Consulted with all relevant persons; • Adequately evaluated all impacts and risks; • Adequately demonstrated that the environmental impacts and risks will be reduced to as low as reasonably practicable; • Adequately demonstrated that the environmental impacts and risks will be of an acceptable level; • And that the EP is inconsistent with the Blue Whale Conservation Management Plan and threatened species recovery plans; • The EP is inconsistent with the principles of ecologically sustainable development, specifically the 'intergenerational principle'. <p>GAP has further responded and provided feedback, objections and claims relating to:</p> <ul style="list-style-type: none"> • Consultation • Impact and risk identification • Routine acoustic emissions from seismic survey equipment, vessels and AUV • Accidental Hydrocarbon Release - Vessel Collision • Physical presence (unplanned) - interaction with marine fauna • Woodside not being a fit and proper Proponent. <p>GAP has further responded and provided feedback, objections and claims reiterating its previous claims and an additional claim that the EP was inconsistent with a recovery plan for a listed threatened species.</p>	<p>Woodside assessed the feedback on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate.</p> <p>Regarding the claim that this EP was inconsistent with a recovery plan for a listed threatened species, this claim has no merit as it is addressed in the EP through the robust demonstration (see Table 6-22 for a summary) that the activity is not inconsistent with the Blue Whale Conservation Management Plan.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Section 6.6.2 of the EP has been updated with a new control (C 4.6). The control will be implemented in the peak northbound migration season (May and June) and comprises a spotter vessel (with two Marine Fauna Observers onboard) ahead of the seismic vessel to observe for PBWs.</p> <p>Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on GAP's functions, interests or activities.</p>
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Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Australian Conservation Foundation (ACF) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Summary of information provided and record of consultation:

- On 5 September 2022, during the course of preparing this EP, ACF (represented by the Environmental Defender's Office (EDO)) self-identified and raised interest in this EP via correspondence on consultation material it had received from Woodside relating to other Scarborough EPs.
- On 12 September 2022, Woodside responded to ACF / EDO and attached a copy of the Consultation Information Sheet and attached a detailed table of responses to address specific claims and objections raised on the proposed activity, where appropriate.
- On 23 September 2022, Woodside followed up with ACF / EDO via email.
- On 27 September 2022, ACF / EDO responded via email and advised it would like to meet with Woodside to discuss the proposed activity.
- On 29 September 2022, Woodside responded to ACF offering a meeting on 10 October 2022.
- On 5 October 2022, ACF responded and provided its availability to meet via video conference.
- On 11 October 2022, Woodside provided a briefing to ACF via video conference on the proposed activity and the broader Scarborough Project. The briefing covered:
 - Scarborough project overview
 - Description of specific proposed activities (including this proposed activity) along with a map of the OA.
 - Woodside provided responses for ACF's queries regarding the Seismic EP and the respective proposed seismic activities.
 - ACF queried the difference between the Seismic EP OA and the Active Source Area
 - ACF raised not all titles in the OPP are included in the Operational Area/Active Source Area.
 - ACF asked why data from the previous seismic testing undertaken in 2004 be utilised? And what is gained from another seismic activity – which wasn't captured in previous testing.
 - ACF queried if the material updates to the version of the Seismic EP currently on the NOPSEMA site?
 - ACF provided feedback about the consideration of lower-impact technological alternatives.
 - AFC provided feedback and claims about perceived impacts on marine fauna:
 - The potential seismic activity to take place during pygmy blue whale migration periods.
 - Concerns around humpback whales being impacted by seismic activities as noted in studies undertaken by Dunlop (2017).
 - Negative impacts should be mitigated entirely, rather than avoided.
 - Acoustic pollution and negative impacts on whale calves
 - ACF provided feedback on the cumulative impacts of seismic and the proposed Scarborough Project more broadly.
- On 17 March 2023, Woodside emailed ACF and included responses to address specific claims and objections raised in the 11 October 2022 meeting regarding the proposed activity, where appropriate.
 - Woodside addressed ACF's questions in relation to the activity scope and scale:
 - Woodside referred to Section 3.4.1 of the publicly available EP (Revision 0), referencing the definition of the Activity Source Area.
 - Woodside advised discharge of the seismic source during vessel run ins, run outs, soft starts and full fold seismic data acquisition will occur in the Activity Source Area. Seismic source testing will also occur in the Activity Source Area. The seismic source will not be discharged within this buffer.
 - Woodside referred to Section 3.4.2 of the EP (Revision 0), referencing the definition of the Operational Area. The seismic source will not be discharged within this buffer.
 - Woodside advised the Woodside-operated Petroleum Titles relevant to this PAP are listed in table 3-1 of this EP (Revision 0).

- Woodside confirmed the latest version of the EP has been updated to include WA-63-R in Table 3-1, as it was inadvertently omitted from this table in Revision 0.
- Woodside noted the PAP will be carried out under an access Authority which authorises an existing Petroleum Title Holder to carry out petroleum exploration or recovery operations, other than drilling a well, outside of the boundary of their existing tiles.
- Woodside advised the Activity Source Area and Operational Area show a buffer around the Woodside-operated Title(s) to enable full imagery and understanding of the entire Scarborough plus Jupiter reservoirs, which were not included in the original surveys.
- Regarding the previous seismic testing data, Woodside referred to its correspondence sent on 12 September 2022.
- Woodside advised that since Revision 0 the EP has been updated through successive revisions in response to feedback from NOPSEMA and stakeholders and shows examples of how feedback has been considered. Woodside confirmed that no material changes have been made to the location, duration or activity as described in the original EP, with the scope being narrowed over time as project definition is refined. Woodside provided an example of the decision to remove AUV seismic nodes from the PAP, which is reflected in subsequent versions of the EP.
- Regarding the consideration of lower impact technological alternatives, Woodside referred to its correspondence sent on 12 September 2022.
- Woodside addressed ACF's claims in relation to impacts on marine fauna:
 - The Activity Source and Operational Areas for the seismic survey, while within the distribution range for pygmy blue whales, are outside the migration BIA and that it is also not in an area where foraging or resting is likely to take place.
 - The activity does not overlap BIAs for any other marine mammal species.
 - The likelihood of encountering pygmy blue whales and other cetaceans is expected to be low, even if the timing overlaps peak periods for northbound and southbound migration.
 - The Active Source Area is located ~25km from the western boundary of the migration BIA and the results of satellite tracking studies showed that out of a total of 20 pygmy blue whales tagged and tracked during these studies there was only one individual migrating north that travelled to the west of the migration BIA.
 - Woodside referred to Section 6.6.2 (Revision 0) of the EP includes EPBC Act Policy Statement 2.1 art B.6 – Adaptive Management Measures to minimise potential impacts on pygmy blue whales from seismic noise, which will be triggered if encounters are more frequent than expected.
 - Woodside confirmed the seismic survey vessel maintains a constant upper speed of 5 knots which largely dictates the speed of escorting and chase vessels accompanying it. In addition the vessels adopt go-slow buffers around marine fauna as per EPBC Regulations 2000 Part 8 Division 8.1 Interacting with cetaceans (c15.1).
 - Additionally, Woodside provided a list of the controls in the EP to manage this risk to an ALARP and acceptable level.
 - Woodside advised that as a precautionary approach, it has included an additional control (C 4.6) (under the application of the EPBC Statement Policy 2.1, Part B.3) in section 6.6.2 of the latest revision of the EP.
 - Woodside advised the Activity Source and Operational Areas are located a significant distance (138km) to the west of the humpback whale migration BIA. Woodside confirmed that Telemetry data from satellite tracking of northbound and southbound migrating humpback whale has confirmed the migratory pathways are within the continental shelf waters of the North-West Shelf. The location, distribution, and movement of humpback whales documented in the North-West Marine Region show that it is unlikely that migrating humpback whales will be encountered at any time of the year within the area of the proposed activity.
 - Woodside advised the EP (Revision 0) includes application of the EPBC Act Policy Statement 2.1 Part A standard management procedures to minimise the impacts to all cetaceans including humpback whales.
 - Additionally, Woodside provided a list of the controls in the EP to manage this risk to an ALARP and acceptable level.
 - Woodside also referred to the additional control added (C 4.6) Application of EPBC Policy Statement 2.1 Part B.3 – Use of additional vessels to detect presence of cetaceans (spotter vessel).
 - Woodside referred to section 2.6 of the EP (Revision 0) which describes Woodside's approach to addressing the risks and impacts associated with its activities.

- This includes the application of international guidance in decision support, calibration and the hierarchy of controls which preferences elimination of risks and impacts over mitigative controls. The application of these tools results in a demonstration that each identified risk and impact is minimised to an ALARP level, as described in section 2.72 of the EP (Revision 0).
- Regarding Acoustic pollution and negative impact on humpback whales, Woodside referred to section 6.5.3 of the EP which describes potential impacts of acoustic emissions on cetaceans. Woodside also referred to its correspondence on 12 September 2022.
- Woodside addressed ACF's claims in relation to cumulative impact assessment.
 - Woodside referred its correspondence on 12 September 2022.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>ACF has met with Woodside and provided additional consultation information on the broader Scarborough activities, including this proposed activity.</p> <p>ACF has provided feedback, objections and claims relating to:</p> <ul style="list-style-type: none"> • The activity scope and scale • Alternative technologies (lower impact) • Perceived impacts on marine fauna • Cumulative impact assessment. 	<p>Feedback has been assessed on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has consulted ACF in the course of preparing this EP. Woodside has assessed the claims or objections raised by ACF. No additional measures or controls have been put in place.</p> <p>Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on ACF's functions, interests or activities.</p>
The Wilderness Society (TWS)		

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with The Wilderness Society (TWS) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Summary of information provided and record of consultation:

- On 16 September 2022 Woodside emailed TWS advising of the proposed activity and provided a Consultation Information Sheet.
 - Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the TWS public website.
 - Woodside extended an opportunity to meet to discuss the proposed activity.
- On 21 September 2022, TWS emailed Woodside seeking an opportunity to meet in relation to the proposed activity.
- On 23 September 2022, Woodside emailed TWS to confirm it is able to offer a meeting on 27 or 28 September 2022.
 - Woodside received an out of office reply and subsequently offered to meet on 3 October 2022.
- On 29 September 2022, TWS emailed Woodside and requested alternative options for meeting dates.
- On 30 September 2022 Woodside emailed TWS requesting it propose a suitable date to meet.
- On 30 September 2022, TWS emailed Woodside requesting to meet on either 6 or 7 October 2022.
- On 3 October 2022, Woodside emailed TWS confirming its availability to meet on 6 October 2022.
- On 3 October 2022, TWS emailed Woodside and confirmed the 6 October 2022 meeting time.
- On 4 October 2022, Woodside emailed TWS acknowledging its confirmation and advising it would receive a meeting invite.
- On 6 October 2022, Woodside provided a briefing to TWS on the proposed activities and the broader Scarborough Project. The briefing covered:
 - Scarborough project overview.
 - Description of specific proposed activities (including this proposed activity) along with a map of the OA.
- On 17 October 2022 Woodside emailed TWS:
 - Woodside attached a meeting summary which included responses to address specific claims and objections raised on the proposed activity, where appropriate. The following topics were covered relevant to the broader Scarborough activities, including this proposed activity:
 - The decision to consult TWS with regard to Woodside's proposed activities for the purpose of understanding how Woodside may mitigate any adverse impacts its activities may have on The Wilderness Society's functions, interests and activities.
 - The work undertaken to understand marine fauna populations and their migration patterns in relation to Woodside's proposed activities and the controls in place to mitigate any potential impacts, including, but not limited to, acoustic surveillance and marine fauna observers.
 - In response to questions raised by TWS during the meeting regarding perceived environmental impacts, Woodside confirmed that:
 - A significant number of scientific studies and findings informed the Scarborough OPP and subsequent EPs, including Woodside-supported studies undertaken by the Australian Institute of Marine Science and The University of Western Australia
 - Scientific studies and modelling were also used to inform the impact assessment in relevant EPs which demonstrate the activities (i.e., seismic acquisition) will be performed in a manner that prevents injury to whales, and minimises the potential for biologically significant behavioural disturbance
 - Continuous consideration of cumulative impacts for the proposed activities under each EP, as was previously considered for the OPP; and
 - Regarding TWS's queries in relation to Woodside's engagement with Traditional Owners on the relevant EPs, Woodside confirmed it has undertaken extensive engagement with the relevant Traditional Owners and Traditional Owner representative groups with respect to the proposed activities. Woodside confirmed this engagement included archaeological and ethnographic surveys, which have informed the Scarborough EPs.
 - In relation to TWS's query regarding zooplankton and any potential impacts from the proposed activities on the broader food chain, Woodside confirmed scientific studies and modelling have been used to assess and ensure an ALARP and acceptable approach to activities.

- Woodside noted that no new concerns or queries have been raised by TWS directly to Woodside that have not already been addressed by Woodside in each of the EPs discussed.
- Noting TWS's more general interest in carbon offsets, biodiversity and native vegetation, though outside of the scope of the Scarborough Project consultation, Woodside would welcome the opportunity for TWS to meet with subject matter advisers from Woodside to discuss the work that is being undertaken in this space.
- On 19 October 2022, Woodside received correspondence from TWS via NOPSEMA dated 14 October 2022 that contained a number of claims/objections and requests for information relating to the proposed activity.
 - Woodside's current methodology and application regarding offset (carbon and biodiversity), in response to the proposed activities.
 - Any remuneration or business unit KPIs to the progression of the Environmental Plan or the commencement of the related activities.
 - Confirmation that the development of a cumulative/holistic impact assessment covers the full breadth of the development, production and decommissioning activities.
 - An outline of how dissenting scientific or technical expertise to Woodside's proposal was identified, actively sought and considered in the EP.
 - Contemporary approaches to reducing the outstanding issues arising from views regarding the impacts of seismic survey activity on zooplankton population (particularly as cited by McCauley et al. (2017) and recommended by the Senate inquiry.
 - Woodside's current and proposed investment in alternative or lower-impact technological innovations to seismic surveying.
- On 14 February 2023, TWS emailed Woodside in response to the letter provided by Woodside on 17 October 2022 regarding Woodside's Scarborough Subsea Installation EP. TWS' email contained a number of claims/objections and request for information relating to the proposed activity.
 - TWS provided feedback on Woodside's consultation process, highlighting that consultation should be adaptable and specifically designed for each relevant person. TWS additionally claimed that a statement of finality by Woodside that declares consultation has been undertaken, does not mean that this consultation was satisfactory, nor does it mean that the method or conclusion of consultation has been mutually agreeable.
 - How has Woodside addressed the risk of real or perceived bias in relation to funding, support or influence of scientific studies, for example those cited as undertaken by The Australian Institute of Marine Science (AIMS) and The University of Western Australia (UWA)? TWS highlighted AIMS has cited in its 2021-22 corporate plan that 46% of its external funding is provided by industry. The linkages between UWA and industry are well understood.
 - What carbon and biodiversity offsets are currently proposed by Woodside, where are these offsets located and how are these offsets being certified?
 - Does any corporate or business unit KPI suite link to the progress and finalisation of EPs to employee or contractor remuneration?
 - How is Woodside reconciling its confirmation of localised and indistinguishable impacts of seismic surveys
 - Comparisons of previous seismic surveys to Table 6-0 of this EP and quantitative data relating to the frequency, volume, duration of seismic blasting undertaken during prior surveys.
- On 22 February 2023, TWS emailed Woodside to check its 14 February 2023 email had been received.
- On 23 February 2023, Woodside emailed TWS to confirm its 14 February 2023 email had been received.
- On 17 March 2023, Woodside emailed TWS and attached a detailed table of responses to address specific claims and objections raised during the 6 October 2022 meeting, and within the 14 October 2022 letter (received by Woodside on 19 October 2022 via NOPSEMA) and the 14 February 2023 letter regarding the proposed activity, where appropriate.
 - Woodside confirmed that the claims raised by TWS are already addressed in the Seismic EP. Therefore, given the in-depth meeting with TWS on 6 October 2022, the well-informed feedback received and responded to in the meeting, subsequent correspondence from Woodside together with the length of time the EP has been open for comment, any further feedback provided by TWS on the Seismic EP will be accepted and considered as part of ongoing consultation.
 - Woodside advised the Seismic EP assesses both direct and indirect environmental impacts and risks associated with the PAP, having regard to the nature and scale of the PAP. The extraction of Scarborough gas for onshore processing is not included in the PAP for this EP. Therefore, indirect impacts and risks arising from onshore processing of Scarborough gas are not considered indirect impacts/risks of this PAP but will be considered in relevant Scarborough EPs as appropriate.
 - Woodside confirmed there is no linkage to remuneration or bonus schemes for achievement of EP acceptance.

- Woodside advised cumulative impacts for this activity are assessed in later revisions of the EP. Woodside referred to Control 7.1 in the EP (Revision 0) as an example. Woodside referred to Table 6-11 of the EP (Revision 0) which identifies other potential seismic surveys occurring in the region; the closest being approximately 275km away, with a four-year window for execution.
- Woodside advised the importance of scientific understanding and knowledge to its environmental management approach. Woodside confirmed that input from internal subject matter experts and external specialists with proven track records and academic credentials is part of the established EP process. This includes consideration of recently published peer-reviewed data and studies to inform understanding of risk and impact assessment, and consideration of current best practice controls within the ALARP framework.
- Regarding feedback relating to seismic survey activity impacts on zooplankton, Woodside referred to its correspondence on 17 October 2022, where this topic is addressed.
 - Woodside referred to Section 6.7 of the EP that assesses the impacts of seismic surveys on zooplankton.
 - Woodside advised the EP has been updated to include a statement that impacts to Zooplankton are unlikely to result in impacts to higher order trophic levels.
 - Additionally, Woodside provided a list of the controls in the EP to manage this risk to an ALARP and acceptable level.
- Regarding investment in alternative or lower-impact technologies, Woodside referred to its correspondence on 17 October 2022, where this topic is addressed.
 - Woodside confirmed it has and continues to follow the development of marine seismic vibrator technology and has participated in technical forums held with seismic contractors. However, marine seismic vibrator technology is still in research and development and is yet to be offered commercially.
 - Woodside advised the newest revision of the EP has been updated to include consideration of marine seismic vibrator technology in the ALARP assessment.
 - Woodside advised it considered a trial of a small-scale ocean bottom node (OBN) survey using emerging technology with AUV, which was included in earlier versions of the EP, however, due to technical issues with this technology the scope was removed from Revision 5 of the EP. Woodside also noted that an OBN survey still requires an energy source.
- Woodside advised that the Australian Institute of Marine Science (AIMS) operates under the Australian Institute of Marine Science Act 1972 (Cth) and is engaged in research.
 - The Act allows AIMS to participate in partnerships and the Statement of Ministerial Expectations requires that AIMS work with industry.
 - Woodside advised that it and AIMS have a long-standing relationship spanning more than 25 years. Woodside provided key details to the success of that partnership to address TWS' specific claims. For example, the source of AIMS funding has no influence on how the science is conducted or reported.
- Woodside advised that Routine Atmospheric and GHG emissions associated with the seismic activity have been added to Section 6.7.2 of the revised EP. This includes an additional control that requires the evaluation of tenders for the project will include consideration of vessel fuel usage / emissions and low carbon / alternative fuels (C 8.2).
- Woodside confirmed there are no corporate or business unit KPI suite links to the progress/finalisation of EPs to employee or contractor remuneration.
- Regarding impacts of seismic surveys and previous seismic surveys, Woodside advised it has undertaken a comprehensive assessment, including full justification of the impacts and risks of seismic surveys for the regulator NOSPEMA to assess in accordance with the Environment Regulations and NOPSEMA Guidance Note (N-04750-GN1344a339814) EPC Content Requirement.

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<p>Woodside has received feedback from TWS during the course of consultation on a range of Woodside EPs covering the broader Scarborough activities.</p> <p>TWS has provided feedback, objections or claims about the proposed activity, and the broader Scarborough project relating to:</p> <ul style="list-style-type: none"> • Consultation process • Industry funding, support or influence on scientific studies • Carbon and biodiversity offsets • KPIs and remuneration relating to EP process and completion • Impacts of seismic surveys • Previous seismic surveys 	<p>Feedback has been assessed on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on TWS's functions, interests or activities.</p>
<p>Say No to Scarborough Gas (SNTSG)</p>		

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Say No to Scarborough Gas (SNTSG) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Summary of information provided and record of consultation:

- On 16 September 2022 Woodside emailed SNTSG advising of the proposed activity and provided a Consultation Information Sheet.
 - Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the SNTSG public website relating to Climate change and GHG and Rock art and Aboriginal cultural heritage.
 - Woodside confirmed that the concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Seismic EP.
 - Woodside advised the Seismic EP assesses both direct and indirect environmental impacts and risks associated with the PAP, having regard to the nature and scale of the PAP. The extraction of Scarborough gas for onshore processing is not included in the PAP for this EP. Therefore, indirect impacts and risks arising from onshore processing of Scarborough gas are not considered indirect impacts/risks of this PAP but will be considered in relevant Scarborough EPs as appropriate.
 - Woodside advised that Routine Atmospheric and GHG emissions associated with the seismic activity have been added to Section 6.7.2 of the revised EP. This includes an additional control that requires the evaluation of tenders for the project will include consideration of vessel fuel usage / emissions and low carbon / alternative fuels (C 8.2).
 - Woodside confirmed that activities covered by this EP are located ~374km away from Murujuga and will have no impact on access to sites of cultural and spiritual significance. Woodside also confirmed there would be no impact from emissions or rock art displacement and that damage to heritage sites is not anticipated.
 - Woodside advised it has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development. These works have not identified any heritage places, objects or values which will be impacted by the activities covered in this EP.
 - Woodside extended an opportunity to meet to discuss the proposed activity.
- On 23 September 2022 Woodside followed up with SNTSG via email.
- On 29 September 2022 SNTSG emailed Woodside requested more time to provide feedback and asked for a copy of the current version of the EP.
 - SNTSG advised its availability to meet with Woodside to discuss the EP.
- On 4 October 2022 Woodside emailed SNTSG confirming its availability to meet on 10 October 2022.
- On 5 October 2022, SNTSG emailed Woodside advising it was unavailable to meet on 10 October 2022 and requested to meet on 13 October 2022.
- On 6 October 2022 Woodside emailed SNTSG confirming its availability to meet on 13 October 2022.
- On 11 October 2022 SNTSG emailed Woodside in response to other Scarborough EP consultation and referenced that its focus of the scheduled meeting on 13 October 2022 was to discuss a separate specific proposed Woodside activity.
 - SNTSG noted that more information about all of the EPs will be valued but SNTSG will require more time after the meeting to give feedback and go through a thorough consultation process.
- On 11 October 2022 Woodside emailed SNTSG:
 - Woodside confirmed the purpose of the meeting is to provide context and an overview on the upcoming activities for the Scarborough Project to allow for feedback and information to be provided as relevant.
 - Woodside advised it will discuss a number of Scarborough EPs.
 - Woodside encouraged SNTSG to share any interests, claims or concerns it has in relation to these EPs to inform Woodside of appropriate measures it may take to mitigate any adverse impacts Woodside's activities may have.
- On 12 October 2022 SNTSG emailed Woodside and advised: it will endeavour to give as much feedback as possible on the day and as soon it can after the 13 October 2022 meeting.

- On 13 October 2022, Woodside provided a briefing to SNTSG on the proposed activities and the broader Scarborough Project. The briefing covered:
 - Scarborough project overview
 - Description of specific proposed activities (including this proposed activity) along with a map of the OA.
 - During the meeting SNTSG noted it will provide Woodside, early in the week commencing Monday, 17 October 2022, with a summary of concerns it has in relation to the relevant EPs.
 - During the meeting, SNTSG asked questions and provided feedback regarding:
 - The purpose of the seismic survey, specifically why data cannot be used from previous seismic testing undertaken in 2004. SNTSG asked what is gained from another seismic activity? Is the survey required due to the time that has passed since the last survey, and what is the minimum acceptable time between surveys?
 - Activity timing, specifically the timing of the proposed activity, timing of other surveys to ensure they do not take place at the same time.
 - SNTSG noted the fact sheet is out of date from May 2021, and asked of there has been material changes to the EP.
 - Activity location, regarding the activity source area size against the WA-61-L title and difference between the EP operational area and activity source area, and titles inclusion in the operational area and active source area.
 - Underwater noise, regarding impact on marine species. SNTSG requested an expert opinion on impacts.
 - Impacts of the activity on pygmy blue whales
 - Impacts of cyclones on the activity and union consultation on potential cyclone risk
 - Impacts on zooplankton and the marine food chain
 - Whale shark vessel strike risk regarding vessel speeds over 10 knots
 - Light emissions, specifically what results have been determined from assessments undertaken on artificial light
- On 14 October 2022 Woodside emailed SNTSG:
 - Woodside acknowledged the EPs discussed during the meeting and noted the date of week commencing 17 October 2022 for SNTSG to provide feedback.
 - At the request of SNTSG, Woodside resent the consultation information sheet as SNTSG mentioned it had not yet received it. Woodside confirmed that it emailed SNTSG and sent the consultation information on 30 September 2022.
 - Woodside encouraged SNTSG to visit the Consultation Activities page of the Woodside Energy website, where all Consultation Information Sheets can be located, and to sign up to the mailing list on the Consultation Activities page, enabling it to receive notifications when new Information Sheets are released.
- On 19 October 2022, Woodside received correspondence from SNTSG via NOPSEMA dated 29 September 2022 which advised the regulator of the engagements and consultation conducted by Woodside.
- On 16 November 2022, SNTSG emailed Woodside and included a letter. The letter contained a number of claims/objections relating to the proposed activity.
 - SNTSG provided feedback about community consultation:
 - Community consultation, stating there was no information on which communities and community groups would be consulted. Further, there was no information on what the process would be for incorporating feedback and then re-releasing the EPs. SNTSG asked if Woodside will publish it's redrafted EP's
 - Indigenous peoples and communities have strong cultural and spiritual connections to sites within the EPs and would have an interest in management decisions impacting culturally important oceanic fauna. To what extent are they being consulted? Which communities are being consulted? And how is their feedback incorporated into the EPs?
 - Query whether certain groups had been consulted such as Australian Marine Conservation Society and marine tourism operators
 - SNTSG commented it was concerned that project work was well underway, before approvals had been granted, and that parties are acting as though environmental approvals are guaranteed.
 - SNTSG provided feedback about consistency with existing conservation plans or ecological principles:

- SNTSG claims the plans are not consistent with ecological principles of sustainable development, particularly the intergenerational principle. It asked how Woodside plans to meet these principles.
- SNTSG asked how the plan is consistent with the Blue Whale Conservation Management Plan and threatened species recovery plans
- SNTSG provided feedback about independence:
 - SNTSG asked about the skills of the people at the Environmental Risk and Impact identification workshop and their ties to Woodside and any conflicts of interest they hold. SNTSG also asked about the lifetime for identifying environmental risk and impact identification.
 - Regarding environmental impacts and risks being reduced to ALARP, SNTSG asked who is responsible for determining what is reasonably practical and what their ties are to Woodside, and what grounds are the determinants for ALARP based upon (economic or environmental)?
- SNTSG provided feedback on emissions:
 - Emissions caused by the project are a major concern for SNTSG and it noted the EPs ignore scope 1,2, and 3 and they cannot be ignored when considering approvals. SNTSG requested more information and figures on the lifetime of emissions of the project and emissions forecasting, consistency with conservation management plans and species recovery plans, Woodsides response to various external reports and sources, CCS and carbon offset planning, emissions projections and Scope 3 emissions.
- SNTSG provided feedback on lighting:
 - What are the impacts of artificial lights on ecological processes and sea birds? Why are the routine light emissions impacts estimated to have an impact for less than one year? Will Woodside commit to the National Light Pollution guidelines for Wildlife?
- SNTSG provided feedback on ecosystem impacts:
 - Ecosystem impacts such as effects of climate change on interactions between marine life and the disturbance and pollution caused by the project, ecological parameters used to assess impacts on species / populations etc., the process of the deep-water survey, microbial communities and carrying out work during PBW migration season
- SNTSG provided feedback on seismic activity:
 - Concern over Woodside's ALARP system, SNTSG asked for definitions about ALARP, and measures taken.
 - Requested an updated version of the information sheet.
 - The need for another seismic survey, why Woodside could not use data collected in 2004?
 - The timing of the activity and overlap of testing and behavioural effects of the activity on species outside of the operational area.
 - Impacts of cyclones on the activity and union consultation on potential cyclone risk
 - SNTSG asked or access to results from animat modelling and details about the decibel level of the seismic blasting.
 - Have expert opinions been sourced regarding exposure experiments and observed behaviours, and whether the experts are part of the community consultation.
 - SNTSG asked Woodside's plans about the impacts on zooplankton
 - SNTSG asked the speed at which the vessels are travelling during the surveys.
- On 17 March 2023, Woodside emailed SNTSG and included responses to address specific claims and objections raised during the 13 October 2022 meeting, and the 16 November 2023 correspondence regarding the proposed activity, where appropriate.
 - Regarding the purpose of the seismic activity, Woodside provided an explanation as to why the survey must be repeated, as no further uplift can be gained from the 2004, 2010 and 2018 data. Additionally, the original survey does not extend over the full Scarborough gas field or over the Jupiter gas field.
 - Woodside advised that the requirement of the survey is not related to a specific time period between surveys.
 - Regarding the activity timing, Woodside advised details determining the timing of the activity, two years from EP acceptance.
 - Woodside advised the EP (revision 0) contains Control 7.1 requiring a separation distance from any identified concurrent seismic survey to reduce the potential for cumulative impacts.

- Woodside referred to table 6-11 in the EP (revision 0) which identifies other potential seismic surveys occurring in the region, the closest being 275km away with a four year window execution.
- Woodside confirmed a revised version of the consultation sheet is available on its website. Since Revision 0, which is available on the NOPSEMA website, the EP has been updated through successive revisions in response to feedback from NOPSEMA and stakeholders. No material changes have been made to the location, duration, or activity, as described in the original document and fact sheet.
- Regarding the activity location, Woodside advised the Woodside-operated Petroleum Titles relevant to this PAP are listed in table 3-1 of this EP (Revision 0).
 - Woodside confirmed the latest version of the EP has been updated to include WA-63-R in Table 3-1, as it was inadvertently omitted from this table in Revision 0.
 - Woodside noted the PAP will be carried out under an access Authority which authorises an existing Petroleum Title Holder to carry out petroleum exploration or recovery operations, other than drilling a well, outside of the boundary of their existing titles.
 - Woodside advised the Activity Source Area and Operational Area show a buffer around the Woodside-operated Title(s) to enable full imagery and understanding of the entire Scarborough plus Jupiter reservoirs, which were not included in the original surveys.
 - Woodside referred to Section 3.4.1 of the publicly available EP (Revision 0), referencing the definition of the Activity Source Area.
 - Woodside advised discharge of the seismic source during vessel run ins, run outs, soft starts and full fold seismic data acquisition will occur in the Activity Source Area. Seismic source testing will also occur in the Activity Source Area. The seismic source will not be discharged within this buffer.
 - Woodside referred to Section 3.4.2 of the EP (Revision 0), referencing the definition of the Operational Area. The seismic source will not be discharged within this buffer.
- Regarding underwater noise, Woodside advised the impacts of underwater noise generated by the seismic survey equipment are assessed in the EP Section 6.5.3 and Section 6.5.4 for vessels (Revision 0).
 - Woodside advised the impact assessments use peer reviewed literature and scientific studies, supported by activity specific underwater sound program modelling.
 - Woodside advised the impact assessments consider a range of receptor groups and provided a list of example groups.
 - The impact assessments determined highest potential consequence for these receptors to be 'D' (Minor, short-term impact) for noise from survey equipment and 'F' (No Lasting Effect, localised impact not significant to environmental receptors) for noise from project vessels.
 - Woodside referenced a list of controls in the EP (Section 6.5.3, Revision 0) to manage risk to an ALARP and acceptable level.
 - Woodside referenced the additional control (C 4.6) (under the application of the EPBC Statement Policy 2.1, Part B.3) in section 6.6.2 of the latest revision of the EP.
- Regarding pygmy blue whales, Woodside provided information about the Active Source and Operational areas of the Scarborough 4D MSS being outside the migration BIA, and accordingly, the likelihood of encountering the pygmy blue whale and other cetaceans is expected to be low.
 - The EP includes application of the EPBC Act Policy Statement 2.1 Part B.6 – Adaptive measures to minimise the potential impacts to pygmy blue whales from seismic noise, which will be triggered if encounters with pygmy blue whales are more frequent than suspected.
 - Woodside referred to Section 6.6.6 of the EP (Revision 0) which assesses the risk of accidental collision between project vessels and marine fauna, including PBWs.
- Regarding impacts on zooplankton and the marine food chain, Woodside confirmed that scientific studies and modelling have been used to assess and ensure an ALARP and acceptable approach to activities.
 - Further to Woodside's response in the meeting, Woodside provided confirmation that the risk assessments in the EP conclude that impacts to zooplankton are likely to be localised (>100 m from the seismic source) and localised changes in zooplankton abundance are likely to be replenished and indistinguishable from natural levels and distributions within hours of the seismic vessel passing.
 - Woodside referred to Section 6 of the EP (Revision 0), particularly 6.6.2 Routine Acoustic Emissions from Seismic Survey Equipment and 6.6.3 Routine Acoustic Emissions from Project Vessels and 6.6.5 Routine Discharges, which consider the potential impacts to zooplankton in the risk/impact assessments.

- Regarding Whale shark and vessel strike risk due to vessel speeds over 10 knots, Woodside confirmed the constant maintained speed of the seismic survey vessel (upper speed of 5 knots). This largely also dictates the speed of both the escorting support and chase vessel. Woodside advised that the vessels also adopt a go-slow buffer around marine fauna as per the EPBC Regulations - Part 8 Division 8.1 Interacting with cetaceans (C14.1).
 - Woodside advised the PAP Operational Area does not overlap with any known foraging, feeding or related areas for whale sharks. The nearest BIA is 136 km south-east from the Operational Area.
 - Woodside referred to Section 6.7.6 of the EP (revision 0) which assesses the risk of vessel collision or entanglement with marine fauna. While contact with whale sharks is not considered credible as part of this risk assessment., the EP does require implementation of Control 14.1 which includes the requirement that “vessels will not travel faster than eight knots within 250m of whale shark and not allow the vessel to approach closer than 30m of a whale shark.
- Regarding light emissions and assessments undertaken, Woodside referred to Section 6.5.7 (Revision 0) of the EP which considers Routine Light Emissions associated with External Lighting on Project Vessels.
 - Woodside advised in the latest revision of the EP, receptors that have important habitat within a 20km radius of the Operational Area were considered as part of the impact assessment, based on recommendations of the Natural Light Pollution Guideline for Wildlife including Marine Turtles, Seabirds and Migratory Shorebirds. The impact assessment determined that light emissions from project vessels will not result in an impact greater than localised and temporary disturbance to marine fauna in the vicinity of the Operational Area, with no lasting effect to any species.
- Regarding community consultation, Woodside advised that consultation requirements as set out in Reg 11A of the Environmental Regulations have been complied with in relation to the consultation process for EPs Woodside detailed during its consultation meeting with SNTSG on 13 October 2022.
 - Where feedback is received which informs Woodside of new risks or measures that it may take to mitigate the potential adverse environmental impacts from the PAP, Woodside incorporates this feedback into the EP, and where appropriate will introduce additional controls to ensure risks are managed to an ALARP and an acceptable level.
 - Woodside confirmed that the PAP of the EP remains the same as what is included in the Consultation Information Sheets. Woodside advised that after publishing to the NOPSEMA website, EPs may change whilst under assessment prior to the final EP being accepted. Following the initial public comments period, an additional round of stakeholder Consultation Information Sheets and advertisements in local publications were issued during the development of the EP.
 - Woodside advised it has undertaken extensive consultation with relevant Traditional Owners and Traditional Owner representative groups with respect to the proposed activities.
 - Woodside confirmed the engagement included archaeological and ethnographic surveys, which have informed the Scarborough EPs.
 - Woodside confirmed it has not undertaken any of the activities which are subject of environmental approvals which are currently under assessment.
- Regarding consistency with existing conservation plans or ecological principles, Woodside confirmed the PAP is carried out in a manner consistent with the principles of ecological sustainable development.
- Woodside advised it confirmed with SNTSG during the consultation meeting on 13 October 2022 that proposed activities are consistent with the Blue Whale Conservation Management Plan.
 - Woodside also confirmed that Table 6-21 and Demonstration of Acceptability in Section 6.5.3 in the EP (Revision 0) provides the assessment of the relevant activities against the Blue Whale Conservation Management Plan.
- Regarding independence, Woodside confirmed the experience of the participants in the Environmental Risk and Impact Identification Workshop, which included external environmental consultants supporting the EP development. Woodside referred to Table 2-3 of the EP (Revision 0) for a summary of duration for identifying environmental risk and impacts.
- Regarding responsibility for determining what is reasonably practicable and ties to Woodside, Woodside confirmed the details are provided in Sections 2.2, 2.3 and 2.7.2 of the EP (Revision 0).
- Regarding emissions and ecosystem impacts, Woodside advised that concerns relating to carbon and the impact on climate change from Scarborough gas are not relevant to the EP. The EP assesses both direct and indirect impacts and risks associated with the PAP, having regard for the nature and scale of the PAP.

- Woodside also advised the extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the EP, therefore indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered those of the PAP for the EP but may be evaluated in other Scarborough EPs as appropriate.
- Woodside also confirmed that Section 6.7 of the EP (Revision 0) Recovery Plan and Threat Abatement Plan Assessment describes the assessment that Woodside has undertaken to demonstrate that the PAP is not inconsistent with any recovery or threat abatement plans. Woodside referred to Table 6-19 for more information.
- Woodside advised that the various external comments provided by SNTSG are not applicable to the activity which is the subject of the EP.
- Regarding ecosystem impacts, Woodside advised that Impacts to all relevant ecological parameters are considered in the risk/impact assessments in Section 6 of the EP (Revision 0).
 - Woodside advised the deep-water environment surveys are not relevant to the EP, and information in the EP is drawn from Bryce et. al, 2015.
 - Woodside referred to Section 4.5 (Revision 0) of the EP for information on the habitats and biological communities in the Operational Area.
 - Woodside referred to Sections 6.5.3 and 6.5.4 of the EP (Revision 0) which contain an ALARP assessment of the controls to reduce seismic and vessel noise.
- Regarding seismic activity Woodside referred to the ALARP assessments in Section 6 of the EP (Revision 0) and several previous responses provided above.
 - Regarding the activity timing, Woodside confirmed that as advised in the consultation meeting on 13 October 2022, it plans to undertake the activity as soon as possible, following regulator acceptance.
 - Regarding cyclone risk and consultation, Woodside referred to its previous responses, as well as Section 7.12 Severe Weather Preparation of the EP (Revision 0).
 - Woodside referred to Table 6-7 of the EP (Revision 0) for result from the animat modelling.
 - Regarding seismic blasting, Woodside referred to Section 6.5.3 of the EP (Revision 0).

<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>
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<p>Following a briefing with Woodside, SNTSG has provided feedback, objections and claims relating to:</p> <ul style="list-style-type: none"> • Assessment of climate change from activity • Rock art and Aboriginal cultural heritage • Purpose of the seismic survey (use of the 2004 data) • Activity timing • Activity location • Underwater noise • Pygmy blue whales • Impacts of cyclones on the proposed activity and union consultation • Impacts on zooplankton • Whale shark and vessel strike risk • Light emissions • Community consultation • Consistency with existing conservation plans and ecological principles • Independence • Emissions • Lighting • Ecosystem impacts • Seismic activity 	<p>Woodside assessed the feedback on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate.</p> <p>Woodside has assessed claims and objections raised on the SNTSG public website that cover topics relevant to the proposed activity, where appropriate and provided responses to SNTSG (shown above).</p> <p>Woodside has provided specific information from the EP to address feedback, objections and claims, as well as Woodside's consultation approach and methodology to identify relevant persons (see Section 5.7).</p> <p>No amendments have been made to the EP in relation to any of the feedback, objections or claims raised. Woodside has provided responses to feedback received as shown above.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has consulted SNTSG in the course of preparing this EP. Woodside has assessed the claims or objections raised by SNTSG. No additional measures or controls have been put in place.</p> <p>Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on SNTSG's functions, interests or activities.</p>
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Australian Marine Conservation Society (AMCS)

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Australian Marine Conservation Society (AMCS) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Summary of information provided and record of consultation:

- On 16 September 2022 Woodside emailed AMCS advising of the proposed activity and provided a Consultation Information Sheet.
 - Woodside also provided an attached statement of response to claims and objections raised by topic on the AMCS public website relevant to the proposed activity.
 - Woodside extended an opportunity to meet to discuss the proposed activity.
- On 23 September 2022, Woodside followed up with AMCS via email.
- On 10 October 2022, Woodside followed up with AMCS via email and confirmed no response had been received.
- On 11 October 2022, AMCS emailed Woodside and advised that it was unable to make a submission before 30 September 2022 due to the large number of consultations it is involved with and needs to prioritise its limited resources at this time. AMCS requested for Woodside to continue to send notifications and reminders of its consultations.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	<p>Woodside has assessed claims and objections raised on the AMCS public website that cover topics relevant to the proposed activity, where appropriate and provided responses to AMCS (shown above).</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	No additional measures or controls are required.
Sea Shepherd Australia (SSA)		
<p>Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Sea Shepherd Australia (SSA) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:</p> <p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> On 16 September 2022, Woodside emailed SSA advising of the proposed activity and provided a Consultation Information Sheet. <ul style="list-style-type: none"> Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the SSA public website. Woodside extended an opportunity to meet to discuss the proposed activity. On 23 September 2022, Woodside followed up with SSA via email. On 10 October 2022, Woodside followed up with SSA via email and confirmed no response had been received. 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	<p>Woodside has assessed claims and objections raised on the AMCS public website that cover topics relevant to the proposed activity, where appropriate and provided responses to AMCS (shown above).</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	No additional measures or controls are required.
Research institutes and local conservation groups or organisations		
National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP)		

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 28 April 2022, NERA self-identified via email on a separate EP and requested information on the proposed activity. NERA noted that the Operational Area of the proposed activity overlaps with the area outlined in its Collaborative Seismic Environment Plan.
- On 11 May 2022 Woodside emailed NERA advising of the proposed activity (Appendix F, reference 1.28) and provided a Consultation Information Sheet.
 - Woodside noted to NERA that given the EP is in its final stages of assessment, stakeholder feedback at this time may not be able to be incorporated into the EP but will be considered as necessary.
 - NERA was advised it would be kept informed of any future relevant consultation regarding the activity.
- On 11 November 2022, Woodside sent an email to NERA in relation to the Scarborough EPs. (Appendix F, reference 1.37)
- On 22 February 2023, Woodside emailed NERA a reminder that consultation is closing soon (Appendix F, reference 1.90).
- On 24 February 2023, NERA thanked Woodside for keeping CSEP up to date and confirmed they have no comments and no planned activities for 2023.
- On 28 February 2023, Woodside emailed and confirmed they will provide NERA with commencement and cessation of activity notifications relating to the proposed activities.
- On 1 May 2023, NERA emailed Woodside on a separate project advising the Collaborative Seismic EP had been withdrawn and will no longer go ahead. NERA requested that the CSEP be removed from relevant person consultation.
- On 2 May 2023, Woodside emailed NERA confirming Woodside would remove the CSEP from its relevant person consultation for future EPs.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.

Other

██████████, ██████████ and Save Our Songlines (SOS)

Woodside has consulted in accordance with Regulation 11A with ██████████, ██████████ and Save Our Songlines (SOS) by providing them with sufficient information and a reasonable period of time and opportunity to make an informed assessment of the possible consequences of the activities on their functions, interests or activities in their individual Traditional Owner and eNGO capacities.

Woodside has addressed each objection or claim made by ██████████, ██████████ and SOS, and has implemented controls in response to topics raised by them during consultation as well as in response to objections and claims they have made. Woodside has consulted ██████████, ██████████ and SOS both individually and together, providing opportunities for any and all topics relating to their functions, interests and activities – and potential risks or impacts to their functions, interests and activities - to be discussed, including those relating to a fundamental objection to the Scarborough Project as well as those relating, in accordance with indigenous tradition, to spiritual and cultural heritage and values.

For completeness, it is also noted that ██████████ and ██████████ have also, from time to time, been members of Aboriginal Corporations who have been separately consulted as relevant persons by Woodside.

As demonstrated in the summary below and the consultation record that follows, consultation with ██████████, ██████████ and SOS complies with Regulation 11A and is complete.

Summary

Sufficient information

Woodside has, since at least 2022, provided information to ██████████, ██████████ and SOS to allow an informed assessment of the possible consequences of the activity on their functions, interests or activities in their Traditional Owner and eNGO capacities. This information has been sufficient to allow an informed assessment of the possible consequences of the activity on their functions, interests or activities. The method of consultation has been informed by ██████████, ██████████ and SOS' preferences, has proceeded in accordance with protocols set by them and has included consultation meetings held on Country:

- Since at least 2022, ██████████, ██████████ and SOS have been provided with and have been made aware of the Environment Plan, Fact Sheets and Information Sheets which set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity and on the basis of which ██████████, ██████████ and SOS could assess any potential impact on their cultural interests. The documents set out the information in various formats that provide many levels of detail – from the fulsome detail provided in the Environment Plan through to summary information and visual diagrams in the Fact Sheets and Information Sheets (written in plain English). Woodside has also provided power point slides tailored to topics that ██████████, ██████████ and SOS have indicated are of interest to them. [Ref in particular: Woodside letter 22 July 2022; EDO email 25 July 2023; EDO email 4 October 2023; Meetings on 25 July 2023 and 12 September 2023 and subsequent correspondence]
- Information has been provided to ██████████, ██████████ and SOS in hard copy as well as electronic format. ██████████, ██████████ and SOS, through their lawyers confirmed that, for correspondence, electronic format is an appropriate format for the information to be provided [Ref: 12 September 2023 meeting].
- The information in those documents as they relate to the activity description, the location of the activity and the potential risks and impacts of the activity have remained materially the same since the information was first provided in 2022. In some instances, activity scope has reduced and consequently, risks and impacts of the activity have been removed from scope. This has allowed ██████████, ██████████ and SOS sufficient information in both a high level of detail, in summary format and in a format specifically tailored to topics they have shown interest in, to allow an informed assessment of the possible consequences of the activity on their functions, interests and activities. [Ref for example: Emails/letters to ██████████, ██████████ and SOS 22 July 2022 and 2 December 2022 Woodside letter to NOPSEMA 17 April 2023; power point slides for 25 July 2023 meeting and 12 September 2023 meeting]
- In addition to the information provided, Woodside has had several meetings with ██████████, ██████████ and SOS since 2022 on Country and online in accordance with the meeting formats requested by ██████████, ██████████ and SOS [Ref: 10 March 2023; 25 July 2023; 12 September 2023; 4 October 2023].
- Woodside has on a number of occasions, confirmed to ██████████, ██████████ and SOS the purpose of consultation and has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans", Guideline "Guideline: Consultation in the course of preparing an environment plan" and Policy "Draft policy for managing gender-restricted information PL2098" [Ref for example: email 15 September 2023].
- In meetings and correspondence:

- ██████████, ██████████ and SOS have confirmed that, since around 2022 they have received and read the Scarborough Project EP materials [most recently: 4 October 2023].
- ██████████, ██████████ and SOS have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project. [Ref Woodside 29 March 2023 email; meeting on 25 July 2023 and 12 September 2023 and correspondence following those meetings; Border Affidavits filed in the Federal Court in August and September 2023].
- Since around 2022, ██████████, ██████████ and SOS have been represented by the Environment Defenders Office (EDO), a legal team with experience in oil and gas projects and environment plans, who are experienced in representing clients who, in accordance with Indigenous tradition, have cultural and spiritual values.
- ██████████, ██████████ and SOS originally sought to consult on all Scarborough EPs at once and confirmed they have information and “objections” to share on all Scarborough EPs as early as September 2022. From about June 2023, this position changed and ██████████, ██████████ and SOS expressly directed Woodside to consult on individual EPs. Woodside has been ready, willing and able to consult on all Scarborough EPs (including this EP) since consultation commenced and has attempted to do so [i.e. most recently 25 July 2023, 12 September 2023, 4 October 2023,] through the presentation and provision of information on all EPs as well as discussion on all EPs.
- Objections, claims and topics relevant to ██████████, ██████████ and SOS and addressed by Woodside, were initially focused on Murujuga and included a focus on land-based impacts to Murujuga rock art, removal of Murujuga rock art, air emission impacts on Murujuga rock art, restriction to sites on the Burrup Peninsula and to plants and animals of Murujuga [Ref letter to Woodside 6 June 2022; letter to NOPSEMA 26 September 2022]. More recently, their focus has shifted to an interest in Sea Country and marine plants and animals [Ref for example Second ██████████ Affidavit dated 7 September 2023. As of mid-September 2023, they have identified Rosemary Island (near the Burrup Peninsula, and not near the EMBA or operations area) as being a place of particular cultural significance. Notably, the Second ██████████ Affidavit dated 7 September 2023 stated that ██████████, ██████████ and SOS have information to share with Woodside and this information “needs to be shared at the appropriate place, namely on Country”. However, the Second ██████████ Affidavit did not identify Rosemary Island as being a culturally significant location or the only location at which that information could be shared with Woodside.
- Objections, claims and topics have been unclear or inconsistent in some instances – in one meeting ██████████ indicated her concern was *not* pygmy blue whales (a focus of EP noise controls due to PBW distribution and behaviour) but humpback whales [meeting on 12 September 2023]. At the next meeting, Woodside was criticised for reflecting a position that humpback whales were a topic of specific interest to ██████████, ██████████ and SOS [meeting on 4 October 2023]. Generally speaking, ██████████ has stated that whales carry important songlines, the whale Dreaming, and connection between land and sea [Second Border Affidavit dated 7 September 2023]. The EP contains several controls to manage potential risks and impacts to whales to ALARP and acceptable levels.
- Throughout consultation, it has been made clear to Woodside that ██████████, ██████████ and SOS hold a fundamental objection to the Scarborough Project and their preference is for the Scarborough Project to be stopped [Ref: 14 March 2023 (and summary email 16 March 2023); 4 October 2023 meetings; SOS website].
- Throughout consultation, ██████████, ██████████ and SOS have continued to state that they have further information they wish to tell Woodside and that they say Woodside requires for its Environment Plans. However, despite Woodside offering ample opportunities for consultation, including online and in person on Country, ██████████, ██████████ and SOS have expressly refused to provide that information to Woodside [Ref 6 April 2023 letter, 17 April 2023 letter and most recently 4 October 2023 meeting].
- On a number of occasions, ██████████, ██████████ and SOS have declined to provide the information to Woodside but have been prepared to provide the information publicly [Affidavits of ██████████ September 2023] or offered to provide the information to others [Ref: letter to NOPSEMA 26 September 2022; letter to NOPSEMA 5 October 2023].
- Woodside has attended all meetings in listening mode to hear from ██████████, ██████████ and SOS and also in presentation mode, ready, willing and able to present and provide information on the activities proposed under the Environment Plan as well as on the broader Scarborough Project. In those meetings, Woodside has listened to items and topics raised by ██████████, ██████████ and SOS and has prepared and brought material in the form of presentations, tables, maps and video to share with ██████████, ██████████ and SOS. [Ref meetings on 14 March 2023, 25 July 2023, 12 September 2023, 4 October 2023 and presentations prepared for those meetings]
- During meetings, Woodside has discussed with ██████████, ██████████ and SOS, the controls Woodside has in place to manage topics relating to potential impacts and risks relating to spiritual and cultural connections and values that Woodside understands are relevant to ██████████, ██████████ and SOS. Woodside has also attended ready, willing and able to answer questions and provide additional information as appropriate and when requested. In a number of instances, despite

confirmation that Woodside would present on all of the activities under the Scarborough Project, ██████████, ██████████ and SOS expressly told Woodside that they did not want to hear from Woodside on the Scarborough project activities and instead directed Woodside to only discuss or present on specific aspects of each Environment Plan. Despite that direction, at some of those meetings, ██████████, ██████████ and SOS raised queries that related more broadly to other activities in the Scarborough Project. Woodside provided responses and information in relation to those questions [Ref: meetings on 14 March 2023; 25 July 2023; 12 September 2023; 4 October 2023].

- As part of consultation, Woodside has also taken time to show ██████████, ██████████ and SOS how the information ██████████, ██████████ and SOS have provided during consultation has been incorporated into the EPs and how Woodside has proposed control measures to manage potential impacts and risks to topics Woodside understands are relevant to them, including to request any input by ██████████, ██████████ and SOS into the proposed control measures or any other available measures. ██████████, ██████████ and SOS have provided input in some cases and have otherwise expressed views in relation to the control measures. In some instances, in response to queries seeking their views, ██████████, ██████████ and SOS have explicitly stated that they do not have any views to share with Woodside on the control measures. [12 September 2023; 4 October 2023 meetings]
- In a number of instances, ██████████, ██████████ and SOS have indicated an impossibility to provide information to Woodside – in that they cannot *yet*, or that it is *not possible* to provide the information. For instance they have made statements to Woodside to the effect that there is information that they *do not yet know* and that they *don't know when they will know* (for example, information that the Murujuga rocks have not yet disclosed to them) [Ref 14 March 2023] or information that they will find out from animals who speak to them [Second ██████████ Affidavit para 11] as well as information that comes to them from time-to-time in visions [12 September 2023].
- During consultation, consistent with NOPSEMA's guidance and suggestions, Woodside has asked ██████████, ██████████ and SOS on a number of occasions whether there are other individuals who ought to be consulted. ██████████, ██████████ and SOS have made various references to MAC. In early instances, ██████████, ██████████ and SOS did not provide an answer [Email to EDO 3 August 2023, and EDO response on 9 Aug 2023]. Most recently, ██████████, ██████████ and SOS stated words to the effect that "it is not [their] responsibility to identify relevant persons on Woodside's behalf and to distribute information to them". [Ref EDO email 19 September 2023] Consultation with ██████████, ██████████ and SOS has not otherwise identified any other groups or individuals who, in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity, or whom may have other communally held functions, activities or interests. [Ref example: Woodside email 15 September 2023 email; EDO email 19 September 2023].
- In correspondence and meetings, Woodside has questioned what it has perceived to be a general refusal by ██████████, ██████████ and SOS to provide information to Woodside, including at meetings where, before the meeting, ██████████, ██████████ and SOS had confirmed they would attend and provide information [25 July 2023; 12 September 2023].
- Throughout consultation, ██████████, ██████████ and SOS have expressed a general dislike and mistrust of Woodside and a reluctance to provide Woodside with information, stating most recently words to the effect: "I don't trust any of you. There is no trust here, trust me lady, there is nothing" [Ref 4 October 2023 meeting].
 - Given those circumstances, and with a genuine concerted aim of attempting to manage potential impacts and risks to ██████████, ██████████ and SOS and to more broadly understand their functions, interests and activities, as well as topics that might relate to a fundamental objection to the Scarborough Project and in accordance with Indigenous tradition, ██████████, ██████████ and SOS' potential spiritual cultural and connections and values; Woodside has reviewed publicly available information. This has included reviewing ██████████ statement made to the Commonwealth Senate Standing Committee on Environment and Communications [Ref Opening Statement from ██████████, ██████████ Murujuga Aboriginal Corporation – Public Hearing, Perth – 20 April 2017], information provided by ██████████, ██████████ and SOS on their SOS website, submissions made by ██████████, ██████████ and SOS to various Commonwealth government bodies [Ref: February 2022 and 19 October 2022 s10 ATSIHP Act applications] the United Nations [Ref: UN letter 22 September 2022], the Woodside Board [Ref June 2022], various government bodies [Ref NOPSEMA letters including 22 September 2022], at Annual General Meetings held by Woodside [Ref transcript Question time 19 May 2022], in proceedings against NOPSEMA and Woodside in the Federal Court [Ref ██████████ Affidavits dated August and September 2023] and in various Appeal Convenor processes. Topics, claims and objections in that information have been included in the EP where relevant and in brief, provide the following insights:
 - Information set out in the publicly available information shows that ██████████, ██████████ and SOS have an understanding of the Scarborough Project and the activities involved in the Scarborough Project.
 - ██████████ has expressed a view that MAC holds the key responsibility for the stewardship and management of the Land and Sea Country according to the Aboriginal Lore and Culture; MAC's work includes collecting environmental and heritage records to assist with compiling data [building a library] relevant to

Law and Culture on sacred sites, including 42 islands of the Dampier Archipelago; MAC has been embraced by the community as the body for cultural knowledge and guidance which allows the community to speak with one spiritual and cultural voice and with strong cultural integrity. This means that some decisions or advice given by individuals previously, may not reflect the current and more valid cultural leadership that governs today [Ref: 20 April 2017 Opening Statement]. This position is at odds with the position being put forward by ██████████, ██████████ and SOS in consultation with Woodside.

- ██████████, ██████████ and SOS hold a fundamental objection to the Scarborough Project [for example: SOS website]
- On a number of occasions, ██████████, ██████████ and SOS have declined to provide the information to Woodside and have instead provided information publicly [Affidavits of ██████████ August and September 2023] or offered to provide the information to others [Ref: letter to NOPSEMA 26 September 2022; letter to NOPSEMA 5 October 2023]

Reasonable period of time

- ██████████ is a former member of MAC. Woodside's engagement and correspondence with ██████████ (as a MAC representative) date back an extended period to when discussions on the Scarborough Project commenced with MAC in around June 2018.
- Woodside has been consulting specifically with ██████████, ██████████ and SOS on the Seismic EP since at least July 2022.
- ██████████, ██████████ and SOS have recently confirmed that consultation commenced in at least 2022 [Ref: 5 October 2023 letter]. This represents a consultation period that spans over one year which on an objective analysis fulfills Woodside's obligation to provide a reasonable period of time for consultation.
- Woodside has accommodated ██████████, ██████████ and SOS's initial consultation requests for at least four weeks [Ref 8 November 2022 letter] and then, later in the consultation, requests for 6 weeks [Ref EDO letter 24 March 2023] between consultation meetings to enable them to provide information they wish to share.
- ██████████, ██████████ and SOS have been made aware of the Scarborough Project and desire by Woodside to commence activities under each EP. Since at least August 2023, ██████████, ██████████ and SOS have been made aware that commencement of activities under the Scarborough Project is imminent and that, if they would like Woodside to consider their information prior to commencement of activities, they needed to provide the information to Woodside imminently [Ref: correspondence throughout August 2023 prior to the Federal Court proceedings; 15 September 2023; Federal Court proceedings; various emails to EDO from 17 September 2023 and onwards.]
- Woodside notes the assertion by ██████████, ██████████ and SOS, through their legal representatives, that consultation is 'in its early stages' [Ref: EDO letter 10 August 2023]. This statement is contrary to the history of consultation, and to their recent confirmation that consultation indeed commenced in at least 2022 [EDO 4 October 2023 letter].
- Having regard to the objective timeframe allowed by Woodside for consultation, the history of engagement between Woodside and ██████████, ██████████ and SOS and the transparency with which Woodside has communicated timeframes for consultation, Woodside has met its obligation to provide ██████████, ██████████ and SOS a reasonable period for consultation.

Reasonable opportunity

- ██████████, ██████████ and SOS have been provided a reasonable opportunity to consult in relation to this EP and all of the Scarborough EPs.
- There is a large body of correspondence, email and text messages which show Woodside's continual offers for consultation meetings for over a year. It is noteworthy that despite around 9 months of offers and attempts by Woodside to meet with ██████████, ██████████ and SOS (from around June 2022 – March 2023) a meeting only first took place at Hearson Cove in March 2023.
- There have been at least six instances where Woodside has attended an agreed meeting venue on an agreed date, ready, willing and able to consult in person with ██████████, ██████████ and SOS. ██████████, ██████████ and SOS has attended most agreed meetings, but have otherwise failed to attend or refused to attend [11 October 2022; 14 March 2023; 25 July 2023; 12 September 2023; 4 October 2023; 5 October 2023]
- Since 2022, Woodside has expressed a willingness and openness to consult at any time and having regard to ██████████, ██████████ and SOS' preferred consultation methods [Ref: Allens letter August 2023]. To further support the consultation process, Woodside also offered to engage in fortnightly meetings with ██████████, ██████████ and SOS. This offer was declined. [Ref 25 July 2023 meeting]
- Woodside has respectfully accommodated delay to meetings or rescheduling of meetings where ██████████, ██████████ and SOS have requested that to occur.

- Woodside has agreed with requests from ██████████, ██████████ and SOS in relation to meeting protocols. This has included significant efforts by Woodside to accommodate ██████████ and ██████████ cultural requests by allocating female subject matter experts to prepare and attend meetings with ██████████, ██████████ and SOS where matters are otherwise managed by male subject matter experts for Woodside.
- Upon request from ██████████, ██████████ and SOS, Woodside has also nominated a specific woman at Woodside who is able to receive culturally sensitive information on behalf of Woodside. Despite this, ██████████, ██████████ and SOS have declined to provide this information. [Ref Woodside 28 February 2023 email]
- During the consultation, ██████████, ██████████ and SOS have stated that they will provide information to Woodside by way of video. Woodside waited for that information to be provided, only to be told at a later date that no video will be provided [Ref EDO emails post 25 July meeting; Woodside email 29 August 2023; EDO email 4 September 2023].
- During the consultation, ██████████, ██████████ and SOS have informed Woodside, and made public statements that they have further information they want to provide to Woodside for its Scarborough Environment Plans [Second ██████████ Affidavit dated 7 September 2023]. Notwithstanding numerous opportunities, ██████████, ██████████, ██████████ and SOS have not provided any further information to Woodside. At the last meeting in October, ██████████ and SOS did not present Woodside with any reasonably viable way to receive the information when Woodside informed ██████████ and SOS that its employees were unable to attend consultation at Rosemary Island for cultural protection and safety reasons.
- Until around 12 September 2023, Woodside was told by ██████████, ██████████ and SOS that their preference was to meet at Murujuga [Ref 8 November 2022 letter]. It was previously suggested that Hearson Cove on the Burrup Peninsula in the Pilbara was ██████████, ██████████ and SOS' preferred on-Country location to share culturally sensitive information with Woodside [February 2023]. Woodside has confirmed on a number of occasions its willingness to attend on-Country to consult with ██████████, ██████████ and SOS at that location.
- In the meeting on 12 September 2023, ██████████ indicated that the preferred location was Rosemary Island and that Woodside would need to make arrangements (including chartering a boat) in order for ██████████, ██████████ and SOS to share information. This was the first time that ██████████, ██████████ had requested to consult at Rosemary Island. Woodside agreed to investigate arrangements to meet on Rosemary Island and proceeded to contract a vessel, at short notice, to take 6 people to Rosemary Island for the meeting and offering ██████████ an opportunity to bring with her, 3 support people on the vessel. ██████████ provided a list of 8 people (including 3 lawyers and men, after indicating the island was a women's island and the story to be shared there was women's business) and demanded that Woodside, at short notice, charter a larger vessel to accommodate that additional number of people. While investigating arrangements for the meeting, it was made clear to Woodside from other Traditional Owner groups that Woodside did not have cultural permission or spiritual protection to convene a meeting on Rosemary Island. When that information was communicated to ██████████, ██████████ and SOS, ██████████ expressed disappointment. A compromise was initially agreed involving Woodside chartering a vessel to circumnavigate Rosemary Island so that ██████████ and SOS could provide information to Woodside. When Woodside confirmed it could arrange this at short notice, ██████████ withdrew the agreement and cancelled the meeting and declined to provide information to Woodside.
- During the 4 October 2023 meeting, ██████████ indicated there is broader community misalignment and difference on topics and information being presented by ██████████, ██████████ and SOS and ██████████ expressed some emotion in relation to discussing those differences with the various members of the community. From the meeting and the way the message was delivered, Woodside staff apprehended that there is potential for physical and verbal exchanges between community members. Woodside considers it is not appropriate for Woodside to consult further on these issues in circumstances where Woodside will be brought into community cultural disagreements. It is also not appropriate for Woodside to expose its employees to behaviours and situations where psychosocial safety is not guaranteed, and that put the health and safety of those employees at risk, including mental and emotional health and wellbeing.

Consultation capacities

- ██████████, ██████████ and SOS have been consulted in their individual traditional owner and eNGO capacities. Notably:
 - ██████████, ██████████ and SOS have been consulted in their capacities as eNGOs who have a fundamental objection to the Scarborough Project and seek to pause or stop the Scarborough project or "Stop Scarborough Gas" [Ref for example SOS website; 14 March 2023 meeting; 4 October 2023 meeting].
 - ██████████ indicated she is a Kuruma Mardudhunera woman and ██████████ has indicated she is a Mardudhunera woman. Woodside has consulted with the Kuruma and Mardudhunera people including through consultation with MAC, Wirrawandi Aboriginal Corporation (**WAC**), Ngarluma Aboriginal Corporation (**NAC**) and Robe River Aboriginal Corporations. Both ██████████ and ██████████ have been consulted in their capacities as Traditional Custodians of Murujuga in so far as their interests relate, in accordance with indigenous tradition, to spiritual and cultural heritage and values. Further, the results from an ethnographic heritage

assessment undertaken for the Scarborough Project development footprint identified no ethnographic sites, values or traditional interests relevant to this EP or the Scarborough Project [Ref MAC consultation]

- As to individual interests,
- Woodside has addressed in this EP, topics expressed to be of interest to ██████████ and ██████████. Controls that Woodside has either updated or implemented as a result of consultation with ██████████ and ██████████ have been discussed with them and their views have been provided on them.
- ██████████ has been invited to all consultation meetings and has been provided opportunity to consult. Despite this, she has not engaged in consultation in person since 25 July 2023 and, despite being invited, did not attend consultation meetings on 12 September 2023 or 4 and 5 October 2023. Woodside has made enquiries directly to ██████████ by email, phone calls and text messages and has sought confirmation from ██████████ and the lawyers Woodside understood were acting for ██████████. ██████████ has declined to attend meetings.
- During correspondence, in Court affidavits and at meetings with ██████████ and ██████████ (in so far as ██████████ attended those meetings), ██████████ and ██████████ have expressed a deep and emotional interest in topics they have covered. They have provided information to Woodside about “visions” that come to them individually [Ref for example 14 March 2023 and 12 September 2023 meetings], information that comes to them from ancestors from the grave [Ref for example 4 October 2023 meeting] messages that are communicated to them individually from Murujuga rocks [Ref for example 14 March 2023 meeting] and to their ability to listen and speak on behalf of all plants and animals [██████████ Affidavit 7 September 2023]. Stories about songlines have been communicated to Woodside as being “my stories” and songlines have been expressed as being personal, as expressed in consultation [for example 4 October 2023]. Songlines have also been expressed to Woodside as having been recent and individually held, rather than ancient, group songlines, passed down in community. For example, a whale songline was expressed to Woodside as having been recently created by ██████████ when she was doing certain activities at a recent visit to Rosemary Island [Ref for example 12 September 2023 and 4 October meetings 2023 – sensitive womans only information]. Information has been expressed along the lines of being “my story”, “my songline” [Ref 12 September 2023 and 4 October 2023 meetings].
- In circumstances where it has been expressed to Woodside that these stories and interests are deeply personal and personally emotionally connected to ██████████ and ██████████, they are interests that are individual. They have not been expressed by ██████████ and ██████████ as being stories or connections that are communal or are held by traditional owner groups. Indeed, other traditional owner groups consulted by Woodside have indicated a position to the effect that it is very unlikely that cultural stories and values can be known only to individuals within a community. This is consistent with the sentiment expressed in ██████████ statements from 2017 when she was on the Board of MAC to the effect that “MAC has been embraced by the community as the body for cultural knowledge and guidance which allows the community to speak with one spiritual and cultural voice and with strong cultural integrity... [A]dvice given by individuals ... may not reflect the current and more valid cultural leadership ... [of MAC]”. Ethnographic surveys undertaken by traditional owner groups, as well as continuing engagements with those groups, have similarly indicated there are no specific values and interests at risk of harm in the operational area or EMBA for this EP. In these circumstances, the interests conveyed by ██████████ and ██████████, while respected by Woodside appear to be individual interests and presented in an individual capacity, rather than interests held by a community.
- Consistent with the indications from other traditional owner groups, Woodside is not aware of any other individual interests of this nature (and no other individual First Nations persons have indicated to Woodside that they have any such individual or personal interests).
- Consistent with this position, ██████████, ██████████ and SOS have expressly stated to Woodside that their views and positions differ from that of MAC and other elders. In addition, Woodside has received communications, strong warnings and information from authorised traditional owner groups expressing a view that ██████████, ██████████ and SOS do not speak for them and ██████████, ██████████ and SOS views are not held by the communities.

Conduct in consultation

- The process of consultation has limits. It is a statutory obligation that must be understood in a practical and reasonable way so that it is capable of performance. It cannot be one that is incapable of being complied with within a reasonable time. The consultation scheme must operate in a way that a Titleholder will be able to, with reasonable diligence, discharge its obligation to consult. The consultation obligation is an obligation that must be capable of practical and reasonable discharge by the person upon whom it is imposed.¹ Consultation does not require consent². In carrying out consultation, Titleholders are not required to wait indefinitely for a response.³
- During consultation, ██████████, ██████████ and SOS have made serious statements including that Woodside has caused delays in meetings, has misrepresented information, is disrespectful, discriminatory and has breached protocols. In each instance, Woodside has expressed concern that ██████████, ██████████ and SOS have formed these perceptions of consultation, and Woodside has taken time to address and clarify the issue in each instance. Despite challenging circumstances, Woodside

¹ *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 at [136], [138], [89], [95]

² F2023L00998ES Explanatory Statement issued by the authority of the Minister for Resources OPGGS (E) Regulations page 28

³ F2023L00998ES Explanatory Statement issued by the authority of the Minister for Resources OPGGS (E) Regulations page 30

personnel have maintained professionalism and integrity in genuine efforts to consult with ██████████, ██████████ and SOS during all consultation efforts, which have been occurring since at least 2022.

- Woodside has demonstrated a genuine openness to consult, provide and listen to information. In most instances, meetings have opened and closed amicably but, during the progress of the meeting, Woodside employees have often been subjected to hostile, offensive language and behaviours, placing unacceptable strain on Woodside personnel. This includes recent demands to meet on Rosemary Island, where cultural safety concerns were raised by the recognised traditional custodians. Woodside does not consider these outcomes to be aligned with the consultation requirement. In circumstances where Woodside has fulfilled its obligations under reg 11A, Woodside does not consider it appropriate to continue to consult further with ██████████, ██████████ and SOS including because of these risks.
- Finally, Woodside has made clear to ██████████, ██████████ and SOS that consultation is not to be used by parties as a mechanism to stall and delay approvals [Ref: Woodside 17 April 2023 letter], especially in circumstances where parties (as in this instance) have publicly stated a fundamental objection to the Scarborough project and stated publicly an aim including one which is to stop or pause the Scarborough Project.

Consultation is complete

- Consultation under Reg 11A is complete because sufficient information, a reasonable period of time and reasonable opportunity have been provided to ██████████, ██████████ and SOS in their individual Traditional Owner and eNGO capacities.
- The fact that relevant persons have requested further consultation does not mean that Woodside has not met its obligations under reg 11A. This is underscored in the current circumstances where further consultation is not reasonable and is not required in order to comply with reg 11A:
 - persons being consulted have stated they have additional information they wish to share with Woodside for Woodside's EPs [Ref Federal Court proceedings] but then declined to share this information.
 - persons being consulted have stated that information has not yet been revealed to them, is not yet known to them, it will be revealed 'in time', but also they do not know when it will be revealed to or known by them (for instance where the wisdom of Murujuga rocks have not yet spoken to them; when animals have not yet provided information to them or where they at various times, receive information in visions) [Ref meetings on 14 March 2014; ██████████ Affidavits dated 17 August 2023; 12 September 2023]
 - persons have affirmed that information about certain matters can only be disclosed to people "born as biological female and living as a female in accordance with their beliefs and customary practices" [Ref Second ██████████ Affidavit 7 Sept para 12]
 - further consultation exposes Woodside employees to unacceptable risk – including psychosocial, health and safety risk.

In all of the circumstances, consultation under Regulation 11A has been completed and Woodside has met its obligations under Regulation 11A.

Summary of information provided and record of consultation:

- Woodside understands:
- ██████████ is a Karuma Mardudhunera woman and a traditional custodian of Murujuga
- ██████████ is a Mardudhunera woman and a traditional custodian of Murujuga
- Save Our Songlines is an organisation formed by ██████████ and ██████████.

Historical Engagement

2017 – September 2022

Woodside has engaged with the Ngarluma and Mardudhunera communities on the Scarborough project since 2018 through their representative organisations including Murujuga Aboriginal Corporation, Yaburara and Coastal Mardudhunera Aboriginal Corporation (MAC), Wirrawandi Aboriginal Corporation and Ngarluma Aboriginal Corporation.

Woodside understands ██████████ was a member of MAC since inception, was the ██████████ of MAC between 2016 and 2017 and was a board member of MAC until 11 February 2022, and took part in discussions between Woodside and MAC on the Scarborough Project. During these two-way engagements, in the three years leading up

to November 2021, Woodside was not made aware of any specific concerns of [REDACTED], [REDACTED], (Mardudhunera Traditional Owners) and [REDACTED] (Ngarluma Traditional Owner) around the Scarborough Project.

While a member of MAC, [REDACTED] expressed a view that MAC holds the key responsibility for the stewardship and management of the Land and Sea Country according to the Aboriginal Lore and Culture; MAC's work including collecting environmental and heritage records to assist with compiling data [building a library] relevant to Law and Culture on sacred sites, including 42 islands of the Dampier Archipelago; MAC has been embraced by the community as the body for cultural knowledge and guidance which allows the community to speak with one spiritual and cultural voice and with strong cultural integrity. This means that some decisions or advice given by individuals previously, may not reflect the current and more valid cultural leadership that governs today [Ref Opening Statement from [REDACTED], [REDACTED] Murujuga Aboriginal Corporation – Public Hearing, Perth – 20 April 2017].

The first time Woodside became aware of [REDACTED], [REDACTED] and SOS' concerns regarding the Scarborough Project was via a number of public statements on the Save Our Songlines websites and social media (November 2021).

After seeing the concerns, Woodside met or has attempted to meet with individuals involved in SOS to discuss the Scarborough project in other capacities and on numerous occasions, including:

- On 15 December 2021, Woodside held a meeting at the MAC office in Dampier with the MAC Board (including [REDACTED]) and Circle of Elders, to provide an overview of the Scarborough and Pluto Train 2 projects. (Evidence of this meeting supplied with the MAC correspondence in the Traditional Custodian part of this Table).
- In February 2022, [REDACTED] and [REDACTED] wrote to the (then) Federal Environment Minister requesting an assessment under s10 of the Aboriginal Torres Strait Islander Heritage Protection Act 1984 (Cth) regarding "threats to the Murujuga Aboriginal heritage posed by proposed Scarborough LNG..." (2). This letter cited potential damage to Murujuga rock art due to industrial activity on the Burrup Peninsula and climate change. The letter also claimed that members of MAC had been subject to a "gag clause"(3).
- On 21 March 2022, [REDACTED] and [REDACTED] sent an email addressed to the Woodside [REDACTED], requesting a meeting with Woodside on the morning of 21 March 2022
- On 24 March 2022, there was an attempted virtual meeting over Microsoft Teams between Woodside, [REDACTED], [REDACTED] and [REDACTED]. On the same day Woodside emailed [REDACTED], [REDACTED] and SOS:
- Woodside noted that despite its representatives being online and waiting for 35 minutes, the meeting did not proceed due to technical issues.
- Woodside advised that it remained keen to understand Traditional Custodian concerns, including those matters that [REDACTED], [REDACTED] and SOS have set out, and that Woodside remained available to meet.
- On 24 March 2022, [REDACTED], [REDACTED] and SOS also emailed Woodside to advise that:
 - They were waiting to join the virtual meeting but there was no response.
 - They were disappointed at this outcome and hoped to have a more formal meeting in times to come.
 - Emails exchanged later that day extended Woodside's offer to hold further meetings. By this stage, there had been four attempts by Woodside to meet and discuss issues with [REDACTED], [REDACTED] and SOS. This was in addition to the previous three years of consultation with [REDACTED] and [REDACTED] via MAC.
 - On 6 June 2022, some seven months after SOS had launched its public campaign on social media, [REDACTED], [REDACTED] and SOS wrote to the [REDACTED] and Board of Woodside regarding consultation on the NOPSEMA assessment of Scarborough offshore gas field development. The letter contained the following:
 - Industrialisation of our globally significant Murujuga cultural landscape is causing impacts on rock art through pollution, physical displacement of rock art which is highly significant within our ongoing system of Aboriginal Law and culture, damage to other heritage sites, and restriction of access to sites of cultural and spiritual significance. These impacts on our cultural heritage will all be further exacerbated by the Scarborough gas developments and related activities. After being preserved and respected for at least 50,000 years of continuous cultural and spiritual practice, Traditional Owners and Custodians are now seeing this degradation occur within our own lifetimes. As a result, industrial activity on the Burrup is already impacting our ability to practice cultural traditions and pass on our culture to future generations in accordance with our cultural obligations.

- We assert our rights to be consulted as 'relevant persons' in relation to cultural heritage impacts of the Scarborough gas development according to the OPGGS (E) regulations. [This relates to cultural values that are nationally protected as part of the *Dampier National Heritage Place* and values yet to be described as part of the proposed World Heritage Listing for the Burrup Peninsula and surrounds] (4)
- Given the lack of previous assessment of cultural heritage impacts and the significant uncertainties regarding these impacts a precautionary approach must be taken according to the ESD Principles in Section 3A of the EPBC Act. (5)
- Direct and indirect impacts on cultural heritage must be assessed now, and for all stages of the Scarborough development according to Section 527E of the Environmental Protection and Biodiversity Conservation (EPBC) Act and the EPBC Act Indirect Consequences Policy. (5)
- In order to comply with requirements to consult under the regulations, disclosure of certain information is required from Woodside.
- Woodside's own policy, the UNDRIP and other frameworks require that Traditional Owners are provided with the right of free, prior and informed consent regarding any cultural heritage impacts.
- Impacts to heritage values and other potential impacts associated with the Scarborough gas development must be understood and assessed with reference to the cultural practices, beliefs and customs and unique understanding of these issues held by Murujuga's traditional knowledge holders.
- The Murujuga Aboriginal Corporation does not represent the interests of Traditional Owners seeking to protect cultural heritage (6) and Woodside's limited consultation with MAC does not satisfy the requirement for free, prior and informed consent for cultural heritage impacts, or the requirements of 'relevant person' consultation according to the above regulations.
- Woodside notes that in the opening paragraph of this letter ██████████ and ██████████ state that they are Murujuga Elders, Traditional Owners, Traditional Custodians and members of the Murujuga Aboriginal Corporation (MAC). MAC was established to preserve and protect the land, heritage and culture of the Burrup and Maitland Industrial Estate and is made up of a Circle of Elders who hold cultural authority and consist of representation from the 5 language groups.
- Included with the correspondence was an open letter signed by several Traditional Custodians requesting (among other things) that further investment on project on Murujuga be withheld and that any further investments decisions on the Scarborough Project be paused. The letter was titled 'Open letter from Traditional Owners and Custodians of Murujuga concerning the proposed Woodside Scarborough gas development'.
- On 22 July 2022, Woodside responded to the 6 June letter sent by ██████████ and ██████████. The letter largely related to the Seismic Survey EP, but also stated that Woodside 'is open to receiving feedback and to discussing issues raised in relation to each of its Scarborough Environment Plans'.
- Throughout July and August 2022, Ngarluma and Yindjibarndi Foundation Ltd (NYFL) offered to engage ██████████ and ██████████ and to facilitate a series of up to three meetings between Woodside and ██████████ and ██████████ to discuss Scarborough and Pluto Train 2 project and activities. Woodside accepted this invitation, including outlining payment for ██████████ and ██████████ time. The proposed meeting did not progress because of a lack of response from ██████████ and ██████████.
- On 2 August 2022, Woodside wrote to NYFL accepting NYFL's offer to facilitate SOS meetings.
- On 26 September 2022, ██████████, ██████████ and Save Our Songlines emailed a letter to NOPSEMA regarding a number of Scarborough EPs, including this one:
 - ██████████, ██████████ and Save Our Songlines raised several issues relating to Woodside's consultation requirements under the Regulations.
 - ██████████, ██████████ and Save Our Songlines stated that they have functions interests and activities within the EMBA's of the Scarborough EPs (including this EP) which might be directly affected by the proposed activity.
 - ██████████, ██████████ and Save Our Songlines requested that NOPSEMA refrain from accepting the Scarborough EPs (not this EP) until Woodside had properly complied with Reg 11A in relation to their functions, interests and activities and in relation to the time provided for consultation.
 - ██████████, ██████████ and Save Our Songlines offered to provide to NOPSEMA, further information about their functions, interests and activities that may be affected by activities under the Scarborough EPs.
- Information to be shared by Save Our Songlines is to be treated with high sensitivity and confidentially (7).
- The letter stated that Woodside had not provided a "reasonable opportunity to provide our objections in relation to the Trunkline and Drilling EPs, and therefore cannot have responded to those objections". (8)

- ██████████ and ██████████ offered to share information about their functions, interests and activities regarding these EPs to NOPSEMA (9). This is an indication that as early as September 2022, ██████████ and ██████████ had information and “objections” to share about all Scarborough EPs which, despite Woodside providing ample opportunity, they had not shared with Woodside.
- On 29 September 2022, Woodside emailed ██████████, ██████████ and Save Our Songlines:
- Woodside requested a meeting to share information in relation to the Scarborough Gas Project. Woodside requested to hold this meeting prior to 10 October 2022.
- Woodside advised it welcomed the opportunity to meet to discuss the matters raised in the letters of 6 June 2022 and 29 September 2022, to share information in relation to the Scarborough Gas Project and demonstrate how items raised in the correspondence have been addressed in the relevant environment plans.
- Woodside proposed that the meeting would be attended by subject matter experts and project personnel as required to answer any questions.
- On 6 October 2022, Woodside followed up with ██████████, ██████████ and Save Our Songlines via email and phone / voicemail.
- On 7 October 2022, ██████████, ██████████ and Save Our Songlines responded to Woodside via phone to arrange a suitable date and time.
- On 7 October 2022, Woodside and ██████████, ██████████ and Save Our Songlines discussed arrangements via phone to meet on 11 October 2022.
- On 7 October 2022, ██████████ and Save Our Songlines contacted Woodside via phone to advise that ██████████ would be in touch to set up the meeting. ██████████ and Save Our Songlines could not confirm if the 11 October 2022 meeting was proceeding as planned.
- On 10 October 2022, Woodside emailed ██████████, ██████████ and Save Our Songlines noting it had not received any further contact or confirmation of the 11 October 2022 consultation meeting. Woodside advised it was still ready and available to proceed with a meeting.
- On 11 October 2022, Woodside flew personnel to Karratha to attend the meeting with ██████████, ██████████ and SOS and followed up with ██████████, ██████████ and Save Our Songlines via phone and SMS.
- On 11 October 2022, ██████████, ██████████ and Save Our Songlines advised Woodside via SMS that it was awaiting confirmation from its lawyers regarding the proposed meeting.
- Woodside did not receive further contact and, despite Woodside being ready in Karratha for the meeting as agreed, this meeting did not proceed.
- None of ██████████, ██████████, or SOS provided an explanation to Woodside as to their non-attendance at this meeting.
- On 8 November 2022, ██████████, ██████████ and Save Our Songlines sent a letter to Woodside in relation to the Scarborough gas project EP meetings request including this EP.
- ██████████, ██████████ and Save Our Songlines acknowledged Woodside’s correspondence of 29 September 2022 and 6 October 2022 in respect of Woodside’s consultation with relevant persons for activities related to the Scarborough Project and associated EPs. Acknowledging their understanding that Woodside’s correspondence encompassed all activities with the Scarborough Gas Project including Seismic, D&C, SITI and State EPs and of the forthcoming Subsea EP.
- ██████████, ██████████ and Save Our Songlines reiterated that they were relevant persons for activities relating to these EPs and acknowledged the invitation to meeting to discuss the EPs and the answer any questions they may have.(4)
- ██████████, ██████████ and Save Our Songlines stated that it was unfortunate that they had been unavailable to meet as requested, however they welcomed the opportunity to discuss their letters dated 6 June 2022 and 26 September 2022 and their concerns on the impacts and risks of the above activities. They acknowledged that Woodside may have an internal target date but that it was generally not practicable to arrange meetings with less than 4 weeks’ notice and requested that Woodside provide sufficient notice for any meeting opportunities.
- ██████████, ██████████ and Save Our Songlines offered several dates on which they were available to meet and shared their preference to meet on Murujuga.
- ██████████ and ██████████ wrote to Woodside, stating “Unfortunately we have been unavailable to meet as requested...” but that “we acknowledge your invitation to meet... to discuss the Scarborough EPs and to answer any questions we may have” and that ██████████ and ██████████ “welcome the opportunity to discuss our letters of 6 June 2022 and 26 September 2022 and our concerns as to the impacts and risks of the above activities” (being the Seismic EP, Trunkline EP, Drilling EP and SURF EP). ██████████ and ██████████ therefore represented they were ready and able to discuss all Scarborough EPs. ██████████ and ██████████ also requested 4 weeks notice for meetings, and proposed a meeting in late November 2022.
- On 22 November 2022, Woodside emailed ██████████, ██████████ and Save Our Songlines:

- Woodside acknowledged the letter addressed to Woodside on 8 November 2022 that was passed on via NOPSEMA.
- Woodside confirmed its availability to meet in Karratha on Tuesday 29 November 2022 or a date suitable to [REDACTED], [REDACTED] and SOS.
- On 24 November 2022, [REDACTED], [REDACTED] and Save Our Songlines wrote a letter to Woodside regarding the proposed meeting date. Despite recording in their correspondence on 26 September 2022 and 8 November 2022 that they had information and “objections” they were ready to share regarding the Scarborough Project, [REDACTED] and [REDACTED] now stated they would not proceed with consultation until there was clarification around the scope and purpose of the meeting and until Woodside confirmed their status as “relevant persons” and Woodside provided requested information. [REDACTED] and [REDACTED] stated “We will not be in a position to provide substantive information about our functions, interests and activities at the first meeting you have proposed”, but still committed to discussing all Scarborough EPs. In particular [REDACTED], [REDACTED] and Save Our Songlines sought confirmation on the following items:
 - Acknowledgement from Woodside as to relevant person status for all EPs associated with the Scarborough Gas Project (4).
 - Provision of necessary information about the proposed activities and the anticipated impacts to allow for informed comment and input to be made as part of the relevant person consultation process. As a minimum they requested draft copies of the Scarborough EPs and associated technical and other information and any studies, research or other information held by Woodside relating to:
 - cultural values (not limited to ethnographic sites) including marine fauna of cultural significance (5)
 - impacts and risks of industrial pollution from gas processing on cultural heritage at Murujuga (2)
 - Purpose of meeting, indicating they would be happy to meet when information requested in points above was received and they understood Woodside’s assessment of them as relevant persons (4). They indicated that the initial meeting would be for introductions and an opportunity for [REDACTED], [REDACTED] and Save Our Songlines to ask questions and obtain information they require to determine the consequences, impacts and risks of the proposed activities so that consultation could commence. The issue of protocols around gender restricted information was raised and they stated that they would not be able to provide substantive information about their functions, interests and activities at the first meeting proposed (7).
- On 2 December 2022, Woodside emailed [REDACTED], [REDACTED] and Save Our Songlines and included responses to address the items raised on 24 November 2022, where appropriate. Woodside reiterated its availability to meet and provided an option for any date in December 2022. [REDACTED], [REDACTED] and Save Our Songlines did not respond to this offer.
- Woodside reiterated that it is open to continue consulting, receiving feedback and discussing concerns in relation to Woodside’s Scarborough Environment Plans (EPs). Consultation is ongoing and feedback will continue to be accepted throughout the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance, while the EP remains in force.(4)
- Woodside confirmed its arrangements to meet and consult that have been ongoing since November 2021, and it remains open to continue consulting in relation to the Scarborough EPs.(4)
- Woodside advised it is available to meet with [REDACTED], [REDACTED] and Save Our Songlines on any date in December 2022 in Karratha. Woodside requested confirmation of availability to meet by 9 December 2022. (4)
- Woodside again provided a link to the Consultation Information Sheets for all Scarborough EPs, which had been available on Woodside’s website since September 2022, to assist in preparing for the meeting.
- Woodside noted there has been ample time and information available to inform feedback on our proposed Scarborough EPs. Woodside requested [REDACTED], [REDACTED] and Save Our Songlines provide feedback no later than at the proposed meeting in December 2022 (8).
- Woodside noted the letter dated 24 November 2022 made reference to arrangements which would enable [REDACTED], [REDACTED] Save Our Songlines to share relevant information such as matters that are restricted to women or men only. Woodside requested for [REDACTED], [REDACTED] and Save Our Songlines to confirm what arrangements are required to enable them to share this information by 9 December 2022. (7)
- Despite Woodside being available to meet any time in December and the date of December 9 being suggested, there was no response from [REDACTED], [REDACTED] and Save Our Songlines so a meeting could not proceed (8).
- On 4 January 2023, Woodside emailed [REDACTED], [REDACTED] and Save Our Songlines to follow-up on its meeting request Woodside reiterated its availability to meet and provided an option for any date in January 2023.
- On 13 January 2023, [REDACTED], [REDACTED] and Save Our Songlines emailed Woodside:

- ██████████, ██████████ and Save Our Songlines confirmed it would like to meet with Woodside, but reiterated its requests contained within its 24 November 2022 correspondence.
- ██████████, ██████████ and Save Our Songlines stated it can advise of its availability for a meeting once the information requested above is provided.
- On 19 January 2023, Woodside emailed ██████████, ██████████ and Save Our Songlines. Woodside included the following responses to address the items raised, where appropriate:
 1. Woodside reiterated it is open to continue consulting with ██████████, ██████████ and Save Our Songlines, receiving feedback and discussing their concerns in relation to Woodside's Scarborough Environment Plans (EPs) in Commonwealth and State waters (collectively referred to as the Scarborough EPs). (4)
 2. That consultation on the Scarborough EPs began when Woodside provided ██████████, ██████████ and Save Our Songlines with consultation information on the Scarborough EPs. (8) Information on the Seismic EP has been provided directly to ██████████, ██████████ and SOS since at least July 2022 [Ref Woodside letter 22 July 2022]
 3. That Woodside has made every effort to meet with ██████████, ██████████ and Save Our Songlines to understand their claim of relevance and to develop a comprehensive understanding of potential impacts to their functions, interests or activities. (8)
 4. That it has been trying to arrange a meeting with ██████████, ██████████ and Save Our Songlines since November 2021 to discuss the Scarborough EPs, including a representative travelling to Karratha for a planned meeting on 11 October 2022 and making representatives available for a meeting on 29 November 2022. (8)
 5. Woodside reiterated its availability to meet and provided an option for any date in January or early February 2023 (8).
 - On 8 February 2023, Woodside was copied into correspondence sent from the Environmental Defender's Office (EDO) to the WA State Minister for Mines and Petroleum regarding a separate Environment Plan under State Regulations. Copies of previous correspondence between Woodside and ██████████, ██████████ and Save Our Songlines were attached to the email. This included a detailed response from Woodside dated 5 January 2023 which responded to claims and objections made in relation to spiritual and cultural values.
 - On 8 February 2023, the EDO (acting on behalf of SOS) emailed Woodside and stated that the earliest its clients would be able to meet would be the weeks commencing 13 and 20 March 2023.
 - On 15 February 2023, Woodside emailed ██████████, ██████████ and Save Our Songlines. Woodside reiterated its availability to meet and, based on dates suggested within the 8 February correspondence, provided ██████████, ██████████ and Save Our Songlines with confirmation it was available to meet on the suggested dates in March 2023. (1)
 - On 24 February 2023 Woodside sent ██████████, ██████████ and Save Our Songlines a follow up email. Woodside reiterated its availability to meet.
 - On 24 February 2023 the EDO (acting on behalf of ██████████, ██████████ and Save Our Songlines) emailed Woodside and advised its client was available to meet on 13 and 14 March 2023. EDO requested that Woodside nominate a female staff member who could receive "highly sensitive" cultural information at the meeting, which Woodside took to mean that ██████████, ██████████ and Save our Songlines intended to share cultural information at the meeting.
 - On 28 February 2023 the EDO (acting on behalf of ██████████, ██████████ and Save Our Songlines) emailed Woodside to follow up on the request to secure a meeting.
 - On 1 March 2023 Woodside emailed ██████████, ██████████ and Save Our Songlines (and CC to EDO) to propose the meeting time and location for 14 March 2023 Woodside also nominated a female staff member to receive cultural information (7).
 - On 7 March 2023 the EDO (acting on behalf of ██████████, ██████████ and Save Our Songlines) emailed Woodside to confirm the meeting time and location for 14 March 2023.
 - On 8 March 2023 Woodside emailed the EDO, ██████████, ██████████ and Save Our Songlines with a proposed agenda for the 14 March 2023 meeting and requested they advise if there were any particular issues they wished to discuss during the meeting. (8)
 - On 10 March 2023, Woodside emailed EDO, ██████████, ██████████ and Save Our Songlines with further logistic and meeting protocol details for the proposed meeting on 14 March 2023. The agreed meeting protocol, based on a discussion between Woodside and ██████████, included that there would be no audio or video recording of the meeting to respect privacy, safety and cultural values (7).

- **MEETING:** On 14 March 2023 (summarised in 16 March 2023 email), Woodside met with EDO, [REDACTED], [REDACTED] and Save Our Songlines on-country and discussed the proposed activity. Despite Woodside's continued efforts and offers to meet since at least September 2022, this meeting represented the first time Woodside and [REDACTED], [REDACTED] and Save Our Songlines had met in person since the establishment of Save Our Songlines in November 2021. (4, 8)

Woodside provided an overview of the Scarborough activities (Seismic EP, Subsea EP, D&C EP, SITI EP (Cth and State)).

Feedback from [REDACTED], [REDACTED] and Save Our Songlines (at the on-Country meeting):

- [REDACTED], [REDACTED] and Save Our Songlines told Woodside that the proposed activities gave them a sick feeling and the activities should be stopped (10). [REDACTED], [REDACTED] and Save Our Songlines also informed Woodside that, in their view, there is nothing that could be done by Woodside to progress with the proposed Scarborough activities in a way that could minimise impact to [REDACTED], [REDACTED] and Save Our Songlines' functions, activities and interests or that would be respectful to its culture and country (10). Woodside Response (at the on-Country meeting):

- Woodside agreed not to share cultural details which were shared at the 14 March 2023 meeting (7).

- [REDACTED] and [REDACTED] noted there is information that is not yet known to them (for instance, wisdom that Murujuga rocks have for the past and future) (9).

- On 16 March 2023, Woodside emailed EDO, [REDACTED], [REDACTED] and Save Our Songlines to advise that:

- It appreciated the request for Woodside to attend the meeting with open hearts, deep listening and respectful conversation and that it would intend to continue this approach to engagement.
- Woodside's consultation process is ongoing through the environmental approval process and when an activity is being performed and that Woodside looks forward to continuing its discussions with [REDACTED], [REDACTED] and Save Our Songlines in the future (8).
- Woodside is open to consulting further with [REDACTED], [REDACTED] and Save Our Songlines on the proposed Scarborough activities and are open to the continuing engagements regarding the Scarborough activities (8). Woodside noted this was notwithstanding comments made at the meeting by [REDACTED] and [REDACTED] that the proposed activities gave them a 'sick feeling' and should be stopped.
- Woodside provided responses to specific actions taken during the meeting, including:
- A request for Woodside to provide background information on the "why" behind the Scarborough activities. Woodside responded that the Scarborough Gas Project helps play a role in the global energy transition, including helping neighbouring Asian countries take action on emissions reduction and advised there is further information on Woodside's website.
- A request for Woodside to check with MAC whether MAC's ethnographic survey can be shared with [REDACTED], [REDACTED] and Save Our Songlines. Woodside advised that the ethnographic survey is held by MAC and Woodside does not have permission to share it (3).
- A request for Woodside to confirm whether fracking would occur in relation to the Scarborough activities. Woodside confirmed that no fracking would be undertaken as part of the proposed Scarborough activities (1).

• On 17 March 2023, Woodside emailed [REDACTED] and [REDACTED] and Save Our Songlines acknowledging SAVE OUR SONGLINES's correspondence to Woodside dated 6 June 2022, 26 September 2022 and 24 November 2022 and the discussion with Woodside on 14 March 2023. Woodside included an attachment containing responses to relevant objections, clai and additional information raised in the correspondence relating to the activities the subject of this EP. Woodside stated:

- Woodside has conducted an ethnographic survey to support the development of EPs for the Scarborough Project which have not identified any heritage places, objects or values which will be impacted by the activities covered by the this EP.
- None of Woodside's agreements with Traditional Custodians include "gag clauses" or restrictions on voicing opinions on our projects.
- Re the principles of FPIC Woodside is guided by UNDRIP under our Indigenous Communities Policy and has consulted representative institutions including MAC for a number of years.
- Woodside has made several attempts since November 2021 to engage with [REDACTED], [REDACTED] and Save Our Songlines, with a meeting held on Tuesday 14 March 2023. Woodside is open to receiving feedback.
- Re cultural heritage impacts, concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Seismic EP. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the Seismic EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for this EP but may be evaluated in other Scarborough EPs as appropriate.

- Re impacts on rock art through pollution, emissions from the activities covered by the Seismic EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. The activities covered by the Seismic EP are located ~374 km away from Murujuga.
- Re the proposed removal of rock art from the Perdaman site, Woodside stated it is not appropriate for Woodside's EPs to address or seek to regulate the activities of third parties progressing separate projects.
- Woodside has resourced Traditional Custodian representative institutions to access relevant information and independent expert advice so that they are enabled to provide informed and considered feedback on the broader Scarborough activities.
- A number of documents containing cultural heritage information, including heritage assessments, contain the intellectual property of Traditional Custodians or sensitive information that may be culturally restricted. For these reasons, Woodside does not disclose this information. This information is held by representative institutions and may be disclosed by them where they consider it appropriate to do so. The Scarborough Project Cultural Heritage Management Plan is a publicly available document and can be found on Woodside's website.
- Woodside continues to consult with MAC on all relevant aspects of this EP prior to and during the execution of activities.
- Re impacts and risks on Aboriginal heritage sites on and around Murujuga, Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by Scarborough activities. These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the Seismic EP.
- Woodside considers the time it has provided to consider information prior to meetings to be more than suitable to inform SAVE OUR SONGLINES's feedback on Woodside's proposed Scarborough EPs.
- We confirm as per Woodside's ongoing consultation approach, feedback and comments received continue to be assessed and responded to, as required, through the life of an EP, including during EP assessment and throughout the duration of the accepted EP, in accordance with the intended outcome of consultation.
 - On 24 March 2023, the EDO (acting on behalf of ██████████ ██████████ and Save Our Songlines) provided a letter to Woodside which copied NOPSEMA, DMIRS and the WA Minister for Mines and Petroleum:
 - The letter acknowledged that Woodside had provided information on all relevant Scarborough EPs (Seismic, Drilling, SITI and Subsea), and confirmed that ██████████ ██████████ and ██████████ raised "particular concerns about the impacts that underwater activities that form part of the EP activities might have on their functions, interests and activities". This confirmed that the parties were consulting on all EPs at this stage.
 - The letter detailed a response to the 14 March 2023 meeting and Woodside's 16 March 2023 email, and covered the range of Scarborough EPs (Seismic, D&C, SITI, Subsea and State EP) , including this proposed activity. The EDO noted its client's concerns relating to:
 - The summary of the meeting, stating the functions, interests and activities of their client were distinct from those of Murujuga Aboriginal Corporation and that their stories were not told as a part of any consultation with MAC (6). The raised concerns about impact of underwater activities, impacts related to greenhouse gas and Murujuga industrialisation.
 - Clarification of its client's position, that Woodside had mischaracterised their clients position. Their view is that Woodside should not undertake the Scarborough Gas Project because of the harm it will cause and that is different to the conclusion that there is 'nothing that can be done' to minimise impacts or be respectful to our clients, their culture and their country (10) Their clients regard genuine consultation on the proposed EP activities an important demonstration of their respect for their functions, interests and activities. The letters assert that they consider that the consultation process has just commenced (11).
 - Communication of relevant person status – the EDO stated that their clients should be recognised as relevant persons individually and not only Save Our Songlines, the foundation their clients founded.(4)
 - Acknowledgement of response to questions arising at the meeting of 14 March 2023 (1), that Woodside had followed up their requests and provided a link to Woodside's publicly available website and advised that the ethnographic survey was held by MAC and Woodside did not have permission to share it.(12)
 - The letter noted that the EDO's clients would review the consultation information provided, and that it anticipated its clients would require approximately six weeks to do this (8).
 - The letter requested Woodside not submit the draft environment plan until consultation was complete.

- On 28 March 2023 Woodside emailed the EDO, ██████████, ██████████ and Save Our Songlines (CC to NOPSEMA) in response to the 24 March 2023 letter. Woodside reiterated its responses to topics raised during the meeting and in previous correspondence, relevant to the proposed activity. The response included the following responses which are summarised as follows:

In regards to additional or new information:

- Woodside advised it has a process in place for the life of an EP that allows the EP to be updated to include additional or new information or feedback that is received after an EP is submitted. This is done through a "Management of Knowledge" process. This means that feedback or information provide in future meetings can still be taken into account and, where appropriate, can be incorporated in the EP during the life of the activity.
- Woodside advised that following the meeting, based on the information provided, no updates were required to the EP via the Management of Knowledge process.
- In regards to Functions, interests and activities
- Woodside acknowledged that it had been advised that ██████████, ██████████ and Save our Songlines' functions interests and activities are distinct from those of MAC and that it was interested to learn about this further (6).
- In response to a request for the ethnographic survey undertaken by MAC, Woodside reiterated that it has no authority to provide this information. Given ██████████ previous role with MAC at the time the ethnographic survey was being undertaken, Woodside suggested that ██████████ may have contacts at MAC to request a copy of that survey (12).
- Woodside advised that as to ██████████, ██████████ and Save Our Songlines' functions, interests and activities , it continues to invite these to be shared with Woodside so it can consider the likely impacts and risks of the EP activities on these functions, interests and activities and what Woodside can do to lessen or avoid those impacts (8).
- Woodside confirmed that as ██████████, ██████████ and Save Our Songlines' were not prepared to share some information with Woodside, it remains open to hearing from them when this is known, and it is ready to be shared (8, 9).
- In regards to minimising impacts to functions, interests and activities, Woodside reshaped its interpretation of the take-aways from the meeting in relation to underwater activities, Greenhouse gas emissions and industrialisation of Murujuga (2)
- In the meeting, Woodside provided an overview of the Scarborough Project and potential impacts of activities on whales (13).
- Emissions from the activities covered by the Commonwealth EPs are of a scale that no credible impact pathway to their onshore cultural interests is foreseen. This has been the subject of separate correspondence (2).
- In relation to the detail of the EPs and information accessed and provided, the meeting provided an overview of the Scarborough Project and followed volumes of previous correspondence on the Scarborough Project. Previous correspondence indicated that a large volume of information on the Scarborough Project had been accessed, read and considered. The correspondence showed an informed and thorough understanding of the various Scarborough activities and the Scarborough Project. (8, 9)
- In relation to Consultation in general (8), Woodside advised it has continued to consult with ██████████, ██████████ and Save Our Songlines' and continues to invite further consultation.
- In relation to Relevant persons. (4), Woodside advised that the Commonwealth approval process requires Woodside to consult with "relevant persons".
- Woodside has previously explained the approval process relating to the concept of "relevant persons" and noted that, at the relevant time consultations are included under a category of "relevant persons" in EPs. Woodside generally applies this category at a stage when they are trying to understand more about a person's functions, interests and activities and also the impacts of Woodside's activities on them.
- Woodside reiterated that there is no need for it to categorise persons as relevant in order to consult with them.
- In relation to Ongoing consultation (4), Woodside advised that once an EP is accepted, Woodside continues ongoing consultations with relevant persons. Is open to continuing consultation to understand how the proposed Commonwealth EP activities relevantly affect ██████████, ██████████ and Save Our Songlines.
- In relation to Further consultation (8, 9), Woodside noted that ██████████, ██████████ and Save Our Songlines' correspondence, it would like to organise another meeting and will require approximately six weeks to read into materials and prepare for a meeting.
- Woodside requested for ██████████, ██████████ and Save Our Songlines' to advise its preferred times for the next meeting, noting the time taken to arrange the previous meeting.

- Woodside advised it is available to meet in the week commencing 8 May 2023 or earlier.
- The agreed meeting protocol was shared again, including there being no audio or visual recording of meetings.
- On 29 March 2023, the EDO responded acknowledging receipt of Woodside's email, noted the invitation for further consultation and advised it was seeking instructions and would respond in due course.
- On 6 April 2023, the EDO sent a letter to NOPSEMA and copied Woodside with a subject of "Relevant interested person" consultation requirements – Scarborough Trunkline Installation 4D B1 Marine Seismic Survey Environment Plan (sic)". The letter suggests that consultation with the EDO's clients ██████, ██████ and Save Our Songlines (SOS) has not been completed and therefore the Scarborough 4DMSS Seismic EP should not be accepted.
- On 17 April 2023, Woodside responded by email to a letter from the EDO dated 6 April 2023 addressed to NOPSEMA and copied to Woodside. Woodside stated:
 - The letter sent by EDO dated 6 April 2023 suggests that consultation with the EDO's clients ██████ and ██████ and Save Our Songlines (SOS) has not been completed and therefore the Scarborough 4DMSS Seismic EP should not be accepted by NOPSEMA (8).
 - Woodside provided notes giving additional context in relation to items raised in the letter, including in relation to Woodside's repeated and protracted attempts to meet, engage and consult with ██████ and ██████ and SOS on the Scarborough Project, including the Scarborough 4DMSS Seismic EP (8).
 - Woodside confirmed the Scarborough 4DMSS Seismic EP was submitted for approval on the grounds it met the regulations and that the underpinning consultation effort is documented within the EP, demonstrating provision of sufficient information, time and opportunity to consult over an extended period (8).
 - Woodside reiterated the process for consultation remains open post EP approval and that it has consistently offered an open invitation to ██████ and ██████ and SOS to provide feedback to allow Woodside to consider the potential impacts and risks of the activities on functions, interests and activities and to provide input on things Woodside can do to mitigate those potential impacts and risks. (8)
 - An attachment of 5 pages sent with this response to NOPSEMA sets out the history of Woodside's extensive engagements with ██████ and ██████ and SOS. It states that since June 2018, Woodside has undertaken 82 substantial engagements relating to the Scarborough Project including 32 meetings with Traditional Custodians and their representatives (8).
 - The letter went on to provide further context and highlighted relevant engagements with ██████ and ██████ and SOS, and stated Woodside's position i.e. having regard to all of the circumstances of the consultation undertaken with ██████ and ██████ and SOS, and in light of the concepts of "reasonable time", "reasonable diligence", a consultation obligation that "must be capable of practical and reasonable discharge ... that must be capable of performance", NOPSEMA can be reasonably satisfied that an appropriate level of consultation has taken place with ██████ and ██████ and SOS (8).
 - Woodside also outlined details about correspondence and the opportunities and invitations Woodside has attempted to provide for consultation to occur and why these have not occurred (8).
 - Woodside closed the letter by stating Woodside would be pleased to discuss the notes contained in this letter and the issues raised in the Letter from EDO with NOPSEMA.
- On 8 May 2023, the EDO emailed Woodside to advise they had not had any response to date, and were writing again to enquire whether Woodside wished to propose dates that can put to their clients for consultation regarding another Scarborough EP.
- On 9 May 2023, Woodside emailed ██████, ██████, and Save Our Songlines via the EDO reiterating Woodside's willingness to engage in ongoing consultation on this and other Scarborough EPs; On proposed meeting dates in May, noting that Woodside was awaiting response on ██████, ██████ and Save our Songlines availability and that Woodside was open to meeting either on country or remotely, noted draft guidance from NOPSEMA regarding Managing gender-restricted information, and included a draft agenda (8).
- On 9 May 2023, Woodside emailed ██████, ██████ and Save Our Songlines, with respect to the SITI EP and included responses to relevant objections (some of which are broadly applicable to the Scarborough Project including this activity), claims and additional information raised on 6 June 2022, 26 September 2022 and 24 November 2022:
- Woodside confirmed it has conducted an ethnographic survey to support the development of EPs for the Scarborough Project (Mott 2019, UWA 2021, McDonald and Phillips 2021, Nutley 2022a and 2022b). These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the SITI EP. An ethnographic survey determines the cultural values which are associated with a particular area, feature or object. Representatives from the Mardudhunera, Ngarluma, Yaburara, Yindjibarndi and Wong-Goo-Tt-Oo Peoples—all five Indigenous groups represented by MAC—participated in these surveys

(Mott 2019, McDonald and Phillips 2021). Participants were not restricted in the types of heritage or other values they were encouraged to identify, but typical results from surveys of this nature might include songlines, ceremonial places such as 'thalu' sites for managing environmental resources, or places where activities such as birthing, initiation or other significant activities are performed. (5, 6)

- Woodside advised Archaeological assessments have been made over the ancient landscape, being the extent of the continental shelf which was previously exposed during human occupation. This includes an Australian-first assessment of the archaeological perspective along the trunkline route conducted with the support and consultation of Traditional Custodians (UWA 2021). An executive summary is available on Woodside's website at <https://www.woodside.com/docs/default-source/sustainability-documents/indigenous-peoples/cultural-heritage/scarborough-pipeline-cultural-heritage-assessment-exec-summary.pdf> (5).
- Woodside advised it has had all of its submerged heritage work assessed by an expert underwater archaeologist for gaps in our processes (Nutley 2022a), as well as a review of Side Scan Sonar data to confirm whether archaeological sites could be identified on the seabed (Nutley 2022b). (5)
- Woodside advised that Section 4.9.1 of the SITI EP includes a summary of these assessments. The assessments include the relevant areas sufficient to assess the cultural values of the Operational Area for this EP. (5)
- Woodside confirmed that none of Woodside's agreements with Traditional Custodians include "gag clauses" or restrictions on voicing opinions on its projects. Woodside has supported Traditional Custodian representative institutions to access relevant information and independent expert advice so that they are enabled to provide informed and considered feedback on the Scarborough project. (3)
- Woodside advised that the principles of Free, Prior and Informed Consent (FPIC) are based in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) where it is envisaged as a communal right of Indigenous communities and secured through consultation with representative institutions utilising traditional decision-making mechanism such as deferring to MAC's Circle of Elders. Woodside is guided by UNDRIP under its First Nations Communities Policy and has consulted representative institutions including MAC for a number of years (6).
- Woodside confirmed it has made several attempts since November 2021 to engage with Save Our Songlines, [REDACTED] and [REDACTED], with a meeting held on Tuesday 14 March 2023. Woodside confirmed that Woodside is open to receiving feedback on the SITI EP (8).
- Woodside confirmed that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the SITI EP (2). This EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program (2, 5).
- Woodside advised the proposed Petroleum Activities Program is outside of the National Heritage Place and the anticipated boundary of the Murujuga Cultural Landscape World Heritage Property (2).
- Woodside confirmed the extraction of Scarborough gas for onshore processing is not within the scope of the activity described in this EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for this EP but may be evaluated in other Scarborough EPs as appropriate (2).
- Woodside confirmed emissions from the activities covered by this EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. Woodside advised that no rock art will be displaced as a result of the Scarborough Project (2).
- The activities covered by this EP are located in Commonwealth waters and will have no impact on access to sites of cultural and spiritual significance (2).
- Woodside advised it has resourced Traditional Custodian representative institutions to access relevant information and independent expert advice so that they are enabled to provide informed and considered feedback on the broader Scarborough activities. A number of documents containing cultural heritage information, including heritage assessments, contain the intellectual property of Traditional Custodians or sensitive information that may be culturally restricted. For these reasons, Woodside does not disclose this information. This information is held by representative institutions and may be disclosed by them where they consider in appropriate to do so. (5)
- Woodside provided a link to the Scarborough Project Cultural Heritage Management Plan which is a publicly available document and can be found at: https://www.woodside.com/docs/default-source/our-business---documents-and-files/burrup-hub---documents-and-files/scarborough---documents-and-files/scarborough-cultural-heritage-management-plan.pdf?sfvrsn=162e353a_3 (3)
- Woodside advised it continues to consult with MAC on all relevant aspects of this EP prior to and during the execution of activities. (1)
- Woodside advised it considers the adequate time and information it has provided, including the meeting on Tuesday 14 March 2023, to be more than suitable to inform feedback on Woodside's proposed Scarborough EPs (8, 9).

- Woodside confirmed that as per Woodside's ongoing consultation approach, feedback and comments received continue to be assessed and responded to, as required, through the life of an EP, including during EP assessment and throughout the duration of the accepted EP, in accordance with the intended outcome of consultation (8, 9).
- Woodside reiterated the consultation information sheet has been available on Woodside's website since August 2021 and invited feedback on the proposed activities to be provided before 30 September 2021. Revision 1 of the SITI EP has been available on the NOPSEMA website since 13 January 2022. Woodside re-provided links to both documents (8, 9).
- On 10 May 2023, the EDO (acting on behalf of ██████, ██████, and Save Our Songlines) emailed Woodside to query the date of previous correspondence.
- On 15 May 2023, Woodside emailed the EDO confirming that the May 2023 correspondence refers to emails dated 9 May 2023 with the subject line "RE: Scarborough Environment Plans – Consultation.
- On 1 June 2023, the EDO emailed Woodside confirming ██████, ██████, and Save Our Songlines were available to meet in Karratha on Tuesday, 13 June 2023 (8).
- On 6 June 2023, Woodside emailed ██████, ██████, and Save Our Songlines. Acknowledging and in response to the Save our Songlines correspondence of 6 June 2022, 26 September 2022, 24 November 2022, correspondence via EDO of 6 April 2023, 18 April 2023 and during meeting on 14 March 2023, Woodside confirmed:
 - Ethnographic surveys have been carried out to support EP development (and the EP updated to reflect this), with surveys not identifying any heritage places, objects or values which will be impacted by any of the activities covered by the D&C EP (5)
 - None of Woodside's agreements with Traditional Custodians include "gag clauses" or restrictions on voicing opinions on our projects. Woodside has supported Traditional Custodian representative institutions to access relevant information and independent expert advice so that they are enabled to provide informed and considered feedback on the Scarborough project (3).
 - The principles of Free, Prior and Informed Consent (FPIC) are based in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) where it is envisaged as a communal right of Indigenous communities and secured through consultation with representative institutions utilising traditional decision-making mechanisms such as deferring to MAC's Circle of Elders. Woodside is guided by UNDRIP under our Indigenous Communities Policy and has consulted representative institutions including MAC for a number of years (6).
 - Woodside has made several attempts since November 2021 to engage with Save Our Songlines, with a meeting held on Tuesday 14 March 2023. We confirm that Woodside is open to receiving feedback and to discussing issues raised in relation to the D&C EP. As per Woodside's ongoing consultation approach, feedback and comments received continue to be assessed and responded to, as required, through the life of an EP, including during EP assessment and throughout the duration of the accepted EP, in accordance with the intended outcome of consultation. (8)
 - The D&C EP assesses both direct and indirect impacts and risks associated with the PAP and is outside the National Heritage Place and anticipated boundary of the Murujuga Cultural Landscape World Heritage Property (5).
 - Emissions from the activities covered by the D&C EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. No rock art will be displaced as a result of the Scarborough Project and damage to heritage sites is not anticipated as a result of the PAP (2, 5)
 - The activities covered by the D&C EP are located ~430km away from Murujuga and will have no impact on access to sites of cultural and spiritual significance. (2, 5)
 - Woodside has resourced Traditional Custodian representative institutions to access relevant information and independent expert advice so that they are enabled to provide informed and considered feedback on the broader Scarborough activities. A number of documents containing cultural heritage information, including heritage assessments, contain the intellectual property of Traditional Custodians or sensitive information that may be culturally restricted. For these reasons, Woodside does not disclose this information. This information is held by representative institutions and may be disclosed by them where they consider in appropriate to do so (12)
 - Woodside shared a link to the publicly available Scarborough Project Cultural Heritage Management Plan (12)
 - In response to the Save our Songlines letter dated 26 September 2022, Woodside referred to responses provided to address claims in the 6 June 2022 Save our Songlines letter and also confirmed Woodside has undertaken an ethnographic survey to identify cultural heritage that may be impacted by Scarborough activities. This work has not identified any heritage places, objects or values which will be impacted by the activities covered by the D&C EP (5).

- In response to the Save our Songlines letter dated 24 November 2022, Woodside confirmed it considers the time and information it has provided, including the meeting on Tuesday 14 March 2023, to be more than suitable to inform Save our Songlines feedback on proposed Scarborough EPs. As per the ongoing consultation approach, feedback and comments received continue to be assessed and responded to, as required, through the life of an EP, including during EP assessment and throughout the duration of the accepted EP, in accordance with the intended outcome of consultation (8, 9).
- On 7 June 2023, Woodside emailed the EDO requesting the email be forwarded to [REDACTED], [REDACTED], and Save Our Songlines. Woodside confirmed availability to meet in Karratha on 13 June 2023 to continue consultation on the Scarborough EPs; proposed an agenda; confirmed meeting protocols and advised Woodside attendees. Woodside requested to know who would be attending on behalf of SOS and confirmation of other meeting details. The agenda included the sharing of interests, the functions of Save Our Song lines, a walk through of Scarborough EPs, and a description of the Scarborough Project and activities to be undertaken under each EP. The same meeting protocol agreed prior to the March meeting was shared, including no audio or visual recording being taken. On 9 June 2023, Woodside emailed the EDO, [REDACTED], [REDACTED], and Save Our Songlines requesting confirmation of the meeting scheduled for Tuesday 13 June 2023 and its time and location. Confirmation was sought by 5pm on 9 June 2023 as there were a number of flight and other logistics that needed to be confirmed by 5pm in order for that meeting to progress on Tuesday. If the meeting could not proceed then requested the provision of alternative meeting dates (8).
- On 9 June 2023 after 5pm the EDO emailed Woodside confirming availability for a morning meeting on 13 June 2023 (8).
- On 9 June 2023, Woodside emailed the EDO advising reasons why it was not available to meet on 13 June 2023 ie. flights and other logistics had timed out (8).
- On 10 June 2023, the EDO emailed Woodside to advise [REDACTED], [REDACTED] and Save Our Songlines were available to meet on 13 June 2023 on country with the EDO and provided a phone number to discuss logistics. EDO did not object to the agenda or the meeting protocol (including no recording being taken) (7, 8, 9).
- On 12 June 2023, the EDO on behalf of its clients [REDACTED], [REDACTED] and Save Our Songlines emailed Woodside advising availability to meet on 13 June 2023 at Hearson Cove. Despite its previous position committing to consulting on all Scarborough EPs, and confirmation that [REDACTED], [REDACTED] and SOS had information to share on all Scarborough EPs and the Scarborough Project generally (see correspondence dated 26 September 2022, 8 November 2022 and 24 November 2022) the EDO for the first time stated it did not think it was appropriate to deal with all 4 EPs in one meeting (15). EDO did not raise any concern with the meeting protocol, including no recording being taken.
- On 12 June 2023, Woodside emailed [REDACTED], [REDACTED] and Save Our Songlines and the EDO regarding meeting arrangements and a draft agenda. Woodside requested next available dates for a meeting with [REDACTED], [REDACTED] and Save Our Songlines and the EDO.
- On 12 June 2023, the EDO emailed Woodside to advise the [REDACTED], [REDACTED] and Save Our Songlines wanted to keep the existing arrangement for a consultation meeting on 13 June 2023 in Karratha.
- On 14 June 2023, the EDO emailed Woodside to advise that their clients, [REDACTED], [REDACTED] and Save Our Songlines were still willing to meet at the times specified in the previous email while EDO solicitors will be available in Karratha and that Woodside could join by phone or videoconference if needed.
- On 14 June 2023, Woodside emailed the EDO and [REDACTED], [REDACTED] and Save Our Songlines to advise Woodside was not available to meet the week of 13 June 2023 but proposed 5 alternative dates in June 2023 for a meeting to be held in Karratha or via Teams (remotely). These dates allow for Woodside to follow the agreed protocols (including having a female only team) (7, 8).
- On 14 June 2023, the EDO emailed Woodside to advise it would revert back once instructions had been received from their clients.
- On 14 June 2023, the EDO emailed Woodside, confirming dates to meet in Karratha in June, and noted the agreed meeting protocols.
- On 20 June 2023, the EDO emailed Woodside to advise the EDO will not be in a position to arrange any in-person consultation meeting for the week of 20 June and the EDO is awaiting instructions as to preferred dates and next steps for consultation. In the meantime Woodside could let the EDO know if Woodside had any questions (8).
- On 21 June 2023, Woodside emailed the EDO, [REDACTED], [REDACTED] and Save Our Songlines, thanking them for their email and advising that Woodside was looking forward to hearing from them when ready. Woodside offered for comments / queries / requests to be emailed in the meantime if more efficient (8, 9).
- On 28 June 2023, the EDO on behalf of its clients, [REDACTED], [REDACTED] and SOS, emailed a letter to NOPSEMA and copied Woodside urging NOPSEMA to not accept the 4 Scarborough EPs Woodside had submitted as Woodside had failed to comply with its consultation obligations under reg 11A (8, 9). The EDO stated: Woodside had not notified their clients that the EPs had been submitted nor the dates of submission.

A meeting scheduled for 13 June 2023 did not proceed; plans to reschedule are ongoing.

Woodside had not explained the activities of the Scarborough EPs and the associated impacts and risks in a way the SOS can understand and how this will impact their functions, interests and activities. Also, ██████████, ██████████ and SOS had not been provided with sufficient information and a reasonable period for consultation (8, 9).

- On 3 July 2023, Woodside emailed the EDO and copied NOPSEMA in response to the EDO's letter to NOPSEMA dated 28 June 2023 (copied to Woodside). Woodside clarified:
 - Woodside had consulted ██████████, ██████████ and SOS while preparing the 4 Scarborough Project EPs since March 2022. Woodside reaffirmed ██████████, ██████████ and SOS's relevant persons status (4, 8).
 - Consultation between Woodside and ██████████, ██████████ and SOS had been extensive over an extended period. As at 13 April 2023, consultation had included 5 meetings, 2 attempted meetings, 19 emails, 7 phone calls and 10 letters [Ref letter to NOPSEMA, copied to EDO dated 17 April 2023] (8, 9).
 - At a meeting on 14 March 2023, Woodside provided an overview of the Scarborough Project to ██████████, ██████████ and SOS to provide further understanding of the activities to be carried out under the Scarborough EPs. Woodside agreed to keep the full details of the meeting confidential at the request of the EDO's clients on the basis that some matters included secret women's business (7, 8, 9).
 - Following this meeting, a suite of correspondence was exchanged where Woodside further explained the activities to enable ██████████, ██████████ and SOS to make an informed assessment of the possible consequences of the activities on their functions, interests or activities. This was in addition to consultation material previously provided since August 2022 and the publicly accessible Scarborough EPs published on NOPSEMA's website. (8, 9)
 - During the meeting, without expressing to Woodside what their functions, activities and interests were (which remained (at the date of this letter) unexpressed by the EDO or its clients), ██████████, ██████████ and SOS informed Woodside that nothing could be done by it to progress with the activities to be carried out under the Scarborough EPs in a way that could minimise the effects of those activities on their undisclosed functions, interests or activities (10). Nonetheless, Woodside had continued to continue to consult with ██████████, ██████████ and SOS in the event they had any matters they wished to communicate to Woodside that could be relevant to the Scarborough EPs (8, 9).
 - Woodside had been prepared to meet and had continued to correspond with the EDO's clients and the EDO.
 - Woodside considered it had met reg 11A of the Regulations.
 - Woodside remained open and available to meet and proposed a meeting date from 3 July 2023.
- On 17 July 2023, the EDO emailed Woodside with 4 potential video conference meeting dates in July. The EDO also acknowledged receipt of Woodside's letter of 3 July 2023 and advised it would revert in due course.
- On 17 July 2023, Woodside emailed the EDO advising it would revert with meeting details.
- On 18 July 2023, Woodside emailed the EDO confirming it was available for a meeting on Tuesday 25 July at 9am by Webex and asked for confirmation. A draft agenda was proposed and the agreed protocols were included that were previously agreed. This included no audio or video recordings.
- On 19 July 2023, Woodside provided the EDO with NOPSEMA consultation documents (brochure, guideline and policy) and asked they be provided to ██████████, ██████████, ██████████ and Save Our Songlines ahead of the meeting.
- On 19 July 2023, the EDO advised ██████████ and ██████████ of EDO have taken over carriage of the matter and they will respond to the latest emails from Woodside.
- On 19 July 2023, the EDO responded to Woodside confirming the meeting on 25 July 2023 and provided a revised agenda which was the agenda that was agreed ahead of the 13 June Karratha meeting that did not proceed. The EDO made no objection to the agreed meeting protocol, including no audio or video recordings (7).
- On 20 July 2023, Woodside responded to EDO agreeing to the meeting time and date, stating that the proposed agenda would be reviewed internally, and requesting confirmation on specific protocols to be adhered to in the meeting would be aligned with those previously set by SOS (7).
- On 21 July 2023, Woodside emailed EDO notifying that arrangements had been made for the planned meeting on 25 July, that Woodside was comfortable with the proposed agenda and that Woodside would provide information on the broader Scarborough project and EPs currently being assessed rather than a single EP. This would give ██████████, ██████████ and SOS an opportunity to discuss and ask questions on the other Scarborough EPs currently being assessed. Woodside also sought confirmation that previously mentioned protocols would be followed (7).

- On 24 July 2023, EDO emailed Woodside to inform that presentation of broader information on the Scarborough Project and EPs was acceptable (15), and requested that the meeting be recorded but paused for discussion of culturally sensitive matters (7). This was raised a day before the meeting, despite Woodside circulating the agreed protocol for comment several times since the March 2023 meeting. EDO had also confirmed that the existing protocols would be appropriate (7).
- On 25 July 2023, Woodside emailed EDO to state that Woodside intends to adhere to the protocols already agreed, including that attendees are welcome to take written notes however there will be no other recording of meetings. Woodside stated that it does not consent to the meeting being recorded (7).
- On 25 July 2023, ██████████, ██████████ and SOS' lawyers confirmed they were running late to the meeting. [Ref 25 July 2023 email 9:01am]
- **MEETING:** On 25 July 2023, Woodside met with EDO and SOS, ██████████ and ██████████ via web meeting:
 - introductions, EDO stated that for the meeting to proceed the meeting had to be recorded. It was stated that if the meeting was not recorded, ██████████, ██████████ and SOS would not participate in the meeting.
 - As this had not been agreed between the parties, at around 9.40am, the meeting paused while arrangements were discussed. As noted above, EDO only raised this as an issue on 24 July, the day before the meeting. EDO, SOS, ██████████ and ██████████ could have raised an objection to the agreed meeting protocol at any time between the March and July meetings, including when Woodside circulated the agreed protocol on several occasions (7).
 - During the meeting on 25 July, following a pause in the meeting to consider recording, Woodside emailed EDO to inform that following an internal discussion, Woodside agreed to rejoin the meeting and the meeting being recorded under certain conditions (7). The issue around recording delayed the meeting by approximately 1 hour.
 - When the meeting recommenced, Woodside provided the meeting with a power-point presentation covering all 4 Scarborough EPs and presented on regulatory context and provided an overview of the Scarborough Project. In accordance with emails exchanged before the meeting Woodside came to the meeting ready, willing and able to address all 4 Scarborough EPs including the activities under this EP. Detailed information on each EP was provided for in the slide pack (8, 15).
 - On behalf of ██████████, ██████████ and SOS, EDO intervened and told Woodside words to the effect that ██████████, ██████████ and SOS did not want the opportunity to hear the presentation on any other EP, stating that their client was only there to consult on one EP (Seismic EP). This was despite EDO confirming in its email on 24 July 2023 that Woodside had said it would provide information on the Scarborough Project and other EPs. Woodside presented on the Seismic EP including by describing the activity in detail and talking through potential risks and impacts of the proposed activity and controls in place to manage them. Woodside also attempted to provide information on the rest of the Scarborough EPs (SIT1, D&C and Subsea) and gave an opportunity to hear ██████████, ██████████ and SOS in relation to the activities under these EPs (as agreed in the meeting agenda), but was refused (8, 15).
 - Woodside provided an overview of the Scarborough project and the offshore infrastructure. Despite a direction to only discuss the Seismic EP, ██████████ asked a question relating to the Drilling EP regarding the depth of the Scarborough wells(1). Woodside noted the wells will be drilled in approximately 900 -950 m water depth, however the wells themselves are drilled a lot deeper to get to the reservoir. Woodside noted they would take an action to provide specific accurate water depths and target reservoir depths, and provided this detail as part of their correspondence on 27 July 2023. ██████████, ██████████ and SOS also asked questions relating more broadly to the other Scarborough EPs.
 - Woodside provided an overview of the Scarborough Seismic survey activity. ██████████ asked about the spatial extent of the Operational Area and the larger environment that may be affected. Woodside provided an overview of the spatial extent of the environment that may be affected for the Scarborough project and how it is driven by the highly unlikely event of a hydrocarbon spill from a vessel collision. ██████████ enquired as to the unplanned risk of an oil spill, particularly querying who determines the credible spill scenario (1). Woodside offered to explain or to note the question and respond after the presentation, though EDO lawyers said they would make a list of questions to go through after. At this point. EDO lawyers again required that the meeting would only discuss the seismic EP (15). When the topic of drilling and well depth was raised later in the meeting ██████████ indicated she didn't want to skip past and wanted to go through the 'whole lot', and, despite this, EDO lawyers again suggested the meeting was to only discuss the seismic EP (15).
 - ██████████, ██████████ and SOS provided feedback and asked questions relevant to a different Scarborough EP (Seismic EP). No new cultural information was provided relevant to any of the Scarborough activities. ██████████, ██████████ and SOS declined to provide further detail about the nature of their cultural values at the meeting (8, 9).
 - ██████████, ██████████ and SOS raised queries relating to the oil spill modelling Woodside undertakes to determine the EMBA (1). Woodside gave an overview of oil spill modelling and the stochastic nature of the model (1). EDO requested Woodside to provide the underlying information for the oil spill modelling about how the risk is determined i.e. worst case hydrocarbon spill scenario. Woodside provided a response to this request as part of their correspondence on 27 July 2023.

- ██████████, ██████████ and SOS stated that they are broadly concerned about impact on the whales (13) and other animals (16), the songlines (unspecified) and the energy lines (18).
- ██████████, ██████████ and SOS stated that only they know the songlines and other Traditional Custodians did not, including MAC (6)
- The meeting agreed outstanding questions for Woodside to revert on (1). While these questions were not necessarily asked in relation to this activity, some of them are relevant to this activity. Woodside also pointed Save Our Songlines, ██████████ and ██████████ to the summary consultation information sheets which are designed to explain highly complex content in a more readily understood manner (8).
- Woodside asked whether Save Our Songlines, ██████████ and ██████████ could share information about themselves and Save Our Songlines, in particular the communal and/ or individual interests held (9). ██████████ declined to do so and suggested that this meeting was not the time for that. ██████████ stated the focus of herself, ██████████ and Save Our Songlines at that time was to understand the activities, and that this information could be shared at a later time when they are ready (9).
- Woodside pointed out that ██████████, ██████████ and SOS had told Woodside that they would provide information at the meeting and had not done so. Woodside asked for honesty going forward so that information would be provided to Woodside where ██████████, ██████████ and SOS had told Woodside they would provide it.
- Woodside offered to establish fortnightly meetings to provide ██████████, ██████████ and SOS opportunities to provide the information to Woodside. ██████████, ██████████ and SOS stated they would be unavailable for the next 6 weeks. (8)
- SOS stated that they did not regard consultation had commenced until today. Woodside did not agree and this contradicts previous correspondence from ██████████, ██████████ and SOS, where letter 24 March 2023 consultation had just commenced (11).
- The parties agreed to share the recording of the meeting.
- On 25 July 2023, EDO emailed Woodside:
 - Requesting a copy of the recording,
 - Requesting a response to seven follow up questions from ██████████, ██████████ and SOS, six of which are relevant to this EP relating to freshwater, migratory patterns of whales, dugongs and turtles, seagrass distribution, the worst case spill scenario and modelling, acoustic emissions (specifically decibels) associated with the seismic survey (1).
 - Informing Woodside of ██████████, ██████████ and SOS' desired approach for response to the meeting on 25 July and further engagements, including that ██████████, ██████████ and SOS would provide a preliminary response to the meeting in video format on country, which may need to be supplemented (14). This has never been provided to Woodside.
 - Proposing a sequence of meetings and responses be adopted on a per-EP basis (15)
 - Requesting confirmation that the consultation meeting on 25 July formed part of the consultation requirements required by Reg 11A of the OPGGS (Environment) Regulations 2009 for the Seismic EP ~~a different EP (Seismic EP)~~ (8).
- On 25 July 2023, Woodside emailed EDO notifying that Woodside will discuss the points raised and respond accordingly, and agreeing to provide the recording of the meeting.
- On 25 July 2023, EDO emailed Woodside requesting the meeting recording be provided via SharePoint, confirming that it would be passed on.
- On 26 July 2023, Woodside provided a recording of the meeting held on 25 July to EDO via a secure file transfer system and requested that it be passed on to SOS.
- On 27 July 2023, Woodside responded to EDO's email on 25 July:
 - Confirming that a copy of the meeting recording from 25 July had been sent to EDO
 - Providing responses to the seven follow up questions from ██████████, ██████████ and SOS (1)
 - Noting that despite agreement prior to the meeting that cultural interests and feedback would be discussed at the meeting, this was not shared (9)
 - Describing previous offers of meetings, noting that these were declined and confirming Woodside availability to meet on country (8, 14)
 - Describing why it is it Woodside's preference to consult on the Scarborough project as a whole rather than on a per-EP basis, and noting that during the meeting ██████████, ██████████ and SOS asked questions about various Scarborough Project EPs (15).
 - Describing how requirements of Reg 11A have been met, however Woodside remains open to continued consultation with SOS in good faith (8).

- Noting that an offer to meet fortnightly to support consultation had been made, which was declined
- On 3 August, Woodside emailed EDO requesting that a message be passed on to SOS:
 - Following up on Woodside's offer to meet on-country and whether SOS would be available (15).
 - Informing that a separate Scarborough EP had been accepted by NOPSEMA with conditions requiring Woodside to seek further input, and requesting that SOS inform Woodside if it has input or information to provide (8, 9).
 - Providing links to information about EP consultation and describing the purpose of EP consultation (8).
 - Informing SOS that gender-restricted or culturally sensitive information is managed carefully, and attaching NOPSEMA's Policy for Managing Gender-Restricted Information" (7).
- On 9 August 2023, EDO emailed Woodside:
 - Confirming that the recording of the meeting from 25 July had been received and passed on to SOS
 - Noting that its clients expect Woodside to comply with EP acceptance conditions related to a recently accepted Scarborough EP with the same EMBA
 - Reiterating its "clients explained they were not ready to provide Woodside with information following the presentation". This was contrary to previous correspondence where ██████████ and ██████████ confirmed they had information to share on all Scarborough EPs and the Scarborough Project generally (see correspondence dated 26 September 2022, 8 November 2022 and 24 November 2022) (8, 9).
 - Stating that approaching consultation in good faith requires flexibility, that a fortnightly meeting arrangement is not appropriate and that a proposed date for another meeting will be part of a separate email (8).
 - Reiterating that SOS, ██████████ and ██████████ intend to consult on EPs individually and consecutively, rather than concurrently, despite the previous position that consultation was occurring across all Scarborough EPs and the Scarborough Project generally (15).
 - Stating that SOS do not consider that requirements of Regulations have been met, and that a response following the meeting on 25 July is in preparation (8).
- On 9 August 2023, Woodside emailed EDO, requesting that a message be passed on to SOS:
 - Confirming that Woodside had previously consulted with SOS regarding the Seismic EP (8)
 - Informing that the activity described in the Seismic EP is planned to commence on a specified date, and requesting that SOS inform Woodside whether it is aware of any other people that have not been afforded the ability to provide information, or of any information SOS wishes to provide on cultural or heritage features/values prior to the activity commencing (8, 9).
- On 10 August 2023, EDO emailed NOPSEMA (copying Woodside), stating that ██████████, ██████████ and Save Our Songlines object to Woodside commencing activities under the accepted EP, asserting that the EP acceptance was invalid
- On 11 August 2023, the EDO emailed Woodside (and copied NOPSEMA) regarding a Foreshadowed breach of conditions related to the separate, accepted Seismic EP and advised its clients were alarmed that Woodside intended to commence activities on 12 August 2023 before it had complied with certain conditions in the Approval. The EDO further stated Woodside had not met the conditions and that its clients did not consider they had been sufficiently consulted on the Seismic EP. The EDO requested an undertaking from Woodside that it would not commence an activity until it had fully consulted with its clients and that that undertaking was provided by 12 noon AEST on 11 August 2023. If this did not occur the EDO was instructed to seek injunctive relief in the Federal Court of Australia.
- The EDO also stated it considered the Approval invalid and without a valid approval Woodside could not commence the activities under the Seismic EP.

Correspondence 11 August – 12 September 2023

An amount of correspondence was exchanged in relation to the Federal Court proceedings. A relevant summary is below:

- On 14-16 August 2023, the EDO and Woodside exchanged emails related to the commencement of the activity. Woodside informed EDO that the activity would not commence as originally planned
- On 16 August 2023, Woodside emailed the EDO to clarify that they were acting for ██████████ and ██████████. EDO replied that they were

- On 17 August 2023, ██████████ and SOS commenced Federal Court proceedings seeking a judicial review of NOPSEMA's decision to accept the Seismic EP with conditions. An affidavit of ██████████ was filed on that date which referenced ██████████, ██████████ and SOS
- On 21 August 2023, Woodside emailed the EDO seeking consultation regarding another EP. In the email, Woodside also reiterated previously agreed upon consultation conditions and reaffirmed its readiness and willingness to meet and consult with ██████████, ██████████ and SOS, and requested available date to meet
- On 21 August 2023, Allens on behalf of Woodside sent a letter to the EDO to inform that Woodside's position is that it had complied with Regulations, and that Woodside is prepared to meet with ██████████, ██████████ and Save Our Songlines at any time or place suitable to them so that they could provide any information they consider relevant.
- On 22 August 2023, the EDO emailed Woodside informing that they would obtain further instructions from their clients regarding available dates for consultation and would email soon. The EDO also reiterated that SOS remains willing to consult.
- On 25 August 2023, the EDO emailed Woodside with two dates and location options available for consultation with their clients.
- On 25 August 2023, Woodside emailed the EDO seeking clarification on the two dates and information regarding payment for ██████████ airfare to and from the consultation location.
- On 25 August 2023, the EDO emailed Woodside confirming both date options.
- On 25 August 2023, Woodside emailed the EDO confirming receipt of the email and responding that they would revert with availability.
- On 29 August 2023, Woodside emailed the EDO with a preferred consultation date of 12-13 September 2023. Woodside also reaffirmed that these consultations would take place on a no-admission basis in relation to whether Woodside has satisfied Reg 11A of the OPGGS (E) Regulations given that EDO's clients hold a different view. It was also stated in the email that Woodside is proceeding on the basis that previously agreed protocols apply (7, 8). Woodside also enquired about receipt of a video taken on Murujuga that was expected to be forwarded from ██████████, ██████████ and SOS (8, 9, 14).
- On 30 August 2023, the EDO emailed Woodside confirming receipt of email and said they would respond soon.
- On 1 September 2023, Woodside emailed the EDO following up a confirmation for consultation on the 12 and 13 September 2023, for a 2-day on-Country workshop with SOS.
- On 4 September 2023, the EDO emailed Woodside responding to the email sent on the 29 August 2023:
 - The EDO agreed that consultations are to take place on a no-admission basis and provided instructions on how the 2-day consultation meeting is to proceed including separating the two days over time (7, 8).
 - The EDO asked that the first meeting focus on Seismic EP and the second meeting, sometime after the 29 September 2023, will take place on Country with the intention of visiting the island off Murujuga (14). As noted above, this was contrary to the initial position taken by ██████████, ██████████ and SOS that they would consult on all Scarborough EPs and had information to share on each Scarborough EP (15).
 - The EDO expressed their client's interest in meeting a third time to discuss appropriate measures put in place for the EP previously discussed (not this EP).
 - The EDO asked Woodside to confirm that audio recordings at the meeting are permissible, as agreed on 25 July 2023, and that the consultation is to take place with only women (7).
 - The EDO responded to Woodside's query about the on-Country Murujuga video and stated that, their clients no longer intend to provide that video (14).
- On 7 September 2023, the EDO emailed Woodside asking to confirm the consultation date of 12 September 2023 for planning purposes (flights and accommodation).
- On 7 September 2023, Woodside emailed the EDO confirming the consultation date of 12 September 2023 along with a proposed location in Karratha. Woodside restated the previously agreed upon protocols and listed the female Woodside employees that would be attending the meeting. Woodside confirmed the consultation would be conducted on a non-admission basis given the different view of the parties as to whether consultation occurred in accordance with Environment Regulations (7, 8).
- On 7 September 2023, the EDO emailed Woodside agreeing to the location, outlining dietary requirements and listing the attendees on their side.

- On 7 September 2023, as part of the Federal Court proceedings, a second affidavit of ██████████ was filed. This affidavit sets out information relating to ██████████, ██████████ and SOS. It contains information that ██████████, ██████████ and SOS have declined to previously provide to Woodside in the course of consultation, communications and meetings that have taken place since around 2022.
- The affidavit contains information about ██████████, ██████████ and SOS' interests, including in relation to "whale dreaming" and songlines. This information is publicly accessible in an online court file. This information was not provided to Woodside in previous consultation, and was asserted it could not be provided due to cultural sensitivity and as a result of a lack of information about the Scarborough EPs and their impacts on ██████████ interests (9). Woodside was therefore surprised to see the information for the first time being provided in a public forum when Woodside has been asking for and consulting with ██████████, ██████████ and SOS in order to hear and discuss the information for at least a year.
- On 11 September 2023, the EDO emailed Woodside confirming the 12 September 2023 meeting and asked Woodside to confirm that the purpose for the meeting is to discuss the Sesimc EP to better understand the nature of the activities and ask questions to Woodside (15).
- On 11 September 2023, given the context of the Federal Court proceedings focused on the Seismic EP, Woodside emailed the EDO:
 - Confirming that the meeting proposed is to go over the Seismic EP and answer any further questions their clients have (15, 8, 9).
 - Asking ██████████, ██████████ and SOS to provide questions in advance so that Woodside can have answers ready to share (8, 9).
 - Stating that they would like to provide a refresher on other Scarborough EPs including this EP with the aim to consult and provide ██████████, ██████████ and SOS the opportunity to discuss their interests and any claims and objections that they may have on the broader Scarborough Project footprint (15, 8).
 - Restating Woodside's commitment to ongoing consultation with ██████████, ██████████ and SOS as part of its commitment to ongoing consultation during the life of an environment plan.
- **MEETING:** On 12 September, Woodside met with ██████████, SOS and EDO in Karratha. ██████████ sent her apologies as she could not make it and asked for meeting to go ahead without her. Culturally sensitive and gender restricted content was discussed and has been provided to NOPSEMA separately in accordance NOPSEMA's Managing Gender Restricted Information. The meeting covered all of the Scarborough activities to the extent that is described or discussed below. During the meeting:
 - EDO and ██████████ opened the meeting by stating that ██████████ would like to learn more about the activities covered under the Seismic EP and that she would then revert to Woodside to share her story.
 - Woodside provided a recap of the previous meeting (25 July 2023) and ran through how Woodside had addressed the topics raised during that meeting. Woodside shared the control measures that had been adopted in the Scarborough EPs as a result of consultation with ██████████, ██████████ and SOS. ██████████, SOS and EDO queried whether any control measures have been removed from the Scarborough EPs overtime and what mitigation measures were considered and not implemented in the EPs (1). Woodside explained that principles of the ALARP process that underpins environmental impact and risk assessment, and that the process generally means building in and improving environmental controls over time (1).
 - Throughout the meeting, ██████████ SOS raised concerns and questions, which are summarised below, and were addressed during the meeting:
 - How Woodside determines that the potential impacts from an activity are ALARP and acceptable (1).
 - A concern about the potential impacts from the Seismic EP on whales (16) and emphasized the importance of these animals (whales) and their deep connection to them (13).
 - Who conducted the MAC ethnographic surveys, and whether ██████████ and SOS could be provided with the full report (12).
 - How Marine Fauna Observers (MFOs) are able to spot whales from the vessels.
 - A request for further information on the Jupiter Fields. Woodside noted that all the Scarborough gas fields are covered in the Scarborough OPP and that this information could be provided to ██████████, ██████████ and SOS (1).
 - In response to these concerns and questions, Woodside asked ██████████ and SOS whether there was anything that Woodside might be able to do to help minimise any impacts to cultural values. ██████████ and SOS stated words to the effect that the only thing Woodside could do is stop the project (10).

- During a discussion on the impacts of noise emissions on cetaceans, ██████████ and SOS questioned why there was a focus on pygmy blue whales, rather than humpback whales, which ██████████ and SOS stated they were more concerned about. In particular, ██████████ expressed her desire to see controls adopted for humpback whales, which Woodside considered, implemented and showed to ██████████ and SOS at a subsequent meeting [ref meeting 4 October 2023).
- Woodside encouraged ██████████ and SOS to take some time and read through materials provided to her. Woodside asked whether ██████████ and SOS had any information from her own history and her own knowledge and information that she could share, including the kinds of issues that Woodside should be looking at that are of importance to her. ██████████ and SOS again stated that she could not share any further information until she is provided with the cultural heritage surveys WEL has had completed. Woodside said they would share the publicly available content from the report, and repeated that ██████████ and SOS would need to speak to MAC if they wanted access to the full report (12).
- ██████████ and SOS indicated her desire to take Woodside employees out to Rosemary Island for an on-Country meeting. Woodside enquired as to the logistics including whether they would need to travel by boat and how long the boat ride would take (14).
- Woodside shared that there are consultation meetings happening in Karratha, Port Headland and Roebourne the following week, and that ██████████, ██████████ and SOS were welcome to attend and ask any questions or share anything then (8, 9).
- Woodside concluded the meeting noting the information that Woodside had committed to providing ██████████, ██████████ and SOS and checking whether there were any other documents to be provided.
- On 13 September 2023, the EDO emailed Woodside thanking them for the meeting on the 12 September 2023. The EDO also stated that they were looking forward to receiving requested information and listed the specific requests in the email. They also reiterated that they expected that certain cultural information divulged in the meeting to remain confidential and gender-restricted, referring to the agreed upon consultation protocols (7). This was not expected by Woodside because at all times, ██████████ and SOS have control to stop a recording and point out that culturally sensitive information is being shared. It was not apparent during the meeting that the information was culturally sensitive and ██████████ at no time asked for the recording to be stopped. In any event, Woodside acknowledged the position and undertook to manage the information sensitively.
- On 13 September 2023, as part of the Federal Court proceedings, a third ██████████ affidavit was filed. This affidavit confirmed that ██████████ “has not been consulted and wishes to be consulted in relation to the Drilling EP (and other Environment Plans relevant to the Scarborough Project that are not the subject of these proceedings”) (8).

Woodside provided the information to ██████████, ██████████ and SOS by email on 17 September.

Summary: - correspondence leading to 4 and 5 October meeting

A significant amount of correspondence was exchanged between Woodside and ██████████, ██████████ and SOS from 15 September in relation to Woodside's offer to meet on 4 and 5 October to give another opportunity for ██████████, ██████████ and SOS to provide and discuss information they say they have and that Woodside needs for its Scarborough EPs.

A summary of the correspondence is as follows:

17 September – 2 October 2023

- On 17 September 2023, Woodside emailed ██████████, ██████████ and SOS to agree a way forward to finalise consultation on all Scarborough EPs with the utmost expedition and in a culturally appropriate way.
- Woodside confirmed the urgency around consultation and offered an opportunity to attend a meeting on country every day (including weekends) during the next week. Woodside also confirmed it is open to discussing and receiving any and all information on all Scarborough EPs. This was acknowledged by EDO (Ref email 19 September 2023 and 20 September) (7,8,9)
- Given the urgency and given there was no response, the email was followed by phone calls, voice mail and text messages to ██████████ and ██████████ on 18 September.
- In this email Woodside confirmed that information provided at ██████████, ██████████ and SOS' request relating to the DSDMP, CHMP, UWA study and OPP is already publicly available.

- The information has been previously provided to ██████████, ██████████ and SOS or is information they were previously aware of. Reading that information is not a reason to delay consultation on the Scarborough Commonwealth EPs
- On 19 September, the EDO sent an email to Woodside and noted that ██████████ was unable to meet because of personal circumstances, because her lawyers were heavily occupied with the Federal Court proceedings and because of the large amount of information provided following the 12 September meeting.
- On 20 September 2023, Woodside sent an email to the EDO and reiterated ██████████ has stated that she already knows the information that she wishes to provide to Woodside, has received information on each Scarborough EP since at least 2022, through questions and information has shown an understanding of each of the EPs and has been provided the opportunity to discuss each of the EPs at each meeting this year. Woodside requested a meeting by 6 October 2023 at the latest.
- On 20 September, EDO confirmed ██████████, ██████████ and SOS were available for a meeting on 4 and 5 October and that they would like to visit the islands off Murujuga during this part of consultation and asked Woodside to coordinate logistics. A concern was expressed regarding the amount of information that would need to be reviewed prior to the meeting.
- On 21 September, Woodside agreed to a meeting on 4 and 5 October and agreed to investigate logistics regarding a trip to Rosemary Island. Woodside appreciated the confirmation that consultation would occur on all Scarborough EPs on those 2 meeting dates. Woodside also confirmed that there was no reason for concern regarding information that would need to be reviewed prior to the meeting because ██████████ has stated that the information she and SOS want to share with Woodside is currently known to them given she and SOS have stated that they have information they want and are ready to share with Woodside. Woodside also reiterated that ██████████, ██████████ and SOS have had that information since at least 2022 and have shown an understanding of the content. Woodside asked ██████████, ██████████ and SOS to confirm items so that Woodside could investigate logistics associated with arranging the meeting, including hiring a boat and venue for the meetings.
- On 25 September, the EDO confirmed that ██████████ wishes to visit Rosemary Island as part of the consultation meeting, that ██████████ attendance was not yet confirmed, and that further logistics would be confirmed the next day.
- On 27 September, Woodside sent a follow up email because it still had no confirmation from ██████████, ██████████ and SOS regarding the items that Woodside needed to be confirmed in order for the meetings and vessel hire to progress. Woodside set out a proposed agenda for the 4 and 5 October meetings and some logistical issues. One issue was that the vessel Woodside is investigating has space for ██████████ and 3 other attendees ██████████ selects. Woodside respectfully also notified ██████████, ██████████ and SOS that the crew of the vessel was likely to be male and that there were potentially ways to manage the culturally sensitive information out of ear shot of the male crew.
- On 28 September, EDO provided some information regarding travel to Rosemary Island including that ██████████ will potentially bring 8 other attendees with her on the boat to Rosemary Island and requiring Woodside to arrange a larger vessel. ██████████ noted that Rosemary Island is a culturally significant place and she had included 2 males to attend for the purposes of cultural safety. She also suggested that a third party Appeals Convenor (██████████) should be included in the trip. She also noted that she did not anticipate there would be any need for the Appeals Convenor or Woodside to share confidential or culturally sensitive information during or on the trip to Rosemary Island.
- On 29 September 2023, Woodside emailed the EDO informing that culturally sensitive and gender restricted information would be managed appropriately, in accordance with NOPSEMA *Draft Policy for Managing Gender Restricted Information*
- On 29 September, Woodside arranged a meeting with the external boat provided to undertake a risk assessment (including for health and safety) for the proposed travel by boat to Rosemary Island.
- On 29 September, during the course making preparations for the trip to Rosemary Island, Woodside received strong advice from cultural authorities that because of Rosemary Island's high cultural significance, the cultural authority did not support Woodside convening a meeting at Rosemary Island.
- On 29 September Woodside sent an email to the EDO. Woodside said that it had received broader cultural advice that Rosemary Island has high cultural significance and that Woodside has been strongly cautioned against convening a meeting at that location because of cultural sensitivity and safety concerns.

Woodside suggested Hearson Cove as an alternative meeting location for [REDACTED], [REDACTED] and SOS to share any and all remaining information on the Scarborough EPs. Woodside also stated that it did not think it would be appropriate for the Appeals Convenor to attend, given the purpose of the meeting and questioned why three EDO lawyers needed to be in attendance.

- On 2 October, EDO emailed Woodside, expressing [REDACTED] disappointment at Woodside's decision regarding Rosemary Island and confirming arrangements for the meeting on 4 and 5 October.
- On 2 October, Woodside emailed the EDO regarding the meeting on 4 and 5 October explaining the decision to not progress with the meeting on Rosemary Island. The email also conveyed that Woodside's priority was to understand the cultural values that [REDACTED], [REDACTED] and Save Our Songlines assert that Woodside needed to know for Scarborough EPs.
- Woodside replied on 3 and 4 October confirming that it takes cultural safety very seriously and confirmed that Ngaarda Ngarli community leaders have strongly discouraged Woodside from attending Rosemary Island. Other meeting items and logistics were confirmed.

Meeting on 4 and 5 October 2023

- MEETING: On 04 October 2023 Woodside met with [REDACTED] and SOS in Karratha (8, 9)
- Prior to meeting on 4 October 2023, Woodside arranged a meeting room at the Karratha Red Earth Arts Precinct and arranged catering. As a gesture of goodwill, Woodside communicated before the meeting and arranged coffees for attendees.
- Woodside arrived at the Red Earth Art Precinct ahead of the meeting to prepare the room for the meeting and was ready, willing and able to commence at the agreed start time of 10am. Woodside remained at all times, at the meeting room and available to consult on the Environment Plans. A Woodside employee left the meeting for around 15 minutes at a later stage in the meeting in order, at short notice, to re-book a vessel to facilitate a visit to Rosemary Island so that a trip could be made that circumnavigated the island.
- [REDACTED], SOS and EDO arrived at around 10.20am. They exited the meeting a number of times during the allocated meeting time for private conversations, time out and to manage energies that were being felt. In total, [REDACTED] spent around two hours outside the meeting.
- Opening remarks
- [REDACTED] and EDO confirmed that [REDACTED] would not attend the meeting and that [REDACTED] was not feeling the best as she was managing some family and other circumstances.
- Rosemary Island Trip
- There was discussion regarding [REDACTED] preference to travel to Rosemary Island and Woodside's position that could not attend because of the strong cautions given to Woodside not to attend including for spiritual and cultural health and safety reasons.
- Woodside's aim was to maintain integrity and respect for all first nations people with whom it consults and to present the information in a balanced manner. [REDACTED] stated that she found Woodside's change in position on attending Rosemary Island to be disrespectful. In particular, [REDACTED] was offended by the fact that Woodside had spoken to other person(s) about her consultation with them.
- [REDACTED] asked Woodside to confirm who specifically had told Woodside not to attend the island and expressed concern around this and referenced a spiritual war that was going on
- During the meeting, [REDACTED] and SOS shared their perspective on matters leading up to the meeting, including their disappointment about the cancellation of the Rosemary Island trip. Woodside confirmed they were following meeting protocols and showing respect to the Traditional Custodian groups for the area (7, 14). Woodside suggested alternative meeting locations and other options, at a previous meeting [REDACTED], [REDACTED] and SOS had indicated that they would tell their story at Hearson Cove. The offer to meet at another place or meet at an alternative location on-Country of cultural significance where Woodside could receive the information were rejected by [REDACTED] and SOS - all options suggested by Woodside were rejected including (14):
- A suggestion was made by Woodside that they use the boat Woodside had secured to circumnavigate Rosemary Island (but not disembark onto Rosemary Island), allowing [REDACTED] and SOS to share her information. [REDACTED] and SOS agreed that this could be a compromise. Woodside contacted [REDACTED] during the meeting to see if they had a boat available for 5th Oct that could circumnavigate Rosemary Island to allow for consultation on sea country to

proceed, without landing on the Island. ██████████ confirmed that they had suitable vessel available, and made special efforts to stand-up a marine crew. When Woodside confirmed this was available, ██████████ rejected the offer and declined to meet.

- Another option suggested was that ██████████ and SOS visit Rosemary Island and produce an audio recording of their story; and
- A meeting at Hearson Cove, as Hearson Cove had previously been identified as culturally safe by ██████████, ██████████ and SOS and a place where they had (in March 2023) shared information with Woodside.
- Presentation and Discussion on Scarborough EPs
- During the meeting, Woodside presented on each of the Scarborough EPs and controls suggested to demonstrate how Woodside had addressed each of the topics and cultural values previously raised by ██████████, ██████████ and SOS (13, 17, 19) and the relevant controls in place for each of the SCA EPs activities. Woodside displayed a table on-screen during the meeting which contained the previously expressed areas of interest to ██████████, ██████████ and SOS and controls pertaining to each of these interests. When Woodside went to keep discussing these controls after talking through the D&C updates to cultural heritage and noise controls, Woodside was stopped by EDO and questioned why controls were being discussed, and not EP overview / content. In reviewing the newly adopted controls that were able to be covered, ██████████, SOS and EDO provided views on some controls including the cultural awareness crew training control that had been included in all Scarborough EPs. ██████████ and SOS' feedback on the control was adopted (1).
- While Woodside was presenting on the controls implemented for humpback whales, ██████████ recognized the words were those she had said in the previous meeting with Woodside and appeared pleased that her words were used to describe the controls in the EP (1). ██████████ and SOS noted that all marine animals are important, not just whales. Woodside asked ██████████ and SOS to clarify, as in the previous meeting on 12 September ██████████ and SOS had specified humpback whales as being of particular importance. ██████████ and SOS disagreed and said she had always said all animals and plants, but whales and turtles are bigger and more apparent (16).
- On request of ██████████ and SOS, Woodside presented on the Scarborough activities (Drilling, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation), showing the presentation that had been prepared for the 25 July 2023 meeting when Woodside was ready to present on all EPs and was directed to only discuss the Seismic EP.
- Woodside gave an overview of the Scarborough Drilling and Completions activity (this EP), including the number of wells, well depth, vessels used and length of time of activity. Woodside gave an overview of the drilling process and, when requested by ██████████, showed ██████████ and SOS a drilling video to provide greater visual context. ██████████ said she had an understanding of mining equipment and had worked on the Pluto project, she said that she had the 'gist' of what Woodside was telling her, however she wanted to see the equipment. While the video played, ██████████ identified a number of relevant technical issues relating to drilling. After the video was played, ██████████ asked:
 - What the environmental impacts and risks from the activity are (1). Woodside responded to this by outlining key environmental impacts and risks from drilling, including a detailed explanation of noise impacts from DP MODUs, light emissions, atmospheric emissions and marine discharges arising from the activity (1).
 - Woodside then provided an overview of the Scarborough Subsea Infrastructure Installation activity. ██████████ and SOS had various questions, relating to both the drilling, subsea installation and SITI EPs specifically, including (1);
 - How equipment withstands earthquakes and tectonic movements. Woodside explained the basic requirements of a Well Operations Management Plan, and the safety factors that are considered in the well design process (1) as well as considerations for well location.
 - ██████████ stated she had watched a lot of spills and was concerned that they don't get contained. Woodside responded that gas released at 900m (Scarborough well depths) would dissolve in the water column and not result in a typical oil spill scenario, but that the greater risk from a spill perspective is diesel spill from vessels caused by vessel collisions for example. Woodside provided an overview of a credible spill scenario from a vessel collision and discussed the Environment that Might be Affected (EMBA) (1).
 - Whether NOPSEMA approves the oil spill preparedness and response plans; Woodside confirmed that these plans are assessed and approved as part of the Environment Plan assessment process (1).
 - Woodside described the subsea installation activity and showed a Scarborough field lay out figure for context. ██████████ and SOS expressed concern about the nature of the activity. Woodside asked whether ██████████ and SOS could expand on her concern and queried whether she was concerned about the laydown of flowlines and equipment on the seabed, or more concerned about the presence of vessels in the field. ██████████ and SOS expressed it was the 'whole lot' she was concerned about. ██████████ and SOS expressed her desire to seek external experts to provide her with their perspective on the subsea activities (1).

- Woodside moved on to the last Scarborough EP in the suite (SITI EP) and provided an overview of the proposed Trunkline and explained the process for selecting the Trunkline route and Trunkline construction methodology. ██████████ and SOS spent some time looking at the figures showing where the Trunkline passed through the Montebello MUZ and the various marine park classifications around the Montebello Islands, and sought to understand that further.. Woodside provided an overview of the dredging activity for the offshore borrow ground area, and explained the logic behind the focus on environmental impacts from dredging in that EP.
- Meeting conclusion
- Woodside again emphasized a willingness to listen to ██████████ and SOS story and keenness to ensure her cultural values are protected.
- Towards the end of the meeting, Woodside confirmed that a boat was available to circumnavigate Rosemary island on 5 October as was the agreed compromise position. ██████████ said words to the effect that this was not good enough, and after a brief discussion on the logistics of the boat trip to Rosemary Island, including raised voices and a significant aggressive and emotional diatribe by ██████████, the meeting ended (8, 9, 14).
- After the close of the meeting, Woodside informed EDO lawyers that another option available for ██████████, SOS and ██████████ to share her story was to share it directly with NOPSEMA (9).
- 5 October meeting
- Woodside attended the Red Earth Arts Precinct ready, willing and able to engage in consultation on 5 October 2023. Despite Woodside confirming it was ready for the meeting, ██████████ and EDO declined to attend.

Correspondence following the 4 October meeting

A summary of the correspondence is as follows:

- Woodside and EDO exchanged emails following the meeting, noting that accounts and take-aways from the meeting differed.
 - On 4 October 2023, EDO emailed Woodside stating that each of the Scarborough EPs, including this EP, were not discussed “substantively” with ██████████ before the meeting today (4 October 2023), other than the Seismic EP discussed on 25 July 2023 meeting, and that it was the first time Woodside has provided a “substantive” presentation describing the activities described in the D&C EP, SITI EP and Subsea EP.
- (1) ██████████, through EDO, emphasised the importance of understanding the impacts and controls relating to animals affected by the activities (1).
 - (2) EDO stated that ██████████ did not agree to meet again on the 5th October in Karratha and ██████████ could not proceed with the proposed agenda, as she could not share the story she wanted to share with Woodside anywhere other than on Rosemary Island. ██████████ wished to engage in consultation and share information about her story and how her functions, interests and activities may be affected, she did not wish to meet in those circumstances (7, 8, 9, 14).
 - (3) EDO re-emphasised the importance of attending Rosemary Island for purposes of ██████████ sharing information (7).
 - On 5 October 2023 Woodside emailed EDO acknowledging the email sent on 4th Oct 2023 and stating that Woodside’s understanding of the meeting differs. Woodside enquired if there were alternative approaches for ██████████ to share her story from Rosemary Island, such as recording her story or inviting the Regulator to attend and that they remain open to understanding how the issue could be progressed (7, 8, 9, 14).
 - On 5 October 2023 EDO emailed Woodside stating that ██████████ and EDO would not be attending the meeting that day.
 - ██████████ considered Woodside had seriously damaged the relationship of trust and confidence required for consultation. EDO were instructed to say that ██████████ was open to the prospect of future meetings if the relationship was able to be repaired (7, 8, 9, 14).
 - On 5 October 2023 Woodside emailed EDO sharing their disappointment that ██████████ and SOS would not be attending the meeting that day. Woodside confirmed employees were at the Red Earth Arts Precinct centre, as agreed, and was ready, willing and able to participate in the meeting, and that this was another opportunity for ██████████ to share her information on the Scarborough EPs. Woodside re-iterated that there was no disrespect intended towards ██████████, that they had accommodated the consultation requests put forward by ██████████, making themselves available and demonstrating they were ready to listen. Woodside stated that there was a clear limit where consultation in the method proposed was not possible, including instances where there were unacceptable health and safety risk, as was the case in the instance of Woodside employees going onshore for a meeting with ██████████ and SOS at Rosemary Island when it was advised not to, due to cultural sensitivity and cultural safety risks. Woodside reiterated that Woodside employees had received strong advice on cultural safety and

did not have cultural permission to convene a meeting with ██████████ or SOS on Rosemary Island and asked again if there were alternatives available for ██████████ to share her information. A link to the NOPSEMA draft policy for managing gender restricted information (PL2098) was provided (7, 8, 9, 14).

- On 5 October 2023, EDO sent a letter on behalf of ██████████ ██████████ to NOPSEMA, cc'd Woodside, which:
- Acknowledged that, in ██████████ view, consultation with Woodside began in October or November 2022, (3);
- alleged that Woodside had “shared information regarding consultation with individuals outside of those involved in consultation” and that this “may be a breach of the cultural protocol agreed between Woodside and ██████████ to enable consultation to occur in a culturally safe manner”.
- Alleged that Woodside presented on matters outside of the agreed agenda, being control measures Woodside had adopted in each of its environment plans following the 12 September 2023 meeting;
- that ██████████ could not share information directly with Woodside in a culturally safe manner and that the trust and respect necessary for genuine consultation had been breached (8, 9, 14). (11).
- Sought to arrange a meeting with female representatives of NOPSEMA at Rosemary Island or “another place of equivalent cultural significance, where she is able to share her information in a culturally safe manner”.
- On 9 October 2023 Woodside emailed NOPSEMA stating that Woodside disagreed with a number of statements contained within the EDO letter sent to NOPSEMA and, accordingly, wished to correct the record and provide context. Woodside had consistently provided opportunities for ██████████, ██████████ and SOS to share information and engage in two-way dialogue and had attempted to accommodate the varied consultation requests made by ██████████, ██████████ and SOS (7, 8, 9, 14).

Summary of Feedback, Objection or Claim	Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>(1) Questions raised and addressed in meetings or in subsequent emails:</p> <ul style="list-style-type: none"> - Whether the Scarborough activity included fracking - How credible spill scenarios are determined and who determines these. - Oil spill modelling Woodside undertakes. - Freshwater environments in the EMBA - Whale migration patterns - Seagrass distribution - Acoustic emissions, particularly from seismic acquisition. - How MFOs observe whales in the distance from the vessels. - Where Woodside sources information relating to species, migration patterns and Biologically Important Areas, particularly those relating to whales. - Credibility of the science underpinning Woodside’s assessment of noise impacts on species (particularly in reference to the Scarborough seismic EP). - How equipment installed as part of the Scarborough project withstands earthquakes. 	<p>(1) Woodside has addressed the questions raised by SOS, ██████████ and ██████████ in meetings and in subsequent email responses [Ref for example meetings on 14 March 2023; 25 July 2023; 12 September 2023; 4 October 2023 and correspondence for example 17 September 2023 email from Woodside to EDO].</p> <p>(2) Woodside confirmed the extraction of Scarborough gas for onshore processing is not within the scope of the activity described in this EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for this EP but may be evaluated in other Scarborough EPs as appropriate. Woodside confirmed that emissions from the activities covered by this EP are of a scale and physical remoteness from Murujuga’s rock art that no credible impact pathway is foreseen. Woodside advised that no rock art</p>	<p>(1) Not required. Existing controls considered sufficient, as described in Section 6. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural features or heritage values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p> <p>(2) Not required</p> <p>(3) Not required</p> <p>(4) Not required</p> <p>(5) Not required</p> <p>(6) Not required.</p> <p>(7) Not required.</p> <p>(8) Not required.</p> <p>(9) Not required.</p> <p>(10) Not required (existing controls are sufficient)</p> <p>(11) Not required.</p> <p>(12) Not required.</p>

<ul style="list-style-type: none"> - The nature of the credible spill scenario associated with the various Scarborough activities (including this EP), and underlying information on how oil spill modelling is undertaken. - Whether NOPSEMA approves OSPRMA for EPs. - Whether ██████ could seek her own external experts to provide opinion on the EPs. - Additional information on the Jupiter field - Environmental controls included in the EPs, including how these have changed overtime, and what controls have been considered and not implemented. - Environmental impacts from Scarborough activities and how Woodside determines that environmental impacts are at an ALARP and acceptable level. <p>(2) Threat posed to Murujuga rock art by Scarborough LNG and industrialization on the Burrup, and values associated with:</p> <ul style="list-style-type: none"> - Murujuga - Murujuga rock art <p>(3) Murujuga Aboriginal Corporation (MAC) are subject to gag clauses</p> <p>(4) Save Our Songlines, ██████ and ██████ desire to be consulted as a relevant person</p> <p>(5) Need for EPs to consider cultural heritage impacts, both direct and indirect.</p> <p>(6) MAC does not represent the interests of Save Our Songlines, ██████ and ██████. Save Our Songlines, ██████ and ██████ have interests that are separate and distinct from those of MAC.</p> <p>(7) Sensitive information shared by Save Our Songlines, ██████ and ██████ was to be treated with high sensitivity and confidentiality. Meeting protocols agreed by both parties should be met.</p> <p>(8) Save Our Songlines, ██████ and ██████ have not been afforded reasonable opportunity or sufficient information for consultation.</p> <p>(9) Save Our Songlines, ██████ and ██████ have interests they wish to share with Woodside, for consideration in Woodside's Scarborough Environment Plans.</p> <p>(10) Objection to the Scarborough gas project, including the view that no controls could be</p>	<p>will be displaced as a result of the Scarborough project. [For example email from Woodside 5 Jan 2023 and letter dated 17 April 2023]</p> <p>(3) Woodside confirmed that none of Woodside's agreements with Traditional Custodians include 'gag clauses' or restrictions on voicing opinions on its projects. Woodside confirmed it has supported Traditional Custodian representative institutions to access relevant information and independent expert advice so that they are enabled to provide informed and considered feedback on the Scarborough project. [For example email from Woodside 5 Jan 2023 and letter dated 17 April 2023] In any event, Woodside notes that to the extent that this assertion is considered an objection or claim by ██████, ██████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates.</p> <p>(4) Woodside has consulted extensively with ██████, ██████ and Save Our Songlines on both the proposed activity and the broader Scarborough project. Woodside has confirmed ██████, ██████ and Save Our Songlines are relevant for this EP and have responded to all requests for further information.[For example, see consultation record in this EP; letter dated 3 July 2023] In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████, ██████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(5) Woodside confirmed that EPs assess cultural heritage impacts, including both direct and indirect impacts and risks associated with the PAP. Woodside confirmed that the PAP is outside the National Heritage Place and anticipated boundary of the Murujuga Cultural Landscape World Heritage Property. As above (2), Woodside has confirmed that the extraction of Scarborough gas for onshore</p>	<p>(13) Woodside has considered ██████, ██████ and SOS's feedback and updated Section 4.10 to record topics of interest and cultural value, including those relating to whales. As a result of consultation with ██████, ██████ and SOS, Woodside has updated the noise adaptive management control relating to pygmy blue whales to also include humpback whales (C 4.1).</p> <p>(14) Not required.</p> <p>(15) Not required.</p> <p>(16) Woodside has considered topics raised by ██████, ██████ and SOS's as to interests and updated Section 4.10 to record these. These are assessed in 6.9 with appropriate controls implemented. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural features or heritage values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p> <p>(17) Not required (existing controls adequate)</p> <p>(18) Woodside has considered ██████, ██████ and SOS's feedback and updated Section 4.10 to record topics of interest and cultural values, including songlines and energy lines. These are assessed in Section 6.9 with appropriate controls implemented. At this stage, Woodside has not been provided with specific information on these potential values so as to enable a more fulsome assessment. In lieu of additional information on these values, Woodside has implemented a control that inductions for all relevant marine crew will include information on cultural values, including tangible and intangible cultural heritage (C 19.1). This control was updated further during the October 4th 2023 meeting based on feedback received during the meeting that the control should be timebound.</p>
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<p>implemented to minimise potential impacts to cultural values.</p> <p>(11) Consultation with Save Our Songlines, ██████████ and ██████████ is still in its early stages [Ref: EDO letter 10 August 2023].</p> <p>(12) Request for MAC ethnographic survey results to be shared with Save Our Songlines, ██████████ and ██████████. Requests to know who from MAC participated in the ethnographic surveys.</p> <p>(13) Cultural features associated with whales.</p> <p>(14) Need for Save Our Songlines, ██████████ and ██████████ to share their cultural knowledge and story on Country.</p> <p>(15) That it is not appropriate for Woodside to consult on the Scarborough project as a whole (suite of 4 EPs) in each meeting.</p> <p>(16) Demonstrated an interest in:</p> <ul style="list-style-type: none"> - Marine animals - Seagrass and dugongs - Pygmy blue whales - Whales - Turtles - Underwater heritage - Where saltwater and freshwater meet - Potential impacts of the Scarborough project activities on whales (particularly the seismic activity). - Sharks - Water quality - Seabirds - Plankton - Pelagic fish <p>(17) The need for Woodside to consider all animals in EP impact assessments.</p> <p>(18) Cultural features associated with songlines, dreaming and energy lines.</p> <p>(19) Cultural values publicly available in the Affidavits of ██████████ (September 2023) and Concise Statement (Ref. Section 4.9.1):</p> <ul style="list-style-type: none"> - Murujuga - Rock art - Caring for Country - Bungarra - Eagle - Kangaroo 	<p>processing is not within the scope of the activity described in this EP and therefore that indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for this EP but may be evaluated in other Scarborough EPs as appropriate. [For example, see email from Woodside 26 August 2022 and 5 Jan 2023 and letter dated 17 April 2023]</p> <p>(6) Woodside has consulted with ██████████, ██████████ and SOS separately from MAC and other relevant representative bodies. [See consultation record] In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates.</p> <p>(7) Sensitive information has been appropriately handed by Woodside in accordance with agreed protocols. Woodside has agreed with requests from ██████████, ██████████ and SOS in relation to meeting protocols. This has included significant efforts by Woodside to allocate women subject matter experts to prepare and attend meetings with ██████████, ██████████ and SOS where matters are otherwise managed by male subject matter experts for Woodside [For example, see emails setting up meetings on 14 March 2023; 25 July 2023; 12 September 2023 and 4 October 2023. See emails on 3, 4 and 5 October 2023] In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(8) Woodside has, since at least 2022, provided information to ██████████, ██████████ and SOS to allow an informed assessment of the possible consequences of the activity on their functions, interests or activities in their</p>	<p>(19) Woodside has considered ██████████, ██████████ and SOS's feedback and updated Section 4.10 to record indicated topics of interest and cultural values. These are assessed in Section 6.9, with appropriate controls implemented, including the adoption of PS 19.3.1, the noise adaptive management control relating to turtles.</p>
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Potential impacts from seismic activities, asserted in publicly available Affidavits of ██████████ (September 2023) and Concise Statement (Ref. Section 4.9.1):

- Whales
- Turtles, dugongs and other species
- Songlines (including those around Murujuga)

Traditional Owner and eNGO capacities. The information provided by Woodside meets the requirements of Regulation 11A for the reasons set out above. ██████████, ██████████ and SOS have been provided a reasonable time and opportunity to consult in relation to this EP and all of the Scarborough EPs. [Please see consultation record]. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates.

(9) Woodside has provided a reasonable period of time and ample opportunity for ██████████, ██████████ and SOS to provide the information that they say Woodside requires for its EPs. Despite providing that reasonable period of time and opportunity, ██████████, ██████████ and SOS have not provided the information. Woodside has consistently sought to provide a culturally safe space for ██████████, ██████████ and SOS to share the information they wish to share with Woodside. Throughout consultation, ██████████, ██████████ and SOS have continued to state that they have additional information they wish to tell Woodside and that they say Woodside requires for its Environment Plans, and, despite Woodside offering ample opportunity, have expressly refused to provide information to Woodside.

- a. [Ref for example 17 April 2023 letter, letters setting up each meeting on 14 March, 25 July, 12 September and 4 October and most recently 3, 4 and 5 October 2023 correspondence]. There is a limit to consultation – Woodside is not required to wait indefinitely to receive this information. On a number of occasions, ██████████, ██████████ and SOS have declined to provide the information to Woodside and have

instead provided information publicly [Affidavits of ██████████ September 2023] or offered to provide the information to others [Ref: letter to NOPSEMA 26 September 2022; letter to NOPSEMA 4 October 2023]. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates

- (10) Woodside considers that ██████████, ██████████ and SOS have expressed a fundamental objection to the Scarborough project, including this EP. Despite this, Woodside has continued to engage in good faith to understand what could be done to minimise any potential impacts to cultural interests and values held by ██████████, ██████████ and SOS. [See for example, consultation record and discussions with ██████████, ██████████ and SOS on their views regarding controls in place to manage topics of concern to them – Ref for example 12 September and 4 October meetings].
- (11) This is refuted in the letter from EDO dated 4 October 2023 which confirms consultation commenced in at least 2022 [EDO 4 October 2023 letter]. Woodside considers that Consultation under Reg 11A is complete in circumstances because sufficient information, a reasonable period of time and opportunity have been provided to ██████████, ██████████ and SOS in their individual Traditional Owner and eNGO capacities. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates

	<p>(12) Woodside has resourced Traditional Custodian representative institutions to access relevant information and independent expert advice so that they are enabled to provide informed and considered feedback on the broader Scarborough activities. A number of documents containing cultural heritage information, including heritage assessments, contain the intellectual property of Traditional Custodians or sensitive information that may be culturally restricted. For these reasons, Woodside respects this position and does not disclose this information. This information is held by representative institutions and may be disclosed by them where they consider it appropriate to do so. Woodside has provided Save Our Songlines, ██████████ and ██████████ with the outcomes of these surveys to the extent that these can be shared publicly, consistent with the information in the public domain (i.e. where culturally appropriate). [Ref for example, 14 March 2023 and following correspondence]. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(13) Woodside understands that some species hold spiritual and cultural importance to ██████████ ██████████ and SOS. Woodside has implemented controls to reduce potential risks and impacts to ecological and cultural values to ALARP and to an acceptable level, and has discussed with ██████████, ██████████ and SOS, controls that Woodside has put in place to manage impacts and risks relating to their spiritual and cultural connection to the environment. [Ref for example, 25 July 2023 meeting and following correspondence, 12 September 2023 meeting and following correspondence as well as 4 October meeting]</p> <p>(14) Woodside has consistently sought to make arrangements for ██████████, ██████████ and</p>	
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	<p>SOS to be able to share their cultural knowledge and stories in a culturally appropriate manner, including offering and attending several on Country meetings [ref: 14 March, 25 July, 12 September and 4 October 2023 meetings]. Woodside also sought to meet the requests of ██████████ and SOS to attend an on-Country meeting at Rosemary Island, but was cautioned by the relevant cultural authority that Woodside did not have cultural permissions or spiritual protection to do so. Woodside and ██████████ reached a compromise relating to circumnavigating Rosemary Island rather than going on shore. ██████████ later refused this compromise and refused to share information [Ref meeting on 4 October 2023]. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(15) ██████████, ██████████ and SOS originally sought to consult on all Scarborough EPs at once and confirmed they have information and “objections” to share on all Scarborough EPs as early as September 2022. [Ref correspondence and information in the public domain from around February 2022, July 2022, 26 August 2022 and 4 January 2023] From about June 2023, this position changed and ██████████, ██████████ and SOS expressly directed Woodside to consult on individual EPs. Woodside has been ready, willing and able to consult on all Scarborough EPs (including this EP) since consultation commenced, and prepared materials to consult on all EPs – and attempted to present these materials – however was directed by EDO to only talk about Seismic, or to describe activities and not cover controls [Ref. 12 September 2023 meeting and 4 October 2023 meeting]. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim</p>	
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	<p>by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(16) ██████████, ██████████ and SOS have not expressly confirmed their interests and rather, have raised topics of interest to them. Woodside has considered ██████████, ██████████ and SOS's topics of interest and shared relevant information with ██████████, ██████████ and SOS relating to these interests, including controls put in place to manage risks and impacts to them, during meetings and subsequent emails. [Ref for example, 25 July 2023 meeting and following correspondence, 12 September 2023 meeting and following correspondence; 4 October 2023 meeting]</p> <p>(17) Woodside has confirmed that consideration is given to all marine animals in the Environment Plan preparation process. Marine fauna that may credibly be impacted by both direct or indirect activities are considered in the impact assessment (s. 6). Woodside has also stepped through these issues during consultation meetings [Ref for example 12 September 2023 meeting and 4 October 2023 meeting]</p> <p>(18) Woodside understands that songlines and energy lines to hold personal spiritual and cultural value individually (rather than communally) to ██████████, ██████████ and SOS. Woodside has consistently sought to understand the nature of these values to ensure impacts to these values can be minimised. ██████████, ██████████ and SOS have declined to provide further information on these values. In any event, Woodside has sought to include controls that seek to reduce risks and impacts to ALARP and acceptable levels and has sought ██████████ and ██████████ and SOS' views on the proposed controls. [Ref for example, 12 September 2023 meeting and following correspondence; 4 October 2023 meeting]</p>	
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	<p>(19) Through the publicly available Affidavits of [REDACTED] (August and September 2023) and Concise Statement, Woodside has been made aware that [REDACTED], [REDACTED] and SOS may hold cultural and spiritual values associated with caring for Country, bungarra, eagle and kangaroo. Bungarra, eagles and kangaroos have not been identified as species credibly impacted by either direct or indirect activities associated with this proposed activity. Woodside has assessed potential risk/impact of the activity on receptors raised. Woodside has not been provided with any additional detail regarding values associated with Caring for Country. However, Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	
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Table 2: Engagement Report with Persons or Organisations Assessed as Not Relevant

Commonwealth Commercial fisheries and representative bodies		
Australian Southern Bluefin Tuna Industry Association (ASBTIA)		
<p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> On 3 February 2023, Woodside emailed ASBTIA on the proposed activity (Appendix F, reference 1.65) and provided a Consultation Information Sheet and fisheries map. On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.86). 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or clai received despite follow up.	<p>Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP.</p> <p>No additional measures or controls are required.</p>

Tuna Australia

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside emailed Tuna Australia on the proposed activity (Appendix F, reference 1.65) and provided a Consultation Information Sheet and fisheries map.
- On 3 February 2023, Tuna Australia responded and requested remuneration for consultation.
- On 15 March 2023, Woodside emailed Tuna Australia:
 - Woodside advised that the level of feedback provided by an organisation, if any, is at the person or organisation's discretion.
 - Woodside advised it would be happy to meet with Tuna Australia to provide an overview of our proposed activities, how we develop our environment plans and the extensive controls we have in place to reduce impacts to as low as reasonable practical (ALARP) and acceptable level.
 - The aim is to provide an efficient and simple way to obtain feedback and to assist in an understanding of Woodside's activities.
- On 15 March 2023, Tuna Australia emailed Woodside:
 - Tuna Australia attached what it described as 'an industry position statement for engaging with energy companies seeking consultation advice from stakeholders on environmental plans and project proposals'. This included:
 - An overview of Tuna Australia's functions, interests and activities as well as the organisation's company objectives.
 - The geographic areas that Tuna Australia represents by membership Statutory Fishing Rights
 - A recommendation that project proponents also engage with the Australian Southern Bluefin Tuna Industry Association for any proposals in the Southern Bluefin Tuna fishing area.
 - The position that Tuna Australia considers itself a 'relevant person' consistent with NOPSEMA guidelines.
 - A request that Tuna Australia be contacted when any proposed activity has the potential to impact vessel navigation, fishing activities, and/or the conservation of fish resources consistent with the Offshore Petroleum and Greenhouse Gas Storage Act 2006.
 - A request for a map from proponents of the proposed activity to determine if its member interests may be affected on a case-by-case basis.
 - A request that where potential effects exist, there is a need for a service agreement. Tuna Australia advised it can no longer coordinate consultation with offshore energy activities on behalf of Tuna Australia's members without a service agreement in place. Tuna Australia requests proponents execute Tuna Australia's services agreement and provide information in a written succinct manner including estimated boundaries for extent of planned activity impacts (i.e. artificial light, noise, discharges etc) as well as activities within the operational area. This advice will be distributed to members and non-members holding SFRs in the Eastern (114 concession holders) and Western (61 concession holders) Tuna and Billfish Fisheries for comment. Information provided would be relevant to tuna and billfish fisheries in the area that may affect vessel navigation, fishing activities, and/or the conservation of fish resources based on the planned aspects of the activity, and proposed control measures to manage impacts.
 - Tuna Australia noted that it wishes to engage constructively with project proponents for all situations where there is potential for conflict with vessel navigation, access to fishing area and/or gear, and the biology of target fish and baitfish. Advice provided can change annually due to the dynamic nature of its fisheries.
 - Tuna Australia encouraged companies requiring advice from its sector to enter into a consultation services agreement with Tuna Australia to support their applications. Noting that Tuna Australia may be able to provide information on vessel navigation, fishing activities and/or the conservation of fish resources that may be affected that is not publicly available and will be an important input to environmental impact and risk assessment processes.

- On 17 May 2023, Woodside emailed Tuna Australia (Appendix F, reference 1.111) thanking it for its position statement and:
 - Noted the level of feedback provided by an organisation, if any, is at the person or organisation’s discretion.
 - Woodside does not have an expectation that organisations will provide a report or engage a consultant to engage in consultation or provide feedback on their behalf.
 - Woodside is open to suggestions from Tuna Australia as to ways to improve efficiency and simplicity for feedback so that the process is manageable.
 - Woodside reiterates it would be happy to meet with Tuna Australia to provide an overview of our proposed activities, how we develop our environment plans and the extensive controls we have in place to reduce impacts to as low as reasonably practical (ALARP) and acceptable level.
- On 17 May 2023, Tuna Australia sent an email to NOPSEMA, and copied in Woodside, regarding Woodside’s position on engagement with Tuna Australia. The email stated:
 - When energy companies execute a service agreement with Tuna Australia, this ensures that all Western Tuna and Billfish Fishery (WTBF) and Eastern Tuna and Billfish Fishery concession holders are consulted on environmental plans and responses are provided in a report.
 - Woodside do not have an appreciation of the nature fishing and are more content to receive information to support their environmental plans and proposals free of charge. This is not consistent with their company values.
 - Woodside has failed to recognise the WTBF is a relevant person.
 - WTBF concession holders are very concerned with developments in their fishing zone and have many comments and questions on environmental plans and proposals.
 - Tuna Australia requested that to meet sound consultation principles NOPSEMA stipulate that all environmental plan submissions receive formal advice from Tuna Australia.
- On 26 May 2023, Woodside had a phone call with the Tuna Australia CEO and:
 - Explained that Woodside would like to discuss a path forward following receipt of Tuna Australia’s Position Statement across its EP activities, including the activities proposed under this EP.
 - Noted Tuna Australia’s correspondence to NOPSEMA and copied to Woodside dated 17 May 2023.
 - Noted Tuna Australia’s previous EP consultation feedback that Woodside had responded to with respect to unrelated EPs.
 - Reiterated that Woodside does not expect Tuna Australia to provide a consultation report for each of its EPs and are concerned about this potential misalignment on expectations.
 - Tuna Australia advised it would like to discuss a way forward as woodside suggested and requested Woodside call Tuna on 30 May 2023, which Woodside committed to.
- On 2 June 2023, Woodside made a follow up phone call to Tuna Australia and left a voicemail covering the following:
 - Woodside called Tuna Australia on 2 June 2023 to follow up on phone call on 26 May 2023.
 - Woodside left a message requesting a call back and the opportunity to meet with Tuna Australia to discuss Woodside’s portfolio of environment plan activities.
 - Woodside requested the opportunity to discuss options to consult with Tuna Australia and potentially lessen the burden on Tuna Australia for providing feedback on Woodside’s EPs.
 - Woodside offered the opportunity to take Tuna Australia through the entire EP portfolio, inclusive of decommissioning, so Tuna Australia could better assess the volume of activities.
 - Woodside reiterated that there was no expectation for Tuna Australia to provide a consultation report on each individual EP, and potentially there is an opportunity for Woodside and Tuna Australia to work together on a more strategic approach.

Summary of Feedback, Objection or Claim

Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response

Environment Plan Controls

<p>Tuna Australia has responded providing a position statement that outlines a request for how it would like to be consulted on EP activities.</p> <p>The position statement requests that where there is the potential for the proposed activity to impact Tuna Australia's functions, interests or activities or that of its members, there is a need for a service agreement to be executed.</p>	<p>The fishery management area for the Western Tuna and Billfish Fishery, which Tuna Australia represents, overlaps both the operational area and EMBA. However, there is considered to be no potential for interaction within these areas as:</p> <ul style="list-style-type: none"> No fishing effort has occurred within or nearby to the Operational Area or EMBA in at least the last 10 years, with the nearest fishing effort occurring over 350 km south of the Operational Area (Patterson et al., 2015, 2016, 2017, 2018, 2019, 2020). In the highly unlikely event of a marine diesel spill (represented by the EMBA under a range of different weather conditions), there is considered to be no potential for interaction with the fishery, with its nearest fishing effort ~110 km to the west of the EMBA boundary. <p>Woodside acknowledges previous feedback received from Tuna Australia with respect to separate EPs, and notes that for the proposed activities:</p> <ul style="list-style-type: none"> Woodside has controls in place to identify and manage potential interaction with recreational and commercial fisheries, including establishing and maintaining a publicly available interactive map which provides stakeholders with updated information on activities, including location of seismic vessel, and establishing and maintaining a 3 nm radius Safe Navigation Area around the seismic vessel and towed array. Acoustic emissions from the seismic survey, and general vessel-based noise will be managed in accordance with legislative and regulatory requirements (e.g. EPBC Act Policy Statement 2.1 and EPBC Regulations 2000 – Part 8 Division 8.1) Routine marine vessel discharges will be managed in accordance with legislative and regulatory requirements (e.g. marine orders) There is no planned direct interaction with the seabed as part of the proposed activities. <p>Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.10.2 of this EP.</p> <p>Woodside has adopted the following controls to manage potential interactions with commercial fisheries:</p> <ul style="list-style-type: none"> C 10.3 – vessels will comply with the Navigation Act and Marine Order 21 C 1.1 – notifications to AHO to allow generation of navigation warnings and Notice to Mariners C 2.1 – establishment of temporary exclusion zones C1.3 – AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area will be notified prior to the commencement and at the end of the activity <p>Woodside has also adopted the following controls to manage the points raised in Tuna Australia's Feedback</p> <ul style="list-style-type: none"> C13.1 and C 9.2 vessels will comply with Marine orders 95 and 96
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	will apply its Management of Change and Revision process (see Section 7.7).	
Other non-government groups or organisations		
350 Australia (350A)		
<p>Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with 350 Australia (350A) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:</p> <ul style="list-style-type: none"> • On 14 February 2022, during the course of preparing the EP, 350A self-identified and provided comment on the broader Scarborough development and requested to be consulted on the proposed activity. <ul style="list-style-type: none"> - 350A's members are affected by the Scarborough development in a number of ways; it has the potential to impact on marine wildlife. 350A needs to be certain the EP has considered impacts from all pollution sources on all potential receptors and has stringent monitoring and pollution response programs. - 350A believes the Scarborough development will produce over one billion tonnes of carbon emissions over the next 25 years, adding to WA's emissions and the planet's burden of climate change impacts, and it will accelerate climate change. • On 25 February 2022, Woodside emailed 350A and included responses to address specific claims and objections raised regarding the proposed activity, where appropriate. <ul style="list-style-type: none"> - Woodside advised it will assess the self-identification by 350A and the comments received to determine relevancy for the purposes of consultation for future Scarborough EPs when those EPs are being prepared. - Woodside provided a link to the publicly available draft EP on the NOPSEMA website which has been available since 13 January 2022. - Woodside invited 350A to provide further feedback on the proposed activity. 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>350A self-identified, provided comment on the broader Scarborough development and requested to be consulted on the proposed activity.</p> <p>350A provided feedback relating to:</p> <ul style="list-style-type: none"> • Impacts to marine wildlife from pollution • Carbon emissions and climate change. <p>350A asked for additional time to provide feedback.</p> <p>350A later provided additional feedback:</p> <ul style="list-style-type: none"> • Consultation should be undertaken when Revision 3 of the EP is complete and available • 350A requested a JASCO report on marine acoustic impacts • Impacts of vessel use on turtles • Limiting vessel speed in relation to whales • Risks controlled to ALARP for vulnerable and endangered species. 	<p>Feedback has been assessed on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>

Australasian Centre for Corporate Responsibility (ACCR)

- Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Australasian Centre for Corporate Responsibility (ACCR) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:
- On 16 September 2022, Woodside emailed ACCR (Appendix F, reference 1.33) advising of the proposed activity and provided a Consultation Information Sheet.
 - Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the ACCR website.
 - Woodside extended an opportunity to meet to discuss the proposed activity.
- On 23 September 2022, Woodside followed up with ACCR via email.
- On 10 October 2022, Woodside followed up with ACCR via email and confirmed no response had been received.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has assessed claims and objections raised on the ACCR public website that cover topics relevant to the proposed activity, where appropriate and provided responses to ACCR (shown above). Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.

The Climate Council (TCC)

- Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with The Climate Council (TCC) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:
 - On 16 September 2022 Woodside emailed TCC (Appendix F, reference 1.29) advising of the proposed activity and provided a Consultation Information Sheet.
 - Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the TCC public website.
 - Woodside extended an opportunity to meet to discuss the proposed activity.
- On 16 September 2022, TCC emailed an automated response to Woodside noting that due to the high volume of emails it receives, TCC may not be able to respond individually to your enquiry. No feedback was received from the organisation.
- On 23 September 2022, Woodside followed up with TCC via email.
- On 10 October 2022, Woodside followed up with TCC via email and confirmed no response had been received.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls

<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has assessed claims and objections raised on the TCC public website that cover topics relevant to the proposed activity, where appropriate and provided responses to TCC (shown above).</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
<p><i>Doctors for the Environment Australia (DEA)</i></p>		
<p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> • On 1 February 2022, during the course of preparing the EP, DEA self-identified and provided comment on the broader Scarborough development and requested to be consulted on the proposed activity. <ul style="list-style-type: none"> - DEA believes it is a relevant organisation due to its membership being comprised of medical professionals who deal with people impacted directly and indirectly by climate change e.g youth, elderly, First Nations people, people from low socioeconomic backgrounds, disabled people, those with disabilities, pre-existing medical conditions and people who live in remote and rural communities. - DEA believe that climate change is being called “the greatest global health threat of the 21st century”. In Australia, the Australian Medical Association and the Australian College of Nursing have said climate change is health emergency and that health impacts of climate change threaten to undermine the last centuries progress in public and global health. - DEA believe that gas is also recognised as a health threat e.g., gas in domestic premises has been shown to contribute to childhood asthma. - DEA believe that gas processing on the Burrup Peninsula will also increase existing levels of nitrogen dioxide, sulphur dioxide, ozone, mercury, other heavy metals and many thousands of tonnes of volatile organic compounds. Air pollutants of this type can cause serious health impacts, including heart disease, stroke, lung cancer, asthma and diabetes, even at low levels of exposure. • On 25 February 2022, Woodside emailed DEA and included responses to address specific claims and objections raised regarding the proposed activity, where appropriate. <ul style="list-style-type: none"> - Woodside advised that it will assess the self-identification by DEA and the comments received to determine relevancy for the purposes of consultation for future Scarborough EPs when those EPs are being prepared. - Woodside provided a link to the publicly available draft EP on the NOPSEMA website which has been available since 13 January 2022. - Woodside invited DEA to provide further feedback on the proposed activity. 		
<p><i>Summary of Feedback, Objection or Claim</i></p>	<p><i>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</i></p>	<p><i>Environment Plan Controls</i></p>

<p>DEA self-identified, provided comment on the broader Scarborough development and requested to be consulted on the proposed activity.</p> <p>DEA provide feedback relating to:</p> <ul style="list-style-type: none"> • Climate change and global impacts to human health. • Pollutants produced by gas processing. 	<p>Feedback has been assessed on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate.</p> <p>Based on Woodside's methodology for the Assessment of Additional Persons (see Section 5.3.1) Woodside has determined there is no potential for the functions, interests or activities of DEA to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan.</p> <p>Woodside confirms the 4D Seismic EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program (PAP), having regard to the nature and scale of the proposed PAP.</p> <p>The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the 4D Seismic EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for the SITI EP but may be evaluated in Scarborough EPs as appropriate.</p> <p>GHG emissions associated with the Seismic activity (i.e., fuel combustion from project vessels) are considered in Section 6.6.4.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
<i>Extinction Rebellion WA (XRWA)</i>		
<ul style="list-style-type: none"> • Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Extinction Rebellion WA (XRWA) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically: • On 16 September 2022, Woodside emailed XRWA (Appendix F, reference 1.31) advising of the proposed activity and provided a Consultation Information Sheet. <ul style="list-style-type: none"> - Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the XRWA public website. - Woodside extended an opportunity to meet to discuss the proposed activity. • On 23 September 2022, Woodside followed up with XRWA via email. • On 30 September 2022, XRWA emailed Woodside advising it is 'entirely opposed to all of Woodside's new offshore gas extraction projects' and 'When you are ready to respond in a considered and responsible manner to the overwhelming weight of scientific opinion that demands that there must be no new gas projects Extinction Rebellion WA will be only too happy to meet with you.' • On 4 October 2022, Woodside emailed XRWA noting XRWA's position that it does not wish to engage further on the proposed activity. 		
<i>Summary of Feedback, Objection or Claim</i>	<i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i>	<i>Environment Plan Controls</i>

<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has assessed claims and objections raised on the XRWA public website that cover topics relevant to the proposed activity, where appropriate and provided responses to XRWA (shown above).</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
<p><i>Friends of Australian Rock Art. Inc (FARA)</i></p>		

- Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Friend of Australian Rock Art Inc (FARA) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:
- On 14 January 2022, during the course of preparing the EP, FARA self-identified and provided comment on the broader Scarborough development and requested to be consulted on the proposed activity.
 - FARA believes it is a 'relevant organisation' due to being involved for many years in the preservation and conservation of the Murujuga rock art and surrounding landscape.
 - FARA raised concerns about the broader impacts of the Scarborough Project including climate change impacts and socio-economic pressures on remote and Indigenous communities in the Pilbara.
 - FARA raised concerns regarding damage to the cultural landscape and rock art and impacts on Traditional custodians of Murujuga and the Dampier Archipelago who will be directly impacted (emissions, facilities) and indirectly impacted (noise, view, dust).
 - FARA believes that increased industrial emissions on the Burrup Peninsula will almost certainly compromise the application to have the site added as a World Heritage place.
 - FARA believes its members (local workers in the gas industry and community members) will be affected by atmospheric emissions from offshore drilling, along associated pipelines, during processing, production, transport of the Scarborough gas, and gas used by Perdaman and others on the Burrup Peninsula.
 - FARA raised concerns regarding the marine environment and endangered species. FARA's members want to know:
 - That the Scarborough EPs have considered the impacts from all pollution sources on all potential receptors, and include stringent monitoring and pollution-response programs,
 - That there is a robust decommissioning plan with funds set aside.
- On 28 January 2022, Woodside received correspondence from FARA, via NOPSEMA (letter dated 16 January 2022) providing comment on the broader Scarborough development and requested to be consulted on the proposed activity.
- On 25 February 2022, Woodside emailed FARA:
 - Woodside included advice that Woodside has determined there is no potential for the functions, interests or activities of FARA to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan.
 - Woodside advised that it will assess the self-identification by FARA and the comments received to determine relevancy for the purposes of consultation for future Scarborough EPs when those EPs are being prepared.
 - Woodside provided a link to the publicly available draft EP on the NOPSEMA website which has been available since 13 January 2022.
 - Woodside invited FARA to provide further feedback on the proposed activity
- On 5 April 2022, FARA responded noting it had since consulted with NOPSEMA and understands Woodside's assessment of FARA's relevance.
 - FARA also commented that it understands it is appropriate for Woodside to consult with FARA for the Scarborough Operations EP.
- On 22 June 2022, FARA provided further comment on the broader Scarborough development.
 - FARA endorses and supports the request made by Murujuga custodians [REDACTED] and [REDACTED] that they are 'relevant persons' to be consulted by Woodside on the Scarborough gas project.
 - FARA stated it also has relevant person status as Murujuga's rock art will be indirectly impacted by the proposed development.
 - FARA claimed acidic emissions from Woodside's JV site at Karratha Gas Plant have been impacting on the fragile patina of the adjoining petroglyphs and emissions from Scarborough activities will further increase this impact. Using scrubber technology advocated by FARA has never been adopted by Woodside due to costs.
 - With the proposal to process additional gas for another 25 years using the aging infrastructure of the Karratha Gas Plant, FARA sees it as extremely urgent that Woodside's emissions-control technology, and that of the two Pluto plants, is updated to world standards in order to substantially reduce its toxic NOx and SOx emissions.

<ul style="list-style-type: none"> - FARA wishes to be consulted by Woodside on all EPs pertaining to developments which would cause or lead to damage (both direct and indirect impacts) to Murujuga's rock art. • On 22 July 2022, Woodside advised FARA that the previous advice provided on 25 February 2022 still applies. - Woodside confirmed it makes information on each of its EPs publicly available via its website. Woodside also confirmed it continues to accept feedback on the EPs which are made publicly available by the regulator upon initial submission and final acceptance and remain available online following final acceptance. 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>FARA self-identified, provided comment on the broader Scarborough development.</p> <p>FARA's feedback relating to:</p> <ul style="list-style-type: none"> • Murujuga rock art and surrounding landscape • Climate change • Socio-economic pressures on remote and Indigenous communities • Direct and indirect impacts on Traditional custodians of Murujuga and the Dampier Archipelago • Burrup Peninsula's World Heritage listing application compromised • Their members being affected by impacts of emissions from Scarborough activities • The Impacts to marine environment and endangered species • Impacts from all pollution sources on all potential receptors. 	<p>Feedback has been assessed on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate.</p> <p>Based on Woodside's methodology for the Assessment of Additional Persons (see Section 5.3.1) Woodside has determined there is no potential for the functions, interests or activities of FARA to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan.</p> <p>Woodside confirms the 4D Seismic EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program (PAP), having regard to the nature and scale of the proposed PAP.</p> <p>The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the 4D Seismic EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for the seismic EP but may be evaluated in Scarborough EPs as appropriate.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
International Fund for Animal Welfare (IFAW)		
<ul style="list-style-type: none"> • Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with International Fund for Animal Welfare (IFAW) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically: • On 16 September 2022, Woodside emailed IFAW (Appendix F, reference 1.34) advising of the proposed activity and provided a Consultation Information Sheet. <ul style="list-style-type: none"> - Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the IFAW public website. - Woodside extended an opportunity to meet to discuss the proposed activity. • On 23 September 2022, Woodside followed up with IFAW via email. • On 10 October 2022, Woodside followed up with IFAW via email and confirmed no response had been received. 		

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has assessed claims and objections raised on the IFAW public website that cover topics relevant to the proposed activity, where appropriate and provided responses to IFAW (shown above). Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).	No additional measures or controls are required.
Lock The Gate Alliance (LTGA)		
<ul style="list-style-type: none"> • Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Lock The Gate Alliance (LTGA) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically: • On 4 February 2022, during the course of preparing the EP, LTGA self-identified and provided comment on the broader Scarborough development and requested to be consulted on the proposed activity: <ul style="list-style-type: none"> - LTGA believes it is a relevant organisation which will be affected by the Scarborough development. Its members, especially those who live in the Pilbara and Kimberley, those who depend on groundwater, and those who live in areas subject to flooding (especially the Kimberley), will be affected by climate change which will be increased by the project. - LTGA commented that the development will produce carbon emissions over the next 25 years, impacting climate change and socioeconomic pressures which will directly affect LTGA and its supporters. - LTGA believe that the Scarborough development will lead to damage to the National Heritage values of the Burrup Peninsula. • On 25 February 2022, Woodside emailed LTGA and included responses to address specific claims and objections raised regarding the proposed activity, where appropriate. <ul style="list-style-type: none"> - Woodside advised it will assess the self-identification by LTGA and the comments received to determine relevancy for the purposes of consultation for future Scarborough EPs when those EPs are being prepared. - Woodside provided a link to the publicly available draft EP on the NOPSEMA website which has been available since 31 August 2021. - Woodside invited LTGA to provide further feedback on the proposed activity. 		
Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls

<p>LTGA self-identified, provided comment on the broader Scarborough development and requested to be consulted on the proposed activity.</p> <p>LGTA provided feedback relating to:</p> <ul style="list-style-type: none"> • Socio-economic impacts of climate change and carbon emissions on its members • Damage to National Heritage values of the Burrup Peninsula. 	<p>Feedback has been assessed on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate.</p> <p>Based on Woodside's methodology for the Assessment of Additional Persons (see Section 5.3.1) Woodside has determined there is no potential for the functions, interests or activities of LTGA to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan.</p> <p>Woodside confirms the 4D Seismic EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program (PAP), having regard to the nature and scale of the proposed PAP.</p> <p>The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the 4D Seismic EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for the Seismic EP but may be evaluated in Scarborough EPs as appropriate.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
<p>Market Forces</p>		
<ul style="list-style-type: none"> • Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Market Forces for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically: • On 16 September 2022, Woodside emailed Market Forces (Appendix F, reference 1.32) advising of the proposed activity and provided a Consultation Information Sheet. <ul style="list-style-type: none"> - Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the Market Forces public website. - Woodside extended an opportunity to meet to discuss the proposed activity. • On 23 September 2022, Woodside followed up with Market Forces via email (Appendix F, reference 1.27). • On 10 October 2022, Woodside followed up with Market Forces via email and confirmed no response had been received. • On 10 October 2022, Market Forces emailed Woodside noting it would like to continue to receive correspondence regarding EPs for Woodside projects and the opportunity to consult and provide feedback on those plans. 		
<p>Summary of Feedback, Objection or Claim</p>	<p>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</p>	<p>Environment Plan Controls</p>

<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has assessed claims and objections raised on the Market Forces public website that cover topics relevant to the proposed activity, where appropriate and provided responses to Market Forces (shown above).</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
<p>World Wildlife Fund (WWF) Australia</p>		
<ul style="list-style-type: none"> • Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with World Wildlife Fund Australia (WWF) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically: • On 19 September 2022, Woodside emailed WWF (Appendix F, reference 1.35) advising of the proposed activity and provided a Consultation Information Sheet. <ul style="list-style-type: none"> - Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the WWF public website. - Woodside extended an opportunity to meet to discuss the proposed activity. • On 19 September 2022, WWF provided an automated email response to Woodside noting a member of its Supporter Relation team will be in touch shortly. • On 23 September 2022, Woodside followed up with WWF via email. No feedback received from WWF. • On 10 October 2022, Woodside followed up with WWF via email and confirmed no response had been received. 		
<p>Summary of Feedback, Objection or Claim</p>	<p>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</p>	<p>Environment Plan Controls</p>
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has assessed claims and objections raised on the WWF public website that cover topics relevant to the proposed activity, where appropriate and provided responses to WWF (shown above).</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
<p>University of Western Australia (UWA)</p>		

Summary of information provided and record of consultation:

- On 14 December 2022, Woodside emailed UWA in response to an email regarding Woodside’s Scarborough State EP and arranged a time to meet.
- On 15 December 2022, Woodside met with representatives from UWA via video conference to provide a briefing on the broader Scarborough Project activities and related EPs. During its meeting UWA confirmed:
 - In general, Woodside’s offshore activities are out of the scope of interest for UWA; however, it has a particular interest in the Madeleine Shoals and the adjacent borrow ground in Commonwealth waters;
 - There is a lack of data on terrain outside of the current mapping on Madeleine Shoals that, while unlikely, may extend north (towards the borrow ground area);
 - The full extent of the terrain was not captured given time and cost constrains; and,
 - The current mapping has the Shoals mapped ~100 m from the marine park boundary and ~1.3 km from the borrow ground boundary.
 - UWA also acknowledged Woodside may already have mapping of the borrow ground that indicates no exposed rock or hard material.
 - Woodside confirmed extensive studies of the borrow ground and adjacent marine park found no hard material and a substantial depth of sand.
 - UWA concluded it has submitted for additional funding for further exploration of Madeleine Shoals.
- On 6 February 2023, Woodside emailed UWA advising of the proposed activity (Appendix F, reference 1.74) and provided an updated Consultation Information Sheet.

Summary of Feedback, Objection or Claim	Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>UWA has advised that the proposed Scarborough activities are predominantly outside the scope of interest for UWA.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>

Western Australian Marine Science Institution (WAMSI)

Summary of consultation provided and responses:

- On 3 February 2023, Woodside emailed WAMSI advising of the proposed activity (Appendix F, reference 1.70) and provided an updated Consultation Information Sheet.
 - Woodside also asked for details of any research activities WAMSI is undertaking that may overlap with the proposed activity.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.84).

Summary of Feedback, Objection or Claim	Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

<p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> On 6 February 2023, Woodside emailed CSIRO advising of the proposed activity and provided an updated Consultation Information Sheet. <ul style="list-style-type: none"> Woodside also asked for details of any research activities CSIRO is undertaking that may overlap with the proposed activity. On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.96). 		
<p>Summary of Feedback, Objection or Claim</p>	<p>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</p>	<p>Environment Plan Controls</p>
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>
<p>Australian Institute of Marine Science (AIMS)</p>		
<p>Summary of information provided and record of consultation:</p> <ul style="list-style-type: none"> On 6 February 2023, Woodside emailed AIMS advising of the proposed activity (Appendix F, reference 1.75) and provided an updated Consultation Information Sheet. <ul style="list-style-type: none"> Woodside also asked for details of any research activities AIMS is undertaking that may overlap with the proposed activity. On 9 February 2023, AIMS emailed Woodside thanking it for the opportunity to consider the proposed activity. AIMS confirmed there are no overlaps with planned AIMS science activities in the area. 		
<p>Summary of Feedback, Objection or Claim</p>	<p>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</p>	<p>Environment Plan Controls</p>
<p>AIMS has confirmed there are no overlaps with planned AIMS science activities in the area. Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).</p>	<p>No additional measures or controls are required.</p>

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1. Consultation

1.1 Woodside Consultation Information Sheet (sent to all relevant stakeholders)



STAKEHOLDER CONSULTATION

INFORMATION SHEET

May 2021

SCARBOROUGH 4D BASELINE MARINE SEISMIC SURVEY

NORTHERN CARNARVON BASIN

Woodside is planning to conduct a 4D baseline marine seismic survey (MSS) over the Scarborough field within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia. The proposed activity is planned to commence in Q3 2022 for a period of between 55 and 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

The proposed survey will be conducted over areas where the Scarborough Joint Venture has previously acquired seismic data. The objective for the proposed activity is to acquire a new 3D seismic

survey that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey) over the Scarborough, North Scarborough and possibly the Jupiter gas fields (located within Petroleum Titles WA-61-L, WA-62-L & WA-61-R).

Woodside is Operator of the various joint ventures relating to the Scarborough, North Scarborough, Thebe and Jupiter fields, which comprise both Woodside and BHP (North West Shelf) Pty Ltd ("BHP"). Current equity participation of the joint venture is as described in the below table.

Gas Fields	Woodside Interest	BHP Interest
Scarborough (WA-61-L)	73.5%	26.5%
North Scarborough (WA-62-L)	73.5%	26.5%
Thebe (WA-63-R)	50%	50%
Jupiter (WA-61-R)	50%	50%

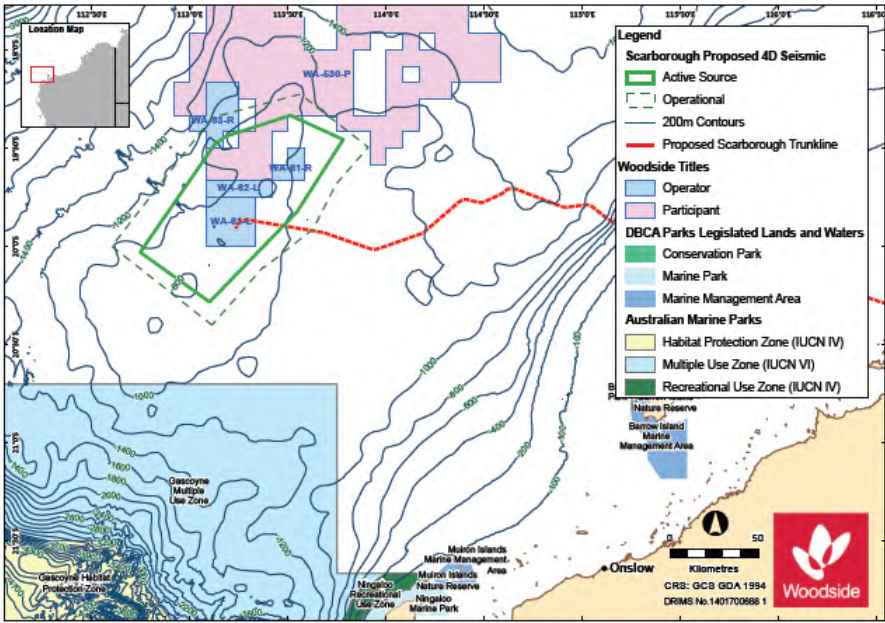


Figure 1. Proposed Scarborough 4D Baseline MSS Active Source and Operational Area

1 Scarborough 4D Baseline Marine Seismic Survey Northern Carnarvon Basin | May 2021

About Marine Seismic Surveys

During planned activities, a seismic vessel traverses a series of pre-determined sail lines within the survey Active Source Area at a speed of approximately three to five knots (5.5 – 9.3 km/hr).

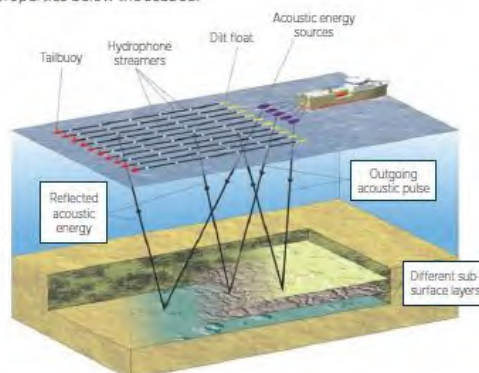
An additional buffer area, or Operational Area, around the Active Source Area is allowed for vessel manoeuvring and line turns. No discharge of the seismic source will occur in this Operational Area. Testing of the seismic source, 'soft starts', and all other operations of the seismic source during seismic lines including 'run ins' and 'run outs' will all be undertaken within the Active Source Area.

As the vessel travels along a sail line series, seismic air sources discharge compressed air to generate acoustic pulses approximately every 2 to 10 seconds.

These acoustic pulses are directed vertically through the water column and into the seabed. The released energy is reflected at geological boundaries, with the reflected signals detected by sensitive microphones called 'hydrophones, geophones or MEMS', embedded within cables, or streamers, towed directly behind the seismic vessel.

The reflected sound is recorded and then processed to generate

a seismic image, providing information about the structure and composition of geological formations and the associated sedimentary properties below the seabed.



Proposed Activity

Table 1 - Activity summary

Activity	Details
Earliest commencement date	Q3 2022
Estimated duration	55 – 70 days
Active Source Area	-5,650 km ²
Operational Area	-9,200 km ²
Water depth in Operational Area	Approximately 800 m - 1150 m
Last acquired data	2004
Vessels	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Distance from Active Source Area to nearest port/marina	214 km north-west of Exmouth
Distance from Active Source Area to nearest marine park	46 km north of Gascoyne Marine Park Multiple Use Zone

The proposed survey will be conducted by a purpose-built seismic survey vessel. The proposed marine seismic survey is typical of seismic surveys conducted in Australian marine waters, in terms of technical methods and procedures.

Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (dual or triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.

Seismic nodes have been widely used since the mid-2000s using remotely operated vehicles operated from a support vessel for node placement and retrieval from the seabed. However, advances in autonomous technology mean that the nodes will be able to self-reposition. The autonomous devices will make minimal noise when moving between locations and will have negligible disturbance to the seabed when positioning.

An additional support vessel will accompany the seismic vessel for assistance in the form of emergency tow as required and to re-supply the survey vessel with fuel and other logistical and operational supplies. An additional chase vessel may be used to manage interactions with other marine users in the vicinity of the survey if required. Survey activities will take place 24 hrs per day.

Technical details are outlined in Table 2.

Table 2 - Technical overview

Activity	Details
Number of streamers	Up to 14
Each streamer length	- 8 km
Distance between streamers	between 50 to 100 m
Maximum width of streamer array	-up to 1.5 km
Safe navigation area (cautionary zone)	Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations
Streamer tow depth	-15 m to 20 m

Table 4 - Summary of key risks and/or Impacts and management measures

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to:	<ul style="list-style-type: none"> • Consultation with petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP.
<ul style="list-style-type: none"> • Defence activities • Petroleum activities • Commercial fishing activities • Shipping activities • Infrastructure activities 	<ul style="list-style-type: none"> • Advice to relevant stakeholders prior to the commencement of activities. • Ongoing consultation by way of updates on vessel movements during survey activities at a frequency to meet relevant stakeholder needs.
Marine discharges	<ul style="list-style-type: none"> • All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards.
Underwater noise	<ul style="list-style-type: none"> • Implementation of <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) Policy Statement 2.1. • Noise modelling to inform potential impacts and input to mitigation and management measures.
Vessel interaction	<ul style="list-style-type: none"> • Woodside will notify relevant fishery stakeholders and Government maritime safety agencies of specific start and end dates, specific vessel-on-location dates, and any exclusion zones prior to commencement of the activity. • A three nautical mile radius safe navigation area will be in place around the seismic vessel and streamers during seismic operations. • The seismic vessel will display appropriate day shapes and lights to indicate the vessel is towing and is therefore restricted in its ability to manoeuvre. • The streamers will tow surface tail buoys fitted with safe navigation devices • A visual and radar watch will be maintained on the project vessel bridge at all times. • A support vessel and a potential chase vessel will be on standby to direct any shipping traffic or commercial fishing vessels away from the seismic vessel and its towed equipment.
Waste management	<ul style="list-style-type: none"> • Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. • Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. • Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Unplanned activities	
Hydrocarbon release	<ul style="list-style-type: none"> • Appropriate 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.
Introduction of invasive marine species	<ul style="list-style-type: none"> • All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. • Compliance with Australian biosecurity requirements and guidance. • Contracted vessels comply with Australian ballast water requirements.
Marine fauna interactions	<ul style="list-style-type: none"> • Measures will be taken to protect marine fauna and ecosystems from vessel activities and to prevent vessel collisions and groundings. • Maintaining dedicated marine fauna observers throughout the survey. • All marine fauna sightings are recorded and reported to the Department of Agriculture, Water and the Environment.

Providing Feedback

Our intent is to minimise environmental and social Impacts associated with the proposed activities, and we are seeking any interest or comments you may have to inform our decision making. If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before 14 June 2021.

Please note that your feedback and our response will be included in our Environment Plan for the proposed activity, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan for this information to remain confidential to NOPSEMA.

Ryan Felton, Senior Corporate Affairs Adviser Woodside Energy Ltd
 E: Feedback@woodside.com.au | Toll free: 1800 442 977

Please note that stakeholder feedback will be communicated to NOPSEMA as required under legislation. Woodside will communicate any material changes to the proposed activity to affected stakeholders as they arise.



Activity	Details
Sound source size	-3,150 in ²

Communications with mariners

A temporary three nautical mile radius safe navigation area will be maintained around the seismic vessel and towed array during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

The seismic vessel will be actively acquiring seismic data within the Operational Area determined for these activities. Marine notices will be issued prior to the start of work to alert vessels that maybe operating in waters nearby and that access to these areas may be limited.

Woodside will provide updates on vessel movements and their details during the activities in the form of look ahead reports at an appropriate frequency to meet relevant stakeholder needs.

The location of the Active Source Area and Operational Area are outlined in Table 3.

Table 3 - Survey location

Location point	
Latitude	Longitude
Active Source Area	
20°16'59.043"S	113°6'0.387"E
20°14'47.096"S	112°44'50.156"E
19°28'31.503"S	113°7'47.431"E
19°26'15.236"S	113°11'12.497"E
19°19'55.308"S	113°30'40.293"E
19°27'20.645"S	113°46'53.197"E
19°49'26.264"S	113°32'44.0"E
Operational Area	
20°24'2.0"S	113°6'45.162"E
19°59'57.873"S	112°36'7.851"E
19°20'39.38"S	113°6'41.252"E
19°13'25.19"S	113°33'49.172"E
19°29'41.467"S	113°54'32.011"E
19°40'50.544"S	113°44'44.882"E
19°54'42.118"S	113°37'40.185"E
20°6'2.873"S	113°23'11.168"E
20°6'31.786"S	113°22'13.473"E

Implications for Stakeholders

In support of the proposed activities, Woodside will consult relevant stakeholders whose interests, functions and activities may be affected by the proposed activities. We will also keep other stakeholders who have identified an interest informed about our planned activities.

Woodside has undertaken an assessment to identify potential risks to the marine environment and relevant stakeholders, considering timing, duration, location, and potential impacts arising from the Scarborough 4D Baseline Marine Seismic Survey.

A number of mitigation and management measures will be implemented and are summarised below.

Further details will be provided in the EP.

1.2 Email sent to ABF (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#).

Activity:

Summary:	The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside's work program commitments for the permit.
Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
Location:	214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E
Approximate Water Depth (m):	800 m – 1150 m
Schedule:	Around Q3 2022
Duration:	Around 55 days - 70 days
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards

[Redacted signature block]

1.3 Email sent to AFMA (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A temporary three nautical mile radius safe navigation area will be maintained around the seismic vessel and towed array during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth. It is highly unlikely the proposed activity will cause significant impacts to fish spawning and recruitment in any key commercial fish species due to underwater noise. Acquisition of the survey will not overlap the peak spawning season for key target species in the region, such as ruby snapper (December to April). Impacts to fish eggs and larvae are not likely due to the short duration of the survey, and lack of overlap with the peak spawning season.

An information sheet (also on our [website](#)), and map of relevant fisheries and list of previous surveys are attached.

Activity:

<i>Summary:</i>	The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside's work program commitments for the permit.
<i>Survey type:</i>	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
<i>Location:</i>	214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E
<i>Approximate Water Depth (m):</i>	800 m – 1150 m
<i>Schedule:</i>	Around Q3 2022
<i>Duration:</i>	Around 55 days - 70 days
<i>Relevant fisheries</i>	Commonwealth - Western Deepwater Trawl Fishery

- Vessels: A purpose-built seismic vessel, one support vessel and a potential chase vessel
- Safe navigation zone (cautionary area) Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> Defence activities Petroleum activities Commercial fishing activities Shipping activities Infrastructure activities 	<ul style="list-style-type: none"> Consultation with petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP. Advice to relevant stakeholders prior to the commencement of activities. Ongoing consultation by way of updates on vessel movements during survey activities at a frequency to meet relevant stakeholder needs.
Marine discharges	<ul style="list-style-type: none"> All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards.
Underwater noise	<ul style="list-style-type: none"> Implementation of <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) Policy Statement 2.1. Noise modelling to inform potential impacts and input to mitigation and management measures.
Vessel interaction	<ul style="list-style-type: none"> Woodside will notify relevant fishery stakeholders and Government maritime safety agencies of specific start and end dates, specific vessel-on-location dates, and any exclusion zones prior to commencement of the activity. A three nautical mile radius safe navigation area will be in place around the seismic vessel and streamers during seismic operations. The seismic vessel will display appropriate day shapes and lights to indicate the vessel is towing and is therefore restricted in its ability to manoeuvre. The streamers will tow surface tail buoys fitted with safe navigation devices A visual and radar watch will be maintained on the project vessel bridge at all times. A support vessel and a potential chase vessel will be on standby to direct any shipping traffic or commercial fishing vessels away from the seismic vessel and its towed equipment.
Waste management	<ul style="list-style-type: none"> Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment.

	<ul style="list-style-type: none"> Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Unplanned activities	
Hydrocarbon release	<ul style="list-style-type: none"> Appropriate 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.
Introduction of invasive marine species	<ul style="list-style-type: none"> All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. Compliance with Australian biosecurity requirements and guidance. Contracted vessels comply with Australian ballast water requirements.
Marine fauna interactions	<ul style="list-style-type: none"> Measures will be taken to protect marine fauna and ecosystems from vessel activities and to prevent vessel collisions and groundings. Maintaining dedicated marine fauna observers throughout the survey. All marine fauna sightings are recorded and reported to the Department of Agriculture, Water and the Environment.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

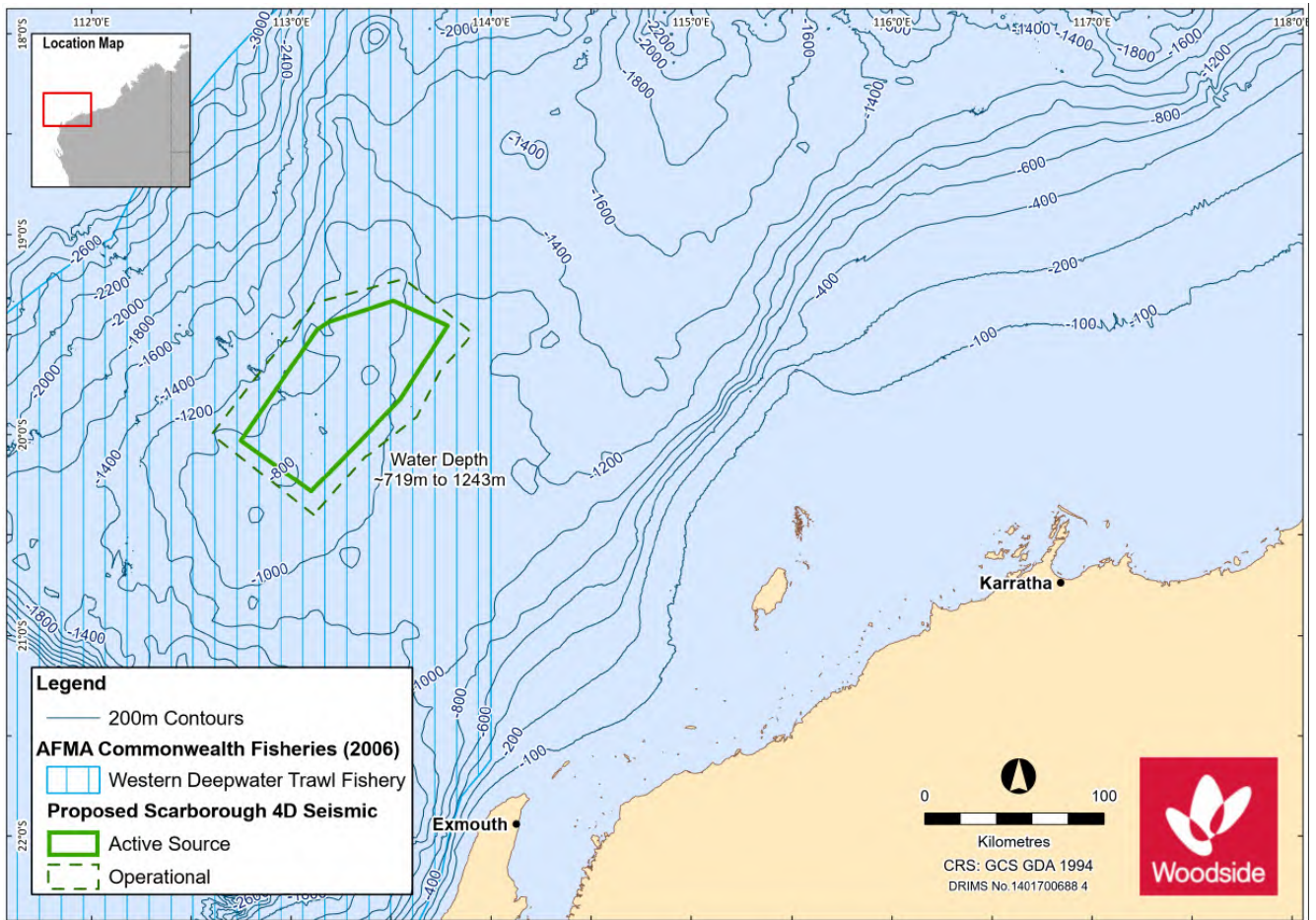
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **14 June 2021**.

Regards



Scarborough 4D B1 Marine Seismic Survey Environment Plan



Previous seismic surveys

SURVEY	2D/3D	YEAR
Scarborough 3D MSS	3D	2004
HEX03A Scarborough 3D MS	3D	2004
Bonaventure 3D MSS	3D	2006
Hex07B Thebe 3D MSS	3D	2007
Keystone 2008 3D	3D	2008
Mary Rose MR11 3D	3D	2011
Mary Rose NE Extension MC3D MSS 2011-2012	3D	2012
Honeycombs 3D HC12	3D	2012
Honeycombs MC3D	3D	2012
Mary Rose MC3D	3D	2012
Mary Rose MC3D	3D	2012
Mary Rose Northeast 3D	3D	2012
Duvalia MC 2D MSS 2012	2D	2012
Westralia Span MC2D MSS	2D	2012
Westralian SPAN 2D	2D	2013
Northwest Shelf Renaissance 2D 2016	2D	2016

1.4 Email sent to AHO (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#). A map showing vessel density is also attached for reference.

Activity:

Summary: The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside’s work program commitments for the permit.

Survey type: Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.

Location:	214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E
Approximate Water Depth (m):	800 m – 1150 m
Schedule:	Around Q3 2022
Duration:	Around 55 days - 70 days
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third- party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

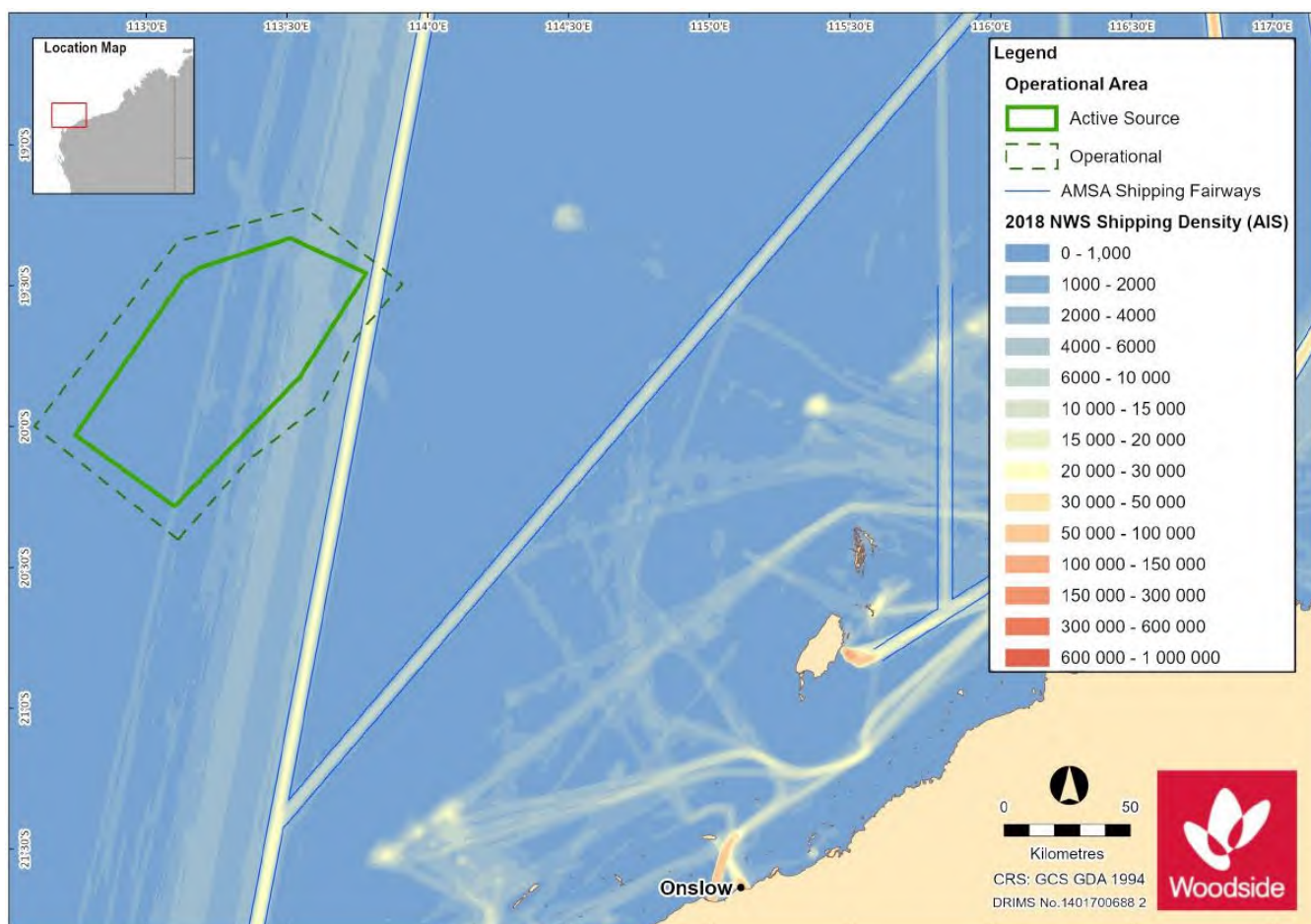
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards

[Redacted signature]

1.5 Shipping lanes map sent to AHO and AMSA (13 May 2021)



1.6 Email sent to AMSA (Maritime Safety) (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#). A map showing vessel density is also attached for reference.

Activity:

Summary:

The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside's work program commitments for the permit.

Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
Location:	214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E
Approximate Water Depth (m):	800 m – 1150 m
Schedule:	Around Q3 2022
Duration:	Around 55 days - 70 days
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards

[Redacted signature]

1.7 Email sent to AMSA (Marine Pollution) (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#). A map showing vessel density is also attached for reference.

Activity:

<i>Summary:</i>	The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside's work program commitments for the permit.
<i>Survey type:</i>	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
<i>Location:</i>	214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E
<i>Approximate Water Depth (m):</i>	800 m – 1150 m
<i>Schedule:</i>	Around Q3 2022
<i>Duration:</i>	Around 55 days - 70 days
<i>Vessels:</i>	A purpose-built seismic vessel, one support vessel and a potential chase vessel
<i>Safe navigation zone (cautionary area)</i>	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards



1.8 Email sent to DCCEEW (13 May 2021)

Dear DAWE

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. The Information Sheet is also available on our [website](#).

Activity:

<i>Summary:</i>	The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside's work program commitments for the permit.
<i>Survey type:</i>	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
<i>Location:</i>	214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E
<i>Approximate Water Depth (m):</i>	800 m – 1150 m
<i>Schedule:</i>	Around Q3 2022
<i>Duration:</i>	Around 55 days - 70 days
<i>Relevant fisheries</i>	Commonwealth - Western Deepwater Trawl Fishery
<i>Vessels:</i>	A purpose-built seismic vessel, one support vessel and a potential chase vessel
<i>Safe navigation zone (cautionary area)</i>	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Implications for DAWE's interests

We have identified and assessed potential risks and impacts to active Commonwealth commercial fishers, biosecurity matters and the marine environment that overlap the proposed Operational Area in the development of the proposed Environment Plan for this activity.

Woodside has endeavoured to reduce these risks to an as low as reasonably practicable (ALARP) level.

Commercial fishing implications:

One Commonwealth-managed fishery has been identified as being relevant to the proposed Activity, this being the Western Deepwater Trawl Fishery.

Woodside will consult licence holders in this fishery, including the provision of a fact sheet specific to commercial fishing interests.

Fisheries were assessed for relevance on the basis of fishing licence overlap with the Operational Area, as well as consideration of government fishing effort data from recent years, fishing methods, and water depth.

Biosecurity implications:

With respect to the biosecurity matters, please note the following information below.

<i>Potential IMS risk</i>	<i>IMS mitigation management</i>
Introduction and establishment of IMS.	Vessels are required to comply with the Australian Biosecurity Act 2015, specifically the Australian Ballast Water Management Requirements (as defined under the Biosecurity Act 2015) (aligned with the International Convention for the Control and Management of Ships' Ballast Water and Sediments) to prevent introducing IMS. Vessels will be assessed and managed to prevent the introduction of invasive marine species in accordance with Woodside's Invasive Marine Species Management Plan. Woodside's Invasive Marine Species Management Plan includes a risk assessment process that is applied to vessels undertaking Activities. Based on the outcomes of each IMS risk assessment, Management measures commensurate with the risk (such as the treatment of internal systems, IMS inspections or cleaning) will be implemented to minimise the likelihood of IMS being introduced.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or +61 439 500 799.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

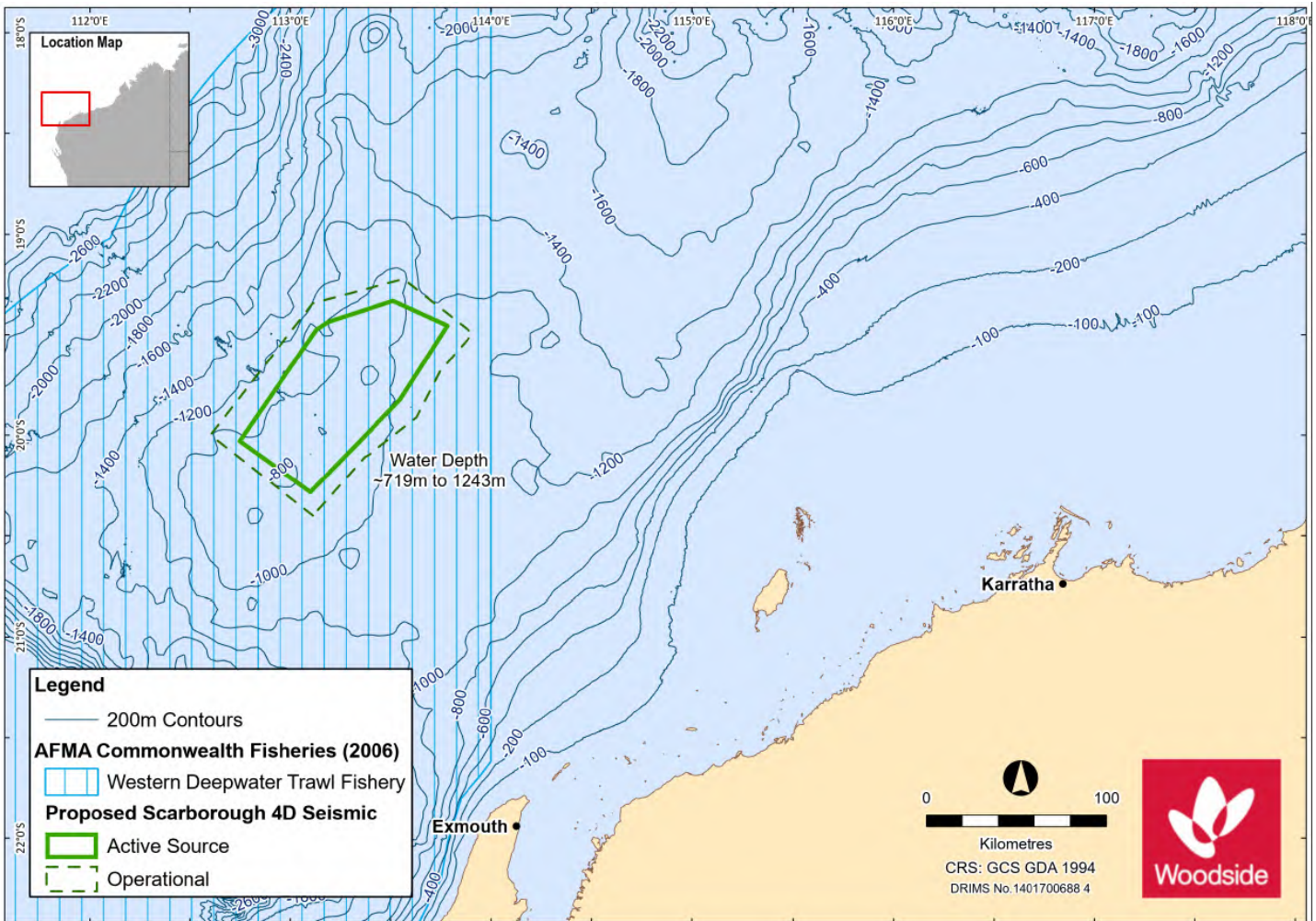
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **14 June 2021**.

Regards



1.9 Fisheries map sent to DCCEEW (13 May 2021)



1.10 Email sent to DoD (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#). A map of practice and training defence areas is also attached.

Activity:

Summary:

The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside’s work program commitments for the permit.

Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
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Survey location:

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Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

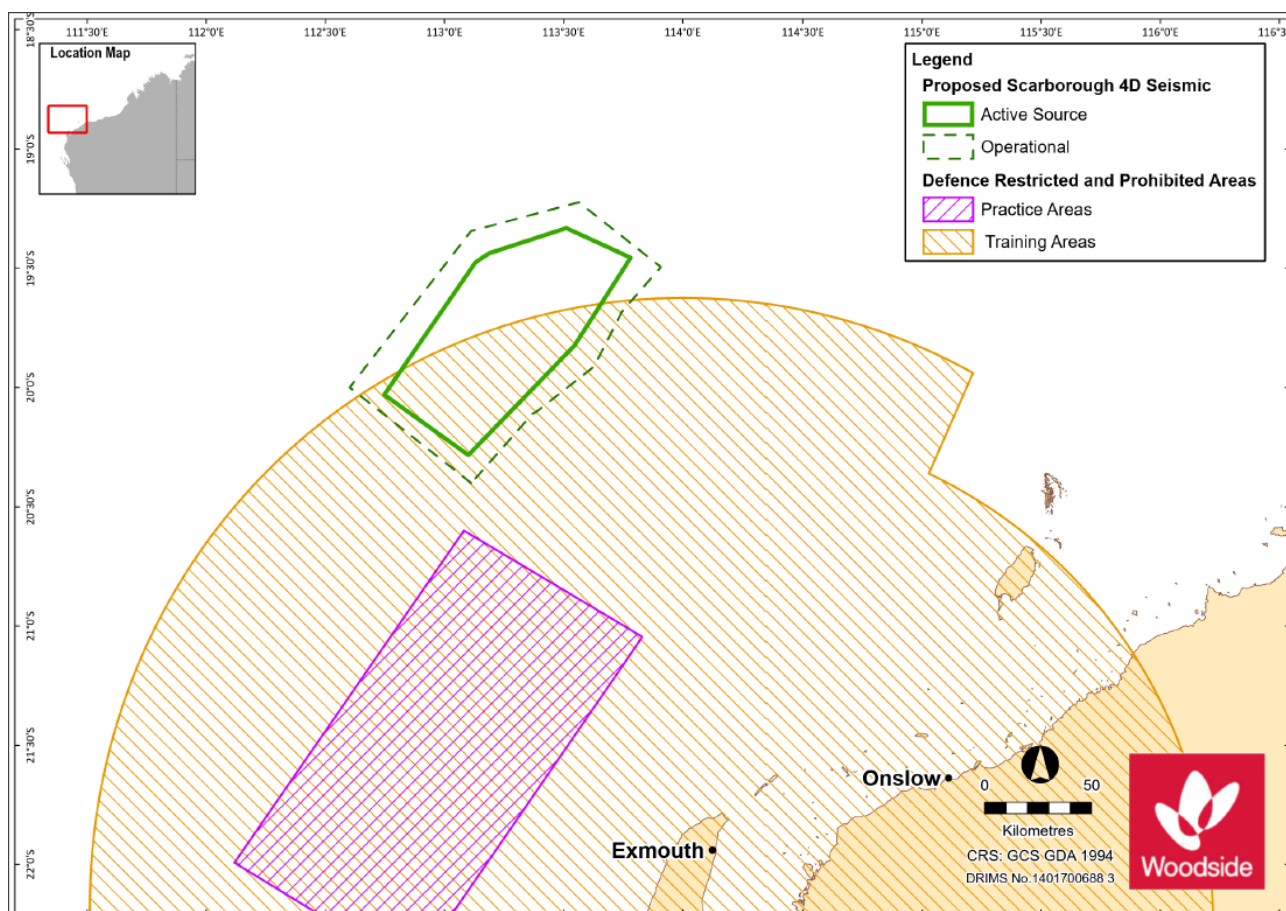
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards



1.11 Defence area map sent to DoD (13 May 2021)



1.12 Email sent to DISER (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#).

Activity:

Summary:

The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside’s work program commitments for the permit.

Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
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Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards



1.13 Email sent to DNP (13 May 2021)

Dear Director of National Parks

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

We would also be happy to meet online should you wish to discuss the proposed activity in more detail.

Implications for Parks Australia interests

We note Australian Government Guidance on consultation activities with respect to the proposed activities and confirm that:

- We have assessed potential impacts and risks to AMPs in the development of the proposed Environment Plan for this activity and believe that there are no credible impacts associated with planned activities that have potential to impact marine park values.
- In the unlikely event of a hydrocarbon release there is risk of hydrocarbons contacting the Montebello, Abrolhos, Carnarvon Canyon, Gascoyne and Ningaloo AMPs. The worst-case credible spill scenario assessed for this activity is a marine diesel oil spill resulting from the highly unlikely event of a vessel collision.
- A Commonwealth Government approved oil spill response plan will be in place for the duration of the activities, which includes notification to relevant agencies and organisations as to the nature and scale of the event, as soon as practicable following an occurrence. The Director of National Parks will be advised if an environmental incident occurs that may impact on the values of a marine park.

A Consultation Information Sheet about the planned activity is attached, which provides background on the activity, including a summary of potential key risk and associated management measures. The Information Sheet is also available on our [website](#).

In line with Australian Government guidance on consultation with government agencies, can you please advise within 10 business days if you have any feedback on the proposed activity, noting that your feedback and our response will be included in an Environment Plan for consideration by the National Offshore Petroleum Safety and Environmental Management Authority, as is required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

Comments can be made by email, letter or by phone.

Regards

[Redacted signature]

1.14 Email sent to DMIRS (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#).

Activity:

Summary: The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside's work program commitments for the permit.

Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
Location:	214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E
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Duration:	Around 55 days - 70 days
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards



1.15 Email sent to DoT (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#).

Activity:

- Summary:* The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside’s work program commitments for the permit.
- Survey type:* Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
- Location:* 214 km north-west of Exmouth; Latitude 20°16’59.043”, Longitude 113°6’0.387”E
- Approximate Water Depth (m):* 800 m – 1150 m
- Schedule:* Around Q3 2022
- Duration:* Around 55 days - 70 days
- Vessels:* A purpose-built seismic vessel, one support vessel and a potential chase vessel
- Safe navigation zone (cautionary area)* Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards



1.16 Email sent to Chevron, Western Gas and ExxonMobil (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#). A map showing the proposed activity relevant to adjacent petroleum titles is also attached.

Activity:

Summary:	The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside's work program commitments for the permit.
Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
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Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards

[Redacted signature]

1.17 Email sent to DBCA (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#).

Activity:

<i>Summary:</i>	The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside's work program commitments for the permit.
<i>Survey type:</i>	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
<i>Location:</i>	214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E
<i>Approximate Water Depth (m):</i>	800 m – 1150 m
<i>Schedule:</i>	Around Q3 2022
<i>Duration:</i>	Around 55 days - 70 days
<i>Vessels:</i>	A purpose-built seismic vessel, one support vessel and a potential chase vessel
<i>Safe navigation zone (cautionary area)</i>	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards

[Redacted signature]

1.18 Email sent to Western Deepwater Trawl (13 May 2021) (5 Licence Holders)

Dear Licence Holder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A temporary three nautical mile radius safe navigation area will be maintained around the seismic vessel and towed array during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth. It is highly unlikely the proposed activity will cause significant impacts to fish spawning and recruitment in any key commercial fish species due to underwater noise. Acquisition of the survey will not overlap the peak spawning season for key target species in the region, such as ruby snapper (December to April). Impacts to fish eggs and larvae are not likely due to the short duration of the survey, and lack of overlap with the peak spawning season.

An information sheet (also on our [website](#)), and map of relevant fisheries and list of previous surveys are attached.

Activity:

- Summary:** The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside's work program commitments for the permit.
- Survey type:** Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
- Location:** 214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E

Approximate Water Depth (m): 800 m – 1150 m

Schedule: Around Q3 2022

Duration: Around 55 days - 70 days

Relevant fisheries Commonwealth
- Western Deepwater Trawl Fishery

Vessels: A purpose-built seismic vessel, one support vessel and a potential chase vessel

Safe navigation zone (cautionary area) Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> Defence activities Petroleum activities Commercial fishing activities Shipping activities Infrastructure activities 	<ul style="list-style-type: none"> Consultation with petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP. Advice to relevant stakeholders prior to the commencement of activities. Ongoing consultation by way of updates on vessel movements during survey activities at a frequency to meet relevant stakeholder needs.
Marine discharges	<ul style="list-style-type: none"> All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside’s Environmental Performance Standards.
Underwater noise	<ul style="list-style-type: none"> Implementation of <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) Policy Statement 2.1. Noise modelling to inform potential impacts and input to mitigation and management measures.
Vessel interaction	<ul style="list-style-type: none"> Woodside will notify relevant fishery stakeholders and Government maritime safety agencies of specific start and end dates, specific vessel-on-location dates, and any exclusion zones prior to commencement of the activity. A three nautical mile radius safe navigation area will be in place around the seismic vessel and streamers during seismic operations. The seismic vessel will display appropriate day shapes and lights to indicate the vessel is towing and is therefore restricted in its ability to manoeuvre. The streamers will tow surface tail buoys fitted with safe navigation devices A visual and radar watch will be maintained on the project vessel bridge at all times. A support vessel and a potential chase vessel will be on standby to direct any shipping traffic or commercial fishing

	vessels away from the seismic vessel and its towed equipment.
Waste management	<ul style="list-style-type: none"> • Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. • Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. • Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Unplanned activities	
Hydrocarbon release	<ul style="list-style-type: none"> • Appropriate 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.
Introduction of invasive marine species	<ul style="list-style-type: none"> • All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. • Compliance with Australian biosecurity requirements and guidance. • Contracted vessels comply with Australian ballast water requirements.
Marine fauna interactions	<ul style="list-style-type: none"> • Measures will be taken to protect marine fauna and ecosystems from vessel activities and to prevent vessel collisions and groundings. • Maintaining dedicated marine fauna observers throughout the survey. • All marine fauna sightings are recorded and reported to the Department of Agriculture, Water and the Environment.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

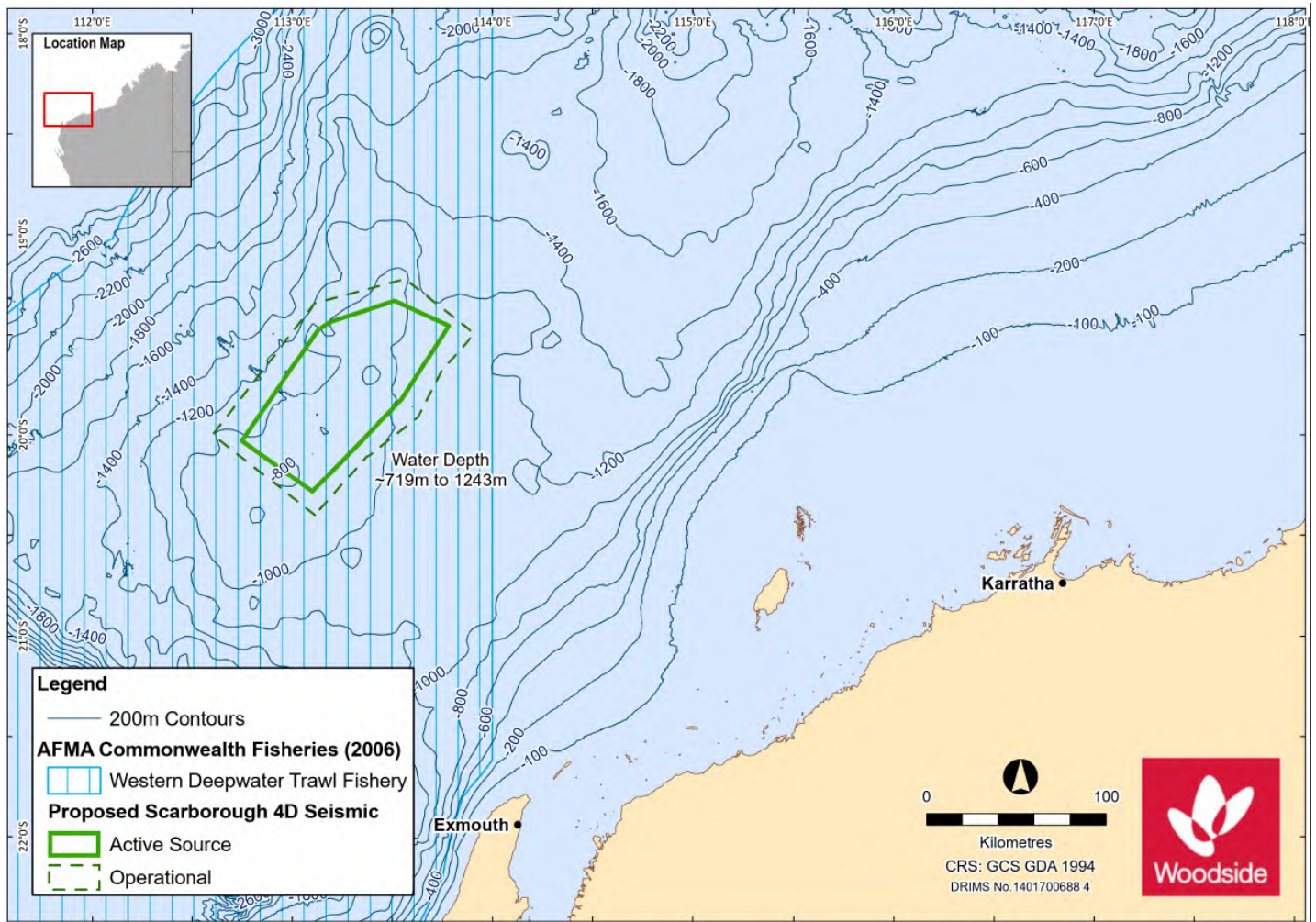
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **14 June 2021**.

Regards



Scarborough 4D B1 Marine Seismic Survey Environment Plan



Previous seismic surveys

SURVEY	2D/3D	YEAR
Scarborough 3D MSS	3D	2004
HEX03A Scarborough 3D MS	3D	2004
Bonaventure 3D MSS	3D	2006
Hex07B Thebe 3D MSS	3D	2007
Keystone 2008 3D	3D	2008
Mary Rose MR11 3D	3D	2011
Mary Rose NE Extension MC3D MSS 2011-2012	3D	2012
Honeycombs 3D HC12	3D	2012
Honeycombs MC3D	3D	2012
Mary Rose MC3D	3D	2012
Mary Rose MC3D	3D	2012
Mary Rose Northeast 3D	3D	2012
Duvalia MC 2D MSS 2012	2D	2012
Westralia Span MC2D MSS	2D	2012
Westralian SPAN 2D	2D	2013
Northwest Shelf Renaissance 2D 2016	2D	2016

1.19 Email sent to Commonwealth Fisheries Association (CFA) (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A temporary three nautical mile radius safe navigation area will be maintained around the seismic vessel and towed array during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth. It is highly unlikely the proposed activity will cause significant impacts to fish spawning and recruitment in any key commercial fish species due to underwater noise. Acquisition of the survey will not overlap the peak spawning season for key target species in the region, such as ruby snapper (December to April). Impacts to fish eggs and larvae are not likely due to the short duration of the survey, and lack of overlap with the peak spawning season.

An information sheet (also on our [website](#)), and map of relevant fisheries and list of previous surveys are attached.

Activity:

Summary: The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and

assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside’s work program commitments for the permit.

Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
Location:	214 km north-west of Exmouth; Latitude 20°16’59.043”, Longitude 113°6’0.387”E
Approximate Water Depth (m):	800 m – 1150 m
Schedule:	Around Q3 2022
Duration:	Around 55 days - 70 days
Relevant fisheries	Commonwealth - Western Deepwater Trawl Fishery
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> • Defence activities • Petroleum activities • Commercial fishing activities • Shipping activities • Infrastructure activities 	<ul style="list-style-type: none"> • Consultation with petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP. • Advice to relevant stakeholders prior to the commencement of activities. • Ongoing consultation by way of updates on vessel movements during survey activities at a frequency to meet relevant stakeholder needs.
Marine discharges	<ul style="list-style-type: none"> • All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside’s Environmental Performance Standards.
Underwater noise	<ul style="list-style-type: none"> • Implementation of <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) Policy Statement 2.1. • Noise modelling to inform potential impacts and input to mitigation and management measures.
Vessel interaction	<ul style="list-style-type: none"> • Woodside will notify relevant fishery stakeholders and Government maritime safety agencies of specific start and end dates, specific vessel-on-location dates, and any exclusion zones prior to commencement of the activity.

	<ul style="list-style-type: none"> • A three nautical mile radius safe navigation area will be in place around the seismic vessel and streamers during seismic operations. • The seismic vessel will display appropriate day shapes and lights to indicate the vessel is towing and is therefore restricted in its ability to manoeuvre. • The streamers will tow surface tail buoys fitted with safe navigation devices • A visual and radar watch will be maintained on the project vessel bridge at all times. • A support vessel and a potential chase vessel will be on standby to direct any shipping traffic or commercial fishing vessels away from the seismic vessel and its towed equipment.
Waste management	<ul style="list-style-type: none"> • Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. • Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. • Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Unplanned activities	
Hydrocarbon release	<ul style="list-style-type: none"> • Appropriate 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.
Introduction of invasive marine species	<ul style="list-style-type: none"> • All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. • Compliance with Australian biosecurity requirements and guidance. • Contracted vessels comply with Australian ballast water requirements.
Marine fauna interactions	<ul style="list-style-type: none"> • Measures will be taken to protect marine fauna and ecosystems from vessel activities and to prevent vessel collisions and groundings. • Maintaining dedicated marine fauna observers throughout the survey. • All marine fauna sightings are recorded and reported to the Department of Agriculture, Water and the Environment.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

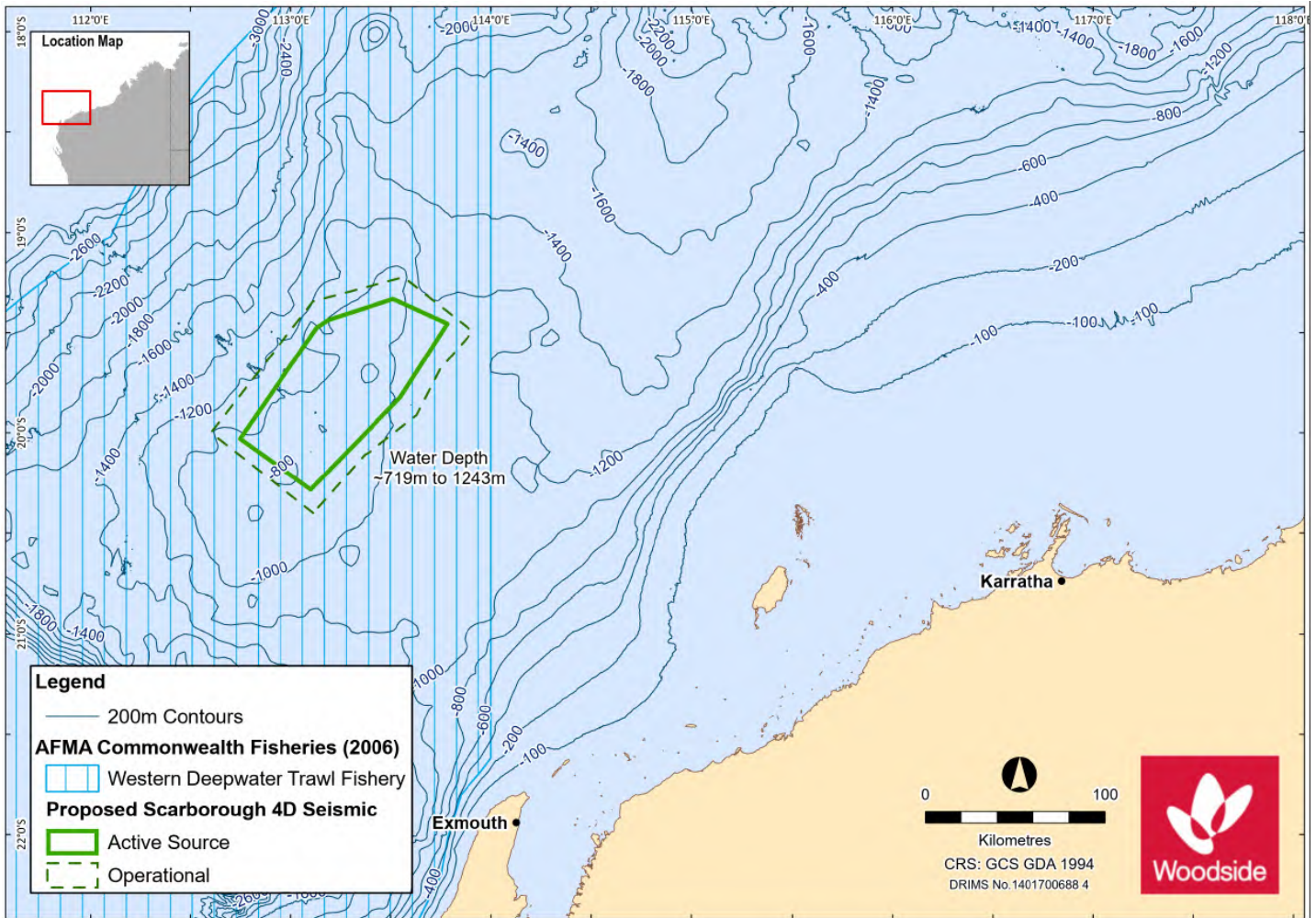
Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **14 June 2021**.

Regards

[Redacted signature]



1.20 Email sent to WAFIC (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A temporary three nautical mile radius safe navigation area will be maintained around the seismic vessel and towed array during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth. It is highly unlikely the proposed activity will cause significant impacts to fish spawning and recruitment in any key commercial fish species due to underwater noise. Acquisition of the survey will not overlap the peak spawning season for key target species in the region, such as ruby snapper (December to April). Impacts to fish eggs and larvae are not likely due to the short duration of the survey, and lack of overlap with the peak spawning season.

An information sheet (also on our [website](#)), and map of relevant fisheries and list of previous surveys are attached.

Activity:

- Summary:** The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside’s work program commitments for the permit.
- Survey type:** Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
- Location:** 214 km north-west of Exmouth; Latitude 20°16’59.043”, Longitude 113°6’0.387”E
- Approximate Water Depth (m):** 800 m – 1150 m
- Schedule:** Around Q3 2022
- Duration:** Around 55 days - 70 days
- Relevant fisheries** Commonwealth
 - Western Deepwater Trawl Fishery
- Vessels:** A purpose-built seismic vessel, one support vessel and a potential chase vessel
- Safe navigation zone (cautionary area)** Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> • Defence activities • Petroleum activities • Commercial fishing activities • Shipping activities • Infrastructure activities 	<ul style="list-style-type: none"> • Consultation with petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP. • Advice to relevant stakeholders prior to the commencement of activities. • Ongoing consultation by way of updates on vessel movements during survey activities at a frequency to meet relevant stakeholder needs.

Marine discharges	<ul style="list-style-type: none"> All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards.
Underwater noise	<ul style="list-style-type: none"> Implementation of <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) Policy Statement 2.1. Noise modelling to inform potential impacts and input to mitigation and management measures.
Vessel interaction	<ul style="list-style-type: none"> Woodside will notify relevant fishery stakeholders and Government maritime safety agencies of specific start and end dates, specific vessel-on-location dates, and any exclusion zones prior to commencement of the activity. A three nautical mile radius safe navigation area will be in place around the seismic vessel and streamers during seismic operations. The seismic vessel will display appropriate day shapes and lights to indicate the vessel is towing and is therefore restricted in its ability to manoeuvre. The streamers will tow surface tail buoys fitted with safe navigation devices A visual and radar watch will be maintained on the project vessel bridge at all times. A support vessel and a potential chase vessel will be on standby to direct any shipping traffic or commercial fishing vessels away from the seismic vessel and its towed equipment.
Waste management	<ul style="list-style-type: none"> Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Unplanned activities	
Hydrocarbon release	<ul style="list-style-type: none"> Appropriate 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.
Introduction of invasive marine species	<ul style="list-style-type: none"> All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. Compliance with Australian biosecurity requirements and guidance. Contracted vessels comply with Australian ballast water requirements.
Marine fauna interactions	<ul style="list-style-type: none"> Measures will be taken to protect marine fauna and ecosystems from vessel activities and to prevent vessel collisions and groundings. Maintaining dedicated marine fauna observers throughout the survey.

- All marine fauna sightings are recorded and reported to the Department of Agriculture, Water and the Environment.

Feedback:

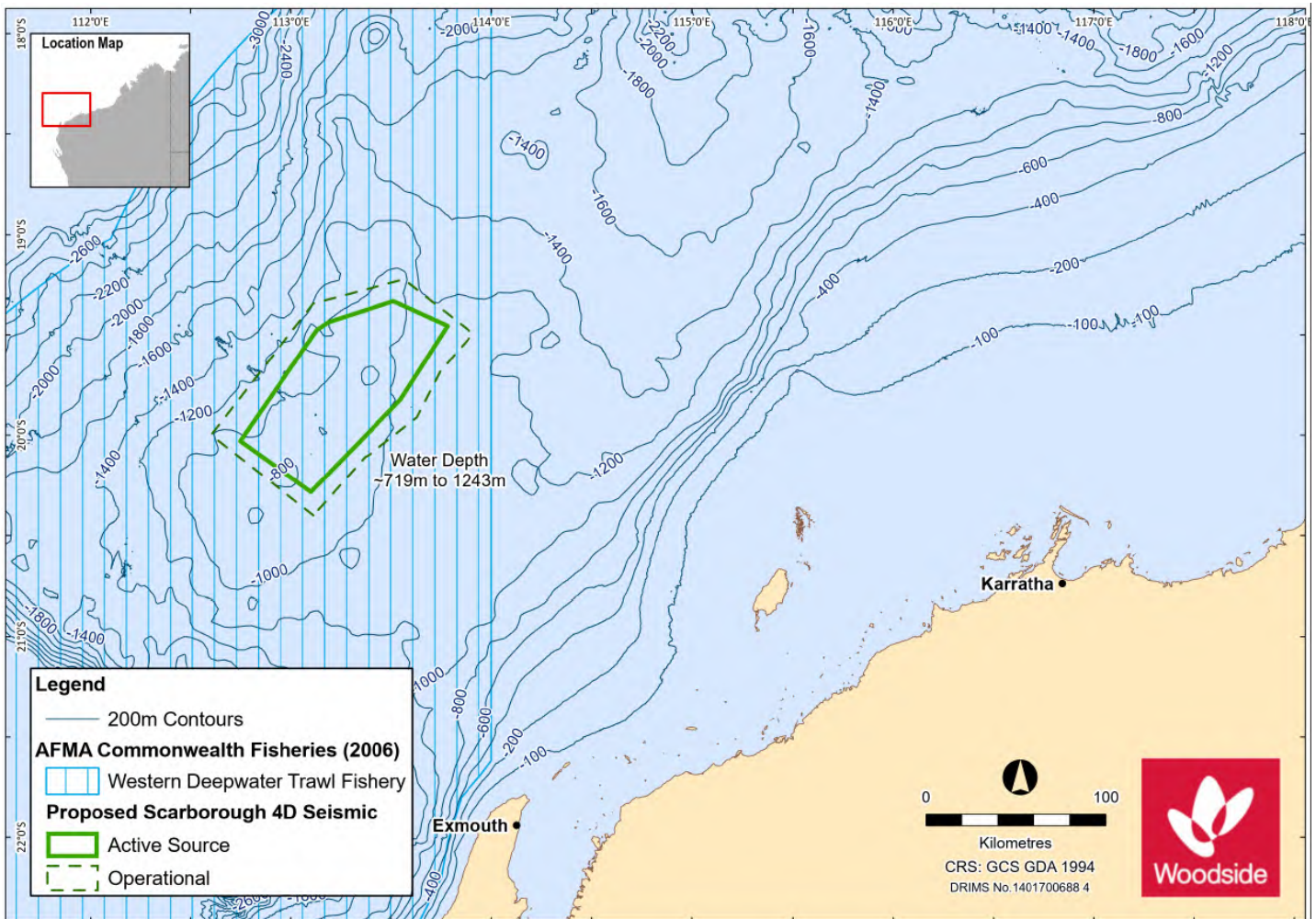
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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **14 June 2021**.

Regards

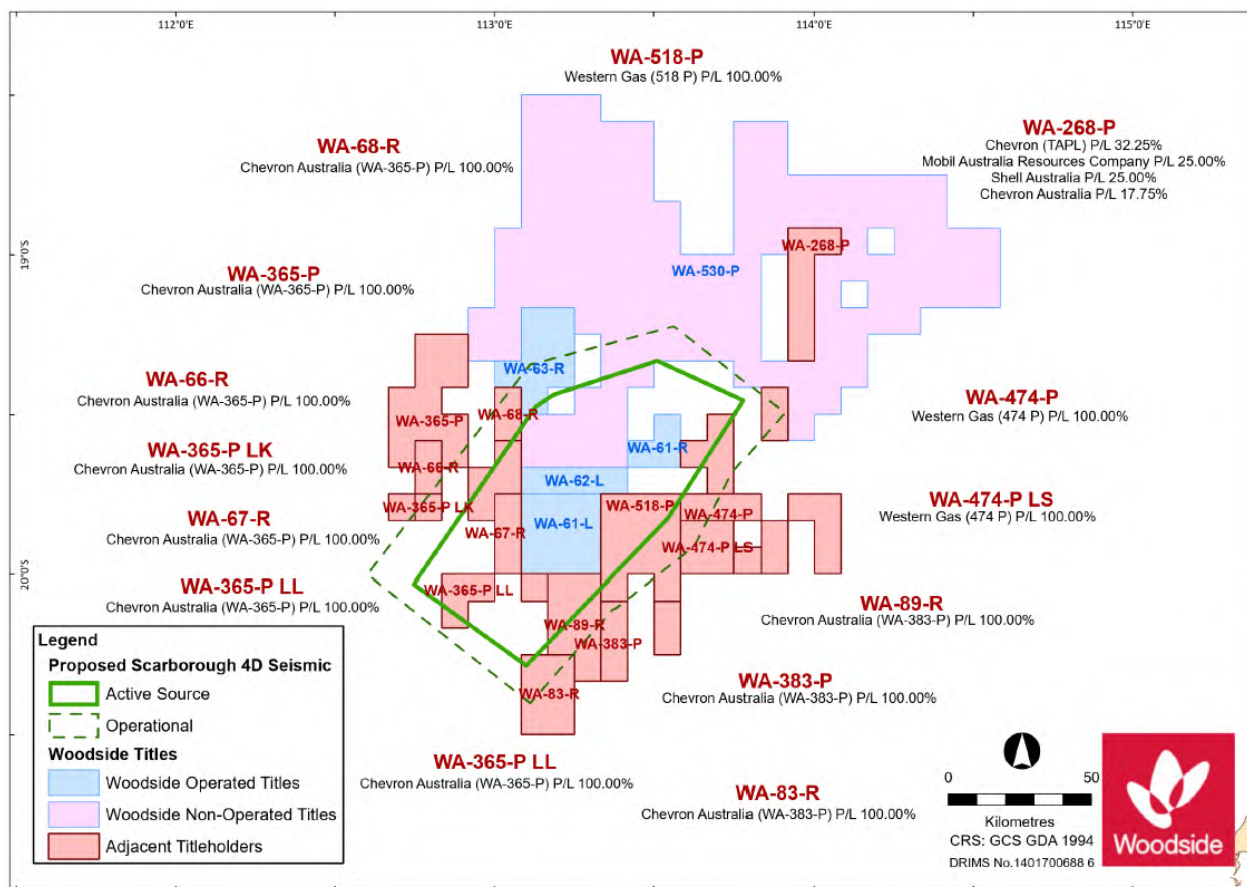


Scarborough 4D B1 Marine Seismic Survey Environment Plan

Previous seismic surveys

SURVEY	2D/3D	YEAR
Scarborough 3D MSS	3D	2004
HEX03A Scarborough 3D MS	3D	2004
Bonaventure 3D MSS	3D	2006
Hex07B Thebe 3D MSS	3D	2007
Keystone 2008 3D	3D	2008
Mary Rose MR11 3D	3D	2011
Mary Rose NE Extension MC3D MSS 2011-2012	3D	2012
Honeycombs 3D HC12	3D	2012
Honeycombs MC3D	3D	2012
Mary Rose MC3D	3D	2012
Mary Rose MC3D	3D	2012
Mary Rose Northeast 3D	3D	2012
Duvalia MC 2D MSS 2012	2D	2012
Westralia Span MC2D MSS	2D	2012
Westralian SPAN 2D	2D	2013
Northwest Shelf Renaissance 2D 2016	2D	2016

1.21 Adjacent Titleholders map sent to Chevron, Western Gas, ExxonMobil and Shell (13 May 2021)



1.22 Email sent to Shell (13 May 2021)

Dear [REDACTED]

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#). A map showing the proposed activity relevant to adjacent petroleum titles is also attached.

Activity:

Summary: The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside’s work program commitments for the permit.

Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
Location:	214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E
Approximate Water Depth (m):	800 m – 1150 m
Schedule:	Around Q3 2022
Duration:	Around 55 days - 70 days
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards

[Redacted signature]

1.23 Email sent to APPEA (13 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

An Environment Plan for this activity will be submitted in accordance with the the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our [website](#).

Activity:

- Summary:** The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside’s work program commitments for the permit.
- Survey type:** Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
- Location:** 214 km north-west of Exmouth; Latitude 20°16’59.043”, Longitude 113°6’0.387”E
- Approximate Water Depth (m):** 800 m – 1150 m
- Schedule:** Around Q3 2022
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- Vessels:** A purpose-built seismic vessel, one support vessel and a potential chase vessel
- Safe navigation zone (cautionary area)** Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 14 June 2021.

Regards



1.24 Email sent to DPIRD (14 May 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The activity is planned to commence in Q3 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A temporary three nautical mile radius safe navigation area will be maintained around the seismic vessel and towed array during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth. It is highly unlikely the proposed activity will cause significant impacts to fish spawning and recruitment in any key commercial fish species due to underwater noise. Acquisition of the survey will not overlap the peak spawning season for key target species in the region, such as ruby snapper (December to April). Impacts to fish eggs and larvae are not likely due to the short duration of the survey, and lack of overlap with the peak spawning season.

An information sheet (also on our [website](#)), and map of relevant fisheries and list of previous surveys are attached.

Activity:

<i>Summary:</i>	The purpose of the survey is to improve data quality and subsurface imaging within the permit, allowing Woodside to define new and existing leads and assess commerciality of potential hydrocarbon accumulations. The survey is part of Woodside's work program commitments for the permit.
<i>Survey type:</i>	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel. Woodside is also considering using a small fleet of autonomous ocean bottom seismic nodes (AUV nodes) that will also record the reflected energy over a localised area.
<i>Location:</i>	214 km north-west of Exmouth; Latitude 20°16'59.043", Longitude 113°6'0.387"E
<i>Approximate Water Depth (m):</i>	800 m – 1150 m
<i>Schedule:</i>	Around Q3 2022
<i>Duration:</i>	Around 55 days - 70 days
<i>Relevant fisheries</i>	Commonwealth - Western Deepwater Trawl Fishery
<i>Vessels:</i>	A purpose-built seismic vessel, one support vessel and a potential chase vessel
<i>Safe navigation zone (cautionary area)</i>	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> • Defence activities • Petroleum activities • Commercial fishing activities • Shipping activities • Infrastructure activities 	<ul style="list-style-type: none"> • Consultation with petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP. • Advice to relevant stakeholders prior to the commencement of activities. • Ongoing consultation by way of updates on vessel movements during survey activities at a frequency to meet relevant stakeholder needs.
Marine discharges	<ul style="list-style-type: none"> • All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards.
Underwater noise	<ul style="list-style-type: none"> • Implementation of <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) Policy Statement 2.1. • Noise modelling to inform potential impacts and input to mitigation and management measures.
Vessel interaction	<ul style="list-style-type: none"> • Woodside will notify relevant fishery stakeholders and Government maritime safety agencies of specific start and end dates, specific vessel-on-location dates, and any exclusion zones prior to commencement of the activity. • A three nautical mile radius safe navigation area will be in place around the seismic vessel and streamers during seismic operations. • The seismic vessel will display appropriate day shapes and lights to indicate the vessel is towing and is therefore restricted in its ability to manoeuvre. • The streamers will tow surface tail buoys fitted with safe navigation devices • A visual and radar watch will be maintained on the project vessel bridge at all times. • A support vessel and a potential chase vessel will be on standby to direct any shipping traffic or commercial fishing vessels away from the seismic vessel and its towed equipment.
Waste management	<ul style="list-style-type: none"> • Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. • Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. • Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Unplanned activities	
Hydrocarbon release	<ul style="list-style-type: none"> • Appropriate 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.

Introduction of invasive marine species	<ul style="list-style-type: none"> • All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. • Compliance with Australian biosecurity requirements and guidance. • Contracted vessels comply with Australian ballast water requirements.
Marine fauna interactions	<ul style="list-style-type: none"> • Measures will be taken to protect marine fauna and ecosystems from vessel activities and to prevent vessel collisions and groundings. • Maintaining dedicated marine fauna observers throughout the survey. • All marine fauna sightings are recorded and reported to the Department of Agriculture, Water and the Environment.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans, which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

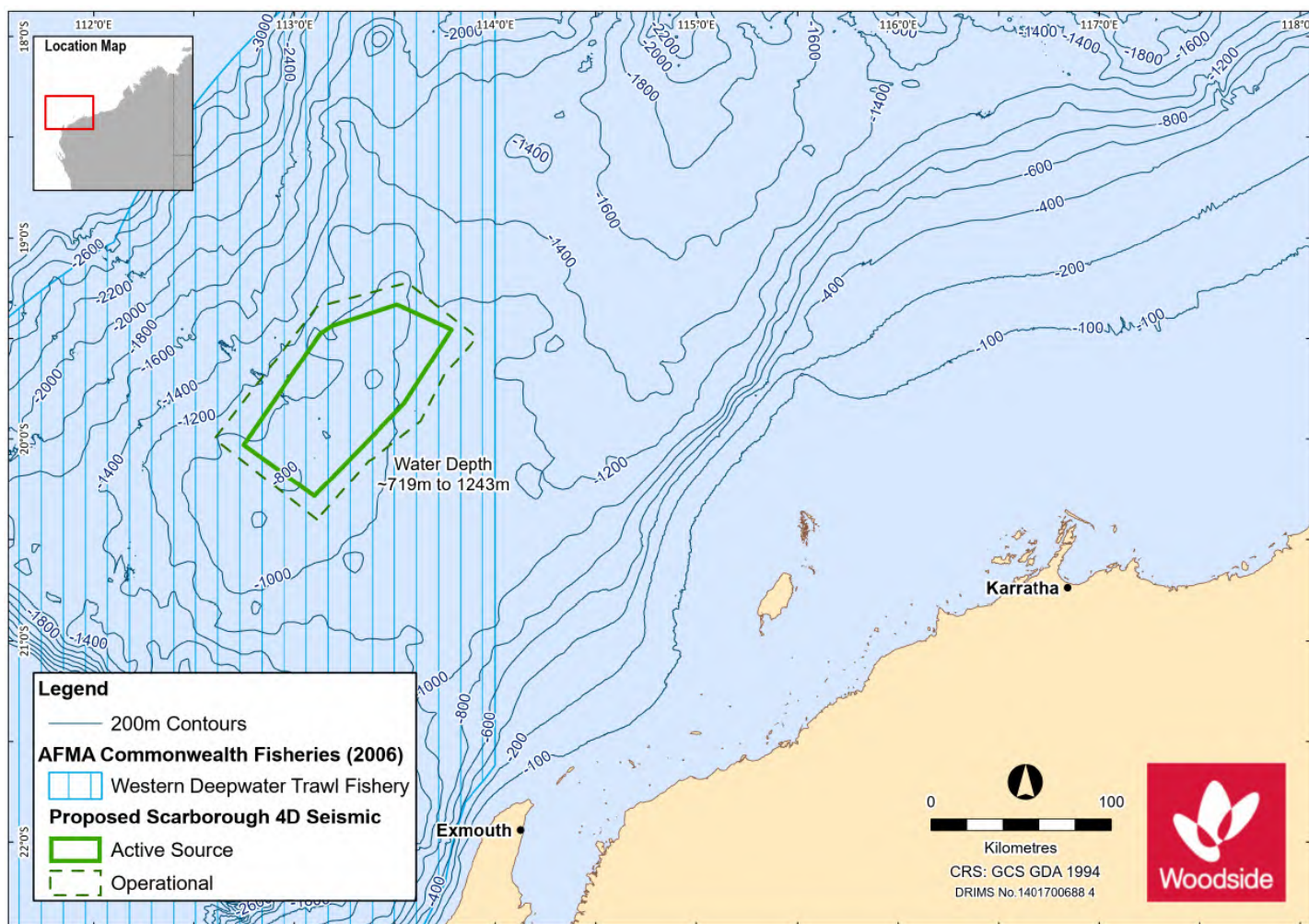
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **14 June 2021**.

Regards



Scarborough 4D B1 Marine Seismic Survey Environment Plan



Previous seismic surveys

SURVEY	2D/3D	YEAR
Scarborough 3D MSS	3D	2004
HEX03A Scarborough 3D MS	3D	2004
Bonaventure 3D MSS	3D	2006
Hex07B Thebe 3D MSS	3D	2007
Keystone 2008 3D	3D	2008
Mary Rose MR11 3D	3D	2011
Mary Rose NE Extension MC3D MSS 2011-2012	3D	2012
Honeycombs 3D HC12	3D	2012
Honeycombs MC3D	3D	2012
Mary Rose MC3D	3D	2012
Mary Rose MC3D	3D	2012
Mary Rose Northeast 3D	3D	2012
Duvalia MC 2D MSS 2012	2D	2012
Westralia Span MC2D MSS	2D	2012
Westralian SPAN 2D	2D	2013
Northwest Shelf Renaissance 2D 2016	2D	2016

1.25 Email sent to AMSA (Marine Pollution) (6 July 2021)

Dear [REDACTED]

As part of Woodside's ongoing consultation for its current and planned activities, I would like to advise Australian Maritime Safety Authority (AMSA) that Woodside are preparing the *Scarborough 4D Marine Seismic Survey Environment Plan* and would like to offer AMSA the opportunity to review or provide comment on the activity.

Information is presented as follows:

- A Consultation Information Sheet is available on our [website here](#), providing information on the proposed petroleum activities program. Please note that this is a joint Information Sheet with Angel Operations.
- The *Scarborough 4D Marine Seismic Survey First Strike Plan* is attached. This will form part of the approval submission in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Woodside propose to submit an EP on 27th August 2021 to support these activities.

Should you require additional information or have a comment to make about the proposed activity, please contact myself by close of business 21st August to allow us sufficient time to inform our activity planning and EP development.

Comments can be made by email, letter or by phone.

Please be aware that your feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), as is required under legislation.

We look forward to hearing from you.

Many thanks,

[REDACTED]

1.26 Email sent to DoT (8 July 2021)

Dear [REDACTED]

As part of Woodside's ongoing consultation for its current and planned activities, I would like to advise WA Department of Transport (DoT) that Woodside are preparing the *Scarborough 4D Marine Seismic Survey Environment Plan* and would like to offer DoT the opportunity to review or provide comment on the activity.

Information is presented as follows:

- A Consultation Information Sheet is available on our [website here](#), providing information on the proposed petroleum activities program. Please note that this is a joint Information Sheet with Angel Operations.
- The *Scarborough 4D Marine Seismic Survey First Strike Plan* is attached. This will form part of the approval submission in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.
- In the table below, as requested in the *Offshore Petroleum Industry Guidance Note* (July 2020) and from recent engagement activities between DoT and Woodside, responses to the information requirements in a succinct summary and source of information.

Woodside propose to submit an EP on 27th August 2021 to support these activities.

Should you require additional information or have a comment to make about the proposed activity, please contact myself by close of business 21st August to allow us sufficient time to inform our activity planning and EP development.

Comments can be made by email, letter or by phone.

Please be aware that your feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), as is required under legislation.

We look forward to hearing from you.

Many thanks,

[Redacted signature block]

Information Requested in the Offshore Petroleum Industry Guidance Note (July 2020)	Information Provided & Reference
Description of activity, including the intended schedule, location (including coordinates), distance to nearest landfall and map.	Included in the consultation information sheet
Worst case spill volumes.	Included in Appendix A of the First Strike Plan
Known or indicative oil type/properties.	Included in Appendix A of the First Strike Plan
Amenability of oil to dispersants and window of opportunity for dispersant efficacy.	Dispersant is not deemed to be suitable for marine diesel spill.
Description of existing environment and protection priorities.	Included in section 4 of the First Strike Plan
Details of the environmental risk assessment related to marine oil pollution - describe the process and key outcomes around risk identification, risk analysis, risk evaluation and risk treatment. For further information see the Oil Pollution Risk Management Information Paper (NOPSEMA 2017).	<p>Unplanned loss of containment events from the Petroleum Activities Program have been identified during the risk assessment process (presented in Section 7 of the EP). Further descriptions of risk, impacts and mitigation measures (which are not related to hydrocarbon preparedness and response) are provided in Section 7 of the EP. One unplanned event or credible spill scenario for the Petroleum Activities Program has been selected as representative across types, sources and incident/response levels, up to and including the WCCS.</p> <p>Table 2-1 of the OSPRMA presents the credible scenario for the Petroleum Activities Program. One worst-case credible scenario been used for response planning purposes for the activity as all other scenarios are of a lesser scale and extent. By demonstrating capability to meet and manage an event of this size and timescale, Woodside assumes relevant scenarios that are smaller in nature and scale can also be managed by the same capability.</p> <p>Response performance outcomes have been defined based on a response to the WCCS.</p>

Outcomes of oil spill trajectory modelling, including predicted times to enter State waters and contact shorelines.	Credible Scenario-01 – surface release of marine diesel after a vessel collision	
	2,000 m ³ marine diesel – residue of 100 m ³ (5%)	
	Minimum time to shoreline contact (above 100 g/m ²) in days	
Shoreline receptors	No contact	
<i>Please note, no floating or shoreline impacts are predicted within State Waters, however, there may be some entrained contact at 10 ppb which enters State Waters on the Northwest Cape.</i>		
Details on initial response actions and key activation timeframes.	Included in Section 2 and 3 of the First Strike Plan	
Potential Incident Control Centre arrangements.	Included in Appendix E and F of the First Strike Plan	
Potential staging areas / Forward Operating Base.	A Forward Operating Base can be established at Exmouth and/ or Dampier.	
Details on response strategies.	Included in Section 2 and 3 of the First Strike Plan	
Use of DoT equipment resources	Woodside has access to its own and contracted stockpiles of response equipment and acknowledges that potential use of DoT resources cannot be assumed and is at the discretion of DoT.	
Details and diagrams on proposed IMT structure including integration of DoT arrangements as per this IGN.	Included in Appendix E and F of the First Strike Plan	
Details on testing of arrangements of OPEP/OSCP.	<ul style="list-style-type: none"> One Level 1 ‘First Strike’ drill conducted within two weeks of activity commencement. <p>Testing of Oil Spill Response Arrangements</p> <p>There are a number of arrangements which in the event of a spill will underpin Woodside’s ability to implement a response across its petroleum activities. In order to ensure each of these arrangements is adequately tested, the Hydrocarbon Spill Preparedness Capability and Competency Coordinator ensures tests are conducted in alignment with the Hydrocarbon Spill Arrangements Testing Schedule (Woodside Doc No. 10058092).</p> <p>Woodside’s Hydrocarbon Spill Preparedness & Response Testing Schedule aligns with international good practice for spill preparedness & response management; the testing is compatible with the IPIECA Good Practice Guide and the Australian Emergency Management Institute Handbook.</p> <p>The Hydrocarbon Spill Arrangements Testing Schedule (Woodside Doc No. 10058092) identifies the type of test which will be conducted annually for each arrangement, and how this type will vary over a five year rolling schedule. Testing methods may include (but are not limited to): audits,</p>	

	<p>drills, field exercises, functional workshops, assurance reporting, assurance monitoring and reviews of key external dependencies.</p> <p>Activity specific Oil Spill Pollution First Strike Plans are developed to meet the response needs of that particular activity's Worst Credible Spill Scenario (WCCS). The ability to implement these plans may rely on specific arrangements or those common to other Woodside activities. Regardless of their commonality each arrangement will be tested in at least one of the methods annually. This ensures that personnel are familiar with spill response procedures, reporting requirements, and roles/ responsibilities.</p> <p>At the completion of testing a report is produced to demonstrate the outcomes achieved against the tested objectives. The report will include the lessons learned, any improvement actions and a list of the participants. Alternatively, an assurance report, assurance records, or audit report may be produced. These reports record findings and include any recommendations for improvement. Improvement actions and their close-out are actively recorded and managed.</p> <p>This is over and above the emergency management exercises conducted.</p>
Additional comments	Please note some of the links in the document are still being finalised, and as such may show a reference error in the attached version.

1.27 Email sent to Market Forces (23 September 2022)

Dear Market Forces

This is a courtesy email reminder on the below and the attached consultation information regarding the Scarborough 4D B1 Marine Seismic Survey Environment Plan.

Woodside requests your response by Friday 30 September 2022. If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 30 September 2022, to discuss the Scarborough 4D Baseline Marine Seismic Survey Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible and before 30 September 2022.

Kind Regards,

Woodside Feedback

1.28 Email sent to National Energy Resource Australia (NERA) (11 May 2022)

Hi [REDACTED], thanks for your email and apologies for my delay in responding.

I have attached some information regarding the Scarborough 4D B1 Marine Seismic Survey that was provided to other stakeholders during the consultation phase of the development of the Environment Plan (EP). The EP is currently under assessment by the regulator, which can be read on the NOSEMA website (https://info.nopsema.gov.au/environment_plans/559/show_public)

Given the EP is in its final stages of assessment, stakeholder feedback at this time may not be able to be incorporated into the EP, but will be considered as necessary. I can also add you to our stakeholder list for any future relevant consultation regarding the activity.

Perhaps once you have had a chance to review the information it might be best to come back to me with any questions or additional information you may be seeking and I can pass this on to the relevant project team members. As you suggest, if you can pass me on the information regarding your CSEP project I can also direct this to the relevant focal points.

Kind Regards,

[Redacted signature block]

Attachment A: Detailed statement of response to Greenpeace Australia Pacific letter – 8 April 2022 (in relation to the activities the subject of the Scarborough 4D B1 Marine Seismic Survey EP)

GAP request for additional information	Woodside response
<p><i>11. Request for the following information, including any reports, analyses, assessments, modelling and/or other documents.</i></p> <p><i>11. a. A description of the environment that may be affected by the activities, including the potential extent and area of a Worst Case Oil Spill and gas leak.</i></p>	<p>WR1: The Environment that May be Affected (EMBA) has been determined based on the extent and area of the worst-case loss of containment scenario for the activity. This scenario is ~1062 m³ marine diesel spill from a vessel collision resulting in the rupture of a fuel tank, though the modeling has conservatively used 2000 m³ release to understand the potential EMBA.</p> <p>Figure 1 (below, at end of commentary and Figure 4-1 in the EP) presents the outputs of stochastic modelling for the worst-case loss of containment scenario. Noting that the EMBA presented does not represent the predicted coverage of any one hydrocarbon spill or a depiction of a slick or plume at any particular point in time. Rather, the areas are a composite of a large number of theoretical paths, integrated over the full duration of the simulations under various metocean conditions.</p> <p>There is no potential for a gas leak from this activity therefore it has not been considered throughout this request.</p>
<p><i>11. b. The potential environmental impacts and risks of the activities, including in relation to a Worst Case Oil Spill and gas leak.</i></p>	<p>WR2: Key impacts and risks are summarised in the consultation fact sheet which is publicly available on the Woodside website. A full list of the environmental aspects which have been impact and risk assessed in the Seismic EP (Section 6) is provided in Table 1 (below, at end of commentary and have been assessed in the EP).</p>
<p><i>11. c. The potential impacts and risks on any species listed under the Environment Protection and Biodiversity Conservation Act 1999 (Cth), including in relation to a Worst Case Oil Spill and gas leak.</i></p>	<p>WR3: Table 4-5, Table 4-7, Table 4-10 and Table 4-12 of the Seismic EP identify the EPBC species that may be present in the Operational Area and / or the EMBA. Section 6.6 and 6.7 of the EP provide an assessment of the impacts and potential risks on those identified EPBC species.</p>
<p><i>11.d The potential impacts and risks on the Scott Reef Marine Park, and any other significant marine ecosystem, including in relation to a Worst Case Oil Spill and gas leak.</i></p>	<p>WR4: Due to location of the activity and distance to Scott Reef Marine Park there are no potential impacts or risks. As detailed in WR1, the worst-case loss of containment scenario is restricted to the offshore environment with no shoreline contact. Receptors including any significant marine ecosystem are considered in the EMBA and are detailed in Section 6.7.2 of the Seismic EP.</p>
<p><i>11. e. The potential impacts and risks in relation to Sea Country and other areas of marine or terrestrial Aboriginal cultural significance and/or heritage, including in relation to a Worst Case Oil Spill and gas leak.</i></p>	<p>WR5: The closest landfall to the activity is the North West Cape, about 188 km south-south-east at its nearest point. This means the activity is offshore from the ancient coastline occupied by the people that first arrived in Australia some 65,000 years ago. At this time, sea levels were around 100 m lower than today. The First Australians occupied and exploited an evolving continental shelf</p>

	<p>landscape before sea level rose and stabilized around 7,000 years ago, flooding the cultural landscape that had been lived upon by thousands of generations of people.</p> <p>Similarly, the worst-case loss of containment scenario, represented by the EMBA, does not result in any shoreline contact and remains offshore from the ancient coastline. The existence of any unknown Aboriginal sites or artefacts of significance within the EMBA is therefore considered highly unlikely.</p>
<p>11. f. <i>The total greenhouse gas emissions associated with the activities and where these greenhouse gas emissions will occur, including any flaring/venting of greenhouse gas emissions both offshore and onshore.</i></p>	<p>WR6: Greenhouse gas emissions which will be generated by the Seismic activities have been estimated based on data gathered from previous activities, standard factors and the most up to date planning available. The total GHG emissions for this activity have been included in the EP (Section 6.6.4) and have been determined to be approximately 30,000 ktCO₂e.</p> <p>The purpose of the Petroleum Activities program is the appraisal of the offshore Scarborough gas fields to help inform the optimised management of the hydrocarbon reserves. The Scarborough 4D B1 Marine Seismic Survey EP assesses both direct and indirect environmental impacts and risks associated with the proposed Petroleum Activities Program (PAP), having regard to the nature and scale of the proposed PAP. The extraction of Scarborough gas for onshore processing is not included in the Petroleum Activities Program for this EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of this Petroleum Activities Program but will be considered in relevant Scarborough EPs as appropriate.</p>
<p>11. g. <i>The potential impacts and risks of the activities' greenhouse gas emissions in relation to global warming and climate change, including whether and how those emissions would fit within a carbon budget and emissions reduction scenarios aligned with the temperature goals of the Paris Agreement, and specifically whether the Project can be accommodated within a carbon budget for a 1.5 degree, 1.8 degree or 2 degree warming scenario.</i></p>	<p>WR7: Not relevant for this activity</p>
<p>11. h. <i>The proposed greenhouse gas emissions control measures, including details of any proposed</i></p>	<p>WR8: Controls in the EP include:</p> <ul style="list-style-type: none"> • Marine Order 97 (Marine Pollution Prevention – Air Pollution).

<p><i>offsets and any proposal for carbon capture and storage.</i></p>	<ul style="list-style-type: none"> • Evaluation of contractors to include consideration of vessel fuel usage
<p><i>11. i. The potential cumulative impacts of the above listed impacts or risks considered in the context of existing and proposed developments and/or activities in the vicinity of the area that may be affected by the activities and/or the Project, including in relation to a Worst Case Oil Spill.</i></p>	<p>WR9: Cumulative impacts have been considered in the Seismic EP (Section 6.3)</p>
<p><i>11. j. The potential cumulative impacts of upstream and downstream activities associated with the Project as a whole, including transport of gas via undersea pipeline and onshore processing of gas.</i></p>	<p>WR10: Not relevant for the Seismic EP</p>
<p><i>12. Information, including any reports, analyses, assessments and/or other documents, that:</i></p> <p><i>12.a. Demonstrates that the environmental impacts and risks of the activities will be reduced to as low as reasonably practicable.</i></p> <p><i>12.b. Demonstrates that the environmental impacts and risks of the activities will be of an acceptable level.</i></p> <p><i>12. c. Details the environmental performance outcomes, environmental performance standards and measurement criteria to be adopted in relation to the activities.</i></p> <p><i>12. d. Details the implementation strategy and monitoring, recording and reporting arrangements in relation to the environmental impacts and risks of the activities.</i></p>	<p>WR13:</p> <p>a. The demonstration that environmental impacts and risk of the activities will be reduced to as low as reasonably practicable (ALARP) is included in the Seismic EP, as required by the <i>Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009</i>. Through the EP assessment process, the adequacy of these ALARP positions will be assessed by NOPSEMA. ALARP positions form much of the Seismic EP document (see Section 6), which is under assessment and available on the NOPSEMA website.</p> <p>b. The demonstration that the environmental impacts and risks of the activities will be of an acceptable level is included in the EP, as required by the <i>Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009</i>. Please see Section 6 of the Seismic EP on the NOPSEMA website.</p> <p>c. The relevant environmental performance outcomes (EPOs) adopted are detailed in the EP, see Section 6.3 of the Seismic EP.</p> <p>d. The implementation strategy and monitoring, recording and reporting arrangements have been included in the Seismic EP, as required by the <i>Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009</i>. Please see Section 7 the Seismic EP on the NOPSEMA website.</p>
<p>Reasonable Period for Consultation</p>	<p>WR 14: Woodside advised and sought GAP's input regarding the proposed Scarborough development in December 2018 and offered GAP a briefing regarding the development in July 2019. No acknowledgement or response from GAP was received.</p>

Environment Plan consultation information sheets for each activity are publicly available on the Woodside website, including details on how to provide feedback. These information sheets are consistent with those provided to all relevant persons. We note GAP has subscribed to our Consultation Activities page.

In addition, GAP was provided links to the full EPs on 29 April 2022.

Acknowledging the above timeframes, including the additional 14-day period in which Woodside has requested GAP response to this letter, and that issues raised in GAP's correspondence have previously been addressed in previous consultations with other parties, Woodside believes GAP have been provided with a reasonable period for consultation on this EP.

Figure 1: Seismic worst-case loss of containment scenario (2000 m³ marine diesel spill) modelling outputs

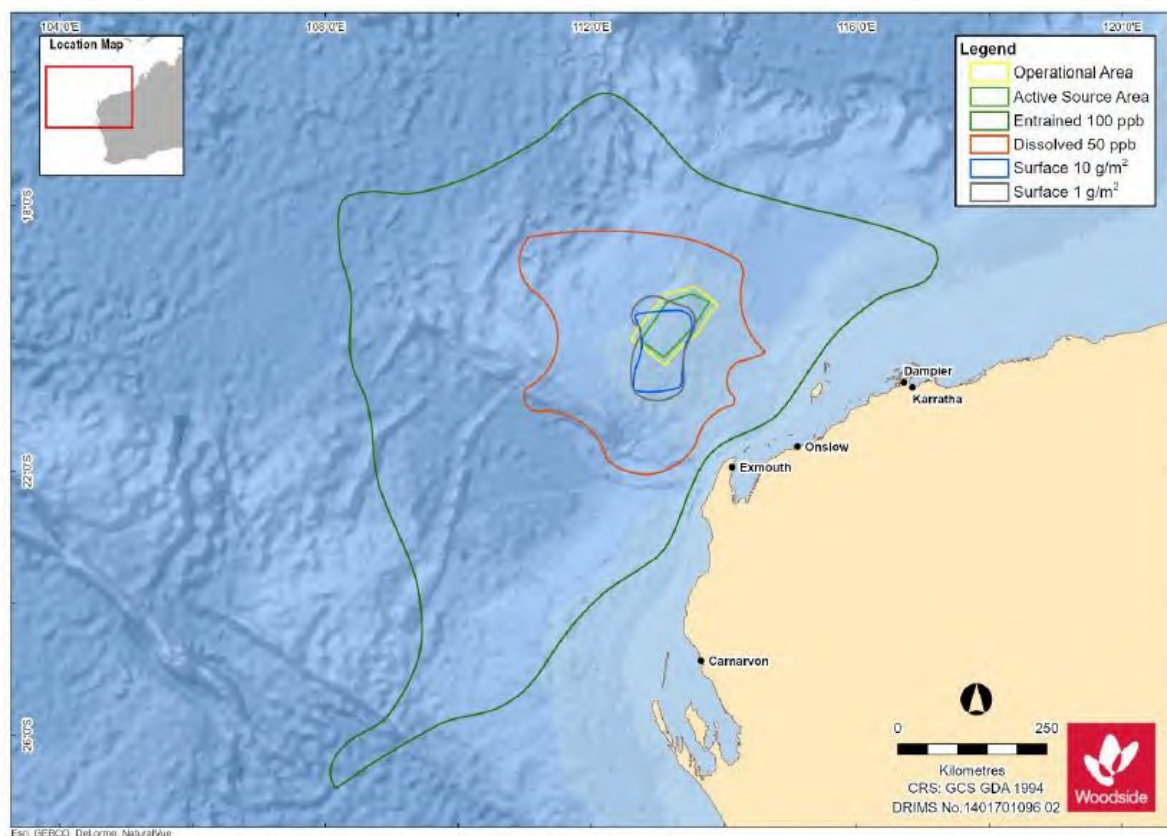


Figure 1 presents the outputs of stochastic modelling for the worst-case loss of containment scenario. Noting that the EMBA presented does not represent the predicted coverage of any one hydrocarbon spill or a depiction of a slick or plume at any particular point in time. Rather, the areas are a composite of a large number of theoretical paths, integrated over the full duration of the simulations under various metocean conditions.

Table 1: Seismic EP Environmental Aspects

Aspect	EP Section Reference
<i>Planned Activities (Routine and Non-routine)</i>	
Physical Presence: Interactions with Other Marine Users	6.6.1
Routine Acoustic Emissions: Seismic Survey Equipment	6.6.2
Routine Acoustic Emissions: Project Vessels	6.6.3
Routine Atmospheric Emissions and GHG Emissions	6.6.4
Routine Discharge: Bilge Water, Grey Water, Sewage, Putrescible Wastes and Deck Drainage Water	6.6.5
Routine Light Emissions: External Lighting on Project Vessels	6.6.6
<i>Unplanned Activities (Accidents, Incidents, Emergency Situations)</i>	
Accidental Hydrocarbon Release: Vessel Collision	6.7.2
Accidental Hydrocarbon Release: Bunkering	6.7.3
Unplanned Discharge: Deck Spills	6.7.4
Unplanned Discharge: Loss of Solid Hazardous and Non-Hazardous Wastes (including Dropped Objects)	6.7.5
Physical Presence: Vessel Collision / Entanglement with Marine Fauna	6.7.6
Physical Presence: Loss of Equipment	6.7.7
Physical Presence: Introduction and Establishment of Invasive Marine Species	6.7.8

1.29 Email sent to TCC (16 September 2022)

Dear Climate Council

Woodside has identified that Climate Council has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The purpose of the marine seismic survey is to improve data quality and subsurface imaging within the permit. The activity is planned to commence in Q4 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet has been available on [Woodside's website](#) since May 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since 18 October 2021 and was open for public comment until 17 November 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Noting consultation material has been available since May 2021 and feedback was sought by 14 June 2021, we understand that Climate Council has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough 4D Baseline Marine Seismic Survey Environment Plan, please provide your views by **30 September 2022**.

Woodside has reviewed your online public campaign in relation to the activity defined in the Scarborough 4D Baseline Marine Seismic Survey Environment Plan, and notes that content generally relates to impacts and risks of the Scarborough Project to climate change and greenhouse gas (GHG) emissions.

We confirm that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough 4D Baseline Marine Seismic Survey Environment Plan (the Seismic EP). Woodside confirms that the Seismic EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program (PAP), having regard to the nature and scale of the proposed PAP. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the Seismic EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for the Seismic EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the Seismic activity (ie fuel combustion from project vessels) are considered in Section 6.5.5 (Revision 0) of the publicly available Seismic EP.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 30 September 2022, to discuss the Scarborough 4D Baseline Marine Seismic Survey Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is accepted throughout the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance, while the EP remains in force.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

Activity:

Summary:	The purpose of the survey is to improve data quality and subsurface imaging within the permit.
Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel.
Location:	214 km north-west of Exmouth Latitude 20°16'59.043" Longitude 113°6'0.387"E
Approximate Water Depth (m):	800 m – 1150 m
Schedule:	Currently planned for Q4 2022
Duration:	Around 55 days - 70 days
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have issues or concerns with the proposed marine seismic activities then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan, which will be resubmitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for

acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **30 September 2022**.

Regards,

Woodside Feedback

1.30 Email sent to The Wilderness Society (16 September 2022)

Dear Wilderness Society

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The purpose of the marine seismic survey is to improve data quality and subsurface imaging within the permit.

The activity is planned to commence in Q4 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet has been available on [Woodside's website](#) since May 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since 18 October 2021 and was open for public comment until 17 November 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Noting consultation material has been available since May 2021 and feedback was sought by 14 June 2021, we understand that Wilderness Society has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough 4D Baseline Marine Seismic Survey Environment Plan, please provide your views by **30 September 2022**.

Woodside has reviewed your website and notes that it raised concern with seismic sources on marine life. We confirm that to mitigate the risk to cetaceans from the seismic survey, a suite of controls have been adopted in the EP (Section 6.5.3, Revision 0) to manage this risk to an ALARP and acceptable level for this activity including:

- C 4.1 - Seismic source validation
- C 5.1 - Application of EPBC Policy Statement 2.1 Part A Standard Management Procedures and Part B.4 to whales
- C 5.2 - Application of EPBC Policy Statement 2.1 Part B.1 – MFOs
- C 5.3 - Application of EPBC Policy Statement 2.1 Part B.5 – PAM
- C 5.4 - Adaptive Management Measures to minimise the potential impacts to pygmy blue whales from seismic noise
- C 5.5 - No operation of the seismic source within 25 km of the pygmy blue whale migration BIA
- C 6.1 - No operation of the seismic source outside of the Active Source Area
- C 7.1 - A 40 km separation distance between the Petroleum Activities Program and any identified concurrent seismic survey

The Active Source and Operational areas for the Scarborough 4D MSS, whilst within the distribution range for pygmy blue whales, are outside the migration BIA, and also not in an area where foraging or resting is likely to take place. Additionally, the activity does not overlap BIAs for any other marine mammal species. Accordingly, the likelihood of encountering pygmy blue whales and other cetaceans is expected to be low, even if the timing of the activity overlaps peak periods for northbound and southbound pygmy blue whale migration. The Active Source Area is located ~30 km from the western boundary of the migration BIA, and the results of the Thums et al. (2022) and Double et al. (2014) satellite tracking studies showed that out of a total of 20 pygmy blue whales tagged and tracked during these studies there was only a single individual migrating north that travelled to the west of the migration BIA.

The Environment Plan includes application of EPBC Act Policy Statement 2.1 Part B.6 – Adaptive Management measures to minimise the potential impacts to pygmy blue whales from seismic noise, which will be triggered if encounters with pygmy blue whales are more frequent than expected. The seismic survey vessel maintains a constant upper speed of 5 knots when in operation to minimise the noise of movement of water over the seismic streamers. This largely dictates the speed of both the escorting support and chase vessel that accompanies the survey vessel. In addition, vessels adopt the go-slow buffers around marine fauna as per EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans (C14.1).

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 30 September 2022, to discuss the Scarborough 4D Baseline Marine Seismic Survey Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is accepted throughout the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance, while the EP remains in force.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

Activity:

Summary:	The purpose of the survey is to improve data quality and subsurface imaging within the permit.
Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel.
Location:	214 km north-west of Exmouth Latitude 20°16'59.043" Longitude 113°6'0.387"E
Approximate Water Depth (m):	800 m – 1150 m
Schedule:	Currently planned for Q4 2022
Duration:	Around 55 days - 70 days
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have issues or concerns with the proposed marine seismic activities then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan, which will be resubmitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **30 September 2022**.

Regards,

Woodside Feedback

1.31 Email sent to Extinction Rebellion WA (XRWA) (16 September 2022)

Dear Extinction Rebellion WA

Woodside has identified that Extinction Rebellion WA has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The purpose of the marine seismic survey is to improve data quality and subsurface imaging within the permit.

The activity is planned to commence in Q4 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet has been available on [Woodside's website](#) since May 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since 18 October 2021 and was open for public comment until 17 November 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Noting consultation material has been available since May 2021 and feedback was sought by 14 June 2021, we understand that Extinction Rebellion WA has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough 4D Baseline Marine Seismic Survey Environment Plan, please provide your views by **30 September 2022**.

Woodside has reviewed your online public campaign in relation to the activity defined in the Scarborough 4D Baseline Marine Seismic Survey Environment Plan, and notes that content generally relates to impacts and risks of the Scarborough Project to climate change, greenhouse gas (GHG) emissions, rock art and Aboriginal cultural heritage.

We confirm that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough 4D Baseline Marine Seismic Survey Environment Plan (the

Seismic EP). Woodside confirms that the Seismic EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program (PAP), having regard to the nature and scale of the proposed PAP. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the Seismic EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for the Seismic EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the Seismic activity (ie fuel combustion from project vessels) are considered in Section 6.5.5 (Revision 0) of the publicly available Seismic EP.

On rock art and Aboriginal cultural heritage – we confirm that activities covered by the 4D Seismic EP are located ~430 km away from Murujuga and will have no impact on access to sites of cultural and spiritual significance. Emissions from the activities covered by the 4D Seismic EP are of a scale and physical remoteness from Murujuga’s rock art that no credible impact pathway is foreseen. No rock art will be displaced as a result of the proposed Petroleum Activities Program (PAP). Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program (PAP). Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development. These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the 4D Seismic EP.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 30 September 2022, to discuss the Scarborough 4D Baseline Marine Seismic Survey Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is accepted throughout the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance, while the EP remains in force.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside’s consultation activities on our [website](#).

Activity:

Summary: The purpose of the survey is to improve data quality and subsurface imaging within the permit.

Survey type: Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel.

Location: 214 km north-west of Exmouth
Latitude 20°16'59.043" | Longitude 113°6'0.387"E

Approximate Water Depth (m): 800 m – 1150 m

Schedule: Currently planned for Q4 2022

Duration: Around 55 days - 70 days

Vessels: A purpose-built seismic vessel, one support vessel and a potential chase vessel

Safe navigation zone (cautionary area) Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have issues or concerns with the proposed marine seismic activities then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan, which will be resubmitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **30 September 2022**.

Regards,

Woodside Feedback

1.32 Email sent to Market Forces (16 September 2022)

Dear Market Forces

Woodside has identified that Market Forces has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The purpose of the marine seismic survey is to improve data quality and subsurface imaging within the permit.

The activity is planned to commence in Q4 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet has been available on [Woodside's website](#) since May 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since 18 October 2021 and was open for public comment until 17 November 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Noting consultation material has been available since May 2021 and feedback was sought by 14 June 2021, we understand that Market Forces has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough 4D Baseline Marine Seismic Survey Environment Plan, please provide your views by **30 September 2022**.

Woodside has reviewed your online public campaign in relation to the activity defined in the Scarborough 4D Baseline Marine Seismic Survey Environment Plan, and notes that content generally relates to impacts and risks of the Scarborough Project to climate change, greenhouse gas (GHG) emissions, rock art, Aboriginal cultural heritage and an unplanned oil spill.

We confirm that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough 4D Baseline Marine Seismic Survey Environment Plan (the

Seismic EP). Woodside confirms that the Seismic EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program (PAP), having regard to the nature and scale of the proposed PAP. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the Seismic EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for the Seismic EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the Seismic activity (ie fuel combustion from project vessels) are considered in Section 6.5.5 (Revision 0) of the publicly available Seismic EP.

On rock art and Aboriginal cultural heritage – we confirm that activities covered by the 4D Seismic EP are located ~430 km away from Murujuga and will have no impact on access to sites of cultural and spiritual significance. Emissions from the activities covered by the 4D Seismic EP are of a scale and physical remoteness from Murujuga’s rock art that no credible impact pathway is foreseen. No rock art will be displaced as a result of the proposed Petroleum Activities Program (PAP). Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program (PAP). Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development. These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the 4D Seismic EP.

On unplanned oil spill risk – we confirm that Unplanned Activities (Accidents, Incidents, Emergency Situations) from the marine seismic survey activity are assessed in Section 6.6 (Rev 0) of the publicly available EP.

- Section 4 (Rev 0) of the publicly available EP describes the Environment that May Be Affected (EMBA) which is the largest spatial extent where unplanned events could have an environmental consequence on the surrounding environment. For this EP, the EMBA is the potential spatial extent of surface and in-water hydrocarbons at concentrations above ecological impact thresholds, in the event of the worst-case credible spill, ecological impact thresholds used to delineate the EMBA are defined in Section 6.7.1.2. The worst-case credible spill scenario for this EP is a vessel collision resulting in hydrocarbon release of 2,000m³ of marine diesel.
- The EMBA presented does not represent the predicted coverage of any one hydrocarbon spill or a depiction of a slick or plume at any particular point in time. Rather, the areas are a composite of a large number of theoretical paths, integrated over the full duration of the simulations under various metocean conditions.
- The best response to a marine pollution event is considered to be prevention. Woodside and its contractors have agreed operating procedures and management plans in the unlikely event of an oil spill, to minimise loss of hydrocarbons to the environment.
- In the unlikely event of an oil spill, a NOPSEMA approved Oil Pollution Emergency Plan (OPEP) will be in place for all activities to be managed under this EP.

The OPEP supports timely implementation of pre-determined response strategies through defined organisational structures, human and physical resource requirements, and alignment with applicable government and industry oil spill response plans and requirements.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 30 September 2022, to discuss the Scarborough 4D Baseline Marine Seismic Survey Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is accepted throughout the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance, while the EP remains in force.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside’s consultation activities on our [website](#).

Activity:

Summary:	The purpose of the survey is to improve data quality and subsurface imaging within the permit.
Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel.
Location:	214 km north-west of Exmouth Latitude 20°16'59.043" Longitude 113°6'0.387"E
Approximate Water Depth (m):	800 m – 1150 m
Schedule:	Currently planned for Q4 2022
Duration:	Around 55 days - 70 days
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have issues or concerns with the proposed marine seismic activities then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan, which will be resubmitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **30 September 2022**.

Regards,

Woodside Feedback

1.33 Email sent to Australasian Centre for Corporate Responsibility (ACCR) (16 September 2022)

Dear Australasian Centre for Corporate Responsibility

Woodside has identified that the Australasian Centre for Corporate Responsibility (ACCR) has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The purpose of the marine seismic survey is to improve data quality and subsurface imaging within the permit.

The activity is planned to commence in Q4 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet has been available on [Woodside's website](#) since May 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since 18 October 2021 and was open for public comment until 17 November 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Noting consultation material has been available since May 2021 and feedback was sought by 14 June 2021, we understand that ACCR has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough 4D Baseline Marine Seismic Survey Environment Plan, please provide your views by **30 September 2022**.

Woodside has reviewed your online public campaign in relation to the activity defined in the Scarborough 4D Baseline Marine Seismic Survey Environment Plan, and notes that content generally relates to impacts and risks of the Scarborough Project to climate change and greenhouse gas (GHG) emissions.

We confirm that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough 4D Baseline Marine Seismic Survey Environment Plan (the Seismic EP). Woodside confirms that the Seismic EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program (PAP), having regard to the nature and scale of the proposed PAP. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the Seismic EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for the Seismic EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the Seismic activity (ie fuel combustion from project vessels) are considered in Section 6.5.5 (Revision 0) of the publicly available Seismic EP.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 30 September 2022, to discuss the Scarborough 4D Baseline Marine Seismic Survey Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is accepted throughout the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance, while the EP remains in force.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

Activity:

Summary: The purpose of the survey is to improve data quality and subsurface imaging within the permit.

Survey type: Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel.

Location:	214 km north-west of Exmouth Latitude 20°16'59.043" Longitude 113°6'0.387"E
Approximate Water Depth (m):	800 m – 1150 m
Schedule:	Currently planned for Q4 2022
Duration:	Around 55 days - 70 days
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have issues or concerns with the proposed marine seismic activities then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan, which will be resubmitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **30 September 2022**.

Regards

Woodside Feedback

1.34 Email sent to International Fund for Animal Welfare (IFAW) (16 September 2022)

Dear International Fund for Animal Welfare

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The purpose of the marine seismic survey is to improve data quality and subsurface imaging within the permit.

The activity is planned to commence in Q4 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet has been available on [Woodside's website](#) since May 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the

NOPSEMA website since 18 October 2021 and was open for public comment until 17 November 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Noting consultation material has been available since May 2021 and feedback was sought by 14 June 2021, we understand that the International Fund for Animal Welfare has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough 4D Baseline Marine Seismic Survey Environment Plan, please provide your views by **30 September 2022**.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 30 September 2022, to discuss the Scarborough 4D Baseline Marine Seismic Survey Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is accepted throughout the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance, while the EP remains in force.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

Activity:

Summary:

The purpose of the survey is to improve data quality and subsurface imaging within the permit.

Survey type:

Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel.

Location:

214 km north-west of Exmouth
Latitude 20°16'59.043" | Longitude 113°6'0.387"E

Approximate Water Depth (m):

800 m – 1150 m

Schedule:

Currently planned for Q4 2022

Duration:

Around 55 days - 70 days

Vessels:

A purpose-built seismic vessel, one support vessel and a potential chase vessel

Safe navigation zone (cautionary area)

Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have issues or concerns with the proposed marine seismic activities then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan, which will be resubmitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **30 September 2022**.

Regards,

Woodside Feedback

1.35 Email sent to World Wildlife Fund (WWF) Australia (19 September 2022)

Dear World Wildlife Fund

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA for a marine seismic survey in Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.

The purpose of the marine seismic survey is to improve data quality and subsurface imaging within the permit.

The activity is planned to commence in Q4 2022 for a period of around 55 to 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet has been available on [Woodside's website](#) since May 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since 18 October 2021 and was open for public comment until 17 November 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Noting consultation material has been available since May 2021 and feedback was sought by 14 June 2021, we understand that the WWF has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough 4D Baseline Marine Seismic Survey Environment Plan, please provide your views by **30 September 2022**.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 30 September 2022, to discuss the Scarborough 4D Baseline Marine Seismic Survey Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is accepted throughout the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance, while the EP remains in force.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

Activity:

Summary:	The purpose of the survey is to improve data quality and subsurface imaging within the permit.
Survey type:	Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (triple) and multiple streamers towed behind the survey vessel.
Location:	214 km north-west of Exmouth Latitude 20°16'59.043" Longitude 113°6'0.387"E

Approximate Water Depth (m):	800 m – 1150 m
Schedule:	Currently planned for Q4 2022
Duration:	Around 55 days - 70 days
Vessels:	A purpose-built seismic vessel, one support vessel and a potential chase vessel
Safe navigation zone (cautionary area)	Three nautical mile radius safe navigation area around the seismic vessel and streamers during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

Survey location:

The location of the Active Source Area and Operational Area are outlined in the attached Consultation Information Sheet.

Feedback:

If you have issues or concerns with the proposed marine seismic activities then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan, which will be resubmitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **30 September 2022**.

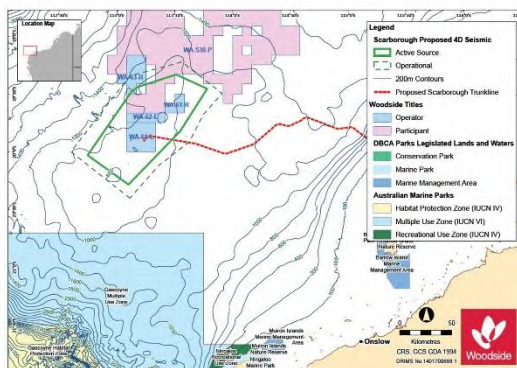
Regards,

Woodside Feedback

SCARBOROUGH CONSULTATION

Scarborough 4D B1 Marine Seismic Survey (Scarborough Seismic)

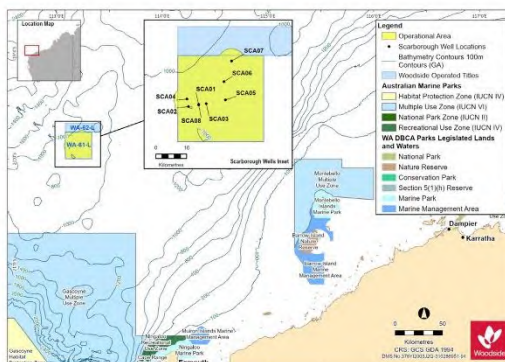
Proposed activity details	
Location	• Located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia
Earliest commencement date	• Q3 2022
Estimated duration	• 55 – 70 days
Active Source Area	• ~5,650 km
Operational Area	• ~9,200 km
Water depth in Operational Area	• Approximately 800 m – 1150 m
Vessels	• A purpose-built seismic vessel, one support vessel and a potential chase vessel
Distance from Active Source Area to nearest port/marina	• 214 km north-west of Exmouth
Distance from Active Source Area to nearest marine park	• 46 km north of Gascoyne Marine Park Multiple Use Zone



SCARBOROUGH CONSULTATION


Scarborough Drilling and Completions (Scarborough D&C)

Proposed activity details	
Location	• Permit Area WA 61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia
Water depth	• Approximately 900 m – 955 m
Earliest commencement date	• H2 2022 pending approvals, vessel availability and weather constraints
Estimated duration	• 50-60 days per well
Operational Area (OA)	• ~4,000 m for moored mobile offshore drilling unit (MODU), 500 m for dynamically positioned mobile offshore drilling unit (DPMODU)
Vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels
Distance from OA to nearest port/marina	• 244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Distance from OA to nearest marine park	• 83 km north of the Gascoyne Marine Park (Cwlth) • 206 km north-west of Montebello Marine Park (Cwlth) • 208 km north-northwest of Ningaloo Marine Park (Cwlth)



1.36 NOPSEMA public comment period newspaper advertisements (21 October 2022) placed in the Pilbara News, The West Australian and The Australian

Scarborough 4D Baseline Marine Seismic Survey Notice



Woodside Energy Scarborough Pty Ltd is proposing to conduct the Scarborough 4D Baseline Marine Seismic Survey activity in Q3 2022 located in Commonwealth waters adjacent to WA. The activity will be conducted for up to 80 days in an operational area up to 9,200 km², 214 km north west of Exmouth.

An Environment Plan (EP) for the activity has been prepared in accordance with the regulations administered by NOPSEMA under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. A comment period is open until Wednesday 17 November 2021 providing the public with an opportunity to submit a comment in relation to the EP.

To submit a comment or for further information about the activity see NOPSEMA's website at: [Industry environment plans \(nopsema.gov.au\)](http://Industry.environment.plans(nopsema.gov.au)).

1.37 Email sent to National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP) (11 November 2022)

Dear [REDACTED]

Further to the below correspondence regarding Woodside's Scarborough 4D B1 Marine Seismic Survey, please be advised that Woodside has submitted an Environment Plan (EP) to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for the following proposed activities:

- [Scarborough Seabed Intervention and Trunkline Installation Environment Plan](#) (SITI EP)
- [WA-61-L Scarborough Drilling and Completions](#) (D&C EP)

Woodside has previously submitted Revision 1 of the SITI EP to NOPSEMA. This revision of the EP has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Woodside has also previously submitted Revision 0 of the D&C EP to NOPSEMA. This revision of the EP has been available on the NOPSEMA website since November 2021

(https://info.nopsema.gov.au/environment_plans/565/show_public). Woodside is preparing an updated revision of the SITI EP and D&C EP for submission to NOPSEMA. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. Woodside is also proposing to undertake seabed site surveys and installation of subsea production infrastructure within Permit Areas WA-61-L and WA-62-L, about 374 km west-northwest of Dampier, Western Australia under the [WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan](#) (Subsea EP). This EP has not yet been submitted to NOPSEMA.

A Consultation Information Sheet for each of the activities is linked above, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. They are also available on our [website](#).

The proposed activities under the SITI EP, D&C EP and Subsea EP are planned to be undertaken within a subset of the activity area for the Scarborough Seismic Survey and may be of interest to you.

Each of these EPs fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP) and will be conducted in line with relevant requirements of the OPP. The OPP includes a detailed description of activities and an assessment of impacts; with controls to develop acceptability criteria. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

Should NERA CESP have feedback on the SITI EP, D&C EP or Subsea EP, please provide your views by **25 November 2022**.

Your feedback and our response will be included in our Environment Plan which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Regards,

Woodside Feedback

1.38 Presentation to Exmouth Community Reference Group (17 November 2022)

ENVIRONMENT PLANS

Scarborough

- State and Commonwealth primary environmental approvals for the Scarborough Project secured
- Project and related activity-specific Environment Plans in development / under NOPSEMA assessment

Scarborough 4D B1 Marine Seismic Survey (Cth)

- Submitted for assessment October 2021
- Proposal to conduct a 4D baseline marine seismic survey over the Scarborough field within Commonwealth waters, ~ 214 km north-west of Exmouth

Scarborough Drilling and Completions (Cth)

- Submitted for assessment November 2021
- Proposal for drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells, ~244 km north-northwest of Exmouth

Scarborough Seabed Intervention and Trunkline Installation (Cth)

- Submitted for assessment Dec 2021
- Proposal for seabed intervention and installation activities for the section of the Scarborough Trunkline in Commonwealth waters that runs ~ 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) (~244 km north-northwest of Exmouth) to the existing onshore Pluto LNG facility on the Burrup Peninsula

Scarborough Subsea Infrastructure Installation (Cth)

- In development
- Proposal for visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough FPU, ~244 km north-northwest of Exmouth

1.39 Woodside Consultation Information Sheet – (updated January 2023)



STAKEHOLDER CONSULTATION

INFORMATION SHEET

January 2023

SCARBOROUGH 4D BASELINE MARINE SEISMIC SURVEY

NORTHERN CARNARVON BASIN

Woodside is planning to conduct a 4D baseline marine seismic survey (MSS) over the Scarborough and Jupiter field within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia. The proposed activity is planned to commence in H1 2023 for a period of between 55 and 70 days, pending approvals, final survey dimensions, vessel availability and weather constraints.

The proposed survey will be conducted over areas where the Scarborough Joint Venture has previously acquired seismic data. The objective for the proposed activity is to acquire a new 3D seismic survey that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey) over the Scarborough, North Scarborough and possibly the Jupiter gas fields (located within Petroleum Titles WA-61-L, WA-62-L, WA-61-R & WA-63-R).

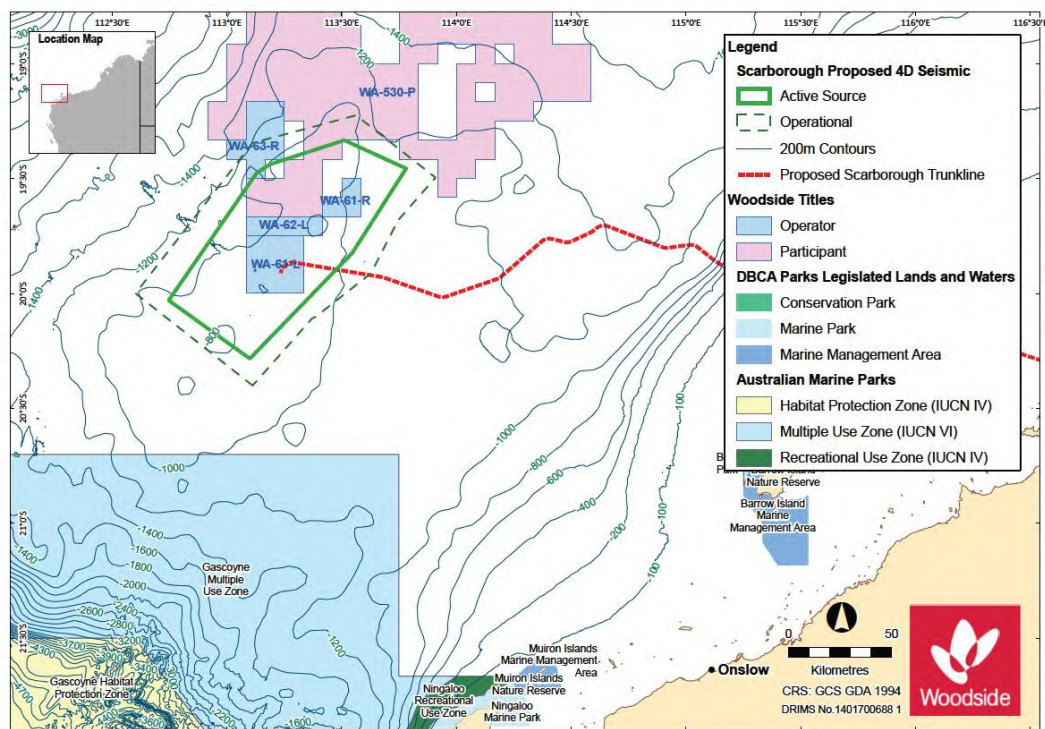


Figure 1. Proposed Scarborough 4D Baseline MSS Active Source and Operational Area.

About marine seismic surveys

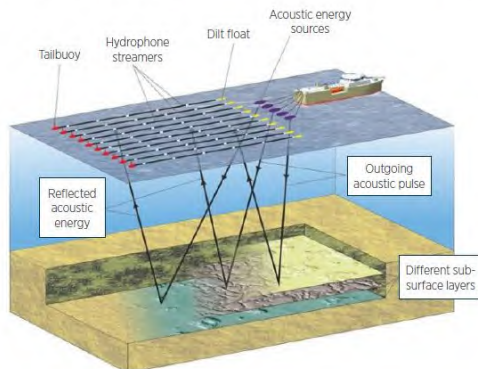
During planned activities, a seismic vessel traverses a series of pre-determined sail lines within the survey Active Source Area at a speed of approximately three to five knots (5.5 – 9.3 km/hr).

An additional buffer area, or Operational Area, around the Active Source Area is allowed for vessel manoeuvring and line turns. No discharge of the seismic source will occur in this Operational Area. Testing of the seismic source, 'soft starts', and all other operations of the seismic source during seismic lines including 'run ins' and 'run outs' will all be undertaken within the Active Source Area.

As the vessel travels along a sail line series, seismic air sources discharge compressed air to generate acoustic pulses approximately every 2 to 10 seconds.

These acoustic pulses are directed vertically through the water column and into the seabed. The released energy is reflected at geological boundaries, with the reflected signals detected by sensitive microphones called 'hydrophones, geophones or MEMS', embedded within cables, or streamers, towed directly behind the seismic vessel.

The reflected sound is recorded and then processed to generate a seismic image, providing information about the structure and composition of geological formations and the associated sedimentary properties below the seabed.



Proposed activity

Table 1 - Activity summary

Activity	Details
Earliest commencement date	H1 2023 pending approvals, vessel availability and weather constraints
Estimated duration	55 – 70 days
Active Source Area	-5,650 km ²
Operational Area	-9,200 km ²
Water depth in Operational Area	Approximately 800 m – 1,150 m
Last acquired data	2004
Vessels	A purpose built seismic vessel, one support vessel, a potential chase vessel and an additional spotter vessel (May to June).
Distance from Active Source Area to nearest port/marina	214 km north-west of Exmouth
Distance from Active Source Area to nearest marine park	46 km north of Gascoyne Marine Park Multiple Use Zone

The proposed survey will be conducted by a purpose-built seismic survey vessel. The proposed marine seismic survey is typical of seismic surveys conducted in Australian marine waters, in terms of technical methods and procedures.

Woodside is proposing to acquire a 3D seismic survey to be used as a future 4D baseline within the Active Source Area. This involves the use of an acoustic source array (dual or triple) and multiple streamers towed behind the survey vessel.

An additional support vessel will accompany the seismic vessel for assistance in the form of emergency tow as required and to re-supply the survey vessel with fuel and other logistical and operational supplies. An additional chase vessel may be used to manage interactions with other marine users in the vicinity of the survey if required. An additional vessel may be used during northbound migration. Survey activities will take place 24 hrs per day.

Technical details are outlined in **Table 2**.

Table 2 - Technical overview

Activity	Details
Number of streamers	Up to 14
Each streamer length	- 8 km
Distance between streamers	between 50 to 100 m - 75 m
Maximum width of streamer array	-up to 1.5 km
Safe navigation area (cautionary zone)	Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations
Streamer tow depth	-15 m to 20 m
Sound source size	upto 3,150 in ³

Communications with mariners

A temporary three nautical mile radius safe navigation area will be maintained around the seismic vessel and towed array during seismic operations. Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels.

The seismic vessel will be actively acquiring seismic data within the Active Source Area determined for these activities. Marine notices will be issued prior to the start of work to alert vessels that maybe operating in waters nearby and that access to these areas may be limited.

Woodside will provide updates on vessel movements and their details during the activities in the form of look ahead reports at an appropriate frequency to meet relevant stakeholder needs.

The location of the Active Source Area and Operational Area are outlined in **Table 3**.

Table 3 - Survey location

Location point	
Latitude	Longitude
Active Source Area	
20°16'59.043"S	113°6'0.387"E
20°1'47.096"S	112°44'50.156"E
19°28'31.503"S	113°7'47.431"E
19°26'15.236"S	113°11'12.497"E
19°19'55.308"S	113°30'40.293"E
19°27'20.645"S	113°46'53.197"E
19°49'26.264"S	113°32'44.0"E
Operational Area	
20°24'2.0"S	113°6'45.162"E
19°59'57.873"S	112°36'7.851"E
19°20'39.38"S	113°6'41.252"E
19°13'25.19"S	113°33'49.172"E
19°29'41.467"S	113°54'32.011"E
19°40'50.544"S	113°44'44.882"E
19°54'42.118"S	113°37'40.185"E
20°6'2.873"S	113°23'11.168"E
20°6'31.786"S	113°22'13.473"E

Implications for stakeholders

In support of the proposed activities, Woodside will consult relevant stakeholders whose interests, functions and activities may be affected by the proposed activities. We will also keep other stakeholders who have identified an interest informed about our planned activities.

Woodside has undertaken an assessment to identify potential risks to the marine environment and relevant stakeholders, considering timing, duration, location, and potential impacts arising from the Scarborough 4D Baseline Marine Seismic Survey.

A number of mitigation and management measures will be implemented and are summarised below.

Environment That May Be Affected (EMBA)

The environment that may be affected (EMBA) is the largest spatial extent where the Scarborough Seismic Survey Activity could potentially have an environmental consequence (direct or indirect impact). The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this Environment Plan (EP) is determined by a highly unlikely release of marine diesel to the environment as a result of a vessel collision. This is depicted in Figure 2.

The EMBA does not represent the extent of the predicted impact of the highly unlikely marine diesel release. Rather, the EMBA represents the merged area of many possible paths a highly unlikely hydrocarbon release could travel depending on weather and ocean conditions at the time of the release.

This means in the highly unlikely event a hydrocarbon release does occur, the entire EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release.

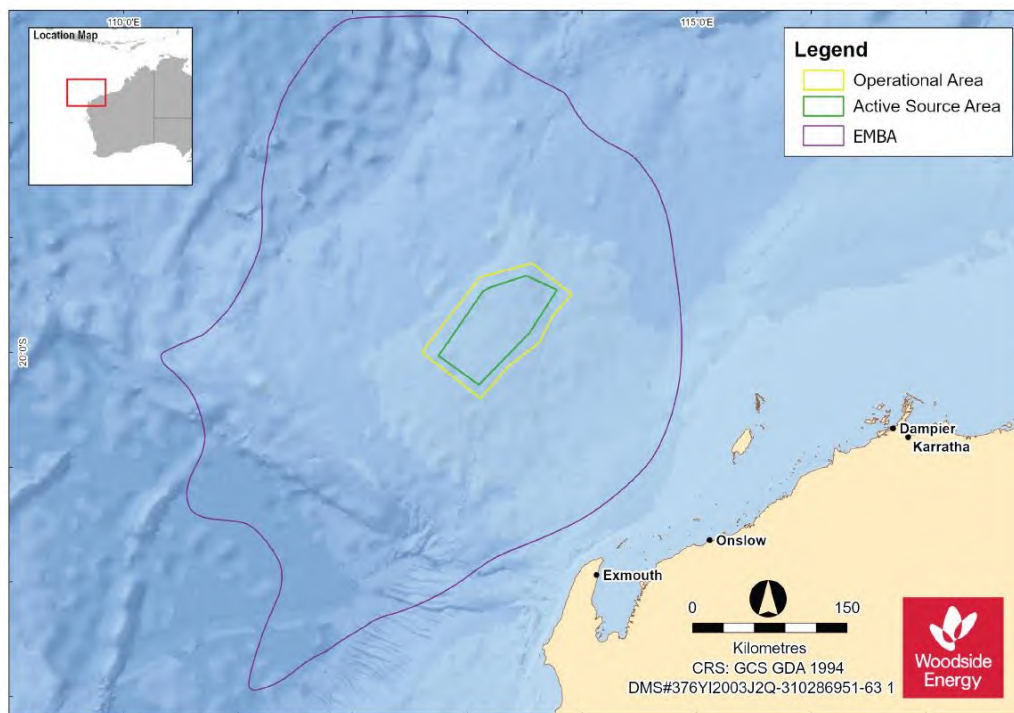


Figure 2. Environment that May Be Affected by the Scarborough Seismic Survey Activity

Mitigation and management measures

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from the Scarborough Seismic Survey Activity.

A number of mitigation and management measures for the Scarborough Seismic Survey Activity are outlined in **Table 4**.

Table 4 - Summary of key risks and/or impacts and preliminary management measures for the Scarborough Seismic Survey Activity

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures ¹
Planned			
Physical presence and interactions with other marine users	<ul style="list-style-type: none"> Several vessel types will be required to complete the activity including one seismic survey vessel, one support vessel, one chase vessel and one spotter vessel (May to June). The physical presence and movement of project vessels within the Operational Area has the potential to displace other marine users. 	<ul style="list-style-type: none"> Other vessels in the Operational Area, which may include commercial fishing, shipping and defence vessels, may be asked to deviate periodically to accommodate seismic survey operations. Deviations or interactions would be short-term due to the small area occupied by the seismic vessel and Safe Navigational Area (SNA) at any one time, and its transient nature. Impacts would be limited to operational inconvenience (navigational hazard) and temporary displacement within the Operational Area. The Operational Area overlaps with a shipping fairway and north-south international shipping traffic and therefore the potential impact to commercial shipping is expected to include short-term displacement of vessels as described above. Given the absence of fishing in the Operational Area in recent years, it is expected there will be no impact to commercial fisheries. The Operational Area is considered too far offshore for recreational fishing or tourism activities to occur. Therefore, it is expected there will be no impact. The Department of Defence (DoD) did not identify any activities within the North-West Exercise Area (NWXA) that overlaps the Operational Area. 	<ul style="list-style-type: none"> Vessels adhere to legislative requirements for navigational safety. Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and upon completion of activities. Notify the Australian Hydrographic Service (AHS) prior to commencement of the activity to enable them to update maritime charts, so that marine users are aware of the activity. Consult with relevant persons to ensure they are informed of the proposed activities. A concurrent operations plan developed for concurrent seismic activities identified (currently none have been identified). Publicly available interactive map showing location of the seismic vessel. 3 nm SNA established and communicated around the seismic vessel and towed array. One vessel available to assist the seismic vessel to manage third-party vessel interactions. Project vessels operating with appropriate equipment lighting to alert third-party marine users.
Routine acoustic emissions: project vessels	<ul style="list-style-type: none"> Project vessels will generate noise in the air and underwater due to the operation of thruster engines, propellers, and on-board machinery etc. 	<ul style="list-style-type: none"> Elevated underwater noise can affect marine fauna, including marine mammals, turtles and fishes in three main ways: <ol style="list-style-type: none"> By causing direct physical effects, including injury or hearing impairment. Hearing impairment may be temporary or permanent. Through disturbance leading to behavioural changes or displacement from important areas. The occurrence and intensity of disturbance is highly variable and depends on a range of factors relating to the animal and situation. By masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey). Marine fauna associated with the Operational Area will be predominantly pelagic fish species, with the potential for species such as whale sharks, rays, marine turtles and marine mammal species to transit through the Operational Area. There are no marine fauna Biologically Important Areas (BIAs) within the Operational Area. Therefore, potential impacts from vessel noise are likely to be restricted to temporary avoidance behaviour to individuals and are therefore considered localised with no lasting effect. 	<p>Comply with regulatory requirements for interactions with marine fauna to prevent adverse interactions.</p>

¹ This EP is currently under assessment - these mitigation and management measures are subject to change through the consultation and assessment process and may not represent content in the publicly available EP or in the final plan once accepted.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures ¹
<p>Routine acoustic emissions: seismic survey equipment</p>	<ul style="list-style-type: none"> The seismic source will consist of an airgun array with a maximum capacity of up to 3150 in³. The source will be used to generate acoustic pulses by discharging compressed air periodically into the water column, at intervals of about five to six seconds. 	<ul style="list-style-type: none"> Elevated underwater noise can affect marine fauna, including marine mammals, turtles and fishes in three main ways (see above). The area over which seismic sound may impact marine species depends upon many factors including the extent of sound propagation relative to the location of receptors, and the sensitivity and range of spectral hearing of different species. The potential impacts of noise emissions from the seismic source on zooplankton during the seismic acquisition are considered to be slight and short-term, and the activity is not likely to result in ecologically significant impacts at a population level for zooplankton, fish eggs or larvae that may be present in the water column within or adjacent to the Operational Area. Demersal and pelagic fish communities within the Operational Area may exhibit some temporary behavioural responses to noise emissions from the seismic source, however, this is not likely to have an impact at the ecosystem level. Potential impacts from acoustic emissions on fish, sharks and rays are likely to be restricted to localised and temporary avoidance behaviour, and individuals impacted are unlikely to represent a significant proportion of the population within the Operational Area and the region overall. Potential impacts from acoustic emissions on fish, sharks and rays are likely to be restricted to localised and temporary avoidance behaviour, and individuals impacted are unlikely to represent a significant proportion of the population within the Operational Area and the region overall. The potential impacts of noise emissions from the seismic source on marine mammals during the acquisition of the survey are likely to be short-term and restricted to temporary behavioural changes (avoidance) in individuals moving through the Operational Area, with predicted noise levels from the seismic acquisition not considered likely to cause injury effects. Migrating whales are surrounded by open water with no restrictions (such as shallow waters, embayments) on an animal's ability to avoid the activities. Whales transiting through the area may deviate slightly from their migration route, but can continue on their migration pathway without any long-term impact. The potential impacts of noise emissions from the seismic source on marine reptiles (turtles) during the acquisition of the survey are considered to be slight and short-term. Interaction with turtles is expected to be low and impacts are likely to be restricted to temporary behavioural changes (avoidance) to transient turtles that may pass within 3.87 km of the seismic source. Turtles would be exposed to noise levels above behavioural threshold levels for a short period of time as the vessel moves through the survey area (up to 80-days). 	<ul style="list-style-type: none"> Comply with regulatory requirements for interactions with marine fauna to prevent adverse interactions. The use of trained Marine Fauna Observers to implement management procedures and adaptive management measures to minimise potential impacts to pygmy blue whales and other marine fauna from seismic noise. Dedicated spotter vessel deployed ahead of the seismic vessel if activity overlaps the May-June peak period for northbound migration of pygmy blue whales. Seismic source will be validated against noise sources assessed as acceptable in the EP and will not be discharged outside of the Active Source Area to limit the extent of underwater noise. Operation of the seismic source will not occur within 25 km of the pygmy blue whale migration BIA. A 40 km separation distance will be applied between the activity and any identified concurrent seismic surveys.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures ¹
Routine acoustic emissions: seismic survey equipment (cont)		<ul style="list-style-type: none"> In the absence of foraging BIAs, it is unlikely seabirds would be impacted by the seismic survey. Noting that no commercial fisheries operate within or near the Operational Area and the Operational Area does not provide suitable habitat or water depths for target fish or crustacean species, no physical or behavioural impacts are predicted to commercial fish stocks and no impacts are predicted to commercial fishery catch rates. The Scarborough Seismic Survey Activity will be undertaken in a manner consistent with the management objectives for Australian Marine Parks (AMPs) and the North-West Marine Park Network. No long-term impacts are predicted and the values will be conserved and protected. 	
Atmospheric emissions and greenhouse gas (GHG) emissions	<ul style="list-style-type: none"> Atmospheric emissions and greenhouse gases will be generated by the project vessels from internal combustion engines and incineration activities. 	<ul style="list-style-type: none"> Emissions from project vessels could result in temporary, localised reductions in air quality in the immediate vicinity of the vessels. Given the short duration and exposed location of project vessels (which will lead to the rapid dispersion of the low volumes of atmospheric emissions), the potential impacts are expected to be localised and of no lasting effect. Given the nature and scale of GHG emissions from vessel fuel usage for this activity, the potential GHG impact and risk from this activity is considered negligible. 	<ul style="list-style-type: none"> Comply with regulatory requirements for marine air pollution and GHG emissions reporting. Evaluation of contract tenders will include consideration of vessel fuel usage/missions and low carbon/alternative fuels.
Routine discharge: bilge water, greywater, sewage, putrescible wastes and deck drainage water	<ul style="list-style-type: none"> Sewage, greywater and putrescible waste will be discharged from project vessels. Bilge water, deck drainage and brine and cooling water may also be discharged. 	<ul style="list-style-type: none"> The main impact associated with ocean disposal of sewage and other organic wastes (i.e. putrescible waste) is eutrophication. Eutrophication occurs when the addition of nutrients, such as nitrates and phosphates, causes adverse changes to the ecosystem including short-term, localised impacts to water quality. No significant impacts are expected to water quality from planned discharges because of the minor quantities involved, the expected localised mixing zone and high level of dilution into the open water marine environment of the Operational Area. Similarly, although some marine fauna may transit the Operational Area, any potential for impact remains low due to the localised nature of discharges and rapid dilution. 	Routine marine discharges will be managed consistently with regulatory requirements.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures ¹
Light emissions	<ul style="list-style-type: none"> Project vessels will use external lighting to navigate and conduct safe operations at night. Vessel lighting will also be used to communicate the vessels' presence to other marine users (i.e. navigation/warning lights). 	<ul style="list-style-type: none"> Light emissions can affect fauna (such as marine turtles and birds) in two ways: <ol style="list-style-type: none"> Behaviour: artificial lighting has the potential to create a constant level of light at night that can override natural levels and cycles. Orientation: if an artificial light source is brighter than a natural source, the artificial light may override natural cues, leading to disorientation. Light emissions to marine turtles from project vessels are unlikely to result in more than localised, behavioural disturbance to isolated transient individuals, with no lasting effect to the species. The Operational Area may be visited occasionally by seabirds, but does not overlap with BIAs or critical habitat for bird species. Impacts are expected to be limited to temporary behavioural disturbance to isolated individuals, with no lasting effect or displacement from important habitat. Lighting from project vessel activities in the Operational Area may result in the localised aggregation of fish around the vessel. Any long-term changes to fish species' composition or abundance are considered highly unlikely and are not expected to impact on commercial fisheries in the area. 	<ul style="list-style-type: none"> Lighting will be limited to the minimum required for navigation and safe operational requirements, with the exception of emergency events.

Unplanned			
Unplanned hydrocarbon release – vessel collision	<ul style="list-style-type: none"> Project vessels will use marine diesel fuel, meaning a vessel collision involving a project vessel or third-party during the activity may result in the release of marine diesel. For a collision to result in the worst-case scenario diesel release, several factors must occur as follows: <ul style="list-style-type: none"> Identified causes of vessel interaction must result in a collision. The collision has enough force to penetrate the vessel hull and in the exact location of the fuel tank. The fuel tank must be full or at least of volume which is higher than the point of penetration. 	<ul style="list-style-type: none"> In the highly unlikely event of a vessel collision causing a release of hydrocarbons, impacts to water quality and marine ecosystems could occur. Modelling of a surface release of marine diesel was undertaken as worst case scenario vessel collision. Marine diesel is a relatively volatile, non-persistent nature hydrocarbon with up to 35% evaporating within the first 24 hours. Potential impacts across the EMBA were assessed including receptors such as plankton, mangroves, seabirds and migratory shorebirds, saltmarshes, coral, tourism, recreation and cultural heritage (for example). Taking into account receptor sensitivity, the highest consequence rating for this unplanned event was a 'Moderate' risk. Receptors were rated as having a potential consequence level of 'Minor' or less ('Slight' or 'Negligible'). 	<p>Preventing vessel collision:</p> <ul style="list-style-type: none"> Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements. Consult with relevant persons so that other marine users are informed and aware, reducing the likelihood of a collision. Establish a Safety Navigation Area around vessels which are communicated to marine users to reduce the likelihood of a collision. Develop a management plan for simultaneous operations where a concurrent seismic activity is identified in the Operational Area (currently none have been identified). One vessel available to assist the seismic vessel to manage third-party vessel interactions to reduce the likelihood of a collision. Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and upon completion of activities. Notify the AHS prior to commencement of the activity to enable them to update maritime charts, so that marine users are aware of the activity. <p>Spill response arrangements:</p> <ul style="list-style-type: none"> Arrangements supporting the Oil Pollution Emergency Preparation document (OPEP) will be tested so that the OPEP can be implemented as planned. In the event of a spill, emergency response activities would be implemented in line with the OPEP.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures ¹
Unplanned hydrocarbon release - bunkering	<ul style="list-style-type: none"> Accidental loss of hydrocarbons to the marine environment during bunkering/refueling may occur; caused by partial or total failure of a bulk transfer hose or fittings due to operational stress or other integrity issues. 	<ul style="list-style-type: none"> A marine diesel surface release is expected to be confined to within several kilometers of the release site, and well within the EMBA identified for the vessel collision scenario. This unplanned marine diesel release has the potential to result in changes in water quality and fauna behaviour. Receptors considered in the risk assessment for this unplanned event included marine mammals, marine reptiles, fish, sharks and rays. Taking into account receptor sensitivity, receptors were rated as having a potential consequence level of 'Minor' or less ('Slight' or 'Negligible'). 	<p>Preventing unplanned hydrocarbon release due to bunkering:</p> <ul style="list-style-type: none"> Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements. Appropriate bunkering equipment kept and maintained, and contractors to follow procedures and requirements for bunkering and refueling to reduce the likelihood of a spill. <p>Spill response arrangements:</p> <ul style="list-style-type: none"> Maintain and locate spill kits close to hydrocarbon storage and deck areas for use to contain and recover deck spills. Arrangements supporting the Oil Pollution Emergency Preparation document (OPEP) will be tested to ensure the OPEP can be implemented as planned. Emergency response activities would be implemented in line with the OPEP.
Unplanned discharge - deck spills	<ul style="list-style-type: none"> Accidental, unplanned loss of liquid chemical or fuels from equipment/storage on deck. 	<ul style="list-style-type: none"> Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (<50 L) are anticipated, resulting in very short-term impacts to water quality, and limited to the immediate release location. The biological consequences of such a small volume spill on identified open water sensitive receptors relate to a minor potential for toxicity impacts to plankton and fish populations (surface and water column biota) and localised reduction in water quality within a small spill affected area. No impacts are predicted to benthic habitat communities in the Operational Area. 	<ul style="list-style-type: none"> Comply with regulatory requirements for the prevention of marine pollution. Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily. Spill kits positioned in high-risk locations around the vessel (near potential spill points such as transfer stations).
Unplanned discharge of solid hazardous, non-hazardous solid waste, equipment	<ul style="list-style-type: none"> Accidental, unplanned loss of hazardous or non-hazardous solid wastes/equipment to the marine environment may occur if dropped or blown overboard. Dropped objects may also result in unplanned disturbance of benthic habitat. 	<ul style="list-style-type: none"> The potential impacts of hazardous or non-hazardous solid wastes and equipment accidentally discharged to the marine environment include contamination of the environment as well as secondary impacts relating to potential contact of marine fauna with wastes. The temporary or permanent loss of waste materials/equipment into the marine environment is not likely to have a significant environmental impact, based on the location of the activity, the types, size and frequency of wastes that could occur, and species present. 	<ul style="list-style-type: none"> Comply with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes. Implement waste management procedures to ensure the safe handling and transportation, segregation and storage and appropriate classification of all waste generated. Solid waste/equipment dropped to the marine environment will be recovered, where safe and practicable to do so. Where retrieval is not practicable and/or safe, material items (property) that are lost to the marine environment will undergo an impact assessment and will be added to the inventory for the title.
Physical presence: loss of equipment	<ul style="list-style-type: none"> The seismic vessel may tow up to 14 streamers, approximately 8,000 m in length which in an unlikely event, could be lost. 	<ul style="list-style-type: none"> Loss of this equipment has the potential to cause minor physical damage to seabed and benthic communities, in the unlikely event that the streamers sink. Given the size of seismic equipment, only a relatively small area of the seabed would be disturbed and no lasting impacts to benthic habitats are expected. In the unlikely event equipment is lost, commercial fisheries and/or other marine users of the Operational Area may be required to make minor diversions to avoid the equipment, until it can be retrieved (if possible). 	<ul style="list-style-type: none"> Comply with regulatory requirements for navigational safety to reduce the likelihood of a collision which could result in loss of equipment. Equipment operated as per predetermined procedures to reduce the likelihood of equipment loss. Lost equipment recovered where safe and practicable to do so. Where retrieval is not practicable and/or safe, material items (property) lost to the marine environment will undergo an impact assessment and will be added to the inventory for the title.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures ¹
Unplanned interaction with marine fauna	<ul style="list-style-type: none"> Vessel movements have the potential to result in collisions between the vessel (hull and propellers) and marine fauna. The factors contributing to the frequency and severity of impacts due to collisions vary greatly due to vessel type, vessel operation (specific activity, speed), physical environment (e.g. water depth) and the type of animal potentially present and their behaviours. The seismic vessel will be advancing at low speeds around 4-5 knots (7-9 km) during seismic acquisition. The support vessel(s) travel generally at higher speeds. 	<ul style="list-style-type: none"> Vessel movements have the potential to result in accidental collisions between the vessel (hull and propellers) and marine fauna. The risk of vessel collision with marine mammals is present year-round but is elevated seasonally for species such as humpback whales and pygmy blue whales during migration periods and within migration BIAs. The Operational Area does not overlap with marine mammal BIAs or critical habitat. Given this, and the short duration of activities within the Operational Area, and the slow speeds at which project vessels operate, collisions with marine mammals are considered highly unlikely. It is expected marine turtles will respond to vessel presence by avoiding the immediate vicinity of the vessels, and combined with low vessel speed, this will reduce the likelihood of a vessel-turtle collision. In addition, there are no BIAs or critical habitat to the survival of marine turtles within the Operational Area. 	<ul style="list-style-type: none"> Comply with regulatory requirements for interactions with marine fauna. Streamer tail buoys fitted with appropriate turtle guards or employ a design that doesn't represent an entanglement risk for turtles.
Accidental introduction of invasive marine species (IMS)	<ul style="list-style-type: none"> Vessels transiting to the Operational Area may be subject to marine fouling whereby organisms attach to the vessel hull. IMS could be present as biofouling on the vessel hull or on immersible equipment (e.g. Remotely Operated Vehicle - ROV) and could be translocated to the operational area and transferred directly to the seafloor or subsea structures where they could establish. 	<ul style="list-style-type: none"> It is not credible for IMS to be introduced and established on the seabed or subsea structures in the Operational Area as these deep waters (> 800 m) are not conducive to the settlement and establishment of IMS. There is potential for the transfer of IMS between the project vessels. 	<ul style="list-style-type: none"> Ballast water and biofouling will be managed according to regulatory requirements, including the Australian Ballast Water Management Requirements, and the Australian Biofouling Management Requirements, as applicable. Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment entering the Operational Area.

Feedback

If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before **17 February 2023** via:

E: Feedback@woodside.com.au
Toll free: 1800 442 977

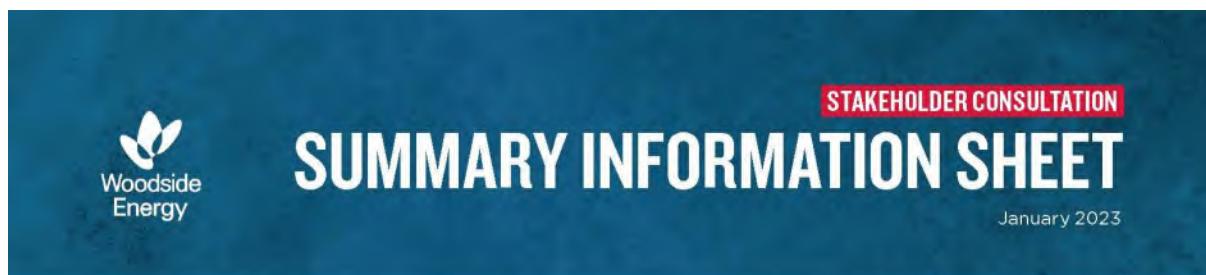
You can subscribe on our website to receive Consultation Information Sheets for proposed activities: **www.woodside.com/sustainability/consultation-activities**.

Please note that stakeholder feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) as required under legislation. Woodside will communicate any material changes to the proposed activity to affected stakeholders as they arise.

Please note that your feedback and our response will be included in our Environment Plan for the proposed activity, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

1.40 Simplified Consultation Information Sheet (January 2023)



SCARBOROUGH SEISMIC SURVEY

This is a summary of the activity in plain English. More detailed information is included in the Scarborough 4D Baseline Marine Seismic Survey Information Sheet.

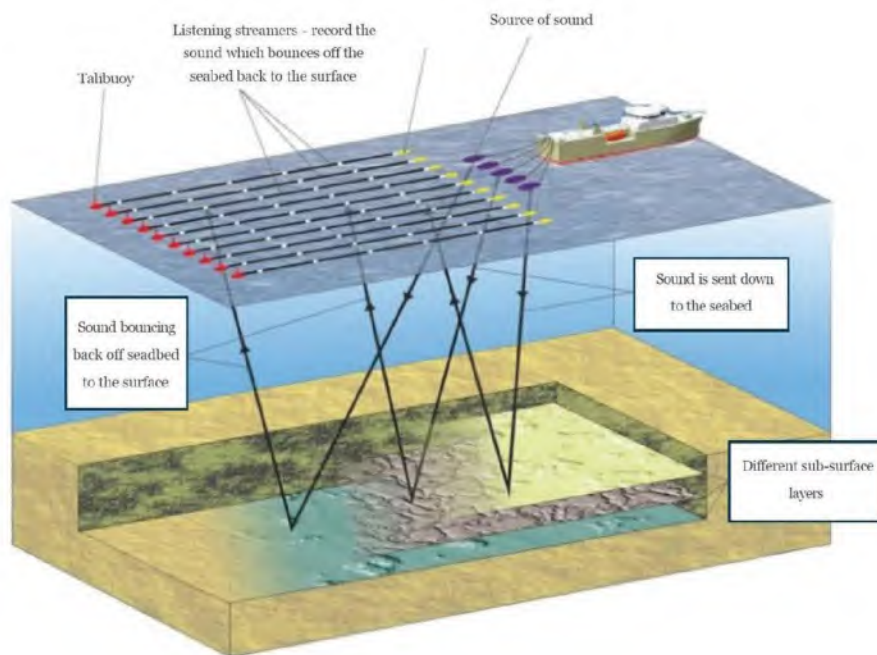
Overview

Woodside plans to conduct a seismic survey over the Scarborough and Jupiter gas fields located in the Exmouth Plateau, approximately 214km northwest of Exmouth. A seismic survey is the study of what is underneath the seafloor. This is carried out by sending sound to the bottom of the ocean which then bounces back up to the surface. These sounds are used to generate images of underneath the seafloor.

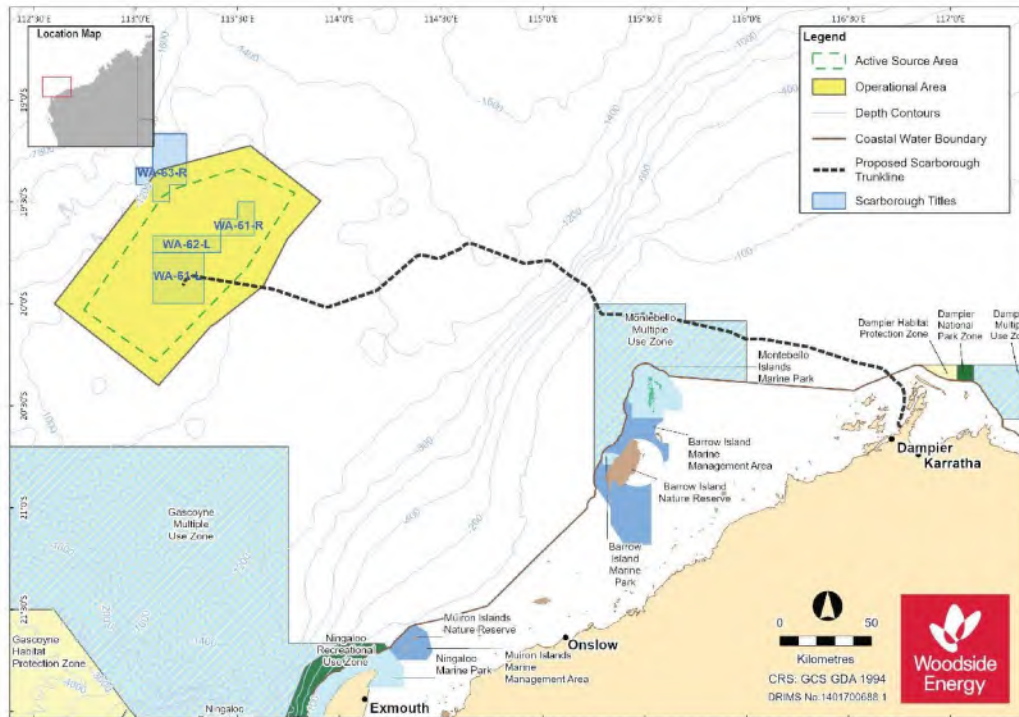
The Scarborough seismic activity involves a survey vessel, accompanied by a support vessel which tows seismic equipment approximately 8km long and up to 1.5km wide.

Woodside is planning to start the seismic survey upon the acceptance of the Environment Plan, and the aim is to start the survey around the first half of 2023. The survey is expected to take up to around 55 to 70 days to complete.

A picture of how a seismic survey is conducted is shown below.



A map showing the location of where the seismic survey will take place is provided below.



Work Method

To conduct the seismic survey, a vessel will sail at a speed of around 4-5 knots (5.5 – 9.3 km/hr). As the vessel travels through the water, equipment is towed behind the vessel which includes sound making and sound receiving equipment. The sound equipment pushes out compressed air that makes sounds underwater, which travels down through the water to the seabed. The sound bounces off different types of rock and sand below the seabed and is sent back up to the sea surface. This sound is received and recorded by equipment inside the listening streamers which are towed by the vessel. These sounds are then analysed and used to provide images that show the geological structures under the sea floor.

Environmental Impacts and Management

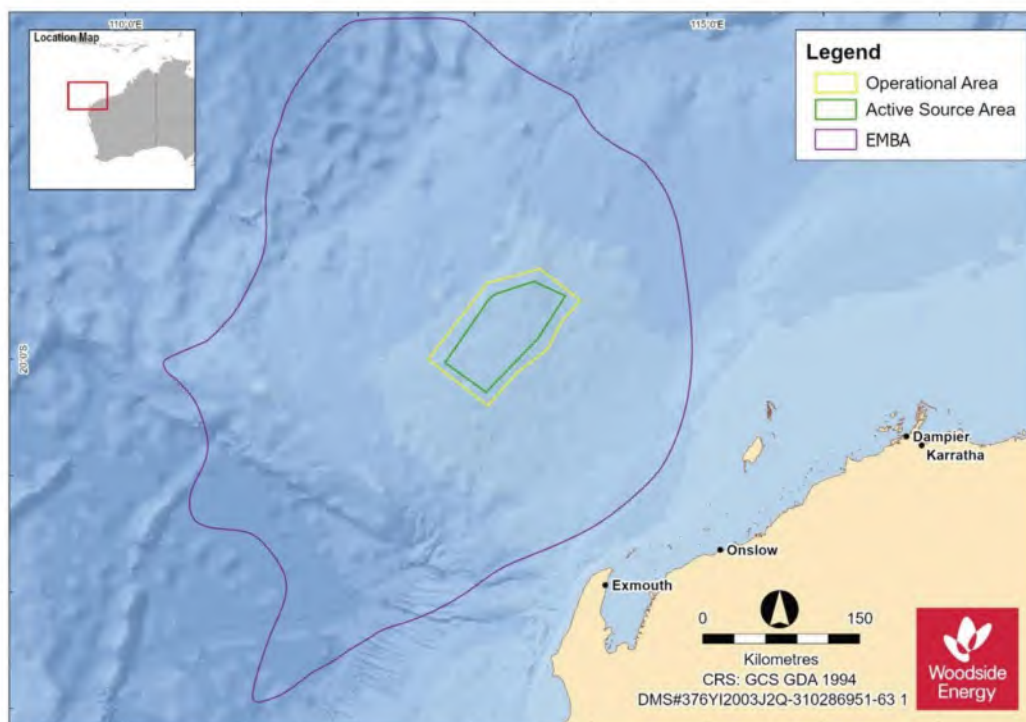
This work program includes Planned Activities but may also result in Unplanned Activities. Both Planned and Unplanned Activities may impact the environment. Woodside manages the work program to reduce impacts and risks to as low as practical.

Planned Activities are activities that Woodside knows will happen as part of this work program. For example, Planned Activities will include other marine users being temporarily stopped from accessing the seismic survey area, and the marine and survey vessels used for the work may generate underwater noise, light emissions, atmospheric emissions, and routine discharges (such as sewage, waste, and deck drainage), and other authorised waste.

Unplanned Activities are not planned as part of the work program, but may be the result of an accident, incident, or emergency situation. It is highly unlikely that there will be an Unplanned Activity. Unplanned Activities might include a spill of fuel or oil from a vessel collision, a spill on the deck of a vessel (such as during refuelling), loss of seismic equipment, accidental collision with marine animals, waste entering the environment and accidental introduction of invasive species from outside the region.

A table showing all planned and unplanned activities, potential impacts, and management measures for each is included in the attached Information Sheet, Table 4.

The total area over which unplanned events could have environmental impacts is shown in the map below. This is referred to as the environment that may be affected (EMBA). The location in which the vessels will operate for the Seismic Survey, known as the Operational Area, is shown on the map below. The location in which the sound will be generated from the seismic survey, known as the Active Source Area, is also shown on the map below. In the highly unlikely event such as a fuel spill from a vessel collision, the entire EMBA will not be affected. The part of the EMBA that is affected will only be known at the time of the event.



Providing feedback

If you have an interest in the area of the "environment that may be affected" (EMBA) by this work program and would like more information or have any concerns, you can tell Woodside by calling **1800 442 977** or sending an email to feedback@woodside.com.au. Please contact Woodside before **20th February 2023** so your questions or concerns can be considered during the environmental approval process.

If you would prefer to speak to the government directly, they can be contacted on **+61 (0)8 6188 8700** or send an email to communications@nopsema.gov.au.

Conclusion

Woodside produces energy that Western Australia, Australia, and the world needs. Woodside has made this energy from its oil and gas projects in Western Australia for over 35 years safely, reliably, and without any major environmental incident. Woodside is very proud of this legacy.

There are always potential risks with projects like this. Woodside has carefully planned this work program so that the risk of environmental impact is reduced to as low as reasonably practical and of an acceptable level. There are also strict government laws in place to protect the environment. Woodside complies with these laws and has systems in place to keep following these laws and rules for each project it undertakes.

If you would like information about Woodside's work to study and care for the environment, you can find it at <https://www.woodside.com/sustainability/environment>.

Further Information

You can find the details Consultation Information Sheet for proposed activity on our website: <https://www.woodside.com/sustainability/consultation-activities>.

1.41 Simplified Overview Consultation Information Sheet (January 2023)



SCARBOROUGH PROJECT

Introduction

This is a summary of some of the work Woodside will be doing for its Scarborough Project. Most of this work will take place in the ocean approximately 375km northwest of Karratha.

Woodside

Woodside has been operating safely for over 35 years, delivering gas and oil to customers in Australia and around the world safely, reliably, and without any major environmental incident. Woodside is very proud of this legacy.

You can find more information about Woodside on our website:
www.woodside.com.

Scarborough Project

Scarborough is a gas field under the sea floor about 375 km northwest of Karratha. Woodside plans to bring this gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline (called a trunkline) that is approximately 430km long, to Woodside's Pluto gas plant.

The map below shows where the Scarborough project, including the trunkline, is located.



You can find more information about the Scarborough project on Woodside's website:

<https://www.woodside.com/what-we-do/growth-projects/scarborough>

Work for the Scarborough Project

This is an overview of some of the programs which make up the Scarborough project. Woodside is planning to commence work on these programs once the environmental plans have been approved. There will be further work programs that will form part of the Scarborough project.

The current work programs are:

1. Laying the pipeline from the Scarborough gas field to the shore at Murujuga (Burrup Peninsula). The pipeline (called a trunkline) is approximately 430 kilometres long. This is called **Seabed Intervention and Trunkline Installation**.
2. A survey of what is underneath the seafloor. These are called **Seismic Surveys**.
3. Drilling and installing between 8 and 10 subsea gas wells on the sea floor to extract gas from the Scarborough gas field. This is called **Drilling and Completions**.
4. Installing pipes and other equipment on the sea floor so gas can be carried to a proposed Floating Production Unit (FPU). This is called **Subsea Infrastructure Installation**.

Information sheets for these work programs are available on our website:

<https://www.woodside.com/sustainability/consultation-activities>.

1.42 Email sent to Ngarluma Aboriginal Corporation (NAC) (20 January 2023)

Good morning [REDACTED]

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that the NTGAC and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If there is any support or specific information that NTGAC requires to prepare for a meeting, please let me know. We are also happy to discuss appropriate mechanisms for consultation. In the meantime, I have attached for NTGAC's review:

2. A Summary Overview of the Scarborough project; and
3. Respective Summary Information sheets

NTGAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to NTGAC members as required. Woodside would be pleased to speak with NTGAC members in addition to the NTGAC Board / office holders.

We look forward to hearing from you.

Kind regards

██████████

1.44 Email sent to Murujuga Aboriginal Corporation (MAC) (20 January 2023)

Good morning ██████████

In follow up to your recent conversation with ██████████, please find attached, and following, information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on [our website](#), which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Murujuga Aboriginal Corporation (MAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

I understand that [REDACTED] will be attending the MAC board meeting on **24 January 2023** to discuss this and the previous information we have shared in relation to the Nganhurra Riser Turret Mooring (RTM).

In preparation for the meeting, I have attached for MAC's review:

3. A Summary Overview of the Scarborough project; and
4. Respective Summary Information sheets

MAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to MAC members as required. Woodside would be pleased to speak with MAC members in addition to the MAC Board / office holders.

We look forward to hearing from you.

Kind regards

[REDACTED]
[REDACTED]

1.45 Email sent to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) (27 January 2023)

Hi [REDACTED]

I hope your week is travelling nicely.

I tried to call this morning, just to reach out to see if you require any further information at this point, whether you need anything from Woodside to assist with NTGAC's consideration, or whether you need any assistance to prepare for our meeting on 16/2.

Please feel free to call / email if you need any assistance. I would also be more than happy to meet up if you would like.

Have a great weekend.

[REDACTED]

1.46 Email sent to Wirrawandi Aboriginal Corporation (WAC) (20 January 2023)

Good morning [REDACTED]

In follow up to previous email correspondence from my colleague [REDACTED], please find attached, and following, information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on [our website](#), which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Wirrawandi Aboriginal Corporation (Wirrawandi) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

I understand you would like to speak with us, on this and in relation to the Nganhurra Riser Turret Mooring (RTM) information that [REDACTED] has already shared. I will reach out to you by phone, on **Monday 23 January** to discuss where you, and your board members would like to meet and to discuss the soonest possible date/time to do so.

If there is any support or specific information that Wirrawandi requires to prepare for the meeting, please let me know. In the meantime, I have attached for Wirrawandi's review:

4. A Summary Overview of the Scarborough project; and
5. Respective Summary Information sheets

WAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to Wirrawandi members as required. Woodside would be pleased to speak with Wirrawandi members in addition to the WAC Board / office holders.

I look forward to connecting with you on Monday, to arrange a meeting and to discuss the logistics of such.

Kind regards

[REDACTED]
[REDACTED]

1.47 Email sent to Yinggarda Aboriginal Corporation (YAC) via Yamatji Marlpa Aboriginal Corporation (YMAC) (20 January 2023)

Good afternoon [REDACTED]

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on [our website](#), which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Yindjibarndi Aboriginal Corporation (YAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that YAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for YAC's review:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

YAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to YAC members as required. Woodside would be pleased to speak with YAC members in addition to the YAC Board / office holders.

We look forward to hearing from you.

Kind regards

██████████

1.49 Email sent to Robe River Kuruma Aboriginal Corporation (RRKAC) (20 January 2023)

Good afternoon ██████████

Further to our recent communications, I attach information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on [our website](#), which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Robe River Kuruma Aboriginal Corporation (RRKAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that RRKAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for RRKAC's review:

5. A Summary Overview of the Scarborough project; and
6. Respective Summary Information sheets

RRKAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to RRKAC members as required. Woodside would be pleased to speak with RRKAC members in addition to the RRKAC Board / office holders.

We look forward to hearing from you.

Kind regards

██████████

1.50 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (20 January 2023)

Good afternoon ██████████

I hope this email finds you well. I note your recent communications with ██████████ and attach information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on [our website](#), which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Buurabalayji Thalanyji Aboriginal Corporation (BTAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that BTAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for BTAC's review:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

BTAC can also provide feedback directly to [REDACTED] on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to BTAC members as required. Woodside would be pleased to speak with BTAC members in addition to the BTAC Board / office holders.

We look forward to hearing from you.

Kind regards

[REDACTED]
[REDACTED]

1.51 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (23 January 2023)

Dear [REDACTED]

I hope this message finds you well.

[REDACTED] mentioned that I sent the below email to the wrong email address. I am sorry about this.

As always, please don't hesitate to contact me if you have any questions. I'll also reach out this week by phone.

Sincerely

[REDACTED]

1.52 Email sent to Australian Border Force (ABF), Director of National Parks (DNP), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Department of Transport (DoT), Department of Biosecurity, Conservation and Attractions (DBCA), Department of Industry, Science and Resources (DISR), Department of Mines, Industry

Regulation and Safety (DMIRS), Australian Petroleum Production and Exploration Association (APPEA) (27 January 2023)

Dear Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation	Drilling and Completions activities in	4D baseline seismic survey over the	Seabed site surveys and installation of

	activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.

<p>Distance from Operational Area to nearest marine park</p>	<ul style="list-style-type: none"> • The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> • ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth) 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> • ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
<p>Operational Area and Exclusion Zones</p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
<p>Vessels:</p>	<p>Seabed intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge 	<ul style="list-style-type: none"> • Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	<ul style="list-style-type: none"> • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 			
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Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Woodside Feedback

1.53 Email sent to Australian Hydrographic Office (AHO) and Australian Maritime Safety Authority (AMSA) – Marine Safety (27 January 2023)

Dear AHO and AMSA

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and

- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

Woodside will make available a shipping lane figure as soon as possible.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future ‘time lapse’ reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU).

	Commonwealth waters. A separate EP covers activities in State waters.			Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> • The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> • ~83 km north of the Gascoyne Marine Park (Cwth) • ~206 km north-west of Montebello Marine Park (Cwth) • ~208 km north-northwest of Ningaloo Marine Park (Cwth) 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> • ~ 77 km north of the Gascoyne Marine Park (Cwth) • ~ 201 km north-west of Montebello Marine Park (Cwth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)

<p>Operational Area and Exclusion Zones</p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
<p>Vessels:</p>	<p>Seabed intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	<ul style="list-style-type: none"> • Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Woodside Feedback

1.54 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) / Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries and Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (3 February 2023)

Dear Department of Climate Change, Energy, the Environment and Water (DCCEEW) and Department of Agriculture, Fisheries and Forestry (DAFF)

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

Woodside advises there are a number of historical shipwrecks which have been recorded within the EMBA for the proposed activities. Please find a list relevant to each EP attached. **Also attached are Commonwealth fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Please note this consultation information is of relevance to both DCCEEW and DAFF.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.

Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwlth) ~206 km north-west of Montebello Marine Park (Cwlth) ~208 km north-northwest of Ningaloo Marine Park (Cwlth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwlth) ~ 201 km north-west of Montebello Marine Park (Cwlth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail 	The Operational Area for activities includes a radius of: <ul style="list-style-type: none"> 1,000 m around location of the

	<p>The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<p>buoys during seismic operations</p> <ul style="list-style-type: none"> • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>outermost concrete pads.</p> <ul style="list-style-type: none"> • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
<p>Vessels:</p>	<p>Seabed intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	<ul style="list-style-type: none"> • Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

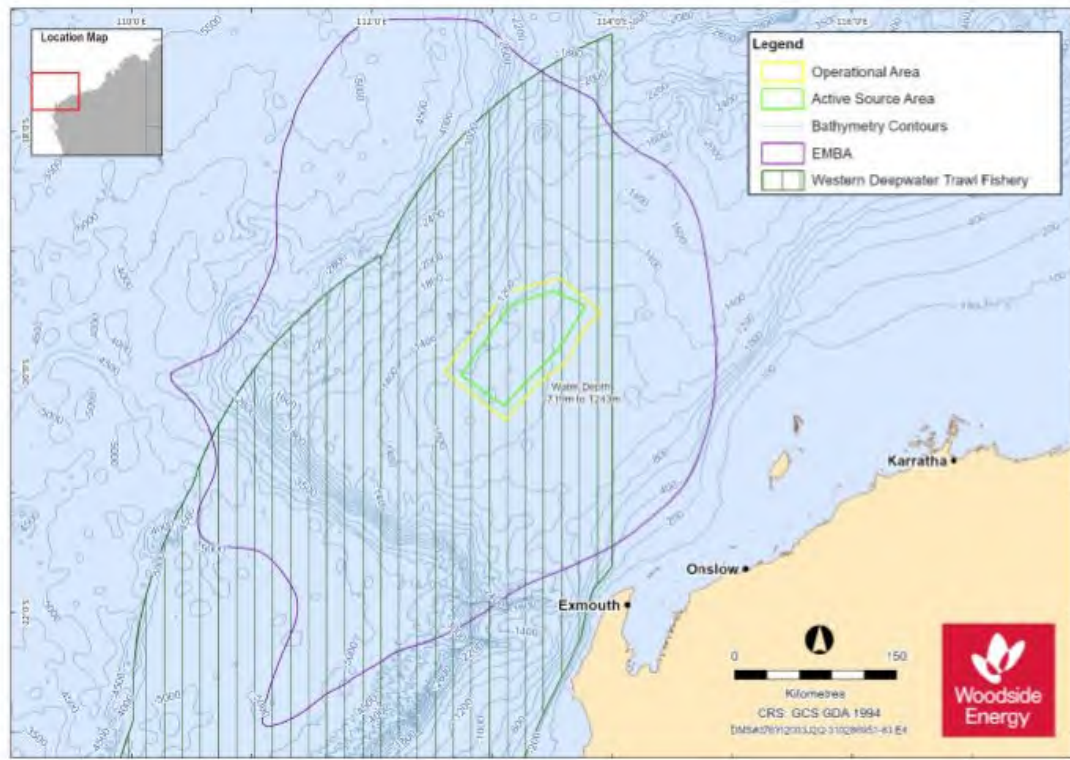
Regards,

APPENDIX A

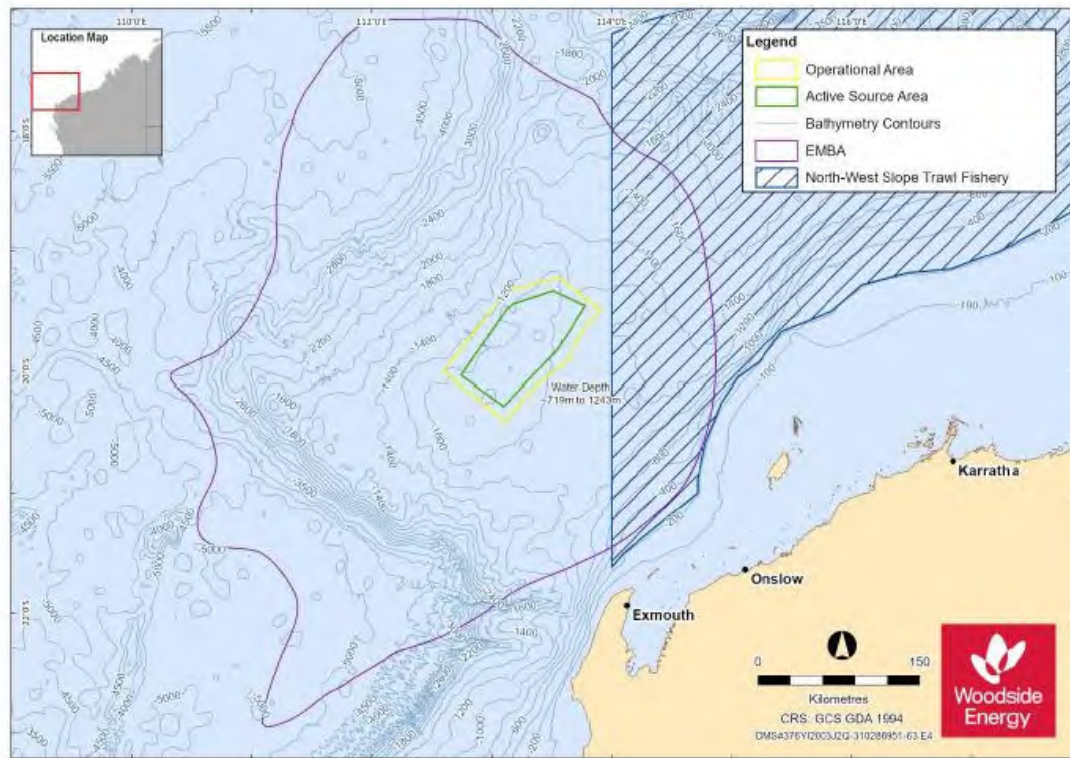
FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

North West Slope and Trawl Fishery



Western Deepwater Trawl Fishery



1.55 Email sent to Department of Defence (DoD) (27 January 2023)

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**); and
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**).

Woodside is also planning to undertake seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

Woodside is also seeking access to sufficient data or a map of Defence Restricted and Prohibited Areas to inform Woodside’s development of defence zone maps and figures for DoD’s use.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP

<p>Summary:</p>	<p>Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.</p>	<p>Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.</p>	<p>4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).</p>	<p>Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.</p>
<p>Location:</p>	<p>Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.</p>	<p>Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.</p> <p>Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.</p>	<p>The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.</p>	<p>Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.</p>
<p>Approx. Water Depth (m):</p>	<p>~ 32 m – 1400 m</p>	<p>~ 900 m – 955 m</p>	<p>~ 800 m – 1,150 m</p>	<p>~ 900 m – 1000 m</p>
<p>Earliest commencement date:</p>	<p>Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p>Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).</p>
<p>Estimated duration:</p>	<p>~24 months across multiple campaigns</p>	<p>~50 – 60 days per well</p>	<p>~55 – 70 days</p>	<p>~18 months (cumulative) for the survey and installation activities</p>
<p>Distance from Operational</p>	<p>The closest Commonwealth section of the trunkline on the State waters boundary</p>	<p>~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.</p>	<p>~214 km north-west of Exmouth.</p>	<p>~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.</p>

Area to nearest town	is ~32 km north-west of Dampier.			
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwlth) ~206 km north-west of Montebello Marine Park (Cwlth) ~208 km north-northwest of Ningaloo Marine Park (Cwlth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwlth) ~ 201 km north-west of Montebello Marine Park (Cwlth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> DP MODU/drillship – 500 m radius from each well centre Moored MODU – 4,000 m radius from each well centre. Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> 1,000 m around location of the outermost concrete pads. 1,500 m around location of subsea infrastructure. 2,000 m around future location of FPU. Temporary 500 m exclusion zone around vessels to manage vessel movements An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> Trailing suction hopper dredge Offshore construction vessel Rock Installation Vessel Survey vessels Support vessels Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> Pipelay Vessel multi-joint operation 	<ul style="list-style-type: none"> Installation vessels for installing the subsea infrastructure Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities Support vessels including installation vessel(s), anchor handling vessel(s) and 	<ul style="list-style-type: none"> A purpose-built seismic vessel One support vessel A potential chase vessel, and An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> Light construction vessels Heavy construction vessels Heavy lift vessels Derrick lay vessel Reel-lay vessels Survey vessels Support vessels

	<ul style="list-style-type: none"> • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	general supply/support vessels		
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Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:

Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

1.56 Email sent to Recfishwest, Marine Tourism WA and WA Game Fishing Association (27 January 2023)

Dear Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and

- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a

	separate EP covers activities in State waters.			gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwth) ~206 km north-west of Montebello Marine Park (Cwth) ~208 km north-northwest of Ningaloo Marine Park (Cwth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwth) ~ 201 km north-west of Montebello Marine Park (Cwth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)
Operational Area and	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the	A petroleum safety zone of 500 m will be in place around the MODU and	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, 	The Operational Area for activities includes a radius of:

<p>Exclusion Zones</p>	<p>Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<p>streamers and tail buoys during seismic operations</p> <ul style="list-style-type: none"> • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
<p>Vessels:</p>	<p>Seabed intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	<ul style="list-style-type: none"> • Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority

(NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

1.57 Email sent to Western Gas, Exxon Mobil Australia Resources Company, Shell Australia, Finder Energy, KUFPEC, Santos, OMV Australia / Sapura OMV Upstream (WA), (27 January 2023)

Dear Titleholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has

been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.

Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	<p>Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p>Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> • The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> • ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth) 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> • ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements

	Commonwealth waters.			<ul style="list-style-type: none"> An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> Trailing suction hopper dredge Offshore construction vessel Rock Installation Vessel Survey vessels Support vessels Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> Pipelay Vessel multi-joint operation Shallow Water Lay Barge Anchor handling vessel/tug Pipe supply vessels Offshore construction vessel Survey vessels Fuel bunkering vessels 	<ul style="list-style-type: none"> Installation vessels for installing the subsea infrastructure Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> A purpose-built seismic vessel One support vessel A potential chase vessel, and An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> Light construction vessels Heavy construction vessels Heavy lift vessels Derrick lay vessel Reel-lay vessels Survey vessels Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

1.58 Email sent to Chevron Australia and Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA Gorgon via Chevron Australia (27 January 2023)

Dear [REDACTED] and [REDACTED]

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

We would be grateful if you could please forward this consultation information to your Joint Venture participants Osaka Gas Gorgon, Tokyo Gas Gorgon and JERA Gorgon for feedback.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future ‘time lapse’ reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> • The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> • ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth) 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> • ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels 	<ul style="list-style-type: none"> • Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels

	<ul style="list-style-type: none"> • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	<p>installation or contingent activities</p> <ul style="list-style-type: none"> • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 		<ul style="list-style-type: none"> • Support vessels
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Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

1.59 Email sent to BP Developments Australia, Carnarvon Energy, PE Wheatstone, Kyushu Electric Wheatstone, Eni Australia Ltd, Fugro Exploration, JX Nippon O&G Expln (Australia) (27 January 2023)

Dear Titleholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);

- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.

Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	<p>Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p>Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> • The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> • ~ 77 km north of the Gascoyne Marine Park (Cwth) • ~ 201 km north-west of Montebello Marine Park (Cwth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around

	<p>and 1.5 km either side of the proposed trunkline centreline.</p> <ul style="list-style-type: none"> • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<ul style="list-style-type: none"> • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>vessels to manage vessel movements</p> <ul style="list-style-type: none"> • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	Seismic EP	Subsea EP

1.60 Email sent to INPEX Alpha (27 January 2023)

Dear Titleholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**); and
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes.

The SITI EP and D&C EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days

<p>Distance from Operational Area to nearest town</p>	<p>The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.</p>	<p>~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.</p>	<p>~214 km north-west of Exmouth.</p>
<p>Distance from Operational Area to nearest marine park</p>	<ul style="list-style-type: none"> • The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> • ~83 km north of the Gascoyne Marine Park (Cwth) • ~206 km north-west of Montebello Marine Park (Cwth) • ~208 km north-northwest of Ningaloo Marine Park (Cwth) 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone
<p>Operational Area and Exclusion Zones</p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points
<p>Vessels:</p>	<p>Seabed intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge 	<ul style="list-style-type: none"> • Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)

	<ul style="list-style-type: none"> • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 		
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Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP

1.61 Email sent to Wirrawandi Aboriginal Corporation (WAC) (27 January 2023)

Hello [REDACTED]

It was great to connect by phone this morning. I am looking forward to meeting in person in the very near future. I understand from our discussion that your priority at the moment is to prepare for the upcoming Board meeting on the 20th February.

Thank you so much for enabling an opportunity to meet with me on the 21st February whilst you are in Karratha. I will send a separate meeting request with a proposed time for us to have a general catch up on the information we have sent to date on the RTM and Scarborough EMBA's.

It will be great to gain an understanding from you on best way to progress if the Board wish to have further discussions in relation to this information and also on how they may prefer us to engage for any future information shares.

If you have any questions in the meantime please don't hesitate to reach out on the contact details in my signature below.

Kind regards

[REDACTED]

1.62 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (27 January 2023)

Dear [REDACTED]

Firstly, thank you for your correspondence of 20 February regarding consultations about the Scarborough project. We will respond to this correspondence in the coming days and would be most grateful for the opportunity to meet with you to discuss the matters raised in your letter and our relationship more broadly.

Further to my correspondence of 18 January regarding Woodside's plan to remove the Nganhurra Riser Turret Mooring (RTM), and of 20 January regarding Woodside's Scarborough project, please find attached information about Woodside's decommissioning and drilling activities that we are seeking to consult with Buurabalayji Thalanyji Aboriginal Corporation (BTAC) about.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking BTAC's feedback as soon as possible, Woodside is seeking BTAC's feedback on these decommissioning and drilling activities by 17 March. The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Removal of the Nganhurra Riser Turret Mooring (RTM). Information about the RTM was previously emailed on 18 January. For ease of reference, the summary information is attached and the consultation information sheet for the RTM can be found at the link below.
 - [consultation-information-sheet---nganhurra-operations-cessation-environment-plan-revision.pdf \(woodside.com\)](#)
- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
 - [consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf \(woodside.com\)](#)
 - [Consultation Information Sheet - Stybarrow Decommissioning Environment Plans \(woodside.com\)](#)
- Griffin decommissioning.
 - [consultation-information-sheet---griffin-decommissioning-environment-plans.pdf \(woodside.com\)](#)

Drilling Activities:

- TPA03 Well Intervention.
 - [Consultation Information Sheet - TPA03 Well Intervention Environment Plan \(woodside.com\)](#)
- WA-34-L Pyxis Drilling and Subsea Installation.
 - [Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan \(woodside.com\)](#)
- Julimar Appraisal Drilling.
 - [Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan \(woodside.com\)](#)

We look forward to meeting with you to discuss and respond to the matters raised in your letter, this correspondence, and to discuss other matters important to BTAC and Woodside.

Thank you, [REDACTED], for yours and [REDACTED] consideration and work to progress these important consultations. We are looking forward to working with BTAC.

As always, please feel free to contact me on the details below if you require further information or assistance.

Yours sincerely

[REDACTED]

[REDACTED]

[REDACTED]

1.63 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (27 January 2023)

Hi [REDACTED]

I hope your week is travelling nicely.

I left a message this morning, just to reach out to see if you require any further information about Scarborough or the RTM at this point, or whether you need anything from Woodside to assist with BTAC's consideration.

As always, please call / email if you need anything. I would also be more than happy to meet up if you would like, to brief you on these matters and to plan together how Woodside should best approach consultation.

Have a great weekend.

[REDACTED]

1.64 Email sent to Exmouth Community Liaison Group (1 February 2023)

Dear Exmouth Community Reference Group

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
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Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

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(https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021

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Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **3 March 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.

		provided in Table 2 of the attached D&C EP Consultation Information Sheet.		
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	<p>Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p>Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwth) ~206 km north-west of Montebello Marine Park (Cwth) ~208 km north-northwest of Ningaloo Marine Park (Cwth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwth) ~ 201 km north-west of Montebello Marine Park (Cwth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> DP MODU/drillship – 500 m radius from each well centre Moored MODU – 4,000 m radius from each well centre. Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels Refer to Table 3 of the attached Seismic EP 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> 1,000 m around location of the outermost concrete pads. 1,500 m around location of subsea infrastructure. 2,000 m around future location of FPU. Temporary 500 m exclusion zone around vessels to

	<ul style="list-style-type: none"> Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 		<p>Consultation Information Sheet for detailed survey location points</p>	<p>manage vessel movements</p> <ul style="list-style-type: none"> An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> Trailing suction hopper dredge Offshore construction vessel Rock Installation Vessel Survey vessels Support vessels Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> Pipelay Vessel multi-joint operation Shallow Water Lay Barge Anchor handling vessel/tug Pipe supply vessels Offshore construction vessel Survey vessels Fuel bunkering vessels 	<ul style="list-style-type: none"> Installation vessels for installing the subsea infrastructure Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> A purpose-built seismic vessel One support vessel A potential chase vessel, and An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> Light construction vessels Heavy construction vessels Heavy lift vessels Derrick lay vessel Reel-lay vessels Survey vessels Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **3 March 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP
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1.65 Email sent to Commonwealth Fisheries Association (CFA), Australian Southern Bluefin Tuna Industry Association (ASBTIA) and Tuna Australia, North West Slope and Trawl Fishery (4 Licence Holders), Western Deepwater Trawl Fishery (5 Licence Holders) (3 February 2023)

Dear Fishery Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Consultation Information Sheets are attached, which provide background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#). **Also attached are Commonwealth fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future ‘time lapse’ reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> • The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> • ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth) 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> • ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
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Please provide your views by **5 March 2023**.

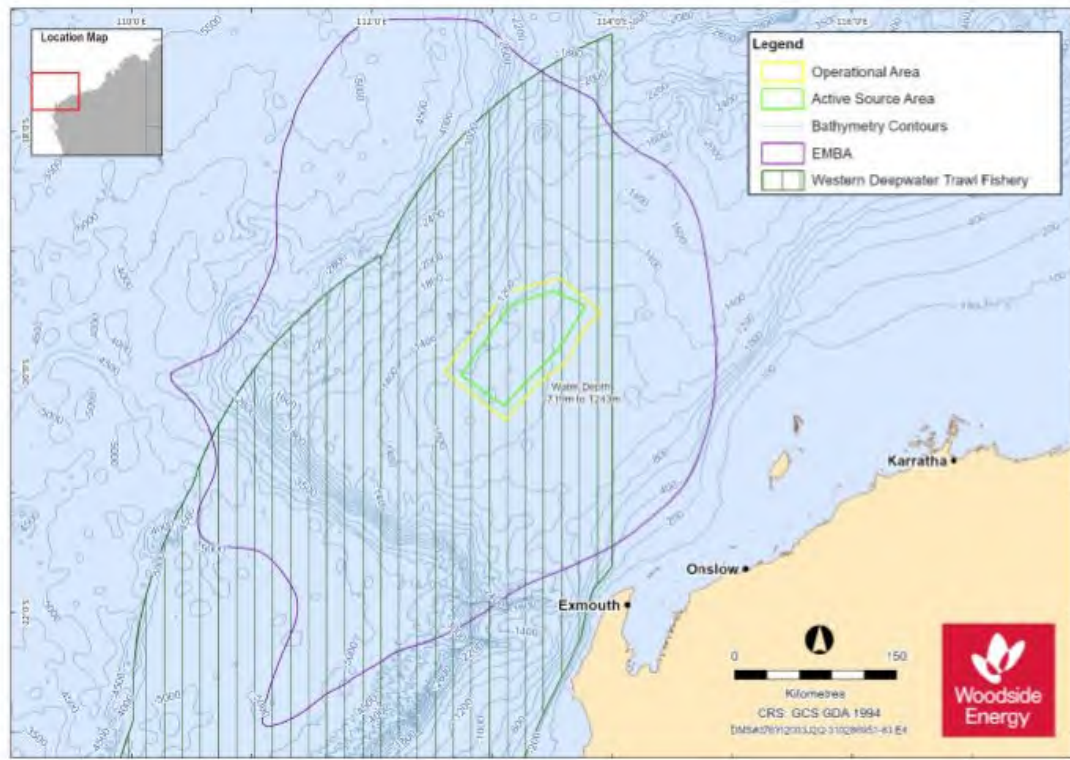
Regards,

APPENDIX A

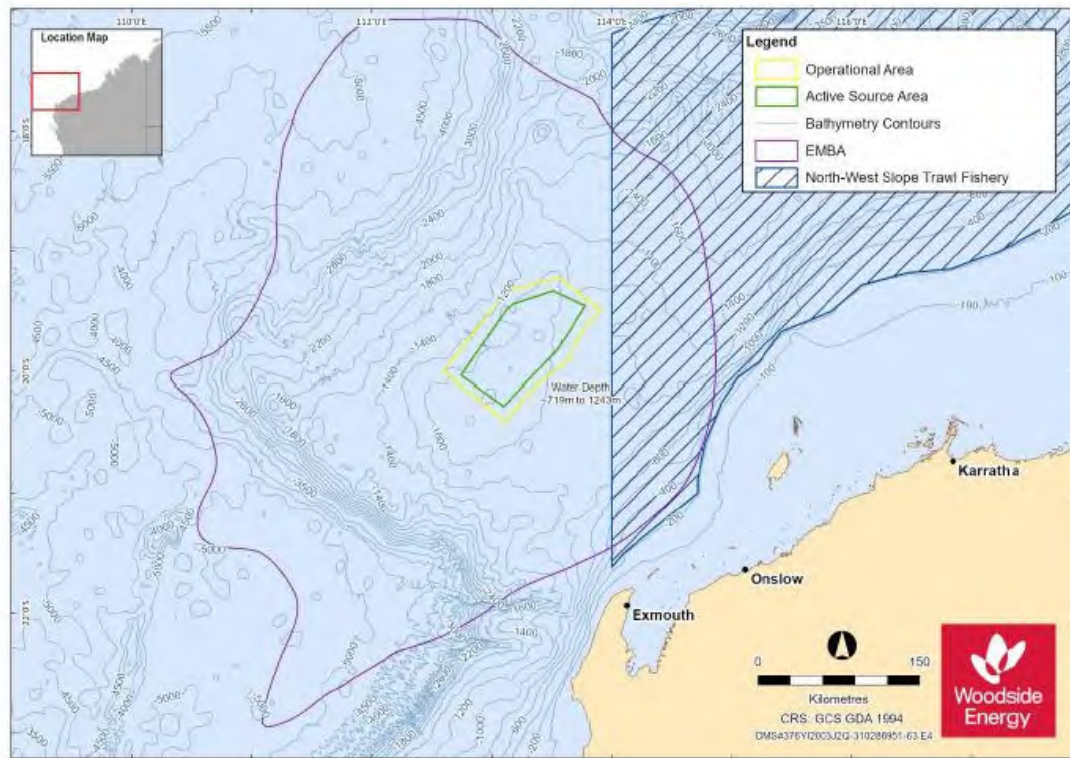
FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

North West Slope and Trawl Fishery



Western Deepwater Trawl Fishery



1.66 Letter sent to Marine Aquarium Managed Fishery (12 Licence Holders), Mackerel Managed Fishery (Area 2 and 3) (43 Licence Holders), West Coast Deep Sea Crustacean Managed Fishery (7 Licence Holders) (3 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

3 February 2023



Woodside Energy Group Ltd

ACN 004 898 962

Mia Yellagonga

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Perth WA 6000

Australia

T: +61 8 9348 4000

www.woodside.com

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Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwth) ~206 km north-west of Montebello Marine Park (Cwth) ~208 km north-northwest of Ningaloo Marine Park (Cwth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwth) ~ 201 km north-west of Montebello Marine Park (Cwth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> DP MODU/drillship – 500 m radius from each well centre Moored MODU – 4,000 m radius from each well centre. Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> 1,000 m around location of the outermost concrete pads. 1,500 m around location of subsea infrastructure. 2,000 m around future location of FPU. Temporary 500 m exclusion zone around vessels to manage vessel movements An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> Trailing suction hopper dredge Offshore construction vessel Rock Installation Vessel Survey vessels Support vessels Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> Pipelay Vessel multi-joint operation 	<ul style="list-style-type: none"> Installation vessels for installing the subsea infrastructure Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support 	<ul style="list-style-type: none"> A purpose-built seismic vessel One support vessel A potential chase vessel, and An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> Light construction vessels Heavy construction vessels Heavy lift vessels Derrick lay vessel Reel-lay vessels Survey vessels Support vessels

	<ul style="list-style-type: none"> • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	vessels		
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Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:

Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

Woodside Feedback



Woodside Energy
 Mia Yellagonga
 Karlak, 11 Mount Street
 Perth WA 6000
 Australia

T: 1800 442 977
 E: feedback@woodside.com.au
www.woodside.com
 f t in v @

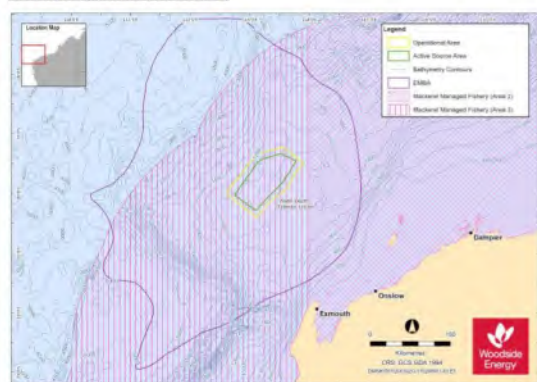
APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Attached: Consultation Information Sheets for the SITI EP, D&C EP, Seismic EP and Subsea EP, Fishery figures

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

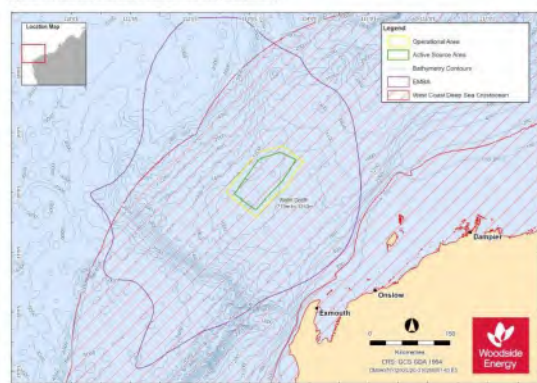
Mackerel Managed Fishery (Area 2 and 3)



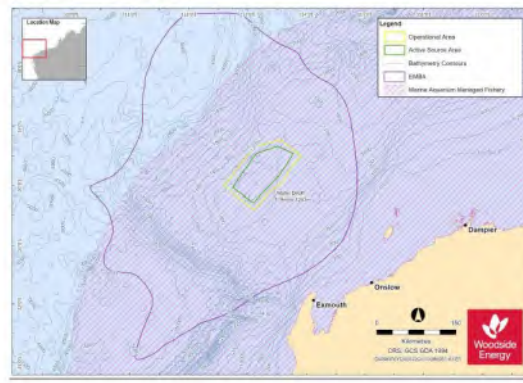
Pilbara Line Fishery



West Coast Deep Sea Crustacean Managed Fishery



Marine Aquarium Managed Fishery



1.67 Email sent to Department of Primary Industries and Regional Development (DPIRD) (3 February 2023)

Dear [REDACTED]

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#). **Also attached are State fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.

	northern extent of the Dampier Archipelago.	Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	Exmouth, Western Australia.	
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	<p>Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p>Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwlth) ~206 km north-west of Montebello Marine Park (Cwlth) ~208 km north-northwest of Ningaloo Marine Park (Cwlth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwlth) ~ 201 km north-west of Montebello Marine Park (Cwlth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> DP MODU/drillship – 500 m radius from each well centre Moored MODU – 4,000 m radius from each well centre. 	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations Marine users are requested to avoid this area during the survey to ensure the safety of the seismic 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> 1,000 m around location of the outermost concrete pads. 1,500 m around location of subsea infrastructure. 2,000 m around future location of FPU.

	<p>435 and 1.5 km either side of the proposed trunkline centreline.</p> <ul style="list-style-type: none"> Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<ul style="list-style-type: none"> Installation vessel – 1,500 m radius around subsea locations 	<p>vessel and third-party vessels</p> <ul style="list-style-type: none"> Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<ul style="list-style-type: none"> Temporary 500 m exclusion zone around vessels to manage vessel movements An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> Trailing suction hopper dredge Offshore construction vessel Rock Installation Vessel Survey vessels Support vessels Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> Pipelay Vessel multi-joint operation Shallow Water Lay Barge Anchor handling vessel/tug Pipe supply vessels Offshore construction vessel Survey vessels Fuel bunkering vessels 	<ul style="list-style-type: none"> Installation vessels for installing the subsea infrastructure Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> A purpose-built seismic vessel One support vessel A potential chase vessel, and An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> Light construction vessels Heavy construction vessels Heavy lift vessels Derrick lay vessel Reel-lay vessels Survey vessels Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:

Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

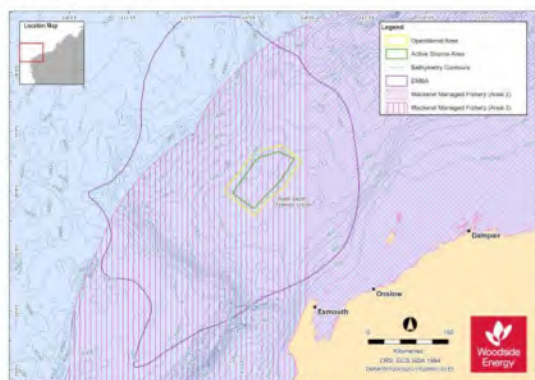
Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

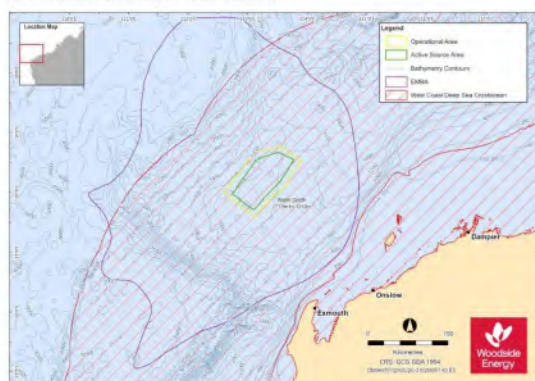
Mackerel Managed Fishery (Area 2 and 3)



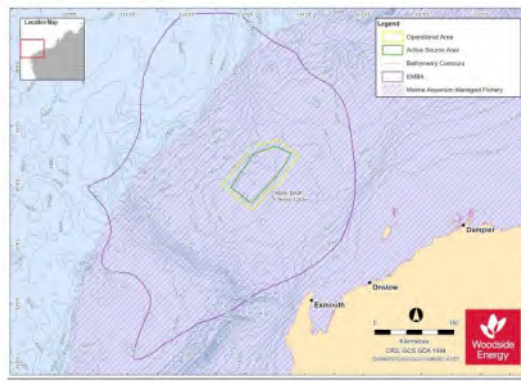
Pilbara Line Fishery



West Coast Deep Sea Crustacean Managed Fishery



Marine Aquarium Managed Fishery



1.68 Email sent to Western Australian Fishing Industry Council (WAFIC) (3 February 2023)

Dear [REDACTED]

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#). **Also attached are State fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

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Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a

				gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
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Operational Area and	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the	A petroleum safety zone of 500 m will be in place around the MODU and	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, 	The Operational Area for activities includes a radius of:

<p>Exclusion Zones</p>	<p>Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<p>streamers and tail buoys during seismic operations</p> <ul style="list-style-type: none"> • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
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Feedback:

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Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority

(NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

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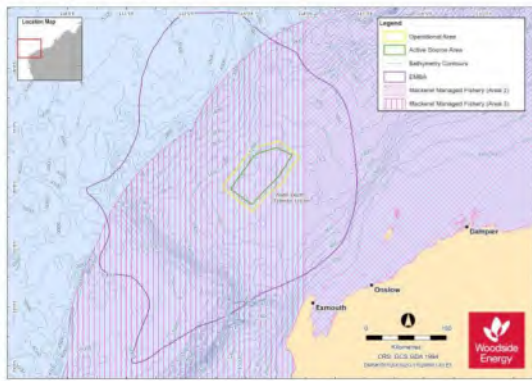
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APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

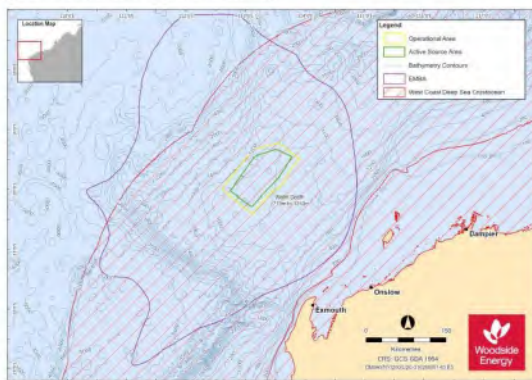
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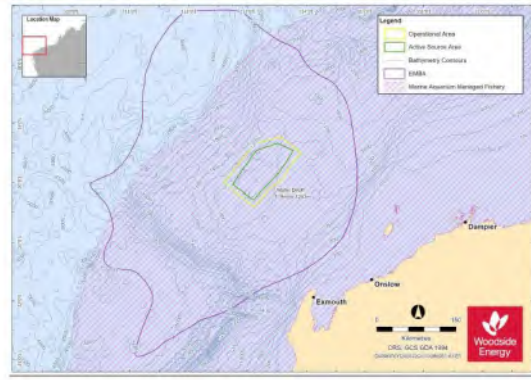
Pilbara Line Fishery



West Coast Deep Sea Crustacean Managed Fishery



Marine Aquarium Managed Fishery



1.69 Email sent to Exmouth Recreational Marine Users (50 Licence Holders) (3 February 2023)

Dear Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

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Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary

	Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> • The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the 	<ul style="list-style-type: none"> • ~83 km north of the Gascoyne Marine Park (Cwth) • ~206 km north-west of Montebello Marine Park (Cwth) 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> • ~ 77 km north of the Gascoyne Marine Park (Cwth) • ~ 201 km north-west of Montebello Marine Park (Cwth) • ~ 180 km north-northwest of

	north of the Dampier Marine Park Habitat Protection Zone	• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)		Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	<ul style="list-style-type: none"> • Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

1.70 Email sent to Western Australian Marine Science Institution (WAMSI) (3 February 2023)

Dear [REDACTED]

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022

(https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021
 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021
 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

Woodside is seeking your advice regarding any research activities that WAMSI may be undertaking that may overlap with our proposed activities.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future ‘time lapse’ reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.

		planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.		
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	<p>Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p>Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwth) ~206 km north-west of Montebello Marine Park (Cwth) ~208 km north-northwest of Ningaloo Marine Park (Cwth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwth) ~ 201 km north-west of Montebello Marine Park (Cwth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> DP MODU/drillship – 500 m radius from each well centre Moored MODU – 4,000 m radius from each well centre. 	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> 1,000 m around location of the outermost concrete pads. 1,500 m around location of subsea infrastructure. 2,000 m around future location of FPU. Temporary 500 m exclusion zone

	<p>side of the proposed trunkline centreline.</p> <ul style="list-style-type: none"> Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<ul style="list-style-type: none"> Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>around vessels to manage vessel movements</p> <ul style="list-style-type: none"> An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> Trailing suction hopper dredge Offshore construction vessel Rock Installation Vessel Survey vessels Support vessels Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> Pipelay Vessel multi-joint operation Shallow Water Lay Barge Anchor handling vessel/tug Pipe supply vessels Offshore construction vessel Survey vessels Fuel bunkering vessels 	<ul style="list-style-type: none"> Installation vessels for installing the subsea infrastructure Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> A purpose-built seismic vessel One support vessel A potential chase vessel, and An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> Light construction vessels Heavy construction vessels Heavy lift vessels Derrick lay vessel Reel-lay vessels Survey vessels Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,
Woodside Feedback

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

1.71 Email sent to Australian Fisheries Management Authority (AFMA) (3 February 2023)

Dear AFMA

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#). Also attached are Commonwealth fishery figures.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

	availability and weather constraints.			
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwlth) ~206 km north-west of Montebello Marine Park (Cwlth) ~208 km north-northwest of Ningaloo Marine Park (Cwlth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwlth) ~ 201 km north-west of Montebello Marine Park (Cwlth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> DP MODU/drillship – 500 m radius from each well centre Moored MODU – 4,000 m radius from each well centre. Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> 1,000 m around location of the outermost concrete pads. 1,500 m around location of subsea infrastructure. 2,000 m around future location of FPU. Temporary 500 m exclusion zone around vessels to manage vessel movements An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> Trailing suction hopper dredge Offshore construction vessel 	<ul style="list-style-type: none"> Installation vessels for installing the subsea infrastructure Light well intervention vessel as an option for well intervention, 	<ul style="list-style-type: none"> A purpose-built seismic vessel One support vessel A potential chase vessel, and 	<ul style="list-style-type: none"> Light construction vessels Heavy construction vessels Heavy lift vessels Derrick lay vessel

	<ul style="list-style-type: none"> • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	<p>subsea hardware installation or contingent activities</p> <ul style="list-style-type: none"> • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Reel-lay vessels • Survey vessels • Support vessels
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Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

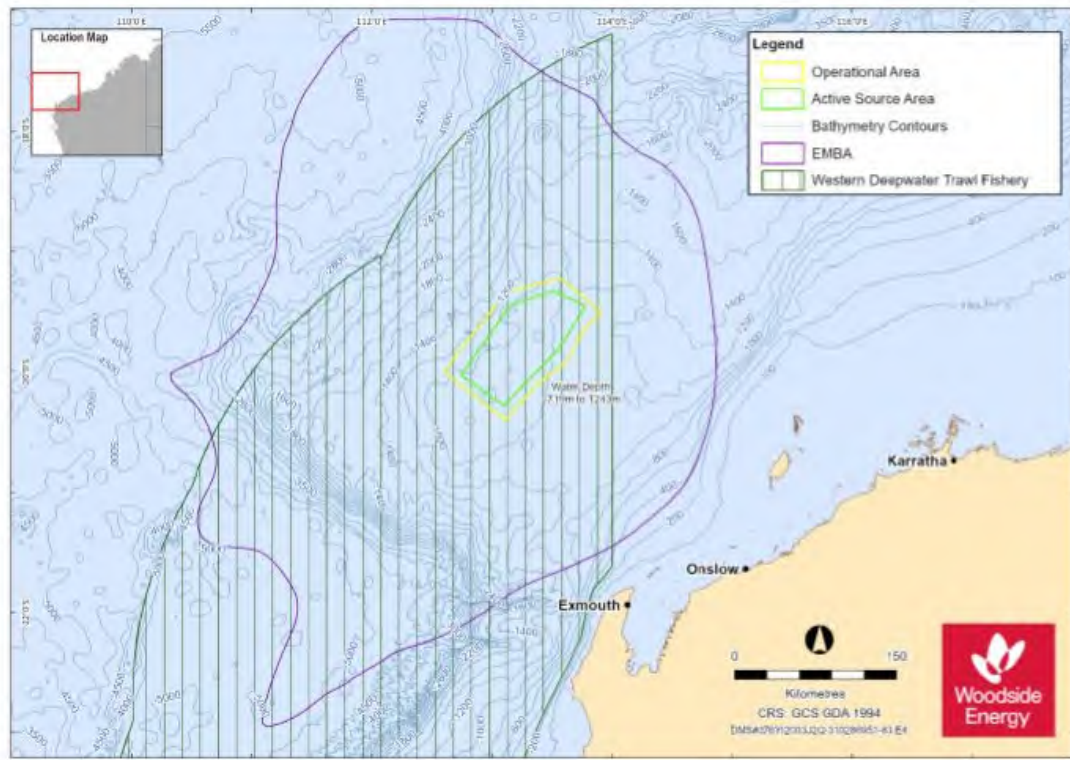
APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

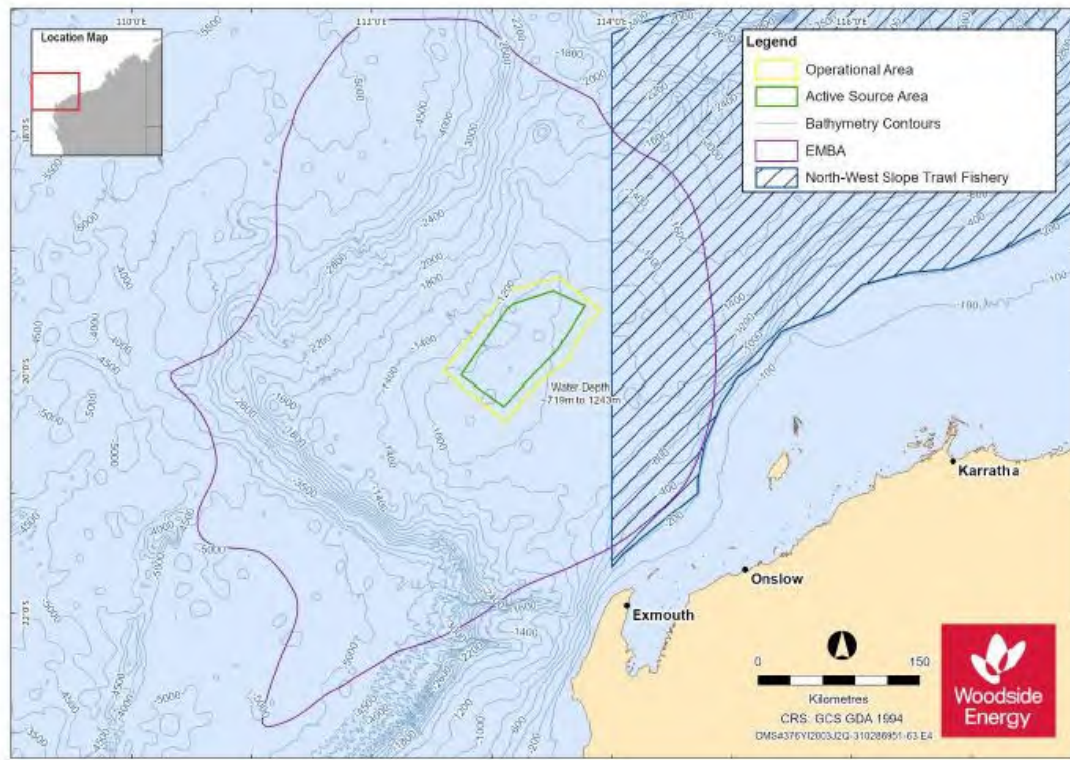
Woodside Feedback

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

North West Slope and Trawl Fishery



Western Deepwater Trawl Fishery



1.72 Email sent to Pilbara Line Fishery (8 Licence Holders) (3 February 2023)

Dear Fishery Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#). **Also attached are State fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP

Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational	The closest Commonwealth section of the trunkline on the State waters boundary	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.

Area to nearest town	is ~32 km north-west of Dampier.			
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwlth) ~206 km north-west of Montebello Marine Park (Cwlth) ~208 km north-northwest of Ningaloo Marine Park (Cwlth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwlth) ~ 201 km north-west of Montebello Marine Park (Cwlth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> DP MODU/drillship – 500 m radius from each well centre Moored MODU – 4,000 m radius from each well centre. Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> 1,000 m around location of the outermost concrete pads. 1,500 m around location of subsea infrastructure. 2,000 m around future location of FPU. Temporary 500 m exclusion zone around vessels to manage vessel movements An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> Trailing suction hopper dredge Offshore construction vessel Rock Installation Vessel Survey vessels Support vessels Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> Pipelay Vessel multi-joint operation 	<ul style="list-style-type: none"> Installation vessels for installing the subsea infrastructure Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities Support vessels including installation vessel(s), anchor handling vessel(s) and 	<ul style="list-style-type: none"> A purpose-built seismic vessel One support vessel A potential chase vessel, and An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> Light construction vessels Heavy construction vessels Heavy lift vessels Derrick lay vessel Reel-lay vessels Survey vessels Support vessels

	<ul style="list-style-type: none"> • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	general supply/support vessels		
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Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:

Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

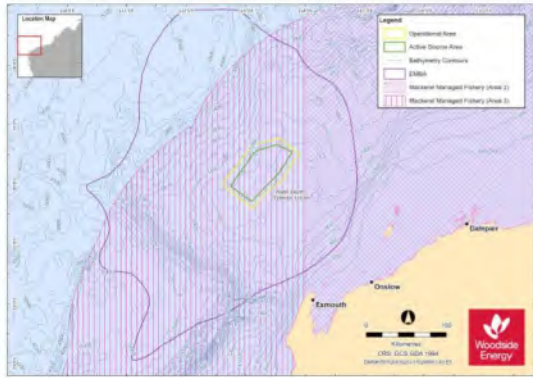
APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Scarborough 4D B1 Marine Seismic Survey Environment Plan

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

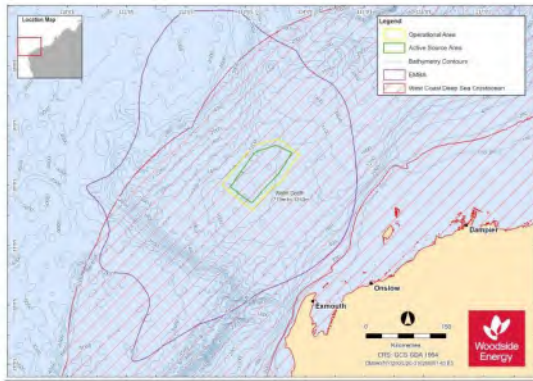
Mackerel Managed Fishery (Area 2 and 3)



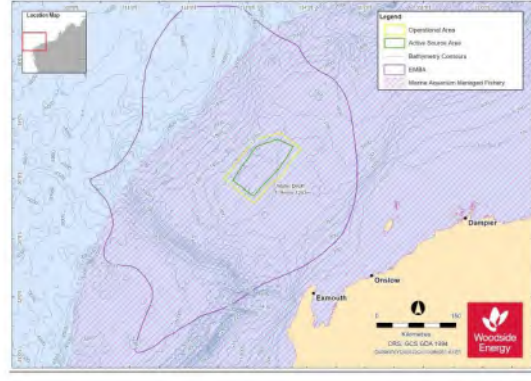
Pilbara Line Fishery



West Coast Deep Sea Crustacean Managed Fishery



Marine Aquarium Managed Fishery



1.73 Letter sent to Gascoyne Recreational Marine Users (65 Licence Holders) (6 February 2023)



Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN004 886952
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

6 February 2023

Dear Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (SITI EP);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (D&C EP);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (Subsea EP).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the SITI EP to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the D&C EP has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the Seismic EP has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by 8 March 2023 2023.

Activity:

Scarborough 4D B1 Marine Seismic Survey Environment Plan

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetric survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 800 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities

Scarborough 4D B1 Marine Seismic Survey Environment Plan

Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwth) ~208 km north-west of Montebello Marine Park (Cwth) ~208 km north-northwest of Ningaloo Marine Park (Cwth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwth) ~ 201 km north-west of Montebello Marine Park (Cwth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)
Operational Area and Exclusion Zones	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> DP MODU/drillship – 500 m radius from each well centre Moored MODU – 4,000 m radius from each well centre. Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> 1,000 m around location of the outermost concrete pads. 1,500 m around location of subsea infrastructure. 2,000 m around future location of FPU. Temporary 500 m exclusion zone around vessels to manage vessel movements An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<p>Seabed intervention:</p> <ul style="list-style-type: none"> Trailing suction hopper dredge Offshore construction vessel Rock Installation Vessel Survey vessels Support vessels Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> Pipelay Vessel multi-joint operation 	<ul style="list-style-type: none"> Installation vessels for installing the subsea infrastructure Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support 	<ul style="list-style-type: none"> A purpose-built seismic vessel One support vessel A potential chase vessel, and An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> Light construction vessels Heavy construction vessels Heavy lift vessels Derrick lay vessel Reel-lay vessels Survey vessels Support vessels

	<ul style="list-style-type: none"> • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	vessels		
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Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:

Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **8 March 2023**.

Regards,

Woodside Feedback



Woodside Energy
Mia Yellagonga
Kariak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com
f t in v @

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Attached: Consultation Information Sheets for the SITI EP, D&C EP, Seismic EP and Subsea EP

1.74 Email sent to UWA (6 February 2023)

Dear [REDACTED]

Woodside appreciated the opportunity to meet with you in December to discuss the Scarborough development and related Environment Plans (Scarborough EPs).

We understand from our meeting in December 2022 that the proposed Scarborough activities are predominantly outside the scope of interest for UWA. For awareness, Woodside wanted to bring to your attention that it has updated its consultation Information Sheets for the Scarborough EPs, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are attached and are also available on our [website](#).

As Woodside will soon be submitting the proposed EP's, should UWA have any additional feedback on the proposed activities, please let us know by **8 March 2023**.

More information on the Scarborough Project can be found [here](#).

Your feedback and our response will be included in the Scarborough EPs which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Regards,

1.75 Email sent to The Australian Institute of Marine Science (AIMS) (6 February 2023)

Dear [REDACTED]

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

Woodside is seeking your advice regarding any research activities that AIMS may be undertaking that may overlap with our proposed activities.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Activity:

	D&C EP	Seismic EP	Subsea EP
Summary:	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> • ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> • ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth)

	<ul style="list-style-type: none"> • ~208 km north-northwest of Ningaloo Marine Park (Cwth) 		<ul style="list-style-type: none"> • ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)
Operational Area and Exclusion Zones	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	<ul style="list-style-type: none"> • Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **8 March 2023**.

Regards,

1.76 Email sent to Australian Border Force (ABF), Director of National Parks (DNP), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Department of Industry, Science and Resources (DISR), Department of Mines, Industry Regulation and Safety (DMIRS), Australian Petroleum Production and Exploration Association (APPEA) (22 February 2023)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.77 Email sent to Australian Fisheries Management Authority (AFMA) (22 February 2023)

Dear AFMA

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.78 Email sent to Western Australian Fishing Industry Council (WAFIC) (22 February 2023)

Dear [REDACTED]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.79 Email sent to Exmouth Recreational Marine Users (50 Licence Holders) (22 February 2023)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.80 Email sent to Yinggarda Aboriginal Corporation (YAC) via Yamatji Marlpa Aboriginal Corporation (YMAC) (22 February 2023)

Dear [REDACTED]

I hope this message finds you well.

Further to my correspondence of 18 January regarding Woodside's plan to remove the Nganhurra Riser Turret Mooring (RTM), and [REDACTED] correspondence of 20 January regarding

Woodside's Scarborough project, please find attached information about Woodside's decommissioning and drilling activities that we are seeking to consult with Yinggarda Aboriginal Corporation (YAC) about.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking YAC's feedback as soon as possible, Woodside is seeking YAC's feedback on these decommissioning and drilling activities by 17 March. The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Removal of the Nganhurra Riser Turret Mooring (RTM). Information about the RTM was previously emailed on 18 January. For ease of reference, the summary information is attached and the consultation information sheet for the RTM can be found at the link below.
 - [consultation-information-sheet---nganhurra-operations-cessation-environment-plan-revision.pdf \(woodside.com\)](#)
- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
 - [consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf \(woodside.com\)](#)
 - [Consultation Information Sheet - Stybarrow Decommissioning Environment Plans \(woodside.com\)](#)
- Griffin decommissioning.
 - [consultation-information-sheet---griffin-decommissioning-environment-plans.pdf \(woodside.com\)](#)

Drilling Activities:

- TPA03 Well Intervention.
 - [Consultation Information Sheet - TPA03 Well Intervention Environment Plan \(woodside.com\)](#)
- WA-34-L Pyxis Drilling and Subsea Installation.
 - [Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan \(woodside.com\)](#)
- Julimar Appraisal Drilling.
 - [Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan \(woodside.com\)](#)

In providing this information and requests for feedback, I acknowledge [REDACTED] correspondence of 6 February and my response of 10 February in which we discussed arrangements for a meeting between YAC and Woodside. Woodside would be most grateful for the opportunity to meet with YAC, at YAC's earliest convenience, and at a location suitable to YAC. Woodside would also be pleased to provide the resources necessary to hold this meeting and we look forward to receiving a budget for consideration. If there is anything else, we can do at this time to facilitate consultation about these planned work activities please let me know.

Thank you, [REDACTED], for yours, YAC's and YMAC's consideration of these matters and work to progress these important consultations.

As always, please feel free to contact me on the details below if you require further information or assistance.

Yours sincerely

[REDACTED]

1.81 Email sent to Pilbara Line Fishery (8 Licence Holders) (22 February 2023)

Dear Fishery Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.82 Letter sent to Marine Aquarium Managed Fishery (12 Licence Holders), Mackerel Managed Fishery (Area 2 and 3) (43 Licence Holders), West Coast Deep Sea Crustacean Managed Fishery (7 Licence Holders) (22 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

22 February 2023



Woodside Energy Group Ltd

ACN 004 858 962

Mia Yellagonga

11 Mount Street

Perth WA 6000

Australia

T: +61 8 9348 4000

www.woodside.com

Dear Fishery Stakeholder

Woodside previously consulted you (correspondence dated 3 February 2023) on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP ([SITI EP](#));
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP ([D&C EP](#));
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP ([Seismic EP](#)); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP ([Subsea EP](#)).

This correspondence included updated Consultation Information Sheets, which are also available on our website, providing additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Kind regards,

Woodside Feedback



Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

1.83 Letter sent to Gascoyne Recreational Marine Users (65 Licence Holders) (22 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

22 February 2023



Woodside Energy Group Ltd
ACN 004 898 982
Mia Yellagonga
11 Mount Street
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T: +61 8 9348 4000
www.woodside.com

Dear Stakeholder

Woodside previously consulted you (correspondence dated 6 February 2023) on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

This correspondence included updated Consultation Information Sheets, which are also available on our website, providing additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Kind regards,

Woodside Feedback



Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia
T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

1.84 Email sent to WAMSI (22 February 2023)

Dear [REDACTED]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,
Woodside Feedback

**1.85 ~~Email sent to Commonwealth Scientific and Industrial Research Organisation (CSIRO)~~
(22 February 2023)**

Repeated

1.86 Email sent to Commonwealth Fisheries Association (CFA), Australian Southern Bluefin Tuna Industry Association (ASBTIA), North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery (22 February 2023)

Dear Fishery Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.87 Email sent to Recfishwest, Marine Tourism WA and WA Game Fishing Association (22 February 2023)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.88 Email sent to Chevron Australia and Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA Gorgon via Chevron Australia (22 February 2023)

Dear [REDACTED] and [REDACTED]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.89 Email sent to Western Gas, Exxon Mobil Australia Resources Company, FINDER Energy, KUFPEC, Santos, OMV Australia / Sapura OMV Upstream (WA) (22 February 2023)

Dear Titleholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.90 Email sent to National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP) (22 February 2023)

Dear [REDACTED]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project.

Woodside wanted to bring to your attention that it has updated its consultation Information Sheet for the Scarborough SITI EP, D&C EP and Subsea EP, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are attached and also available on our [website](#).

We would appreciate any feedback you may have by **8 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.91 Email sent to Karratha Community Liaison Group (22 February 2023)

Dear Karratha Community Liaison Group

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.92 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) / Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries and Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (22 February 2023)

Dear Department of Climate Change, Energy, the Environment and Water (DCCEEW) and Department of Agriculture, Fisheries and Forestry (DAFF)

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.93 Email sent to Exmouth Community Liaison Group (22 February 2023)

Dear Exmouth Community Reference Group

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **3 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.94 Email sent to BP Developments Australia, Carnarvon Energy, PE Wheatstone, Kyushu Electric Wheatstone, Eni Australia Ltd, Fugro Exploration, JX Nippon O&G Expln (Australia) (22 February 2023)

Dear Titleholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.95 Email sent to INPEX Alpha (22 February 2023)

Dear Titleholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.96 Email sent to Commonwealth Scientific and Industrial Research Organisation (CSIRO) (22 February 2023)

Dear CSIRO Enquiries Team, [REDACTED] [REDACTED]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **8 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

Woodside Feedback

1.97 Letter sent to JX Nippon Oil & Gas Exploration (23 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

23 February 2023

Dear Titleholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).


Woodside is preparing to submit a further revision of the SITI EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found on our [website](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023** |

Activity:



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	SITI EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation

Scarborough 4D B1 Marine Seismic Survey Environment Plan

	<p>installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.</p>	<p>seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).</p>	<p>surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU).</p> <p>Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.</p>
Location:	<p>Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.</p>	<p>The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km <u>north west</u> of Exmouth, Western Australia.</p>	<p>Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.</p>
Approx. Water Depth (m):	<p>~ 32 m – 1400 m</p>	<p>~ 800 m – 1,150 m</p>	<p>~ 900 m – 1000 m</p>
Earliest commencement date:	<p>Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p>Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).</p>
Estimated duration:	<p>~24 months across multiple campaigns</p>	<p>~55 – 70 days</p>	<p>~18 months (cumulative) for the survey and installation activities</p>
Distance from Operational Area to nearest town	<p>The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.</p>	<p>~214 km north-west of Exmouth.</p>	<p>~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.</p>
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> • The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> • ~ 77 km north of the Gascoyne Marine Park (Cwth) • ~ 201 km north-west of Montebello Marine Park (Cwth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)

<p>Operational Area and Exclusion Zones</p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
<p>Vessels:</p>	<p>Seabed Intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline Installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.


Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **8 March 2023**.

Regards,

Woodside Feedback



Woodside Energy
Mia Yellagoooa
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Australia

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f t in v @

APPENDIX A

FEEDBACK	SITI EP	Seismic EP	Subsea EP

Attached: Consultation Information Sheets for the SITI EP, Seismic EP and Subsea EP

|

1.98 Email sent to JX Nippon via ENEOS (23 February 2023)

Good Afternoon [REDACTED]

My name is [REDACTED] I work with Woodside Energy's Corporate Affairs team.

Woodside has submitted Environmental Plans to undertake activities in Commonwealth waters for the Scarborough Development. A part of this involves receiving feedback from title and licence holders. ENEOS (formerly JX Nippon) is one of the aforementioned titleholders.

I have attached the relevant documents, and would appreciate if you could either provide us with feedback within the nominated window, or forward on to the correct person and include Feedback@woodside.com.au and my email, [REDACTED][woodside.com.au](mailto:[REDACTED]@woodside.com.au) in the correspondence.

Please contact me on +[REDACTED] or reply to this email if you require any clarification.

Kind Regards,

[REDACTED]

1.99 Email sent to Eni Australia (23 February 2023)

Hi [REDACTED]

Thanks for your email.

Please accept this as confirmation that Woodside will provide Eni with commencement and cessation of activity notifications relating to the proposed activities.

Regards

[REDACTED]
[REDACTED]

1.100 Email sent to DPIRD (24 February 2023)

Hi [REDACTED]

Thank you for the below feedback with respect to the:

- Scarborough Seabed Intervention and Trunkline Installation EP (SITI EP);
- Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP); and
- Subsea Infrastructure Installation EP (Subsea EP).

Woodside has consulted state commercial fishery licence holders and recreational fishery licence holders that are active within the 'environment that may be affected' (EMBA) for each of the proposed activities.

Woodside also provided DPIRD with consultation information relating to the Scarborough Drilling and Completions EP (D&C EP) – re-attached for reference. Should DPIRD have any feedback on the proposed activity we would welcome this by 5 March 2023.

Kind regards,
Woodside Feedback

1.101 Email sent to Ngarluma Aboriginal Corporation (NAC) (24 February 2023)

Good morning [REDACTED]

I mentioned I would be sharing more information when we met on Friday 17 February, to discuss the Environmental Plan (EP) information shared with you to date for Scarborough and Nganghurra RTM. This is the email with further information for NAC to consider if they have any interests in the EMBA (Environment that may be affected) relative to the attached information sheets.

It would be greatly appreciated if you could please acknowledge receipt and confirm the opportunity to meet with the NAC board when they are next due to meet on 29 or 30 March. We welcome the opportunity to spend a whole day with the board on a different day if that works.

This email provides information on Woodside's decommissioning and drilling activities that we are seeking to consult with NAC about.

With the exception of removing the Nganghurra RTM and the Scarborough project, for which Woodside is seeking NAC's feedback as soon as possible, Woodside is seeking NAC's feedback on these decommissioning and drilling activities by **17 March** 2023. The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Removal of the Nganghurra Riser Turret Mooring (RTM). Information about the RTM was previously emailed on 20 January. For ease of reference, the summary information is attached and the consultation information sheet for the RTM can be found at the link below.
 - [consultation-information-sheet---nganghurra-operations-cessation-environment-plan-revision.pdf \(woodside.com\)](#)
- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
 - [consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf \(woodside.com\)](#)
 - [Consultation Information Sheet - Stybarrow Decommissioning Environment Plans \(woodside.com\)](#)
- Griffin decommissioning.
 - [consultation-information-sheet---griffin-decommissioning-environment-plans.pdf \(woodside.com\)](#)

Drilling Activities:

- TPA03 Well Intervention.
 - [Consultation Information Sheet - TPA03 Well Intervention Environment Plan \(woodside.com\)](#)
- WA-34-L Pyxis Drilling and Subsea Installation.
 - [Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan \(woodside.com\)](#)
- Julimar Appraisal Drilling.
 - [Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan \(woodside.com\)](#)

In providing this information and requests for feedback, I acknowledge that we are working towards presenting to the NAC board at their next board meeting in March. Woodside would be most grateful for the opportunity to meet with NAC, at NAC's earliest convenience, and at a location suitable to NAC. Woodside would also be pleased to provide the resources necessary to hold this meeting and we look forward to receiving a budget for consideration. If there is anything else, we can do at this time to facilitate consultation about these planned work activities please let me know.

Thank you, [REDACTED] and [REDACTED] for consideration of these matters and work to progress these important consultations.

Please feel free to contact me on the details below if you require further information or assistance.

Regards

[REDACTED]
[REDACTED]

1.102 Email sent to Wirrawandi Aboriginal Corporate (WAC) (24 February 2023)

Good morning [REDACTED]

I hope your Friday is going well.

I mentioned I would be sharing more information when we met on Tuesday 21 February, to discuss the Environmental Plan (EP) information shared with you to date for Scarborough and Nganghurra RTM. This is the email with further information for Wirrawandi to consider if they have any interests in the Environment that may be affected (EMBA) relative to the attached information sheets.

It would be greatly appreciated if you could please acknowledge receipt and confirm the opportunity to meet with the Wirrawandi board when they are next due to meet in Perth in March.

This email provides information on Woodside's decommissioning and drilling activities that we are seeking to consult with Wirrawandi about.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking Wirrawandi's feedback as soon as possible, Woodside is seeking Wirrawandi's feedback on these decommissioning and drilling activities by **17 March** 2023. The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Removal of the Nganhurra Riser Turret Mooring (RTM). Information about the RTM was previously emailed on 18 January. For ease of reference, the summary information is attached and the consultation information sheet for the RTM can be found at the link below.
 - [consultation-information-sheet---nganhurra-operations-cessation-environment-plan-revision.pdf \(woodside.com\)](#)
- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
 - [consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf \(woodside.com\)](#)
 - [Consultation Information Sheet - Stybarrow Decommissioning Environment Plans \(woodside.com\)](#)
- Griffin decommissioning.
 - [consultation-information-sheet---griffin-decommissioning-environment-plans.pdf \(woodside.com\)](#)

Drilling Activities:

- TPA03 Well Intervention.
 - [Consultation Information Sheet - TPA03 Well Intervention Environment Plan \(woodside.com\)](#)
- WA-34-L Pyxis Drilling and Subsea Installation.
 - [Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan \(woodside.com\)](#)
- Julimar Appraisal Drilling.
 - [Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan \(woodside.com\)](#)

In providing this information and requests for feedback, I acknowledge that we are working towards presenting to the Wirrawandi board at their next board meeting in March. Woodside would be most grateful for the opportunity to meet at Wirrawandi's earliest convenience, and at a location suitable to Wirrawandi. Woodside would also be pleased to provide the resources necessary to hold this meeting and we look forward to receiving a budget for consideration. If there is anything else, we can do at this time to facilitate consultation about these planned work activities please let me know.

Thank you, [REDACTED] for consideration of these matters and work to progress these important consultations.

Please feel free to contact me on the details below if you require further information or assistance.

Kind regards

[REDACTED]
[REDACTED]

1.103 Email sent to Yindjibarndi Aboriginal Corporation (24 February 2023)

Hello [REDACTED]

I understand you last spoke with [REDACTED] on 25 January regarding the Environmental Plan (EP) information shared with YAC for the Scarborough project activity and Nganhurra RTM.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside would appreciate feedback on as soon as possible, Woodside is also seeking RRKAC's feedback on these decommissioning and drilling activities by **17 March 2023**.

The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
 - [consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf \(woodside.com\)](#)
 - [Consultation Information Sheet - Stybarrow Decommissioning Environment Plans \(woodside.com\)](#)
- Griffin decommissioning.
 - [consultation-information-sheet---griffin-decommissioning-environment-plans.pdf \(woodside.com\)](#)

Drilling Activities:

- TPA03 Well Intervention.
 - [Consultation Information Sheet - TPA03 Well Intervention Environment Plan \(woodside.com\)](#)
- WA-34-L Pyxis Drilling and Subsea Installation.
 - [Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan \(woodside.com\)](#)
- Julimar Appraisal Drilling.
 - [Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan \(woodside.com\)](#)

Thank you for your time in considering these matters. We look forward to hearing from you.

Please feel free to contact me on the details below if you require further information or assistance.

Kind regards



1.105 Email sent to AMSA (Marine Safety) (28 February 2023)

Dear AMSA,

Thankyou for your email correspondence and feedback on the Scarborough Environment Plan activities. We also thankyou for providing the AIS data and vessel traffic plot.

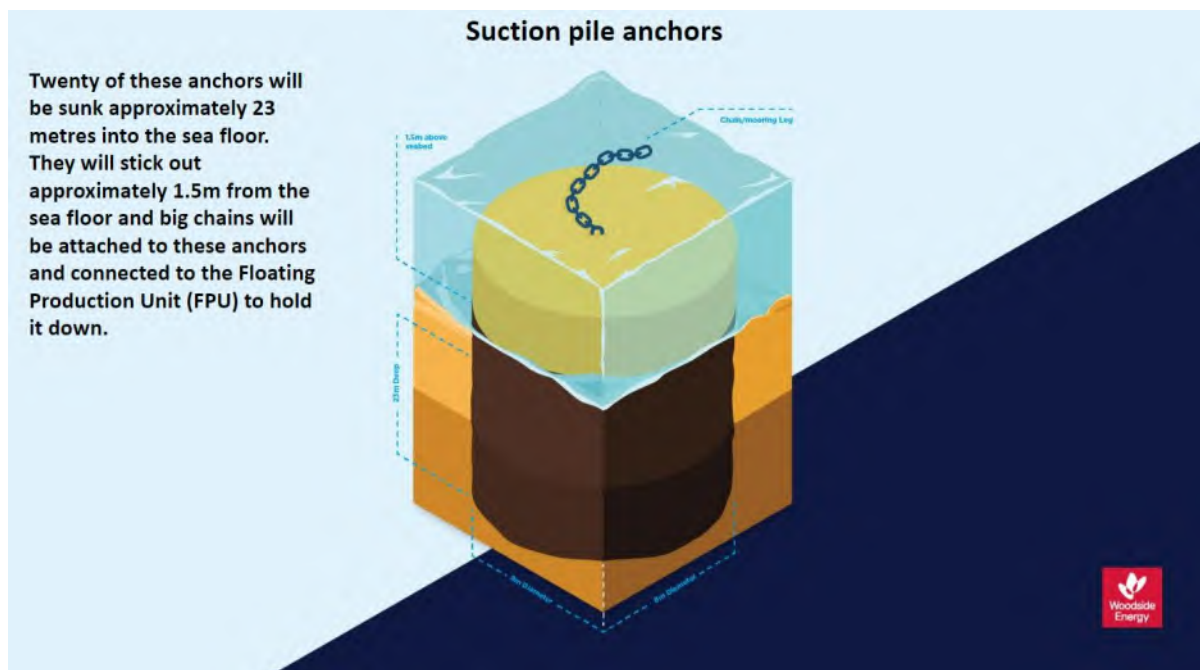
Please see below in response to the additional information you have requested:

- 1) *Please provide information on how high in the water column the moorings actually are and whether they could obstruct shipping traffic.*

The intention is that moorings for the Floating Production Unit (FPU) will be installed prior to FPU arrival within the Operational Area under the Subsea EP (see Figure 4 below), in water depths of approximately 900-1000m. Each of the 20 moorings legs will be composed of both wire and chain components and extend approximately 1650m from the FPU, connected to a suction pile anchor. The suction piles are ~24 m high by ~8 m diameter, which will be buried with only the top exposed above

the seabed (i.e. once installed ~23 m will be buried, with ~ 1-2m remain protruding above the seabed) (see Schematic below).

Note - the Scarborough moorings depicted on AMSA's "Scabroorugh_joint_venture-2023.pdf" are not a component of the Scarborough EPs which are the subject of ongoing consultation. These appear to be metocean moorings that have since been recovered.



2) *When will Woodside send through its shipping lane figure, as stated in your original email, and what will that depict?*

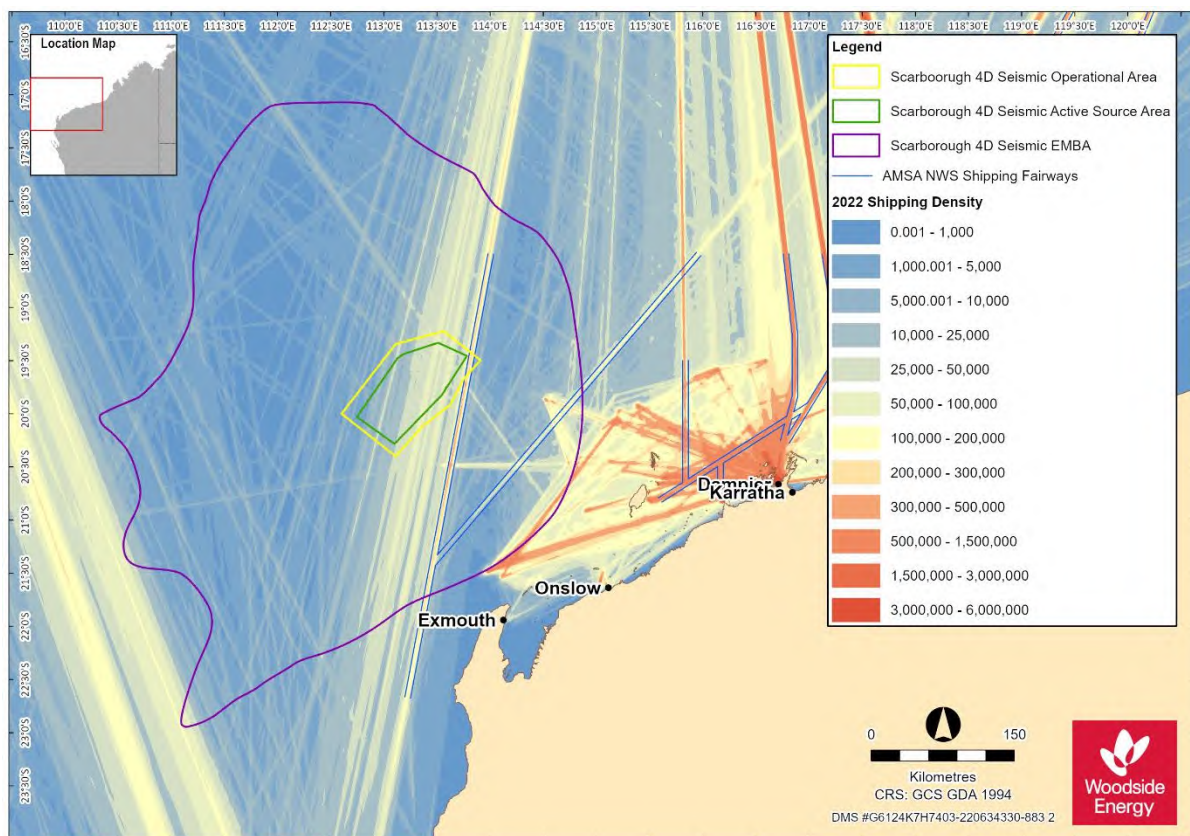
The Shipping Lane figure for each EP's as relevant to their Petroleum Activities Program and associated Operational Area are provided attached. A separate figure showing the Environment that May Be Affected (EMBA) for each activity has also been attached for reference.

Please let us know should you have any questions regarding the above or require further information relating to any of the Scarborough activities.

Kind Regards,

Woodside Feedback

1.106 Updated Shipping lanes map sent to AHO and AMSA (28 February 2023, corrected and resent 8/9 March 2023)



1.107 Email sent to DNP (8 March 2023)

Dear DNP,

Thank you for your feedback on the proposed Scarborough EPs. We note and acknowledge the comments already provided by DNP previously on each of the relevant EPs and that DNP has no further comment or objections and claims. Copies of your previous responses have been received and have been addressed where relevant within each of the proposed EPs.

In response to your request for clarification on the OAs for each activity, please see the following information below:

Scarborough 4D B1 Marine Seismic Survey EP:

The Operational Area includes both the Active Source Area and a surrounding buffer for the purpose of vessel line turns and other vessel manoeuvres. The seismic source will not be discharged within this buffer.

Scarborough Seabed Intervention and Trunkline Installation EP:

The Operational Area defines the spatial boundary of the Petroleum Activities Program, as described, risk assessed and managed by this EP, including vessel related petroleum activities within the Operational Area. For the purposes of this EP, the Operational Area includes the following Project Areas:

- Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline which allows for the movement and positioning of vessels and includes Spoil Ground 5A.

- Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.

WA-61-L Scarborough Drilling and Completions EP:

For the purposes of this EP, the following Operational Areas will apply:

- For a dynamically positioned (DP) MODU, the Operational Area encompasses a radius of 500 metre (m) from each well centre, in which drilling related petroleum activities will take place and will be managed under this EP.
- For a moored MODU, the Operational Area encompasses a radius of 4000 m from each well centre, in which drilling related petroleum activities will take place and will be managed under this EP. This increased Operational Area allows for temporary installation of moorings. Noting that the Operational Area will be limited to the western boundary of Permit Area WA-61-L.
- For the installation activities, the Operational Area encompasses a radius of 1500 m around subsea locations, in which subsea installation activities will take place and will be managed under this EP. The 1500 m (radius) Operational Area around subsea installation allows for the movement and positioning of large vessels.

The Operational Area for drilling activities includes a 500 m petroleum safety zone around the MODU to manage vessel movements. The 500 m petroleum safety zone is under the control of the MODU Person in Charge.

WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan:

For the purposes of this EP, the following Operational Area will apply:

- For the gravimetry activities, the Operational Area encompasses a radius of 1000 m around location of the outermost concrete pads, in which gravimetry preparation and survey activities will take place and will be managed under this EP. The 1000 m (radius) Operational Area around subsea installation allows for the movement and positioning of vessels.
- For the subsea installation activities, the Operational Area encompasses a radius of 1500 m around location of subsea infrastructure, in which subsea installation activities will take place and will be managed under this EP. The 1500 m (radii) Operational Area around subsea installation allows for the movement and positioning of vessels.
- For the mooring pre-lay activities, the Operational Area encompasses a radius of 2000 m around future location of FPU, in which mooring pre-lay activities will take place and will be managed under this EP. The 2000 m (radius) Operational Area around future FPU location allows for moorings to be deployed and the movement and positioning of vessels.

Please let us know should you have any questions regarding the above or require further information relating to any of the Scarborough activities.

Kind Regards,

Woodside Feedback



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f t in v i

1.108 Email sent to AMSA (8 March 2023)

Dear AMSA,

The Scarborough FPU shall be located in the Scarborough Field Petroleum Activity Area (PAA) in approximately 952 m of water (refer to coordinates in below table).

Location and Water Depth of Scarborough FPU

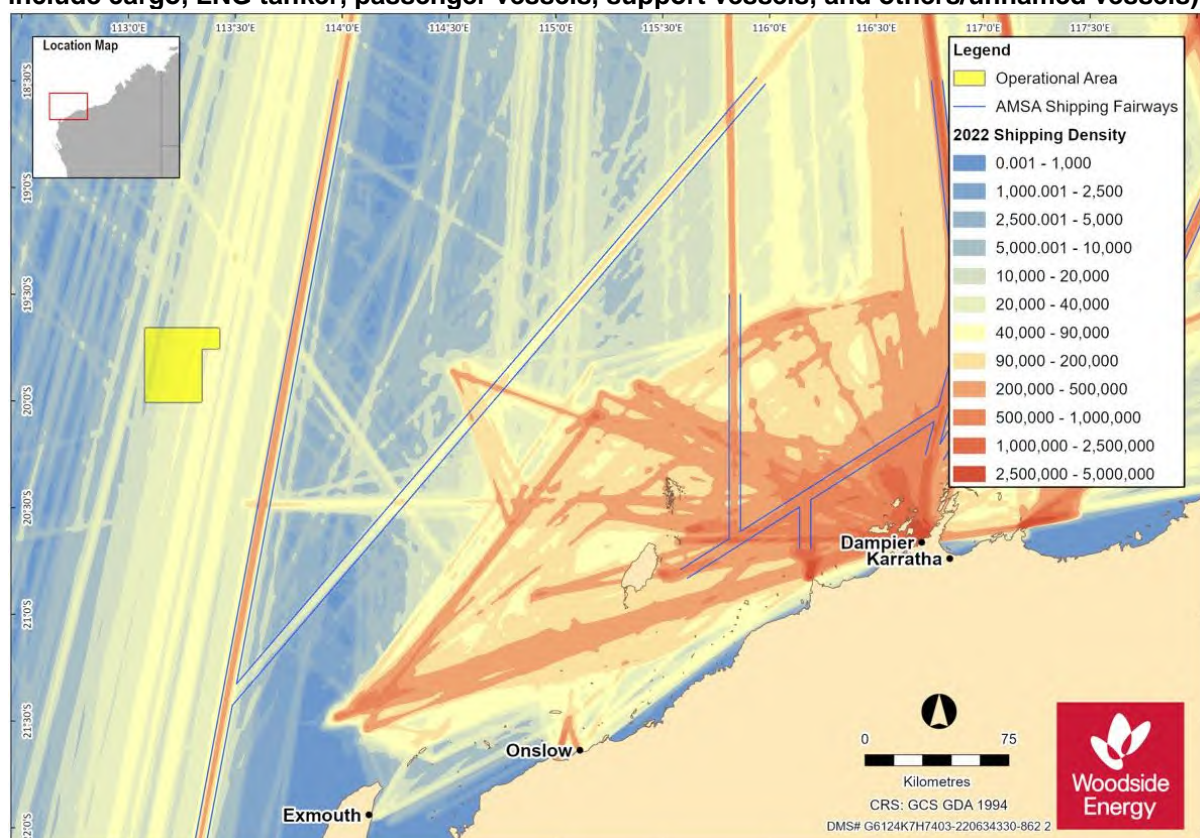
Water Depth (m below MSL)	Northing/ Latitude	Easting/ Longitude	Ref. Grid
952	7,792,300 m N	106.450 m E	MGA94 Grid 50K, 117°E
Cartesian: 19°55'33.7" South 113°14'29.8" East			

The FPU comprises a semi-submersible hull and integrated topsides with the following key components;

- Semi-submersible hull with integrated storage tanks, ballast and bilge systems;
- Risers, umbilicals and mooring system (20 mooring chains connected to suction piles on the seabed); and
- An integrated topsides supporting gas processing systems and equipment, flare systems, utilities, cranes, laydown and storage areas, Utility Building (UB), Living Quarters (LQ) and helideck.

AMSA has introduced a network of marine fairways across the NWMR off WA to reduce the risk of vessel collisions with offshore infrastructure. It is noted that none of these fairways intersect with the PAA; the nearest fairway is approximately 38 km east of the PAA (figure below). Vessel tracking data suggest the majority of shipping is concentrated to the east of the PAA.

Vessel density map for the PAA, derived from AMSA satellite tracking system data (vessels include cargo, LNG tanker, passenger vessels, support vessels, and others/unnamed vessels)



The environment that may be affected (EMBA) is the largest spatial extent where the Petroleum Activities Program could potentially have an environmental consequence (direct or indirect impact). The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this Environment Plan (EP) is determined by a highly unlikely release of marine diesel to the

environment as a result of vessel collision. The EMBA does not represent the extent of predicted impact of the highly unlikely marine diesel release. Rather, the EMBA represents the merged area of many possible paths a highly unlikely hydrocarbon release could travel depending on the weather and ocean conditions at the time of the release. This means in the highly unlikely event a hydrocarbon release does occur, the entire EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release.

In addition to the above responses, please find attached an updated Shipping Density map for the Scarborough Seismic EP showing the correct EMBA profile. Please disregard the previous version of this map provided on 28 February 2023.

Please let us know should you have any questions regarding the above or require further information relating to any of the Scarborough activities.

Kind Regards,

Woodside Feedback



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1.109 Email sent to JX Nippon Oil & Gas Exploration (10 March 2023)

Dear [REDACTED] and [REDACTED]

Woodside is sending this email by way of a reminder that the consultation period has closed to provide feedback on the following proposed activities in Commonwealth waters:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**).
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**).
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

The feedback period is also closing soon for the following proposed activities in Commonwealth waters:

- activities on the TPA03 production well to remediate a down-hole valve and continue production from the lower reservoir, under the TPA03 Well Intervention Environment Plan (**TPA03 EP**);
- geotechnical and geophysical surveys, drilling and appraisal of the Julimar South-1 well (previously called JULA-P) and, plug and abandonment of Julimar South-1, if required, under the Julimar Drilling and Surveys Environment Plan (**Julimar EP**).
- drilling and subsea infrastructure installation activities for one well (PLA08) and contingent well intervention activities for current production wells, under the WA-34-L Pyxis drilling and Subsea Installation Environment Plan Revision (**PLA08 EP**).
- subsea decommissioning activities for the Griffin field under the **Griffin Decommissioning and Field Management EP**, **Griffin Gas Export Pipeline EP** and **Griffin Field Deviation EP**.
- subsea decommissioning activities for the Stybarrow field under the **Stybarrow Plug and Production EP**, **Stybarrow Decommissioning and Field Management EP** and **Stybarrow Field Deviation EP**.

Please find the attached Consultation Information Sheets relating to the above proposed environment plans (EPs). The Consultation Information Sheets provide background on the proposed activities, including maps, summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#). You can also subscribe to receive updates on our consultation activities by subscribing [here](#).

Should JX have feedback on the proposed activities, please let us know. Feedback received after the feedback dates (see emails attached) will continue to be assessed and responded to, as required, through the life of the relevant EP.

As we have invited consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to these locations, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Woodside Feedback

1.110 Email sent to DoD (13 March 2023)

Good afternoon [REDACTED]

Thank you for the Department of Defence's feedback regarding the Scarborough SITI EP, D&C EP, Seismic EP and Subsea EPs, including providing a copy of its restricted airspace and Defence Training Areas off the WA Coast.

In line with Woodside's previous response to the Department of Defence's feedback in relation to the proposed activities, Woodside re-confirms that it notes the Department's advice on the location of the Operational Area and the presence of the North West Exercise Area (NWXA) and restricted airspace.

We also note your advice with respect to the location, identification, removal, or damage to equipment from unexploded ordinances (UXOs).

Please accept this as confirmation that:

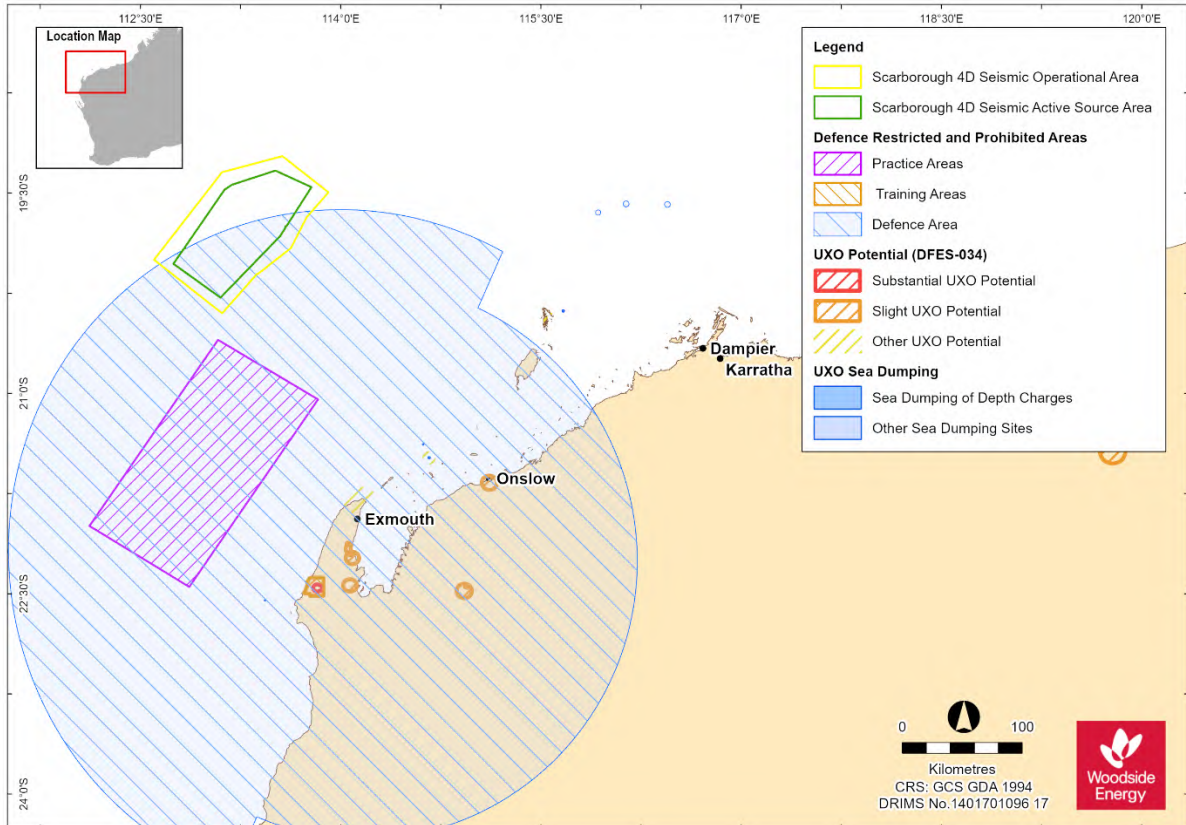
- Woodside will notify the Department of Defence at least five weeks prior to the commencement of activities.
- Woodside notes the requirement and contact details provided by the Department of Defence to engage with Airservices Australia if the restricted airspace is activated. Woodside will confirm restricted air space status with the Department of Defence as part of its commencement of activity notification.
- AHO has already been engaged for this activity and is included in our activity notification protocols. At its request, AHO will be notified four weeks prior to the start of activities.

The Defence figures for each of the proposed EPs as relevant to their Petroleum Activities Program and associated Operational Areas is attached. A separate figure showing the Environment that May Be Affected (EMBA) is also attached for reference.

Kind regards,

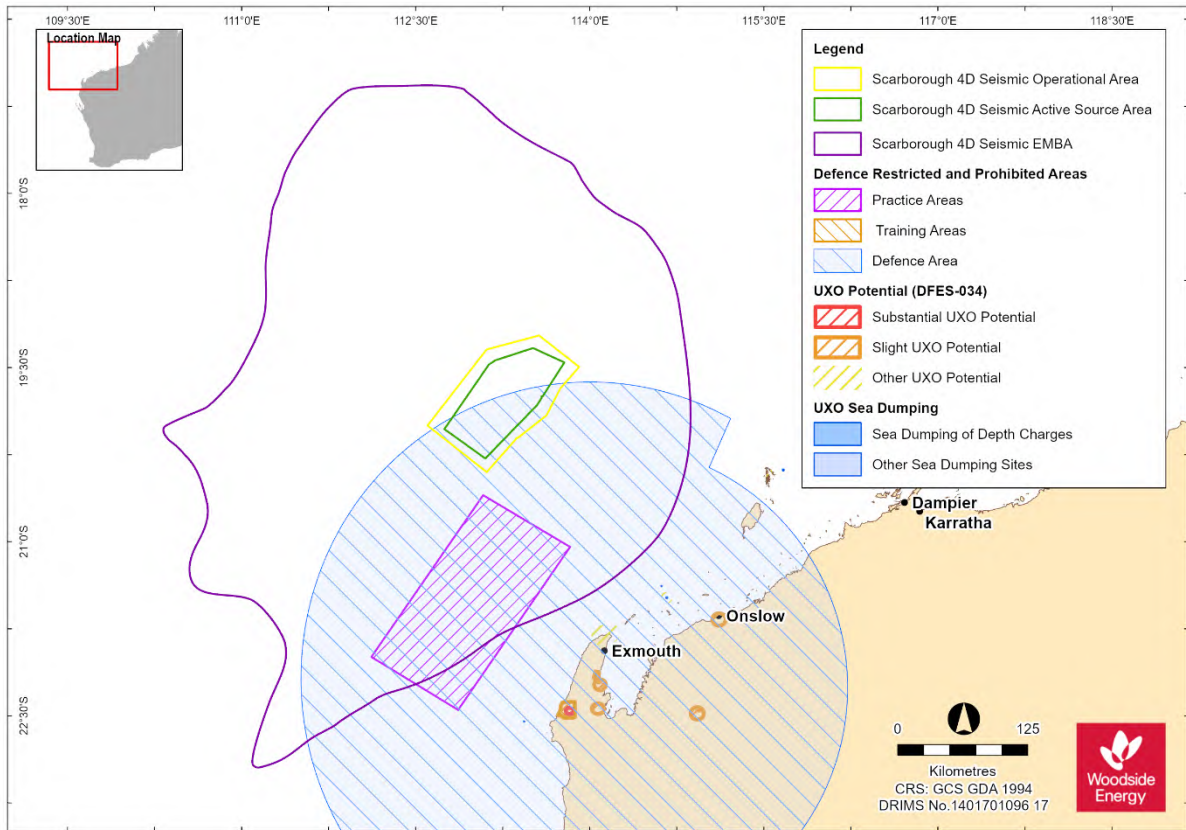
Woodside Feedback

Defence map – Operational Area



Defence map – EMBA

Scarborough 4D B1 Marine Seismic Survey Environment Plan



1.111 Email sent to Tuna Australia (17 March 2023)

Dear [REDACTED]

Thank you for providing Tuna Australia's industry position statement.

As previously advised, the level of feedback provided by an organisation, if any, is at the person or organisation's discretion. Woodside does not have an expectation that organisations will provide a report or engage a consultant to engage in consultation or provide feedback on their behalf. That is not the purpose of the notification or consultation.

We are open to suggestions from Tuna Australia as to ways to improve efficiency and simplicity for feedback so that the process is manageable.

Woodside reiterates it would be happy to meet with Tuna Australia to provide an overview of our proposed activities, how we develop our environment plans and the extensive controls we have in place to reduce impacts to as low as reasonably practical (ALARP) and acceptable level. The aim is to provide an efficient and simple way to obtain feedback and to assist in an understanding of Woodside's activities, such that Tuna Australia's input can be considered in the development of environment plans.

As per Woodside's ongoing consultation approach, feedback continues to be assessed and responded to, as required, through the life of an EP.

Regards,

1.112 Email sent to Karratha Community Liaison Group (27 January 2023)

Dear Karratha Community Liaison Group

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#).

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in	Drilling and Completions activities in Commonwealth waters,	4D baseline seismic survey over the Scarborough and Jupiter	Seabed site surveys and installation of subsea production

	Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.

<p>Distance from Operational Area to nearest marine park</p>	<ul style="list-style-type: none"> • The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> • ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth) 	<ul style="list-style-type: none"> • ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> • ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
<p>Operational Area and Exclusion Zones</p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<ul style="list-style-type: none"> • Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
<p>Vessels:</p>	<p>Seabed intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge 	<ul style="list-style-type: none"> • Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	<ul style="list-style-type: none"> • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 			
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Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

1.113 Email sent to Commonwealth Scientific and Industrial Research Organisation (CSIRO) (6 February 2023)

Dear CSIRO Enquiries Team, [REDACTED] and [REDACTED]

Woodside previously noted (see email below) that there will be a number of opportunities to provide feedback on its proposed activities.

Woodside previously consulted you on its submitted Environment Plan (EPs) to undertake seabed intervention and trunkline installation activities under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP** – Commonwealth and State components).

As part of its ongoing consultation with the CSIRO, Woodside is also seeking your advice regarding any research activities that CSIRO may be undertaking that may overlap with our proposed activities regarding:

- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and

- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our [website](#). Also attached are Commonwealth fishery figures.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the [Scarborough Offshore Project Proposal](#) (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found [here](#).

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also

	separate EP covers activities in State waters.			be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Seabed intervention activities: Mid 2023 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"> The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone 	<ul style="list-style-type: none"> ~83 km north of the Gascoyne Marine Park (Cwth) ~206 km north-west of Montebello Marine Park (Cwth) ~208 km north-northwest of Ningaloo Marine Park (Cwth) 	<ul style="list-style-type: none"> ~46 km north of Gascoyne Marine Park Multiple Use Zone 	<ul style="list-style-type: none"> ~ 77 km north of the Gascoyne Marine Park (Cwth) ~ 201 km north-west of Montebello Marine Park (Cwth) ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)
Operational Area and	Temporary 500 m exclusion zones will apply around applicable seabed	A petroleum safety zone of 500 m will be in place around the MODU and	<ul style="list-style-type: none"> Three nautical mile radius safe navigation area around the 	The Operational Area for activities includes a radius of:

<p>Exclusion Zones</p>	<p>intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters. 	<p>installation vessel for the duration of activities. The Operational Areas are:</p> <ul style="list-style-type: none"> • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations 	<p>seismic vessel, streamers and tail buoys during seismic operations</p> <ul style="list-style-type: none"> • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points 	<ul style="list-style-type: none"> • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
<p>Vessels:</p>	<p>Seabed intervention:</p> <ul style="list-style-type: none"> • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels <p>Trunkline installation:</p> <ul style="list-style-type: none"> • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels 	<ul style="list-style-type: none"> • Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels 	<ul style="list-style-type: none"> • A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June) 	<ul style="list-style-type: none"> • Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:

Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority

(NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.
Please provide your views by **8 March 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

1.114 Presentation to Karratha Community Liaison Group (29 June 2023)

ENVIRONMENT PLAN CONSULTATION

- Changes to Commonwealth Environment Plan (EP) consultation requirements.
- Woodside is now consulting based on the **environment that may be affected (EMBA)** by a proposed petroleum activity rather than within the Operational Area.
- The EMBA is the largest spatial extent where unplanned events, no matter how unlikely, could potentially have an environmental consequence.
- Any person or organisation who does not wish to continue to receive EP consultation materials where they have only been assessed as 'relevant' for unplanned events in the EMBA, under the EP consultation requirements, please advise us in writing and we will not send further information.
- However, you should be aware that this request will need to be recorded in our EP documents and will be publicly available.
- We will be holding a drop-in session after this meeting for anyone in community who would like to know more about any of our EPs.



FIND OUT MORE ABOUT OUR PROPOSED ACTIVITIES

WOULD YOU LIKE TO KNOW WHAT WOODSIDE HAS PLANNED ON LAND AND SEA?

We emphasise open and transparent communication and feedback on our activities. To facilitate this, we have a range of consultation documents that we make available for review and comment.

You can access our consultation information sheets and provide feedback by visiting www.woodsideenergy.com.au/consultation-activities or by scanning the QR code.






29 | Karratha Community Liaison Group | June 2023



2. Newspaper advertisements, social media, community information sessions

2.1 Newspaper advertisements – EP consultation (January 2023)

- The Australian, The West Australian, Pilbara News, Midwest Times, North West Times (18 January 2023)
- Geraldton Times (20 January 2023)

The Australian – 18 January 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Services Pty Ltd (WSE) is proposing to conduct the activities described in the Scarborough 4D Baseline Marine Seismic Survey Environment Plan, as detailed below.

Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough Field to provide the baseline for future time-lapse seismic surveys since 2024.
Location:	24 km north-west of Erimons, site of operations to be 0-2000 km ² .
Commencement timing:	4-2023 pending approvals, vessel availability and weather conditions.
Estimated duration:	~55-70 days per well. Activities will be conducted 24 hours per day, seven days per week.
Consultation commenced:	May 2021 First EP submission to NOPSEMA: November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and completion activities for up to 10 wells, development well and the potential for further horizontal completion wells.
Location:	Adjacent to well areas of Erimons, 24 km north-west of Erimons.
Commencement timing:	4-2023 pending approvals, vessel availability and weather conditions.
Estimated duration:	~60-65 days per well. Activities will be conducted 24 hours per day, seven days per week.
Consultation commenced:	July 2021 First EP submission to NOPSEMA: November 2021

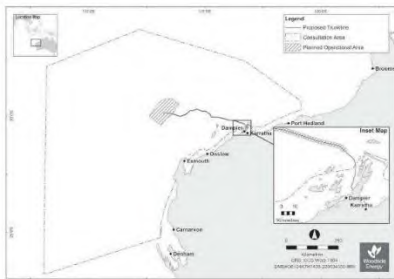
Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and trunkline installation activities.
Location:	Adjacent to well areas of Erimons, 24 km north-west of Erimons.
Commencement timing:	4-2023 pending approvals, vessel availability and weather conditions.
Estimated duration:	Approximately 30 months across multiple campaigns.
Consultation commenced:	August 2021 First EP submission to NOPSEMA: December 2021

Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed site surveys and installation of subsea infrastructure including seabed surveys, trench construction, 24 km north-west of Erimons.
Location:	24 km north-west of Erimons, 24 km north-west of Erimons.
Commencement timing:	4-2023 pending approvals, vessel availability and weather conditions.
Estimated duration:	Approximately 18 months across multiple campaigns.
Consultation commenced:	September 2022 First EP submission to NOPSEMA: Not yet submitted

Figure 1 illustrates the operational area and the environment. The map is reclassified based on a composite of many different factors and factors include a highly on-land environment, which could have an impact based on weather and ocean conditions. Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in this report. Impacts associated with the planned activities include physical presence of vessels and interaction with other marine assets, and noise disturbance from machinery, vessel operations and the risk of oil and gas spills. Other potential impacts include vessel collisions with marine mammals, seabirds, and other marine species, and the risk of vessel collisions with marine mammals, seabirds, and other marine species, and the risk of vessel collisions with marine mammals, seabirds, and other marine species.



Consultation Participation and Feedback
Woodside is seeking to consult with relevant persons to inform the preparation of Environment Plans (EPs) for these activities. Consultation is designed to identify and address any issues that may arise from the proposed activities or the environment. Consultation will inform the drafting of the EPs in accordance with the regulations set out in the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2020 (OPGSA). If you would like to provide information, detailed consultation information sheets are available at: www.woodside.com/sustainability/consultation-activities. You can also subscribe to receive future information on proposed activities. If you would like to comment on the proposed activities outlined above, please contact 'Woodside below' (page 7) by Friday 2023-01-20. Please email your feedback and any responses will be included in the EPs for the proposed activities, which will be submitted to NOPSEMA as required under legislation. Please let us know if your feedback is sensitive and we will make this known to NOPSEMA upon submission of the relevant EP or update this information to remain confidential to NOPSEMA.

8 THE AUSTRALIAN, WEDNESDAY, JANUARY 18, 2023 **WORLD**

Iran raids coffers to help fight protesters

MELANIE SWAN

The security forces violently suppressing protests across Iran have looted \$1.5 billion in the latest budget, despite the country's collapsing economy. A record \$600 million was left for the government the budget for the Islamic Revolutionary Guard Corps (IRGC) has been raised by 20 percent. However, despite the increase, the IRGC's budget is still only a fraction of what it was in 2019. The IRGC also receives income from other oil sales through the Islamic Revolutionary Guard Corps. The government is struggling to fund the IRGC's operations and to help the Islamic regime and with the strategic aim of restoring an international nuclear pact with Iran.

UK vows payback after execution

Britain has vowed more reprisals against Iran after the execution of a British man. Foreign Secretary James Cleverly announced last month that the UK would impose sanctions on the Iranian government if it executed British citizens. The UK has now announced that it will impose sanctions on the Iranian government if it executes British citizens. The UK has now announced that it will impose sanctions on the Iranian government if it executes British citizens.

Iranian protesters, presided by the Islamic Republic of Iran, have been protesting against the execution of a British man. The protesters are demanding the release of British citizens and the end of the Iranian regime. The protesters are demanding the release of British citizens and the end of the Iranian regime.

Iranian protesters are demanding the release of British citizens and the end of the Iranian regime. The protesters are demanding the release of British citizens and the end of the Iranian regime.

Italy mourns golden screen goddess

ELIA TREBONI

One of the last stars of the golden age of Hollywood, Italy's Gina Lollobrigida, who has died at the age of 93, was buried in Rome. Her death was announced on Monday. She was buried in Rome on Monday. She was buried in Rome on Monday.

Italy's Golden Screen goddess, Gina Lollobrigida, has died at the age of 93. She was buried in Rome on Monday. She was buried in Rome on Monday.

Gina Lollobrigida was a famous Italian actress and model. She was known for her beauty and her roles in many classic Italian films. She was buried in Rome on Monday.

Gina Lollobrigida was a famous Italian actress and model. She was known for her beauty and her roles in many classic Italian films. She was buried in Rome on Monday.



Gina Lollobrigida was said to have done Marilyn Monroe 'look the Shirley Temple'



Lollobrigida with Marcello Mastroianni in the 1960 film 'Where the Hot Wind Blows' and meeting Prince Margaret of London's new National Theatre in 1977

Lollobrigida was a famous Italian actress and model. She was known for her beauty and her roles in many classic Italian films. She was buried in Rome on Monday.

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ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct four activities in Commonwealth waters off the West Australian coast for the Scarborough Project, as described below:

Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough field to provide the baseline for future 'time lapse' reservoir surveillance.		
Location:	214 km north-west of Exmouth, size of operational area ~9,200 km ²		
Commencement timing:	H1 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	55-70 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	May 2021	First EP submission to NOPSEMA	November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and success tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	~50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	July 2021	First EP submission to NOPSEMA	November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities.		
Location:	Activities run from the Commonwealth – State waters boundary approximately 12 km north of Dampier to the Scarborough gas field located at Woodside-operated title WA-61-L, approximately 374 km west-northwest of the Burrup Peninsula.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	Approximately 24 months across multiple campaigns.		
Consultation commenced	August 2021	First EP submission to NOPSEMA	December 2021

Scarborough Subsea Infrastructure Environment Plan

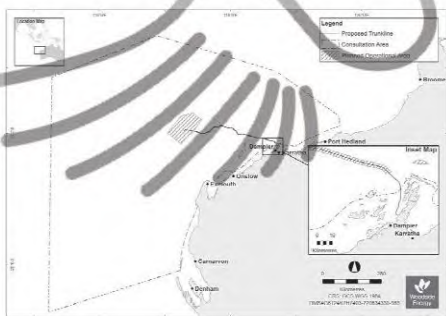
Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	September 2022	First EP submission to NOPSEMA	Not yet submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a highly unlikely, one-off event could have an impact based on weather and ocean conditions.

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP.

Impacts associated with the planned activities include: presence of vessels and interaction with other marine users, seabed disturbance (such as trenching, spoil disposal, dredging and backfill) and infrastructure placement) and other vessel, drilling, seismic and construction impacts (such as noise, light, vibration, discharges and emissions).

Impacts that could occur due to an unplanned event include: liquid hydrocarbon releases, thermal, noise, or other vessel field, gas release during drilling, vessel collision with marine fauna, additional seabed disturbance, introduced marine species, accidental loss of wrecks or other seabed risks.



Consultation Participation and Feedback

Woodside is seeking to consult with relevant persons to inform the preparation of Environment Plans (EPs) for these activities. Consultation is designed to notify and obtain input from relevant persons to assist Woodside to identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment.

Consultation will inform the drafting of the EPs in accordance with the regulations administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGSA).

If you would like additional information, detailed consultation information sheets are available at: www.woodside.com/sustainability/consultation-activities. You can also subscribe to receive future information on proposed activities.

If you would like to comment on the proposed activities outlined above, please contact Woodside before Friday 17 February 2023 via:

E: Feedback@woodside.com | Toll free 1800 442 077

Please note your feedback and our response will be included in our EPs for the proposed activity, which will be submitted to NOPSEMA as required under legislation.

Please let us know if your feedback is sensitive and we will make this known to NOPSEMA upon submission of the relevant EP in order for this information to remain confidential to NOPSEMA.

PUBLIC NOTICES

SHIRE OF EXMOUTH

RFQ 05/2023 Supply of Solid Waste Management Services (2023 Total Solar Eclipse)

The Shire of Exmouth is seeking a suitably qualified and experienced supplier to provide the hire of fire mitigation products to Welch Street Campsite during the Total Solar Eclipse Project.

A copy of the RFQ documentation is available from TenderLink, no other provision of documentation is available. Submissions must be lodged via TenderLink Portal - portal.tenderlink.com/exmouth

Canvassing of Councillors will disqualify. Submissions must be lodged via the TenderLink Portal no later than **2:00pm, Wednesday 1st February 2023.**

Ben Lewis
CHIEF EXECUTIVE OFFICER

SHIRE OF EXMOUTH

REQUEST FOR QUOTE RFQ 03-2023 Supply of Firefighting Equipment (2023 Total Solar Eclipse)

The Shire of Exmouth is seeking a suitably qualified and experienced supplier to provide the hire of fire mitigation products to Welch Street Campsite during the Total Solar Eclipse Project.

A copy of the RFQ documentation is available from TenderLink, no other provision of documentation is available. Submissions must be lodged via TenderLink Portal - portal.tenderlink.com/exmouth

Canvassing of Councillors will disqualify. Submissions must be lodged via the TenderLink Portal no later than **2:00pm, Monday 30th January 2023.**

Ben Lewis
CHIEF EXECUTIVE OFFICER

SHIRE OF EXMOUTH

NOTICE OF ANNUAL GENERAL MEETING OF ELECTORS

In accordance with s5.29 of the Local Government Act 1995, the Shire of Exmouth hereby gives public notice of a General Meeting of Electors.

The meeting will be held on **Thursday 2 February 2023 at 6:00 pm** in the Mandu Mandu Function Centre, Ningaloo Centre, 2 Truscott Crescent Exmouth.

The purpose of this meeting is to:

1. Confirm the minutes of the previous General Meeting of Electors meeting held on the 3 February 2022;
2. Receipt of the 2021/2022 Annual Report; and
3. General Business.

Shire of Exmouth electors are invited to submit in writing to the Chief Executive Officer, questions relating to the general meeting no later than **Wednesday, 1 February 2023** to enable adequate answers to be provided at the meeting.

The Shire of Exmouth 2021/2022 Annual report is available for viewing at the Shire Administration Office, the Exmouth Library and on the Shire's website www.exmouth.wa.gov.au

Ben Lewis
CHIEF EXECUTIVE OFFICER

SHIRE OF ASHBURTON

Proposed Local Laws

Notice is hereby given, pursuant to section 312 of the Local Government Act 1995, it is intended to make the following local laws:

Cats Local Law

The purpose of the proposed local law is to set a standard number of cats that may be kept on premises and deal with cats that may be a nuisance as defined in the local law. The effect is that persons must not keep more than the standard number of cats unless provided for by the local law, the Cat Act 2017 or its associated Regulations, or be a nuisance as defined in the local law to persons in the district.

Public Places and Local Government Property Local Law

The purpose of the proposed local law is to regulate the care, control, and management of property of and under the care, control and management of the Shire including thoroughfares. The effect is that some Shire property is set aside for particular uses, some activities are allowed only under a permit or under a determination, and others are restricted or prohibited. The local law also establishes offences for inappropriate behaviour in or on Shire property.

Extractive Industries Repeal Local Law

The purpose of the proposed local law is to repeal the Shire of Ashburton Extractive Industries Local Law 2013. The effect is that the Shire of Ashburton Extractive Industries Local Law 2013 is no longer in effect.

The proposed local laws may be inspected at the Shire of Ashburton offices or on the Shire's website www.ashburton.wa.gov.au

Public submissions are invited and may be made by 4:30pm on Friday 10 March 2023, as follows:

- Online at www.ashburton.wa.gov.au
- Email to soa@ashburton.wa.gov.au
- in person at any Shire of Ashburton office

Mail to Shire of Ashburton, PO Box 567, Tom Price WA 6751

For more information, please contact the Jasmine Bray, Manager Governance on 9188 4444.

Chantelle McGurk
Acting Chief Executive Officer

www.ashburton.wa.gov.au

EMPLOYMENT

Government of Western Australia
Department of Justice

Clinical Nurse Manager
Corrective Services

Web Search No: 011872

Level/Award/Salary: Level 3 SPN \$118,070 Per Annum + Super (DCSNA)

Location: West Kimberley Regional Prison

About the role

The Department of Justice is offering an ideal opportunity for a suitably experienced and enthusiastic manager who is looking for a new experience in a primary care setting based at West Kimberley Regional Prison which is situated nine kilometres South East of the regional town of Derby. We deliver a comprehensive health care service to the prisoners of West Kimberley Regional Prison within a busy team focused environment.

Visit: jobs.wa.gov.au and key in the Web Search No: 011872 to access detailed information.

For Specific Job Related Information: Please contact **Mel Peet** on (08) 9334 6096

Closing Date: Friday 27th of January 2023.

DOI 19827

Share the important moments with Classifieds

THIS COPYRIGHT MATERIAL MUST NOT BE REPRODUCED WITHOUT PERMISSION OR PASSED ON TO ANY THIRD PARTY. CONTACT: SYNDICATION@WANNEWS.COM.AU

Midwest Time – 18 January 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct four activities in Commonwealth waters off the West Australian coast for the Scarborough Project, as described below:

Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough field to provide the baseline for future 'time lapse' reservoir surveillance.
Location:	214 km north-west of Exmouth, size of operational area ~9,200 km ²
Commencement timing:	H1 2023 pending approvals, vessel availability and weather constraints
Estimated duration:	~55-70 days per well. Activities will be conducted 24 hours per day, seven days per week.
Consultation commenced	May 2021 First EP submission to NOPSEMA November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and success tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	~50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Consultation commenced	July 2021 First EP submission to NOPSEMA November 2021

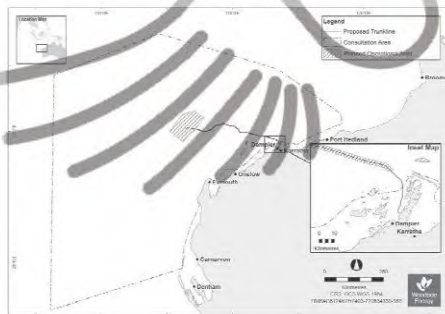
Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities.
Location:	Activities run from the Commonwealth - State Waters boundary approximately 42 km north of Dampier to the Scarborough gas field located at Woodside-operated WA-61-L, approximately 374 km west-northwest of the Burrup Peninsula.
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	Approximately 24 months across multiple campaigns.
Consultation commenced	August 2021 First EP submission to NOPSEMA December 2021

Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Consultation commenced	September 2022 First EP submission to NOPSEMA Not yet submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a highly unlikely, uncoordinated event could have an impact based on weather and ocean conditions. Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP. Impacts associated with the planned activities include physical presence of vessels and interaction with other marine users, seabed disturbance (such as anchoring, spoil disposal, dredging and backfill) and infrastructure placement and other vessel, drilling, seismic and construction impacts (such as noise, light, vibration, gases and emissions). Impacts that could occur due to an unplanned event include loud hydrocarbon releases (thermal, flammable or other vessel failure), gas release during drilling, vessel collision with marine fauna, additional seabed disturbance, introduced marine species, accidental loss of waste or other substances.



Consultation Participation and Feedback

Woodside is seeking to consult with relevant persons to inform the preparation of Environment Plans (EPs) for these activities. Consultation is designed to notify and obtain input from relevant persons to assist Woodside to identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment. Consultation will inform the drafting of the EPs in accordance with the regulations administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth). If you would like additional information, detailed consultation information sheets are available at: www.woodside.com/sustainability/consultation-activities. You can also subscribe to receive future information on proposed activities. If you would like to comment on the proposed activities outlined above, please contact Woodside before Friday, 17 February 2023 via: **E: Feedback@woodside.com | Toll free 1800 442 977** Please note your feedback and our response will be included in our EPs for the proposed activity, which will be submitted to NOPSEMA as required under legislation. Please let us know if your feedback is sensitive and we will make this known to NOPSEMA upon submission of the relevant EP in order for this information to remain confidential to NOPSEMA.

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North West Times – 18 January 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (A/CN 650 77 227) is proposing to conduct four activities in Commonwealth waters off the West Australian coast for the Scarborough Project, as described below:

Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	56 km survey over the Scarborough field to provide the baseline for future time-lapse seismic surveillance.
Location:	2.4 km north-west of Exmouth, size of operational area 9,200 km ² .
Commencement timing:	1-2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	35-70 days on well. Activities will be conducted 24 hours per day, seven days per week.
Consultation commenced	May 2021 First EP submission to NOPSEMA November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and completion activities for eight planned development wells and the potential for a further two additional completion wells.
Location:	24.4 km north-north-west of Exmouth, 37.4 km west-north-west of Dempster.
Commencement timing:	1-2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Consultation commenced	July 2021 First EP submission to NOPSEMA November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed interventions and Trunkline installation activities.
Location:	Activities run from the Commonwealth-State waters boundary approximately 52 km north of Damp or to the Scarborough gas field located off Woodside-operated site W14-4, approximately 37.4 km west-north-west of the Sunup Platform.
Commencement timing:	1-2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	Approximately 24 months across multiple campaigns.
Consultation commenced	August 2021 First EP submission to NOPSEMA December 2021

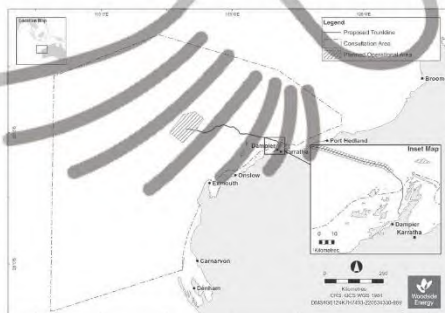
Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	24.4 km north-north-west of Exmouth, 37.4 km west-north-west of Dempster.
Commencement timing:	1-2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	Approximately 18 months to complete the survey and installation of subsea infrastructure. Underway activities will be conducted 24 hours per day, seven days per week.
Consultation commenced	September 2021 First EP submission to NOPSEMA November submitted 2022

Figure 1: Describes the proposed area and the environment that may be affected based on a composite of many different paths and, for most sources, a high probability of an impact would have an impact based on marine habitat considerations.

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from the planned and unlicensed activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP.

Impacts associated with the planned activities include: the presence of vessel and interaction with other marine users; seabed disturbance due to trawling, spoil disposal, dredging, cable and infrastructure placement and other vessel drilling, spilling and construction impacts (such as noise, greenhouse gas emissions and so on). Impacts that could occur due to vessel operations include: oil spills, hydrocarbon releases, noise, gas, other vessel spill, gas release during drilling, vessel oil spills, marine fauna, accidental seabed disturbance, produced marine species, accidents, loss of waste or other discharges.



Consultation Participation and Feedback

Woodside is seeking to consult with relevant persons to inform the preparation of Environment Plans (EP) for these activities. Consultation is a process to identify and obtain input from relevant persons to assist Woodside to identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment. Consultation will inform the drafting of the EP. It is conducted with the regulatory authority (controlled by the Marine Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2008 (OPGSA).

If you would like additional information, contact our consultation information sheets are available at www.woodside.com/sustainability/consultation-activities. You can also subscribe to receive future information on proposed activities.

Please email feedback to Feedback@woodside.com or call 1800 442 977. Please note your feedback and our responses will be included in our EPs for the proposed activity, which will be submitted to NOPSEMA as required regulatory matter.

Please let us know if your feedback is sensitive and we will make this known to NOPSEMA upon submission of the relevant EP. However, this information to remain confidential to NOPSEMA.

PUBLIC NOTICES

Hedland Shooters Club AGM Saturday 26th Jan, 6:30pm at the club house.

Advertise

your WEEKLY SPECIALS

We can help create a fitting tribute to celebrate the life of a loved one. Please phone Classifieds

Reach a LOCAL audience with a newspaper ad



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Geraldton Guardian – 20 January 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (A/N 650 77 227) is proposing to conduct four activities in Commonwealth waters off the West Australian coast for the Scarborough Project, as described below.

Scarborough 4D Bazzelle Marine Seismic Survey Environment Plan

Activity summary:	56 km survey over the Scarborough field to provide the baseline for future time lapse seismic surveillance.
Location:	24 km north-west of Exmouth, size of operational area 9,200 km ²
Commencement timing:	~12023 pending approvals, vessel availability and weather constraints.
Estimated duration:	~55-70 days on well. Activities will be conducted 24 hours per day, seven days per week.
Consultation commenced	May 2021 First EP submission to NOPSEMA November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and completion activities for eight planned development wells and the potential for a further two additional completion wells.
Location:	24 km north-west of Exmouth, 374 km west-northwest of Dampier
Commencement timing:	~12023 pending approvals, vessel availability and weather constraints.
Estimated duration:	~50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Consultation commenced	July 2021 First EP submission to NOPSEMA November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed interventions on and Trunkline installation activities.
Location:	Activities run from the Commonwealth - State waters boundary approximately 32 km north of Dampier or to the Scarboroughs field located off Woodside-operated wells W-4, approximately 374 km west-northwest of the Sunup Platform.
Commencement timing:	~12023 pending approvals, vessel availability and weather constraints.
Estimated duration:	Approximately 24 months across multiple campaigns.
Consultation commenced	August 2021 First EP submission to NOPSEMA December 2021

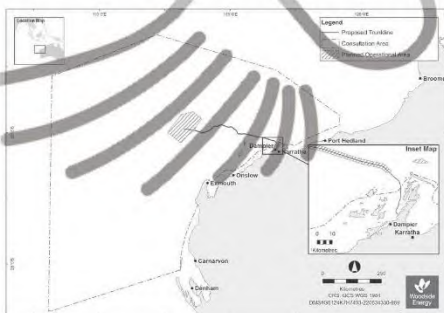
Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	24 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Commencement timing:	~12023 pending approvals, vessel availability and weather constraints.
Estimated duration:	Approximately 18 months commencing from the survey and installation of the first well. Underway activities will be conducted 24 hours per day, seven days per week.
Consultation commenced	September 2021 First EP submission to NOPSEMA November 2021

Figure 1: Describes the general area and the environment that may be affected based on a composite of many different paths and furthest distance where a significant level of noise would be expected to occur based on weather and ocean conditions.

Woodside has undertaken assessment to identify potential impacts and risks to the environment arising from the planned seismic and completion activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP.

Impacts associated with the planned activities include the presence of vessel noise interaction with other marine users, seabed disturbance due to anchoring, spoil disposal, dredging, cable and infrastructure placement and other vessel drilling, operation and construction impacts. Other impacts include the presence of noise and other vessels that could occur due to vessel movement, including hydrocarbon release, noise, other vessels, other vessels, spoil gas release during drilling, vessel oil spills, noise, marine fauna, accidental seabed disturbance, reproduced marine species, accidental loss of waste or other substances.



Consultation Participation and Feedback

Woodside is seeking to consult with relevant persons to inform the preparation of Environment Plans (EP) for these activities. Consultation is being done to notify and obtain input from relevant persons to assist Woodside to identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment.

Consultation will inform the drafting of the EPs in accordance with the regulatory requirements issued by the Marine Office (Department of Primary Industries and Environmental Management Authority) under the Offshore Petroleum and Greenhouse Gas Storage Act 2008 (OPGSA).

If you would like additional information, detail or activities, information sheets are available at www.woodside.com/sustainability/consultation-activities. You can also subscribe to receive future information on proposed activities.

Please send all feedback on the proposed activities outlined above, please contact Woodside on before Friday, 7 February 2023 via:

E: Feedback@woodside.com | Toll-free 1800 442 977

Please note your feedback and our responses will be included in our EPs for the proposed activity, which will be submitted to NOPSEMA as required under legislation.

Please, let us know if your feedback is sensitive and we will make this known to NOPSEMA upon submission of the relevant EP in order for this information to remain confidential to NOPSEMA.

EMPLOYMENT

George Giudice LAW CHAMBERS
PROFESSIONAL AND COMMERCIAL SERVICES

George Giudice Law Chambers are seeking a person for a reception/administrative role to be trained in paralegal matters.

This role will involve a variety of legal and administrative work.

Flexibility is available for some working from home and school hours.

Please send cover letter and resume to: rosemarie@georgejudicelaw.com.au

Greater Geraldton Employment

The City of Greater Geraldton actively welcomes, includes and values the unique contributions of all people in its workforce. The City welcomes applications from all age groups, people with a disability, and those from diverse ethnic and cultural backgrounds.

Benefits we offer: 13.5% superannuation, Health & Wellbeing Program, flexible working arrangements, Career development, Study Assistance, Child Care, Flexible Working Arrangements.

Plant Operator (Ref: 1302) - Mullero
 The Plant Operator undertakes operational activities for the provision of road construction and maintenance to the City of Greater Geraldton, working under direction to ensure all work is carried out in accordance with all relevant budget constraints and in compliance with all relevant state and federal regulations, City policies, procedures, and relevant Australian standards.

Application closes Friday 25 January 2023

Aquatic Facilities Duty Supervisor - Part-Time (Ref: 1044)
 The Aquatic Facilities Duty Supervisor assists the Manager Aquatic Facilities & Coordinator Aquatic Facilities to achieve an optimal level of efficiency in the operation of the aquatic facilities through quality, safety and customer service measures. This position is responsible for the maintenance and efficient operation of all plant and equipment.

This position works 45.6 hours per fortnight and requires working a roster across the spread of hours from 4:30am - 9pm Monday - Sunday inclusive. Whilst working on a roster that includes working one weekend shift per three week roster cycle, this flexibility will apply.

Applications close Wednesday 25 January 2023.

Weighbridge Administration Officer (Ref: 1829) - Part Time
 The Weighbridge Administration Officer supports the seven day a week operation of Meru Landfill Waste Management Facility. This position is responsible for operating the Meru Landfill Weighbridge, offering public administration support and information services to all the Landfill users.

This position is permanent part time working 41.75 hours per fortnight as part of seven (7) day a week rostering roster, including weekends and public holidays.

Applications close Monday 30 January 2023.

Youth Vibrancy Officer (Ref: 1037) - Fixed Term
 The Youth Vibrancy Officer position is responsible for developing and delivering a range of community events and activities targeted toward the youth sector. Operating a broad range of age groups and demographics. These activities will contribute towards making Greater Geraldton a vibrant and engaging place for young people to live, work and play.

This is a great opportunity for a passionate individual to apply their skills in youth work and/or event delivery by creating and delivering an annual calendar of activities that continue to evolve with relevant trends to ensure ongoing interest and engagement. Working with the City's wider Community Development team as well as other agencies and community stakeholders, this role is critical in ensuring a diverse activities and event program that caters to our diverse youth population.

This full-time position is offered as a fixed term contract until 31 October 2023.

Applications close Monday 30 January 2023.

Mullewa Customer Service Officer (Ref: 1030) Part Time
 The Mullewa District Office is seeking a part-time Customer Service Officer to join our team. The Customer Service Officer is the face of the Mullewa District Office, aiming to maximise resolution at the first point of contact and deliver a premium experience to the customers. This role is responsible for providing accurate, concise, and timely information to the general public in all areas of the City business.

This position will be based at the Mullewa District Office and is a permanent part-time opportunity working 22.8 hours per week, with a potential view to increase to full-time hours in the future.

Applications close Thursday 2 February 2023.

Heritage Services Officer (Ref: 1082) - Fixed Term Part Time
 This position is responsible for the provision of a quality library service and being a point of client contact for the Library Heritage Services Department, responding to enquiries appropriately and effectively. The Heritage Services Officer will actively participate in the teamwork responsible for the delivery of excellence in customer service.

This position is offered as a fixed-term part-time opportunity to assist with parental leave coverage, working 36 hours per fortnight Monday to Friday and one Saturday per month, until Friday 22 December 2023.

Applications close Monday 6 February 2023.

Tree & Vegetation Maintenance Worker (Ref: 1265)
 The Tree & Vegetation Maintenance Worker undertakes operational activities associated with the provision of tree and vegetation pruning and maintenance services to the City of Greater Geraldton.

Applications close Monday 6 February 2023.

Interested in applying? To view the position descriptions and more information on how to apply for all roles, please visit our website www.geraldton.wa.gov.au/employment

Ross McKim - Chief Executive Officer

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2.2 General Environment Plan social media campaign – Geraldton to Derby

Facebook Campaign - May 2023

A Facebook information campaign was targeted along the coastline from Geraldton to Derby to ensure it reached all communities adjacent to the EMBA. Geotargeting locations are distributed along the coast, with 80 km radiuses around towns, cities and shires. Geotargeting points were also included for spaces between towns, cities and shires to ensure no areas were missed – you'll see below there are latitude and longitude references for those locations.

As at 9:00am Monday, 29 May 2023

Ad reach: 21,494 users

Impressions: 139,972 views

Clicks through to *Consultation Information* page: 619 link clicks

Geotargeting locations:

- Broome (+80 km)
- Carnarvon (+80 km)
- Denham (+80 km)
- Exmouth (+80 km)
- Geraldton (+80 km)
- Onslow (+80 km)
- Port Hedland (+80 km)
- Karratha (+80 km)
- Latitude -17 Longitude 122.65 Dampier Peninsula (+80 km)
- Latitude -22.75 Longitude 114.10 Exmouth Gulf (+80 km)
- Latitude -18.96 Longitude 121.94 Gingerah (+80 km)
- Latitude -27.85 Longitude 114.25 Kalbarri National Park (+80 km)
- Latitude -21.32 Longitude 116.03 Mardie (+80 km)
- Pardoo (+80 km)
- Latitude -20.94 Longitude 117.83 Sherlock (+80 km)
- Latitude -26.96 Longitude 113.95 Tamala (+80 km)
- Latitude -19.88 Longitude 121.15 Telfer (+80 km)
- Latitude -17.52 Longitude 123.56 Willare (+80 km)
- Latitude -22.43 Longitude 114.93 Yannarie (+80 km)

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Would you like to know what Woodside has planned on land and sea?

We'd like to talk with you.

To find out about our current and proposed work and to share your views with Woodside on your relevant location, activities or interests visit: woodside.com/consultation-activities.

Alternatively, you can contact us at Feedback@woodside.com.au or on 1800 442 977.

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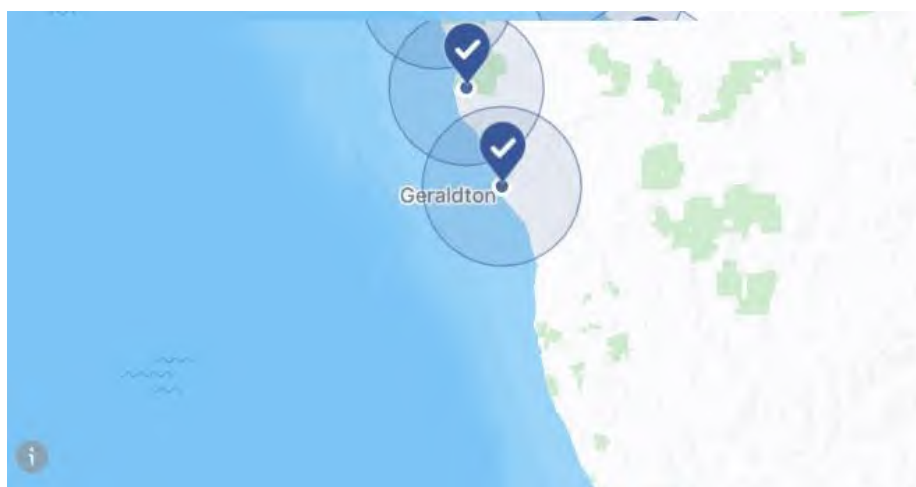
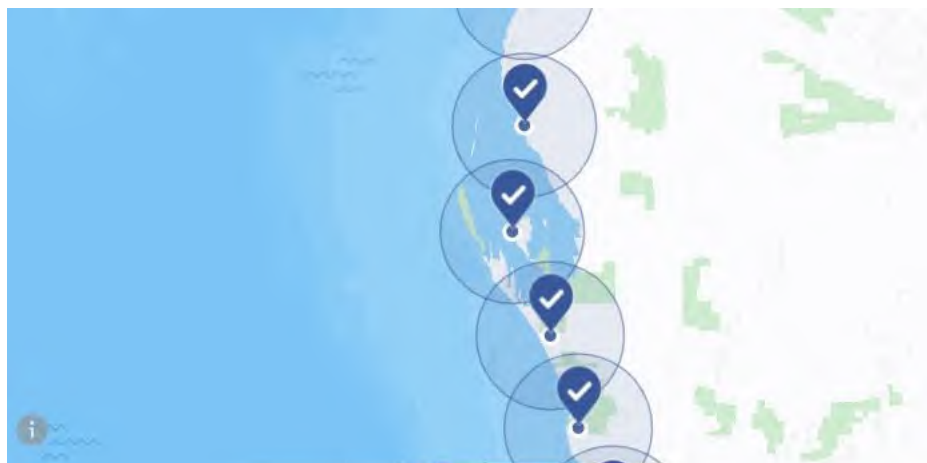
Alternatively, you can contact us at Feedback@woodside.com.au or on 1800 442 977.

 Woodside Energy

[Learn more](#)







Facebook Campaign – June 2023

A Facebook information campaign was targeted along the coastline from Geraldton to Derby to ensure it reached all communities adjacent to the EMBA. Geotargeting locations are distributed along the coast, with 80 km radiuses around towns, cities and shires. Geotargeting points were also included for spaces between towns, cities and shires to ensure no areas were missed – you’ll see below there are latitude and longitude references for those locations.

As at 11.30am 30 June 2023

Reach: 41,118

Impressions: 285,366

Link clicks: 1,236

Geotargeting locations:

- Broome (+80 km)
- Carnarvon (+80 km)
- Denham (+80 km)
- Exmouth (+80 km)
- Geraldton (+80 km)
- Onslow (+80 km)
- Port Hedland (+80 km)

- Karratha (+80 km)
- Latitude -17 Longitude 122.65 Dampier Peninsula (+80 km)
- Latitude -22.75 Longitude 114.10 Exmouth Gulf (+80 km)
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Would you like to know what Woodside has planned on land and sea?

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Alternatively, you can contact us at Feedback@woodside.com.au or on 1800 442 977.

woodside.com
Woodside's consultation activities [Learn more](#)

Woodside Energy
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Would you like to know what Woodside has planned on land and sea?

We'd like to talk with you.

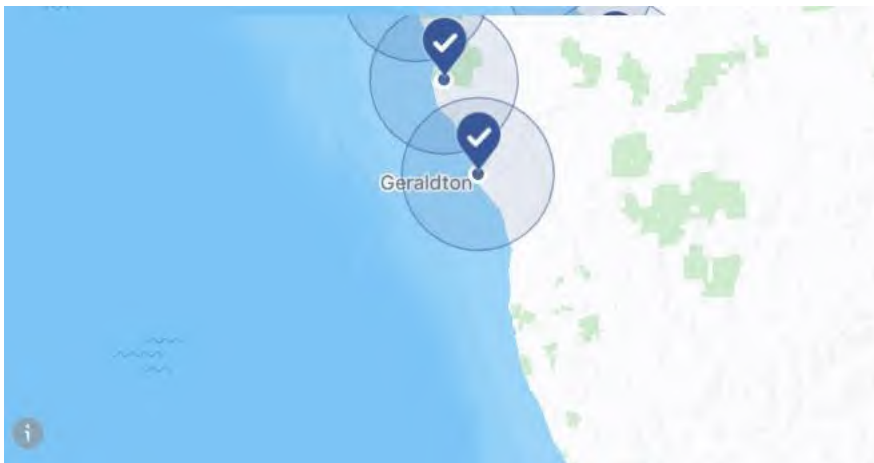
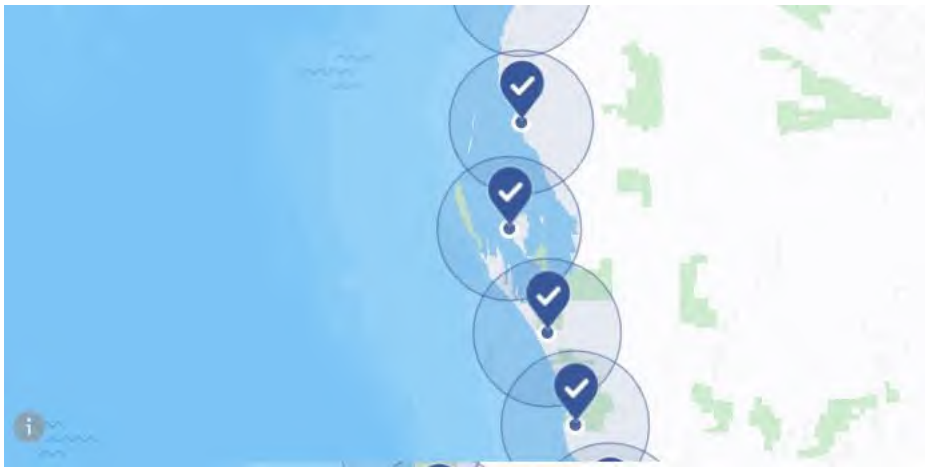
To find out about our current and proposed work and to share your views with Woodside on your relevant location, activities or interests visit: woodside.com/consultation-activities.

Alternatively, you can contact us at Feedback@woodside.com.au or on 1800 442 977.

[Learn more](#)



Scarborough 4D B1 Marine Seismic Survey Environment Plan



2.3 Kimberley region community activities

2.3.1 Community information sessions – Broome, Derby and Kununurra – 12, 13 and 15 June 2023 respectively

Geotargeted social media campaign – June 2023

A Facebook information campaign was targeted in Kununurra, Broome and Derby to ensure it reached communities where the Consultation Information Sessions were planned to be held. Geotargeting points were also included for spaces between towns, cities and shires to ensure no areas were missed – you'll see below there are latitude and longitude references for those locations.

As at 3:30pm, Thursday 15 June 2023

Kununurra:

Dates: 8 June 2023 – 14 June 2023

Total reach: 12,228

Total impressions: 14,486

Geotargeting locations:

- 80km radius around Kununurra
- 80km radius around Durack
- 80km radius around Warmun
- 80km radius around Wyndham

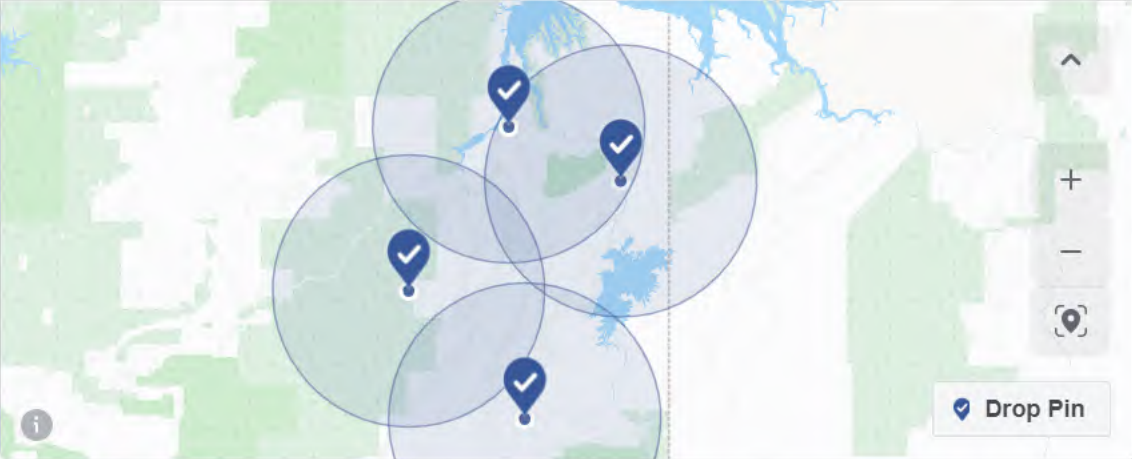
* **Locations**

Reach people living in or recently in this location. ⓘ

Australia

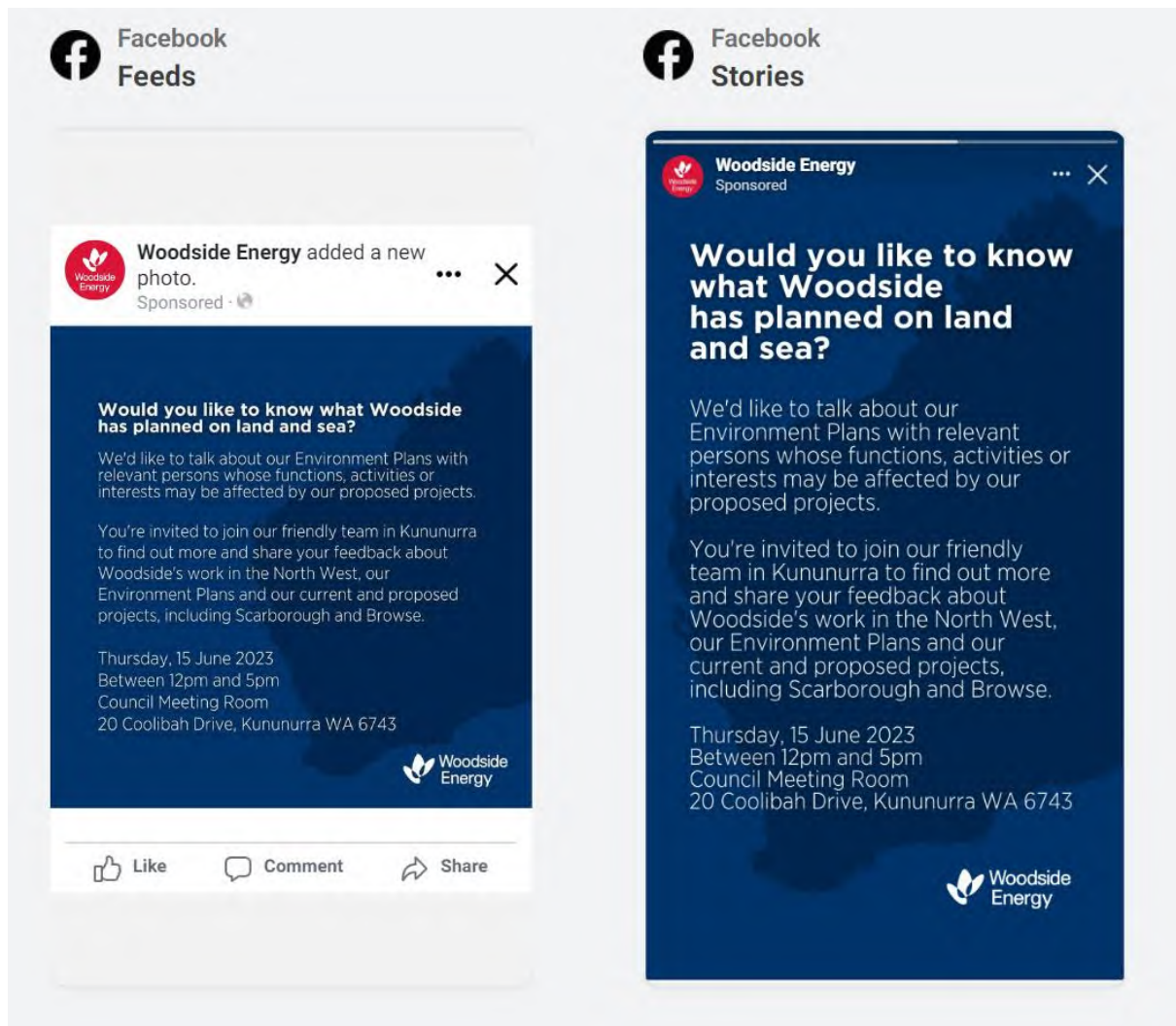
- ✓ Durack, Western Australia City + 80 km ▼
- ✓ Kununurra, Western Australia City + 80 km ▼
- ✓ Warmun, Western Australia City + 80 km ▼
- ✓ Wyndham, Western Australia City + 80 km ▼

✓ Include ▼ 🔍 Search locations Browse



The map displays a geographical area with four blue location pins, each accompanied by a white checkmark. Each pin is surrounded by a semi-transparent blue circular area representing an 80km radius. The locations are Durack, Kununurra, Warmun, and Wyndham, all in Western Australia. The map interface includes a search bar, a 'Drop Pin' button, and navigation controls like zoom in (+) and zoom out (-) buttons.

[Add locations in bulk](#)



Broome:

Dates: 8 June 2023 – 12 June 2023

Total reach: 19,220

Total impressions: 22,665

Geotargeting locations:

- 80km radius around Broome
- 80km radius around Dampier Peninsula
- 80km radius around area between Broome and Dampier Peninsula (Waterbank area)
- 80km radius around area south of Broome (Lagrange area)


*** Locations**

Reach people living in or recently in this location. ⓘ

Australia

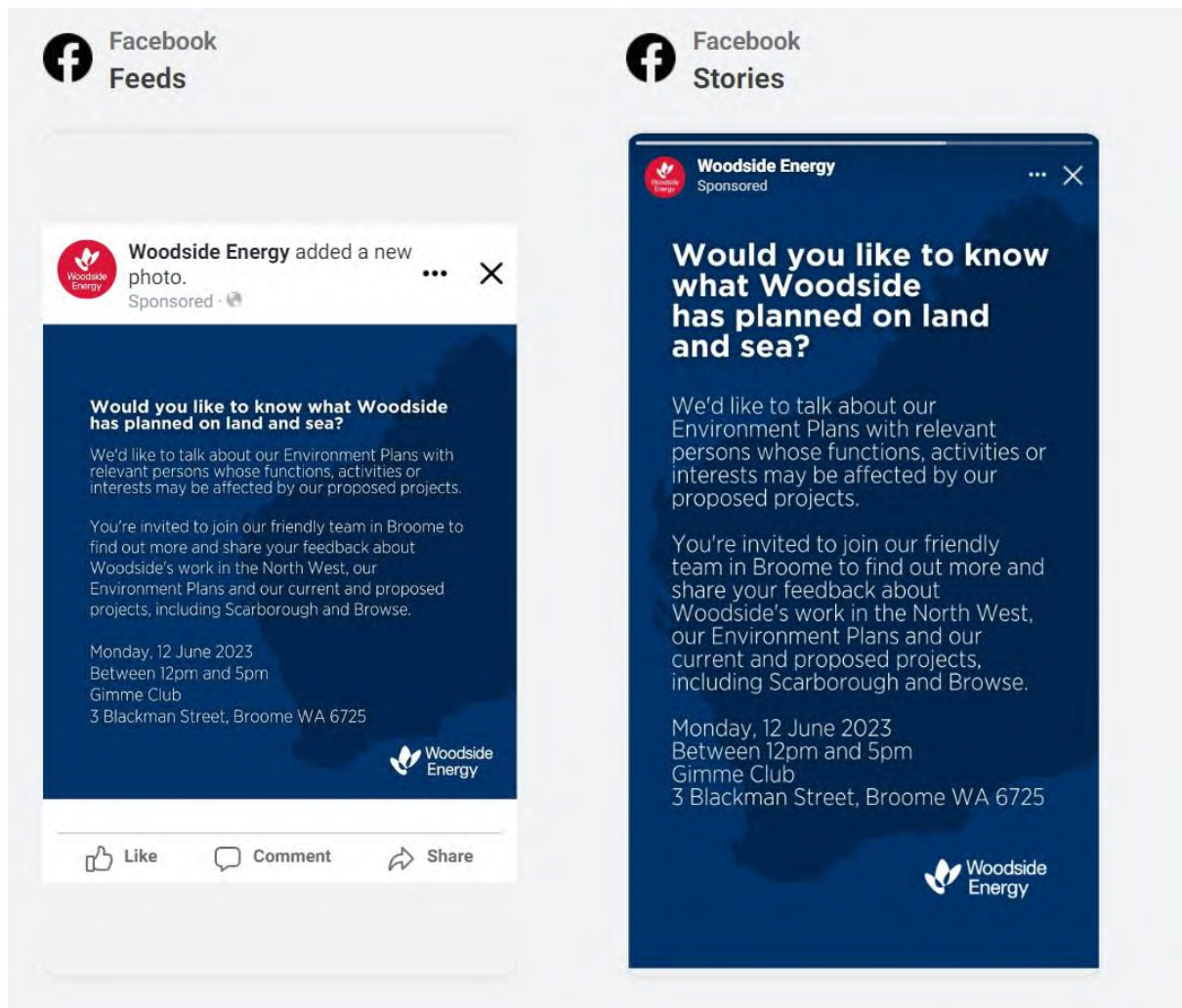
- ✓ (-16.8326, 122.5818) + 80 km ▼
- ✓ (-17.2597, 122.2412) + 80 km ▼
- ✓ (-18.7572, 121.6699) + 80 km ▼
- ✓ Broome, Western Australia City + 80 km ▼

✓ Include ▼ 🔍 Search locations Browse



The map shows the coastal town of Broome in Western Australia. Four blue location pins are placed along the coast, each with a white checkmark. Each pin is surrounded by a semi-transparent grey circle representing an 80km radius. The map includes standard navigation controls on the right side: a home button, zoom in (+) and zoom out (-) buttons, a location search icon, and a 'Drop Pin' button at the bottom right. An information icon (i) is visible in the bottom left corner of the map area.

[Add locations in bulk](#)



Derby:

Dates: 8 June 2023 – 13 June 2023

Total reach: 4,758

Total impressions: 5,773

Geotargeting locations:

- 80km radius around Derby
- 80km radius around Kimbolton

*** Locations**

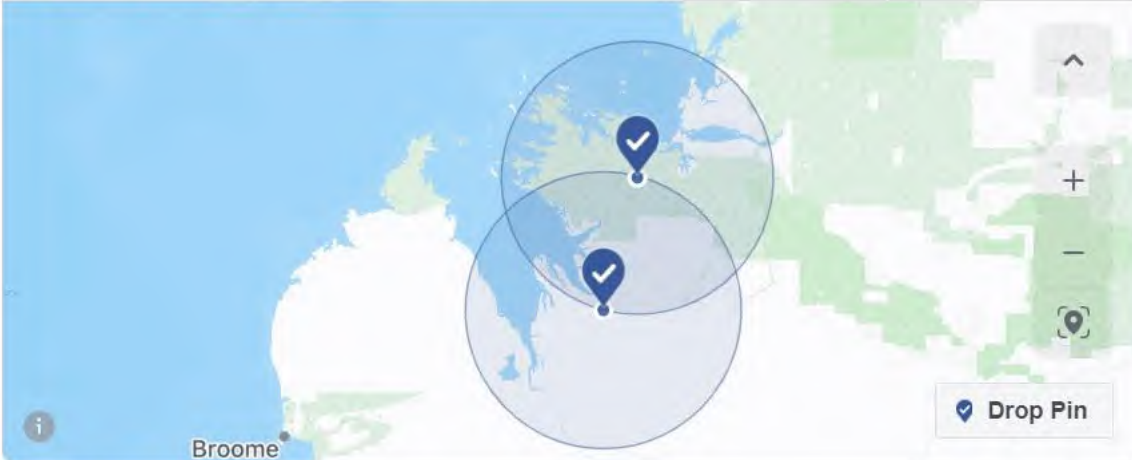
Reach people living in or recently in this location. **i**

Australia

Derby, Western Australia City + 80 km ▼

Kimbolton, Western Australia City + 80 km ▼

Include ▼ Browse



Broome

Drop Pin

Add locations in bulk

The image shows two views of a Facebook post by Woodside Energy. On the left is the 'Facebook Feeds' view, and on the right is the 'Facebook Stories' view. Both views feature a dark blue background with white text. The post is sponsored and includes a title, two paragraphs of text, event details for Tuesday, 13 June 2023, and the Woodside Energy logo.

Facebook Feeds

Woodside Energy added a new photo. Sponsored · 🌐

Would you like to know what Woodside has planned on land and sea?

We'd like to talk about our Environment Plans with relevant persons whose functions, activities or interests may be affected by our proposed projects.

You're invited to join our friendly team in Derby to find out more and share your feedback about Woodside's work in the North West, our Environment Plans and our current and proposed projects, including Scarborough and Browse.

Tuesday, 13 June 2023
Between 12pm and 5pm
Derby Council Chambers
30 Loch Street, Derby WA 6728

Woodside Energy

Like Comment Share

Facebook Stories

Woodside Energy Sponsored

Would you like to know what Woodside has planned on land and sea?

We'd like to talk about our Environment Plans with relevant persons whose functions, activities or interests may be affected by our proposed projects.

You're invited to join our friendly team in Derby to find out more and share your feedback about Woodside's work in the North West, our Environment Plans and our current and proposed projects, including Scarborough and Browse.

Tuesday, 13 June 2023
Between 12pm and 5pm
Derby Council Chambers
30 Loch Street, Derby WA 6728

Woodside Energy

Community information sessions - Newspaper advertisements

Broome Advertiser – 1 June 2023

Thursday, June 1, 2023

broomead.com.au

NEWS 9



The site of the proposed wellness centre development at Frederick Street.

Centre to offer medical services and child care

CAIN ANDREWS & KATYA MINNS

The Shire of Broome has approved a development application for a health and wellness centre which will feature a creche able to look after up to 100 children at a time.

The centre will also supply accommodation for medical centre staff with four short-term units to be built in the north-eastern corner of the lot.

The health and wellness centre will feature a dental practice, a GP clinic, pharmacy, beauty clinic, cafe, psychologist's office, physiotherapy office and two medical imaging tenancies with the project estimated to cost just over \$60m.

to the Shire's local planning scheme. The site will be at Frederick Street between the Broome Boulevard Shopping Centre and the Broome Recreation and Aquatic Centre where the St Martin de Porres Re-engagement School sits. The school is now searching for a new location, according to the Shire agenda.

Shire president Desiree Male said the development was a step in the right direction for the tourist town.

"To have a private developer come in and put a proposal forward to build something (as) significant as this is fantastic," she said.

"Across the board, we are lacking drastically (in child care) and anything that can add to the shortfall is a benefit."

"We're really supportive and thankful that we have attracted this sort of investment to town and we look forward to when it opens."

Tanami sealing set for 10-year build timeline

DAN JERVIS-BARDY

The sealing of the Tanami track in northern WA will take a decade to complete, the Albanese Government has confirmed.

But Infrastructure Minister Catherine King's office is defending the timeframe, saying it would ensure a consistent and manageable stream of work for local contractors and time for proper consultation with communities along the route.

It was revealed during Senate estimates that \$434 million in Commonwealth funding to seal the Tanami was spread out across the next 10 years, suggesting that was how long it would take to finish the much-needed upgrade.

Sealing the track promises

huge social and economic benefits for communities in the East Kimberley, including making it cheaper and easier to transport goods.

The Opposition slammed the decade-long timeline as "completely unacceptable", accusing both the Albanese and McGowan governments of failing to prioritise the project.

Ms King's office confirmed — and defended — the plan in a statement to The West Australian.

"A 10-year rolling delivery time frame will ensure a steady and sustainable pipeline of works for local construction crews," a spokeswoman said.

"As a large, unsealed and remote road, a staged approach over time also allows for the necessary

planning, environmental approvals and consultation to occur — including with First Nations communities."

The spokeswoman said work on the first portion of the 313km track was expected to start in the middle of the year. The project — jointly funded with the WA Government — is expected to cost \$542 million.

"The WA Government is currently developing a delivery strategy which will inform the project's rollout for upgrading and sealing the road," she said.

"Both governments are working together to ensure construction can start as soon as possible on the project, which will improve road safety, connectivity as well as freight access and productivity."

YOU'RE INVITED TO COME AND TALK WITH WOODSIDE ABOUT OUR ACTIVITIES.

Woodside is preparing Environment Plans and wants to discuss these with relevant persons, before submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Activities

- Plug and Abandonment Decommissioning Activities for the Stybarrow field, located about 53 km north-west of Exmouth.
- Pyxis Drilling and Subsea Installation, located about 170 km north west of Dampier.

We welcome Traditional Custodians and all community members to drop in, have a cuppa, find out more about these activities, and share your views.

We're keen to chat about all our operations, decommissioning activities and proposed projects such as Browse and Scarborough during these community information and feedback sessions.

Broome	Derby	Kununurra
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For more information: Feedback@woodside.com.au or phone toll free 1800 442 977. woodside.com










BOARDING INFORMATION EVENING

13th June - Oaks Broome Hotel
Broome - 6-8pm

Bookings are essential!

<https://mazenodregionalistes2023.paperform.co>

Mazenod College, 55 Gladys Road Lesmurdie (08) 9291 1500 | www.mazenod.wa.edu.au
St Brigid's College, 200 Lesmurdie Road Lesmurdie (08) 9290 4200 | www.sbc1.wa.edu.au

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Surf club rides crest of wave



CAM ANDREWS

The new Broome Surf Life Saving Club is set to open to the public with the main construction work of the \$5.5m project complete.

The club, due open to the public by late July, features a range of new facilities including new and increased storage areas, an education and function room, a new gym, bar and public toilets and showers. And the new facilities are already drawing in new members.

Broome Surf Life Saving Club Building director Rob Aristei said he was excited to see the building near completion after working on the project for the better part of a decade.

"In 2016 we started to get the project off the ground as the old building had reached the end of its life. What we're trying to do is make the club fully sustainable so it will be a lot easier for us to replace equipment, attract more members and even expand our patrolling time."

Broome Surf Life Saving Club manager Lauren Henderson said the new building would allow the



Bar manager Chris Andrzejczak, BSLC chairperson Bec Farnham, BSLC Education director Carrie Sehen, BSLC Building director Rob Aristei, Broome Surf Life Saving Club manager Lauren Henderson. Picture: Cam Andrews

club to better service the community.

"The new facilities basically enhance our ability to achieve our core mission, which is to keep the community safe," she said. "It also enables us to purchase more equipment and have better training in our training rooms."

Ms Henderson said the new club was already attracting more members. "We've got the highest number of rippers enrolments this year than we've had since pre-COVID," she said. "There's close to 200 new enrolments and I think the excitement around the new club is part of the reason for that."

"The new building doesn't just benefit our

club, but benefits the whole community as well."

Mr Aristei said the build wouldn't have been possible without sponsorship.

"I'd like to thank Surf Life Saving WA and all of the sponsors for their ongoing support, we couldn't have done it without you," he said.

Major Sponsors for the project include Totally Workwear, Cleanaway, Lion, Broome Plumbing and Gas and Galvins Plumbing Supplies. Major contractors involved in the project include CWD Builders, Laird Tran Studios and the Shire of Broome. See more pictures inside the club at broomead.com.au

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woodside.com



Man jailed for robberies on hotels

KATYA MIBNS

The accomplice of a gang who acted as a "lookout" for his fellow offenders at the Oaks Hotel, a few days after breaking into and stealing alcohol from the Roebuck Bay Hotel, has been sentenced to 31 months imprisonment.

Anton Caleb Joseph Galova faced Broome's District Court on May 29 and pleaded guilty to six counts of aggravated burglary and stealing.

The court was told the 24-year-old was out drinking with friends and family at a residence before being convinced to accompany four other men to break into the Roebuck Bay Hotel at about

Sam on March 19, 2022. Not wanting to be left behind, he went along with the group — helping peel open a metal door to one of the bars within the hotel and stealing 15 bottles of wine.

Three days later, he and the group went to Oaks Hotel on Robinson Street about 2am with the intention to burgle the bar for alcohol.

Galova kept a lookout for security as his fellow offenders used an axe to break the glass of the restaurant to gain entry into the bar, stealing bottles of liquor off the shelves.

An hour after leaving the hotel, the group returned for more alcohol but security was already investigating

the scene and had called police.

The police approached the men leaving the hotel on Guy Street, uncovering bottles of alcohol in their bags and immediately took them into custody.

Defence lawyer Nick Brookes said his client was "not a sophisticated individual" and that Galova did not believe he was fully involved in the crime, hence his co-operation with police when providing statements against the others involved.

District Court Judge Michael Bowden sentenced Galova to 31 months jail, backdated to March 21, 2022. He will be eligible for parole after serving 15½ months.

Unravel Travel Sale

BE INSPIRED. BOOK NOW. SALE ENDS JUNE 14, 2023.

AIRFARES START FROM \$240.00*

We fly to Darwin and Kununurra daily! Airfares include FREE checked baggage*

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 www.airnorth.com.au

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Muster ends with Party in the Park



Jimmy Lannigan, 5, of Halls Creek.



River Allford, 5, of Kununurra.



Allmah Rivers, 10, and Jaz Nayah, 8.



Halle, 1, and Simon McGinness, of Kununurra.

CALLY DUPE

The East Kimberley's biggest festival came to a big close when hundreds gathered at Celebrity Tree Park for the Ord Valley Muster's Horizon Power Party in the Park.

The event — likely to become a staple of the Muster — was a true East Kimberley celebration, with performances, workshops, displays and fun for the family with local and guest entertainment.

Among the line-up was belly dancing, the East Kimberley College Primary School Choir, the Wild Brumby Line Dancers, the East Kimberley Community Choir, and the East Kimberley College Band.

Also featuring were bands Cruise Control, Girls from Oz and the Band of the First Brigade, from Darwin.

But arguably the most popular activity at this year's event was the Sooty Silver Search, a new rendition of what was for decades called the Diamond Dig. Like many years before, participants took to three giant sand pits to dig for pop sticks marked with numbers corresponding with various prizes, which ranged from pond lights and a truck wash, to a stunning silver necklace.



Max & Claire Hogg, with granddaughters Cassidy & Ruthe Cunningham.



John & Julie Peery. Pic: Cally Dupe.



Sandy Griffiths & Tammy Carlock.



Rob & Cooper Cox, 13.



Zoe Sims, 8, and Nikki Cavlovic, 11.

There were three categories, a toddler section, kid section, and adult section. Rainer Winkler's persistence paid off, and after many attempts

he won the top prize in the Ord Valley Muster Silver Search — a custom designed necklace designed by Kimberley Fine Diamonds and valued at \$1200.

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The laughs just kept coming at Comedy in the Park show

CALLY DUPE

It was a night of side-splitting laughter at Kununurra's sold out Comedy in the Park, with a huge crowd of 900 turning out to enjoy the highlights of the Boab Media Ord Valley Muster.

The comedy line-up was hand-picked by the festival organisers to ensure the laughs were non-stop all night, and included comedians Steph Tisdell, Chris Franklin, Bev Killick and Fabian Woods.

It was a global audience at this year's Comedy in the Park, with guests The Kim-

berley Echo spoke with balling from across Australia and as far away as Oregon in the US.

Hosted by the hilarious self-confessed yobbo Franklin, the crowd roared with laughter listening to his mischievous antics and epic stories, tapping into everyone's inner bogan.

From his flannelleto shirt to his double plunger chongs, Franklin's "Hoganesque" style of comedy touched on the delicate issues of discovering he is one-sixteenth Aboriginal, booze and relationships.

"The audience was bril-

liant, we've had a great time up here, the Ord Valley Muster has looked after us well," Franklin said.

A proud Noongar Yarnman, Woods had the crowd chuckling with funny tales of traditional names and dances.

Bold, brassy and brutally honest, Killick had everyone shedding tears of laughter with her rough talking and mama jokes about plucking jockey mothers and groovy teenage boys.

Tisdell ended the show with her self-deprecating humour that kept audience



The crowd at this year's Comedy in the Park at the Ord Valley Muster. Picture: Ian Broadwith

Are you dreaming of turning your passion into a thriving small business? Or maybe you're already a small business owner in the Kimberley region, looking for some extra support and guidance? Whatever your small business needs may be, our team of experts is here to help you. Call us now 1300 572 766

Kimberley Small Business Support

Kimberley Echo – 8 June 2023

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FOR THE LATEST NEWS
kimberleyecho.com.au

Burney to blitz WA for Voice

DAN JERVIS-BARDY

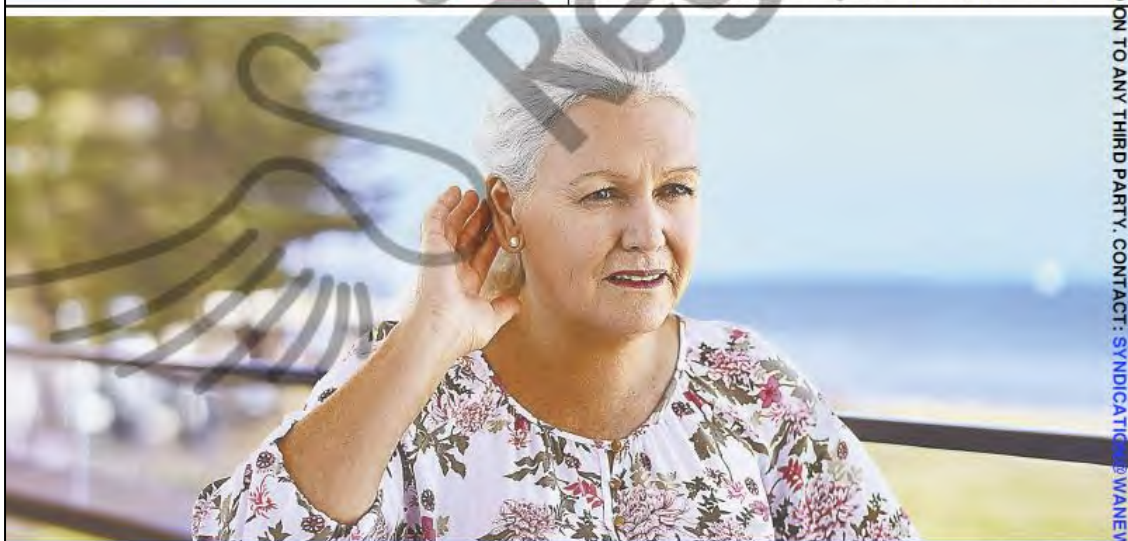
Minister for Indigenous Australians Linda Burney will next month spend a full week criss-crossing WA to build grassroots support for the Voice to Parliament.

Ms Burney told an audience in Perth on Monday the people of WA had a "big job" in helping the referendum across the line. In a speech to the Australian Institute of Aboriginal and Torres Strait Islander Studies summit, the minister said she would travel from "Kununurra to Claremont, from Perth to the Pilbara" to listen and talk to voters about the Voice to Parliament. The rallying cry came as Canning MP Andrew Hastie launches a fundraising drive to position himself as a leading figure in the No campaign. The outcome in WA could be crucial because a majority Yes vote is needed in at least four of the six States to succeed. Ms Burney recalled the shocking abuse she received when, as a State minister in 2010, she returned to the



Linda Burney

voices heard, which gave strength to keep prosecuting the case for a Voice to Parliament. "This referendum is once-in-a-lifetime opportunity," she said. "We have within our grasp the chance to make a positive change that will last generations." While Ms Burney and other Government ministers are upbeat about the referendum, polls suggest support is in decline. The latest Newsweek poll showed fewer than half voters intended to support the constitutional change. Yes campaign director Dean Parkin said the "tightening in the numbers" was understandable after recent heated political debate. "The conversation has been bogged in Canberra politics, in a fair bit of negativity there," Mr Parkin told Sky News. "That phase is coming to an end and so that will allow us to increase the focus on that conversation that's getting some more cut through on that conversation that's starting to grow significantly in communities."



One in six Australians experience hearing loss.
Having a hearing test helps to detect the early signs of hearing loss, so we can keep our hearing healthy for longer.

Book a hearing check, talk to a health professional, or visit health.gov.au/hearing for more information.



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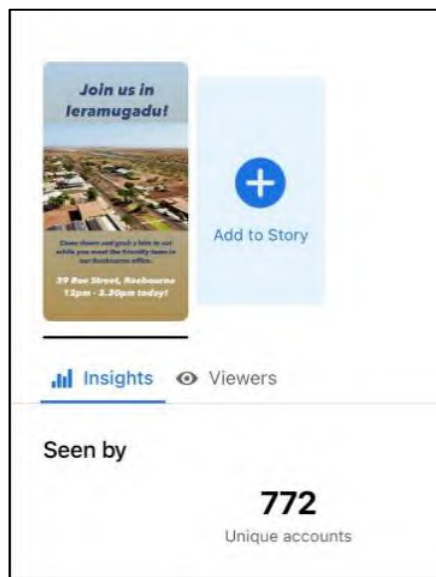
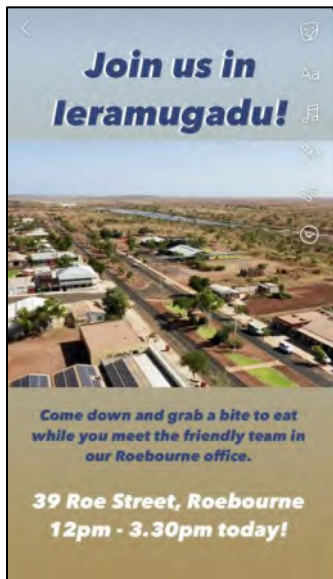
2.4 Pilbara region community activities

2.4.1 Community information sessions – Roebourne – 5, 10, 19, 24 May 2023

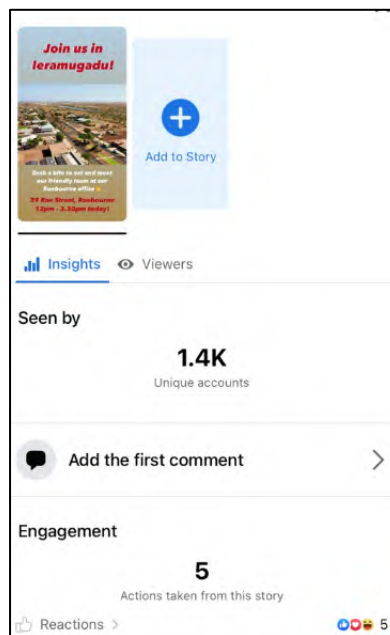
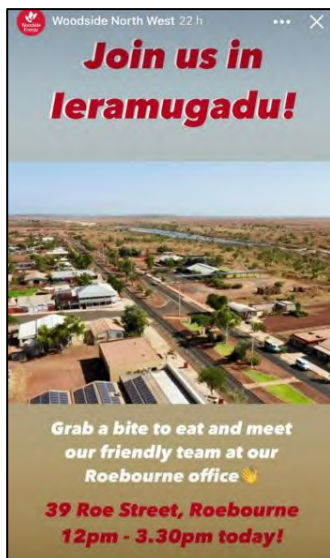
Woodside Facebook Stories – May 2023

Facebook stories on Friday 5/5/2023 seen by 772 people (attachment #1 & #2) and another Facebook story on Wednesday 10/5/2023 seen by 1,400 people (attachment #3 & #4).

#1 & #2



#3 & #4



Woodside Facebook Post



Woodside North West

Posted by Sprinklr

5 d · 🌐

⋮

You're invited to meet, greet and eat with our friendly team at our Roebourne office! 🙌

We're welcoming traditional custodians and all community members to join us and ask any questions you may have about our operations or proposed projects.

Visit us today at 39 Roe Street, Roebourne between 12pm and 3.30pm.



[See Insights and Ads](#)


[Boost post](#)

👍 8


💬 2 comments

←


Post insights




Friday, 12:45pm · 🌐




1.1K



8



2




0


Overview ⓘ

Reach	1,085
Impressions	1,096
Post reactions, comments and shares	10
Total clicks	43


Post reactions, comments and shares ⓘ




8




0




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0



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Reactions	8
Comments	2

Third-party Facebook posts

Roebourne District High School Facebook page (23/5/23 and 18/5/23)



Roebourne District High School
2 d · 🌐

COMMUNITY BBQ SESSIONS

JOIN US IN IERAMUGADU

You're invited to meet, greet and eat with our friendly team at Woodside's Roebourne office.

We're welcoming traditional custodians and all community members to join us and ask any questions you may have about our operations and proposed projects.

Stop by 39 Roe Street, Roebourne, between **12pm** and **3.30pm**, on:

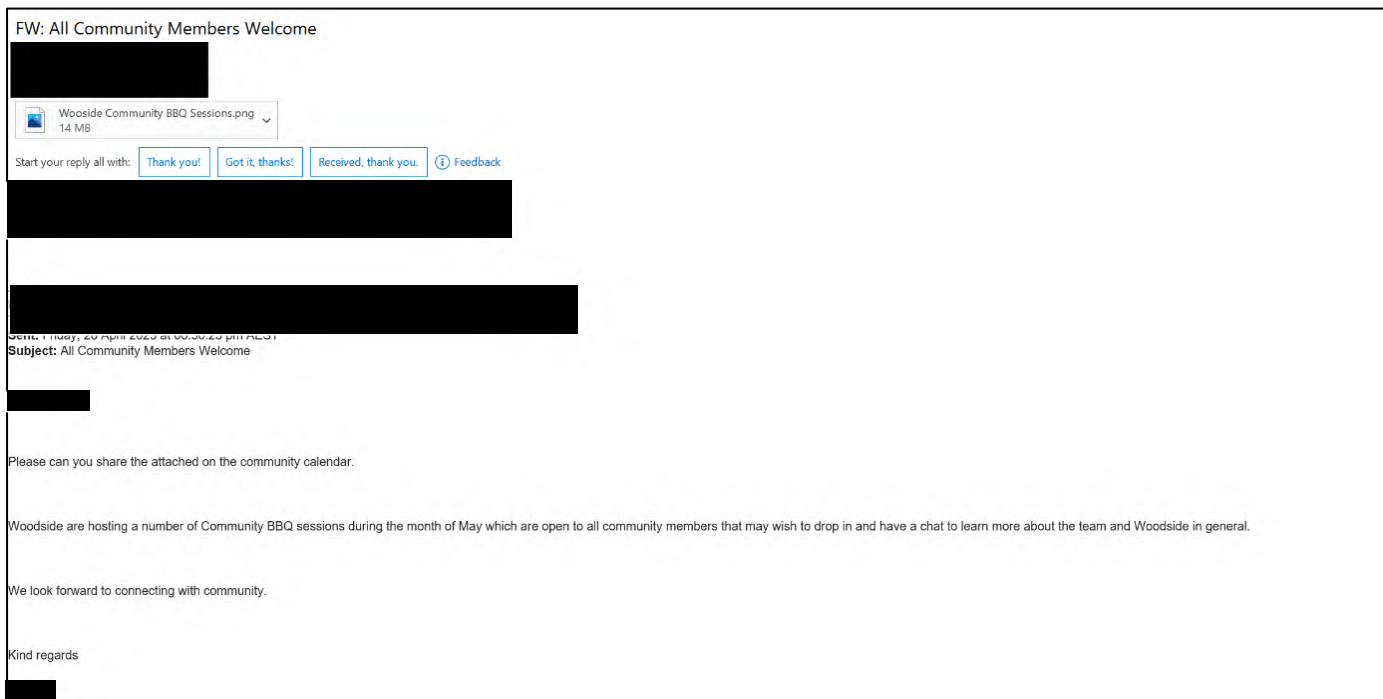
Friday	Wednesday	Friday	Wednesday
5 May 2023	10 May 2023	19 May 2023	24 May 2023

 Woodside Energy

👍 3 1 share

Email sent out via Roebourne Community Calendar – 29 April 2023

Posters and invitation extended via the Roebourne Community Calendar which has a very broad reach to all opt-in organisations including local TO groups, NFP, NGO, Government Agencies and other.



Posters for Community Information Sessions, Roebourne – 5, 10, 19 and 24 May 2023

The posters were physically posted up on community boards in Roebourne at:

- BP Service Station
- Post Office community board
- Community Resource Centre board at Foundation Food
- Centrelink office at NBAC

Posters dropped posters to:

- REFAP both Ganalili and work site offices
- Police
- Roebourne District High School – Cultural classroom



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Stop by 39 Roe Street, Roebourne, between **12pm** and **3.30pm**, on:

Friday	Wednesday	Friday	Wednesday
5 May 2023	10 May 2023	19 May 2023	24 May 2023



2.4.2 Community information sessions – Roebourne – 22 June and 19 July

Posters for Community Information Session, Roebourne – 22 June 2023

On 22 June 2023, Woodside held a Consultation Information Session at its Roebourne office. The session was hosted by members from Woodside's Corporate Affairs and Environment teams and was open for all community members to receive information regarding Woodside's Environment Plans and proposed and planned activities.

Woodside distributed posters advertising the session locally, including:

- Front door and front window of Woodside Roebourne office
- Online distribution via the Roebourne Community Calendar
- Roebourne Police Station provided with printed copy.

Woodside staff also visited the following offices promoting the session:

- Ngarluma and Yindjibarndi Foundation Ltd (NYFL)
- Ngarliyarndu Bindirri Aboriginal Corporation
- Yinjaai-Barni Art
- Foundation Foods.

Posters for Community Information Session, Roebourne – 19 July 2023

On 19 July 2023, Woodside held a Consultation Information Session at its Roebourne office. The session was hosted by members from Woodside's Corporate Affairs and Environment teams and was open for all community members to receive information regarding Woodside's Environment Plans and proposed and planned activities.

Woodside distributed posters advertising the session locally, including:

- Front door and front window of Woodside Roebourne office, with the open sign and fact sheets on display inside
- On the noticeboard at Roebourne Community Resource Centre (inside the Leramugadu Store (NYFL's Foundation Foods).
- Roebourne CRC
- Pilbara Community Legal Service
- NBAC
- WAPOL
- BP.

Woodside staff also visited the following offices to advise of the community information session and provide posters:

- Ngarluma and Yindjibarndi Foundation Ltd (NYFL)
- Yinjaai-Barni Art Group
- Yandi for Change
- NYFL
- WY Program
- Roebourne Library
- Yindjibarndi Ranger office
- Ashburton Aboriginal Corporation
- A poster was also put up at Cossack.


The posters were physically posted up on community boards in Roebourne on 14 July 2023 at:

- Roebourne CRC

- Pilbara Community Legal Service
- NBAC
- WAPOL
- BP
- Cossack.

Posters were delivered to:

- Yinjaai-Barni Art Group
- Yandi for Change
- NYFL
- WY Program
- Roebourne Library
- Yindjibarndi Ranger office
- Ashburton Aboriginal Corporation.



COMMUNITY CONSULTATION


COMMUNITY INFORMATION SESSIONS IN IERAMUGADU

You're invited to meet, greet and eat with our friendly team in Ieramugadu. We'd like to talk about our Environment Plans with relevant persons whose functions, activities or interests may be affected by our proposed projects.

Stop by to find out more and share your feedback about Woodside's work in the North West, our Environment Plans and our current and proposed projects, including Scarborough and Browse.

Visit 39 Roe Street, Roebourne, between **12pm** and **3.30pm**, on:

Thursday	Wednesday
22 June 2023	19 July 2023



Scarborough 4D B1 Marine Seismic Survey Environment Plan



2.4.3 Community information sessions – Karratha – 28 and 29 June 2023

Karratha Community Information Session Facebook post – 28 June 2023

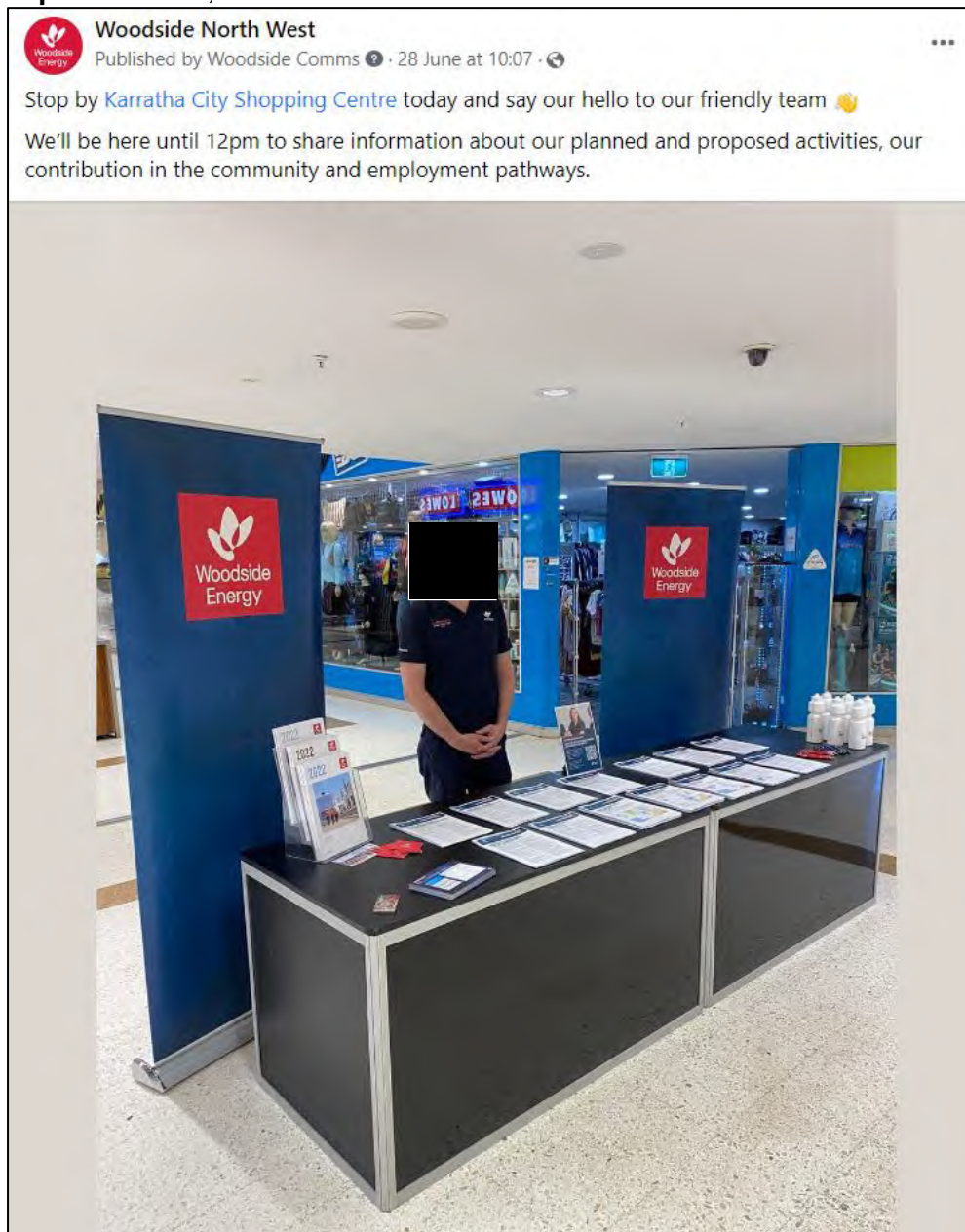
On 28 June 2023, Woodside posted a story on its Woodside North West Facebook account, sharing details of its shopping centre stand where Consultation Information Sheets regarding is planned and proposed activities were available, including the activities proposed under this EP.

Platform/channel: Woodside North West (Facebook)

Date: 28 June 2023

Reach: 1,464 viewers

Impressions: 1,464 views



Karratha Community Information Session Facebook Post – 29 June 2023

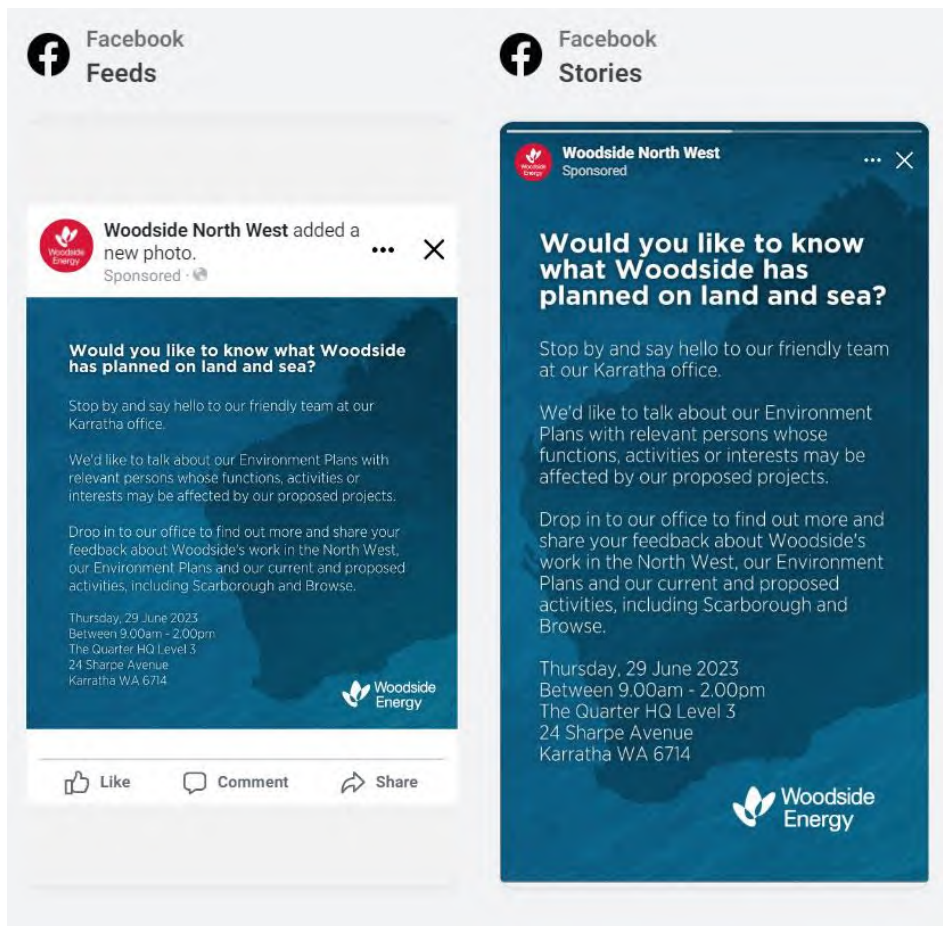
On 29 June 2023, Woodside held a drop-in session at its Karratha town office. The drop-in session was hosted by one of Woodside’s Senior Environmental Advisers and was open for all community members to receive information regarding Woodside’s Environment Plans and proposed and planned activities.

Dates: 16 June 2023 – 29 June 2023

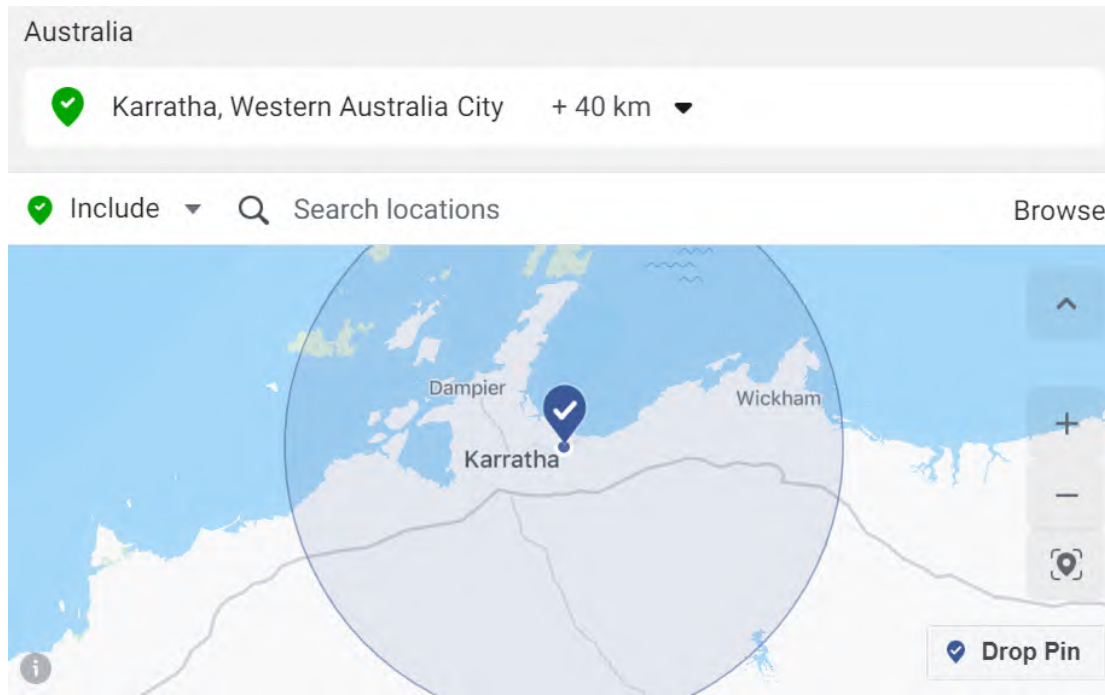
Geotargeting: 40km radius around Karratha

Reach: 19,240 viewers

Impressions: 22,931 views



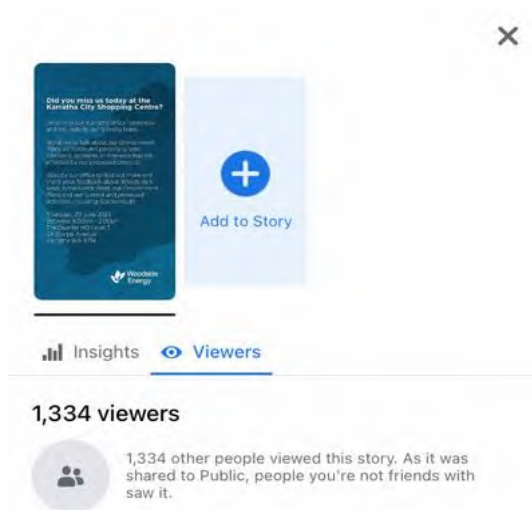
Geotargeting: 40 km radius around Karratha



On 28 June 2023, Woodside posted a story on its Woodside North West Facebook account, sharing details of its drop-in session.

Reach: 1,366 viewers

Impressions: 22,931 views



Woodside North West 16 h

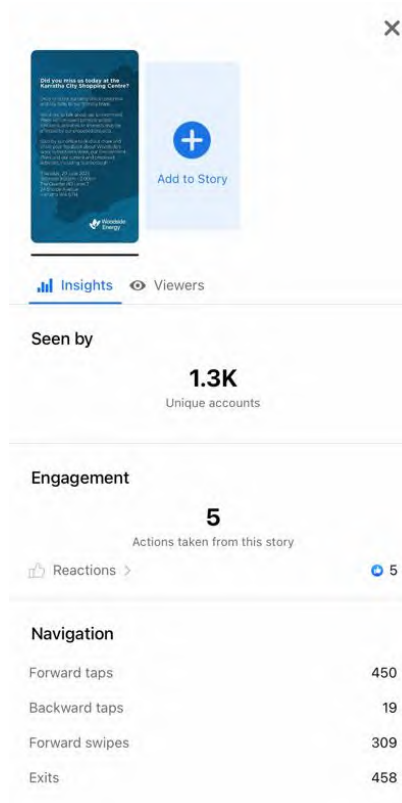
Did you miss us today at the Karratha City Shopping Centre?

Drop in to our Karratha office tomorrow and say hello to our friendly team.

We'd like to talk about our Environment Plans with relevant persons whose functions, activities or interests may be affected by our proposed projects.

Stop by our office to find out more and share your feedback about Woodside's work in the North West, our Environment Plans and our current and proposed activities, including Scarborough.

Thursday, 29 June 2023
 Between 9.00am - 2.00pm
 The Quarter HQ Level 3
 24 Sharpe Avenue
 Karratha WA 6714

Did you miss us today at the Karratha City Shopping Centre?

Insights Viewers

Seen by

1.3K
Unique accounts

Engagement

5
Actions taken from this story

Reactions > 5

Navigation

Forward taps	450
Backward taps	19
Forward swipes	309
Exits	458

Karratha Community Information Session – Newspaper advertisement

Pilbara News – 28 June 2023

Pilbara NEWS
Wednesday, June 28, 2023

pilbaranews.com.au

NEWS 7



Rio reaches \$1b Range milestone

CHEYANNE ENCISO

Rio Tinto has spent \$1 billion with WA businesses as it progresses the development of its Western Range joint venture with China Baowu Steel Group.

Simon Trott, iron ore chief executive of Rio Tinto, said the \$1b spend marked a considerable milestone.

"Rio Tinto spends billions of dollars with local suppliers across Western Australia and the Pilbara every year, helping support thriving communities across the State by providing local jobs for local people," he said.

The 25 million tonnes-a-year Western Range project will help sustain production of Rio's flagship Pilbara blend product from its existing Paraburdoo mining hub as the Eastern Range project depiles. China Baowu said it was pleased to see the Western Range project progressing smoothly.

Premier Roger Cook said significant projects such as the Western Range reinforced WA as an attractive and secure destination for business and investment.

"I want to commend Rio Tinto and Baowu on this latest project milestone and acknowledge their efforts in investing in WA to ensure WA businesses and workers benefit most," he said.

Rio in March reported it had spent \$8.6b with more than 2900 WA and Indigenous businesses in 2022 as part of its local buying program.

The figure included \$618m with Pilbara-based businesses, \$504m with Indigenous companies across WA, and \$418m with businesses run by traditional owners.

Rio Tinto iron ore chief executive Simon Trott and China Baowu vice-president Hou Angui.



We are hiring

JOIN THE TEAM!

Here at Pilbara Ports Authority, we are committed to advancing an inclusive and productive workplace where people are valued and respected.

We are proud of the talent and diversity of our workforce. Our people are key to our current and future success. We are seeking individuals, who strive for excellence in all they do and seek out opportunities for growth. In return, we provide generous support for training and professional development.

If this sounds like a workplace you would thrive in, take a look at our current vacancies.

• Administration Officer – Maintenance – Port Hedland

Find out more about PPA careers and youth training online via careers.pilbaraports.com.au




FIND OUT MORE ABOUT OUR PROPOSED ACTIVITIES

WOULD YOU LIKE TO KNOW WHAT WOODSIDE HAS PLANNED ON LAND AND SEA?

We'd like to talk about our Environment Plans with relevant persons whose functions, activities or interests may be affected by our proposed projects.

Drop in to our office to find out more and share your feedback about Woodside's work in the North West, our Environment Plans and our current and proposed activities, including Scarborough.

Thursday, 29 June 2023
Between 9.00am - 2.00pm
The Quarter HQ Level 3
24 Sharpe Avenue
Karratha WA 6714

You can also access our consultation information and provide feedback by scanning the QR code.




2.4.4 Karratha FeNaCING Festival – 5 and 6 August

- On 5 and 6 August 2023, Woodside had a stand at the annual FeNaCING Festival in Karratha.
- Members of Woodside’s Corporate Affairs and Operations teams actively engaged with the community to discuss proposed EP activities.
- The stand included Consultation Information Sheets for a number of EPs including this EP.
- An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website), a Scarborough Project banner, and Browse Project banners were displayed at Woodside’s stand.
- Approximately 2,000 people visited the Woodside stand (based on the number of completed consultation forms and questionnaires).
- All community members were encouraged to provide their views on Woodside activities through the Woodside feedback form on the Woodside website, or to subscribe to Woodside updates. An iPad was available for stakeholders to do this on the spot.
- This consultation opportunity was promoted in the Pilbara News on 2 August 2023, and a story appeared on the Woodside North West Facebook page on 2 August 2023.
- Community discussions centred on:
 - a. Update of Woodside activities, and employment and contracting opportunities;
 - b. General Scarborough project update and operations. A Scarborough operations map and Floating Production Unit images were available. There was general community interest and support for the project. Discussions included:
 - Location of the fields, distance from shore and water depth
 - Length of the pipeline
 - Interest that the Field Production Unit would not be fixed to the seafloor and its size
 - Progress and development of Pluto Train 2, and role of Pluto Train 1
 - Scarborough commencement and field life;

Story on the Woodside North West Facebook Page – 2 August 2023



PROVIDE YOUR FEEDBACK AT FeNaCING FESTIVAL

Are you interested in what Woodside has planned on land and sea?

Join our friendly team at FeNaCING Festival and find out more about our Environment Plans and projects, including Scarborough and Browse.

We look forward to sharing information about our current and proposed activities and providing the opportunity to discuss your relevant functions, activities or interests and receive your input.



Environment Plan Banner



Woodside Energy

ENGAGE WITH WOODSIDE ON OUR PLANS ON LAND AND SEA

Environment Plans
Are you an individual, organisation or community group whose functions, interests or activities may be affected by our activities? We would like to hear your views.

Engage with us further
To identify an E-consultation opportunity with Woodside or our Environment Plans, please email env@woodside.com.au or call 1300 442 577.

For more information, please visit www.woodside.com.au



Pilbara News Advertisement – 2 August 2023



PROVIDE YOUR FEEDBACK AT FeNaCING FESTIVAL

Are you interested in what Woodside has planned on land and sea?

Join our friendly team at FeNaCING Festival and find out more about our Environment Plans and projects, including Scarborough and Browse.

We look forward to sharing information about our current and proposed activities and providing the opportunity to discuss your relevant functions, activities or interests and receive your input.

Follow us @woodsidenorthwest
www.woodside.com



Melski's murals brought to life

DANIEL SPENCE

Tambrey Primary School has successfully brought renowned artist Mel Melski, popularly known as Melski, and her sister Tash to create three vibrant murals around the school premises.

With funding support from corporate entities like Woodside, FMG and Pilbara Real Estate, as well as community contributions from Aileen Martin, Susan, Yara, and QUIBE Energy, the school raised more than \$20,000 to bring this art project to life.

Home to nearly 700 students, with a third of them having Indigenous backgrounds, school Deputy Principal Toni Whithred and visual arts specialist Felicity Collins said the mission of the project was to celebrate diversity and create a sense of belonging by reflecting students' culture through artwork.

The school's mission was to celebrate diversity and create a profound sense of belonging by reflecting the students' culture through artwork.

What particularly attracted the school to Mel's art-



The artist was brought to the school to create murals.

work was its unique paint-by-numbers style, which allowed students to actively participate in the mural creation process.

Eager to engage the entire school community, the school declared a special 'paint week' during which more than 600 students enthusiastically joined hands to contribute to the murals.

Throughout the week, students not only participated in the creation of the murals but also enjoyed immersive art sessions in the park, including in painting, drawing, collage and chalk drawings under the enchanting winter weather.

The entire experience

served to nurture the students' creativity and appreciation for art, leaving a lasting impact on their artistic aspirations.

Ms Collins said she was thrilled to see the whole school coming together for a week of collaborative art.

"We were delighted to see students immersed in a week of collaborative art," she said.

Students not only contributed to the creation of the mural but also with their involvement in the immersive art in the park sessions — which included painting, drawing, collage and chalk drawings — while all outside soaking up the winter weather.



Beyond supplying affordable, reliable, ever-cleaner energy — we believe we have an important role to play in helping local communities build a vibrant and prosperous future.

We do this by investing in programs which contribute to areas of health and wellbeing, education, environment and building thriving communities.

We're calling for applications for the Chevron Community Spirit Fund, offering donations of up to \$15,000 to not-for-profit organisations operating in the following Northwest locations:

- Carnarvon
- Coral Bay
- Dampier
- Denham
- Exmouth
- Karratha
- Onslow
- Port Hedland
- Roebourne
- Shark Bay

Applications are open now until 11 August 2023. To apply, head to australia.chevron.com




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2.4.5 Passion of the Pilbara Festival – Onslow – 17 August 2023

- Woodside had a stand at the Passion of the Pilbara festival in Onslow.
- Members of Woodside's Corporate Affairs team actively engaged with the community to discuss proposed EP activities.
- The stand included Consultation Information Sheets for a number of EPs including this EP.
- Approximately 100 people visited the Woodside stand.
- Community members were encouraged to provide their views on Woodside's activities through the Woodside feedback form on the Woodside website, or to subscribe to Woodside updates.
- This consultation opportunity was promoted in a story on the Woodside North West Facebook page on 17 August 2023.
- Community discussions centred on:
 - a. Update of Woodside activities and employment opportunities.
 - b. General Scarborough project update and operations. A Scarborough operations map and Floating Production Unit images were available. There was general community interest and support for the project. Discussions included:
 - Support for the project and dissatisfaction about protester activity against the project
 - Number of jobs during construction
 - Location of activities (noting activity was not off the coast of Onslow).
- One individual asked in relation to the Scarborough Project what Woodside was doing to protect the environment.

Passion of the Pilbara Facebook Post –17 August 2023

Passion of the Pilbara
August 17 at 11:00 AM

Passion of the Pilbara wouldn't be possible without the help of supporters like Woodside. Do you want the chance to win some amazing prizes, in 2023 we are bringing back the POP Passport, giving you the chance to win an iPad and more!

Visit the Woodside team at their community stall on Saturday to learn about their activities. Make sure you bring along your POP Passport so the Woodside team can stamp it.

Passion of the Pilbara is brought to you by the Shire of Ashburton with the support of our sponsors.



The poster features a circular graphic with the text 'Onslow Passion of the Pilbara 18-19 August 2023'. The circle is decorated with icons for 'fun', 'music', 'art', 'events', and 'entertainment'. To the right is the 'shire of Ashburton opportunity to community' logo.

THANK YOU TO OUR SPONSOR:



The Woodside Energy logo consists of a stylized white leaf icon on a red background, followed by the text 'Woodside Energy'.

Woodside North West Facebook Page –17 August 2023

Woodside North West
August 17 at 6:32 PM

We can't wait to join in the fun at this year's Passion of the Pilbara. Make sure you stop by this Saturday to collect your POP Passport stamp for your chance to win some awesome prizes!



The poster features a circular graphic with the text 'Onslow Passion of the Pilbara 18-19 August 2023'. The circle is decorated with icons for 'fun', 'music', 'art', 'events', and 'entertainment'. To the right is the 'shire of Ashburton opportunity to community' logo.

THANK YOU TO OUR SPONSOR:



The Woodside Energy logo consists of a stylized white leaf icon on a red background, followed by the text 'Woodside Energy'.

Passion of the Pilbara
August 17 at 11:00 AM

Passion of the Pilbara wouldn't be possible without the help of supporters like Woodside. Do you want the chance to win some amazing prizes, in 2023 we are bri... See more

Woodside Facebook Post and Story – 17 August 2023

Feeds

Facebook Feeds

Woodside North West added a new photo. Sponsored

PROVIDE YOUR FEEDBACK AT PASSION OF THE PILBARA

Are you interested in what Woodside has planned on land and sea?

Join our friendly team at Passion of the Pilbara in Onslow this Saturday and find out more about our Environment Plans and projects, including Scarborough and Browse.

We look forward to sharing information about our current and proposed activities and providing the opportunity to discuss your relevant functions, activities or interests and receive your input.

Like Comment Share

Stories and Reels

Facebook Stories

Woodside North West Sponsored

PROVIDE YOUR FEEDBACK AT PASSION OF THE PILBARA

Are you interested in what Woodside has planned on land and sea?

Join our friendly team at Passion of the Pilbara in Onslow this Saturday and find out more about our Environment Plans and projects, including Scarborough and Browse.

We look forward to sharing information about our current and proposed activities and providing the opportunity to discuss your relevant functions, activities or interests and receive your input.

Woodside Energy

Audience definition

Your audience is defined.

Specific Broad

Estimated audience size: 21,400 - 25,200

Estimates may vary significantly over time based on your targeting selections and available data.

Estimated daily results

Reach

15K-21K

The accuracy of estimates is based on factors such as past campaign data, the budget you entered, market data, targeting criteria and ad placements. Numbers are provided to give you an idea of performance for your budget, but are only estimates and don't guarantee results.

Woodside Marquee



Woodside Information Sheets



2.4.6 Community information sessions – Karratha, Port Hedland and Roebourne – 18, 19 and 20 September respectively

- During 18–20 September 2023, Woodside consulted the Karratha, Port Hedland and Roebourne communities on EP activities.
- Members of Woodside’s Corporate Affairs, First Nations, Environment and Scarborough Project teams actively engaged the community to discuss proposed EPs, including the Scarborough and Browse projects.

18 September 2023

- Karratha Shopping Centre 8am–12pm
- Red Earth Arts Precinct 3–6pm
- Estimated number of people consulted: 20

19 September 2023

- Port Hedland, South Hedland Square 10am–5pm
- Estimated number of people consulted: 2

20 September 2023

- Roebourne, Woodside Office 10am–4pm
- Estimated number of people consulted: no attendance at the session due to Sorry Business and multiple Aboriginal corporation meetings which were unknown at the time of scheduling/planning engagements.

- These consultation opportunities were promoted in the Pilbara News on 13 September 2023, and via Facebook and Instagram social media campaigns from 6 to 16 September 2023.
- An EP consultation banner with a QR code linking to the Consultation Activities page on the Woodside website, a Scarborough Project banner, and Browse Project banners were displayed at Woodside's stand.
- Consultation on all Scarborough EPs occurred. Consultation Information Sheets on all activities were available including this EP, and Woodside's seismic 101 video was shown on an iPad to those interested in that activity. A Scarborough Project map was shown and discussed.
- All community members were encouraged to provide their views on Woodside's activities through the feedback form on the Woodside website or to subscribe to Woodside updates. An iPad was available for stakeholders to do this on the spot.
- Community discussions specific to the Scarborough Project centred on:
 - Opportunities for employment and business
 - Planned Scarborough seismic activities
 - A general Scarborough project update and operations. A Scarborough operations map and Floating Production Unit images were available. There was general community interest in the project. Discussions included:
 - General location (offshore and onshore);
 - Progress and development of Pluto Train 2, and role of Pluto Train 1
 - Project commencement
 - Final customers of the gas, described LNG and also the domestic gas supply to Western Australia
 - One individual in Karratha queried the impacts of seismic to the environment. Woodside's discuss impacts and mitigations
 - Two individuals subscribed to the Woodside website to receive consultation information
 - Kariyarra Aboriginal Corporation discussed business opportunities
 - Nyamal Aboriginal Corporation discussed training and job opportunities
 - Opportunities for engagement with Prescribed Body Corporate's (PBC's).

Pilbara News Advertisement – 13 September 2023

Pilbara news
Wednesday, September 13, 2023

pilbaranews.com.au

NEWS 5



City of Karratha Mayor Peter Long. Picture: Tom Zaunmayer

Mayor runs again as candidates put forward pitches

DANIEL SPENCE

Nominations have closed for the 2023 Karratha mayoral and councillor elections, with the list of candidates running to be the city's next mayor being released. Peter Long — who has been in the position since 2011 — will be running again and said, if re-elected, he would continue to provide Karratha with intelligent, safe and inclusive leadership.

"I am a full-time mayor, always able to receive you and your ideas," he said. "I love the Pilbara and our community."

Regional Development Australia Pilbara chief executive and former local government minister Tony Simpson is also running for mayor.

His vision is to join forces with State and Federal entities to progress childcare, health and housing solutions.

"I would work to draw major brand investments in retail and leisure to provide more options for residents. Identify land for a

foreshore entertainment hub and infuse Karratha with festivals and quality entertainment," he said.

Brenton Johannessen — who ran for the seat of Durack at the recent Federal election under One Nation — said he would donate the entire mayoral allowance to charity.

"I will be a committed full-time mayor, my goal is to visit all businesses and resident groups on a regular basis to touch base and discuss any new issues," he said.

Mr Johannessen said his aims would be neighbourhood safety, more opportunities for locals, ratepayer discounts for local facilities, moving airport smokers' areas, and eco-friendly weed management.

As a sitting councillor, radio announcer, parent and former local business owner mayoral candidate Pablo Miller said he had got to know the people of Karratha.

"As your mayor, I will continue to not only listen but be a strong advocate for our community," he

said. Mr Johannessen said he was interested in expanding opportunities for young people and families, growing local and cultural tourism, supporting businesses and bolstering mental health services.

The owner of the North West Brewing Co Daniel Scott has a vision as mayor to grow Karratha's economy.

His plan is to create an education and sporting precinct between the TAFE and St Luke's College, with accommodation for secondary and tertiary students.

His plans also include a new home for the Pilbara Universities Centre, and a sporting hub for rugby, soccer, hockey and gymnastics.

Those running for council include Daniel Scott, Kieran Darril, Wayne Mothershaw, Mr Johannessen, Sarah Booth, George Levinson, Bradley Dawsey, Mr Simpson, James Corea, Joseph Almonte and Geoff Harris.

Elections will be held for the four vacancies on October 21st.

FIND OUT MORE ABOUT OUR PROPOSED ACTIVITIES

ARE YOU INTERESTED IN WHAT WOODSIDE HAS PLANNED ON LAND AND SEA?

World like to talk to relevant persons about our Environment Plans. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects.

Speak to our friendly team members at one of our four sessions in September.

<p>Monday, 18 September 2023 Between 8.00am - 12.00pm Karratha Shopping Centre Sharpe Avenue Karratha</p>	<p>Monday, 18 September 2023 Between 3.00pm - 6.00pm Red Earth Arts Precinct 27 Welcome Road Karratha</p>
<p>Tuesday, 19 September 2023 Between 10.00am - 5.00pm South Hedland Square 9-31 Throssell Road South Hedland</p>	<p>Wednesday, 20 September 2023 Between 10.00am - 4.00pm Woodside Office 39 Roe Street Roebourne</p>

You can access our consultation information, provide feedback, and subscribe for updates by scanning the QR code.

ON SLOW

Business Excellence Awards

Cocktail Celebration

Saturday 16th September, 2023
at Onslow Beach Resort

A fabulous stand up cocktail event with canapés and drinks from 5:30pm
Award presentations from 7pm
Live entertainment
post award presentations

Tickets

Purchase your tickets online:
<https://OCCI.BusinessAwards2023.eventbrite.com.au>

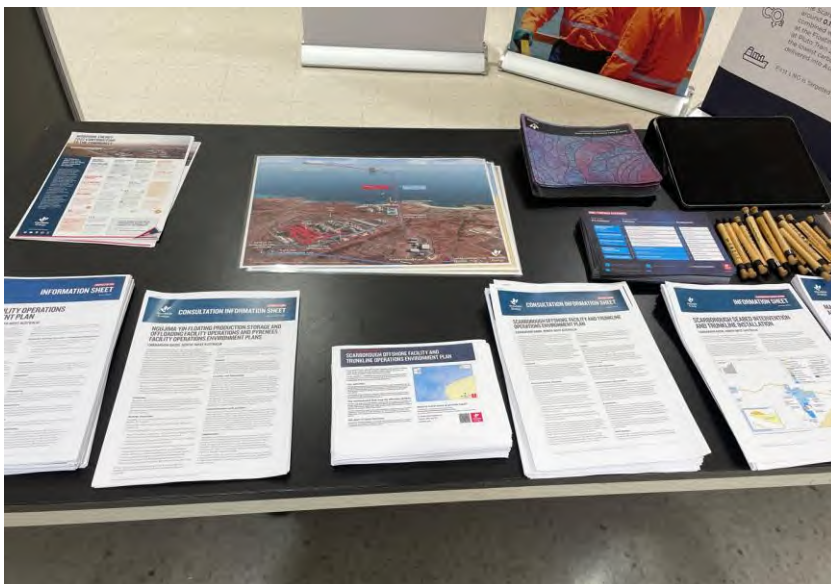
Social Media – 6 to 16 September 2023

<p>Are you interested in what Woodside has planned on land and sea?</p> <p>Stop by and say hello to our friendly team in Karratha.</p> <p>We'd like to talk to relevant persons about our Environment Plans. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects.</p> <p>Monday, 18 September 2023</p> <p>Between 8.00am - 12.00pm Karratha Shopping Centre Sharpe Avenue Karratha</p> <p>Between 3.00pm - 6.00pm Red Earth Arts Precinct 27 Welcome Road Karratha</p> 	<p>Are you interested in what Woodside has planned on land and sea?</p> <p>Stop by and say hello to our friendly team in Port Hedland.</p> <p>We'd like to talk to relevant persons about our Environment Plans. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects.</p> <p>Tuesday, 19 September 2023</p> <p>Between 10.00am - 5.00pm South Hedland Square 9-31 Throssell Road South Hedland</p> 	<p>Are you interested in what Woodside has planned on land and sea?</p> <p>Stop by and say hello to our friendly team in Roebourne.</p> <p>We'd like to talk to relevant persons about our Environment Plans. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects.</p> <p>Wednesday, 20 September 2023</p> <p>Between 10.00am - 4.00pm Woodside Office, Roebourne 39 Roe Street Roebourne</p> 
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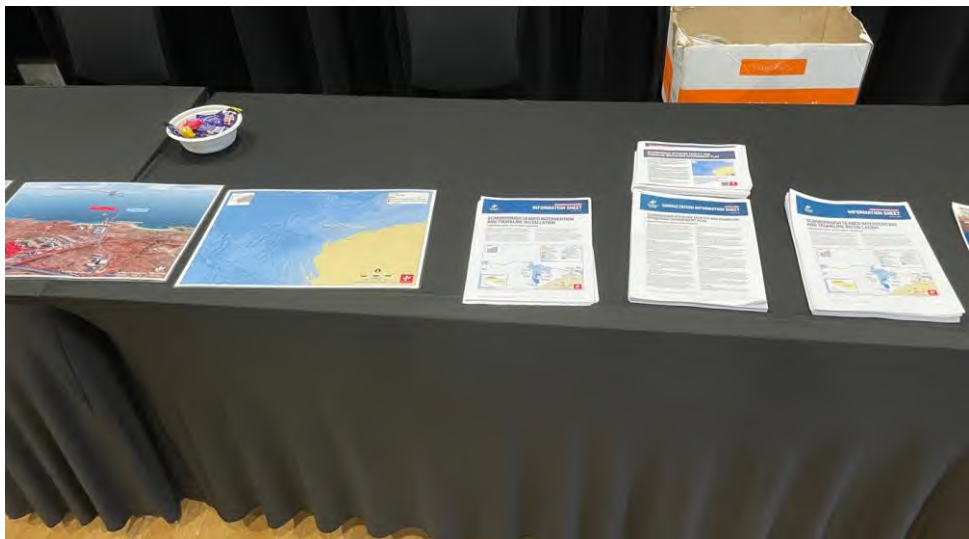
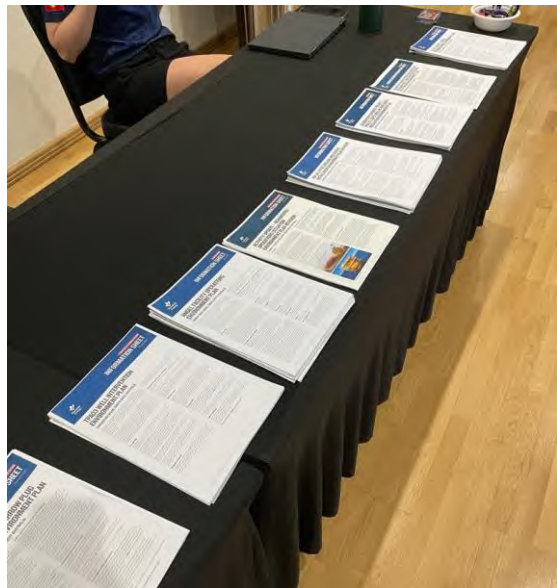
Social media reach:

Location	Reach
Karratha	22,095
Port Hedland	26, 487
Roebourne	22,134

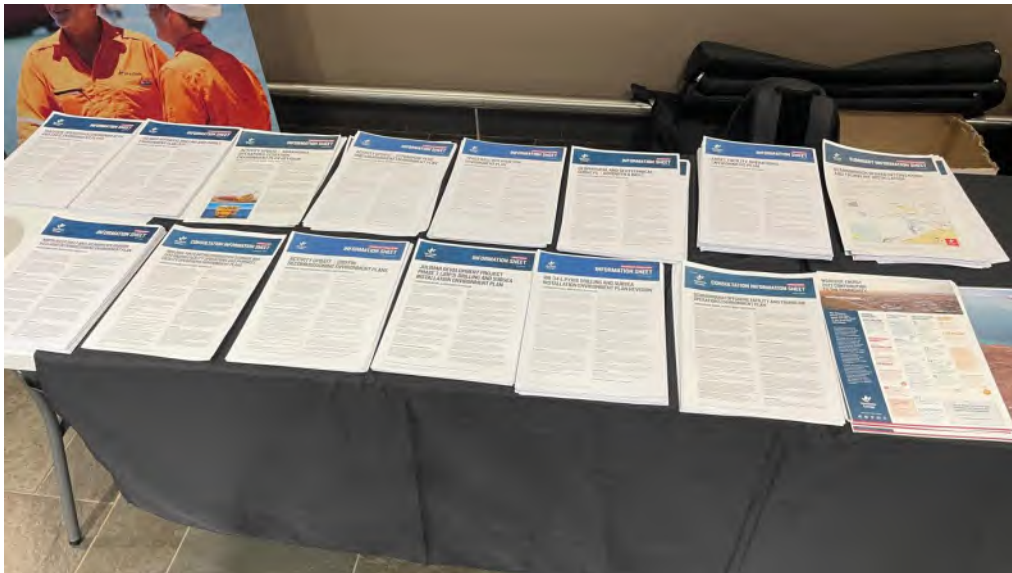
Karratha Shopping Centre, Karratha – 18 September 2023



Red Earth Arts Precinct, Karratha – 18 September 2023



South Hedland Square, Port Hedland – 19 September 2023

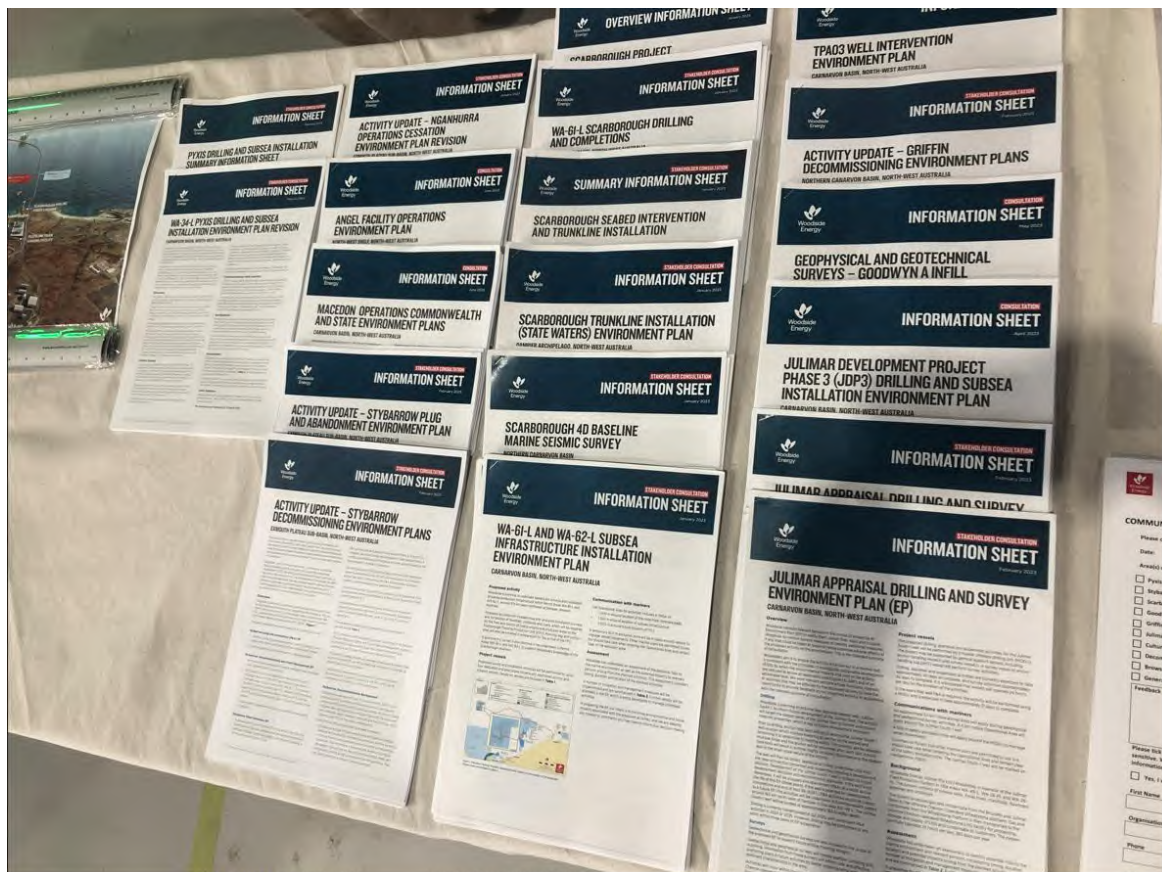


Woodside Office, Roebourne – 20 September 2023



2.5 Gascoyne region community activities

2.5.1 Community information session – Exmouth – 17 June 2023





- Woodside supported the PHI Helicopters community open day at the Exmouth Aerodrome on Saturday 17 June (10am – 1pm).
- Members of Woodside’s Corporate Affairs, Environment and Scarborough Project teams actively engaged the community to discuss proposed EPs.
- Approximately 300 community people attended the event (adults and children).
- The majority of people wanted to understand Woodside’s connection with PHI. There were also queries on contracting and job opportunities, including specifically for Scarborough activities.
- General questions from approximately five community members included:
 - Whales - what Woodside is doing to protect whales, what the impact to whales might be
 - The Scarborough FPU and nature of this i.e. is it DP or moored to the seabed, was it like an FPSO
 - General interest questions on Scarborough project - location, activities (i.e. trunkline installation, construction work at Pluto gas plant (within existing footprint), trunkline size and routing and why the location was chosen, field life and start up timing
 - Turtle nesting and lighting controls
 - Funding for whale shark research
- Many of the Consultation Information Sheets available were taken by attendees. Two attendees said they were taking the information sheets so they could see pipeline routes (for fishing opportunities), specifically mentioning permit numbers they were after.

Exmouth Community Information Session – Geotargeted social media campaign – June 2023

A Facebook information campaign was targeted in Exmouth to ensure it reached communities where the Consultation Information Session was planned to be held. Geotargeting points were also included for spaces between towns, cities and shires to ensure no areas were missed – you’ll see below there are latitude and longitude references for those locations.

Dates: 15 June 2023 – 17 June 2023

Platform: Facebook

Ad type/placement: Feed tile and story

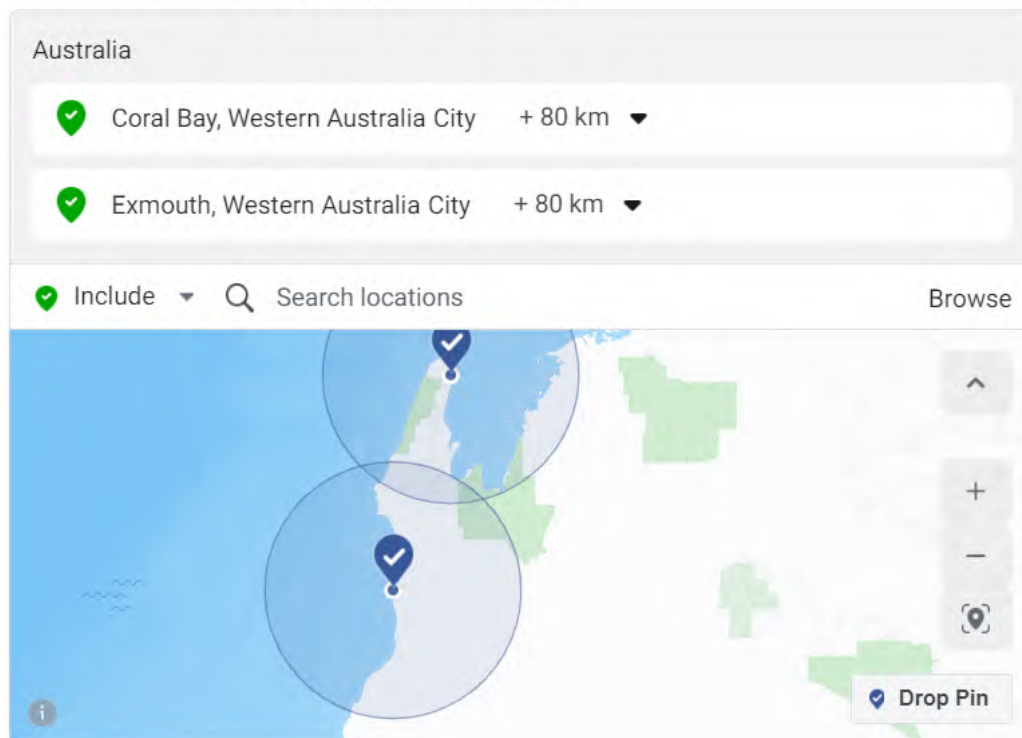
Reach: 6,801

Impressions: 8,237

Geotargeting (see below)

- 80km radius around Exmouth
- 80km radius around Coral Bay

Reach people living in or recently in this location. ⓘ



Appendix G JASCO ACOUSTIC MODELLING REPORT

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Controlled Ref No: SA0006AH1401760303

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Page 405 of 409

Uncontrolled when printed. Refer to electronic version for most up to date information.



Scarborough 4D Marine Seismic Survey

Acoustic Modelling for Assessing Marine Fauna Sound Exposures and Pygmy Blue Whale Exposure Analysis

Submitted to:

Woodside Energy Limited

Authors:

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28 May 2021

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www.jasco.com



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Disclaimer:

The results presented herein are relevant within the specific context described in this report. They could be misinterpreted if not considered in the light of all the information contained in this report. Accordingly, if information from this report is used in documents released to the public or to regulatory bodies, such documents must clearly cite the original report, which shall be made readily available to the recipients in integral and unedited form.

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Executive Summary

JASCO Applied Sciences performed a numerical estimation study of underwater sound levels associated with the planned Woodside Scarborough 4D Marine Seismic Survey (MSS). Acoustic modelling was conducted for this survey to determine ranges to acoustic exposure thresholds representing the best available science for potential injury and behavioural disruption of marine fauna. Additionally, an acoustic exposure analysis using animal movement modelling was conducted for pygmy blue whales within the pygmy blue whale migration Biologically Important Area (BIA) to investigate any potential effects on pygmy blue whale migration from acquisition of the Scarborough 4D survey.

A specialised airgun array source model was used to predict and compare the acoustic signature of the seismic source and complementary underwater acoustic propagation models were used in conjunction with the modelled array signature to estimate sound levels over a large area around the source. Single-impulse sound fields were predicted at two sites within the survey area. The water depths at the modelled sites ranged between 924 and 1101 m. A conservative sound speed profile that would be most supportive of sound propagation for the period of the survey was defined and applied to all modelling.

The modelling methodology considered source directivity and range-dependent environmental properties in each of the two assessed locations. Estimated underwater acoustic levels are presented as sound pressure levels (SPL, L_p), zero-to-peak pressure levels (PK, L_{pk}), peak-to-peak pressure levels (PK—PK, L_{pk-pk}), particle acceleration (peak magnitude), and either single-impulse (i.e., per-pulse) or accumulated sound exposure levels (SEL, L_E) as appropriate for different noise effect criteria. Accumulated sound exposure fields were predicted for a representative scenario for likely survey operations within the survey area over 24 hours.

The sound footprints are highly directional, and while the maximum distances to criteria are presented in the summary, these distances may not be relevant to receptors or areas of interest in a specific direction. The orientation of the source had the greatest effect on distances to criteria because the array has a pronounced directivity pattern, with greater distances to sound levels in the broadside direction (perpendicular to the tow direction) as compared to the endfire direction (along the tow direction).

SEL_{24h} is a cumulative metric that reflects the dosimetric effect of noise levels within 24 hours, based on the assumption that a receiver (e.g. an animal) is consistently exposed to such noise levels at a fixed position. Where the corresponding SEL_{24h} radii are larger than those for peak pressure criteria, they often represent an unlikely worst-case scenario. More realistically, marine mammals, fish, and sea turtles would not stay in the same location for 24 hours (especially in the absence of location-specific habitat) but rather a shorter period, depending on the animal's behaviour and the source's proximity and movements. Therefore, a reported radius for SEL_{24h} criteria does not mean that marine fauna travelling within this radius of the source will be impaired, but rather that an animal could be exposed to the sound level associated with impairment (either permanent threshold shift (PTS) or temporary threshold shift (TTS)) if it remained at that location for 24 hours.

The analysis considered the distances away from the seismic source at which several effects criteria or relevant sound levels were reached. The results are summarised below for the representative single-impulse sites and accumulated SEL scenarios.

Marine mammals

Table 1. Maximum (R_{max}) horizontal distances (in km) from modelled sites or scenarios to behavioural response threshold, PTS and TTS thresholds for marine mammals.

Hearing group	Modelled distance to effect threshold (R_{max})		
	Behavioural response ¹	Impairment: TTS ²	Impairment: PTS ²
LF cetaceans	7.28	60.7	0.38
MF cetaceans		–	–
HF cetaceans		0.39	0.19

¹ Noise exposure criteria: NOAA (2019)

² Noise exposure criteria: NMFS (2018)

A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).

Sea turtles

Table 2. Maximum (R_{max}) horizontal distances (in km) from modelled sites or scenarios to behavioural response thresholds and PTS and TTS thresholds for sea.

Hearing group	Modelled distance to effect threshold (R_{max})			
	Behavioural response ^a	Behavioural disturbance ^b	Impairment: TTS ^c	Impairment: PTS ^c
Turtles	3.87	0.76	0.28	0.05

^a Noise exposure criteria: NSF (2011)

^b Noise exposure criteria: McCauley et al. (2000a)

^c Noise exposure criteria: Finneran et al. (2017)

Fish, fish eggs, fish larvae and plankton

- Fish: This modelling study assessed the radial distances for quantitative criteria based on Popper et al. (2014) and considered both PK and SEL_{24h} (maximum over water column) metrics associated with mortality and potential mortal injury as well as impairment in the following groups:
 - Fish without a swim bladder (also appropriate for sharks in the absence of other information)
 - Fish with a swim bladder that do not use it for hearing
 - Fish that use their swim bladders for hearing
 - Fish eggs, fish larvae and plankton

Table 3. Summary of maximum fish, fish eggs, and larvae injury and TTS onset distances for single impulse and SEL_{24h} modelled scenario.

Relevant hearing group	Effect criteria	Metric associated with longest distance to threshold	R _{max} (km)
Fish: No swim bladder	Injury	PK	0.06
	TTS	SEL _{24h}	4.5
Fish: Swim bladder not involved in hearing and Swim bladder involved in hearing	Injury	PK	0.11
	TTS	SEL _{24h}	4.5
Fish eggs, fish larvae and plankton	Injury	PK	0.11

Animal movement modelling

Animal movement modelling ('animat modelling') focussed on migrating pygmy blue whales in the migration BIA. In this case, the moving receivers (the animats) were set to simulate the real-world movements of migrating pygmy blue whales within the migration BIA. The scenario was modelled for a 7 day period. On each day, a 24 hour segment of the planned seismic track lines was run. Using the distribution of distances of animats predicted to be exposed to sound levels above threshold, the 95th percentile exposure range (ER_{95%}) was computed. The ER_{max} was also included to provide context given the sensitivity of pygmy blue whales and the limited knowledge about their behaviour within the migration BIA. Noise effect metrics included peak pressure level (PK), sound exposure levels (SEL_{24h}), and sound pressure level (SPL).

The results of the animal movement modelling predicted that no pygmy blue whales within the migration BIA would be exposed above any of the assessed threshold criteria. This outcome was driven by two primary influences. First, the closest point of approach (CPA) between the planned seismic survey lines and the BIA was 29.9 km, and second, the migrating pygmy blue whales were traveling through the area and were not present for durations which caused cumulative SEL exposures to exceed either PTS or TTS threshold criteria. These results were different than the distances predicted by the acoustic modelling, which were inherently more conservative because they did not incorporate the complex interactions of both a moving sound field and moving receivers, but rather assumed a static receiver.

Table 4. Summary of animat simulation results for migrating pygmy blue whales indicating maximum (R_{max}) horizontal distances (in km) from modelled sites or scenarios to behavioural response threshold, PTS and TTS thresholds.

Modelled distance to effect threshold (R _{max})		
Behavioural response ¹	Impairment: TTS ²	Impairment: PTS ²
-	-	-

¹ Noise exposure criteria: NOAA (2019)

² Noise exposure criteria: NMFS (2018)

A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).

1. Introduction

JASCO Applied Sciences (JASCO), performed a numerical estimation study of underwater sound levels associated with the planned Woodside Scarborough 4D Marine Seismic Survey (MSS) to assist in understanding the potential acoustic effects on receptors including marine mammals, fish, plankton and sea turtles.

JASCO's specialised Airgun Array Source Model (AASM) was used to predict acoustic signatures and spectra for a 3150 in³ airgun array. AASM accounts for individual airgun volumes, airgun bubble interactions, and array geometry to yield accurate source predictions.

Complementary underwater acoustic propagation models were used in conjunction with the modelled array signature to estimate sound levels considering environmental effects. Single-impulse sound fields were predicted at two locations within the potential survey area, and an accumulated sound exposure field scenario was modelled for a representative acquisition pattern for survey operations over 24 h (Section 2). A sound speed profile that would be most supportive of sound propagation conditions for the potential survey periods was defined and applied throughout.

The modelling methodology considered source directivity and range-dependent environmental properties. Estimated underwater acoustic levels are presented as sound pressure levels (SPL, L_p), zero-to-peak pressure levels (PK, L_{pk}), peak-to-peak pressure levels (PK-PK; L_{pk-pk}), and either single-impulse (i.e., per-pulse) or accumulated sound exposure levels (SEL, L_E) as appropriate for different, species specific noise effect criteria. The resulting sound fields were used to estimate radial distance to exposure during operations of this survey in relation to permanent threshold shift (PTS), temporary threshold shift (TTS), and behavioural effect for marine mammals, fish, sea turtles, and plankton.

The acoustic modelling results were also used in conjunction with animal movement modelling simulations to predict the distance at which pygmy blue whales (*Balaenoptera musculus breviceuda*) are expected to be exposed above threshold criteria for PTS, TTS, and behavioural response. Sound exposure distribution estimates are determined by moving large numbers of simulated animals (animats) through a modelled time-evolving sound field, computed using specialised sound source and sound propagation models. This approach provides the most realistic prediction of the maximum expected SPL, PK, and SEL that are now considered the most relevant sound metrics for effect assessment.

Section 3 explains the metrics used to represent underwater acoustic fields and the effect criteria considered. Section 4 details the methodology for predicting the source levels and modelling the sound propagation, including the specifications of the seismic source and all environmental parameters the propagation models require. Section 4 also details the methodology for animat modelling of pygmy blue whales. Section 5 presents the results, which are then discussed and summarised in Section 6.

2. Modelling Scenarios

Two standalone, single-impulse sites were modelled and were used to model one accumulated SEL scenario. The locations of both modelled sites are provided in Table 5. Both sites and the acquisition lines are shown in Figure 1, along with the survey boundaries. The accumulated SEL scenario assumed that a survey vessel sailed along survey lines at ~4.5 knots, with an impulse interval of 12.5 m.

The single impulse sites and the accumulated SEL scenario were selected based on the proposed survey line plan where the survey will be acquired along survey lines orientated at approximately 40/220°. The locations of the single impulse sites were selected considering the entire line along with the seismic source where it would be operational at full-power, including run-out sections of lines. The selected locations are considered representative of the range of water depths that will be covered during the Scarborough 4D MSS and the potential sound propagation characteristics that may arise during survey acquisition.

The scenario accounted for 13722 impulses during the respective 24 h period of acquisition. During line turns, the seismic source was not operating.

The acoustic exposure analysis and animal movement (animat) scenario was modelled for a 7 day period with the same vessel speed and impulse interval as the accumulated SEL scenario discussed above. Figure 2 shows the geographic features associated with the modelled animat scenario.

Table 5. Location details for the single-impulse modelled sites.

Site	Location		MGA (GDA94), Zone 50		Water depth (m)	Tow direction (°)
	Latitude (S)	Longitude (E)	X (m)	Y (m)		
1	19° 33' 25.045"	113° 39' 54.557"	150038	7834133	1101	40 and 220
2	19° 49' 41.340"	113° 21' 55.896"	119206	7803435	925	40 and 220

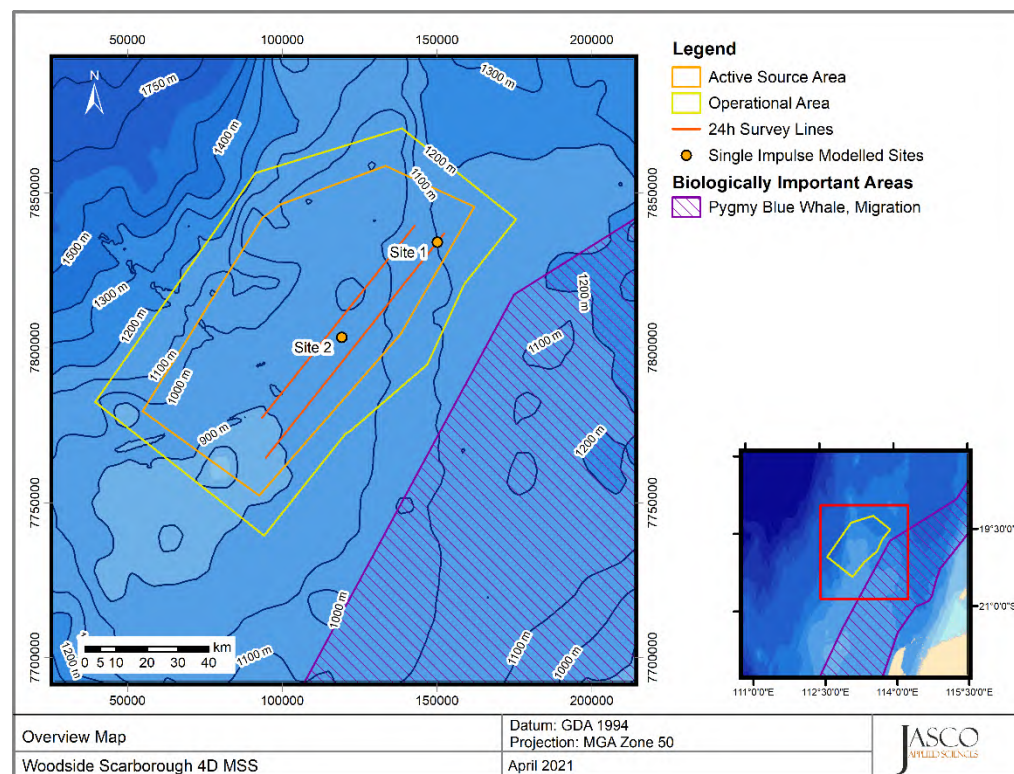


Figure 1. Overview of the modelled sites, acquisition lines, and features for the Scarborough 4D MSS.

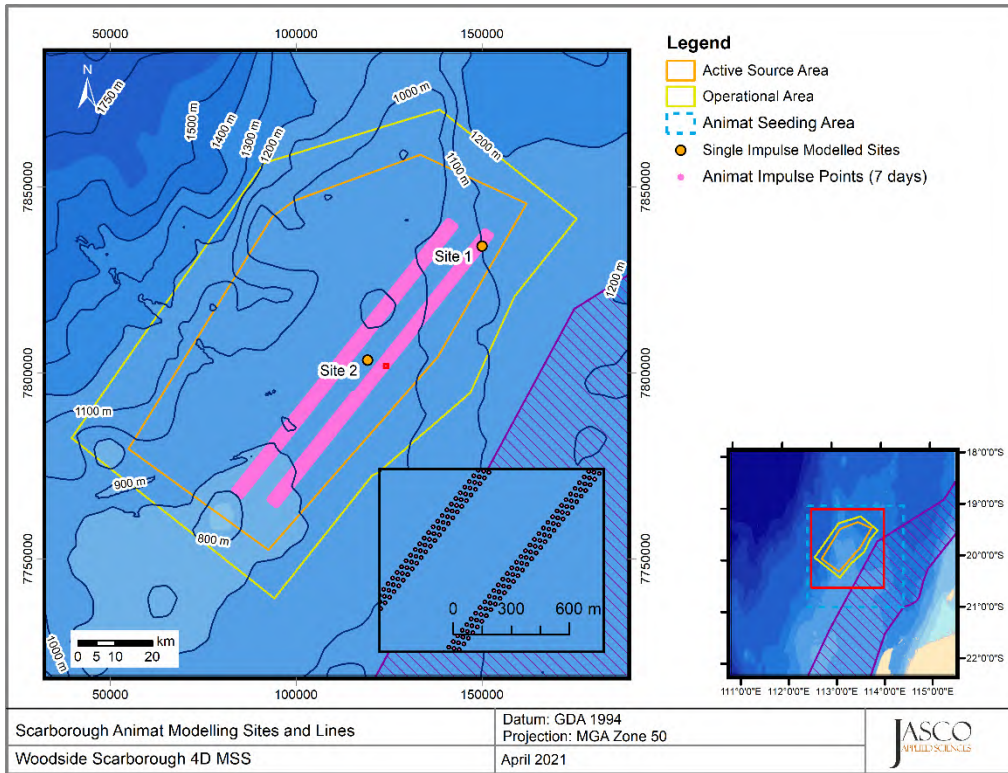


Figure 2. Overview of the features for the pygmy blue whale exposure modelling for the Scarborough 4D MSS.

3. Noise Effect Criteria

The perceived loudness of sound, especially impulsive noise such as from seismic airguns, is not generally proportional to the instantaneous acoustic pressure. Rather, perceived loudness depends on the pulse rise-time and duration, and the frequency content. Several sound level metrics, such as PK, SPL, and SEL, are commonly used to evaluate noise and its effects on marine life (Section 3). The period of accumulation associated with SEL is defined in this report over either a “per pulse” interval or over 24 h. Appropriate subscripts indicate any applied frequency weighting; unweighted SEL is defined as required. The acoustic metrics in this report reflect the updated ISO standard for acoustic terminology, ISO/DIS 18405:2017 (2017).

Whether acoustic exposure levels might injure or disturb marine mammals is an active research topic. Since 2007, several expert groups have developed SEL-based assessment approaches for evaluating auditory injury, with key works including Southall et al. (2007), Finneran and Jenkins (2012), Popper et al. (2014), and United States National Marine Fisheries Service (NMFS 2018). The number of studies that have investigated the level of behavioural disturbance to marine fauna by anthropogenic sound has also increased substantially.

The noise criteria and guidelines considered for this study were chosen because they include standard thresholds, and thresholds or guidelines suggested by the best available science (Sections 3.1–3.3 and Appendices A.3 and A.5):

1. Peak pressure levels (PK; L_{pk}) and frequency-weighted accumulated sound exposure levels (SEL; $L_{E,24h}$) from the US National Oceanic and Atmospheric Administration (NOAA) Technical Guidance (NMFS 2018) for the onset of Permanent Threshold Shift (PTS) in marine mammals.
2. Marine mammal behavioural threshold based on the current US National Oceanic and Atmospheric Administration (NOAA 2019) criterion for marine mammals of 160 dB re 1 μ Pa (SPL; L_p) for impulsive sound sources.
3. Sound exposure guidelines for fish, fish eggs and larvae (including plankton) (Popper et al. 2014).
4. Peak pressure levels (PK; L_{pk}) and frequency-weighted accumulated sound exposure levels (SEL; $L_{E,24h}$) from Finneran et al. (2017) for the onset of permanent threshold shift (PTS) and temporary threshold shift (TTS) in turtles.
5. Turtle behavioural response threshold of 166 dB re 1 μ Pa (SPL; L_p) (NSF 2011), as applied by the US NMFS, along with a sound level associated with behavioural disturbance 175 dB re 1 μ Pa (SPL; L_p) (McCauley et al. 2000b, 2000a).

Additionally, to assess the size of the low-power zone required under the Australian Environment Protection and Biodiversity Conservation (EPBC) Act Policy Statement 2.1, Department of the Environment, Water, Heritage and the Arts (DEWHA 2008), the distance to an unweighted per-pulse SEL of 160 dB re 1 μ Pa²·s (SEL; L_E) is reported.

The following section expands on the thresholds and sound levels for marine mammals, fish, fish eggs, fish larvae, sea turtles, and plankton.

3.1. Marine Mammals

There are two categories of auditory threshold shifts or hearing loss: Permanent Threshold Shift (PTS), a physical injury to an animal's hearing organs; and Temporary Threshold Shift (TTS), a temporary reduction in an animal's hearing sensitivity as the result of receptor hair cells in the cochlea becoming fatigued.

To help assess the potential for the possible injury and hearing sensitivity changes in marine mammals, this report applies the criteria recommended by NMFS (2018), considering both PTS and TTS. These criteria, along with the applied behavioural criteria (NOAA 2019), are summarised in Table 6, with descriptions included in Appendix A.3.1 (auditory impairment) and Appendix A.3.2 (behavioural response), with frequency weighting explained in Appendix A.4. The acoustic metrics in this report reflect the updated ISO standard for acoustic terminology, ISO/DIS 18405.2:2017 (2017).

Table 6. Unweighted SPL and PK, and weighted SEL_{24h} thresholds for acoustic effects on marine mammals.

Hearing group	NOAA (2019)	NMFS (2018)			
	Behaviour	PTS onset thresholds ^a (received level)		TTS onset thresholds ^a (received level)	
	SPL (L_p ; dB re 1 μ Pa)	Weighted SEL _{24h} ($L_{E,24h}$; dB re 1 μ Pa ² ·s)	PK (L_{pk} ; dB re 1 μ Pa)	Weighted SEL _{24h} ($L_{E,24h}$; dB re 1 μ Pa ² ·s)	PK (L_{pk} ; dB re 1 μ Pa)
Low-frequency cetaceans	160	183	219	168	213
Mid-frequency cetaceans		185	230	170	224
High-frequency cetaceans		155	202	140	196

^a Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS and TTS onset. L_p denotes sound pressure level period and has a reference value of 1 μ Pa. L_{pk} denotes unweighted peak sound pressure and has a reference value of 1 μ Pa. L_E denotes cumulative sound exposure over a 24-hour period and has a reference value of 1 μ Pa²·s. Subscripts indicate the designated marine mammal auditory weighting.

3.2. Fish, Fish Eggs, Fish Larvae and Plankton

In 2006, the Working Group on the Effects of Sound on Fish and Turtles was formed to continue developing noise exposure criteria for fish and turtles, work begun by a panel convened by NOAA two years earlier. The resulting guidelines included specific thresholds for different levels of effects and for different groups of species (Popper et al. 2014). These guidelines defined quantitative thresholds for three types of immediate effects:

- Mortality, including injury leading to death.
- Recoverable injury, including injuries unlikely to result in mortality, such as hair cell damage and minor haematoma.
- TTS.

Masking and behavioural effects can be assessed qualitatively, by assessing relative risk rather than by specific sound level thresholds. However, as these depend upon activity-based subjective distances, these effects are not addressed in this report and are included in Table 7 for completeness only. Because the presence or absence of a swim bladder has a role in hearing, fish’s susceptibility to injury from noise exposure varies depending on the species and the presence and possible role of a swim bladder in hearing. Thus, different guidelines were proposed for fish without a swim bladder (also appropriate for sharks and applied to whale sharks in the absence of other information), fish with a swim bladder not used for hearing, and fish that use their swim bladders for hearing. Turtles, fish eggs, and fish larvae are considered separately. Table 7 lists relevant effects thresholds from Popper et al. (2014).

The SEL metric integrates noise intensity over some period of exposure. Because the period of integration for regulatory assessments is not well defined for sounds that do not have a clear start or end time, or for very long-lasting exposures, it is required to define a time. Popper et al. (2014) recommend applying a standard period, where this is either defined as a justified fixed period or the duration of the activity; however, Popper et al. (2014) also included caveats about how long the fish will be exposed because they can move (or remain in location) and so can the source. Popper et al. (2014) summarises that in all TTS studies considered, fish that showed TTS recovered to normal hearing levels within 18–24 hours. Due to this, a period of accumulation of 24 hours has been applied in this study for SEL, which is similar to that applied for marine mammals in NMFS (2016, 2018).

Additional information is provided in Appendix A.5.

Table 7. Guidelines for seismic noise exposure for fish, adapted from Popper et al. (2014).

Type of animal	Mortality and Potential mortal injury	Impairment			Behaviour
		Recoverable injury	TTS	Masking	
Fish: No swim bladder (particle motion detection)	>219 dB SEL _{24h} or >213 dB PK	>216 dB SEL _{24h} or >213 dB PK	>>186 dB SEL _{24h}	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish: Swim bladder not involved in hearing (particle motion detection)	210 dB SEL _{24h} or >207 dB PK	203 dB SEL _{24h} or >207 dB PK	>>186 dB SEL _{24h}	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish: Swim bladder involved in hearing (primarily pressure detection)	207 dB SEL _{24h} or >207 dB PK	203 dB SEL _{24h} or >207 dB PK	186 dB SEL _{24h}	(N) Low (I) Low (F) Moderate	(N) High (I) High (F) Moderate
Fish eggs and fish larvae (relevant to plankton)	>210 dB SEL _{24h} or >207 dB PK	(N) Moderate (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low

Peak sound level (PK) dB re 1 µPa; SEL_{24h} dB re 1µPa²·s. All criteria are presented as sound pressure, even for fish without swim bladders, since no data for particle motion exist. Relative risk (high, moderate, or low) is given for animals at three distances from the source defined in relative terms as near (N), intermediate (I), and far (F).

3.3. Sea Turtles

There is a paucity of data regarding responses of turtles to acoustic exposure, and no studies of hearing loss due to exposure to loud sounds. Popper et al. (2014) suggested thresholds for onset of mortal injury (including PTS) and mortality for sea turtles and, in absence of taxon-specific information, adopted the levels for fish that do not hear well (suggesting that this likely would be conservative for sea turtles).

Finneran et al. (2017) presented revised thresholds for sea turtle injury and hearing impairment (TTS and PTS). Their rationale is that sea turtles have best sensitivity at low frequencies and are known to have poor auditory sensitivity (Bartol and Ketten 2006, Dow Piniak et al. 2012). Accordingly, TTS and PTS thresholds for turtles are likely more similar to those of fishes than to marine mammals (Popper et al. 2014).

McCauley et al. (2000b) observed the behavioural response of caged sea turtles—green (*Chelonia mydas*) and loggerhead (*Caretta caretta*)—to an approaching seismic airgun. For received levels above 166 dB re 1 µPa (SPL), the sea turtles increased their swimming activity and above 175 dB re 1 µPa they began to behave erratically, which was interpreted as an agitated state. The 166 dB re 1 µPa level has been used as the threshold level for a behavioural disturbance response by NMFS and applied in the Arctic Programmatic Environment Impact Statement (PEIS) (NSF 2011). In addition the 175 dB re 1 µPa level from McCauley et al. (2000b) is recommended as a criterion for behavioural disturbance. The Recovery Plan for Marine Turtles in Australia (Department of the Environment and Energy et al. 2017) acknowledges the 166 dB re 1 µPa SPL reported by McCauley et al. (2000b) as the level that may result in a behavioural response to marine turtles. These thresholds are shown in Table 8.

Table 8. Acoustic effects of impulsive noise on sea turtles: Unweighted SPL, SEL_{24h}, and PK thresholds.

Effect type	Criterion	SPL (L_p ; dB re 1 μ Pa)	Weighted SEL _{24h} ($L_{E,24h}$; dB re 1 μ Pa ² ·s)	PK (L_{pk} ; dB re 1 μ Pa)
Behavioural response	NSF (2011) DoEE (2017)	166	NA	
Behavioural disturbance	McCauley et al. (2000a)	175		
PTS onset thresholds* (received level)	Finneran et al. (2017)	NA	204	232
TTS onset thresholds* (received level)			189	226

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS and TTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

L_p denotes sound pressure level period and has a reference value of 1 μ Pa.

$L_{pk,flat}$ denotes peak sound pressure is flat weighted or unweighted and has a reference value of 1 μ Pa.

L_E denotes cumulative sound exposure over a 24 h period and has a reference value of 1 μ Pa²·s.

4. Methods

4.1. Parameters Overview

Sound propagation was modelled up to 100 km from each single-impulse modelled site (listed in Table 5). The specifications of the seismic source and the environmental parameters used in the propagation models are described in detail in Appendix C. A single sound speed profile for August was considered in this modelling study; this was identified as the month that would provide the farthest propagation over the potential operational window (January to April or July to October).

4.2. Acoustic Source Model

The pressure signature of the individual airguns and the composite decidecade-band point-source equivalent directional levels (i.e., source levels) of the seismic sources were modelled with JASCO's Airgun Array Source Model (AASM). Although AASM accounts for notional pressure signatures of each seismic source with respect to the effects of surface-reflected signals on bubble oscillations and inter-bubble interactions, the surface-reflected signal (known as surface ghost) is not included in the far-field source signatures. The acoustic propagation models account for those surface reflections, which are a property of the propagating medium rather than the source.

AASM considers:

- Array layout.
- Volume, tow depth, and firing pressure of each airgun.
- Interactions between different airguns in the array.

The seismic source considered (Appendix C.5) was modelled over AASM's full frequency range, up to 25 kHz. Appendix B.1 details this model.

4.3. Sound Propagation Models

Two sound propagation models were used to predict the acoustic field around the selected 3150 in³ seismic source:

- Combined range-dependent parabolic equation and Gaussian beam acoustic ray-trace model (MONM-BELLHOP, 5 Hz to 25 kHz).
- Full Waveform Range-dependent Acoustic Model (FWRAM, 5 Hz to 1024 Hz).

The models were used in combination to characterise the acoustic fields in terms of SEL, SPL, PK, and PK-PK. Appendix B details each model. MONM-BELLHOP was used to calculate SEL in an area 360° around each source location. The model calculated propagation loss up to distances of 100 km, with a horizontal separation of 20 m between receiver points along the modelled radials. The sound fields were modelled with a horizontal angular resolution of $\Delta\theta = 2.5^\circ$ for a total of $N = 144$ radial planes. Receiver depths were chosen to span the entire water column over the modelled area, from 2 m to a maximum of 2500 m, with step sizes that increased with depth. To supplement the MONM results, high-frequency predictions of propagation loss were modelled using Bellhop for frequencies from 2000 Hz to 25 kHz. The MONM and Bellhop predictions were combined to produce results for the full frequency-range of interest.

FWRAM was used to model synthetic seismic pulses and to generate a generalised range-dependent SEL to SPL conversion function (Appendix C.2) for the considered modelled sites. FWRAM was run to 100 km at modelled site 2, along four radials (fore and aft endfire, and port and starboard broadside) for computational efficiency. A single modelled site was used with FWRAM due to the relatively constant and similar water depths throughout the survey area. A horizontal range step of 20 m was used. Along each radial, computation was done at a variable depth increment starting at

2 m with step sizes that increased with depth. Receivers were selected to span the entire water column. The range-dependent conversion function was applied to predicted per-pulse SEL results from MONM and Bellhop to estimate SPL values. FWRAM was also used to calculate water column PK and PK-PK levels.

During a seismic survey, new sound energy is introduced into the environment with each pulse from the seismic source. While some effect criteria are based on the per-pulse energy released, others, such as the marine mammal, turtle, and fish SEL criteria used in this report account for the total acoustic energy marine fauna is subjected to over a specified period of time, defined in this report as 24 h. An accurate assessment of the accumulated sound energy depends not only on the parameters of each seismic pulse impulse, but also on the number of impulses delivered in a period and the relative positions of the impulses. Appendix C.3 provides additional details on the methods used to calculate the accumulated sound energy for the considered scenarios.

4.4. Animal Movement and Exposure Modelling

The JASCO Animal Simulation Model Including Noise Exposure (JASMINE) was used to predict the exposure of animats to sound arising from the seismic activity. JASMINE integrates the predicted sound field with biologically meaningful movement rules for each marine mammal species (pygmy blue whales for the current analysis) that result in an exposure history for each animat in the model. In JASMINE, the sound received by the animats is determined by the proposed seismic activity. As illustrated in Figure 3, animats are programmed to behave like the marine animals that may be present in the area. The parameters used for forecasting realistic behaviours (e.g., diving and foraging depth, swim speed, surface times) are determined and interpreted from marine mammal studies (e.g., tagging studies) where available, or reasonably extrapolated from related or comparable species. An individual animat's sound exposure levels are summed over a 24 h duration to determine its total received energy, and then compared to the relevant threshold criteria. For PK and SPL metrics, the maximum exposure is evaluated against single impulse threshold criteria, for each 24 h period. For additional information on JASMINE, see Appendix B.4.

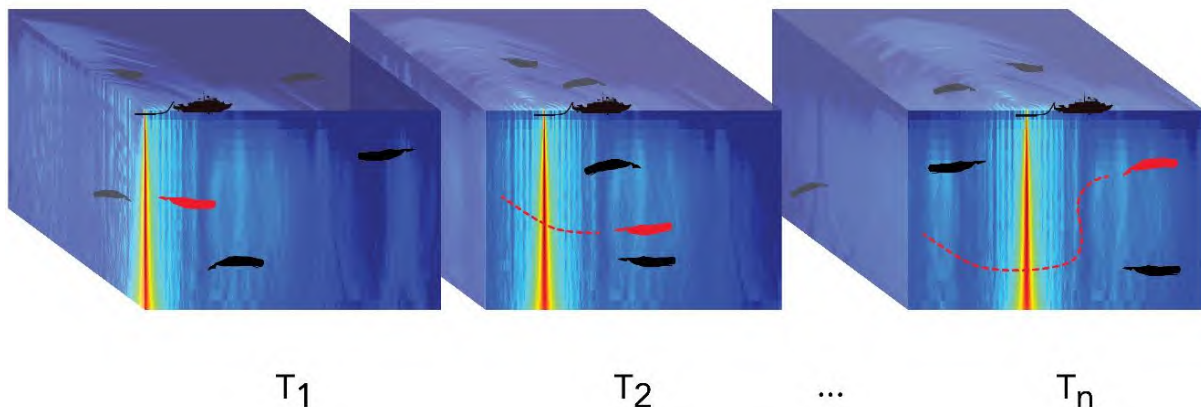


Figure 3. Cartoon of animats in a moving sound field. Example animat (red) shown moving with each time step (T_x). The acoustic exposure of each animat is determined by where it is in the sound field, and its exposure history is accumulated as the simulation steps through time.

The exposure criteria for impulsive sounds (described in Section 3) were used to determine the number of animats exceeding thresholds. To generate statistically reliable probability density functions, model simulations were run with animat densities of 2 animats/km², as this increases the probability of encounter, and thus more robust exposure range estimates. The modelling results are not related to real-world density estimates for pygmy blue whales within the migration BIA, as the number of animals potentially exposed is not calculated. To evaluate PTS, TTS, and behavioural response, exposure results were obtained using detailed behavioural information for migrating pygmy blue whales (described in Section 4.4.2). The simulation was run for a representative period of seven days, with the spatial distribution of animats restricted to the BIA.

The seismic source was modelled as a vessel towing an airgun array at a speed of 4.5 knots, with an impulse interval of 12.5 m. The simulated source track followed a racetrack configuration with a turn time of ~3.4 h. At the time and location of each seismic pulse, the modelled source location with the most similar water depth was selected for exposure modelling. The track lines along with the acoustic modelling locations are shown in Figure 2. Note that the closest point of approach of the acquisition lines to the migration BIA for the scenario is approximately 29.9 km.

4.4.1. Exposure-based Radial Distance Estimation

The results from the animal movement and exposure modelling provided a way to estimate radial distances to effect thresholds. The distance to the closest point of approach (CPA) for each of the animats was recorded. The ER_{95%} (95% Exposure Range) is the horizontal distance that includes 95% of the animat CPAs that exceeded a given effect threshold (Figure 4). The ER_{max} is the maximum distance at which any animat was exposed above threshold in the simulation. Within the ER_{95%} and ER_{max} radial distances, there are generally some proportion of animats that do not exceed threshold criteria. The probability that an animat is exposed above threshold within the ER_{95%} or ER_{max} is provided in the results tables.

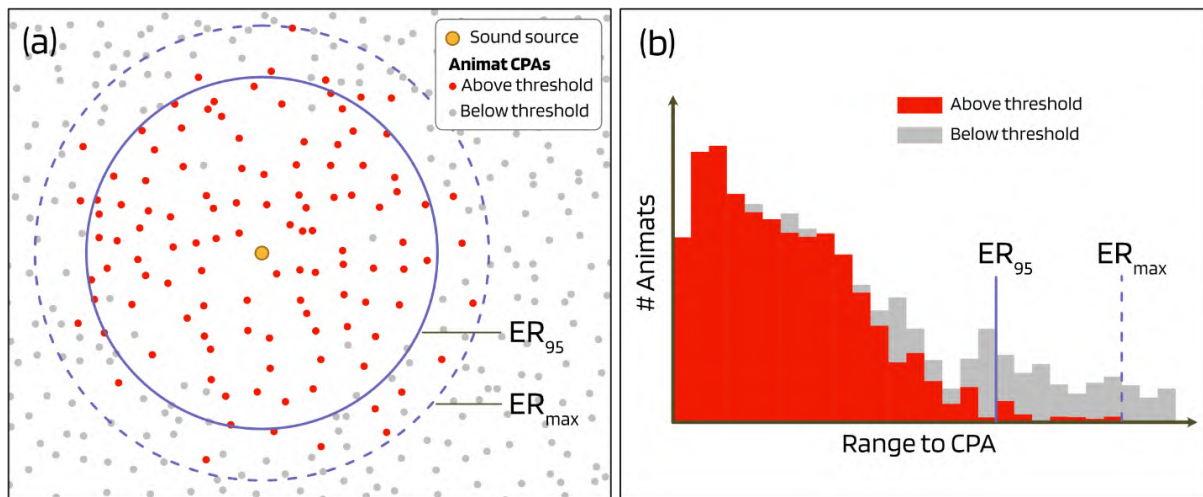


Figure 4. Example distribution of animat closest points of approach (CPAs). Panel (a) shows the horizontal distribution of animats near a sound source. Panel (b) shows the distribution of distances to animat CPAs. The 95% and maximum exposure ranges (ER_{95%} and ER_{max}) are indicated in both panels.

4.4.2. Pygmy Blue Whale Behaviour

The planned Scarborough 4D MSS is adjacent to the migration BIA for pygmy blue whales therefore, migratory behaviour was the only behavioural profile considered. Detailed information on pygmy blue whales was derived from a range of sources that used multi-sensor tags to record fine-scale dive and movement behaviour (Owen et al. 2016, Möller et al. 2020). Where information was unavailable for pygmy blue whales, parameters were derived from blue whale (*B. musculus*) tagging data (Goldbogen et al. 2011).

Multi-sensor tags typically record the depth of an animal along with various movement parameters such as swim speed and their body's orientation. Owen et al. (2016) equipped a sub-adult pygmy blue whale with a multi-sensor tag off Western Australia. They identified dives for their tagged animal as migratory, feeding, or exploratory (i.e., no lunges recorded which would indicate feeding). Pygmy blue whales in the simulation area are presumed to be migrating, and so feeding was not included in the model. Exploratory dives were considered to be part of migratory behaviour, and so the two dive types were modelled together such that the animats were migrating 95% of the time and engaged in exploratory dives 5% of the time (Owen et al. 2016). The analysis of the dive data showed that the depth of migratory dives was highly consistent over time and unrelated to local bathymetry. The mean depth of migratory dives was 14 ± 4 m while the mean maximum depth of exploratory dives was 107 ± 81 m (23–320 m range).

The behaviour of migrating pygmy blue whales was modelled to reflect animals transiting through the modelling area on a 50° track. This represents the animals migrating along the west coast of Australia, to and from Indonesia (Double et al. 2014, DoE (AU) 2015-2025). The speed of travel for migratory behaviour (1.17 ± 0.60 m/s) and exploratory dives (0.88 ± 0.14 m/s) were calculated from data presented in Möller et al. (2020).

5. Results

5.1. Acoustic Source Levels and Directivity

AASM (Section 4.2) was used to predict the horizontal and vertical overpressure signatures and corresponding power spectrum levels for the seismic sources, with results provided in Appendix C.5.1 along with the horizontal directivity plots for the selected source.

Table 9 shows the PK and per-pulse SEL source levels in the horizontal-plane broadside (perpendicular to the tow direction), endfire (along the tow direction), and vertical directions for the worst-case modelled array signature (a 3150 in³ seismic source). The vertical source level that accounts for the “surface ghost” (the out of phase reflected pulse from the water surface) is also presented to make it easier to compare the output of other seismic source models.

Figure C-6 in Appendix C.5.1 shows the broadside, endfire, and vertical overpressure signature and corresponding power spectrum levels for the source. The signature consists of a strong primary peak, related to the initial release of high-pressure air, followed by a series of pulses associated with bubble oscillations. Most energy was produced at frequencies below 500 Hz. Frequency-dependent peaks and nulls in the spectrum result from interference among airguns in the source and correspond with the volumes and locations of the airguns relative to each other.

Table 9. Far-field source level specifications for the 3150 in³ seismic source, for a 7 m tow depth. Source levels are for a point-like acoustic source with equivalent far-field acoustic output in the specified direction. Sound level metrics are per-pulse and unweighted.

Direction	Peak source pressure level ($L_{S,pk}$) (dB re 1 μ Pa m)	Per-pulse source SEL ($L_{S,E}$) (dB 1 μ Pa ² m ² s)	
		10–2000 Hz	2000–25000 Hz
Broadside	248.1	224.1	183.9
Endfire	246.3	223.2	183.9
Vertical	254.4	227.4	193.5
Vertical (surface affected source level)	254.4	230.2	196.5

5.2. Per-Pulse Sound Fields

This section presents the per-pulse sound fields in terms of maximum-over-depth SPL, SEL, PK, and PK-PK. The different metrics are presented for the following reasons:

- SPL sound fields were used to determine the distances to marine mammal and turtle behavioural thresholds (see Sections 3.1 and 3.3).
- Per-pulse SEL sound fields are used as inputs into the 24 h SEL scenarios and to provide context for the radial distance to 160 dB re 1 μ Pa²-s, relevant for the EPBC Act Policy Statement 2.1 (DEWHA 2008).
- PK metrics within the water column are relevant to thresholds and guidelines for marine mammals, sea turtles, fish, fish eggs and larvae (Sections 3.1 –3.3)

The maximum and 95% distances to per-pulse SEL and SPL metrics are presented in Tables 10 and 11. The SPL sound fields, and distances to relevant isopleths can be visualised on the contour maps presented in Figures 5 to 8, whilst the per-pulse SEL sound field maps are presented in Appendix D. The SPL sound fields are also presented as vertical slices for selected sites along the endfire and broadside directions out to 50 km, with the airgun array in the centre (Figures 9 and 10).

Maximum distances to PK and PK-PK thresholds were calculated for both modelled sites in the water column, with maximum-over-depth results presented in Table 12.

5.2.1. Tabulated Results

5.2.1.1. Entire Water Column

Table 10. Maximum (R_{max}) and 95% ($R_{95\%}$) horizontal distances (in km) from the 3150 in³ source to modelled unweighted maximum-over-depth per-pulse SEL isopleths from the modelled single impulse sites, with water depth indicated. Distances are reported as the maximum considering both tow directions at each site.

Per-pulse SEL (L_p ; dB re 1 $\mu\text{Pa}^2\cdot\text{s}$)	Site 1 (1101 m depth)		Site 2 (925 m depth)	
	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$
200	–	–	–	–
190	0.05	0.05	0.05	0.05
180	0.16	0.13	0.16	0.13
170	0.48	0.41	0.49	0.41
160 ^a	2.1	1.75	2.17	1.80
150	9.28	7.4	8.40	7.12
140	34.6	25.3	33.4	27.2
130	>100	/	>100	/

^a Low power zone assessment criteria DEWHA (2008).

A slash indicates that the $R_{95\%}$ radius to threshold is not reported because the R_{max} is greater than the maximum modelling extent. A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).

Table 11. Maximum (R_{max}) and 95% ($R_{95\%}$) horizontal distances (in km) from the 3150 in³ source to modelled maximum-over-depth SPL isopleths from the modelled single impulse sites, with water depth indicated. Distances are reported as the maximum considering both tow directions at each site.

SPL (L_p ; dB re 1 μPa)	Site 1 (1101 m depth)		Site 2 (925 m depth)	
	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$
200	0.03	0.03	0.03	0.03
190	0.13	0.11	0.13	0.11
180	0.43	0.37	0.43	0.37
175 ^a	0.76	0.63	0.75	0.63
170	1.74	1.32	1.86	1.51
166 ^b	3.87	2.84	3.72	3.23
160 ^c	7.28	4.61	6.99	6.05
150	22.3	16.8	22.6	16.9
140	84.9	60.2	86.7	65.3
130	>100	/	>100	/

^a Threshold for turtle behavioural disturbance from impulsive noise (McCauley et al. 2000b).

^b Threshold for turtle behavioural response to impulsive noise (NSF 2011).

^c Marine mammal behavioural threshold for impulsive sound sources (NOAA 2019).

A slash indicates that the $R_{95\%}$ radius to threshold is not reported because the R_{max} is greater than the maximum modelling extent.

Table 12. Maximum (R_{max}) horizontal distances (km) from the 3150 in³ array to modelled maximum-over-depth peak pressure level (PK) thresholds based on the NOAA Technical Guidance (NMFS 2018) for marine mammals, and Popper et al. (2014) for fish and Finneran et al. (2017) for turtles from the modelled single impulse Site 2, with water depth indicated.

Hearing group		PK threshold (L_{pk} ; dB re 1 μ Pa)	Distance R_{max} (km)
			Site 2 (925 m depth)
Low-frequency cetaceans	PTS	219	0.03
	TTS	213	0.06
Mid-frequency cetaceans	PTS	230	–
	TTS	224	–
High-frequency cetaceans	PTS	202	0.19
	TTS	196	0.39
Sea turtles	PTS	232	–
	TTS	226	–
Fish: No swim bladder (also applied to sharks)		213	0.06
Fish: Swim bladder not involved in hearing; Swim bladder involved in hearing Fish eggs, larvae and plankton		207	0.11

A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).

5.2.2. Sound field maps and graphs

5.2.2.1. Sound Level Contour Maps

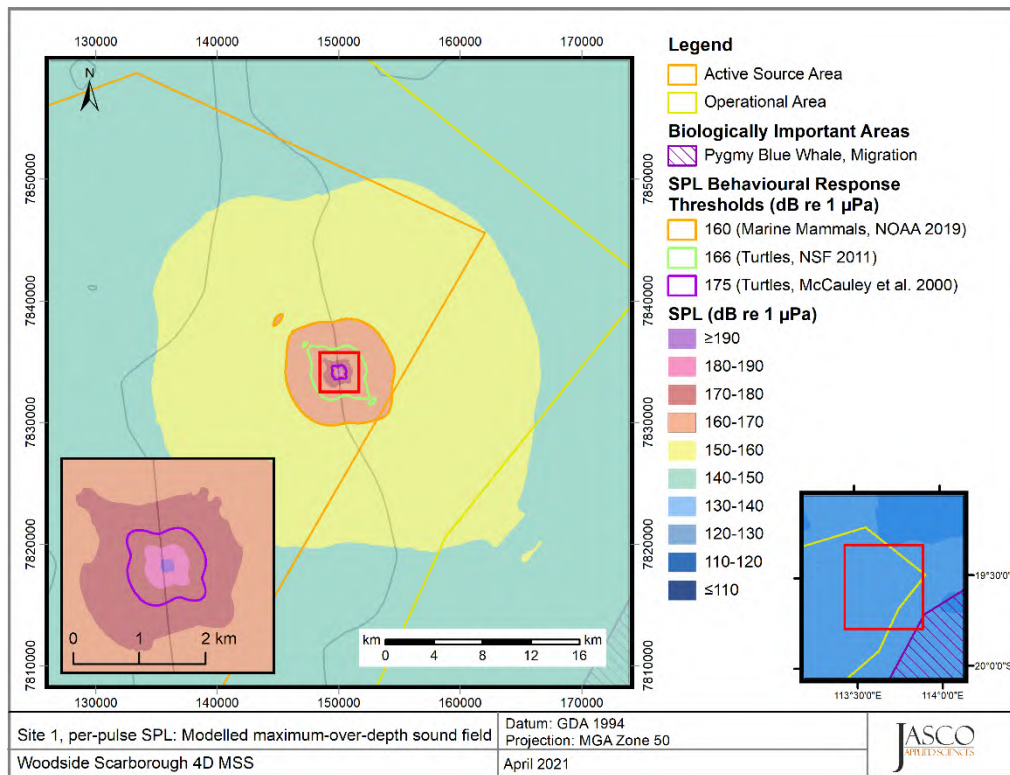


Figure 5. Site 1, tow azimuth 40°, SPL: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response thresholds for marine mammals and turtles.

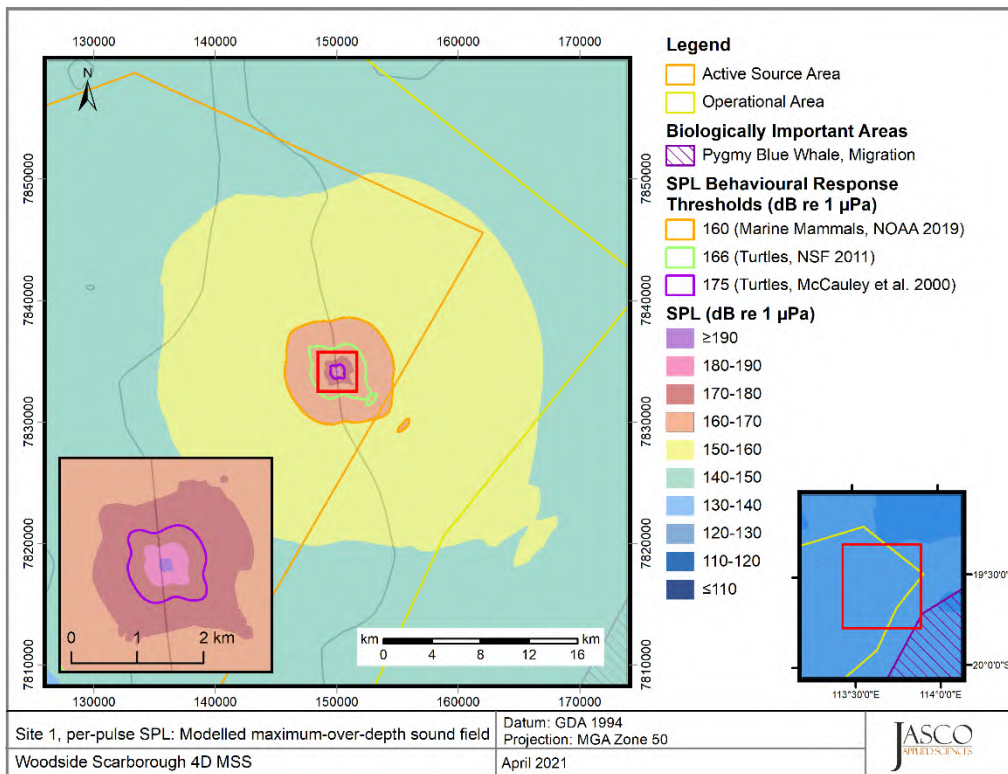


Figure 6. Site 1, tow azimuth 220°, SPL: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response thresholds for marine mammals and turtles.

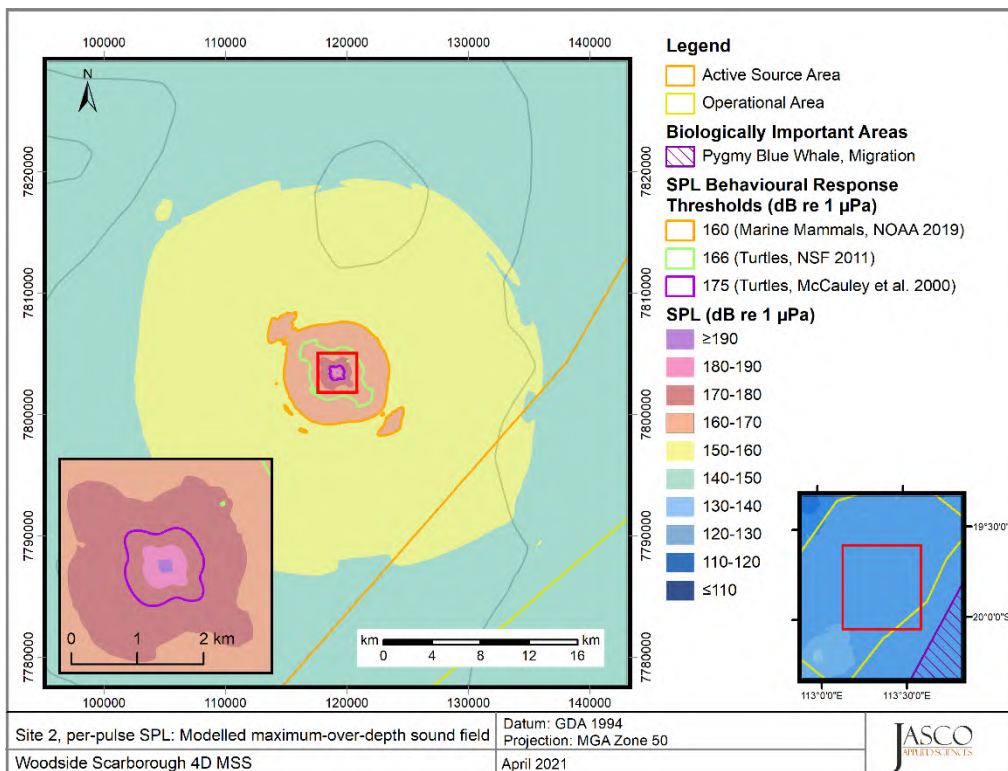


Figure 7. Site 2, tow azimuth 40°, SPL: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response thresholds for marine mammals and turtles.

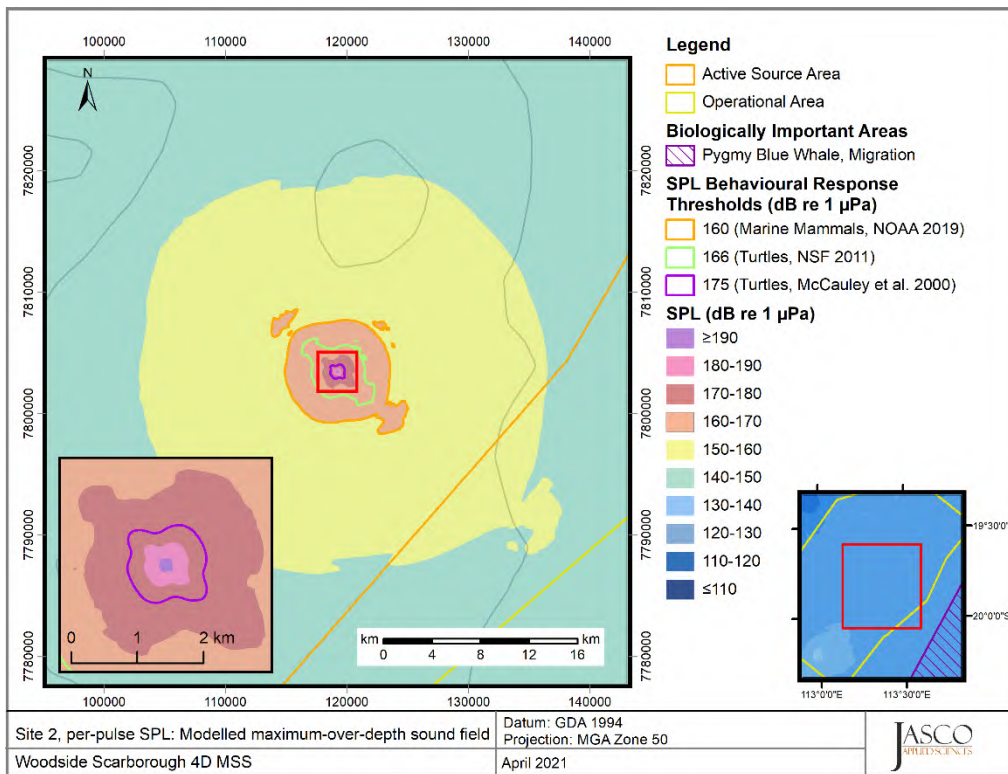


Figure 8. Site 2, tow azimuth 220°, SPL: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response thresholds for marine mammals and turtles.

5.2.2.2. Vertical Slices of Modelled Sound Fields

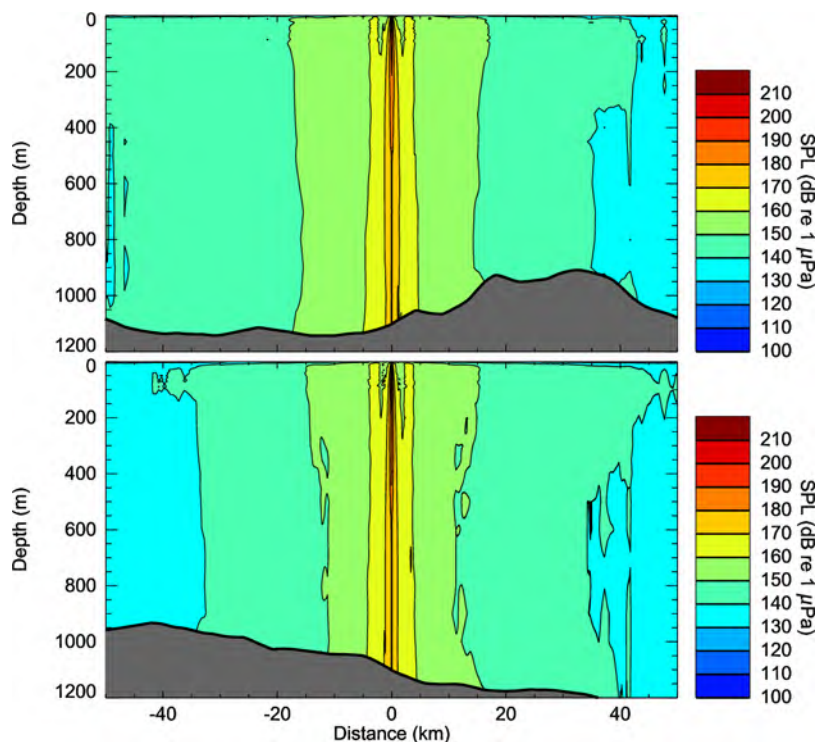


Figure 9. Site 1, tow azimuth 40°, SPL: Sound level contours in vertical slice of the sound field, perpendicular to (broadside, top) and along the tow direction (endfire, bottom). The positive distance direction for the broadside slice is 90° counter-clockwise ('Port') from the tow azimuth. The positive distance direction for the endfire slice is in line with the tow azimuth (the direction of transit).

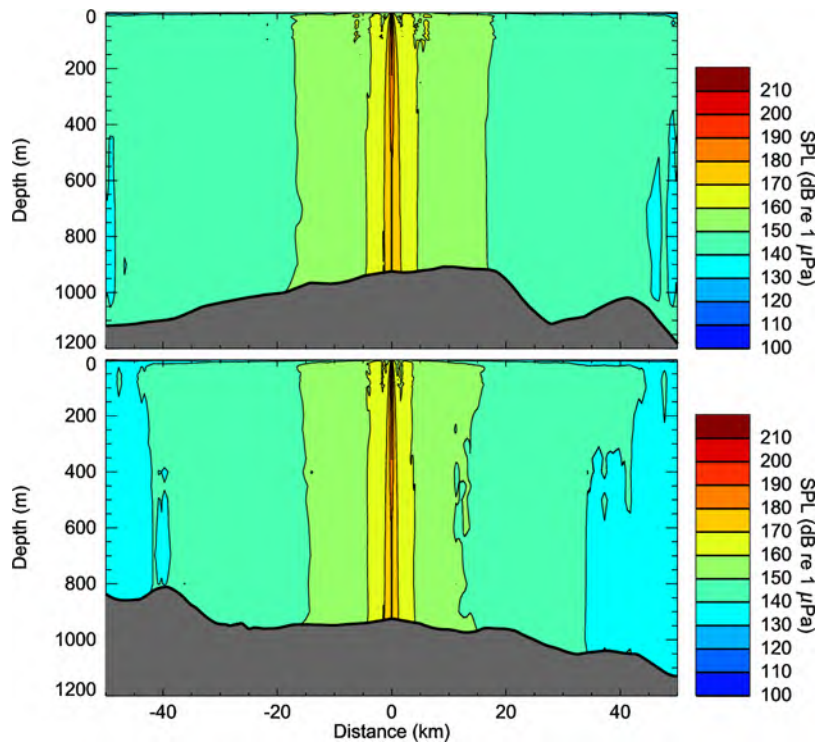


Figure 10. Site 2, tow azimuth 40°, SPL: Sound level contours in vertical slice of the sound field, perpendicular to (broadside, top) and along the tow direction (endfire, bottom). The positive distance direction for the broadside slice is 90° counter-clockwise ('Port') from the tow azimuth. The positive distance direction for the endfire slice is in line with the tow azimuth (the direction of transit).

5.3. Multiple Pulses Sound Fields

This section presents the sound fields in terms of SEL accumulated over 24 h of survey for the modelled SEL_{24h} scenario. Frequency-weighted SEL_{24h} sound fields were used to estimate the maximum and 95% distances (R_{max} and $R_{95\%}$; calculated as detailed in Appendix C.1) to marine mammals and turtle PTS and TTS thresholds (Table 13), and to estimate maximum distance and the area to injury and TTS thresholds for fish over the entire water column (Table 14). Whilst seafloor sound levels were not specifically assessed, the distribution of the sound within the water column (Figures 9 and 10) indicates the ranges at the seafloor would not exceed maximum-over-depth distances.

The SEL_{24h} sound fields are presented as a contour map in Figure 11. This figure presents the unweighted SEL_{24h} in 10 dB steps, as well as the isopleths corresponding to criteria thresholds. Only contours at distances longer than the nearfield of the seismic source are rendered.

5.3.1. Tabulated Results

Table 13. *Marine mammal and sea turtle criteria*: Maximum (R_{max}) horizontal distances (in km) from the survey lines to permanent threshold shift (PTS) and temporary threshold shift (TTS) thresholds considering 24 h of survey activity (maximum-over-depth).

Hearing group	Weighted SEL thresholds ($L_{E,24h}$; dB re 1 $\mu\text{Pa}^2\cdot\text{s}$)	R_{max} (km)	Area (km ²)
<i>PTS</i>			
Low-frequency cetaceans	183	0.38	122
Mid-frequency cetaceans	185	–	–
High-frequency cetaceans	155	–	–
Sea turtles	204	0.05	13.8
<i>TTS</i>			
Low-frequency cetaceans	168	60.7	9863
Mid-frequency cetaceans	170	–	–
High-frequency cetaceans	140	0.16	52.6
Sea turtles	189	0.28	88.2

A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).

Table 14. *Fish criteria*: Maximum horizontal distances (R_{max} , in km) from the survey lines and area (km²) to injury and temporary threshold shift (TTS) thresholds considering 24 h of survey activity (maximum-over-depth).

Marine fauna group	SEL _{24h} threshold ($L_{E,24h}$; dB re 1 $\mu\text{Pa}^2\cdot\text{s}$)	R_{max} (km)	Area (km ²)
<i>Mortality and potential mortal injury</i>			
I	219	0.05	13.0
II, fish eggs and fish larvae	210	0.05	13.8
III	207	0.05	13.8
<i>Fish recoverable injury</i>			
I	216	0.05	13.0
II, III	203	0.05	14.1
<i>Fish TTS</i>			
I, II, III	186	4.5	1210

Fish I–No swim bladder; Fish II–Swim bladder not involved with hearing; Fish III–Swim bladder involved with hearing.

5.3.2. Sound Level Contour Maps

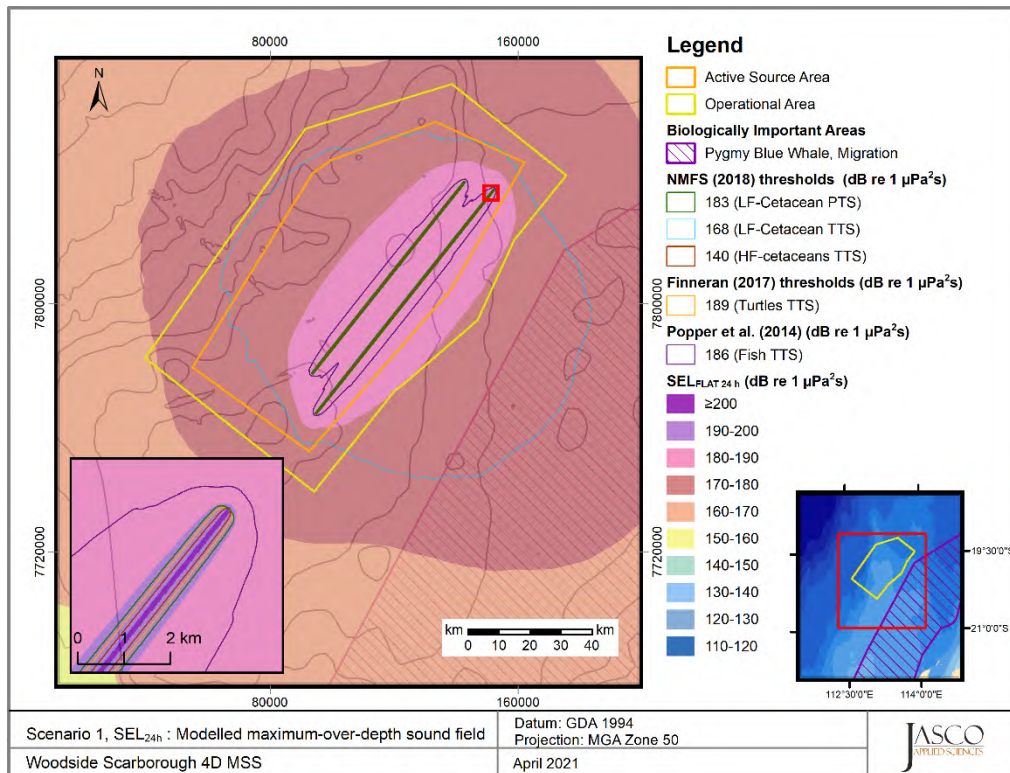


Figure 11. *Accumulated SEL_{24h} Scenario*: Sound level contour map showing unweighted maximum-over-depth SEL_{24h} results, along with isopleths for cetaceans, turtles, and fish. Thresholds omitted here were not reached or not long enough to display graphically. Refer to Tables 13 and 14 for tabulated radii.

5.4. Animal Movement Exposure Ranges

A summary of radial distances to exposure thresholds for migrating pygmy blue whales is included in Table 15. Results include ER_{95%} and ER_{max} exposure ranges calculated for the 160 dB behavioural response threshold and PK and SEL thresholds for both TTS and PTS.

Table 15. Summary of animat simulation results for migrating pygmy blue whales. The 95th percentile exposure ranges (ER_{95%}) and maximum exposure ranges (ER_{max}) in km and probability of animats being exposed above threshold within the ER_{95%} and ER_{max} are provided.

Threshold		Threshold level (dB)	Maximum acoustic radial distance to threshold (km)	ER _{95%}		ER _{max}	
Description	Distance (km)			Probability of exposure (%)	Distance (km)	Probability of exposure (%)	
TTS	PK	213 ^a	0.06	*	0	*	0
	SEL _{24h}	168 ^b	60.7	*	0	*	0
PTS	PK	219 ^a	0.03	*	0	*	0
	SEL _{24h}	183 ^c	0.38	*	0	*	0
Behavioural response		160 ^c	7.28	*	0	*	0

^a PK (L_{pk} ; dB re 1 μPa)

^b LF-weighted SEL_{24h} ($L_{E,24h}$; dB re 1 $\mu\text{Pa}^2\text{s}$)

^c SPL (L_p ; dB re 1 μPa)

An asterisk indicates that no animats were exposed to sound levels exceeding threshold criteria.

6. Discussion and Conclusions

This modelling study predicted underwater sound levels associated with the planned Scarborough 4D MSS. The underwater sound field was modelled for a 3150 in³ seismic source (Appendix C.5). An analysis of seasonal sound speed profiles was conducted (Appendix C.4.2) to determine which month within the proposed acquisition period was the most conducive to sound propagation. The modelling also accounted for site-specific bathymetric variations (Appendix C.4.1) and local geoacoustic properties (Appendix C.4.3).

Most acoustic energy from the seismic sources is output at lower frequencies, in the tens to hundreds of hertz. Simulation results showed the array has a pronounced broadside directivity for 1/3-octave-bands between approximately 100 Hz to about 300 Hz (Appendix C.5.1), which leads to a noticeable axial bulge in the modelled acoustic footprints.

6.1. Per-Pulse and Multiple Pulse Sound Fields

At both single impulse sites the distance to reported isopleths were generally greater in the broadside direction than in the endfire direction, a difference apparent in footprint maps in Section 5.2.2.1. The array directionality and frequency content was the primary driver of levels at longer distances. When in deeper water, the seismic source will have a lower “cut-off frequency (f_c)” than if the source were in shallower water. The cut-off frequency is a single number that describes how much acoustic energy can propagate with minimal loss between the sea surface and seafloor interfaces. For a given acoustic signal, frequencies below f_c are subject to higher loss compared to frequencies above the f_c (Jensen et al. 2011). For this environment, the cut-off frequency was less than 10 Hz, which allows for a large amount of low-frequency energy to propagate in the water column.

Considering the NMFS (2018) SEL_{24h} criteria, low- and high-frequency cetaceans are predicted to experience PTS and TTS (Tables 12 and 13). The footprints and radial distance maxima for all accumulated SEL thresholds are influenced by the consistent water depth with the surrounding area of the survey. Water depths on average 900 m allow the large amount of low-frequency energy to propagate within the water column, which can result in levels propagating to significant distances away from the source by being continually refracted within the deep sound channel. Furthermore, the presence of a slight upward refracting layer near the sea surface also has the potential to trap levels at high frequencies which would otherwise dissipate more rapidly with distance from the source due to spreading and seabed loss.

6.2. Animal Movement Exposure Ranges

The estimated sound fields produced by source and propagation models for the seismic survey were incorporated into a sound exposure model to estimate the radial distance within which 95% of the exposure exceedances occur (ER_{95%}), along with the probability that an animal with a closest point of approach within that distance would be exposed above the relevant threshold.

SEL, PK, and behavioural SPL thresholds were not exceeded since the closest point of approach to the BIA (29.9 km) was longer than the maximum possible distance to threshold (Figure 2). These results differ from the radial distances predicted by the acoustic modelling because they assumed a static receiver. Animal movement modelling simulations incorporate the real-world movements of migrating pygmy blue whales within the migration BIA.

6.3. Summary

This section presents summaries of the distances to the noise effect criteria applied in this study (Section 3) as relevant to the effect assessment. The effect criteria for impairment of marine mammals, fish, and sea turtles use dual metrics (PK and SEL_{24h}), and the longest distance associated with either metric is required to be applied, and thus is presented in this summary.

SEL_{24h} is a cumulative metric that reflects the dosimetric effect of noise levels within 24 h based on the assumption that an animal is consistently exposed to such noise levels at a fixed position. Where the corresponding SEL_{24h} radii for are longer than those for peak pressure criteria, they often represent an unlikely worst-case scenario. More realistically, marine mammals, fish, and sea turtles would not remain in the same location for 24 h, but rather a shorter period, depending upon their behaviour and the source's proximity and movements. Therefore, a reported radius for SEL_{24h} criteria does not mean that marine fauna travelling within this radius of the source will be impaired, but rather that an animal could be exposed to the sound level associated with impairment (either PTS or TTS) if it remained in that location for 24 h.

Marine mammals

- Table 16 summarises the distances to criteria for marine mammals.

Table 16. Maximum (R_{max}) horizontal distances (in km) from modelled sites or scenarios to behavioural response thresholds and PTS and TTS thresholds for marine mammals (PK values from Table 12 and SEL_{24h} values from Table 13).

Hearing group	Modelled distance to effect threshold (R_{max})		
	Behavioural response ^a	Impairment: TTS ^b	Impairment: PTS ^b
LF cetaceans	7.28	60.7	0.38
MF cetaceans		–	–
HF cetaceans		0.39	0.19

^a Noise exposure criteria: NOAA (2019)

^b Noise exposure criteria: NMFS (2018)

A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).

Sea turtles

- Table 17 summarises the distances to criteria for sea turtles.

Table 17. Maximum (R_{max}) horizontal distances (in km) from modelled sites or scenarios to behavioural response thresholds and PTS and TTS thresholds for sea turtles (PK values from Table 12 and SEL_{24h} values from Table 13).

Hearing group	Modelled distance to effect threshold (R_{max})			
	Behavioural response ^a	Behavioural disturbance ^b	Impairment: TTS ^c	Impairment: PTS ^c
Turtles	3.87	0.76	0.28	0.05

^a Noise exposure criteria: NSF (2011)

^b Noise exposure criteria: McCauley et al. (2000a)

^c Noise exposure criteria: Finneran et al. (2017)

Fish, fish eggs, fish larvae and plankton

- This modelling study assessed the radial distances to quantitative guidelines based on Popper et al. (2014) and considered both PK and SEL_{24h} (maximum over water column) metrics associated with mortality and potential mortal injury as well as impairment in the following groups:
 - Fish without a swim bladder (also appropriate for sharks in the absence of other information)
 - Fish with a swim bladder that do not use it for hearing
 - Fish that use their swim bladders for hearing
 - Fish eggs, fish larvae and plankton

- Table 18 summarises the distances to injury guidelines for fish, fish eggs, fish larvae and plankton along with the relevant metric and the location of the information within this report.

Table 18. Summary of maximum fish, fish eggs, and larvae injury and TTS onset distances for single impulse and SEL_{24h} modelled scenarios (PK values from Table 12 and SEL_{24h} values from Table 14).

Relevant hearing group	Effect criteria	Scenario 1	
		Metric associated with longest distance to criteria	R _{max} (km)
Fish: No swim bladder	Injury	PK	0.06
	TTS	SEL _{24h}	4.5
Fish: Swim bladder not involved in hearing and Swim bladder involved in hearing	Injury	PK	0.11
	TTS	SEL _{24h}	4.5
Fish eggs, fish larvae and plankton	Injury	PK	0.11

Literature Cited

- [ANSI] American National Standards Institute and [ASA] Acoustical Society of America. S1.1-2013. *American National Standard: Acoustical Terminology*. NY, USA. <https://webstore.ansi.org/Standards/ASA/ANSIASAS12013>.
- [DEWHA] Department of the Environment Water Heritage and the Arts. 2008. *EPBC Act Policy Statement 2.1 - Interaction Between Offshore Seismic Exploration and Whales*. In: Australian Government - Department of the Environment, Water, Heritage and the Arts. 14 p. <http://www.environment.gov.au/resource/epbc-act-policy-statement-21-interaction-between-offshore-seismic-exploration-and-whales>.
- [HESS] High Energy Seismic Survey. 1999. *High Energy Seismic Survey Review Process and Interim Operational Guidelines for Marine Surveys Offshore Southern California*. Prepared for the California State Lands Commission and the United States Minerals Management Service Pacific Outer Continental Shelf Region by the High Energy Seismic Survey Team, Camarillo, CA, USA. 98 p. <https://ntrl.ntis.gov/NTRL/dashboard/searchResults/titleDetail/PB2001100103.xhtml>.
- [ISO] International Organization for Standardization. 2017. *ISO 18405:2017. Underwater acoustics – Terminology*. Geneva. <https://www.iso.org/standard/62406.html>.
- [NMFS] National Marine Fisheries Service (US). 1998. *Acoustic Criteria Workshop*. Dr. Roger Gentry and Dr. Jeanette Thomas Co-Chairs.
- [NMFS] National Marine Fisheries Service (US). 2016. *Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing: Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts*. US Department of Commerce, NOAA. NOAA Technical Memorandum NMFS-OPR-55. 178 p.
- [NMFS] National Marine Fisheries Service (US). 2018. *2018 Revision to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts*. US Department of Commerce, NOAA. NOAA Technical Memorandum NMFS-OPR-59. 167 p. <https://www.fisheries.noaa.gov/webdam/download/75962998>.
- [NOAA] National Oceanic and Atmospheric Administration (US). 2018. Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys off of Delaware. *Federal Register* 83(65): 14417-14443. <https://www.federalregister.gov/d/2018-12225>.
- [NOAA] National Oceanic and Atmospheric Administration (US). 2019. *ESA Section 7 Consultation Tools for Marine Mammals on the West Coast* (webpage), 27 Sep 2019. <https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/esa-section-7-consultation-tools-marine-mammals-west>. (Accessed 10 Mar 2020).
- [NSF] National Science Foundation (US), Geological Survey (US), and [NOAA] National Oceanic and Atmospheric Administration (US). 2011. *Final Programmatic Environmental Impact Statement/Overseas. Environmental Impact Statement for Marine Seismic Research Funded by the National Science Foundation or Conducted by the US Geological Survey*. National Science Foundation, Arlington, VA, USA. https://www.nsf.gov/geo/oce/envcomp/usgs-nsf-marine-seismic-research/nsf-usgs-final-eis-oeis_3june2011.pdf.
- [ONR] Office of Naval Research. 1998. *ONR Workshop on the Effect of Anthropogenic Noise in the Marine Environment*. Dr. R. Gisiner, Chair.
- Aerts, L.A.M., M. Brees, S.B. Blackwell, C.R. Greene, Jr., K.H. Kim, D.E. Hannay, and M.E. Austin. 2008. *Marine mammal monitoring and mitigation during BP Liberty OBC seismic survey in Foggy Island Bay, Beaufort Sea, July-August 2008: 90-day report*. Document Number P1011-1. Report by LGL Alaska Research Associates Inc., LGL Ltd., Greeneridge Sciences Inc., and JASCO Applied Sciences for BP Exploration Alaska. 199 p. ftp://ftp.library.noaa.gov/noaa_documents.lib/NMFS/Auke%20Bay/AukeBayScans/Removable%20Disk/P1011-1.pdf.
- Austin, M.E. and G.A. Warner. 2012. *Sound Source Acoustic Measurements for Apache's 2012 Cook Inlet Seismic Survey*. Version 2.0. Technical report by JASCO Applied Sciences for Fairweather LLC and Apache Corporation.

- Austin, M.E. and L. Bailey. 2013. *Sound Source Verification: TGS Chukchi Sea Seismic Survey Program 2013*. Document Number 00706, Version 1.0. Technical report by JASCO Applied Sciences for TGS-NOPEC Geophysical Company.
- Austin, M.E., A. McCrodan, C. O'Neill, Z. Li, and A.O. MacGillivray. 2013. *Marine mammal monitoring and mitigation during exploratory drilling by Shell in the Alaskan Chukchi and Beaufort Seas, July–November 2012: 90-Day Report*. In: Funk, D.W., C.M. Reiser, and W.R. Koski (eds.). Underwater Sound Measurements. LGL Rep. P1272D–1. Report from LGL Alaska Research Associates Inc. and JASCO Applied Sciences, for Shell Offshore Inc., National Marine Fisheries Service (US), and US Fish and Wildlife Service. 266 pp plus appendices.
- Austin, M.E. 2014. Underwater noise emissions from drillships in the Arctic. In: Papadakis, J.S. and L. Bjørnø (eds.). *UA2014 - 2nd International Conference and Exhibition on Underwater Acoustics*. 22-27 Jun 2014, Rhodes, Greece. pp. 257-263.
- Austin, M.E., H. Yurk, and R. Mills. 2015. *Acoustic Measurements and Animal Exclusion Zone Distance Verification for Furie's 2015 Kitchen Light Pile Driving Operations in Cook Inlet*. Version 2.0. Technical report by JASCO Applied Sciences for Jacobs LLC and Furie Alaska.
- Austin, M.E. and Z. Li. 2016. *Marine Mammal Monitoring and Mitigation During Exploratory Drilling by Shell in the Alaskan Chukchi Sea, July–October 2015: Draft 90-day report*. In: Ireland, D.S. and L.N. Bisson (eds.). Underwater Sound Measurements. LGL Rep. P1363D. Report from LGL Alaska Research Associates Inc., LGL Ltd., and JASCO Applied Sciences Ltd. For Shell Gulf of Mexico Inc, National Marine Fisheries Service, and US Fish and Wildlife Service. 188 pp + appendices.
- Bartol, S.M. and D.R. Ketten. 2006. *Turtle and tuna hearing*. In: Swimmer, Y. and R. Brill (eds.). Sea turtle and pelagic fish sensory biology: Developing techniques to reduce sea turtle bycatch in longline fisheries. Volume December 2006. NOAA Technical Memorandum NMFS-PIFSC-7. 98-103 p.
http://www.sefsc.noaa.gov/turtles/TM_NMFS_PIFSC_7_Swimmer_Brill.pdf#page=108.
- Carnes, M.R. 2009. *Description and Evaluation of GDEM-V 3.0*. US Naval Research Laboratory, Stennis Space Center, MS. NRL Memorandum Report 7330-09-9165. 21 p.
<https://apps.dtic.mil/dtic/tr/fulltext/u2/a494306.pdf>.
- Collins, M.D. 1993. A split-step Padé solution for the parabolic equation method. *Journal of the Acoustical Society of America* 93(4): 1736-1742. <https://doi.org/10.1121/1.406739>.
- Collins, M.D., R.J. Cederberg, D.B. King, and S. Chin-Bing. 1996. Comparison of algorithms for solving parabolic wave equations. *Journal of the Acoustical Society of America* 100(1): 178-182.
<https://doi.org/10.1121/1.415921>.
- Coppens, A.B. 1981. Simple equations for the speed of sound in Neptunian waters. *Journal of the Acoustical Society of America* 69(3): 862-863. <https://doi.org/10.1121/1.382038>.
- Department of the Environment (Australian Government). 2015-2025. *Conservation Management Plan for the Blue Whale: A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment, 2015. 57 p.
<http://www.environment.gov.au/system/files/resources/9c058c02-afd1-4e5d-abff-11cac2ebc486/files/blue-whale-conservation-management-plan.pdf>.
- Department of the Environment and Energy, NSW Government, and Queensland Government. 2017. *Recovery Plan for Marine Turtles in Australia*. <https://www.environment.gov.au/marine/publications/recovery-plan-marine-turtles-australia-2017>.
- Double, M.C., V. Andrews-Goff, K.C.S. Jenner, M.-N. Jenner, S.M. Laverick, T.A. Branch, and N.J. Gales. 2014. Migratory Movements of Pygmy Blue Whales (*Balaenoptera musculus brevicauda*) between Australia and Indonesia as Revealed by Satellite Telemetry. *PLOS ONE* 9(4).
<https://doi.org/10.1371/journal.pone.0093578>.
- Dow Piniak, W.E., S.A. Eckert, C.A. Harms, and E.M. Stringer. 2012. *Underwater hearing sensitivity of the leatherback sea turtle (Dermochelys coriacea): Assessing the potential effect of anthropogenic noise*. US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2012-00156. 35 p.

- Dragoset, W.H. 1984. A comprehensive method for evaluating the design of airguns and airgun arrays. *16th Annual Offshore Technology Conference* Volume 3, 7–9 May 1984. OTC 4747, Houston, TX, USA. pp. 75–84. <https://doi.org/10.4043/4783-MS>.
- Duncan, A.J., A.N. Gavrilov, R.D. McCauley, I.M. Parnum, and J.M. Collis. 2013. Characteristics of sound propagation in shallow water over an elastic seabed with a thin cap-rock layer. *Journal of the Acoustical Society of America* 134(1): 207-215. <https://doi.org/10.1121/1.4809723>.
- Dunlop, R.A., M.J. Noad, R.D. McCauley, L. Scott-Hayward, E. Kniest, R. Slade, D. Paton, and D.H. Cato. 2017. Determining the behavioural dose–response relationship of marine mammals to air gun noise and source proximity. *Journal of Experimental Biology* 220(16): 2878-2886. <https://doi.org/10.1242/jeb.160192>.
- Dunlop, R.A., M.J. Noad, R.D. McCauley, E. Kniest, R. Slade, D. Paton, and D.H. Cato. 2018. A behavioural dose-response model for migrating humpback whales and seismic air gun noise. *Marine Pollution Bulletin* 133: 506-516. <https://doi.org/10.1016/j.marpolbul.2018.06.009>.
- Ellison, W.T., C.W. Clark, and G.C. Bishop. 1987. *Potential use of surface reverberation by bowhead whales, Balaena mysticetus, in under-ice navigation: Preliminary considerations*. Report of the International Whaling Commission. Volume 37. 329-332 p.
- Ellison, W.T. and P.J. Stein. 1999. *SURTASS LFA High Frequency Marine Mammal Monitoring (HF/M3) Sonar: System Description and Test & Evaluation*. Under US Navy Contract N66604-98-D-5725. <http://www.surtass-lfa-eis.com/wp-content/uploads/2018/02/HF-M3-Ellison-Report-2-4a.pdf>.
- Ellison, W.T. and A.S. Frankel. 2012. A common sense approach to source metrics. In Popper, A.N. and A.D. Hawkins (eds.). *The Effects of Noise on Aquatic Life*. Volume 730. Springer, New York. pp. 433-438. https://doi.org/10.1007/978-1-4419-7311-5_98.
- Exon, N.F. and J.B. Willcox. 1980. *The Exmouth Plateau: Stratigraphy, structure, and petroleum potential*. Department of National Development & Energy: Bureau Of Mineral Resources Geology And Geophysics. Bulletin 199, Canberra, Australia. https://d28rz98at9flks.cloudfront.net/52/Bull_199.pdf.
- Finneran, J.J. and A.K. Jenkins. 2012. *Criteria and thresholds for U.S. Navy acoustic and explosive effects analysis*. SPAWAR Systems Center Pacific, San Diego, CA, USA. 64 p.
- Finneran, J.J. 2015. *Auditory weighting functions and TTS/PTS exposure functions for cetaceans and marine carnivores*. Technical report by SSC Pacific, San Diego, CA, USA.
- Finneran, J.J. 2016. *Auditory weighting functions and TTS/PTS exposure functions for marine mammals exposed to underwater noise*. Technical Report for Space and Naval Warfare Systems Center Pacific, San Diego, CA, USA. 49 p. <https://apps.dtic.mil/dtic/tr/fulltext/u2/1026445.pdf>.
- Finneran, J.J., E.E. Henderson, D.S. Houser, K. Jenkins, S. Kotecki, and J. Mulsow. 2017. *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)*. Technical report by Space and Naval Warfare Systems Center Pacific (SSC Pacific). 183 p. https://nwtteis.com/portals/nwtteis/files/technical_reports/Criteria_and_Thresholds_for_U.S._Navy_Acoustic_and_Explosive_Effects_Analysis_June2017.pdf.
- Frankel, A.S., W.T. Ellison, and J. Buchanan. 2002. Application of the acoustic integration model (AIM) to predict and minimize environmental impacts. *OCEANS 2002*. 29-31 Oct 2002. IEEE, Biloxi, MI, USA. pp. 1438-1443. <https://doi.org/10.1109/OCEANS.2002.1191849>.
- Funk, D.W., D.E. Hannay, D.S. Ireland, R. Rodrigues, and W.R. Koski. 2008. *Marine mammal monitoring and mitigation during open water seismic exploration by Shell Offshore Inc. in the Chukchi and Beaufort Seas, July–November 2007: 90-day report*. LGL Report P969-1. Prepared by LGL Alaska Research Associates Inc., LGL Ltd., and JASCO Research Ltd. for Shell Offshore Inc., National Marine Fisheries Service (US), and US Fish and Wildlife Service. 218 p.
- Gedamke, J., N. Gales, and S. Frydman. 2011. Assessing risk of baleen whale hearing loss from seismic surveys: The effect of uncertainty and individual variation. *Journal of the Acoustical Society of America* 129(1): 496-506. <https://doi.org/10.1121/1.3493445>.

- Goldbogen, J.A., J. Calambokidis, E. Oleson, J. Potvin, N.D. Pyenson, G. Schorr, and R.E. Shadwick. 2011. Mechanics, hydrodynamics and energetics of blue whale lunge feeding: Efficiency dependence on krill density. *Journal of Experimental Biology* 214: 131-146. <https://doi.org/10.1242/jeb.054726>.
- Hamilton, E.L. 1980. Geoacoustic modeling of the sea floor. *Journal of the Acoustical Society of America* 68(5): 1313-1340. <https://doi.org/10.1121/1.385100>.
- Hannay, D.E. and R. Racca. 2005. *Acoustic Model Validation*. Document Number 0000-S-90-04-T-7006-00-E, Revision 02, Version 1.3. Technical report by JASCO Research Ltd. for Sakhalin Energy Investment Company Ltd. 34 p.
- Houser, D.S. and M.J. Cross. 1999. *Marine Mammal Movement and Behavior (3MB): A Component of the Effects of Sound on the Marine Environment (ESME) Distributed Model*. Version 8.08, by BIOMIMETICA.
- Houser, D.S. 2006. A method for modeling marine mammal movement and behavior for environmental impact assessment. *IEEE Journal of Oceanic Engineering* 31(1): 76-81. <https://doi.org/10.1109/JOE.2006.872204>.
- Ireland, D.S., R. Rodrigues, D.W. Funk, W.R. Koski, and D.E. Hannay. 2009. *Marine mammal monitoring and mitigation during open water seismic exploration by Shell Offshore Inc. in the Chukchi and Beaufort Seas, July–October 2008: 90-Day Report*. Document Number P1049-1. 277 p.
- Jensen, F.B., W.A. Kuperman, M.B. Porter, and H. Schmidt. 2011. *Computational Ocean Acoustics*. 2nd edition. AIP Series in Modern Acoustics and Signal Processing. AIP Press - Springer, New York. 794 p. <https://doi.org/10.1007/978-1-4419-8678-8>.
- Kujawa, S.G. and M.C. Liberman. 2006. Acceleration of age-related hearing loss by early noise exposure: Evidence of a missed youth. *Journal of Neuroscience* 26(7): 2115-2123. <https://doi.org/10.1523/JNEUROSCI.4985-05.2006>.
- Kujawa, S.G. and M.C. Liberman. 2009. Adding insult to injury: Cochlear nerve degeneration after 'temporary' noise induced hearing loss. *Journal of Neuroscience* 29(45): 14077-14086. <https://doi.org/10.1523/JNEUROSCI.2845-09.2009>.
- Kujawa, S.G. and M.C. Liberman. 2015. Synaptopathy in the noise-exposed and aging cochlea: Primary neural degeneration in acquired sensorineural hearing loss. *Hearing Research* 330: 191-199. <https://doi.org/10.1016/j.heares.2015.02.009>.
- Landrø, M. 1992. Modeling of GI gun signatures. *Geophysical Prospecting* 40(7): 721–747. <https://doi.org/10.1111/j.1365-2478.1992.tb00549.x>.
- Laws, R.M., L. Hatton, and M. Haartsen. 1990. Computer modelling of clustered airguns. *First Break* 8(9): 331–338. <https://doi.org/10.3997/1365-2397.1990017>.
- Lurton, X. 2002. *An Introduction to Underwater Acoustics: Principles and Applications*. Springer, Chichester, UK. 347 p.
- MacGillivray, A.O. and N.R. Chapman. 2012. Modeling underwater sound propagation from an airgun array using the parabolic equation method. *Canadian Acoustics* 40(1): 19-25. <https://jcaa.caa-aca.ca/index.php/jcaa/article/view/2502/2251>.
- MacGillivray, A.O. 2018. Underwater noise from pile driving of conductor casing at a deep-water oil platform. *Journal of the Acoustical Society of America* 143(1): 450-459. <https://doi.org/10.1121/1.5021554>.
- Maison, S.F., H. Usubuchi, and M.C. Liberman. 2013. Efferent Feedback Minimizes Cochlear Neuropathy from Moderate Noise Exposure. *Journal of Neuroscience* 33(13): 5542-5552. <https://doi.org/10.1523/JNEUROSCI.5027-12.2013>.
- Malme, C.I., P.R. Miles, C.W. Clark, P. Tyack, and J.E. Bird. 1983. *Investigations of the Potential Effects of Underwater Noise from Petroleum Industry Activities on Migrating Gray Whale Behavior*. Report Number 5366. <http://www.boem.gov/BOEM-Newsroom/Library/Publications/1983/rpt5366.aspx>.
- Malme, C.I., P.R. Miles, C.W. Clark, P.L. Tyack, and J.E. Bird. 1984. *Investigations of the Potential Effects of Underwater Noise from Petroleum Industry Activities on Migrating Gray Whale Behavior. Phase II:*

- January 1984 Migration*. Report Number 5586. Report by Bolt Beranek and Newman Inc. for the US Department of the Interior, Minerals Management Service, Cambridge, MA, USA.
<https://www.boem.gov/sites/default/files/boem-newsroom/Library/Publications/1983/rpt5586.pdf>.
- Malme, C.I., B. Würsig, J.E. Bird, and P.L. Tyack. 1986. *Behavioral responses of gray whales to industrial noise: Feeding observations and predictive modeling*. Document Number 56. NOAA Outer Continental Shelf Environmental Assessment Program. Final Reports of Principal Investigators. 393-600 p.
- Martin, B., K. Bröker, M.-N.R. Matthews, J.T. MacDonnell, and L. Bailey. 2015. Comparison of measured and modeled air-gun array sound levels in Baffin Bay, West Greenland. *OceanNoise 2015*. 11-15 May 2015, Barcelona, Spain.
- Martin, B., J.T. MacDonnell, and K. Bröker. 2017a. Cumulative sound exposure levels—Insights from seismic survey measurements. *Journal of the Acoustical Society of America* 141(5): 3603-3603.
<https://doi.org/10.1121/1.4987709>.
- Martin, S.B. and A.N. Popper. 2016. Short- and long-term monitoring of underwater sound levels in the Hudson River (New York, USA). *Journal of the Acoustical Society of America* 139(4): 1886-1897.
<https://doi.org/10.1121/1.4944876>.
- Martin, S.B., M.-N.R. Matthews, J.T. MacDonnell, and K. Bröker. 2017b. Characteristics of seismic survey pulses and the ambient soundscape in Baffin Bay and Melville Bay, West Greenland. *Journal of the Acoustical Society of America* 142(6): 3331-3346. <https://doi.org/10.1121/1.5014049>.
- Matthews, M.-N.R. and A.O. MacGillivray. 2013. Comparing modeled and measured sound levels from a seismic survey in the Canadian Beaufort Sea. *Proceedings of Meetings on Acoustics* 19(1): 1-8.
<https://doi.org/10.1121/1.4800553>.
- Mattsson, A. and M. Jenkerson. 2008. Single Airgun and Cluster Measurement Project. *Joint Industry Programme (JIP) on Exploration and Production Sound and Marine Life Programme Review*. 28-30 Oct 2008. International Association of Oil and Gas Producers, Houston, TX, USA.
- McCauley, R.D., J. Fewtrell, A.J. Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhitya, J. Murdoch, et al. 2000a. *Marine seismic surveys: Analysis and propagation of air-gun signals; and effects of air-gun exposure on humpback whales, sea turtles, fishes and squid*. Report Number R99-15. Prepared for Australian Petroleum Production Exploration Association by Centre for Marine Science and Technology, Western Australia. 198 p. <https://cmst.curtin.edu.au/wp-content/uploads/sites/4/2016/05/McCauley-et-al-Seismic-effects-2000.pdf>.
- McCauley, R.D., J. Fewtrell, A.J. Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhitya, J. Murdoch, et al. 2000b. Marine seismic surveys: A study of environmental implications. *Australian Petroleum Production Exploration Association (APPEA) Journal* 40(1): 692-708.
<https://doi.org/10.1071/AJ99048>.
- McCrodan, A., C.R. McPherson, and D.E. Hannay. 2011. *Sound Source Characterization (SSC) Measurements for Apache's 2011 Cook Inlet 2D Technology Test*. Version 3.0. Technical report by JASCO Applied Sciences for Fairweather LLC and Apache Corporation. 51 p.
- McPherson, C.R. and G.A. Warner. 2012. *Sound Sources Characterization for the 2012 Simpson Lagoon OBC Seismic Survey 90-Day Report*. Document Number 00443, Version 2.0. Technical report by JASCO Applied Sciences for BP Exploration (Alaska) Inc.
http://www.nmfs.noaa.gov/pr/pdfs/permits/bp_openwater_90dayreport_appendices.pdf.
- McPherson, C.R., K. Lucke, B.J. Gaudet, S.B. Martin, and C.J. Whitt. 2018. *Pelican 3-D Seismic Survey Sound Source Characterisation*. Document Number 001583. Version 1.0. Technical report by JASCO Applied Sciences for RPS Energy Services Pty Ltd.
- McPherson, C.R. and B. Martin. 2018. *Characterisation of Polarcus 2380 in³ Airgun Array*. Document Number 001599, Version 1.0. Technical report by JASCO Applied Sciences for Polarcus Asia Pacific Pte Ltd.
- Möller, L.M., C.R.M. Attard, K. Bilgmann, V. Andrews-Goff, I. Jonsen, D. Paton, and M.C. Double. 2020. Movements and behaviour of blue whales satellite tagged in an Australian upwelling system. *Scientific Reports* 10(1): 21165. <https://doi.org/10.1038/s41598-020-78143-2>.

- Nedwell, J.R. and A.W. Turnpenny. 1998. The use of a generic frequency weighting scale in estimating environmental effect. *Workshop on Seismics and Marine Mammals*. 23–25 Jun 1998, London, UK.
- Nedwell, J.R., A.W. Turnpenny, J. Lovell, S.J. Parvin, R. Workman, J.A.L. Spinks, and D. Howell. 2007. A validation of the dB_{ht} as a measure of the behavioural and auditory effects of underwater noise. Document Number 534R1231 Report prepared by Subacoustech Ltd. for Chevron Ltd, TotalFinaElf Exploration UK PLC, Department of Business, Enterprise and Regulatory Reform, Shell UK Exploration and Production Ltd, The Industry Technology Facilitator, Joint Nature Conservation Committee, and The UK Ministry of Defence. 74 p. <https://tethys.pnnl.gov/sites/default/files/publications/Nedwell-et-al-2007.pdf>.
- O'Neill, C., D. Leary, and A. McCrodan. 2010. Sound Source Verification. (Chapter 3) In Blees, M.K., K.G. Hartin, D.S. Ireland, and D.E. Hannay (eds.). *Marine mammal monitoring and mitigation during open water seismic exploration by Statoil USA E&P Inc. in the Chukchi Sea, August-October 2010: 90-day report*. LGL Report P1119. Prepared by LGL Alaska Research Associates Inc., LGL Ltd., and JASCO Applied Sciences Ltd. for Statoil USA E&P Inc., National Marine Fisheries Service (US), and US Fish and Wildlife Service. pp. 1-34.
- Owen, K., C.S. Jenner, M.-N.M. Jenner, and R.D. Andrews. 2016. A week in the life of a pygmy blue whale: Migratory dive depth overlaps with large vessel drafts. *Animal Biotelemetry* 4: 17. <https://doi.org/10.1186/s40317-016-0109-4>.
- Payne, R. and D. Webb. 1971. Orientation by means of long range acoustic signaling in baleen whales. *Annals of the New York Academy of Sciences* 188: 110-141. <https://doi.org/10.1111/j.1749-6632.1971.tb13093.x>.
- Popper, A.N., M.E. Smith, P.A. Cott, B.W. Hanna, A.O. MacGillivray, M.E. Austin, and D.A. Mann. 2005. Effects of exposure to seismic airgun use on hearing of three fish species. *Journal of the Acoustical Society of America* 117(6): 3958-3971. <https://doi.org/10.1121/1.1904386>.
- Popper, A.N., A.D. Hawkins, R.R. Fay, D.A. Mann, S. Bartol, T.J. Carlson, S. Coombs, W.T. Ellison, R.L. Gentry, et al. 2014. *Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. ASA S3/SC1.4 TR-2014*. SpringerBriefs in Oceanography. ASA Press and Springer. <https://doi.org/10.1007/978-3-319-06659-2>.
- Popper, A.N., T.J. Carlson, J.A. Gross, A.D. Hawkins, D.G. Zeddies, L. Powell, and J. Young. 2016. Effects of seismic air guns on pallid sturgeon and paddlefish. In Popper, A.N. and A.D. Hawkins (eds.). *The Effects of Noise on Aquatic Life II*. Volume 875. Springer, New York. pp. 871-878. https://doi.org/10.1007/978-1-4939-2981-8_107.
- Popper, A.N. 2018. *Potential for impact of cumulative sound exposure on fishes during a seismic survey*. Environmental BioAcoustics, LLC, Maryland, USA. <https://docs.nopsema.gov.au/A680658>.
- Porter, M.B. and Y.C. Liu. 1994. Finite-element ray tracing. In: Lee, D. and M.H. Schultz (eds.). *International Conference on Theoretical and Computational Acoustics*. Volume 2. World Scientific Publishing Co. pp. 947-956.
- Racca, R., A.N. Rutenko, K. Bröker, and M.E. Austin. 2012a. A line in the water - design and enactment of a closed loop, model based sound level boundary estimation strategy for mitigation of behavioural impacts from a seismic survey. *11th European Conference on Underwater Acoustics*. Volume 34(3), Edinburgh, UK.
- Racca, R., A.N. Rutenko, K. Bröker, and G. Gailey. 2012b. Model based sound level estimation and in-field adjustment for real-time mitigation of behavioural impacts from a seismic survey and post-event evaluation of sound exposure for individual whales. In: McMinn, T. (ed.). *Acoustics 2012*. Fremantle, Australia. http://www.acoustics.asn.au/conference_proceedings/AAS2012/papers/p92.pdf.
- Racca, R., M.E. Austin, A.N. Rutenko, and K. Bröker. 2015. Monitoring the gray whale sound exposure mitigation zone and estimating acoustic transmission during a 4-D seismic survey, Sakhalin Island, Russia. *Endangered Species Research* 29(2): 131-146. <https://doi.org/10.3354/esr00703>.
- Southall, B.L., A.E. Bowles, W.T. Ellison, J.J. Finneran, R.L. Gentry, C.R. Greene, Jr., D. Kastak, D.R. Ketten, J.H. Miller, et al. 2007. Marine Mammal Noise Exposure Criteria: Initial Scientific Recommendations. *Aquatic Mammals* 33(4): 411-521. <https://doi.org/10.1578/AM.33.4.2007.411>.

- Southall, B.L., D.P. Nowacek, P.J.O. Miller, and P.L. Tyack. 2016. Experimental field studies to measure behavioral responses of cetaceans to sonar. *Endangered Species Research* 31: 293-315. <https://doi.org/10.3354/esr00764>.
- Teague, W.J., M.J. Carron, and P.J. Hogan. 1990. A comparison between the Generalized Digital Environmental Model and Levitus climatologies. *Journal of Geophysical Research* 95(C5): 7167-7183. <https://doi.org/10.1029/JC095iC05p07167>.
- Warner, G.A., C. Erbe, and D.E. Hannay. 2010. Underwater Sound Measurements. (Chapter 3) In Reiser, C.M., D. Funk, R. Rodrigues, and D.E. Hannay (eds.). *Marine Mammal Monitoring and Mitigation during Open Water Shallow Hazards and Site Clearance Surveys by Shell Offshore Inc. in the Alaskan Chukchi Sea, July-October 2009: 90-Day Report*. LGL Report P1112-1. Report by LGL Alaska Research Associates Inc. and JASCO Applied Sciences for Shell Offshore Inc., National Marine Fisheries Service (US), and Fish and Wildlife Service (US). pp. 1-54.
- Warner, G.A., M.E. Austin, and A.O. MacGillivray. 2017. Hydroacoustic measurements and modeling of pile driving operations in Ketchikan, Alaska [Abstract]. *Journal of the Acoustical Society of America* 141(5): 3992. <https://doi.org/10.1121/1.4989141>.
- Whiteway, T. 2009. *Australian Bathymetry and Topography Grid, June 2009*. GeoScience Australia, Canberra. <http://pid.geoscience.gov.au/dataset/ga/67703>.
- Zhang, Z.Y. and C.T. Tindle. 1995. Improved equivalent fluid approximations for a low shear speed ocean bottom. *Journal of the Acoustical Society of America* 98(6): 3391-3396. <https://doi.org/10.1121/1.413789>.
- Ziolkowski, A.M. 1970. A method for calculating the output pressure waveform from an air gun. *Geophysical Journal International* 21(2): 137-161. <https://doi.org/10.1111/j.1365-246X.1970.tb01773.x>.
- Zykov, M.M. and J.T. MacDonnell. 2013. *Sound Source Characterizations for the Collaborative Baseline Survey Offshore Massachusetts Final Report: Side Scan Sonar, Sub-Bottom Profiler, and the R/V Small Research Vessel experimental*. Document Number 00413, Version 2.0. Technical report by JASCO Applied Sciences for Fugro GeoServices, Inc. and the (US) Bureau of Ocean Energy Management.

Appendix A. Acoustic Metrics

A.1. Pressure Related Acoustic Metrics

Underwater sound pressure amplitude is measured in decibels (dB) relative to a fixed reference pressure of $p_0 = 1 \mu\text{Pa}$. Because the perceived loudness of sound, especially pulsed sound such as from seismic airguns, pile driving, and sonar, is not generally proportional to the instantaneous acoustic pressure, several sound level metrics are commonly used to evaluate sound and its effects on marine life. Here we provide specific definitions of relevant metrics used in the accompanying report. Where possible, we follow the American National Standard Institute and International Organization for Standardization definitions and symbols for sound metrics (e.g., ISO 2017, ANSI S1.1-2013), but these standards are not always consistent.

The zero-to-peak sound pressure, or peak sound pressure (PK or $L_{p,pk}$; dB re $1 \mu\text{Pa}$), is the decibel level of the maximum instantaneous acoustic pressure in a stated frequency band attained by an acoustic pressure signal, $p(t)$:

$$L_{p,pk} = 10 \log_{10} \left(\frac{\max|p^2(t)|}{p_0^2} \right) = 20 \log_{10} \left(\frac{\max|p(t)|}{p_0} \right) \quad (\text{A-1})$$

PK is often included as a criterion for assessing whether a sound is potentially injurious; however, because it does not account for the duration of an acoustic event, it is generally a poor indicator of perceived loudness.

The peak-to-peak sound pressure (PK-PK or $L_{p,pk-pk}$; dB re $1 \mu\text{Pa}$) is the difference between the maximum and minimum instantaneous sound pressure, possibly filtered in a stated frequency band, attained by an impulsive sound, $p(t)$:

$$L_{p,pk-pk} = 10 \log_{10} \left(\frac{[\max(p(t)) - \min(p(t))]^2}{p_0^2} \right) \quad (\text{A-2})$$

The sound pressure level (SPL or L_p ; dB re $1 \mu\text{Pa}$) is the root-mean-square (rms) pressure level in a stated frequency band over a specified time window (T ; s). It is important to note that SPL always refers to an rms pressure level and therefore not instantaneous pressure:

$$L_p = 10 \log_{10} \left(\frac{1}{T} \int g(t) p^2(t) dt / p_0^2 \right) \quad (\text{A-3})$$

where $g(t)$ is an optional time weighting function. In many cases, the start time of the integration is marched forward in small time steps to produce a time-varying SPL function. For short acoustic events, such as sonar pulses and marine mammal vocalizations, it is important to choose an appropriate time window that matches the duration of the signal. For in-air studies, when evaluating the perceived loudness of sounds with rapid amplitude variations in time, the time weighting function $g(t)$ is often set to a decaying exponential function that emphasizes more recent pressure signals. This function mimics the leaky integration nature of mammalian hearing. For example, human-based fast time-weighted SPL ($L_{p,fast}$) applies an exponential function with time constant 125 ms. A related simpler approach used in underwater acoustics sets $g(t)$ to a boxcar (unity amplitude) function of width 125 ms; the results can be referred to as $L_{p,boxcar 125ms}$. Another approach, historically used to evaluate SPL of impulsive signals underwater, defines $g(t)$ as a boxcar function with edges set to the times corresponding to 5% and 95% of the cumulative square pressure function encompassing the duration of an impulsive acoustic event. This calculation is applied individually to each impulse signal, and the results have been referred to as 90% SPL ($L_{p,90\%}$). In this report, SPL refers to $L_{p,boxcar 125ms}$.

The sound exposure level (SEL or L_E ; dB re 1 $\mu\text{Pa}^2\cdot\text{s}$) is the time-integral of the squared acoustic pressure over a duration (T):

$$L_E = 10 \log_{10} \left(\int_T p^2(t) dt / T_0 p_0^2 \right) \quad (\text{A-4})$$

where T_0 is a reference time interval of 1 s. SEL continues to increase with time when non-zero pressure signals are present. It is a dose-type measurement, so the integration time applied must be carefully considered for its relevance to effect to the exposed recipients.

SEL can be calculated over a fixed duration, such as the time of a single event or a period with multiple acoustic events. When applied to pulsed sounds, SEL can be calculated by summing the SEL of the N individual pulses. For a fixed duration, the square pressure is integrated over the duration of interest. For multiple events, the SEL can be computed by summing (in linear units) the SEL of the N individual events:

$$L_{E,N} = 10 \log_{10} \sum_{i=1}^N 10^{\frac{L_{E,i}}{10}} \quad (\text{A-5})$$

Because the SPL and SEL are both computed from the integral of square pressure, these metrics are related numerically by the following expression, which depends only on the duration of the time window T :

$$L_p = L_E - 10 \log_{10}(T) \quad (\text{A-6})$$

When applied, the frequency weighting of an acoustic event should be specified, as in the case of weighted SEL (e.g., $L_{E,LF,24h}$; see Appendix A.4).

A.2. Decidecade Band Analysis

The distribution of a sound's power with frequency is described by the sound's spectrum. The sound spectrum can be split into a series of adjacent frequency bands. Splitting a spectrum into 1 Hz wide bands, called passbands, yields the power spectral density of the sound. This splitting of the spectrum into passbands of a constant width of 1 Hz, however, does not represent how animals perceive sound.

Because animals perceive exponential increases in frequency rather than linear increases, analysing a sound spectrum with passbands that increase exponentially in size better approximates real-world scenarios. In underwater acoustics, a spectrum is commonly split into decidecade bands, which are one tenth of a decade wide. They are approximately one third of an octave (base 2) wide and are therefore often referred to as 1/3-octave-bands. Each octave represents a doubling in sound frequency. The centre frequency of the i th band, $f_c(i)$, is defined as:

$$f_c(i) = 10^{\frac{i}{10}} \text{ kHz} \quad (\text{A-7})$$

and the low (f_{lo}) and high (f_{hi}) frequency limits of the i th decade band are defined as:

$$f_{lo,i} = 10^{\frac{-1}{20}} f_c(i) \quad \text{and} \quad f_{hi,i} = 10^{\frac{1}{20}} f_c(i) \quad (\text{A-8})$$

The decidecade bands become wider with increasing frequency, and on a logarithmic scale the bands appear equally spaced (Figure A-1). The acoustic modelling spans from band 7 ($f_c(7) = 5$ Hz) to band 44 ($f_c(44) = 25$ kHz).

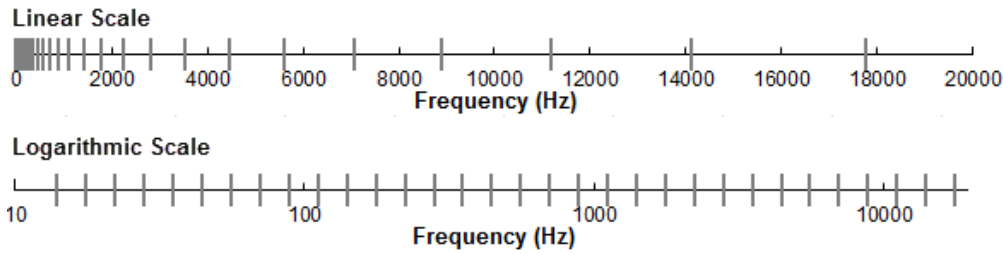


Figure A-1. Decade frequency bands (vertical lines) shown on a linear frequency scale and a logarithmic scale.

The sound pressure level in the i th band ($L_{p,i}$) is computed from the spectrum $S(f)$ between $f_{lo,i}$ and $f_{hi,i}$:

$$L_{p,i} = 10 \log_{10} \int_{f_{lo,i}}^{f_{hi,i}} S(f) df \tag{A-9}$$

Summing the sound pressure level of all the bands yields the broadband sound pressure level:

$$\text{Broadband SPL} = 10 \log_{10} \sum_i 10^{\frac{L_{p,i}}{10}} \tag{A-10}$$

Figure A-2 shows an example of how the decade band sound pressure levels compare to the sound pressure spectral density levels of an ambient noise signal. Because the decade bands are wider with increasing frequency, the decade band SPL is higher than the spectral levels at higher frequencies. Acoustic modelling of decade bands requires less computation time than 1 Hz bands and still resolves the frequency-dependence of the sound source and the propagation environment.

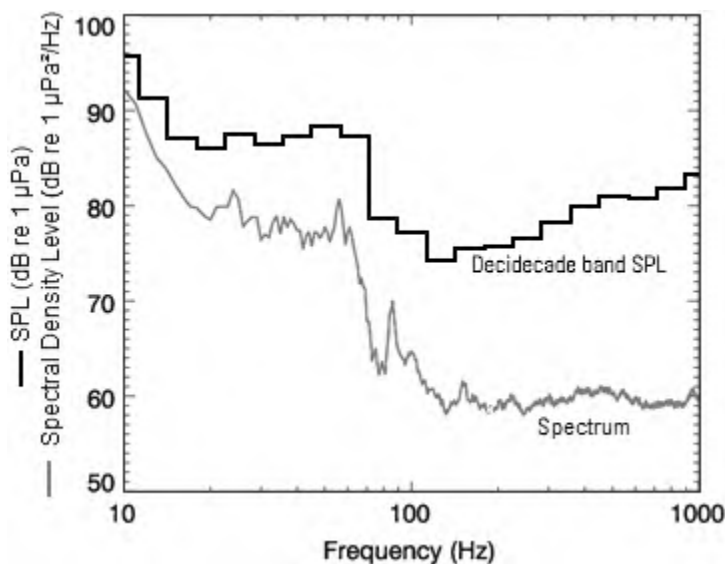


Figure A-2. Sound pressure spectral density levels and the corresponding decade band sound pressure levels of example ambient noise shown on a logarithmic frequency scale.

A.3. Marine Mammal Effect Criteria

It has been long recognised that marine mammals can be adversely affected by underwater anthropogenic noise. For example, Payne and Webb (1971) suggested that communication distances of fin whales are reduced by shipping sounds. Subsequently, similar concerns arose regarding effects of other underwater noise sources and the possibility that impulsive sources—primarily airguns used in seismic surveys—could cause auditory injury. This led to a series of workshops held in the late 1990s, conducted to address acoustic mitigation requirements for seismic surveys and other underwater noise sources (NMFS 1998, ONR 1998, Nedwell and Turnpenny 1998, HESS 1999, Ellison and Stein 1999). In the years since these early workshops, a variety of thresholds have been proposed for both injury and disturbance. The following sections summarize the recent development of thresholds; however, this field remains an active research topic.

A.3.1. Auditory Impairment

There are two categories of auditory threshold shifts (also termed Noise Induced Threshold Shift, NITS): Permanent Threshold Shift (PTS), a physical injury to an animal's hearing system; and Temporary Threshold Shift (TTS), a temporary reduction in an animal's hearing sensitivity as the result of physiological and mechanical processes in the inner ear. While PTS undoubtedly constitutes an injury, TTS (as a temporary effect) was not considered in the same way. However, recent research clearly indicates that already moderate levels (<12 dB) of TTS produced an accelerated hearing loss (PTS) resulting from progressive neural degeneration with age (Kujawa and Liberman 2006, 2009, Maison et al. 2013, Kujawa and Liberman 2015).

The criteria for assessing possible effects of impulsive sounds (such as pile driving or seismic impulses) noise on marine mammals, NMFS (2018), was applied in this study.

A.3.2. Behavioural Response

Numerous studies on marine mammal behavioural responses to sound exposure have not resulted in consensus in the scientific community regarding the appropriate metric for assessing behavioural reactions. However, it is recognised that the context in which the sound is received affects the nature and extent of responses to a stimulus (Southall et al. 2007, Ellison and Frankel 2012, Southall et al. 2016).

For non-impulsive noise, NMFS currently uses step function (all-or-none) threshold of 120 dB re 1 μ Pa SPL (unweighted) to assess and regulate noise-induced behavioural effects for marine mammals (NOAA 2019). The 120 dB re 1 μ Pa threshold is associated with continuous sources and was derived based on studies examining behavioural responses to drilling and dredging (NOAA 2018), referring to Malme et al. (1983), Malme et al. (1984), and Malme et al. (1986), which were considered in , referring to Malme et al. (1983), Malme et al. (1984), and Malme et al. (1986), which were considered in Southall et al. (2007). Malme et al. (1986) found that playback of drillship noise did not produce clear evidence of disturbance or avoidance for levels below 110 dB re 1 μ Pa (SPL), possible avoidance occurred for exposure levels approaching 119 dB re 1 μ Pa. Malme et al. (1984) determined that measurable reactions usually consisted of rather subtle short-term changes in speed and/or heading of the whale(s) under observation. It has been shown that both received level and proximity of the sound source is a contributing factor in eliciting behavioural reactions in humpback whales (Dunlop et al. 2017, Dunlop et al. 2018).

For impulsive noise, NMFS currently uses step function thresholds of 160 dB re 1 μ Pa SPL (unweighted) to assess and regulate noise-induced behavioural effects for marine mammals (NOAA 2018, NOAA 2019). The threshold for impulsive sound is derived from the High-Energy Seismic Survey (HESS) panel (HESS 1999) report that, in turn, is based on the responses of migrating mysticete whales to airgun sounds (Malme et al. 1984). The HESS team recognised that behavioural responses to sound may occur at lower levels, but significant responses were only likely to occur above a SPL of 140 dB re 1 μ Pa. Southall et al. (2007) found varying responses for most marine mammals between a SPL of 140 and 180 dB re 1 μ Pa, consistent with the HESS (1999) report, but lack of convergence in the data prevented them from suggesting explicit step functions.

A.4. Marine Mammal Frequency Weighting

The potential for noise to affect animals depends on how well the animals can hear it. Noises are less likely to disturb or injure an animal if they are at frequencies that the animal cannot hear well. An exception occurs when the sound pressure is so high that it can physically injure an animal by non-auditory means (i.e., barotrauma). For sound levels below such extremes, the importance of sound components at particular frequencies can be scaled by frequency weighting relevant to an animal's sensitivity to those frequencies (Nedwell and Turnpenney 1998, Nedwell et al. 2007).

A.4.1. Marine Mammal Frequency Weighting Functions

In 2015, a US Navy technical report by Finneran (2015) recommended new auditory weighting functions. The overall shape of the auditory weighting functions is similar to human A-weighting functions, which follows the sensitivity of the human ear at low sound levels. The new frequency-weighting function is expressed as:

$$G(f) = K + 10 \log_{10} \left[\left(\frac{(f/f_{lo})^{2a}}{[1 + (f/f_{lo})^2]^a [1 + (f/f_{hi})^2]^b} \right) \right] \quad (A-11)$$

Finneran (2015) proposed five functional hearing groups for marine mammals in water: low-, mid-, and high-frequency cetaceans, phocid pinnipeds, and otariid pinnipeds. The parameters for these frequency-weighting functions were further modified the following year (Finneran 2016) and were adopted in NOAA's technical guidance that assesses noise effects on marine mammals (NMFS 2016, NMFS 2018). Table A-1 lists the frequency-weighting parameters for each hearing group; Figure A-3 shows the resulting frequency-weighting curves.

Table A-1. Parameters for the auditory weighting functions used in this project as recommended by NMFS (2018).

Hearing group	a	b	f_{lo} (Hz)	f_{hi} (kHz)	K (dB)
Low-frequency cetaceans (baleen whales)	1.0	2	200	19,000	0.13
Mid-frequency cetaceans (dolphins, plus toothed, beaked, and bottlenose whales)	1.6	2	8,800	110,000	1.20
High-frequency cetaceans (true porpoises, <i>Kogia</i> , river dolphins, cephalorhynchid, <i>Lagenorhynchus cruciger</i> and <i>L. australis</i>)	1.8	2	12,000	140,000	1.36

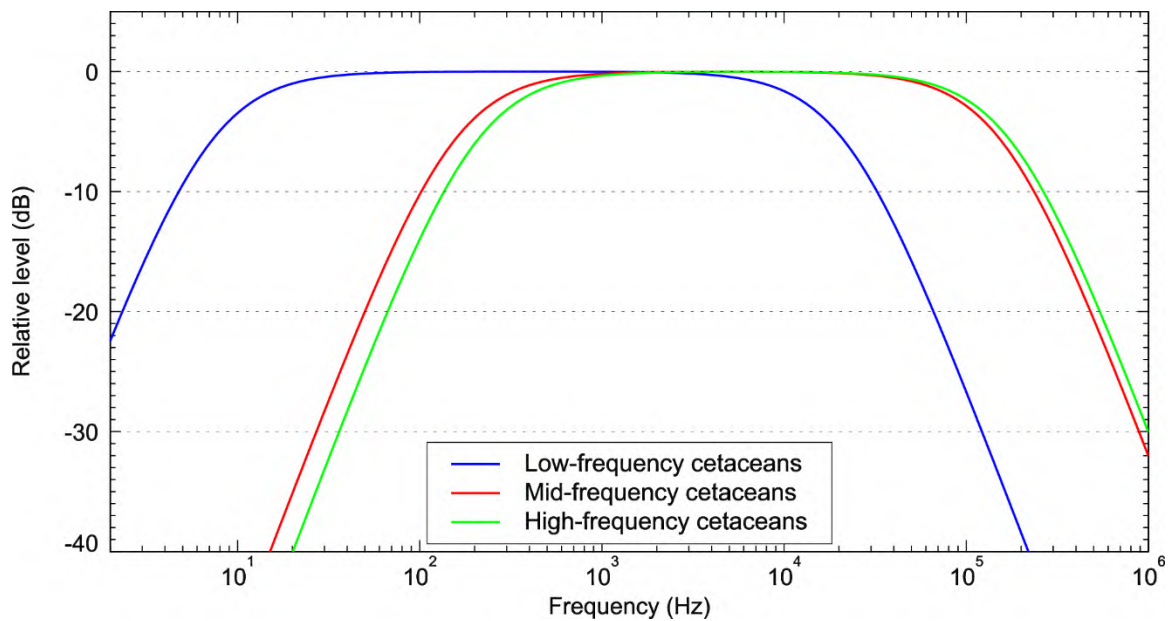


Figure A-3. Auditory weighting functions for functional marine mammal hearing groups used in this project as recommended by NMFS (2018).

A.5. Fish, Fish Eggs, Fish Larvae and Plankton Guidelines

In general, any adverse effects of seismic sound on fish behaviour depends on the species, the state of the individuals exposed, and other factors. We note that, despite mortality being a possibility for fish exposed to airgun sounds, Popper et al. (2014) do not reference an actual occurrence of this effect. Since the publication of that work, newer studies have further examined the question of possible mortality. Popper et al. (2016) adds further information to the possible levels of impulsive seismic airgun sound to which adult fish can be exposed without immediate mortality. They found that the two fish species in their study, with body masses in the range 200–400 g, exposed to a single-impulse of a maximum received level of either 231 dB re 1 μPa (PK) or 205 dB re 1 $\mu\text{Pa}^2\text{-s}$ (SEL), remained alive for 7 days after exposure and that the probability of mortal injury did not differ between exposed and control fish.

In the discussion of the criteria, Popper et al. (2014) discuss the complications in determining a relevant period of mobile seismic surveys, as the received levels at the fish change between impulses because the source is moving, and that in reality a revised guideline based on the closest PK or the per-pulse SEL might be more useful than one based on accumulated SEL. This is because exposures at the closest point of approach (CPA) are the primary exposures contributing to a receiver's accumulated level (Gedamke et al. 2011). Additionally, several important factors determine the likelihood and duration a receiver is expected to be in close proximity to a sound source (i.e., overlap in space and time between the source and receiver). For example, accumulation time for fast moving (relative to the receiver) mobile sources is driven primarily by the characteristics of the source (i.e., speed, duty cycle; NMFS 2016, 2018).

As discussed in Popper (2018), many fish species move around, some over large distances. The author suggests that it is reasonable to think that if the sound of a seismic source becomes too loud, the fish will move away from the source because they are able to determine the direction of a sound source. If the fish moves away, the amount of energy to which it is exposed is likely to be one or a few seismic pulses, and these would not likely be loud enough to result in any effect because the fish would move away at a much lower-level signal than could cause harm. Data on TTS for fish are very limited, with the only study that examined recovery from seismic impulses being Popper et al. (2005). Popper (2018) states that if this study had been conducted on wild, free-swimming fish instead of caged ones, there would have been no effect whatsoever because they were likely to have moved away from the source as it approached them, as would happen with normally free-moving demersal

and pelagic fish species associated with a 3-D seismic survey in northern Australian waters, extrapolating from the Bethany 3-D assessed in Popper (2018).

Therefore, the time over which energy should be accumulated in each individual fish in the survey area should be limited to the time over which fish receives the maximum exposure, and 24 h is likely too long a period for calculating the accumulation of energy in determining potential harm (e.g., damage or TTS) (Popper 2018). Even if fish do show some TTS, recovery will start as soon as the most intense sounds end, and recovery is likely to even occur, to a limited degree, between seismic pulses. Based on very limited data, recovery within 24 h (or less) is very likely. If TTS does occur, the duration of exposure to the most intense sounds that could result in TTS will be over just a few hours. Thus, energy accumulating over longer periods than a few hours is probably inappropriate (Popper 2018).

Appendix B. Models

B.1. Acoustic Source Model

The source levels and directivity of the seismic source were predicted with JASCO's Airgun Array Source Model (AASM). AASM includes low- and high-frequency modules for predicting different components of the seismic source spectrum. The low-frequency module is based on the physics of oscillation and radiation of airgun bubbles, as originally described by Ziolkowski (1970), that solves the set of parallel differential equations that govern bubble oscillations. Physical effects accounted for in the simulation include pressure interactions between airguns, port throttling, bubble damping, and generator-injector (GI) gun behaviour discussed by Dragoset (1984), Laws et al. (1990), and Landrø (1992). A global optimisation algorithm tunes free parameters in the model to a large library of airgun source signatures.

While airgun signatures are highly repeatable at the low frequencies, which are used for seismic imaging, their sound emissions have a large random component at higher frequencies that cannot be predicted using a deterministic model. Therefore, AASM uses a stochastic simulation to predict the high-frequency (800–25,000 Hz) sound emissions of individual airguns, using a data-driven multiple-regression model. The multiple-regression model is based on a statistical analysis of a large collection of high quality seismic source signature data recently obtained from the Joint Industry Program (JIP) on Sound and Marine Life (Mattsson and Jenkerson 2008). The stochastic model uses a Monte-Carlo simulation to simulate the random component of the high-frequency spectrum of each airgun in an array. The mean high-frequency spectra from the stochastic model augment the low-frequency signatures from the physical model, allowing AASM to predict airgun source levels at frequencies up to 25,000 Hz.

AASM produces a set of “notional” signatures for each array element based on:

- Array layout
- Volume, tow depth, and firing pressure of each airgun
- Interactions between different airguns in the array

These notional signatures are the pressure waveforms of the individual airguns at a standard reference distance of 1 m; they account for the interactions with the other airguns in the array. The signatures are summed with the appropriate phase delays to obtain the far-field source signature of the entire array in all directions. This far-field array signature is filtered into decade frequency bands to compute the source levels of the array as a function of frequency band and azimuthal angle in the horizontal plane (at the source depth), after which it is considered a directional point source in the far field.

A seismic array consists of many sources and the point source assumption is invalid in the near field where the array elements add incoherently. The maximum extent of the near field of an array (R_{nf}) is:

$$R_{nf} < \frac{l^2}{4\lambda} \quad (\text{B-1})$$

where λ is the sound wavelength and l is the longest dimension of the array (Lurton 2002, §5.2.4). For example, a seismic source length of $l = 21$ m yields a near-field range of 147 m at 2 kHz and 7 m at 100 Hz. Beyond this R_{nf} range, the array is assumed to radiate like a directional point source and is treated as such for propagation modelling.

The interactions between individual elements of the array create directionality in the overall acoustic emission. Generally, this directionality is prominent mainly at frequencies in the mid-range between tens of hertz to several hundred hertz. At lower frequencies, with acoustic wavelengths much larger than the inter-airgun separation distances, the directionality is small. At higher frequencies, the pattern of lobes is too finely spaced to be resolved and the effective directivity is less.

B.2. Sound Propagation Models

B.2.1. MONM-BELLHOP

Long-range sound fields were computed using JASCO’s Marine Operations Noise Model (MONM). Compared to VSTACK, MONM less accurately predicts steep-angle propagation for environments with higher shear speed but is well suited for effective longer-range estimation. This model computes sound propagation at frequencies of 5 Hz to 2 kHz via a wide-angle parabolic equation solution to the acoustic wave equation (Collins 1993) based on a version of the US Naval Research Laboratory’s Range-dependent Acoustic Model (RAM), which has been modified to account for a solid seabed (Zhang and Tindle 1995). MONM computes sound propagation at frequencies > 2 kHz via the BELLHOP Gaussian beam acoustic ray-trace model (Porter and Liu 1994).

The parabolic equation method has been extensively benchmarked and is widely employed in the underwater acoustics community (Collins et al. 1996). MONM accounts for the additional reflection loss at the seabed, which results from partial conversion of incident compressional waves to shear waves at the seabed and sub-bottom interfaces, and it includes wave attenuations in all layers. MONM incorporates the following site-specific environmental properties: a bathymetric grid of the modelled area, underwater sound speed as a function of depth, and a geoacoustic profile based on the overall stratified composition of the seafloor.

MONM computes acoustic fields in three dimensions by modelling transmission loss within two-dimensional (2-D) vertical planes aligned along radials covering a 360° swath from the source, an approach commonly referred to as N×2-D. These vertical radial planes are separated by an angular step size of $\Delta\theta$, yielding $N = 360^\circ/\Delta\theta$ number of planes (Figure B-1).

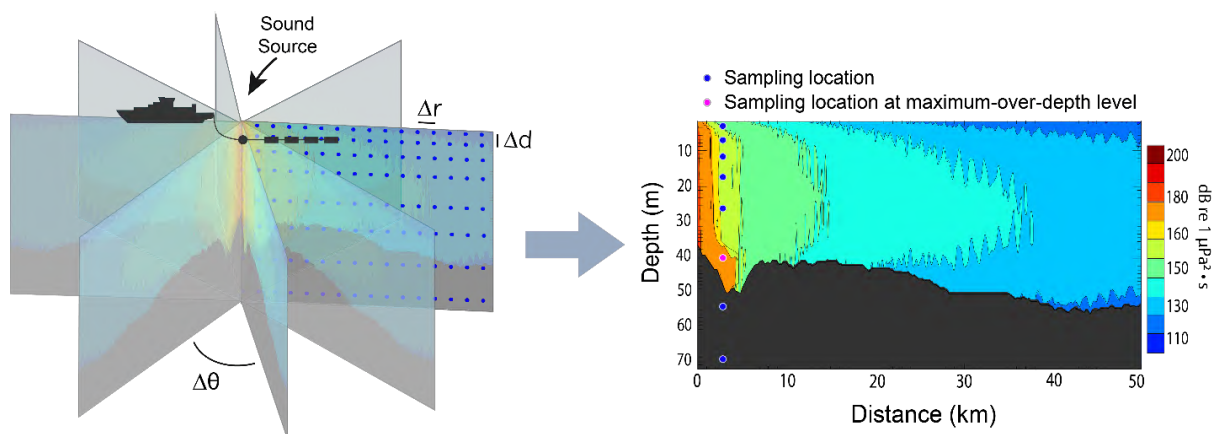


Figure B-1. The N×2-D and maximum-over-depth modelling approach used by MONM.

MONM treats frequency dependence by computing acoustic transmission loss at the centre frequencies of decidecade bands. Sufficiently many frequency bands, starting at 5 Hz, are modelled to include most of the acoustic energy emitted by the source. At each centre frequency, the transmission loss is modelled within each of the N vertical planes as a function of depth and distance from the source. The decidecade-band received per-pulse SEL are computed by subtracting the band transmission loss values from the directional source level in that frequency band. Composite broadband received per-pulse SEL are then computed by summing the received decidecade-band levels.

The received per-pulse SEL sound field within each vertical radial plane is sampled at various radial distances from the source, generally with a fixed radial step size. At each sampling range along the surface, the sound field is sampled at various depths, with the step size between samples increasing with depth below the surface. The step sizes are chosen to provide increased coverage near the depth of the source and at depths of interest in terms of the sound speed profile. For areas with deep water, sampling is not performed at depths beyond those reachable by marine mammals. The received per-pulse SEL at a surface sampling location is taken as the maximum value that occurs

over all samples within the water column, i.e., the maximum-over-depth received per-pulse SEL. These maximum-over-depth per-pulse SEL are presented as colour contours around the source.

B.2.2. Full Waveform Range-dependent Acoustic Model: FWRAM

For impulsive sounds from the seismic source, time-domain representations of the pressure waves generated in the water are required to calculate SPL and PK. Furthermore, the seismic source must be represented as a distributed source to accurately characterise vertical directivity effects in the near-field zone. For this study, synthetic pressure waveforms were computed using FWRAM, which is a time-domain acoustic model based on the same wide-angle parabolic equation (PE) algorithm as MONM. FWRAM computes synthetic pressure waveforms versus range and depth for range-varying marine acoustic environments, and it takes the same environmental inputs as MONM (bathymetry, water sound speed profile, and seafloor geoacoustic profile). Unlike MONM, FWRAM computes pressure waveforms via Fourier synthesis of the modelled acoustic transfer function in closely spaced frequency bands. FWRAM employs the array starter method to accurately model sound propagation from a spatially distributed source (MacGillivray and Chapman 2012).

Besides providing direct calculations of the PK and SPL, the synthetic waveforms from FWRAM can also be used to convert the SEL values from MONM to SPL.

B.3. Model Validation Information

Predictions from JASCO's Airgun Array Source Model (AASM) and propagation models (MONM, FWRAM and VSTACK) have been validated against experimental data from a number of underwater acoustic measurement programs conducted by JASCO globally, including the United States and Canadian Arctic, Canadian and southern United States waters, Greenland, Russia and Australia (Hannay and Racca 2005, Aerts et al. 2008, Funk et al. 2008, Ireland et al. 2009, O'Neill et al. 2010, Warner et al. 2010, Racca et al. 2012a, Racca et al. 2012b, Matthews and MacGillivray 2013, Martin et al. 2015, Racca et al. 2015, Martin et al. 2017a, Martin et al. 2017b, Warner et al. 2017, MacGillivray 2018, McPherson et al. 2018, McPherson and Martin 2018).

In addition, JASCO has conducted measurement programs associated with a significant number of anthropogenic activities which have included internal validation of the modelling (including McCrodan et al. 2011, Austin and Warner 2012, McPherson and Warner 2012, Austin and Bailey 2013, Austin et al. 2013, Zykov and MacDonnell 2013, Austin 2014, Austin et al. 2015, Austin and Li 2016, Martin and Popper 2016).

B.4. Animal Movement and Exposure Modelling

Animal movement and exposure modelling considers the movement of both sound sources (if mobile) and animals over time. Acoustic source and propagation modelling are used to generate 3-D sound fields that vary as a function of distance to source, depth, and azimuth. Sound sources are modelled at representative sites and the resulting sound fields are assigned to source locations using the minimum Euclidean distance. The sound received by an animal at any given time depends on its location relative to the source. Because the true locations of the animals within the sound fields are unknown, realistic animal movements are simulated using repeated random sampling of various behavioural parameters. The Monte Carlo method of simulating many animals within the operations area is used to estimate the sound exposure history of the population of simulated animals (animats).

Monte Carlo methods provide a heuristic approach for determining the probability distribution function (PDF) of complex situations, such as animals moving in a sound field. The probability of an event's occurrence is determined by the frequency with which it occurs in the simulation. The greater the number of random samples, in this case the more simulated animats, the better the approximation of the PDF. Animats are randomly placed, or seeded, within the simulation boundary at a specified density (animats/km²). Higher densities provide a finer PDF estimate resolution but require more computational resources. To ensure good representation of the PDF, the animat density is set as high as practical allowing for computation time. The animat density is much higher than the real-world

density to ensure good representation of the PDF. The resulting PDF is scaled using the real-world density.

Several models for marine mammal movement have been developed (Ellison et al. 1987, Frankel et al. 2002, Houser 2006). These models use an underlying Markov chain to transition from one state to another based on probabilities determined from measured swimming behaviour. The parameters may represent simple states, such as the speed or heading of the animal, or complex states, such as likelihood of participating in foraging, play, rest, or travel. Attractions and aversions to variables like anthropogenic sounds and different depth ranges can be included in the models.

The JASCO Animal Simulation Model Including Noise Exposure (JASMINE) was based on the open-source marine mammal movement and behaviour model (3MB, Houser 2006) and used to predict the exposure of animats to sound arising from the anthropogenic activities. Animats are programmed to behave like the species likely to be present in the survey area. The parameters used for forecasting realistic behaviours (e.g., diving, foraging, aversion, surface times, etc.) are determined and interpreted from marine species studies (e.g., tagging studies) where available, or reasonably extrapolated from related species. An individual animat's modelled sound exposure levels are summed over the total simulation duration to determine its total received energy, and then compared to the assumed threshold criteria.

JASMINE uses the same animal movement algorithms as 3MB (Houser, 2006), but has been extended to be directly compatible with JASCO's Marine Operations Noise Model (MONM) and Full Waveform Range-dependent Acoustic Model acoustic field predictions, for inclusion of source tracks, and importantly for animats to change behavioural states based on time and space dependent modelled variables such as received levels for aversion behaviour, although aversion was not considered in this study.

B.4.1. Animal Movement Parameters

JASMINE uses previously measured behaviour to forecast behaviour in new situations and locations. The parameters used for forecasting realistic behaviour are determined (and interpreted) from marine species studies (e.g., tagging studies). Each parameter in the model is described as a probability distribution. When limited or no information is available for a species parameter, a Gaussian or uniform distribution may be chosen for that parameter. For the Gaussian distribution, the user determines the mean and standard deviation of the distribution from which parameter values are drawn. For the uniform distribution, the user determines the maximum and minimum distribution from which parameter values are drawn. When detailed information about the movement and behaviour of a species are available, a user-created distribution vector, including cumulative transition probabilities, may be used (referred to here as a vector model; Houser 2006). Different sets of parameters can be defined for different behaviour states. The probability of an animat starting out in or transitioning into a given behaviour state can in turn be defined in terms of the animat's current behavioural state, depth, and the time of day. In addition, each travel parameter and behavioural state has a termination function that governs how long the parameter value or overall behavioural state persists in simulation.

The parameters used in JASMINE describe animal movement in both the vertical and horizontal planes. The parameters relating to travel in these two planes are briefly described below.

Travel sub-models

- **Direction**– determines an animat's choice of direction in the horizontal plane. Sub-models are available for determining the heading of animats, allowing for movement to range from strongly biased to undirected. A random walk model can be used for behaviours with no directional preference, such as feeding and playing. In a random walk, all bearings are equally likely at each parameter transition time step. A correlated random walk can be used to smooth the changes in bearing by using the current heading as the mean of the distribution from which to draw the next heading. An additional variant of the correlated random walk is available that includes a directional bias for use in situations where animals have a preferred absolute direction, such as migration. A user-defined vector of directional probabilities can also be input to control animat heading. For more detailed discussion of these parameters, see Houser (2006) and Houser and Cross (1999).

- **Travel rate**—defines an animat’s rate of travel in the horizontal plane. When combined with vertical speed and dive depth, the dive profile of the animat is produced.

Dive sub-models

- **Ascent rate**—defines an animat’s rate of travel in the vertical plane during the ascent portion of a dive.
- **Descent rate**—defines an animat’s rate of travel in the vertical plane during the descent portion of a dive.
- **Depth**—defines an animat’s maximum dive depth.
- **Reversals**—determines whether multiple vertical excursions occur once an animat reaches the maximum dive depth. This behaviour is used to emulate the foraging behaviour of some marine mammal species at depth. Reversal-specific ascent and descent rates may be specified.
- **Surface interval**—determines the duration an animat spends at, or near, the surface before diving again.

B.4.2. Exposure Integration Time

The interval over which acoustic exposure (L_E) should be integrated and maximal exposure (L_p) determined is not well defined. Both Southall et al. (2007) and the NMFS (2018) recommend a 24 h baseline accumulation period, but state that there may be situations where this is not appropriate (e.g., a high-level source and confined population). Resetting the integration after 24 h can lead to overestimating the number of individual animals exposed because individuals can be counted multiple times during an operation. The type of animal movement engine used in this study simulates realistic movement using swimming behaviour collected over relatively short periods (hours to days) and does not include large-scale movement such as migratory circulation patterns. For this study, 7 days were modelled, with results for the full period and also scaled down to 24 h.

Ideally, a simulation area is large enough to encompass the entire range of a population so that any animal that could approach the source during an operation is included. However, there are limits to the simulation area, and computational overhead increases with area. For practical reasons, the simulation area is limited. In the simulation, every animat that reaches a border is replaced by another animat entering at the opposing border—e.g., an animat crossing the northern border of the simulation is replaced by one entering the southern border at the same longitude. When this action places the animat in an inappropriate water depth, the animat is randomly placed on the map at a depth suited to its species definition. The exposures of all animats (including those leaving the simulation and those entering) are kept for analysis. This approach maintains a consistent animat density and allows for longer integration periods with finite simulation areas.

B.4.3. Seeding Density and Scaling

The exposure criteria for continuous sounds were used to determine the number of animats exceeding exposure thresholds. To generate statistically reliable probability density functions, all simulations were seeded with an animat density of 2 animat/km² over the entire simulation area.

Appendix C. Methods and Parameters

This section describes the specifications of the seismic source that was used at all sites and the environmental parameters used in the propagation models.

C.1. Estimating Distance to Threshold Levels

Sound level contours were calculated based on the underwater sound fields predicted by the propagation models, sampled by taking the maximum value over all modelled depths above the sea floor for each location in the modelled region. The predicted distances to specific levels were computed from these contours. Two distances relative to the source are reported for each sound level: 1) R_{max} , the maximum range to the given sound level over all azimuths, and 2) $R_{95\%}$, the range to the given sound level after the 5% farthest points were excluded (see examples in Figure C-1).

The $R_{95\%}$ is used because sound field footprints are often irregular in shape. In some cases, a sound level contour might have small protrusions or anomalous isolated fringes. This is demonstrated in the image in Figure C-1(a). In cases such as this, where relatively few points are excluded in any given direction, R_{max} can misrepresent the area of the region exposed to such effects, and $R_{95\%}$ is considered more representative. In strongly asymmetric cases such as shown in Figure C-1(b), on the other hand, $R_{95\%}$ neglects to account for significant protrusions in the footprint. In such cases R_{max} might better represent the region of effect in specific directions. Cases such as this are usually associated with bathymetric features affecting propagation. The difference between R_{max} and $R_{95\%}$ depends on the source directivity and the non-uniformity of the acoustic environment.

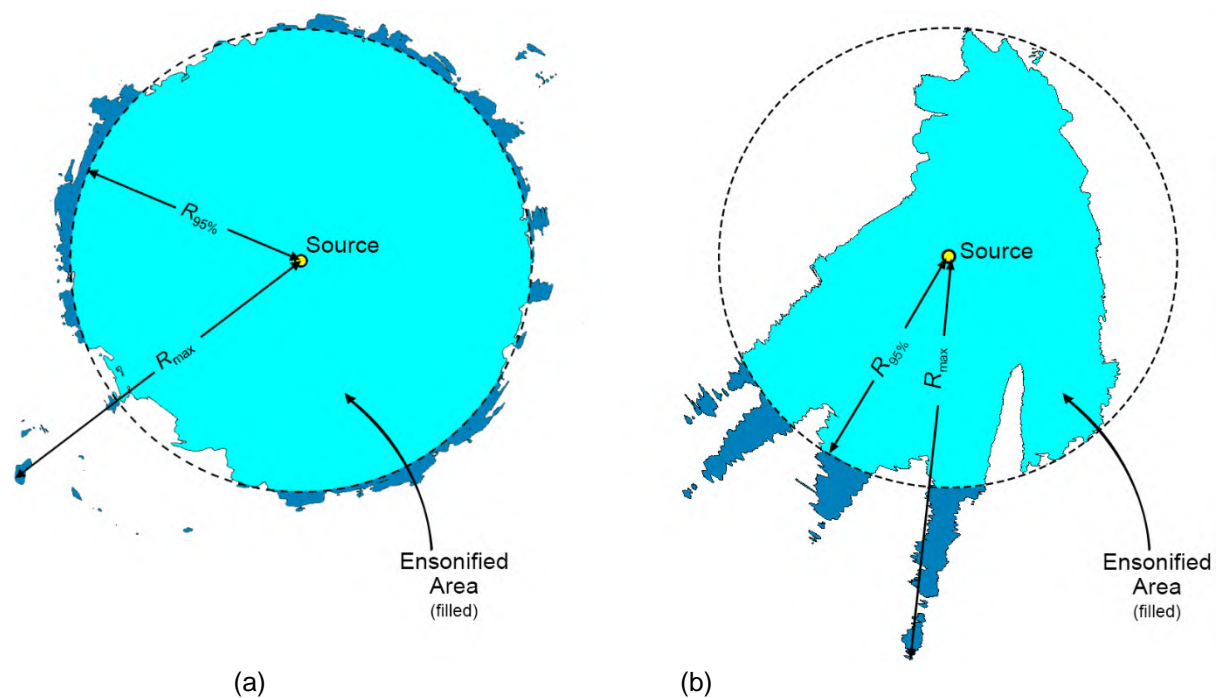


Figure C-1. Sample areas ensonified to an arbitrary sound level with R_{max} and $R_{95\%}$ ranges shown for two different scenarios. (a) Largely symmetric sound level contour with small protrusions. (b) Strongly asymmetric sound level contour with long protrusions. Light blue indicates the ensonified areas bounded by $R_{95\%}$; darker blue indicates the areas outside this boundary which determine R_{max} .

C.2. Estimating SPL from Modelled SEL Results

The per-pulse SEL of sound pulses is an energy-like metric related to the dose of sound received over a pulse’s entire duration. The pulse SPL on the other hand, is related to its intensity over a specified time interval. Seismic pulses typically lengthen in duration as they propagate away from their source, due to seafloor and surface reflections, and other waveguide dispersion effects. The changes in pulse length, and therefore the time window considered, affect the numeric relationship between SPL and SEL. This study has applied a fixed window duration to calculate SPL ($T_{fix} = 125$ ms; see Appendix A.1), as implemented in Martin et al. (2017b). Full-waveform modelling was used to estimate SPL, but this type of modelling is computationally intensive, and can be prohibitively time consuming when run at high spatial resolution over large areas.

For the current study, FWRAM (Appendix B.2.2) was used to model synthetic seismic pulses over the frequency range 5–1024 Hz. This was performed along all broadside and endfire radials at one site due to the relatively constant and similar water depths throughout the survey area. FWRAM uses Fourier synthesis to recreate the signal in the time domain so that both the SEL and SPL from the source can be calculated. The differences between the SEL and SPL were extracted for all ranges and depths that corresponded to those generated from the high spatial-resolution results from MONM. A 125 ms fixed time window positioned to maximize the SPL over the pulse duration was applied. The resulting SEL -to-SPL offsets were averaged in 20 m range bins along each modelled radial and depth, and the 90th percentile was selected at each range to generate a generalised range-dependent conversion function for each site. The range- dependent conversion function was averaged between the two sites and applied to predicted per-pulse SEL results from MONM to model SPL values. Figure C-2 show the conversion offsets for Site 2; the spatial variation is caused by changes in the received airgun pulse as it propagates from the source.

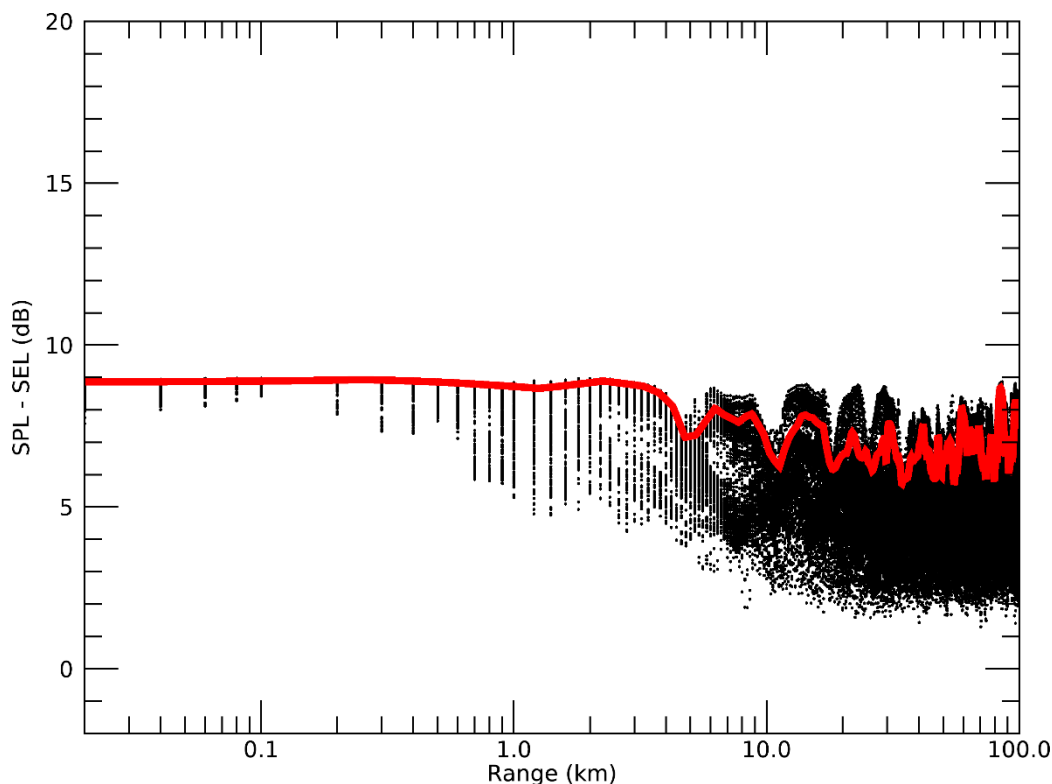


Figure C-2. *Site 2*: Range-and-depth-dependent conversion offsets for converting SEL to SPL for seismic pulses. Slices are shown for the 3150 in³ seismic source. Black lines are the modelled differences between SEL and SPL across different radials and receiver depths; the solid red line is the 90th percentile of the modelled differences at each range.

C.3. Accumulated SEL Calculation

When there are many seismic pulses, it becomes computationally prohibitive to perform sound propagation modelling for every single event. The distance between the consecutive seismic impulses is small enough, however, that the environmental parameters that influence sound propagation are virtually the same for many impulse points. The acoustic fields can, therefore, be modelled for a subset of seismic pulses and estimated at several adjacent ones. After sound fields from representative impulse locations are calculated, they are adjusted to account for the source position for nearby impulses.

Although estimating the cumulative sound field with the described approach is not as precise as modelling sound propagation at every impulse location, small-scale, site-specific sound propagation features tend to blur and become less relevant when sound fields from adjacent impulses are summed. Larger scale sound propagation features, primarily dependent on water depth, dominate the cumulative field. The accuracy of the present method acceptably reflects those large-scale features, thus providing a meaningful estimate of a wide area SEL field in a computationally feasible framework.

To produce the map of accumulated received sound level distributions and calculate distances to specified sound level thresholds, the maximum-over-depth level was calculated at each sampling point within the modelled region. The radial grids of maximum-over-depth sound levels for each impulse were then resampled (by linear triangulation) to produce a regular Cartesian grid. The sound field grids from all impulses were summed (Equation A-5) to produce the cumulative sound field grid with cell sizes of 20 m. The contours and threshold ranges were calculated from these flat Cartesian projections of the modelled acoustic fields. The single-impulse SEL fields were computed over model grids approximately 100 × 100 km in range, which encompasses the full area of the cumulative grid (the entire survey area).

The unweighted (fish) and frequency-weighted (mammals and sea turtles) SEL_{24h} results were rendered as contour maps, including contours that focus on the relevant criteria-based thresholds. Only contours at ranges larger than the nearfield of the seismic source were rendered.

C.4. Environmental Parameters

C.4.1. Bathymetry

Water depths throughout the modelled area were extracted from the Australian Bathymetry and Topography Grid, a 9 arc-second grid rendered for Australian waters (Whitway 2009) for the region shown in Figure C-3. Bathymetry data were extracted and re-gridded onto a Universal Transverse Mercator (UTM) coordinate projection (Zone 50) with a regular grid spacing of 100 × 100 m to generate the bathymetry in Figure C-3 (note the data is re-projected or the display in the Map Grid of Australia (MGA) coordinate system).

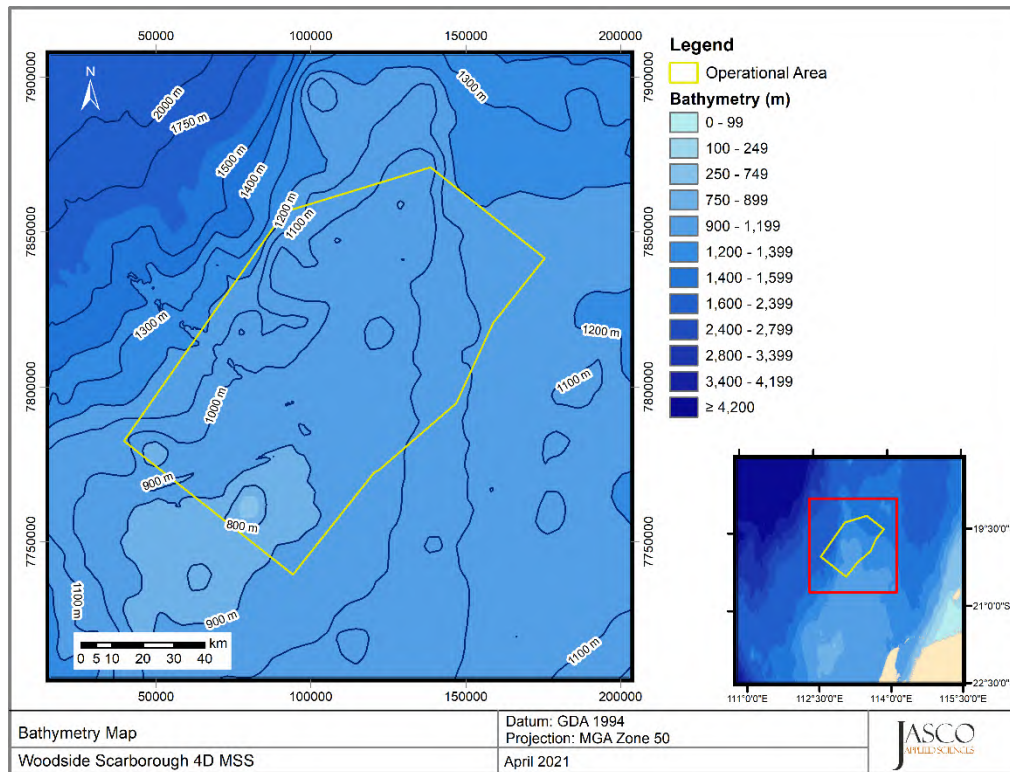


Figure C-3. Map of the modelling area presenting the variation in water depth.

C.4.2. Sound Speed Profile

The sound speed profiles for the modelled sites were derived from temperature and salinity profiles from the US Naval Oceanographic Office’s Generalized Digital Environmental Model V 3.0 (GDEM; Teague et al. 1990, Carnes 2009). GDEM provides an ocean climatology of temperature and salinity for the world’s oceans on a latitude-longitude grid with 0.25° resolution, with a temporal resolution of one month, based on global historical observations from the US Navy’s Master Oceanographic Observational Data Set (MOODS). The climatology profiles include 78 fixed depth points to a maximum depth of 6800 m (where the ocean is that deep). The GDEM temperature-salinity profiles were converted to sound speed profiles according to Coppens (1981).

A mean sound speed profile for August (representative of potential operational period, January to April or July to October) was derived from the GDEM profiles within a 100 km box radius encompassing all modelling sites. The sound speed profile in August is expected to be most favourable to longer-range sound propagation during the proposed survey time frame due to a slight upward refracting profile in the upper 50 m. As such, August was selected for sound propagation modelling to ensure precautionary estimates of distances to received sound level thresholds. Figure C-4 shows the resulting profile used as input to the sound propagation modelling.

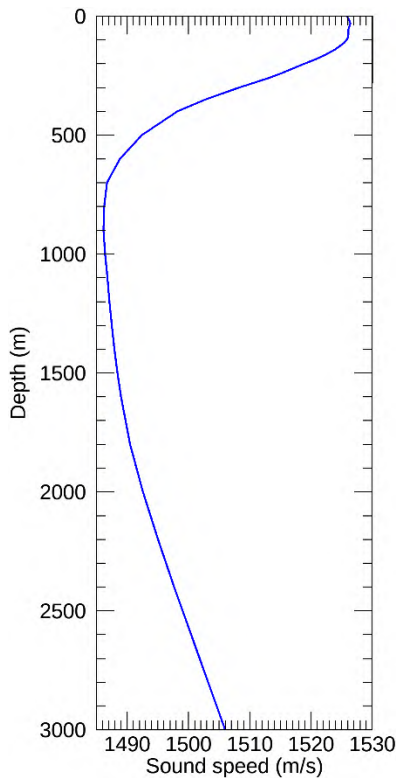


Figure C-4. Monthly averaged sound speed profile for August. The profile for August was used in modelling all sound fields. All profiles were calculated from temperature and salinity profiles from GDEM V 3.0 (GDEM; Teague et al. 1990, Carnes 2009).

C.4.3. Geoacoustics

Deep core samples (Exon and Willcox 1980) show the presence of a thick package of pelagic sediments below the seafloor that is bounded by sedimentary bedrock at a depth of ~2000 m. Table C-1 shows the derived geoacoustic profile that was based on geologic information and descriptions from core samples, generic properties for carbonate sediments and calcarenite from Hamilton (1980) and Duncan et al. (2013).

Table C-1. Geoacoustic profile for the Sites 1–2. Within each depth range, each parameter varies linearly within the stated range. The compressional wave is the primary wave and the shear wave is the secondary wave.

Depth below seafloor (m)	Material	Density (g/cm ³)	Compressional wave		Shear wave	
			Speed (m/s)	Attenuation (dB/λ)	Speed (m/s)	Attenuation (dB/λ)
0–30	Foraminifera/nannofossil ooze, calcisiltit	1.52–1.56	1560–1600	0.12–0.13	250	3.65
30–100		1.56–1.65	1600–1700	0.13–0.15		
100–2000	Calcarenite/calcisiltit	1.90–2.20	2100–2600	0.25–0.52		
>2000	Sedimentary bedrock	2.54	3500	0.11		

C.5. Seismic Sources

The layout of the 3150 in³ seismic source used for modelling in this study is provided in Figure C-5. Details of the airgun parameters are provided in Table C-2.

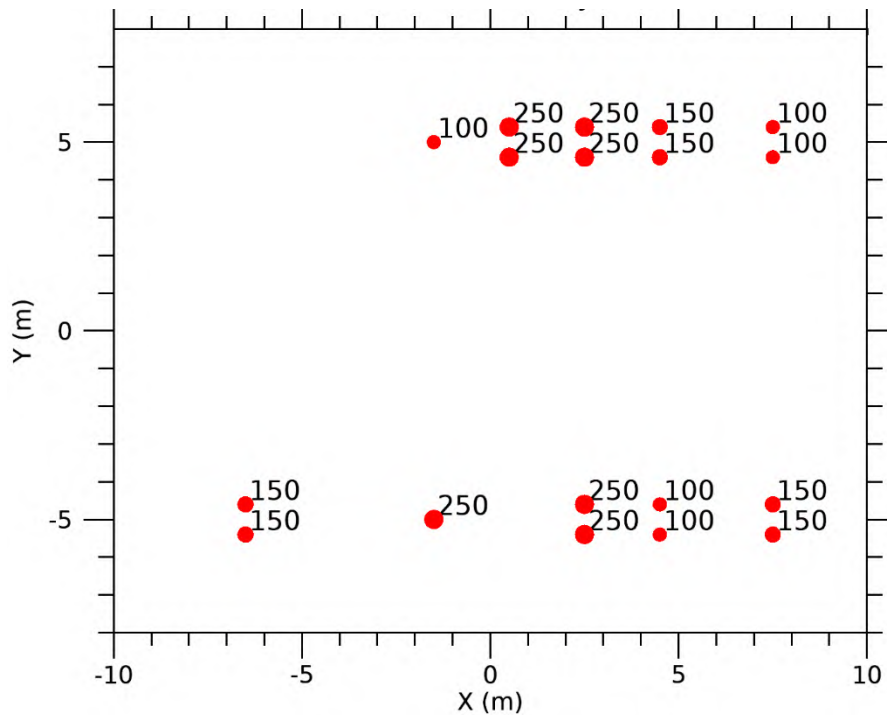


Figure C-5. Layout of the modelled 3150 in³ array. Tow depth is 7 m. The labels indicate the firing volume (in cubic inches) for each airgun. Also see Table C-2.

Table C-2. Layout of the modelled 3150 in³ array. Tow depth is 7 m. Firing pressure for all guns is 2000 psi. Also see Figure C-5.

String	Gun	x (m)	y (m)	z (m)	Vol (in ³)	String	Gun	x (m)	y (m)	z (m)	Vol (in ³)
1	1	7.5	-5.4	7	150	2	12	7.5	4.6	7	100
	2	7.5	-4.6	7	150		13	7.5	5.4	7	100
	3	4.5	-5.4	7	100		14	4.5	4.6	7	150
	4	4.5	-4.6	7	100		15	4.5	5.4	7	150
	5	2.5	-5.4	7	250		16	2.5	4.6	7	250
	6	2.5	-4.6	7	250		17	2.5	5.4	7	250
	8	-1.5	-5	7	250		18	0.5	4.6	7	250
	10	-6.5	-5.4	7	150		19	0.5	5.4	7	250
	11	-6.5	-4.6	7	150		20	-1.5	5	7	100

C.5.1. Array Source Levels and Directivity

Figure C-6 shows the broadside (perpendicular to the tow direction), endfire (parallel to the tow direction) and vertical overpressure signature and corresponding power spectrum levels for the 3150 in³ array. Horizontal decidecade-band source levels are shown as a function of band centre frequency and azimuth (Figure C-7).

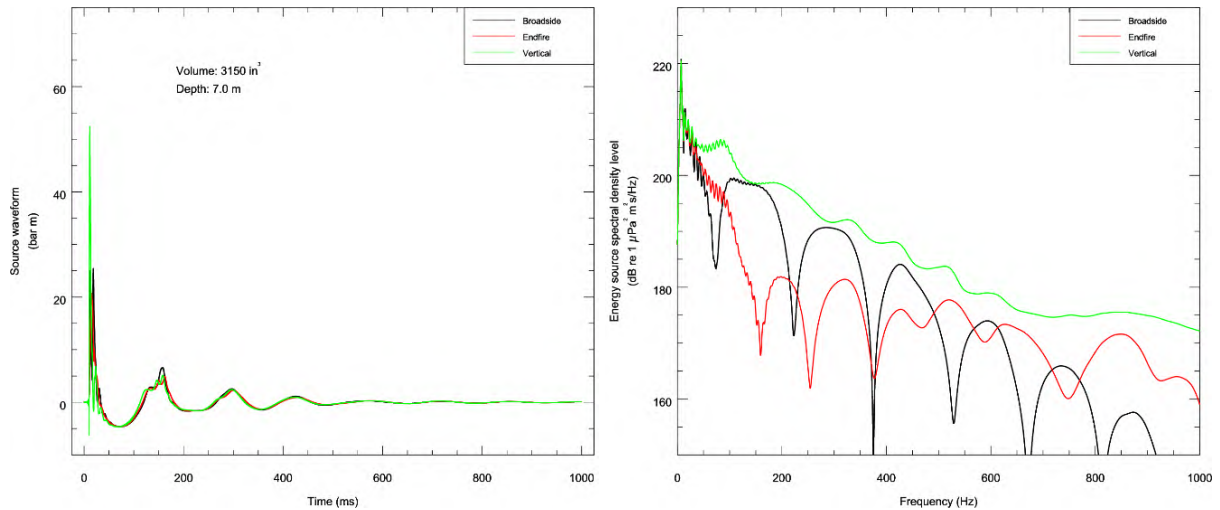


Figure C-6. Predicted source level details for the 3150 in³ array at 7 m towed depth. (Left) the overpressure signature and (right) the power spectrum for in-plane horizontal (broadside), perpendicular (endfire), and vertical directions (no surface ghost).

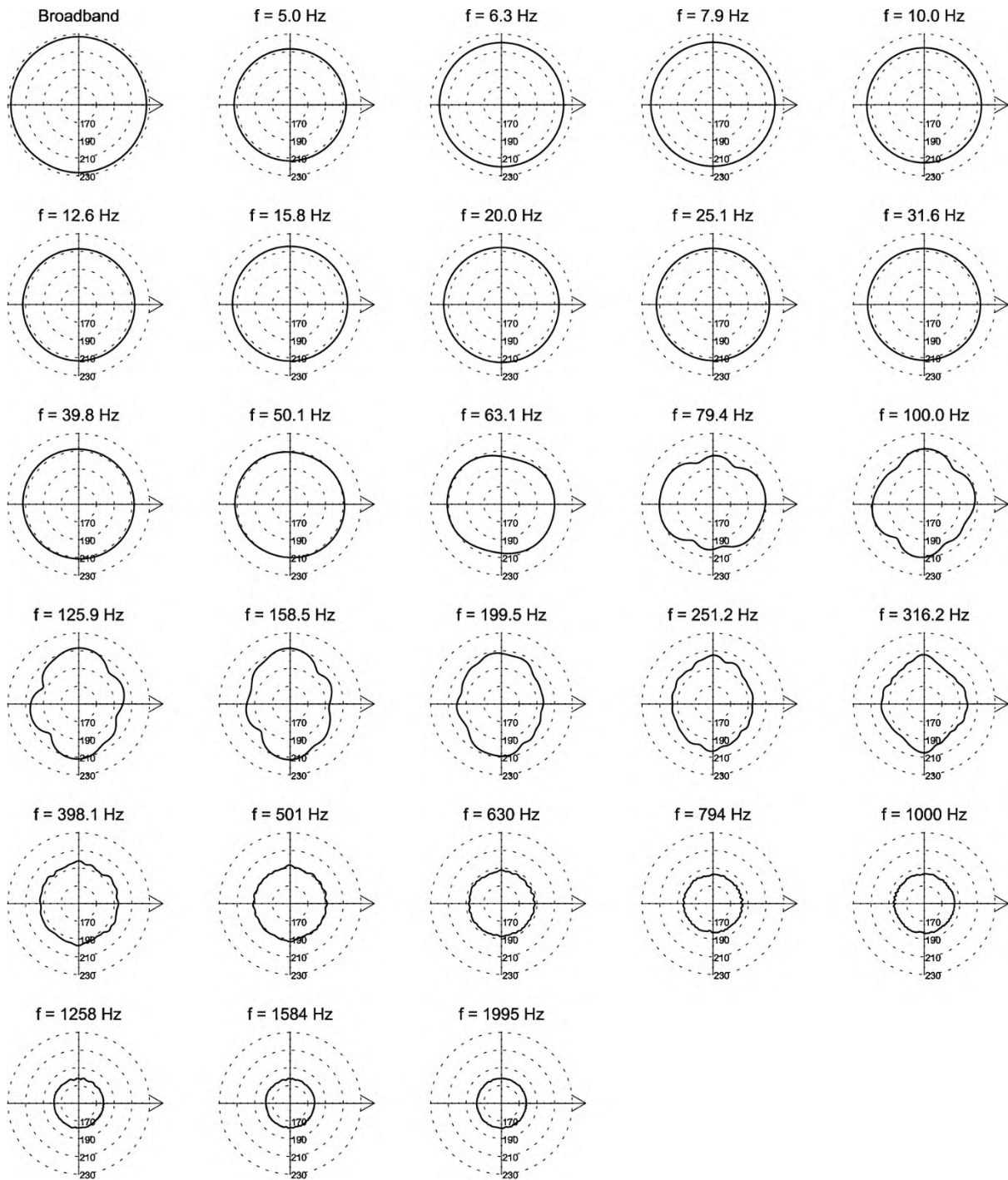


Figure C-7. Directionality of the predicted horizontal source levels for the 3150 in³ seismic source, 5 Hz to 2 kHz. Source levels (in dB re 1 $\mu\text{Pa}^2\cdot\text{s m}^2$) are shown as a function of azimuth for the centre frequencies of the decade bands modelled; frequencies are shown above the plots. The perpendicular direction to the frame is to the right. Tow depth is 7 m (see Figure C-6).

Appendix D. Per-Pulse SEL Sound Field Maps

Per-pulse SEL maps for both modelled sites are provided in Figures D-1 through D-4.

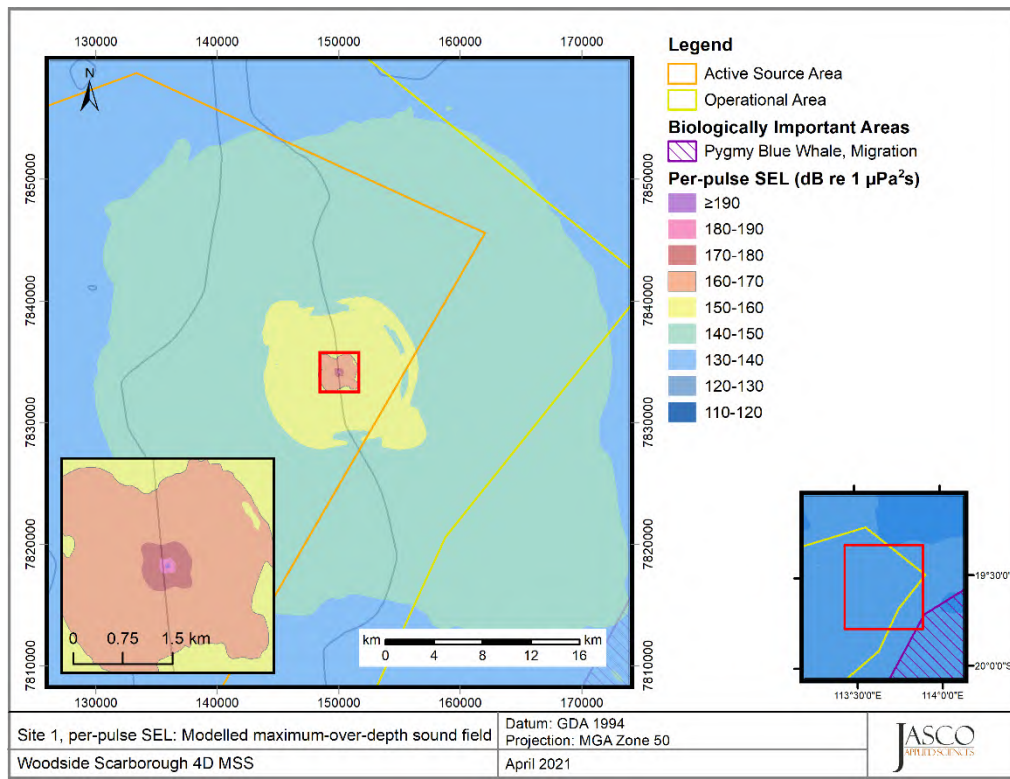


Figure D-1. Site 1, tow azimuth 40°, per-pulse SEL: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps.

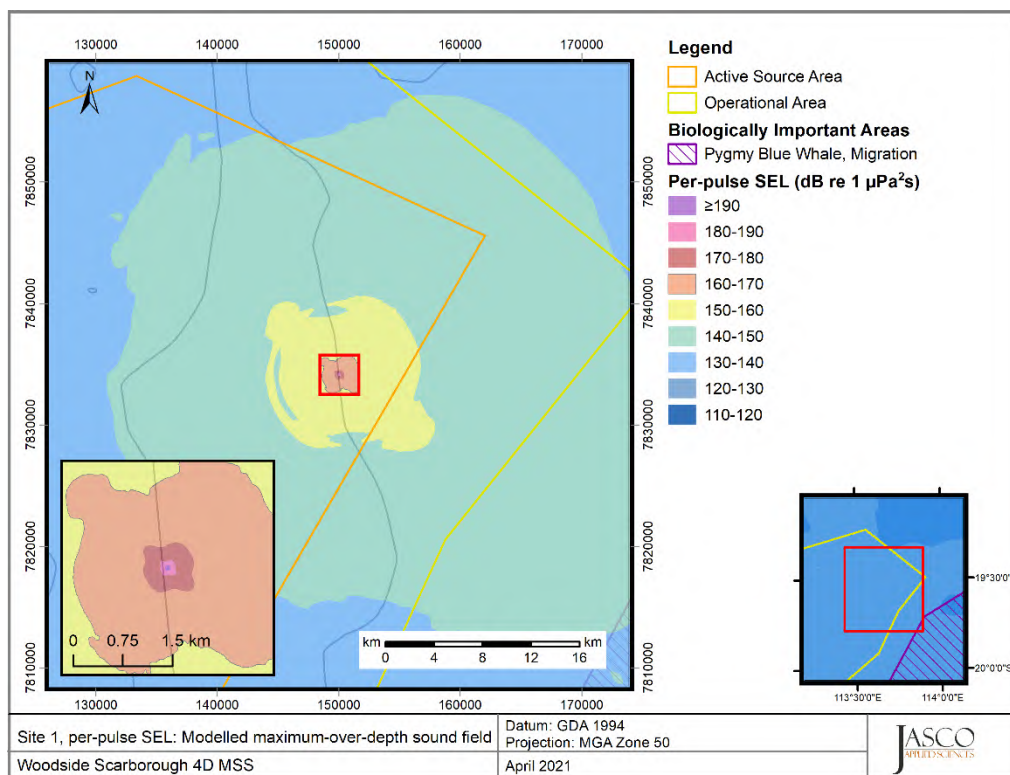


Figure D-2. Site 1, tow azimuth 220°, per-pulse SEL: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps.

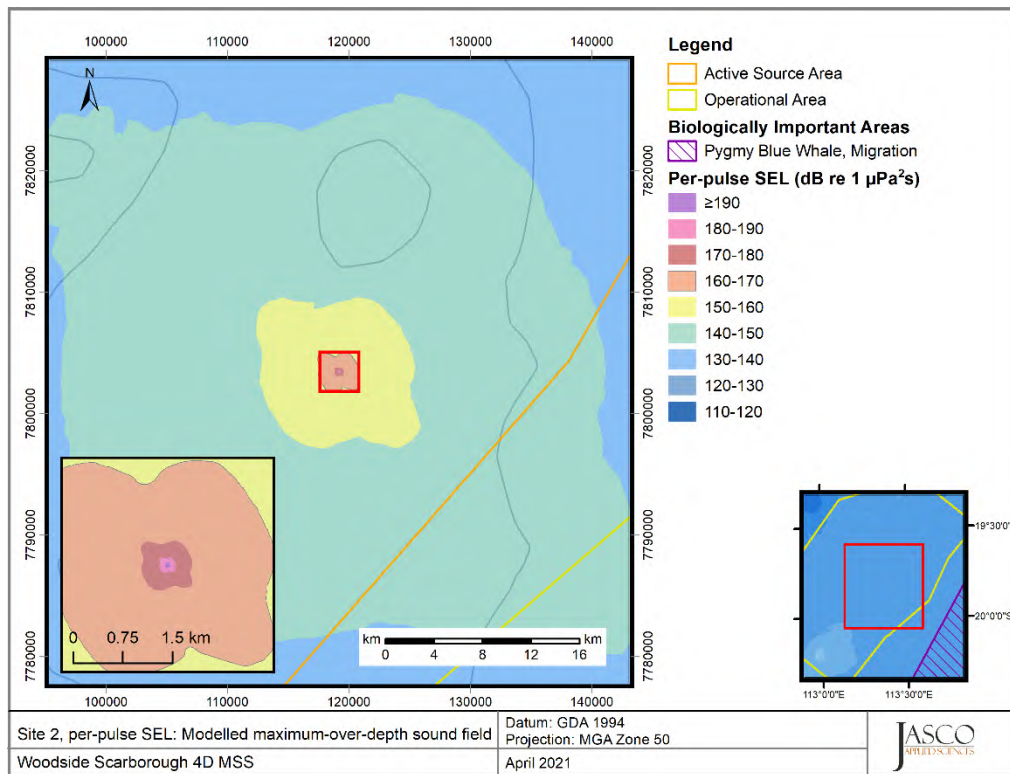


Figure D-3. Site 2, tow azimuth 40°, per-pulse SEL: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps.

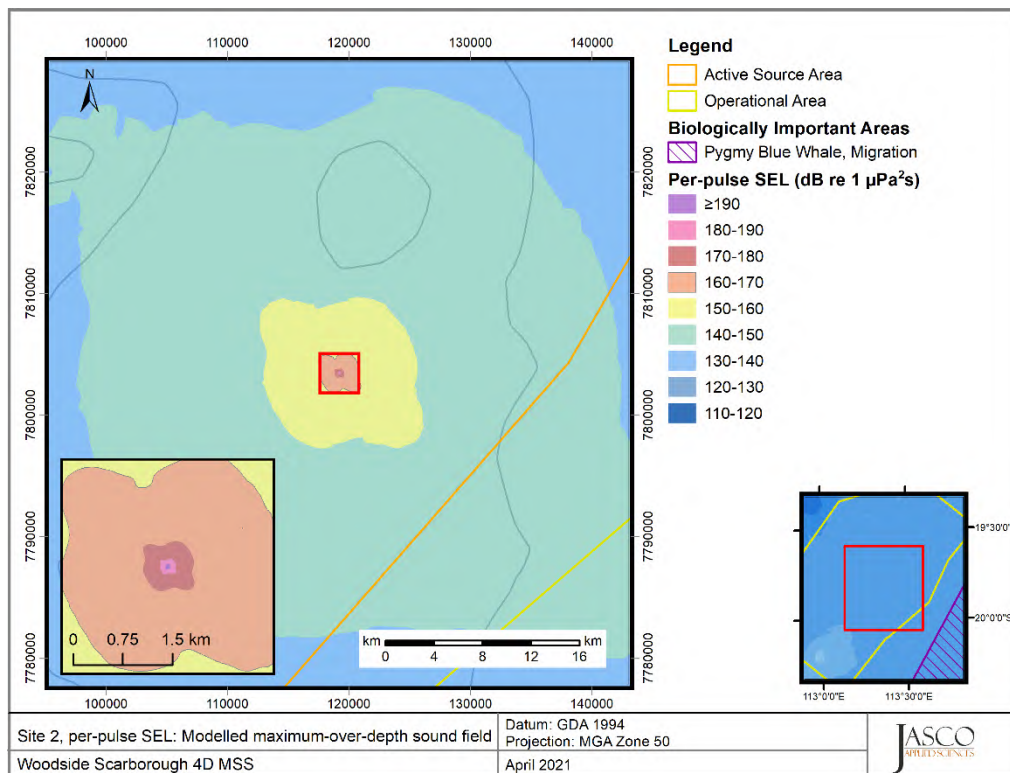


Figure D-4. Site 2, tow azimuth 220°, per-pulse SEL: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps.

Appendix E. Animal Movement Exposure Radial Distances

The JASMINE simulation restricted the spatial distribution of animals to the adjacent migration BIA, which resulted in zero exposures above threshold for any of the assessed criteria (see Section 5.4). To provide context, a second simulation was run that did not limit the distribution of the animals to the BIA. A summary of the resulting exposure ranges is included in Table E-1. Results include ER_{95%} and ER_{max} exposure ranges calculated for the 160 dB behavioural response threshold and PK and SEL thresholds for both TTS and PTS. Figures E-1 through E-5 show histograms of animal CPA ranges for each of the assessed threshold criteria.

Table E-1. Summary of animal simulation results for migrating pygmy blue whales. The 95th percentile exposure ranges (ER_{95%}) and maximum exposure ranges (ER_{max}) in km and probability of animals being exposed above threshold within the ER_{95%} and ER_{max} are provided.

Threshold		Threshold level (dB)	Maximum acoustic radial distance to threshold (km)	ER _{95%}		ER _{max}	
Description	Distance (km)			Probability of exposure (%)	Distance (km)	Probability of exposure (%)	
TTS	PK	213 ^a	0.06	0.05	88	0.06	84
	SEL _{24h}	168 ^b	60.7	15.02	42	21.73	32
PTS	PK	219 ^a	0.03	0.04	73	0.04	71
	SEL _{24h}	183 ^c	0.38	0.06	80	0.13	65
Behavioural response		160 ^c	7.28	6.54	71	7.33	67

^a PK (L_{pk} ; dB re 1 μ Pa)

^b LF-weighted SEL_{24h} ($L_{E,24h}$; dB re 1 μ Pa²·s)

^c SPL (L_p ; dB re 1 μ Pa)

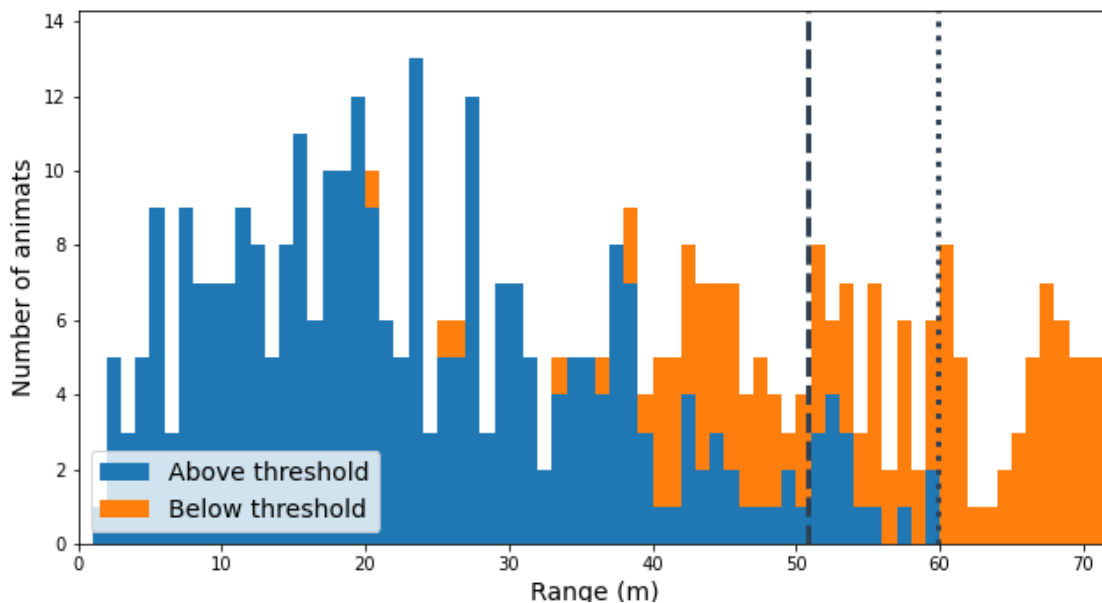


Figure E-1. Histograms of the distribution of CPA ranges for animals exposed above and below TTS PK threshold criteria for migrating pygmy blue whales. The TTS PK ER_{95%} and ER_{max} are indicated by vertical dashed lines.

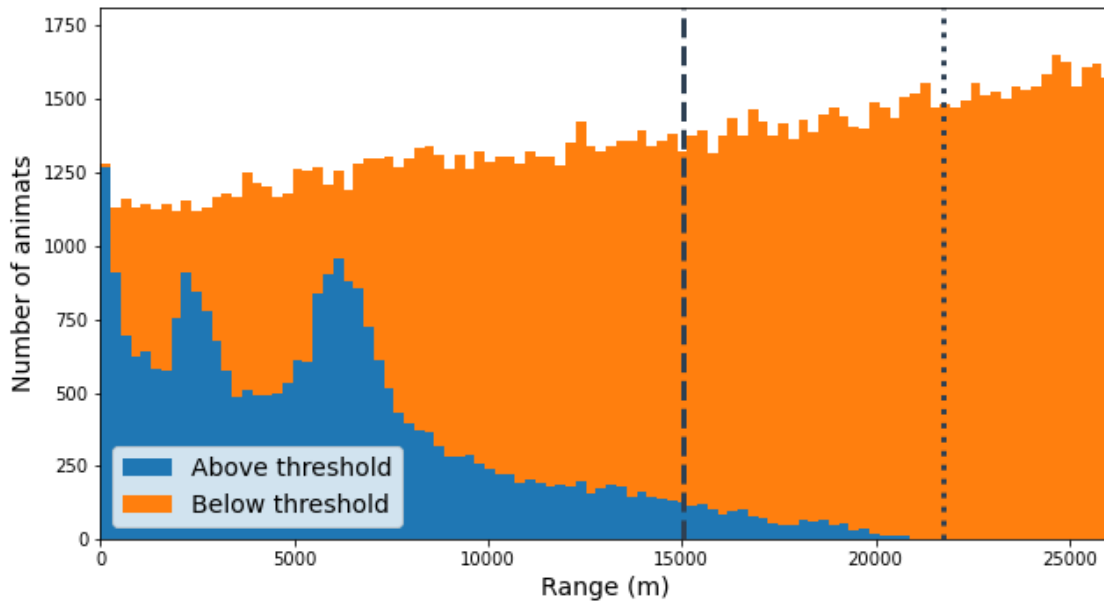


Figure E-2. Histograms of the distribution of CPA ranges for animals exposed above and below TTS SEL_{24h} threshold criteria for migrating pygmy blue whales. The TTS SEL_{24h} ER_{95%} and ER_{max} are indicated by vertical dashed lines.

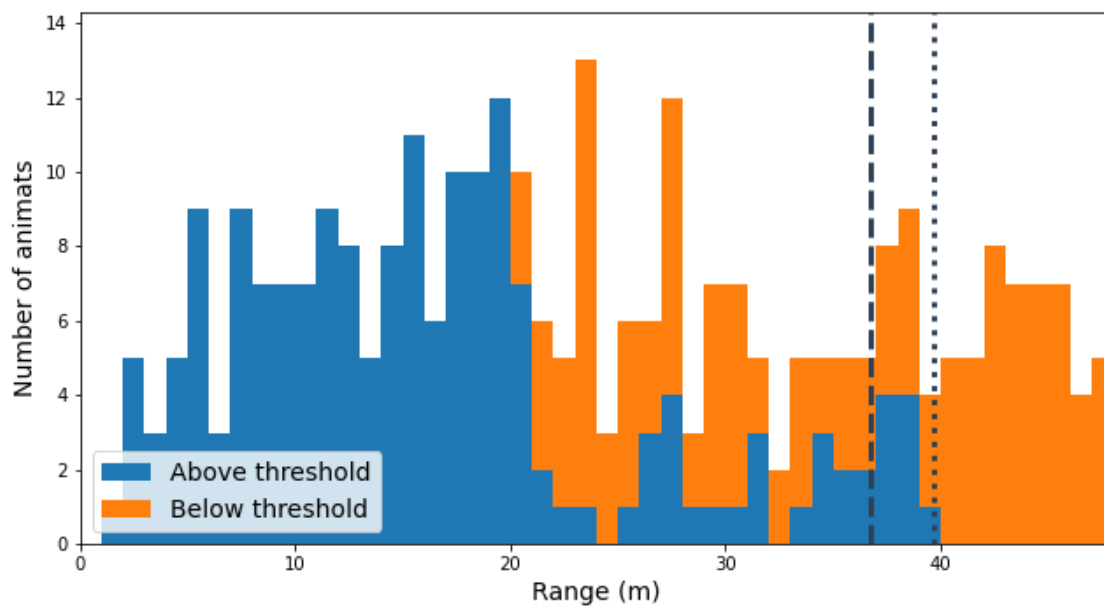


Figure E-3. Histograms of the distribution of CPA ranges for animals exposed above and below PTS PK threshold criteria for migrating pygmy blue whales. The PTS PK ER_{95%} and ER_{max} are indicated by vertical dashed lines.

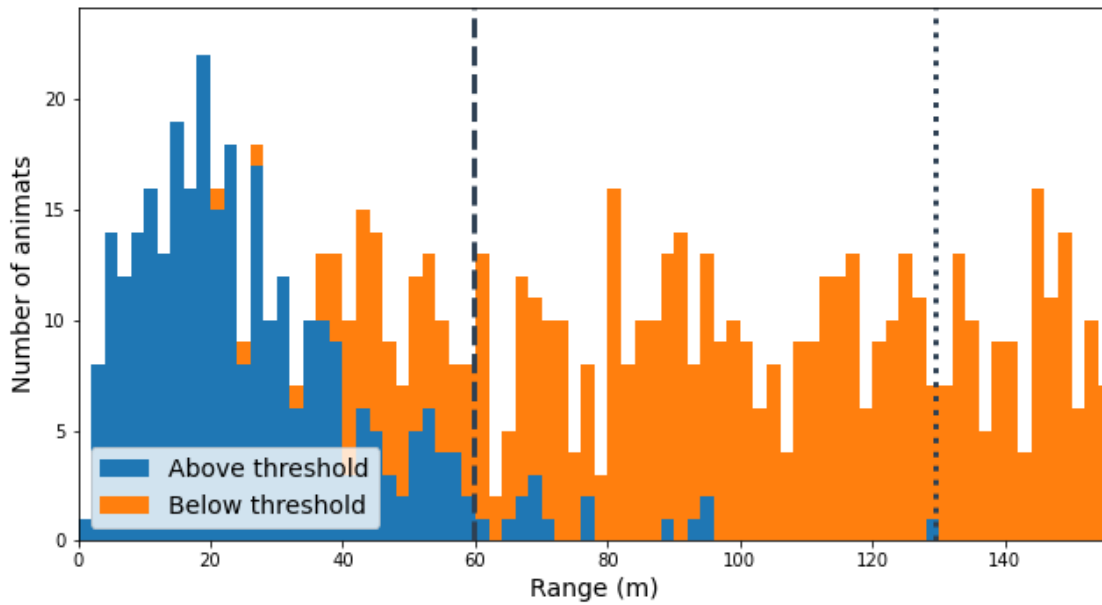


Figure E-4. Histograms of the distribution of CPA ranges for animats exposed above and below PTS SEL_{24h} threshold criteria for migrating pygmy blue whales. The PTS SEL_{24h} ER_{95%} and ER_{max} are indicated by vertical dashed lines.

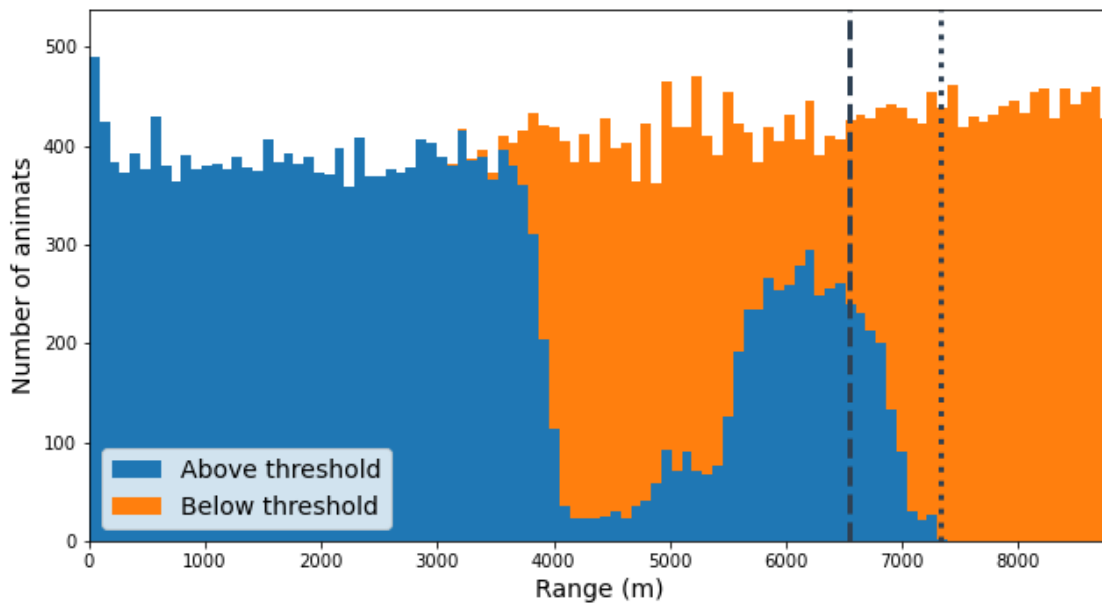


Figure E-5. Histograms of the distribution of CPA ranges for animats exposed above and below the behavioural response threshold criteria for migrating pygmy blue whales. The behavioural response ER_{95%} and ER_{max} are indicated by vertical dashed lines.

Figures E-6 and E-7 demonstrate the accumulation of SEL for TTS and PTS criteria when both the sources and the receivers are moving relative to each other. SEL criteria are assessed over a 24-hour duration, which is reflected in the SEL resets shown in the lower panels of both figures. In Figure E-6, an animat moves in a north-easterly direction and the cumulative SEL increases with proximity to the seismic survey. At approximately 55,000 seconds, the TTS threshold is exceeded. As the animat moves away from the seismic survey area and to the northeast, the SEL accumulation becomes negligible. Figures E-6 and E-7 shows an animat that exceeds both TTS and PTS thresholds within the first 24-hour period. Since the animats are modelled as migrating, they spend less time accumulating energy near the source, and instead follow a relatively direct path into and through the ensounded area. To accumulate levels that exceed PTS or TTS threshold criteria, they need to pass close to the source. Conversely, those animats that were restricted to the BIA were never exposed to levels for long enough to exceed any of the cumulative thresholds.

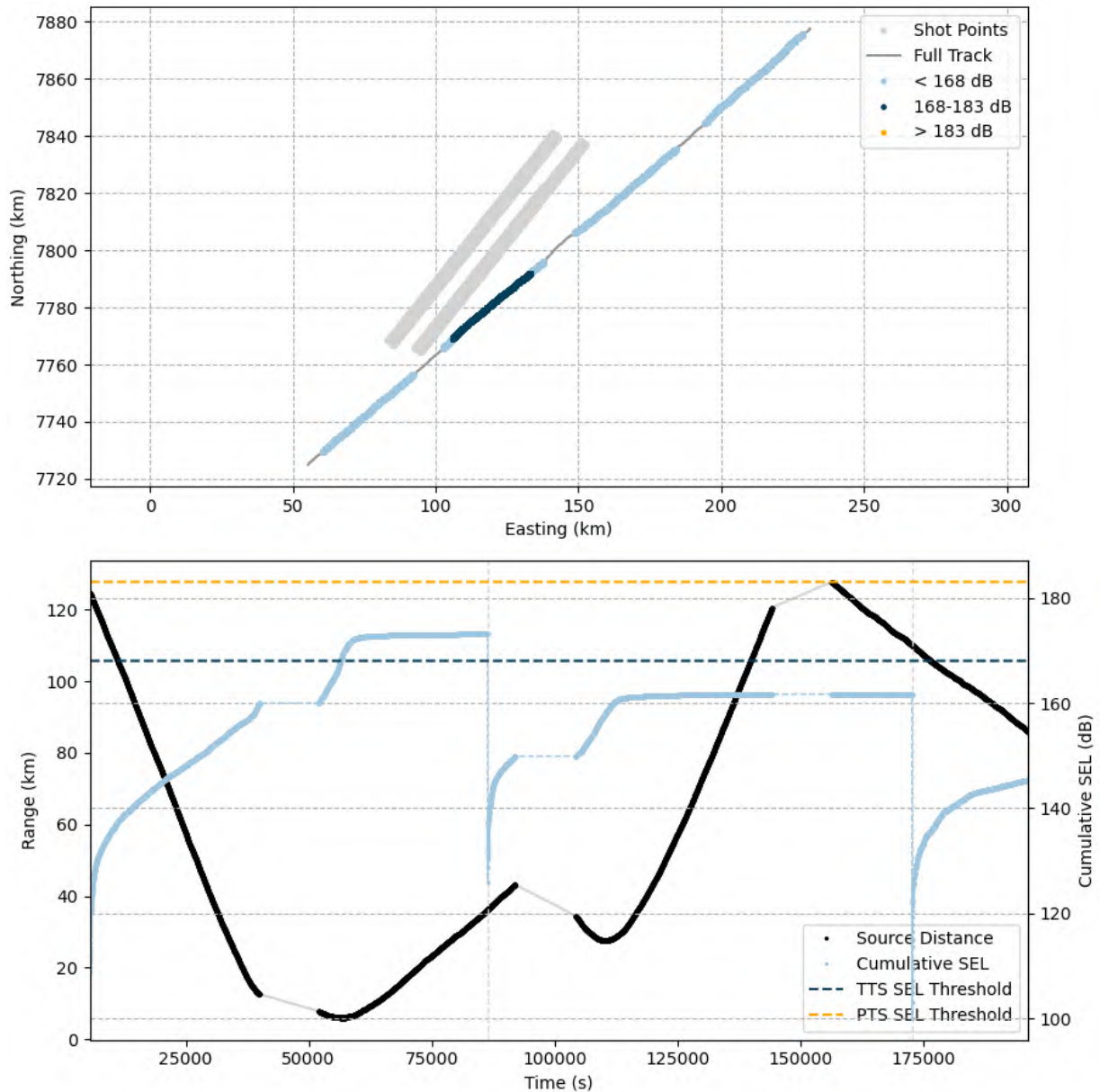


Figure E-6. Plots showing animal an animal track over a duration of approximately 2.2 days. The upper panel shows a plan view of both the source tracks and the migrating animal. Animal steps are coloured to indicate whether the accumulated sound energy at that point has exceeded either TTS or PTS threshold criteria. The lower panel shows horizontal distance in kilometres to the seismic source (black dots; left y-axis), and cumulative 24-h SEL ($L_{E,24h}$, dB re $1 \mu Pa^2 \cdot s$; right y-axis).

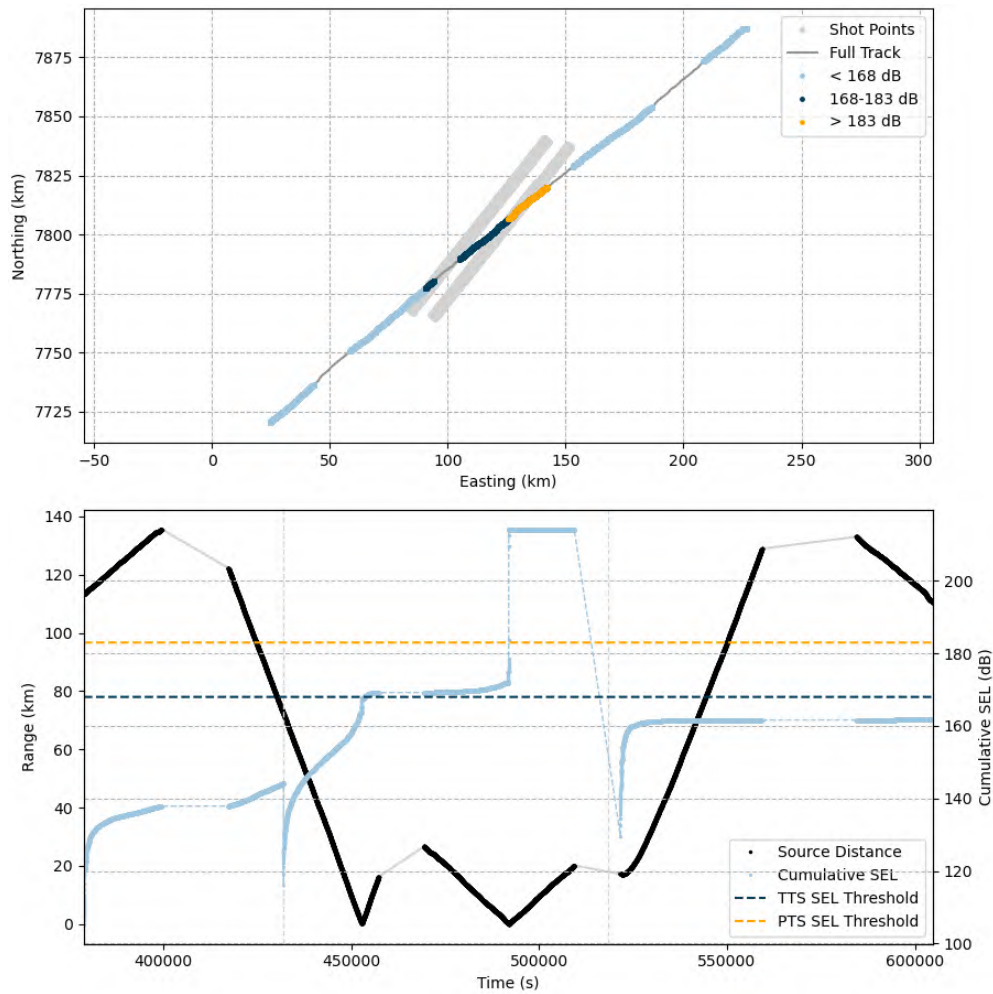


Figure E-7. Plots showing animat an animat track over a duration of approximately 2.5 days. The upper panel shows a plan view of both the source tracks and the migrating animat. Animat steps are coloured to indicate whether the accumulated sound energy at that point has exceeded either TTS or PTS threshold criteria. The lower panel shows horizontal distance in kilometres to the seismic source (black dots; left y-axis), and cumulative 24-h SEL ($L_{E,24h}$, dB re $1 \mu Pa^2 \cdot s$; right y-axis).

Appendix H MASTER WOODSIDE EXISTING ENVIRONMENT

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Description of the Existing Environment

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1. INTRODUCTION

1.1 Purpose

This document applies, where indicated in the relevant Environment Plan, to Woodside Energy Ltd. (Woodside) activities and operations.

1.2 Scope

This document describes the existing environment within the Woodside areas of activity located in Commonwealth waters off north-western Western Australia (WA), with a focus on the North-west Marine Region (NWMR) (**Figure 1-1**). This document includes details of the particular and relevant values and sensitivities of the environment as required by the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 in order to inform the impact and risk evaluation of Woodside's activities within the NWMR. Furthermore, the key values of the South-west Marine Region (SWMR) and the North Marine Region (NMR) are summarised to encompass areas outside the NWMR. This is with reference to the environment that may be affected (EMBA), as defined and described in individual EPs, for unplanned hydrocarbon spill risks. Additional information appropriate to the nature and scale of the impacts and risks of activities that may interact with the environment will be used to further inform impact and risk assessments and included in the Description of the Existing Environment of individual EPs.

This document is informed by a variety of resources that includes: a search of the Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) for the marine bioregions (NWMR, SWMR and NMR) and the three PMST reports provided in **Appendix A**; State (WA)/Commonwealth Marine Park Management Plans, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Species Profile and Threats Database (SPRAT), Part 13 statutory instruments (recovery plans, conservation advices and wildlife conservation plans for listed threatened and migratory species); and peer reviewed scientific publications, as well as Woodside and Joint Venture (JV) funded studies and other titleholder funded study findings available in the public domain.

1.3 Review and Revision

The information presented in this document is reviewed and updated, where relevant, on at least an annual basis to address any relevant changes, which includes but is not limited to the status of EPBC Act listed species, Part 13 Instruments, policies and guidelines and recently published scientific literature.

1.4 Regional Context

Where relevant, the physical, biological and social environments within the areas of interest are discussed with reference to the three marine bioregions of Australia—NWMR, SWMR and NMR (**Table 1-1**). The NWMR is the focal marine bioregion for the Description of the Existing Environment as this is currently the location of most of Woodside's activities.

Table 1-1. Description of the Marine Bioregions

Marine Bioregion	Description
North-west	The NWMR includes all Commonwealth waters (from 3 nautical mile [nm] from the Territorial Sea Baseline [TSB] to the 200 nm Exclusive Economic Zone [EEZ] boundary) extending from the WA/Northern Territory (NT) border to Kalbarri, south of Shark Bay in WA, covering an area of approximately 1.07 million square kilometres and includes extensive areas of shallower waters on the continental shelf, as well as deep areas of abyssal plain where water depths are 5000 m or greater.
South-west	The SWMR comprises Commonwealth waters from the eastern end of Kangaroo Island in SA to Shark Bay in WA. The region spans approximately 1.3 million square kilometres of temperate and subtropical waters and abuts the coastal waters of SA and WA.
North	The NMR comprises Commonwealth waters from west Cape York Peninsula to the NT/WA border). The region covers approximately 625,689 square kilometres of tropical waters in the Gulf of Carpentaria and Arafura and Timor seas, and abuts the coastal waters of Queensland and the NT.

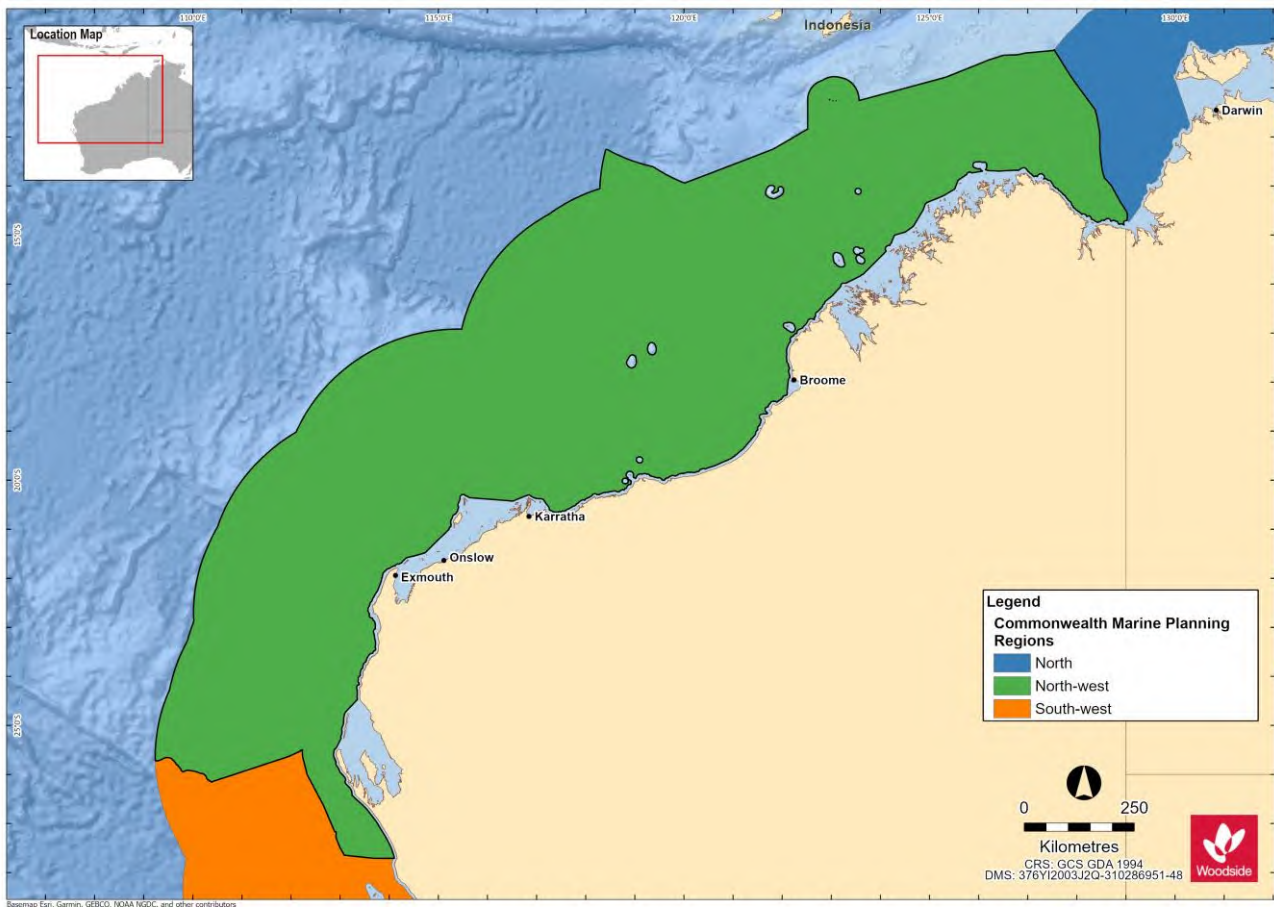


Figure 1-1. Marine Bioregions: North-west (NWMR), South-west (SWMR) and North (NMR)

2. PHYSICAL ENVIRONMENT

2.1 Regional Context

The key physical characteristics of the NWMR, SWMR and NMR are presented in **Table 2-1**.

Table 2-1 Key physical characteristics of the NWMR, SWMR and NMR

Bioregion	Key Characteristics
North-west Marine Region	The NWMR experiences a tropical monsoonal climate towards the northern extent of the region, transitioning to tropical arid and subtropical arid within the central and southern areas of the region (DSEWPAC, 2012a).
	The NWMR is part of the Indo-Australian Basin, the ocean region between the north-west coast of Australia and the Indonesian islands of Java and Sumatra. Dominant currents in the Region include: the South Equatorial Current, the Indonesian Throughflow; the Eastern Gyral Current, and the Leeuwin Current (DEWHA, 2007a).
	The seafloor of the NWMR consists of four general feature types: continental shelf; continental slope; continental rise; and abyssal plain and is distinguished by a range of topographic features including canyons, plateaus, terraces, ridges, reefs, and banks and shoals.
South-west Marine Region	The SWMR contains both subtropical and temperate climates, with overall light climatic cycles.
	The SWMR experiences complex and unusual oceanographic patterns, driven largely by the Leeuwin Current and its associated currents that have a significant influence on biodiversity distribution and abundance.
	The major seafloor features of the SWMR include a narrow continental shelf on the west coast to the waters off south-west WA, and a wide continental shelf dominated by sandy carbonate sediments of marine origin in the Great Australian Bight, the region also contains a steep, muddy continental slope, many canyons and large tracts of abyssal plains (DSEWPAC, 2012b).
North Marine Region	The NMR experiences a tropical monsoonal climate with complex weather cycles, including high temperatures and heavy seasonal yet variable rainfall and cyclones, which can be both destructive (loss of seagrass and mangroves) and constructive (mobilisation of sediment into coastal habitats).
	The NMR comprises Commonwealth waters from west Cape York Peninsula to the NT-WA border, covering tropical waters in the Gulf of Carpentaria and Arafura and Timor seas. Currents in the NMR are driven largely by strong winds and tides, with only minor influences from oceanographic currents such as the Indonesian Throughflow and the South Equatorial Current (DSEWPAC, 2012c).
	The seafloor of the NMR consists mainly of a wide continental shelf, as well as other geomorphological features such as shoals, banks, terraces, valleys, shallow canyons and limestone pinnacles.

2.2 Marine Systems of the North-west Marine Region.

The NWMR can be divided into three large scale ecological marine systems on the basis of the influence of major ocean currents, seafloor features and eco-physical processes (e.g. climate, tides, freshwater inflow) upon the Region (DSEWPAC, 2012a). The three large scale marine systems approximate the Woodside activity areas within the NWMR (**Figure 2-1**). The key characteristics of each marine system are outlined below in **Table 2-2**.

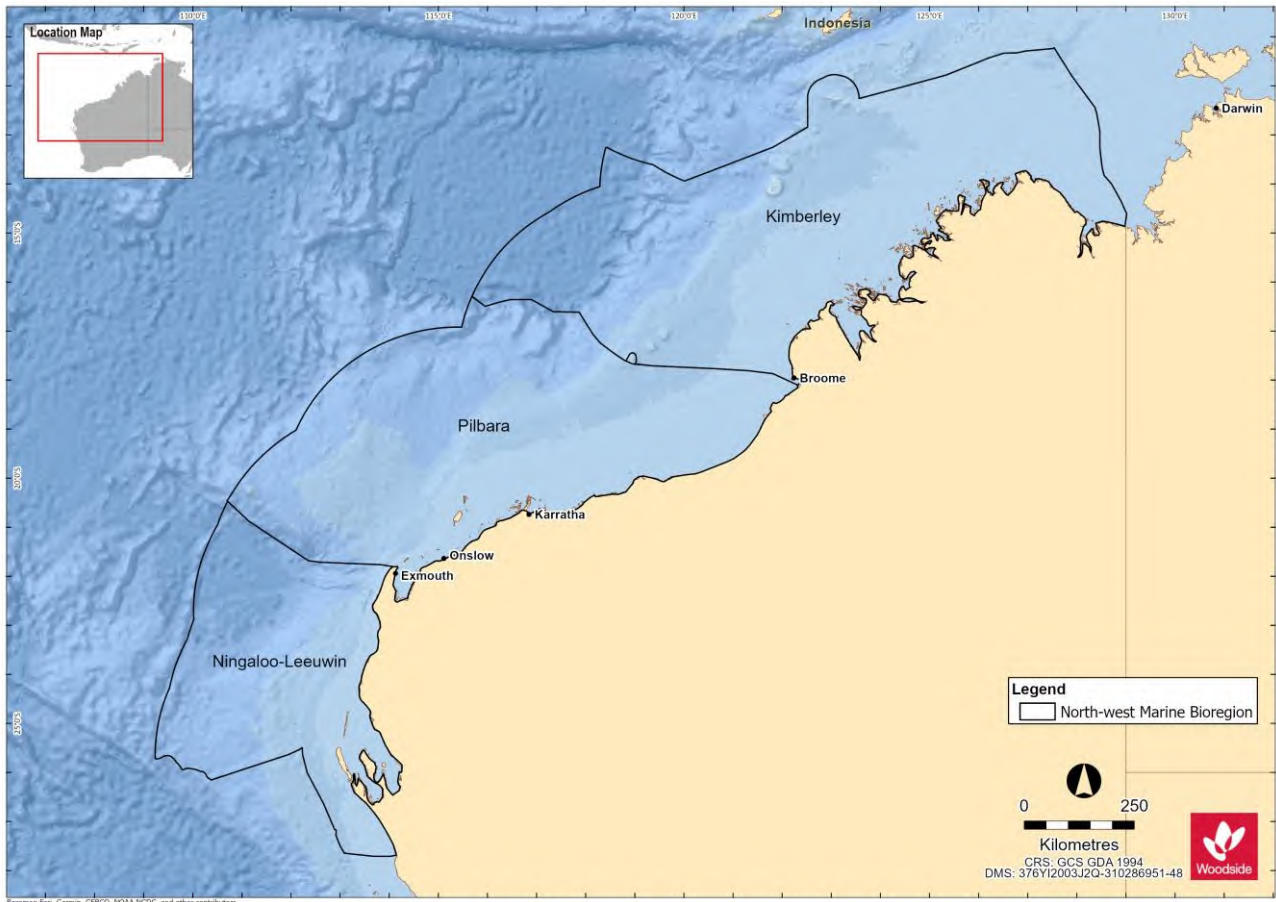


Figure 2-1. The marine systems of the North-west Marine Region (NWMR)

Table 2-2. Key characteristics of the Marine Systems of the NWMR

Note: Woodside areas align with the marine systems as described in DEWHA (2007a)

Marine System	Woodside Activity Area	Key Characteristics
Kimberley	Browse	Tropical monsoonal climate Strong influence from Indonesian Throughflow Predominantly tropical Indo-Pacific species Subject to episodic offshore cyclonic activity, rarely crossing the coast Large tidal regimes Freshwater input from terrestrial monsoonal run-off Turbid coastal waters (i.e. light limited systems) Dominated by shelf environments Predominantly hard substrates in inner to mid-shelf environments Includes a number of shelf-edge atolls (i.e. Scott Reef, Rowley Shoals)
Pilbara	North-west Shelf (NWS) / Scarborough	Tropical arid climate Transition between Indonesian Throughflow and Leeuwin Current dominated areas Predominantly tropical species High cyclone activity with frequent crossing of the coast Transitional tidal zone Internal tide activity Large areas of shelf and slope Dry coast with ephemeral freshwater inputs
Ningaloo-Leeuwin	North-west Cape	Subtropical arid climate Leeuwin Current consolidates Transitional tropical/temperate faunal area Higher water clarity in near-shore and offshore environments Narrow shelf and slope Marginal tidal range Seasonal wind forcing more dominant influence on marine environment

2.3 Meteorology and Oceanography

This section describes the general meteorological conditions and oceanography for the NWMR and provides further detail for the three Woodside activity areas. The NWMR is influenced by a complex system of ocean currents that change between seasons and between years, which generally result in its surface waters being warm and nutrient-poor, and of low salinity (DEWHA, 2007a). The mix of bathymetric features, complex topography and oceanography across the whole north-west marine environment has created and supports a globally important marine biodiversity hotspot (Wilson, 2013).

Table 2-3 NWMR climate and oceanography summary

Receptor	Description
Meteorology	
Seasonal patterns	The NWMR associated land mass of the Australian continent is characterised as a hot and humid summer climate zone. The broader NWMR experiences variations of a tropical or monsoon climate. In the far north-west (Kimberley), there is a hot summer season from December to March and a milder winter season between April and November. The Pilbara area is described as having a tropical arid climate with high cyclone activity (DEWHA, 2007a). The Pilbara and North-west Cape has a hot summer season from October to April and a milder winter season between May and September with transition periods between the summer and winter regimes.
Air temperature and rainfall	In summer (between September and March), maximum daily temperatures range from 31°C to 33°C. During winter (May to July), mean daily temperatures range from 18°C to 31°C (BOM ¹), refer to Figure 2-2a and b . Rainfall in the region typically occurs during the summer, with highest falls observed late in the season. This is often associated with the passage of tropical low-pressure systems and cyclones.
Wind	Wind patterns in north-west WA are dictated by the seasonal movement of atmospheric pressure systems. During summer, high-pressure cells produce prevailing winds from the north-west and south-west, which vary between 10 and 13 ms ⁻¹ . During winter, high-pressure cells over central Australia produce north-easterly to south-easterly winds with average speeds of between 6 and 8 ms ⁻¹ . Refer to Figure 2-3a and b .
Tropical cyclones	The NWS and Pilbara coast (within the NWMR) experiences more cyclonic activity than any other region of the Australian mainland coast (BOM, 2021a). Tropical cyclone activity typically occurs between November and April and is most frequent in the region during December to March (i.e. considered the peak period), with an average of about one cyclone per month (BOM, 2021a). Refer to Figure 2-4 .
Oceanography	
Ocean temperature	Waters in NWMR are tropical year-round, with sea surface temperature in open shelf waters reaching ~26°C in summer and dropping to ~22°C in winter. Nearshore temperatures (as recorded for the NWS area) fluctuate more widely on an annual basis from ~17°C in winter to ~31°C in summer (Chevron Australia, 2010). Refer to Figure 2-5a and b .
Currents	The major surface currents influencing north-west WA flow towards the poles and include the Indonesian Throughflow, the Leeuwin Current, the South Equatorial Current, and the Eastern Gyral Current. The Ningaloo Current, the Holloway Current, the Shark Bay Outflow, and the Capes Current are seasonal surface currents in the region. Below these surface currents are several subsurface currents, the most important of which are the Leeuwin Undercurrent and the West Australian Current. These subsurface currents flow towards the equator in the opposite direction to surface currents (DEWHA, 2007a). Refer to Figure 2-6 . The offshore waters of the NWMR are characterised by surface and subsurface boundary currents that flow along the continental shelf/slope and are enhanced through inflows from the ocean basins and are an important conduit for the poleward heat and mass transport along the west coast (Wijeratne <i>et al.</i> , 2018). Local physical oceanography is strongly influenced by the large-scale water movements of the Indonesian Throughflow (Liu <i>et al.</i> 2015; Sutton <i>et al.</i> 2019). Typically, a warm and well-mixed oligotrophic surface layer and a cooler and more nutrient rich, deeper water layer (Menezes <i>et al.</i> 2013).
Waves	Sea surface waves within the NWMR, generally reflect the direction of the synoptic winds and flow predominately from the south-west in the summer and east in winter (Pearce <i>et al.</i> , 2003). The NWS within the NWMR is a known area of internal wave generation. Both internal tides and internal waves are thought to be more prevalent during summer months due to the increased stratification of the water column (DEWHA, 2007a). Along the continental slope of the NWMR, strong internal waves and interaction between semi-diurnal tidal currents and seabed topographic features facilitates upwelling events and localised productivity events (Holloway, 2001).
Tides	Tides on the NWS (NWMR) increase as the water moves from deep towards the shallower coast. The highest offshore tides are experienced at the border of the Browse and Canning basins. The smallest tides are experienced at the Exmouth Plateau, near the coast. Tides of NWS (NWMR) are predominantly semi-diurnal (two highs and two lows each day), but with increasing importance of the diurnal (once per day) inequality at the southern and northern extremities of the NWS.

¹ http://www.bom.gov.au/jsp/ncc/climate_averages/temperature/index.jsp, accessed 21 January 2021.

Receptor	Description
	The tide range—represented by the Mean Spring Range (MSR)—increases northwards along the coast from 1.4 m at North-west Cape (Point Murat) to 7.7 m at Broome, before decreasing again (apart from local amplification in King Sound and Collier Bay) to about 5 m off Cape Londonderry. The MSR then increases again through Joseph Bonaparte Gulf and on up 5.5 m at Darwin (RPS, 2016).

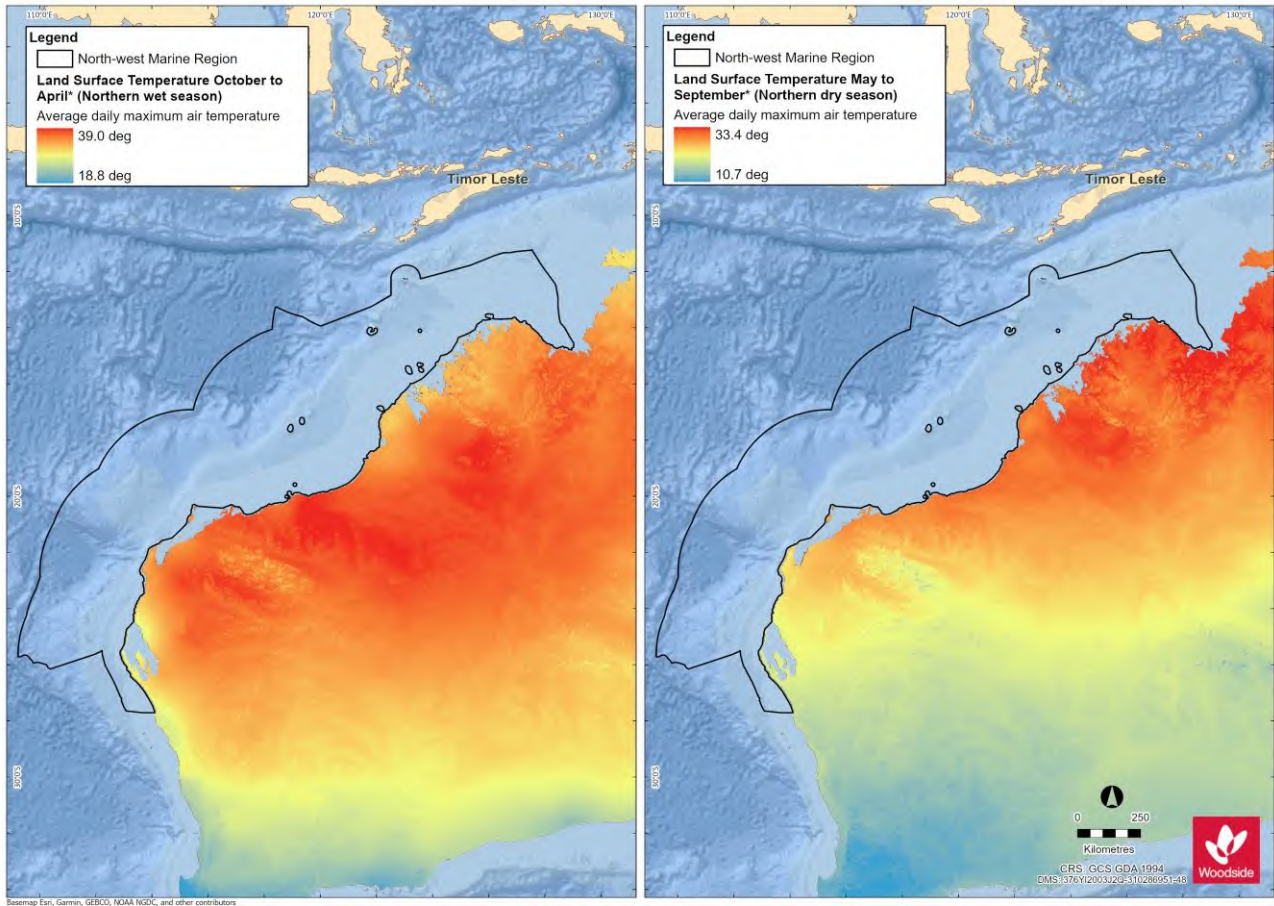


Figure 2-2. Average daily maximum air temperature for land surface adjacent to NWMR: (a) summer (northern wet season) and (b) winter (northern dry season)

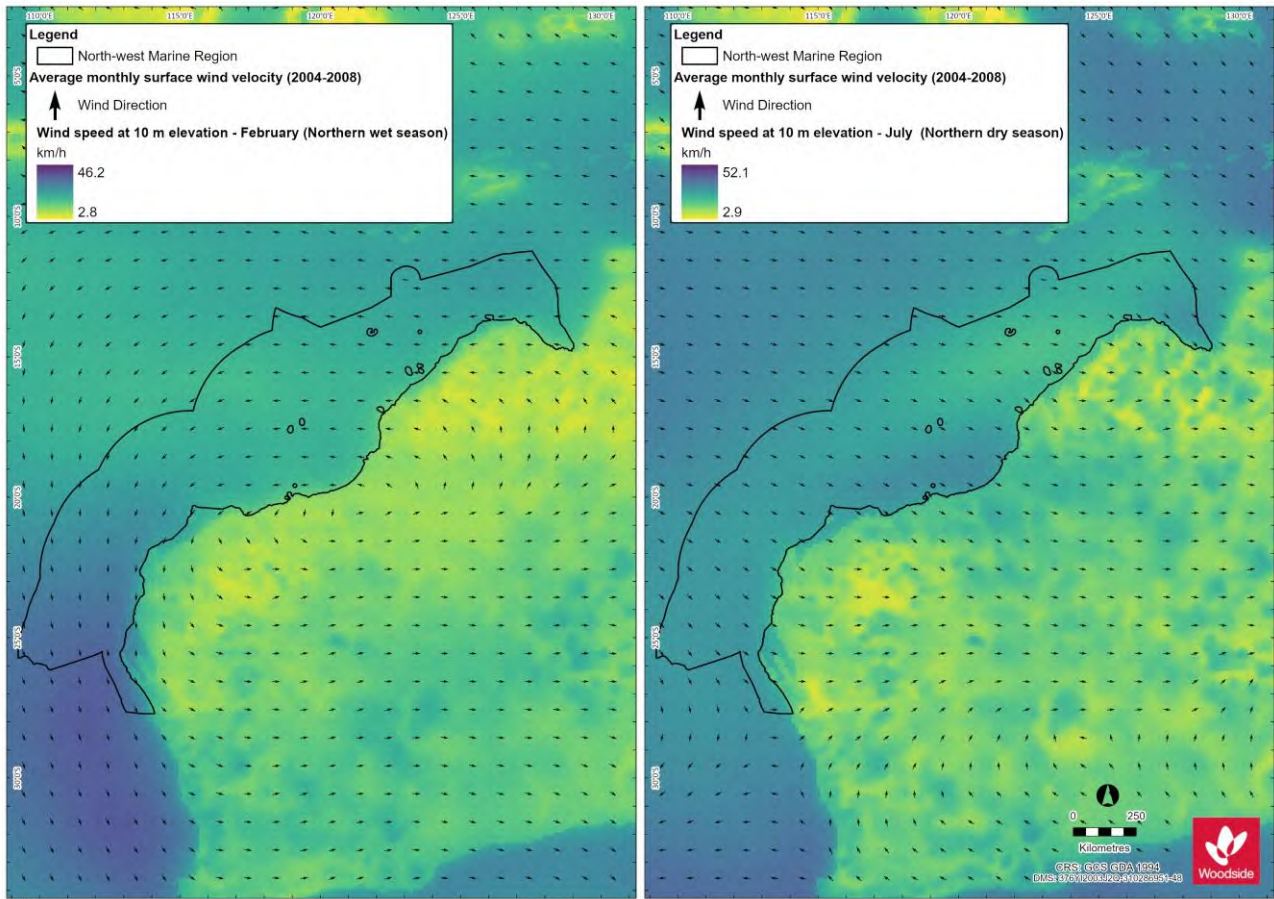


Figure 2-3. Average monthly surface wind direction and velocity for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

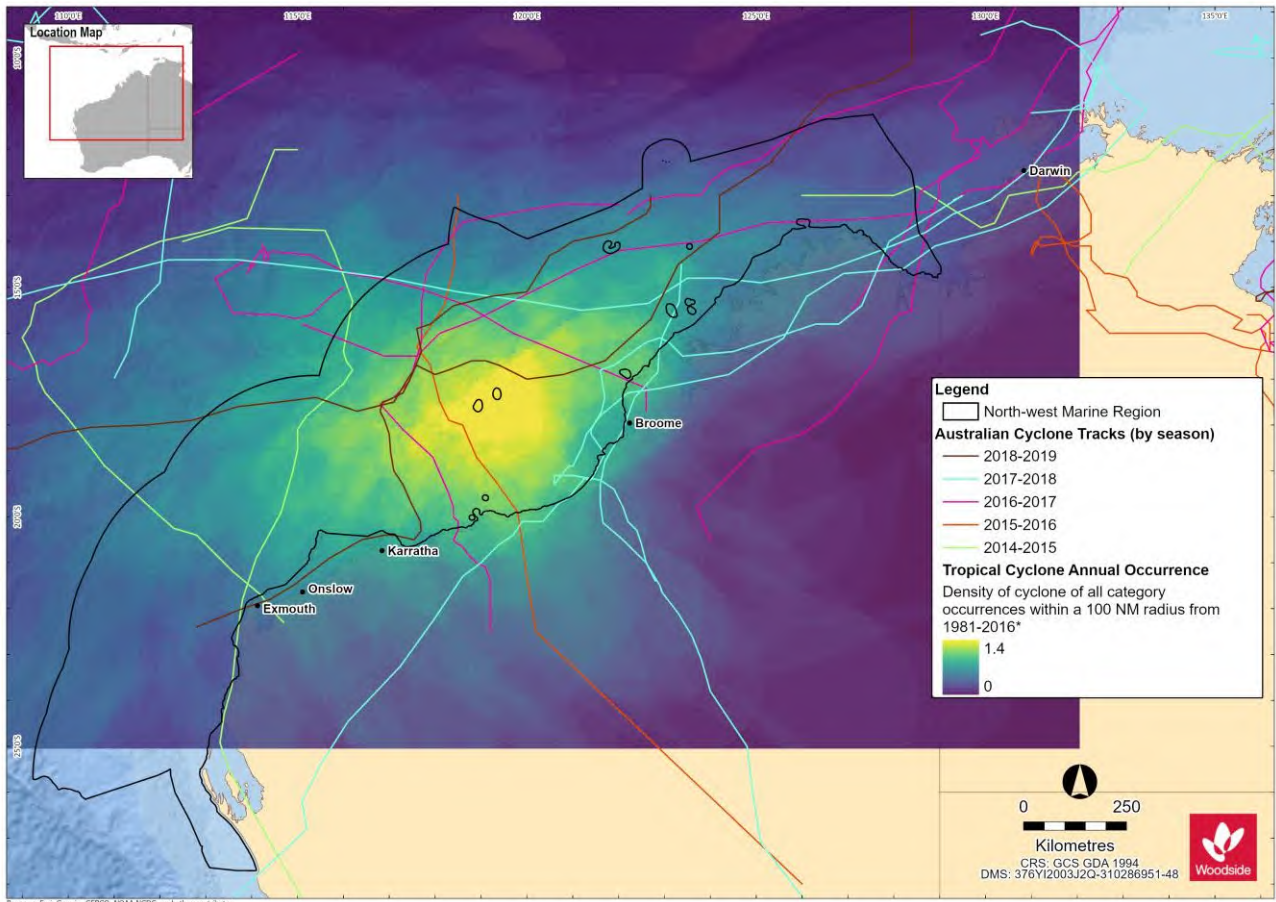


Figure 2-4. Tropical cyclone annual occurrence and cyclone tracks for NWMR

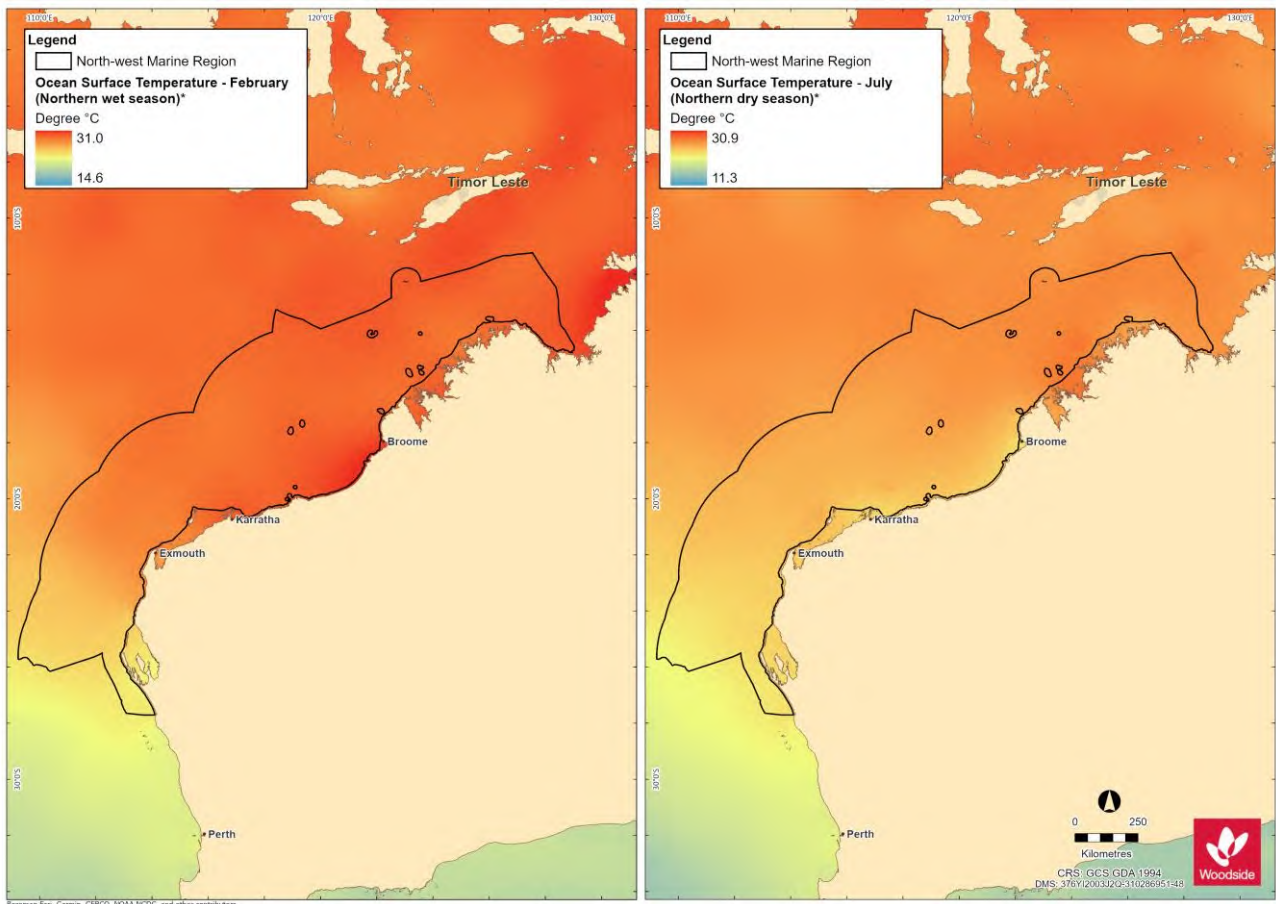


Figure 2-5. Ocean surface temperature for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

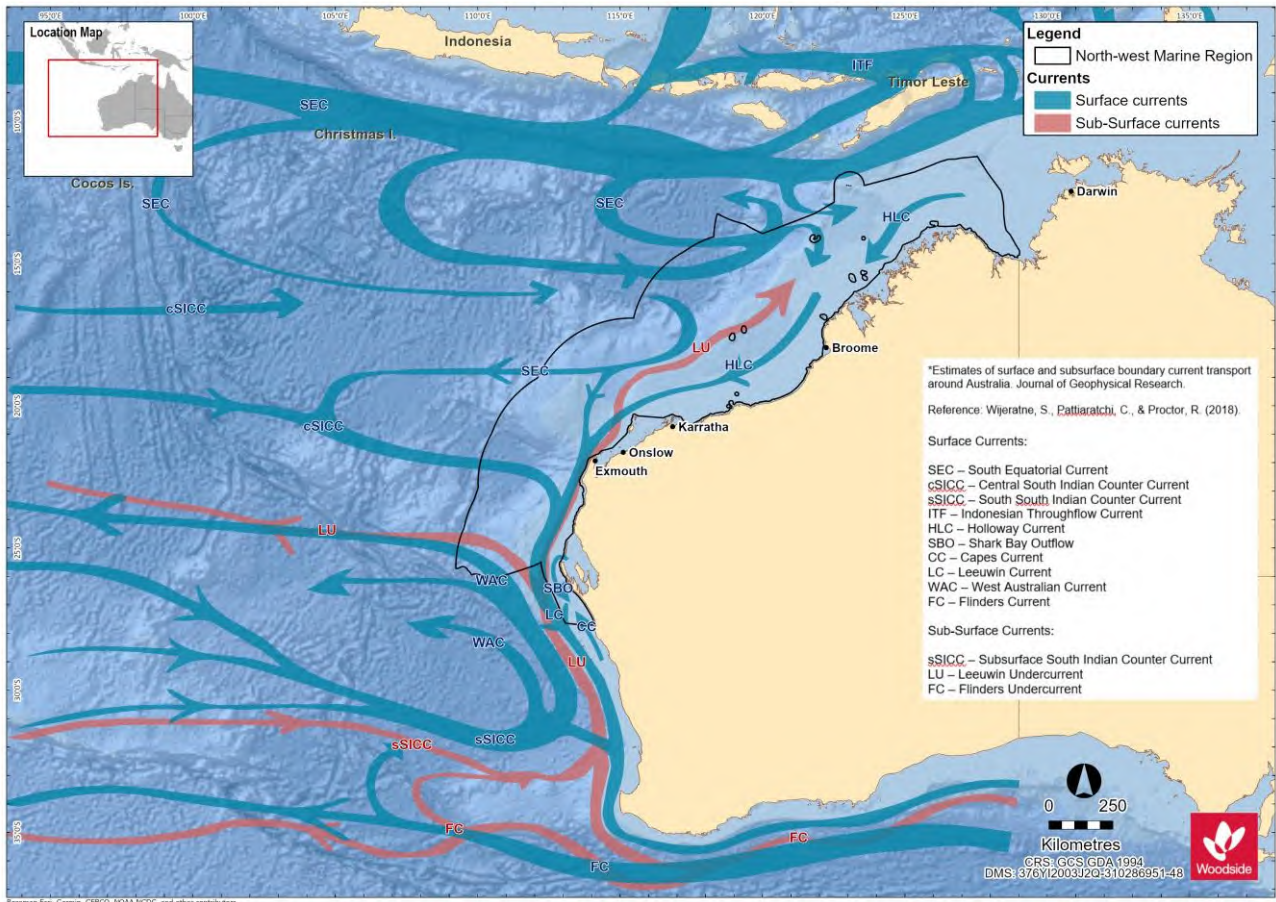


Figure 2-6. Ocean surface and sub-surface currents of the NWMR and wider region

2.3.1 Browse

Table 2-4 Summary meteorology and oceanography for Browse (refer to Appendix B for supporting metocean figures)

Receptor	Description
Meteorology	
Seasonal patterns	The Browse area overlapping the Kimberley marine system experiences tropical monsoon climate with two distinct seasons: the wet season from December to March and dry season from April to November.
Air temperature	The mean annual air temperature recorded at Troughton Island between 2010 and 2020 ranged from 30.1°C in 2011 to 32.6°C in 2016 and highest mean monthly air temperatures were recorded for the months of November and December (BOM, 2021b).
Rainfall	Rainfall recorded from Troughton Island in the Browse basin ranged from barely detectable (<1 mm) mean monthly level to >100 mm in December to March, with the highest rainfall recorded for January. Reflecting the wet monsoon season of the Kimberley marine system (BOM, 2021c).
Wind	The dry season experiences high pressure systems that bring east to south-easterly winds with average wind speeds during the season of approximately 16.6 km/hr and maximum wind gusts of 65 km/hr. In contrast the wet season brings predominately westerly winds with average wind speeds approximately 17 km/hr and maximum gusts exceeding 100 km/hr (generally associated with tropical cyclones (MetOcean Engineers, 2005).
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the south-west during March to June and more variable outside this period (Woodside, 2019). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.3.2 North West Shelf / Scarborough

Table 2-5 Summary meteorology and oceanography for the North West Shelf and Scarborough (refer to Appendix B for supporting metocean figures)

Receptor	Description
Meteorology	
Seasonal patterns	The NWS and Scarborough areas experience the monsoonal climate of the wider NWMR with a distinct wet and dry seasonal regime and transitions periods between seasons.
Air temperature	Air temperatures as measured at the North Rankin A platform on NWS ranged from a maximum average of 39.5°C in summer to a minimum average temperature of 15.6°C in winter (Woodside, 2012).
Rainfall	Rainfall patterns annually reveal the wet season with highest rainfalls during the late summer, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall in the dry season is typically extremely low. (Pearce <i>et al.</i> 2003).
Wind	Winds are typically from the southwest during the wet season (summer) and tending from the south-east during the dry season (winter). The summer south-westerly winds are driven by high pressure cells that pass from west to east over the Australian continent. During the winter period, the relative position of the high-pressure cells shifts further north, leading to prevailing south-easterly winds from the mainland (Pearce <i>et al.</i> 2003).
Oceanography	
Currents	The large-scale ocean currents of the NWMR, primarily the Indonesian Throughflow and Leeuwin Current (and Holloway Current), are the primary influence on the NWS and Scarborough areas. The ITF and Leeuwin Current are strongest during the late summer and winter and flow reversals to the north-east, typically short-lived and weak, when there are strong south-westerly winds can generate localised upwelling on the shelf edge (Holloway and Nye, 1985; James <i>et al.</i> 2004 and Condie <i>et al.</i> 2006).

2.3.3 North-west Cape

Table 2-6 Summary meteorology and oceanography for the North-west Cape (refer to Appendix B for supporting metocean figures)

Receptor	Description
Meteorology	
Seasonal patterns	The climate of the NWMR is dry tropical exhibiting a hot summer season and a mild winter season. There are often distinct transition periods between the summer and winter regimes, characterised by periods of relatively low winds.
Air temperature	Air temperatures in the North-west Cape area range from high summer temperatures (maximum average of 37.5°C) and mild winter temperatures (minimum average of 12.2°C).
Rainfall	Rainfall typically occurs during the summer, with highest rainfall during later summer and autumn, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall is typically low in winter.
Wind	Winds vary seasonally, generally from the south-west quadrant during summer months and the south, south-east quadrant during the autumn and winter months. The summer south-westerly winds are driven by high pressure cells that pass from west to east over the Australian continent. Winds typically weaken and are more variable during the transitional period between the summer and winter seasons, generally between April to August.
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the south-west during March to June and more variable outside this period (Woodside, 2016). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.4 Physical Environment of NWMR

Based on the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) Version 4.0, there are eight provincial bioregions that occur within the NWMR, which are based on patterns of demersal fish diversity, benthic habitat and oceanographic data (Commonwealth of Australia, 2006), **Figure 2-7**. Of the eight provincial bioregions that occur within the NWMR, these include four offshore (~65% of total NWMR area) and four shelf (~35% of total NWMR area) bioregions (Baker *et al.*, 2008).

The NWMR is a tropical carbonate margin that comprises an extensive area of shelf, slope and abyssal plain/deep ocean floor, as well as complex areas of bathymetry such as plateau, terraces and major canyons (Harris *et al.*, 2005). A series of reefs are located on the outer shelf/slope of the NWMR, including Ashmore, Cartier, Scott and Seringapatam reefs (Baker *et al.*, 2008). The distribution of seafloor geomorphic features has been systematically mapped over much of the Australian margin and adjacent seafloor. The mapped area can be divided into 10 geomorphic regions, of which the NWMR overlays two; the Western Margin and Northern Margin (Harris *et al.*, 2005). Most of the region consists of either continental slope (61%) or continental shelf (28%) (DEWHA, 2007a) with more than 40% of the NWMR having a water depth less than 200 m. The shallow shelf is contrasted by features such as the Cuvier and Argo abyssal plains, which reach depths more than five kilometres. A unique feature of the region is the significant narrowing of the continental shelf around North-west Cape (approximately 7 km wide) from the broad continental shelf in the north of the region (approximately 400 km wide at Joseph Bonaparte Gulf) (DEWHA, 2007a), **Figure 2-8**.

The geological history of the region, as well as its geomorphology and oceanography, has influenced the composition and distribution of sediments (DEWHA, 2007a). The sedimentology of the NWMR is dominated by marine carbonates, which show a broad zoning and fining with water depth. Main trends of the NWMR sediments include a tropical carbonate shelf that is dominated by sand and gravel, an outer shelf/slope zone that is dominated by mud and a relatively homogenous rise and abyssal plain/deep ocean floor that is dominated by non-carbonate mud (Baker *et al.*, 2008), **Figure 2-9**.

The distribution and resuspension of sediments on the inner shelf is strongly influenced by the strength of tides across the continental shelf as well as episodic events such as cyclones. Further offshore, on the mid to outer shelf and on the slope itself, sediment movement is primarily influenced by ocean currents and internal tides (DEWHA, 2007a).

This variation in bathymetry and interactions with oceanographic processes provides a diversity of habitats to marine fauna and flora within the NWMR.

2.5 Air quality

The ambient air quality of all three marine regions is largely unpolluted due to the extent of the open ocean area, the activities currently carried out in each and the relative remoteness of each region.

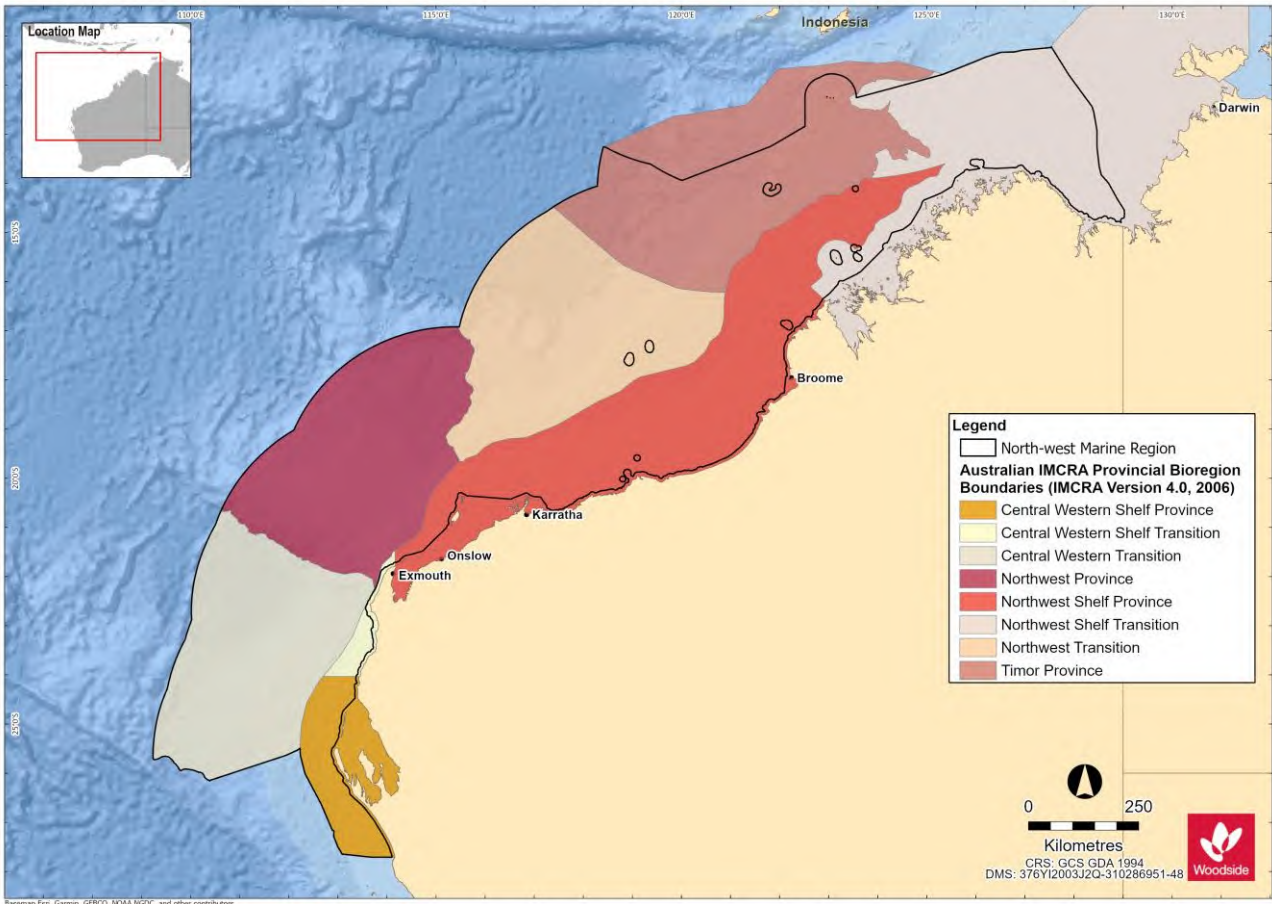


Figure 2-7. The eight provincial bioregions of the NWMR (Commonwealth of Australia, 2006)

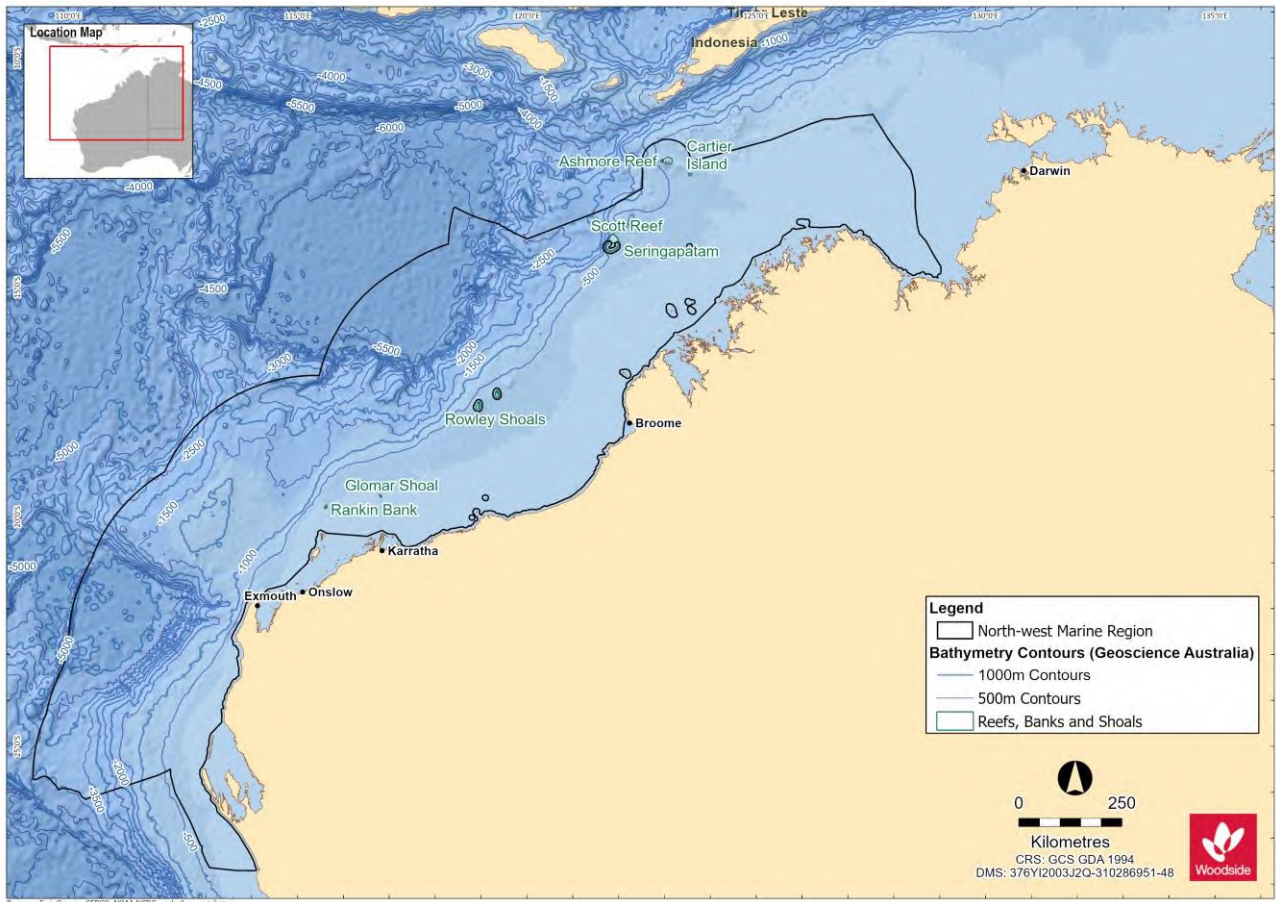


Figure 2-8. Bathymetry of the NWMR

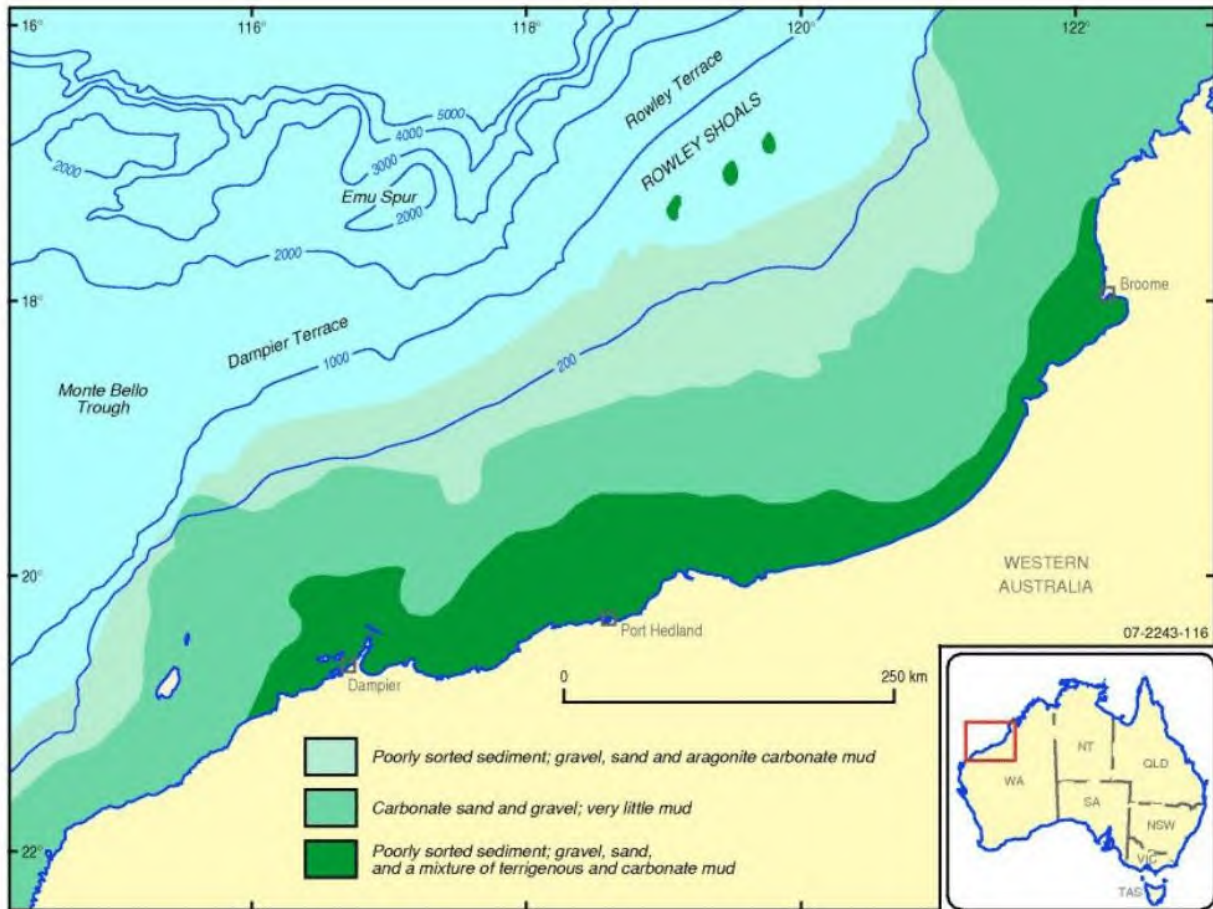


Figure 2-9. Overview of the seabed sediments of the NWMR (Baker *et al.*, 2008)

3. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (EPBC ACT)

3.1 Summary of Matters of National Environmental Significance (MNES)

This section summarises the matters of national environmental significance (MNES) reported for the three bioregions; NWMR (**Table 3-1**), SWMR (**Table 3-2**) and NMR (**Table 3-3**), based on the Protected Matters search reports (**Appendix A**).

Additional information on these MNES are provided in subsequent sections (referenced below).

Table 3-1 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as potentially occurring within the NWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	2	Shark Bay The Ningaloo Coast	Section 10
National Heritage Places	5	Shark Bay The Ningaloo Coast The West Kimberley The Dampier Archipelago (including Burrup Peninsula) Dirk Hartog Landing Site 1616	Section 10
Wetlands of International Importance (Ramsar)	3	Ashmore Reef National Nature Reserve Eighty Mile Beach Roebuck Bay ¹	Section 10
Commonwealth Marine Area	2	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	Section 9 Section 10
Listed Threatened Ecological Communities	1	Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Terrestrial community and not considered further
Listed Threatened Species	70	Refer NWMR PMST report (Appendix A)	Section 5 – Section 8
Listed Migratory Species	84	Refer NWMR PMST report (Appendix A)	Section 5 – Section 8

¹ Roebuck Bay is a designated Wetland of International Importance (Ramsar site), which was not included in the PMST Report (**Appendix A**).

Table 3-2 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as potentially occurring within the SWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	0	N/A	N/A
National Heritage Places	3	Cheetup Rock Shelter Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos HMAS Sydney II and HSK Kormoran Shipwreck Sites	Section 10
Wetlands of International Importance (Ramsar)	4	Becher Point Wetlands Forrestdale and Thomsons Lakes Peel-Yalgorup System Vasse-Wonnerup System	Section 10
Commonwealth Marine Area	2	EEZ and Territorial Sea KEFs AMPs Australian Whale Sanctuary Extended Continental Shelf	Section 9 Section 10
Listed Threatened Ecological Communities	3	Banksia Woodlands of the Swan Coastal Plain ecological community Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community	Terrestrial communities and not considered further
Listed Threatened Species	65	Refer SWMR PMST report (Appendix A)	N/A
Listed Migratory Species	67	Refer SWMR PMST report (Appendix A)	N/A

Table 3-3 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as potentially occurring within the NMR

MNES	Number	Description	Section of this Document
World Heritage Properties	0	N/A	N/A
National Heritage Places	0	N/A	N/A
Wetlands of International Importance (Ramsar)	0	N/A	N/A
Commonwealth Marine Area	2	EEZ and Territorial Sea KEFs AMPs Australian Whale Sanctuary Extended Continental Shelf	Section 9 Section 10
Listed Threatened Ecological Communities	0	N/A	N/A
Listed Threatened Species	33	Refer NMR PMST report (Appendix A)	N/A
Listed Migratory Species	70	Refer NMR PMST report (Appendix A)	N/A

3.2 Part 13 Statutory Instruments for EPBC Act Listed Threatened and Migratory Species in the NWMR, SWMR and NMR

A screening process was conducted to identify which EPBC Act listed threatened and migratory species, and associated Part 13 statutory instruments, are relevant in the context of the assessment of impacts and risks associated with petroleum activities in each of the Woodside activity areas, using the following criteria:

- overlap between the Woodside activity areas with habitat critical for the survival of marine turtles, and with BIAs (overlapping the marine environment) for any listed threatened species as reported in the PMST searches;
- published literature, unpublished reports and/or credible anecdotal information (e.g. feedback from stakeholders) indicating species presence/occurrence within the Woodside activity areas;
- temporal overlap between the likely timing of petroleum activities and peak periods for key behaviours (e.g. breeding, nesting, calving, resting, foraging, migration); and
- environmental aspects associated with petroleum activities have been identified as a key threat to a species in a Part 13 statutory instrument (e.g. anthropogenic noise, light emissions, marine debris).

Relevant EPBC Act threatened and migratory species and their Part 13 statutory instruments are listed in **Table 3-4**. For the full list of EPBC Act listed species for each marine bioregion refer to the PMST reports (**Appendix A**).

Table 3-4 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) to be considered for impact or risk evaluation for Woodside operations

Species	EPBC Act Part 13 Statutory Instrument
All vertebrate marine fauna	Threat Abatement Plan for the impacts of marine debris on vertebrate marine life (Commonwealth of Australia, 2018)
Marine Mammals	
Blue whale	Conservation Management Plan for the Blue Whale: A Recovery Plan under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> 2015–2025 (Commonwealth of Australia, 2015a)
Southern right whale	Conservation Management Plan for the Southern Right Whale: A Recovery Plan under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> 2011–2021 (DSEWPAC, 2012d)
Sei whale	Conservation Advice <i>Balaenoptera borealis</i> sei whale (Threatened Species Scientific Committee, 2015a)
Humpback whale	Conservation Advice <i>Megaptera novaeangliae</i> humpback whale (Threatened Species Scientific Committee, 2015b)
Fin whale	Conservation Advice <i>Balaenoptera physalus</i> fin whale (Threatened Species Scientific Committee, 2015c)
Australian sea lion	Recovery Plan for the Australian Sea Lion (<i>Neophoca cinerea</i>) 2013 (DSEWPAC, 2013a) (due to expire in October 2023) Conservation Advice <i>Neophoca cinerea</i> Australian Sea Lion (Threatened Species Scientific Committee, 2020a) (in effect under the EPBC Act from 23-Dec-2020)
Marine Reptiles	
All marine turtle species (loggerhead, green, leatherback, hawksbill, flatback, olive ridley)	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017)
Short-nosed sea snake	Approved Conservation Advice for <i>Aipysurus apraefrontalis</i> (Short-nosed Sea Snake) (DSEWPAC, 2011a)
Leaf-scaled sea snake	Approved Conservation Advice for <i>Aipysurus foliosquama</i> (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
Fishes, Sharks, Rays and Sawfishes	
Grey nurse shark (west coast population)	Recovery Plan for the Grey Nurse Shark (<i>Carcharias taurus</i>) 2014 (DOE, 2014)
White shark	Recovery Plan for the White Shark (<i>Carcharodon carcharias</i>) 2013 (DSEWPAC, 2013b)
Whale shark	Conservation Advice <i>Rhincodon typus</i> whale shark (Threatened Species Scientific Committee, 2015d)
All sawfishes (largetooth, green, dwarf, speartooth, narrow)	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)

Species	EPBC Act Part 13 Statutory Instrument
Seabirds	
Migratory seabird species	Draft Wildlife Conservation Plan for Migratory Seabirds (Commonwealth of Australia, 2019)
Southern giant petrel	National recovery plan for threatened albatrosses and giant petrels 2011–2016 (DSEWPAC, 2011c)
Indian yellow-nosed albatross	National recovery plan for threatened albatrosses and giant petrels 2011–2016 (DSEWPAC, 2011c)
Abbott's booby	Conservation Advice for the Abbott's booby - <i>Papasula abbotti</i> (Threatened Species Scientific Committee, 2020b)
Australian fairy tern	Approved Conservation Advice for <i>Sterna nereis nereis</i> (Fairy Tern) (DSEWPAC, 2011d)
Australian lesser noddy	Conservation Advice <i>Anous tenuirostris melanops</i> Australian lesser noddy (Threatened Species Scientific Committee, 2015e)
Soft-plumaged petrel	Conservation Advice <i>Pterodroma mollis</i> soft-plumaged petrel (Threatened Species Scientific Committee, 2015f)
Shorebirds	
Migratory shorebird species	Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c)
Eastern curlew, far eastern curlew	Conservation Advice <i>Numenius madagascariensis</i> eastern curlew (DOE, 2015a)
Curlew sandpiper	Conservation Advice <i>Calidris ferruginea</i> curlew sandpiper (DOE, 2015b)
Great knot	Conservation Advice <i>Calidris tenuirostris</i> Great knot (Threatened Species Scientific Committee, 2016a)
Red knot, knot	Conservation Advice <i>Calidris canutus</i> Red knot (Threatened Species Scientific Committee, 2016b)
Bar-tailed godwit (<i>menzbieri</i>)	Conservation Advice <i>Limosa lapponica menzbieri</i> Bar-tailed godwit (northern Siberia) (Threatened Species Scientific Committee, 2016c)
Greater sand plover	Conservation Advice <i>Charadrius leschenaultii</i> Greater sand plover (Threatened Species Scientific Committee, 2016d)
Lesser sand plover	Conservation Advice <i>Charadrius mongolus</i> Lesser sand plover (Threatened Species Scientific Committee, 2016e)

4. HABITAT AND BIOLOGICAL COMMUNITIES

4.1 Regional context

The NWMR habitats range from nearshore benthic primary producer habitats such as seagrass beds, coral communities and mangrove forests, to offshore soft sediment seabed habitats and submerged and emergent reef systems. These habitats support biological communities that range from low density sessile and mobile benthos, such as sponges, molluscs and echinoids (with noted areas of sponge hotspot diversity) in offshore soft sediment habitat (DSEWPAC, 2012a) to complex, diverse, remote coral reef systems.

Benthic primary producer habitats, such as seagrass beds, coral communities and mangrove forests within the SWMR, are described as a mixture of tropical and temperate species, due to the seasonal influences of the tropical waters carried south by the Leeuwin Current and the temperate waters carried north by the Capes Current (DSEWPAC, 2012b).

The NMR shares similar habitat types to the NWMR. The predominant habitat of the region includes soft muddy sediments on relatively flat terrain. Other habitat types include seagrasses, reefs, shoals and coastal habitats such as mangroves and coastal wetlands (Rochester *et al.*, 2007).

The summary of key habitats and biological communities provided in the following sub-sections is focused on the primary features of relevance to the activity areas within the NWMR – primarily the offshore habitats of the continental shelf and slope, submerged shoals and banks, and remote oceanic reef systems of recognised conservation value.

4.2 Biological Productivity of NWMR

Primary productivity of the NWMR is generally low and appears to be largely driven by offshore influences (Brewer *et al.*, 2007), with periodic upwelling events and cyclonic influences driving coastal productivity with nutrient recycling and advection. Seasonal weather patterns also influence the delivery of nutrients from deep-water to shallow water. Cyclones and north-westerly winds during the North-west monsoon (approximately November–March) and the strong offshore winds of the South-east monsoon (approximately April–September) facilitate the upwelling and mixing of nutrients from deep-water to shallow water environments (Brewer *et al.*, 2007).

The Indonesian Throughflow (ITF) has an important effect on productivity in the northern areas of the Region. Generally, its deep, warm and low nutrient waters suppress upwelling of deeper comparatively nutrient-rich waters, thereby forcing the highest rates of primary productivity to occur at depths associated with the thermocline. When the ITF is weaker, the thermocline lifts bringing deeper, more nutrient-rich waters into the photic zone and hence resulting in conditions favourable to increased productivity (DEWHA, 2007a). Similarly, the Leeuwin Current has a significant role in determining primary productivity in the southern areas of the NWMR. As with the ITF, the overlying warm oligotrophic waters of the Leeuwin Current suppress upwelling. A subsurface chlorophyll maximum is therefore formed at a depth in the water column where nutrients and light are sufficient for photosynthesis to proceed. Seasonal changes in the strength of the Leeuwin Current influence primary productivity levels and seasonal interactions between the Leeuwin and Ningaloo currents in the south of the NWMR are believed to be particularly important (DEWHA, 2007a).

Internal tides (defined as internal waves generated by the barotropic tide) are a striking characteristic of many parts of the NWMR and are associated with highly stratified water columns. Internal waves (solitons), which can raise cooler, generally more nutrient rich water higher in the water column, are generated between water depths of 400 m and 1000 m where bottom topography results in a significant change in water depth over a relatively short distance. Cyclones are episodic events in the NWMR that contribute to spikes in productivity through enrichment of surface water layers due to enhanced vertical mixing of the water column. Temporary increases in primary productivity as a result of cyclones generally last between one and two weeks, and it is believed that the impacts of

cyclones are generally limited to waters less than 100 m deep and affect benthic communities more substantially than pelagic systems (DEWHA, 2007a).

Water depth also has a significant overriding influence over productivity in the marine environment, due to its influence on light availability. This is reflected by distinct onshore and offshore assemblages of major pelagic groups of phytoplankton, microzooplankton, mesoplankton and ichthyoplankton. Productivity booms are thought to be triggered by seasonal changes to physical drivers or episodic events, as detailed above, which result in rapid increases in primary production over short periods, followed by extended periods of lower primary production. The trophic systems in the NWMR are able to take advantage of blooms in primary production, enabling nutrients generated to be used by different groups of consumers over long periods (DEWHA, 2007a).

Little detailed information is available about the trophic systems in the NWMR. The utilisation of available nutrients is thought to differ between pelagic and benthic environments, influenced by water depth and vertical migration of some species groups in the water column. In the pelagic system, it is thought that approximately half of the nutrients available are utilised by microzooplankton (e.g. protozoa) with the remainder going to macro/meso-zooplankton (e.g. copepods). As primary and secondary consumers, gelatinous zooplankton (e.g. salps, coelenterates) and jellyfish are thought to play an important role in the food web, contributing a significant proportion of biomass in the marine system during and for periods after booms in primary productivity. Salps are semi-transparent, barrel-shaped marine animals that can reproduce quickly in response to bursts in primary productivity and provide a food source for many pelagic fish species (DEWHA, 2007a).

4.3 Planktonic Communities in the NWMR

The NWMR has two distinct phytoplankton assemblages; a tropical oceanic community in offshore waters and a tropical shelf community confined to the NWS (Hallegraeff, 1995). MODIS (Moderate Resolution Imaging Spectrometer) satellite datasets from the NWMR indicates that chlorophyll (and thus phytoplankton) levels are low in summer months (December to March) and higher in the winter months (Schroeder *et al.*, 2009). Low chlorophyll levels during summer months may be a result of lower plankton productivity during the wet season or lower nutrient inputs from warm surface waters dominant during summer. However, it is likely that much of the primary production is taking place below the surface, where the MODIS imagery does not penetrate (Schroeder *et al.*, 2009). The winter months are relatively cloud free and surface chlorophyll is high throughout most of the region.

Zooplankton and may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well as larval stages of other taxa such as fishes, corals and molluscs. Peaks in zooplankton such as mass coral spawning events (typically in March and April) (Rosser and Gilmour, 2008) and fish larvae abundance (CALM, 2005a) can occur throughout the year. Spatial and temporal patterns in the distribution and abundance of macro-zooplankton on the North-west Shelf are influenced by sporadic climatic and oceanographic events, with large inter-annual changes in assemblages (Wilson *et al.*, 2003). Amphipods, euphausiids, copepods, mysids and cumaceans are among the most common components of the zooplankton in the region (Wilson *et al.*, 2003).

4.3.1 Browse

Phytoplankton within the Browse activity area is expected to reflect the conditions of the NWMR. There is a tendency for offshore phytoplankton communities in the NWMR to be characterised by smaller taxa (e.g. bacteria), whereas shelf waters are dominated by larger taxa such as diatoms (Hanson *et al.*, 2007).

Zooplankton within the activity area may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well as larval stages of other taxa such as fishes, corals and molluscs. Peaks in zooplankton such as mass coral spawning events (typically in March and April) (Rosser and Gilmour, 2008; Simpson *et al.*, 1993) and fish larvae abundance (CALM, 2005a) can occur throughout the year.

The influence of the Indonesian Throughflow restricts upwelling across the Kimberley System (approximately equates to the Browse activity area). However, small-scale topographically associated current movements and upwellings are thought to occur, which inject nutrients into specific locations within the system and result in 'productivity hot-spots'. Similarly, internal waves, generated at the shelf break (e.g. west of Browse Island and around submerged cliffs) play a role in making nutrients available in the photic zone. Productivity within shallow nearshore waters is driven primarily by tidal movement and terrestrial runoff whereby nutrients are mixed by tidal action and new inputs of organic matter come from the land.

4.3.2 North-west Shelf / Scarborough

Plankton communities within the NWS / Scarborough activity area are expected to reflect conditions of the NWMR. Within the Pilbara system of the NWMR (approximately equates to the NWS / Scarborough activity area). Internal tides along the NWS and Exmouth Plateau result in the drawing of deeper cooler waters into the photic zone, stirring up nutrients and triggering primary productivity. Broadly the greatest productivity within this sub-system is found around the 200 m isobath associated with the shelf break.

4.3.3 North-west Cape

Waters of the North-west Cape experience a relatively high diversity of phytoplankton groups including diatoms, coccolithophorids and dinoflagellates. During the warmer months blooms of *Trichodesmium* occur in the region, these have been observed particularly on the frontal systems around Point Murat (Heyward *et al.*, 2000).

Average Leeuwin Current phytoplankton biomass is characteristic of low productivity oceanic waters like the Indian, Pacific and Atlantic Oceans (Hanson *et al.*, 2005). However, the Canyons linking the Cuvier Abyssal Plain and Cape Range Peninsula KEF are connected to the Commonwealth waters adjacent to Ningaloo Reef, and may also have connections to Exmouth Plateau. The canyons are thought to interact with the Leeuwin Current to produce eddies inside the heads of the canyons, resulting in waters from the Antarctic intermediate water mass being drawn into shallower depths and onto the shelf (Brewer *et al.* 2007). These waters are cooler and richer in nutrients and strong internal tides may also aid upwelling at the canyon heads (Brewer *et al.* 2007). The narrow shelf width (about 10 kilometres) near the canyons facilitates nutrient upwelling and relatively high productivity. This high primary productivity leads to high densities of primary consumers, such as micro and macro-zooplankton, such as amphipods, copepods, mysids, cumaceans, euphausiids (Brewer *et al.*, 2007).

4.4 Habitats and Biological Communities in the NWMR

4.4.1 Offshore Habitats and Biological communities

The NWMR has a large area of continental shelf and continental slope, with a range of bathymetric features such as canyons, plateaus, terraces, ridges, reefs, banks and shoals. The marine environment in this region is typified by tropical to sub-tropical marine ecosystems with diverse habitats from soft sediments, canyons, remote coral reefs and limestone pavement.

The key habitats and biological communities representative of the broader NWMR are summarised in **Table 4-1**.

The key habitats and biological communities representative of the broader SWMR and NMR are summarised in **Table 4-2** and **Table 4-3**.

4.4.2 Shoreline habitats and biological communities

The NWMR encompasses offshore and coastal waters, islands and mainland shoreline habitats typified by mangroves, tidal flats, saltmarshes, sandy beaches, and smaller areas of rocky shores. Each of these shoreline types has the potential to support different flora and fauna assemblages due to the different physical factors (e.g. waves, tides, light, etc.) influencing the habitat.

The key shoreline habitats representative of the broader NWMR are summarised in **Table 4-1**.

The key shoreline habitats representative of the broader SWMR and NMR are summarised in **Table 4-2** and **Table 4-3**.

Table 4-1 Habitats and biological communities within the NWMR

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
Offshore habitats and biological communities				
Soft sediment with infauna	The offshore environment of the NWMR comprises predominately of seabed habitats dominated by soft sediments (sandy and muddy substrata with occasional patches of coarser sediments) and sparse benthic biota. The benthic communities inhabiting the predominantly soft, fine sediments of the offshore habitats are characterised by infauna such as polychaetes, and sessile and mobile epifauna such as crustacea (shrimp, crabs and squat lobsters) and echinoderms (starfish, cucumbers). The density of benthic fauna is typically lower in deep-sea sediment habitats (greater than 200 m) than in shallower coastal sediment habitats, but the diversity of communities may be similar.			
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments. This habitat is found in offshore areas of the NWMR, often associated with key ecological features such as the Ancient coastline at 125 m depth contour KEF.			Section 9
	Ancient Coastline at 125 m Depth Contour KEF Continental Slope Demersal Fish Communities KEF	Ancient Coastline at 125 m Depth Contour KEF Continental Slope Demersal Fish Communities KEF	Ancient Coastline at 125 m Depth Contour KEF Continental Slope Demersal Fish Communities KEF	Section 9
Coral Reef	Coral reef habitats within the NWMR have a high species diversity that includes corals, and associated reef species such as fishes, crustaceans, invertebrates, and algae. Coral reef habitats of the offshore environment of the NWMR include remote oceanic reef systems, large platform reefs, submerged banks and shoals.			
	Browse Island Scott Reef Seringapatam Reef Ashmore Reef Cartier Island Hibernia Reef	Rowley Shoals (including Mermaid Reef, Clerke Reef, Imperieuse Reef) Glomar Shoal Rankin Bank	-	Section 10
Seagrass and Macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and also provide key habitats and nursery grounds (Heck Jr. <i>et al.</i> , 2003; Wilson <i>et al.</i> , 2010). In the northern half of Western Australia, these habitats are restricted to sheltered and shallow waters, including around offshore reef systems, due to large tidal movement, high turbidity, large seasonal freshwater run-off and cyclones.			
	Scott Reef Seringapatam Reef Ashmore Reef	Rowley Shoals (including; Mermaid Reef, Clerke Reef, Imperieuse Reef)		Section 10
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWHA, 2008). Filter feeders generally live in areas that have strong currents and hard substratum, often associated with deeper environments of the shoals and banks in the offshore NWMR.			
	Lower outer reef slopes of the oceanic reef	Glomar Shoal Rankin Bank	Cape Range canyon system	Section 10

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Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
	systems such as Scott Reef	Ancient coastline at 125 m depth contour KEF		
Sandy Beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors (e.g. waves, currents, etc). Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NWMR, being found around islands and reefs in the offshore areas of the region.			
	Browse Island Scott Reef (Sandy Islet) Ashmore Reef Cartier Island	Montebello Islands Lowendal Islands Barrow Island	Muiron Islands	Section 10
Nearshore/coastal habitats and biological communities				
Coral Reef	Coral reef habitats typically found in nearshore regions of the NWMR include the fringing reefs around coastal islands and the mainland shore.			
	Kimberley East Holothuria and Long reefs Bonaparte and Buccaneer Archipelagos Montgomery Reef Adele complex (Beagle, Mavis, Albert, Churchill reefs, Adele Island)	Dampier Archipelago Montebello, Lowendal and Barrow Island Groups	Ningaloo Reef Exmouth Gulf Shark Bay	Section 10
Seagrass and Macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and also provide key habitats and nursery grounds (Heck Jr. <i>et al.</i> , 2003; Wilson <i>et al.</i> , 2010). In the nearshore areas of the NWMR, these habitats are restricted to sheltered and shallow waters due to large tidal movement, high turbidity, large seasonal freshwater run-off and cyclones. These areas include in bays and sounds and around reef and island groups.			
	King Sound	Roebuck Bay Dampier Archipelago Montebello, Lowendal and Barrow Island Groups	Ningaloo Reef Exmouth Gulf Shark Bay	Section 10
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWHA, 2007a). Filter feeders generally live in areas that have strong currents and hard substratum. Conversely, higher diversity infauna are mainly associated with soft unconsolidated sediment and infauna communities are considered widespread and well represented along the continental shelf and upper slopes of the NWMR. In nearshore areas of the NWMR, these species are generally found around reef systems.			
	-	Deeper habitats of Rankin Bank and Glomar Shoal	Deeper habitats of Ningaloo Reef and the protected sponge zone in the south	

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie <i>et al.</i> , 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie <i>et al.</i> , 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the NWMR.			
	Dampier Peninsula (including Carnot Bay, Beagle Bay and Pender Bay)	Pilbara Coastline (including; Ashburton River Delta, Coolgra Point, Robe River Delta, Yardie Landing, Yammadery Island and the Mangrove Islands) Montebello, Lowendal and Barrow Island Groups Roebuck Bay	Shark Bay Mangrove Bay, Cape Range Peninsula Exmouth Gulf	
Saltmarshes	Saltmarshes communities are confined to shoreline habitats and are typically dominated by dense stands of halophytic plants such as herbs, grasses, and low shrubs. The diversity of saltmarsh plant species increases with increasing latitude (in contrast to mangroves). The vegetation in these environments is essential to the stability of the saltmarsh, as they trap and bind sediments. The sediments are generally sandy silts and clays and can often have high organic material content.			
	-	Eighty Mile Beach Roebuck Bay	Shark Bay	
Sandy Beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors (e.g. waves, currents, etc). Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NWMR. Sandy beaches are important for both resident and migratory seabirds and shorebirds and can also provide an important habitat for turtle nesting and breeding. They are located along many coastlines of the nearshore environments of the NWMR.			
	Cape Domett Lacrosse Island	Eighty Mile Beach Eco Beach Dampier Archipelago Inshore Pilbara Islands (Northern, Middle, and Southern)	Ningaloo coast Muiron Islands Exmouth Gulf	

Table 4-2 Habitats within the SWMR

Habitat/Community	Location
Offshore	
Soft sediment with infauna	Most of the SWMR seafloor is composed of soft unconsolidated sediments, but due to large variations in bathymetry there are marked differences in sedimentary composition and benthic assemblage structure across the region. Despite the prevalence of these habitats in the SWMR, very little is known about the composition or distribution of the region's sedimentary infauna (DEWHA, 2008b)
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments. Perth Canyon Marine Park Ancient coastline at 90-120 m depth contour KEF Diamantina Fracture Zone Naturaliste Plateau
Coral Reef	To date, studies and understanding of the corals within the SWMR have concentrated on the shallow water areas in State Waters. Within the deeper Commonwealth waters of the SWMR little is known of the distribution of corals.
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWR, 2007). Filter feeders generally inhabit deeper habitat (below the photic zone) that have strong currents and hard substratum Ancient coastline at 90-120 m depth Diamantina Fracture Zone Naturaliste Plateau Perth Canyon Marine Park South-west Corner Marine Park
Nearshore	
Coral Reef	The northern extent of the SWMR coincides loosely with the disappearance of abundant and diverse coral from coastal habitats. To the south of Shark Bay, abundant corals occur predominantly around offshore islands, with corals at inshore sites occurring in very isolated patches of non-reef coral communities, usually of reduced species richness. Houtman Abrolhos Islands Rottneest Island
Seagrass and Macroalgae communities	Within the SWMR, macroalgae and seagrass communities are noted for their extent, species richness and endemism. The clear waters of the region allow light to reach greater depths, with some species found at much greater depths than usual (down to 120 m) (DEWR, 2007). Of the known species there are more than 1000 species of macro-algae and 22 species of seagrass consisting of tropical and temperate species. Seagrass and macro-algae occur in areas with sheltered bays and in the inter-reef lagoons along exposed sections of the coast. Houtman Abrolhos Islands Jurien Marine Park Shoalwater Islands Marine Park Geographe Marine Park Cockburn Sound Rottneest Island

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Habitat/Community	Location
	Commonwealth marine environment within and adjacent to the west-coast inshore lagoons KEF Commonwealth marine environment within and adjacent to Geographe Bay KEF Commonwealth marine environment surrounding the Recherche Archipelago KEF
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWR, 2007). Filter feeders generally live in areas that have strong currents and hard substratum. Houtman Abrolhos Islands Recherche Archipelago
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie <i>et al.</i> , 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie <i>et al.</i> , 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the SWMR. Houtman Abrolhos Islands
Sandy Beaches	Sandy beaches within the SWMR are important for both resident and migratory seabirds and shorebirds and can also host breeding populations of the Australian sea lion. They are found along many coastlines of the nearshore environments of the SWMR. In addition to this, beaches in the SWMR provide a variety of socio-economic values including tourism, commercial and recreational fishing, and support other recreational activities. Houtman Abrolhos Islands Marmion Marine Park Ngari Capes Marine Park Walpole and Nornalup Inlets Marine Park

Table 4-3 Habitats and Biological Communities within the NMR

Habitat/Community	Location		
Offshore habitats and biological communities			
Soft sediment with infauna	Most of the offshore environment of the NMR is characterised by relatively flat expanses of soft sediment seabed. The soft sediments of the region are characterised by moderately abundant and diverse communities of infauna and mobile epifauna dominated by polychaetes, crustaceans, molluscs, and echinoderms.		
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments. The variability in substrate composition may contribute to the presence of unique ecosystems. Species present include sponges, soft corals and other sessile filter feeders associated with hard substrate sediments.		
	Carbonate bank and terrace system of the Van Diemen Rise KEF Pinnacles of the Bonaparte Basin KEF		
Coral Reef	Offshore coral reefs within the NMR is generally associated with a series of submerged shoals and banks. The shoals/banks in the region support tropical marine biota consistent with that found on emergent reef systems of the Indo West Pacific region such as Ashmore Reef, Cartier Island, Seringapatam Reef and Scott Reef (Heyward <i>et al.</i> , 1997)		
	Pinnacles of the Bonaparte Basin KEF Evans Shoal Tassie Shoal Blackwood Shoal		
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWHA, 2007b). Filter feeders generally live in areas that have strong currents and hard substratum and typically associated with the deeper habitats of the submerged shoals and banks, and canyon features.		
	Carbonate bank and terrace system of the Van Diemen Rise KEF Pinnacles of the Bonaparte Basin KEF Tributary Canyons of the Arafura Depression KEF Evans Shoal Tassie Shoal Goodrich Bank		
Nearshore			
Coral Reef	Within the NMR corals occur both as reefs and in non-reef coral communities. Nearshore reefs include patch reefs and fringing reefs sparsely distributed within the region. Coral reefs within the NMR provides breeding and aggregation areas for many fish species including mackerel and snapper and offer refuges for sea snakes and apex predators such as sharks.		
	Submerged coral reefs of the Gulf of Carpentaria KEF Darwin Harbour		
Seagrass and Macroalgae communities	Seagrasses provide key habitats in the NMR. They stabilise coastal sediments and trap and recycle nutrients. They provide nursery grounds for commercially harvested fish and prawns and provide feeding grounds for dugongs and green turtles. Seagrass distribution in the region is largely associated with sheltered small bays and inlets including shallow waters surrounding inshore islands.		
	Field Island The mainland coastline adjacent to Kakadu National Park		
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Habitat/Community	Location
Filter Feeders/ heterotrophic	<p>Filter feeder epifauna such as sponges, ascidians, soft corals, and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWHA, 2007b). Filter feeders generally live in areas that have strong currents and hard substratum.</p> <p>Cape Helveticus</p>
Mangroves	<p>Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie <i>et al.</i>, 2006). Mangroves provide habitat for waterbirds and support many commercially and recreationally important fish and crustacean species for parts of their life cycles. They buffer the coast from large tidal movements, storm surges and flooding.</p> <p>Tiwi Islands Darwin Harbour The mainland coastline adjacent to the Daly River</p>
Sandy Beaches	<p>Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NMR and are important for both resident and migratory seabirds and shorebirds. Sandy beaches can also provide an important habitat for turtle nesting. They are located along many coastlines of the nearshore environments of the islands and mainland shores of the NMR.</p> <p>Tiwi Islands Cobourg Peninsula Joseph Bonaparte Gulf</p>

5. FISHES, SHARKS AND RAYS

5.1 Regional Context

Western Australian waters provide important habitat for listed fishes, sharks, and rays including areas that support key life stages such as breeding, foraging, and migration routes for fish species. Pelagic and demersal fishes occupy a range of habitats throughout each of the regions, from coral reefs to open offshore waters, and are an extremely important component of ecosystems, providing a link between primary production and higher predators, with many species being of conservation value and important for commercial and recreational fishing.

The fish fauna in the NWMR is diverse. Of the approximately 500 shark species found worldwide, 94 are found in the region (DEWHA, 2008). Approximately 54 species of syngnathids (seahorses, seadragons, pipehorses and pipefishes) and one species of solenostomids (ghostpipefishes) are also known to occur in the NWMR or adjacent State waters (DSEWPAC, 2012a).

The fish fauna of the SWMR includes more than 900 species occupying a large variety of habitats. However, only three species of bony fishes known to occur in the region are listed under the EPBC Act as threatened or marine species, and seven listed species of shark (DSEWPAC, 2012b).

The NMR is considered an important area for the sawfish and river shark species group, with five species of sawfishes and river sharks listed under the EPBC Act known to occur in the region (DSEWPAC, 2012c). Approximately 28 species of syngnathids and two species of solenostomids are listed marine and known to occur in the NMR, however there is a paucity of knowledge on the distribution, relative abundance and habitats of these species in the region (DEWHA, 2008).

The following sections focus on the fish species (including sharks and rays) listed as threatened or migratory that are known to occur within the NWMR. In addition, listed, conservation dependent fish and shark species for the NWMR are described. A detailed account of commercial and recreational fisheries that operate in the region is provided in **Section 11**.

Table 5-1 outlines the threatened and migratory fish species that may occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice. **Table 5-2** provides information for species of fish that are listed as conservation dependent that may occur within the NWMR, NMR and SWMR. Note that currently there are no approved Conservation Advices in place for any of these five species.

Table 5-1 Fish species (including sharks and rays) identified by the EPBC Act PMST for the NWMR

Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999			WA Biodiversity Conservation Act 2016	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
<i>Rhincodon typus</i>	Whale shark	Vulnerable	Migratory	Marine	Other specially protected fauna	Conservation Advice <i>Rhincodon typus</i> whale shark. (Threatened Species Scientific Committee, 2015d)
<i>Carcharias taurus</i>	Grey nurse shark (west coast population)	Vulnerable	N/A	Marine	Vulnerable	Recovery Plan for the Grey Nurse Shark (<i>Carcharias taurus</i>) (DOE, 2014a)
<i>Carcharodon carcharias</i>	White shark	Vulnerable	Migratory	Marine	Vulnerable	Recovery Plan for the White Shark (<i>Carcharodon carcharias</i>) (DSEWPAC, 2013b)
<i>Isurus oxyrinchus</i>	Shortfin mako	N/A	Migratory	Marine	N/A	N/A
<i>Isurus paucus</i>	Longfin mako	N/A	Migratory	Marine	N/A	N/A
<i>Lamna nasus</i>	Porbeagle shark Mackerel shark	N/A	Migratory	Marine	N/A	N/A
<i>Carcharhinus longimanus</i>	Oceanic whitetip shark	N/A	Migratory	Marine	N/A	N/A
<i>Anoxypristis cuspidata</i>	Narrow sawfish	N/A	Migratory	Marine	N/A	N/A
<i>Pristis clavata</i>	Dwarf sawfish	Vulnerable	Migratory	Marine	Priority	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
<i>Pristis pristis</i>	Largetooth (Freshwater) sawfish	Vulnerable	Migratory	Marine	Priority	
<i>Pristis zijsron</i>	Green sawfish	Vulnerable	Migratory	Marine	Vulnerable	
<i>Glyphis garricki</i>	Northern river shark	Endangered	N/A	Marine	Priority	
<i>Manta alfredi</i>	Reef manta ray	N/A	Migratory	Marine	N/A	N/A
<i>Manta birostris</i>	Giant manta ray	N/A	Migratory	Marine	N/A	N/A

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Table 5-2 EPBC Act listed Conservation Dependent species of fishes and sharks that may occur in the NWMR, NMR and SWMR

Species Name	Common Name	Likely Occurrence / Distribution	Listing Advice
<i>Hoplostethus atlanticus</i>	Orange roughy, Deep-sea perch, Red roughy	SWMR	No conservation listing advice for this species. Refer to the Marine bioregional plan for the SWMR (DSEWPAC, 2012b) for further information
<i>Thunnus maccoyii</i>	Southern bluefin tuna	NWMR and SWMR	Threatened Species Scientific Committee (2010)
<i>Sphyrna lewini</i>	Scalloped hammerhead	NWMR, NMR and SWMR	Threatened Species Scientific Committee (2018)
<i>Centrophorus zeehaani</i>	Southern dogfish, Endeavour dogfish, Little gulper shark	SWMR	Threatened Species Scientific Committee (2013)
<i>Galeorhinus galeus</i>	School shark, Eastern school shark, Snapper shark, Tope, Soupfin shark	SWMR	Threatened Species Scientific Committee (2009)

5.2 Protected Sharks, Sawfishes and Rays in the NWMR

The EPBC Act Protected Matters search (**Appendix A**) identified seven species of shark and five species of river shark or sawfish listed as threatened and/or migratory within the NWMR. In addition, two species of ray (the reef manta ray and giant manta ray) are listed as migratory within the region (refer **Table 5-2**).

5.2.1 Sharks and Sawfishes

The shark species known to occur within the NWMR include: the whale shark, grey nurse shark, white shark, shortfin mako, and longfin mako (**Table 5-2**).

Five species of river shark or sawfish known to occur in the NWMR and include: the narrow sawfish, northern river shark, freshwater sawfish, green sawfish and dwarf sawfish (**Table 5-2**).

There are identified BIAs within the NWMR for the whale shark, freshwater sawfish, green sawfish, and dwarf sawfish (refer **Section 5.3.2**).

Table 5-2 Information on the threatened shark and sawfish species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Whale shark	Preferred habitat: They have a widespread distribution in tropical and warm temperate seas, both oceanic and coastal (Last and Stevens, 2009). The species is widely distributed in Australian waters. Diet: Whale sharks are planktivorous sharks and feed on a variety of planktonic organisms including krill, jellyfish, and crab larvae (Last and Stevens, 2009).	Ningaloo Reef is the main known aggregation site for whale sharks in Australian waters and has the largest density of whale sharks per kilometre in the world (Martin, 2007). Refer Table 5-3 for the BIA summary for the whale shark.
Grey nurse shark (west coast population)	Preferred habitat: Most commonly found in temperate waters on, or close to, the bottom of the continental shelf, from close inshore to depths of about 200 m (McAuley, 2004). Diet: A variety of teleost and elasmobranch fishes and some cephalopods (Gelsichter <i>et al.</i> , 1999; Smale, 2005).	Details of movement patterns of the western sub-population are unclear (McAuley, 2004) and key aggregation sites have not been formally identified within the NWMR (Chidlow <i>et al.</i> , 2006). The NWMR represents the northern limit of the west coast population.

Species	Preferred Habitat and Diet	Habitat Location
White shark	<p>Preferred habitat: The species typically occurs in temperate coastal waters between the shore and the 100 m depth contour; however, adults and juveniles have been recorded diving to depths of 1000 m (Bruce <i>et al.</i>, 2006; Bruce, 2008).</p> <p>Diet: Smaller white sharks (less than 3 m in length) feed primarily on teleost and elasmobranch fishes, broadening their diet as larger sharks to include marine mammals (Last and Stevens, 2009).</p>	<p>There are no known aggregation sites for white sharks in the NWMR, and this species is most often found south of North-west Cape, in low densities (DSEWPAC, 2012a).</p> <p>Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.</p>
Shortfin mako	<p>Preferred habitat: The shortfin mako shark is a pelagic species with a circumglobal, wide-ranging oceanic distribution in tropical and temperate seas (Mollet <i>et al.</i>, 2000). Tagging studies indicate shortfin makos spend most of their time in water less than 50 m deep but with occasional dives up to 880 m (Abascal <i>et al.</i>, 2011; Stevens <i>et al.</i>, 2010).</p> <p>Diet: Feeds on a variety of prey, such as teleost fishes, other sharks, marine mammals, and marine turtles (Campana <i>et al.</i>, 2005).</p>	<p>Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.</p>
Longfin mako	<p>Preferred habitat: A pelagic species with a wide-ranging oceanic distribution in tropical and temperate seas (Mollet <i>et al.</i>, 2000).</p> <p>Diet: Primarily teleost fishes and cephalopods (primarily squid) (Last and Stevens, 2009).</p>	<p>Records on longfin mako sharks are sporadic and their complete geographic range is not well known (Reardon <i>et al.</i>, 2006).</p> <p>Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.</p>
Mackerel/Porbeagle shark	<p>Preferred habitat: The porbeagle shark primarily inhabits offshore waters around the edge of the continental shelf. They occasionally move into coastal waters, but these movements are temporary (Campana and Joyce, 2004; Francis <i>et al.</i>, 2002). The porbeagle shark is known to dive to depths exceeding 1300 m (Campana <i>et al.</i>, 2010; Saunders <i>et al.</i>, 2011).</p> <p>Diet: Primarily teleost fish, elasmobranchs, and cephalopods (primarily squid) (Joyce <i>et al.</i>, 2002; Last and Stevens, 2009).</p>	<p>In Australia, the species occurs in waters from southern Queensland to south-west Australia (Last and Stevens, 2009). Distribution within the NWMR is unknown, but there are several records for this species on the NWS in the Atlas of Living Australia (ALA).</p>
Oceanic whitetip shark	<p>Preferred habitat: The oceanic whitetip shark is globally distributed in warm-temperate and tropical oceans (Andrzejczek <i>et al.</i>, 2018). The species may occur in tropical and sub-tropical offshore and coastal waters around Australia. They primarily occupy pelagic waters in the upper 200 m of the water column; however, they have been observed diving to depths of around 1000 m, potentially associated with foraging behaviour (Howey-Jordan <i>et al.</i>, 2013; D'Alberto <i>et al.</i>, 2017). The species is highly migratory, travelling large distances between shallow reef habitats in coastal waters and oceanic waters (Howey-Jordan <i>et al.</i>, 2013). The species does exhibit a strong preference for warm and shallow waters above 120 m.</p> <p>Diet: Opportunistic feeders and generally target a variety of finfishes and pelagic squid, depending on habitat. Target pelagics such as tuna in open ocean as noted by the large bycatch numbers in the long line fisheries.</p>	<p>Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.</p>

Species	Preferred Habitat and Diet	Habitat Location
Narrow sawfish	Preferred habitat ¹ : Shallow coastal, estuarine, and riverine habitats, however it may occur in waters up to 40 m deep (D'Anastasi <i>et al.</i> , 2013). Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	Shallow coastal waters of the Pilbara and Kimberly coasts (Last and Stevens, 2009).
Northern river shark	Preferred habitat ¹ : Rivers, tidal sections of large tropical estuarine systems and macrotidal embayments, as well as inshore and offshore marine habitats (Pillans <i>et al.</i> , 2009; Thorburn and Morgan, 2004). Adults have been recorded only in marine environments. Juveniles and sub-adults have been recorded in freshwater, estuarine and marine environments (Pillans <i>et al.</i> , 2009). Diet: Variety of fish and crustaceans (Stevens <i>et al.</i> , 2005)	Within the NWMR records have come from both the west and east Kimberley, including King Sound, the Ord and King rivers, West Arm of Cambridge Gulf and also from Joseph Bonaparte Gulf (Thorburn and Morgan, 2004; Stevens <i>et al.</i> , 2005; Thorburn, 2006; Field <i>et al.</i> , 2008; Pillans <i>et al.</i> , 2008, Whitty <i>et al.</i> , 2008; Wynen <i>et al.</i> , 2008).
Large-tooth (Freshwater) sawfish	Preferred habitat: Sandy or muddy bottoms of shallow coastal waters, estuaries, river mouths and freshwater rivers, and isolated water holes. Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	Refer Table 5-3 for the BIA summary for the freshwater sawfish.
Green sawfish	Preferred habitat ¹ : Inshore coastal environments including estuaries, river mouths, embayments, and along sandy and muddy beaches, as well as offshore marine habitat (Stevens <i>et al.</i> , 2005; Thorburn <i>et al.</i> , 2003). Diet: Schools of baitfish and prawns (Pogonoski <i>et al.</i> , 2002), molluscs and small crustaceans (Cliff and Wilson, 1994).	Refer Table 5-3 for the BIA summary for the green sawfish.
Dwarf sawfish	Preferred habitat ¹ : Shallow (2 to 3 m) silty coastal waters and estuarine habitats, occupying relatively restricted areas and moving only small distances (Stevens <i>et al.</i> , 2008) Diet: Shoaling fish such as mullet, molluscs, and small crustaceans (Cliff and Wilson, 1994).	Refer Table 5-3 for the BIA summary for the dwarf sawfish.

¹ Preferred habitat as described within the Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b).

5.2.2 Rays

Rays are commonly found in the NWMR. Two listed and migratory species of ray known to occur within the NWMR: the reef manta ray and giant manta ray.

No BIAs for either the reef or giant manta ray species have been identified in the NWMR.

Table 5-3 Information on migratory ray species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Reef manta ray	Preferred habitat: The reef manta ray is commonly sighted within productive nearshore environments, such as island groups, atolls or continental coastlines. However, the species has also been recorded at offshore coral reefs, rocky reefs, and seamounts (Marshall <i>et al.</i> , 2009). Diet: Feed on planktonic organisms including krill and crab larvae.	A resident population of reef manta rays has been recorded at Ningaloo Reef. No BIAs identified for NWMR.
Giant manta ray	Preferred habitat: The species primarily inhabits near-shore environments along productive coastlines with regular upwelling, but they appear	The Ningaloo Coast is an important area for giant manta rays from March to August (Preen <i>et al.</i> , 1997).

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Species	Preferred Habitat and Diet	Habitat Location
	to be seasonal visitors to coastal or offshore sites including offshore island groups, offshore pinnacles and seamounts (Marshall <i>et al.</i> , 2011). Diet: Feed on planktonic organisms including krill and crab larvae.	No BIAs identified for NWMR.

5.3 Fish, Shark and Sawfish Biological Important Areas in the NWMR

A review of the National Conservation Values Atlas identified Biologically Important Areas (BIAs) for four species of shark and sawfish (whale shark, freshwater sawfish, green sawfish and dwarf sawfish) within the NWMR. The BIAs for the whale shark and the sawfish species include foraging, nursing and pupping areas. These are described in **Table 5-4**.

Table 5-4 Fish, whale shark and sawfish BIAs within the NWMR

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Pupping	Nursing	Foraging
Whale shark	✓	✓	✓	No pupping BIA identified within the NWMR	No nursing BIA identified within the NWMR	Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March–July) Foraging northward from Ningaloo along the 200 m isobath (July – Nov).
Green sawfish	✓	✓	-	Pupping in Cape Keraudren (pupping occurs in summer in a narrow area adjacent to shoreline) Pupping in Willie Creek Pupping in Roebuck Bay Pupping in Cape Leveque Pupping in waters adjacent to Eighty Mile Beach Pupping (likely) in Camden Sound.	Nursing in Cape Keraudren Nursing in waters adjacent to Eighty Mile Beach	Foraging in Cape Keraudren Foraging in Roebuck Bay Foraging in Cape Leveque Foraging in Camden Sound
Largetooth (freshwater) sawfish	✓	✓	-	Pupping in the mouth of the Fitzroy River (January to May) Roebuck Bay (Jan – May) Pupping likely in waters adjacent to Eighty Mile Beach	Nursing (likely) in King Sound Roebuck Bay (Jan – May)	Foraging in the mouth of the Fitzroy River (January to May) Foraging in King Sound Roebuck Bay (Jan – May) Foraging in waters adjacent to Eighty Mile Beach
Dwarf sawfish	✓	✓	-	Pupping in King Sound Pupping in waters adjacent to Eighty Mile Beach	Nursing in King Sound Nursing waters adjacent to Eighty Mile Beach	Foraging in King Sound Foraging in Camden Sound Foraging in waters adjacent to Eighty Mile Beach

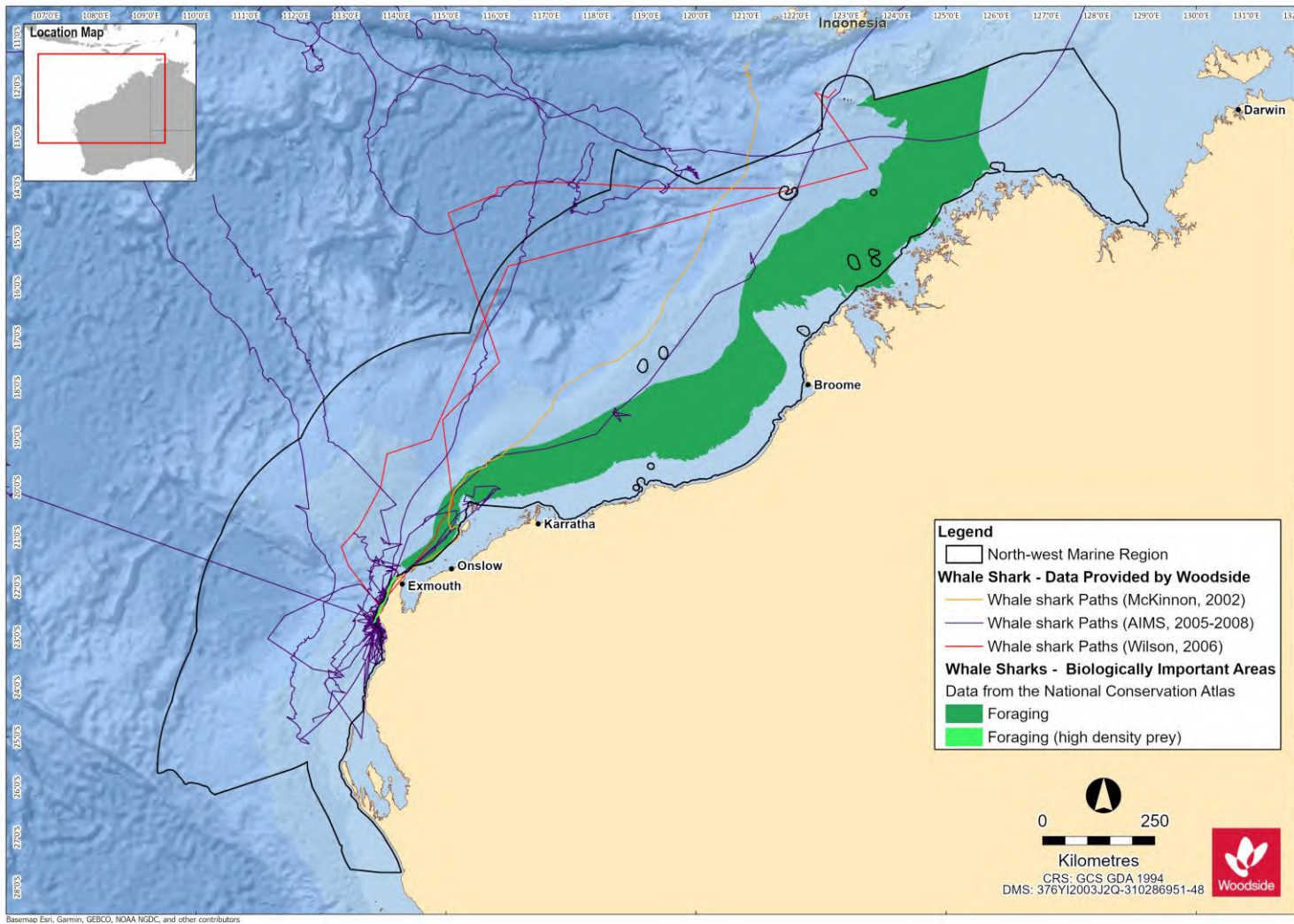


Figure 5-1 Whale shark BIAs for the NWMR and tagged whale shark tracks

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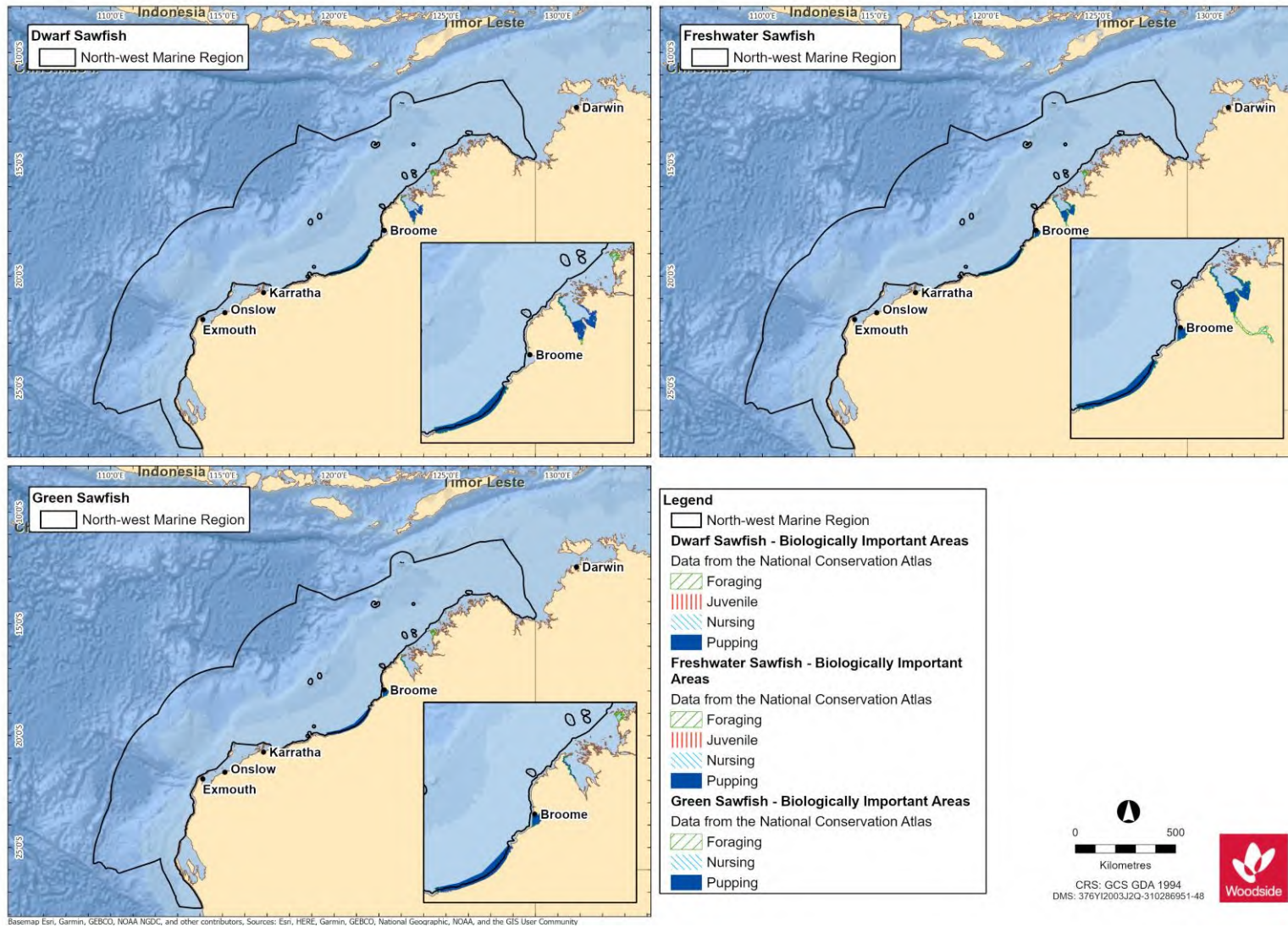


Figure 5-2 Sawfish BIAs for the NWMR

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5.4 Fish Assemblages of the NWMR

5.4.1 Regional Context for Fish Assemblages of NWMR

The NWMR contains a diverse range of fishes of tropical Indo-west Pacific affinity (Allen *et al.*, 1988). The region is characterised by the highest level of endemism and species diversity compared with other areas of the Australian continental slope. Last *et al.* (2005) recorded 1431 species from the three bioregions encompassing the continental slope, whilst also acknowledging some information gaps.

The NWMR is known for its demersal slope fish assemblages; the continental slope of the Timor Province and the North-west Transition supports more than 418 and 505 species of demersal fishes respectively, of which 64 are considered to be endemic. This is the second richest area for demersal fish species across the entire Australian continental slope. Conversely, the broad Southern Province, which covers most of southern Australia, supports 463 species, only 26 possibly being endemic. The continental slope demersal fish assemblages of the NWMR have been identified as a KEF (DEWHA, 2008), as described in **Section 9**.

The NWMR also features a diversity of pelagic fishes (those living in the pelagic zone) and benthopelagic fishes, including tuna, billfish, bramids, lutjanids, serranids and some sharks (DEWHA, 2007a). These species feed on salps and jellyfish, and more often on secondary consumers such as squid and bait fish. Water depth provides an indication of the level of interaction between pelagic and benthic communities within the NWMR; in waters deeper than 1000 m, for instance, the trophic system is pelagically-driven and benthic communities rely on particulates that fall to the seafloor (DEWHA, 2007a).

Pelagic fishes play an important ecological role within the NWMR; small pelagic fishes, such as lantern fish, inhabit a range of marine environments, including inshore and continental shelf waters and form a vital link in and between many of the region's trophic systems, feeding on pelagic phytoplankton and zooplankton and providing a food source for a wide variety of predators including large pelagic fishes, sharks, seabirds and marine mammals (Bulman, 2006; Mackie *et al.*, 2007). Large pelagic fishes, such as tuna, mackerel, swordfish, sailfish and marlin, are found mainly in oceanic waters and occasionally on the continental shelf (Brewer *et al.*, 2007). Both juvenile and adult phases of the large pelagic species are highly mobile and have a wide geographic distribution, although the juveniles more frequently inhabit warmer or coastal waters (DEWHA, 2008).

5.4.2 Listed Fish Species in the NWMR

The family Syngnathidae is a group of bony fishes that includes seahorses, pipefishes, pipehorses and seadragons. Along with syngnathids, members of the related Solenostomidae family (ghost pipefishes) are also found in the NWMR (DSEWPAC, 2012a).

There are 44 solenostomid and syngnathid species that are listed marine species that may occur within the NWMR, although no species is currently listed as threatened or migratory, according to the PMST report (**Appendix A**).

Syngnathids live in nearshore and inner shelf habitats, usually in shallow coastal waters, among seagrasses, mangroves, coral reefs, macroalgae dominated reefs, and sand or rubble habitats (Dawson, 1985; Lourie *et al.*, 1999, Lourie *et al.*, 2004; Vincent, 1996). Two species, the winged seahorse (*Hippocampus alatus*) and western pipehorse (*Solegnathus sp. 2*) have been identified in deeper waters of the NWMR (up to 200 m) (DSEWPAC, 2012a), however, these species were not identified by the Protected Matters search of the NWMR.

Knowledge about the distribution, abundance and ecology of both syngnathids and solenostomids in the NWMR is limited. No BIAs for syngnathids and solenostomids have been identified in the NWMR.

5.4.3 Browse

The proposed Browse activity area includes biologically important habitat for the whale shark and three sawfish species:

- whale shark (foraging northward from Ningaloo along the 200 m isobath (July – Nov),
- freshwater sawfish (pupping, nursing and foraging areas),
- green sawfish (pupping, nursing and foraging areas); and
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the shark and sawfish species are outlined in **Table 5-4** and **Figure 5-1**.

The proposed Browse activity area has partial overlap with the Continental slope demersal fish communities KEF.

5.4.4 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for the whale shark and three sawfish species:

- whale shark (foraging northward from Ningaloo along the 200 m isobath (July – Nov),
- freshwater sawfish (pupping, nursing and foraging areas),
- green sawfish (pupping, nursing and foraging areas); and
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the whale shark and sawfish species are outlined in **Table 5-4** and **Figure 5-1**.

The NWS / Scarborough activity area has partial overlap with the Continental slope demersal fish communities KEF. The continental slope between North-west Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last *et al.*, 2005).

5.4.5 North-west Cape

The North-west Cape activity area includes biologically important foraging habitat for the whale shark:

- whale shark, including:
 - Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March–July); and
 - Foraging northward from Ningaloo along the 200 m isobath (July – Nov).

BIAs for the whale shark are outlined in **Table 5-4** and **Figure 5-1**.

The North-west Cape activity area coincides with part of the Continental slope demersal fish communities KEF.

6. MARINE REPTILES

6.1 Regional Context for Marine Reptiles

The NWMR contains important habitat for listed marine reptiles, including areas that support key life stages such as nesting, internesting, migration and foraging for marine turtle species, and habitats supporting resident sea snake and crocodile populations.

Six of the seven marine turtle species occur in Australian waters, and all six (the green turtle, hawksbill turtle, loggerhead turtle, flatback turtle, leatherback turtle and olive ridley turtle) occur in the NWMR and NMR.

There are 25 listed species of sea snake reported within or adjacent to the NWMR (Guinea, 2007a; Udyawer *et al.*, 2016), of which four are endemic to reef habitats in the remote parts of the region. Nineteen (19) listed sea snake species are known to occur in the NMR, as reported in the Protected Matters search (**Appendix A**).

There are significantly fewer marine reptile species that frequently occur within the SWMR and presently include three species of listed marine turtle and one sea snake species. Other species of sea snake may occur because of the southward-flowing Leeuwin Current, as vagrants in the region (DSEWPAC, 2012b).

The following sections focus on the listed marine reptile species known to occur within the NWMR.

Table 6-1 outlines the threatened and migratory marine reptile species that occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

Table 6-1 Marine reptile species identified by the EPBC Act PMST as potentially occurring within or utilising habitats in the NWMR for key life cycle stages

Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999			WA Biodiversity Conservation Act 2016	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
<i>Caretta caretta</i>	Loggerhead turtle	Endangered	Migratory	Marine	Endangered	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017)
<i>Chelonia mydas</i>	Green turtle	Vulnerable	Migratory	Marine	Vulnerable	
<i>Dermochelys coriacea</i>	Leatherback turtle	Endangered	Migratory	Marine	Vulnerable	
<i>Eretmochelys imbricata</i>	Hawksbill turtle	Vulnerable	Migratory	Marine	Vulnerable	
<i>Natator depressus</i>	Flatback turtle	Vulnerable	Migratory	Marine	Vulnerable	
<i>Lepidochelys olivacea</i>	Olive ridley turtle	Endangered	Migratory	Marine	Vulnerable	
<i>Aipysurus apraefrontalis</i>	Short-nosed sea snake	Critically endangered	N/A	Marine	Critically endangered	Approved Conservation Advice for <i>Aipysurus apraefrontalis</i> (Short-nosed Sea Snake) (DSEWPAC, 2011a)
<i>Aipysurus foliosquama</i>	Leaf-scaled sea snake	Critically endangered	N/A	Marine	Critically endangered	Approved Conservation Advice for <i>Aipysurus foliosquama</i> (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
<i>Crocodylus porosus</i>	Salt-water crocodile	N/A	Migratory	Marine	Other protected fauna	N/A

6.2 Marine Turtles in the NWMR

According to the Protected Matters search (**Appendix A**) six species of marine turtle known to occur within the NWMR are listed as threatened and migratory (three Vulnerable and three Endangered) under the EPBC Act—the green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), flatback (*Natator depressus*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*) turtle (DSEWPAC, 2012a) (refer **Table 6-1**).

The NWMR supports globally significant breeding populations of four marine turtle species: the green, hawksbill, flatback and loggerhead turtle. Olive ridley turtles are known to forage within the NWMR, but there are only occasional records of the species nesting in the region. Leatherback turtles regularly forage over Australian continental shelf waters within the NWMR but there are also no records of the species nesting in the region (DSEWPAC, 2012a).

The six marine turtle species reported for the NWMR also occur within the NMR.

Three marine turtle species; the green, loggerhead, and leatherback turtle, have presumed feeding areas within the SWMR; however, no known nesting areas exist within the region (DSEWPAC, 2012b).

Discrete genetic stocks have evolved within each marine turtle species. This is the result of marine turtles returning to the location where they hatched. These genetically distinct stocks are defined by the presence of regional breeding aggregations. Stocks are composed of multiple rookeries in a region and are delineated by where there is little or no migration of individuals between nesting areas. Turtles from different stocks typically overlap at feeding grounds (Commonwealth of Australia, 2017). There are 17 genetic stocks across both the NWMR and NMR (nine in the NWMR, six in the NMR, and two overlapping both regions). Of these 17 genetic stocks, nine are known to occur within Woodside's three areas of activity (**Table 6-2**).

6.2.1 Life Cycle Stages

Marine turtles are highly migratory during non-reproductive life phases and have high site fidelity during breeding and nesting life phases. Majority of their lives are spent in the ocean, but the adult female marine turtles will come ashore to lay eggs in the sand above the high water mark on natal beaches (Commonwealth of Australia, 2017). **Figure 6-1** summarises the generalised life cycle of marine turtles. Species-specific life cycle information is outlined within the Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017).

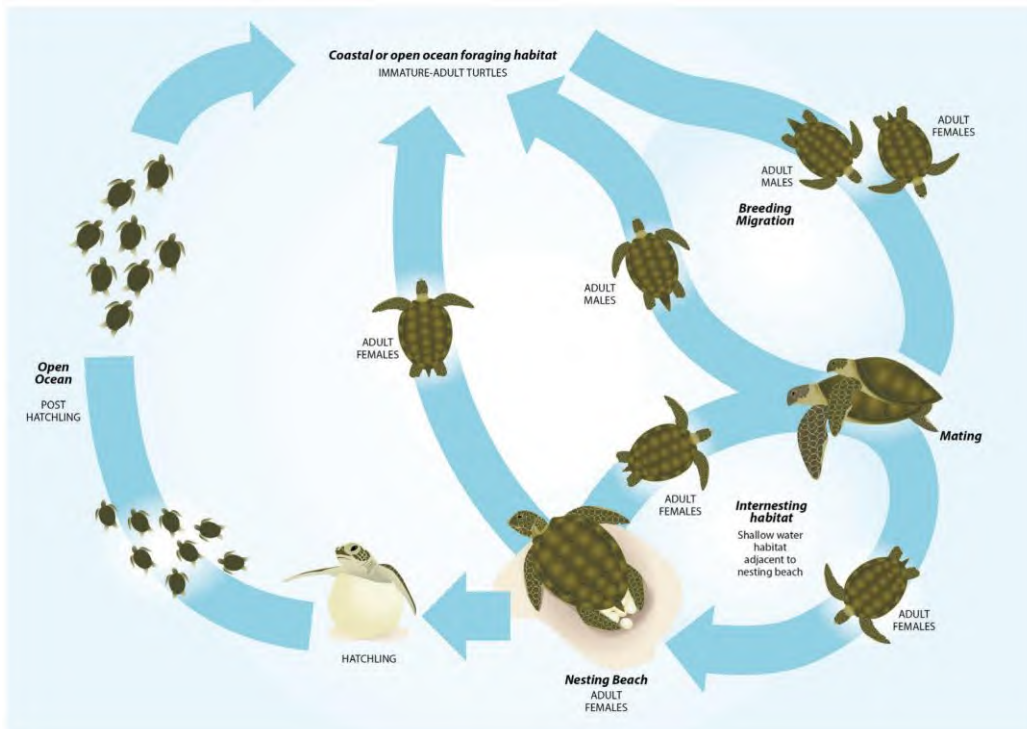


Figure 6-1 Generalised life cycle of marine turtles (Commonwealth of Australia, 2017)

6.2.2 Habitat Critical to Survival for Marine Turtles in the NWMR

The Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017) identifies habitat critical to the survival of a species for marine turtle stocks under the EPBC Act. Habitat critical to survival is defined by the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* as areas necessary:

- for activities such as foraging, breeding or dispersal;
- for the long-term maintenance of the species (including the maintenance of species essential to the survival of the species);
- to maintain genetic diversity and long term evolutionary development; and
- for the reintroduction of populations or recovery of the species.

The Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017) has identified nesting locations and associated internesting areas as habitat critical to survival for four marine turtle species within the NWMR and these are identified, described and mapped in **Table 6-2** and **Figure 6-2**. No habitat critical to survival has been identified within the NWMR for olive ridley or leatherback turtles.

Table 6-2 outlines the relevant genetic stock, habitat critical to survival and key life cycle stage seasonality of the four species of marine turtles within the NWMR.

Table 6-2 Genetic stock, habitat critical to survival and key life cycle stage seasonality of the four species of marine turtles within the NWMR

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (* Major Rookery ¹)	Internesting Buffer	Seasonality-Nesting	Preferred Habitat ²
Green Turtle							
NWS Stock (G-NWS)	✓	✓	✓	Adele Island Maret Island Cassini Island Lacepede Islands* Barrow Island* Montebello Islands (all with sandy beaches)* Serrurier Island Dampier Archipelago Thevenard Island Northwest Cape* Ningaloo coast	20 km radius	Nov-Mar	Nearshore reef habitats in the photic zone.
Ashmore Reef Stock (G-AR)	✓	-	-	Ashmore Reef* Cartier Reef*		All year (peak: Dec-Jan)	
Scott Reef-Browse Island Stock (G-ScBr)	✓	-	-	Scott Reef (Sandy Islet)* Browse Island*		Nov-Mar	
Hawksbill Turtle							
Western Australia Stock (H-WA)	-	✓	-	Dampier Archipelago (including Rosemary Island and Delambre Island)* Montebello Islands (including Ah Chong Island, South East Island and Trimouille Island)* Lowendal Islands (including Varanus Island, Beacon Island and Bridled Island) Sholl Island	20 km radius	Oct-Feb	Nearshore and offshore reef habitats.

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Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (* Major Rookery ¹)	Interesting Buffer	Seasonality-Nesting	Preferred Habitat ²
Flatback Turtle							
Cape Domett Stock (F-CD)	✓	-	-	Cape Domett* Lacrosse Island	60 km radius	All year (peak: Jul-Sep)	Nearshore and offshore sub-tidal and soft bottomed habitats of offshore islands.
South-west Kimberley Stock (F-swKim)	-	✓	-	Eighty Mile Beach* Eco Beach* Lacepede Islands		Oct-Mar	
Pilbara Stock (F-Pil)	-	✓	-	Montebello Islands Mundabullangana Beach* Barrow Island* Cemetery Beach Dampier Archipelago (including Delambre Island* and Huay Island) Coastal islands from Cape Preston to Locker Island		Oct-Mar	
Unknown genetic stock Kimberley, Western Australia	✓	✓	-	Maret Islands Montilivet Islands Cassini Island Coronation Islands (includes Lamarck Island) Napier-Broome Bay Islands (West Governor Island, Sir Graham Moore Island – near Kalumbaru) Champagny, Darcy and Augustus Islands (Camden Sound)		May-July	

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (* Major Rookery ¹)	Interesting Buffer	Seasonality-Nesting	Preferred Habitat ²
Loggerhead Turtle							
Western Australia Stock (LH-WA)	-	-	✓	Dirk Hartog Island* Muiron Islands* Gnaraloo Bay* Ningaloo coast	20 km radius	Nov-May	Nearshore and island coral reefs, bays and estuaries in tropical and warm temperate latitudes.

¹ Major rookeries as outlined in the Recovery Plan (Commonwealth of Australia, 2017)

² Preferred habitat as outlined in the Recovery Plan (Commonwealth of Australia, 2017)

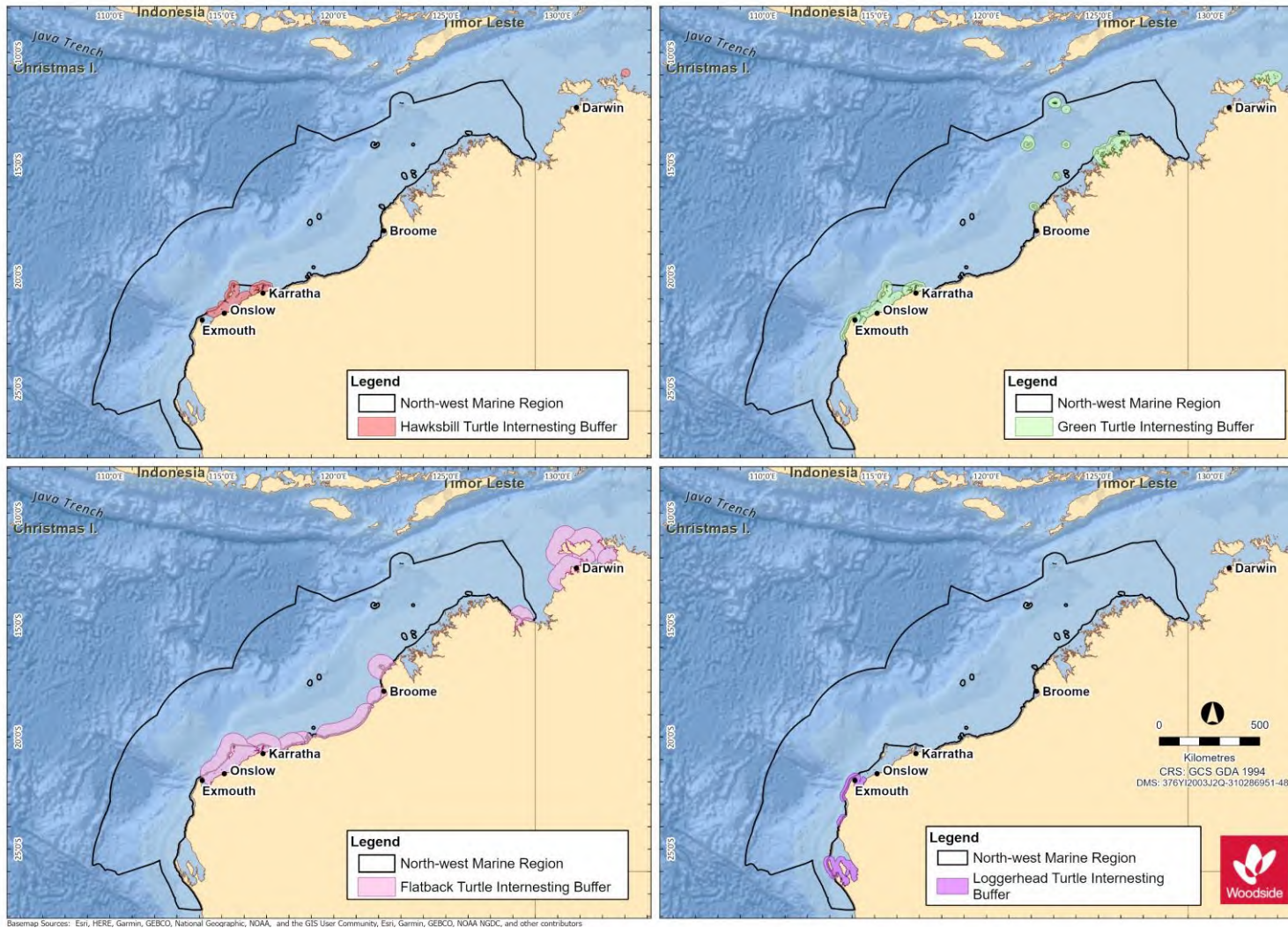


Figure 6-2 Marine turtle species habitat critical to survival (nesting beaches and interning buffers) for the NWMR

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6.3 Marine Turtle Biological Important Areas in the NWMR

A review of the National Conservation Values Atlas (DAWE, 2020²) identified BIAs for the four marine turtle species that occur within the NWMR. These are described in **Table 6-3**. Note that nesting and interesting BIAs are not listed in **Table 6-3** as they are defined as in the Recovery Plan as habitat critical to survival for marine turtles nesting beaches and interesting areas (refer **Table 6-2**).

² <http://www.environment.gov.au/webgis-framework/apps/ncva/ncva.jsf>

Table 6-3 Marine turtle BIAs within the NWMR

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration ³
Green turtle	✓	✓	✓	No mating BIA identified within the NWMR.	Foraging inshore areas of Barrow Island Foraging at Montgomery Reef Foraging at Montebello Islands Foraging at Dixon Island Foraging around Ashmore Reef Foraging at Seringapatam Reef and Scott Reef Foraging in the De Grey River area to Bedout Island Foraging around the Islands between Cape Preston and Onslow and inshore of Barrow Island Foraging around Dampier Archipelago (islands to the west of the Burrup Peninsula) Foraging at Legendre Island and Huay Island Foraging around Delambre Island Foraging in the Joseph Bonaparte Gulf Foraging in waters adjacent to James Price Point	Green turtles can migrate more than 2600 km between their feeding and nesting grounds. Individual turtles foraging in the same area do not necessarily take the same migration route (Limpus <i>et al.</i> , 1992). Ferreira <i>et al.</i> (2021) broadly identified two migratory corridors, one used by the NWS stock-Pilbara and another used by the NWS stock-Kimberley and the Scott-Browse stock with some overlap at the northern and southern extents respectively. This study showed that the foraging distribution of green turtles from two stocks in WA expands throughout north-west and northern Australian coastal waters, including the NT and Queensland.
Hawksbill turtle	✓	✓	✓	No mating BIA identified within the NWMR.	Foraging around the Lowendal Island group Foraging at Delambre Island Foraging around Dixon Island Foraging in the De Grey River area to Bedout Island Foraging around the islands between Cape Preston and	Individuals may migrate up to 2400 km between their nesting and foraging grounds (DSEWPAC, 2012a).

³ Migration BIA does not exist for Marine Turtles – general information provided.

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration ³
					Onslow and inshore of Barrow Island Foraging around the islands of the Dampier Archipelago (to the west of the Burrup Peninsula) Foraging at Ashmore Reef	
Flatback turtle	✓	✓	-	Lacepede Islands Mating at Montebello Islands Mating at Dampier Archipelago (islands to the west of the Burrup Peninsula) Mating at Barrow Island A year-round internesting buffer biologically important area (BIA) of 80 km is located north and north-west of the Montebello Islands, extending 20 km further than the habitat critical to survival. However, use level for this BIA has been defined as very low (Commonwealth of Australia, 2017) and the habitat critical to survival internesting buffer is the legally recognised area of protection under the EPBC Act <i>Significant Impact Guidelines 1.1 – Matters of National Environmental Significance</i> . Refer to the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a) for locations of seasonal 80 km internesting buffer BIAs for flatback turtles	Foraging at the islands between Cape Preston and Onslow and inshore of Barrow Island. Foraging at Montebello Islands Foraging at Dampier Archipelago (islands to the west of the Burrup Peninsula) Foraging at Legendre Island and Huay Island Foraging at Delambre Island Foraging in the Joseph Bonaparte Depression Foraging in waters adjacent to James Price Point	There is evidence that some flatback turtles undertake long-distance migrations between breeding and feeding grounds (Limpus <i>et al.</i> , 1983). However, flatback turtles generally do not have a pelagic phase to their lifecycle. Instead, hatchlings grow to maturity in shallow coastal waters thought to be close to their natal beaches (DSEWPAC, 2012a).

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Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration ³
Loggerhead turtle	✓	✓	-	No mating BIA identified within the NWMR	Foraging in the De Grey River area to Bedout Island Foraging on the Western Joseph Bonaparte Depression Foraging in the waters adjacent to James Price Point	Adult loggerhead turtles dispersing from Dirk Hartog Island beaches (near Shark Bay) have remained within WA waters from southern WA to the Kimberley. Turtles dispersing from the North-west Cape–Muiron Islands nesting area have ranged north as far as the Java Sea and the north-western Gulf of Carpentaria, and to south-west WA (DSEWPAC, 2012).
Olive ridley turtle	✓	✓	-	No mating BIA identified within the NWMR	Foraging in the Western Joseph Bonaparte Depression and Gulf Foraging in the Dampier Archipelago (islands to the west of the Burrup Peninsula)	Migration routes and distances between nesting beaches and foraging areas are not known for Australian olive ridley turtles.

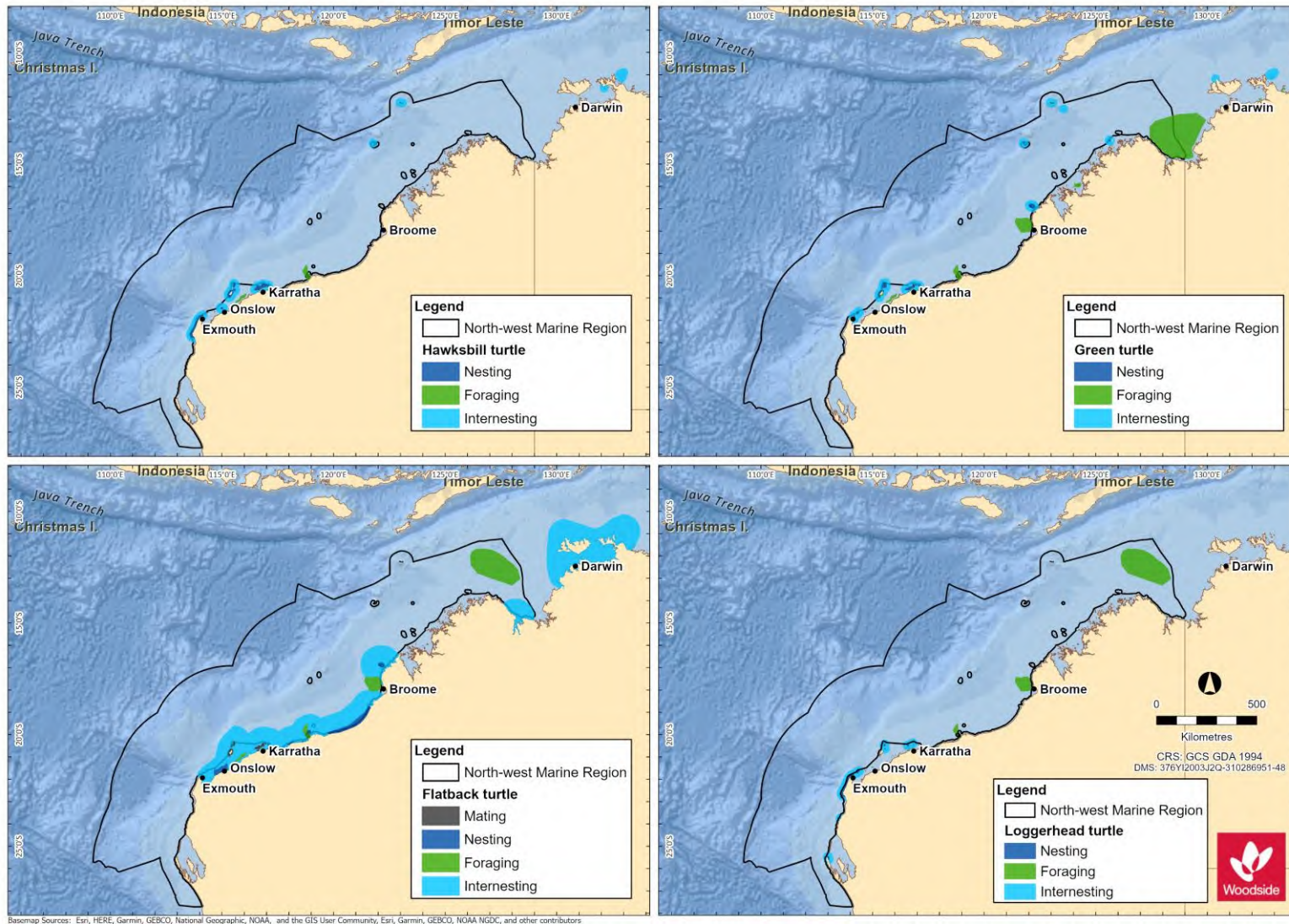


Figure 6-3 Marine turtle species BIA within the NWMR

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6.4 Marine Turtle Summary for NWMR

Six of the seven marine turtle species occur within the Woodside activity areas. Across all three areas, globally significant breeding populations of four marine turtle species; the green, hawksbill, flatback and loggerhead turtle, have been recorded.

However, offshore waters do not represent biologically important habitat for marine turtles in any of the three Woodside activity areas. Isolated records of transient individuals (on post-nesting migration) are expected, but there is no evidence of important habitat or behaviours for marine turtles in offshore, open water environment of the NWS, in general.

6.4.1 Browse

The proposed Browse activity area includes major nesting areas that support globally significant breeding populations of two marine turtle species:

- the green turtle, including two distinct genetic stocks (Ashmore Reef and Scott Reef-Browse Island); and
- the flatback turtle, Cape Domett genetic stock.

Locations of habitat critical for each of the two species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green and flatback turtle are outlined in **Table 6-3** and **Figure 6-3**.

Table 6-4 Marine turtle key information for Browse activity area

Species / Genetic Stock	Key Information
Green Turtle	
Ashmore Reef Stock (G-AR)	<p>The G-AR stock nests in a localised area of the Indian Ocean in the Ashmore Reef and Cartier Island AMP areas. Population estimates are not available for Ashmore Reef, although annual breeding numbers are thought to be in the low hundreds (Whiting, 2000).</p> <p>Designated habitat critical for the G-AR stock are the nesting locations of Ashmore Reef and Cartier Reef, and an internesting buffer of 20 km radius around these rookeries, year-round with peak internesting activity occurring December to January (refer Table 6 of the Recovery Plan).</p> <p>Juvenile and adult turtles forage within the tidal/sub-tidal habitats of offshore islands and coastal waters with coral reef, mangrove, sand, rocky reefs, and mudflats where there are algal turfs or seagrass meadows present (Commonwealth of Australia, 2017).</p>
Scott Reef-Browse Island Stock (G-ScBr)	<p>The G-ScBr stock is a discrete unit known to nest at only two locations within the north-east Indian Ocean—Sandy Islet and Browse Island. There is currently very limited data available for the G-ScBr stock, therefore population numbers are not known.</p> <p>Designated habitat critical for the G-ScBr stock are the nesting locations of Sandy Islet and Browse Island, and an internesting buffer of 20 km radius around these rookeries, for the period November to March (refer Table 6 of the Recovery Plan).</p> <p>Surveys conducted at Scott Reef in 2006, 2008 and 2009 indicate that the summer months from late November to February are the preferred breeding season for green turtles at Sandy Islet (Guinea, 2009).</p> <p>Satellite tagging studies (Pendoley, 2005; Guinea, 2011) have provided an indication of the behaviour and migratory routes of adult green turtles leaving Scott Reef. Most animals appear to swim through South Reef lagoon and disperse toward the Western Australian mainland via two distinct post-nesting migration pathways; travelling east and north toward the Bonaparte Archipelago and then north along the coast to foraging areas in NT waters, or travelling south to Cape Leveque and then south along the coast to the Turtle Islands off the mouth of the De Grey River in the Pilbara region (Ferreira <i>et al.</i>, 2021).</p>

Species / Genetic Stock	Key Information
Flatback Turtle	
Cape Domett Stock (F-CD)	<p>Cape Domett is an important high density nesting area. Combined with a smaller site at Lacrosse Island, the F-CD stock is one of the largest flatback turtle stocks in Australia. Average nesting abundance at Cape Domett is estimated at 3250 females per year (Whiting <i>et al.</i>, 2008).</p> <p>Designated habitat critical for the F-CD stock are the nesting locations of Cape Domett and Lacrosse Island, and an interesting buffer of 60 km radius around these rookeries, year-round with peak interesting activity occurring July to September.</p> <p>Extending further than the habitat critical interesting buffer, an interesting buffer BIA of 80 km is located at Cape Domett and Lacrosse Island.</p>

6.4.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes major nesting areas that support globally significant breeding populations of three marine turtle species, representing four discreet genetic stocks:

- the green turtle, NWS genetic stock;
- the hawksbill turtle, WA genetic stock; and
- the flatback turtle, South-west Kimberley stock and Pilbara genetic stocks.

Locations of habitat critical for each of the four species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green, hawksbill, and flatback are outlined in **Table 6-3** and **Figure 6-3**.

Table 6-5 Marine turtle key information for NWS / Scarborough activity area

Species / Genetic Stock	Key Information
Green Turtle	
NWS Stock (G-NWS)	<p>The G-NWS stock is one of the largest green turtle stocks in the world and the largest in the Indian Ocean. The G-NWS stock is estimated at approximately 20,000 individuals (DSEWPAC, 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia, 2017).</p> <p>Major rookeries of the G-NWS stock within the NWS / Scarborough activity area are located at Barrow Island and the Montebello Islands. These areas are designated habitat critical for the stock and include an interesting buffer of 20 km radius around these rookeries, November to March.</p>
Hawksbill Turtle	
Western Australia Stock (H-WA)	<p>The H-WA stock is the largest in the Indian Ocean. The majority of the nesting for this stock is located in the Pilbara. The Dampier Archipelago has the largest nesting aggregation recorded. In particular, Rosemary Island supports the most significant hawksbill turtle rookery in the WA region and one of the largest in the Indian Ocean; approximately 500-1000 females nest on the island annually, more than at any other WA rookery (Pendoley, 2005; Pendoley <i>et al.</i>, 2016).</p> <p>Major rookeries of the H-WA stock within the NWS / Scarborough activity area are located at Rosemary Island, Delambre Island and the Montebello Islands. These areas are designated habitat critical for the stock and include an interesting buffer of 20 km radius around these rookeries, October to February.</p>
Flatback Turtle	
South-west Kimberley Stock (F-swKim)	<p>The genetic relationship between this nesting aggregation and the Cape Domett and Pilbara stocks is currently under review. Population numbers of the F-swKim stock are unknown.</p> <p>Major rookeries of the F-swKim stock are located at Eighty Mile Beach and Eco Beach. These areas are designated habitat critical for the stock and include an interesting buffer of 60 km radius around these rookeries, October to March.</p>

Species / Genetic Stock	Key Information
Pilbara Stock (F-Pil)	<p>The extent of genetic relatedness of flatback turtles along the WA coast is currently under review. Population numbers of the F-Pil stock are unknown. This stock nests on many islands in the Pilbara and southern Kimberley, with major rookeries at Mundabullangana Beach, Delambre Island and Barrow Island. These areas are designated habitat critical for the F-Pil stock and include an interesting buffer of 60 km radius around these rookeries, October to March.</p> <p>Extending further than the habitat critical interesting buffer, a year-round interesting buffer BIA of 80 km is located north and north-west of the Montebello Islands. However, use level for this BIA has been defined as very low (Commonwealth of Australia, 2017) and the habitat critical interesting buffer is the legally recognised area of protection under the EPBC Act <i>Significant Impact Guidelines 1.1 – Matters of National Environmental Significance</i>.</p> <p>Post-nesting satellite tracking indicates foraging occurs along the WA coast in water shallower than 130 m and within 315 km of shore (Commonwealth of Australia, 2017).</p>

6.4.3 North-west Cape

The North-west Cape activity area includes major nesting areas that support globally significant breeding populations of two marine turtle species, representing two discreet genetic stocks:

- the green turtle, NWS genetic stock; and
- the loggerhead turtle, Western Australia genetic stock.

Locations of habitat critical for each of the two species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green and loggerhead turtles are outlined in **Table 6-3** and **Figure 6-3**.

A 2018 survey, including on-beach monitoring of the Muiron Islands and Ningaloo Coast from North-west Cape to Bungelup (Rob *et al.*, 2019), supports the concept that North-west Cape and the Muiron Islands are major important nesting areas for green and loggerhead turtles, as identified in the Recovery Plan (Commonwealth of Australia, 2017).

Table 6-6 Marine turtle key information for North-west Cape activity area

Species / Genetic Stock	Key Information
Green Turtle	
NWS Stock (G-NWS)	<p>The G-NWS stock is one of the largest green turtle stocks in the world and the largest in the Indian Ocean. The G-NWS stock is estimated at approximately 20,000 individuals (DSEWPAC, 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia, 2017).</p> <p>There is one major rookery of the G-NWS stock located within the North-west Cape activity area. Located on the mainland coast of the North-west Cape, this area is designated habitat critical for the stock and includes an interesting buffer of 20 km radius around the rookery, November to March.</p>
Loggerhead Turtle	
Western Australia Stock (LH-WA)	<p>The LH-WA stock is one of the largest in the world (Limpus, 2009). The trend for the stock is reported as stable (Commonwealth of Australia, 2017).</p> <p>Major rookeries of the LH-WA stock are located at Dirk Hartog Island, Muiron Islands and Gnaraloo Bay. These areas are designated habitat critical for the stock and include an interesting buffer of 20 km radius around these rookeries, November to May.</p> <p>Dirk Hartog Island in the Shark Bay Marine Park, with an average of 122 nests per day over 2.1 km (Reinhold and Whiting, 2014), is recognised as the most important loggerhead turtle rookery in WA (Commonwealth of Australia, 2016; as cited in Rob <i>et al.</i>, 2019).</p>

6.5 Sea Snakes

Sea snakes are commonly found in the NWMR and NMR, but less so in the SWMR, and occupy three broad habitat types: shallow water coral reef and seagrass habitats, deepwater soft bottom habitats away from reefs, and surface water pelagic habitats (Guinea, 2007a).

There are 25 listed species of sea snake reported within or adjacent to the NWMR (Guinea, 2007a; Udyawer *et al.*, 2016), of which four are endemic to reef habitats in the remote parts of the region:

- dusky sea snake (*Aipysurus fuscus*);
- large headed sea snake (*Hydrophis pacificus*);
- short-nosed sea snake (*Aipysurus apraefrontalis*); and
- leaf-scaled sea snake (*Aipysurus foliosquama*).

The short-nosed sea snake and the leaf-scaled sea snake are listed threatened species (Critically Endangered) under the EPBC Act (**Table 6-7**).

There is currently limited knowledge about the ranges and distribution patterns of sea snake species in the NWMR, in addition to a lack of understanding of population status and threats. Recent findings of *A. apraefrontalis* and *A. foliosquama* in locations outside of their previously defined ranges have highlighted the lack of information on species distributions in the NWMR (Udyawer *et al.*, 2016). Udyawer *et al.* (2020) used a correlative modelling approach to understand habitat associations and identify suitable habitats for five sea snake species (*A. apraefrontalis*, *A. foliosquama*, *A. fuscus*, *A. l. pooleorum* and *A. tenuis*). Species-specific habitat suitability was modelled across 804,244 km² of coastal waters along the NWS, and the resulting habitat suitability maps enabled the identification of key locations of suitable habitat for these five species (refer **Table 6-6**).

No habitat critical to survival or BIAs for sea snake species have been identified in the NWMR. While the Ashmore Reef and Cartier Island AMPs have been recognised for their high diversity and density of sea snakes (DSEWPAC, 2012a), surveys have revealed a steep decline in sea snake numbers at Ashmore Reef (Guinea, 2007b; Lukoschek *et al.*, 2013). Leaf-scaled and short-nosed sea snakes have been absent from surveys at Ashmore Reef since 2001, despite an increase in survey intensity (Guinea, 2006, 2007b; Guinea and Whiting, 2005; Lukoschek *et al.*, 2013). The reason for the decline is unknown.

Table 6-7 Information on the two threatened sea snake species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Short-nosed sea snake	Preferred habitat: Primarily on the reef flats or in shallow waters of the outer reef edges to depths of 10 m (Minton <i>et al.</i> , 1975). Typically, movement is restricted to within 50 m of reef flat habitat (Guinea and Whiting, 2005). Diet: Primarily fishes and eels.	The short-nosed sea snake has been recorded from Exmouth Gulf to the reefs of the Sahul Shelf, although most records come from Ashmore and Hibernia reefs (Guinea and Whiting, 2005). Key locations of suitable habitat: Ashmore Reef, Exmouth Gulf, Muiron Islands, Montebello Islands (Udyawer <i>et al.</i> , 2020).
Leaf-scaled sea snake	Preferred habitat: The leaf-scaled sea snake occurs in shallow protected areas of reef flats, typically in water depth less than 10 m. Diet: Primarily shallow water coral-associated wrasse, gudgeons, clinids and eels (McCosker, 1975; Voris, 1972; Voris and Voris, 1983)	The leaf-scaled sea snake has only been recorded at Ashmore and Hibernia reefs (Guinea and Whiting, 2005), indicating it has a very limited distribution. Key locations of suitable habitat: Ashmore Reef, Shark Bay, Exmouth Gulf, Barrow Island and Montebello Islands (Udyawer <i>et al.</i> , 2020).

6.6 Crocodiles

The salt-water crocodile (*Crocodylus porosus*) is a listed migratory species under the EPBC Act known to occur within the NWMR. The species is found in most major river systems of the Kimberley, including the Ord, Patrick, Forrest, Durack, King, Pentecost, Prince Regent, Lawley, Mitchell, Hunter, Roe and Glenelg rivers. The largest populations occur in the rivers draining into the Cambridge Gulf and the Prince Regent River and Roe River systems. There have also been isolated records in rivers of the Pilbara region, around Derby near Broome and as far south as Carnarvon on the mid-west coast.

No BIAs for salt-water crocodile have been identified in the NWMR.

7. MARINE MAMMALS

7.1 Regional Context

The offshore waters of WA include important habitat for marine mammals, including areas that support key life stages such as breeding, foraging, and migration. Of the 45 species of cetacean occurring in Australian waters, 27 species occur regularly in the waters of the NWMR, nine species in the waters of the NMR and 33 species in the SWMR. The waters of the NWMR and the NMR also support significant populations of dugong (DSEWPAC, 2012a, c).

The NWMR is an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters of the NWMR for several cetacean species (DSEWPAC, 2012a). Numerous large mysticetes (baleen whale) species, in particular the humpback whale, are known to utilise the region for migration and calving, and the pygmy blue whale for foraging and as a migration pathway between southern feeding and northern breeding/feeding areas, north of the equator.

The SWMR is an important area for numerous marine mammal species including pinniped species, large, migratory whale species and resident coastal whale and dolphin species (DSEWPAC, 2012b).

The NMR and adjacent areas are important for several species of cetacean, particularly inshore dolphin species. These species, and other marine mammals, rely on the waters of the NMR and adjacent coastal areas for breeding and foraging. However, there is little knowledge of the seasonal movements, migrations and breeding seasonality for many of the marine mammal species in the NMR due to lack of extensive surveys (DSEWPAC, 2012c).

Table 7-1 outlines the threatened and migratory marine mammal species that may occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

Table 7-1 Marine mammal species identified by the EPBC Act PMST as occurring within the NWMR

Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999			WA Biodiversity Conservation Act 2016	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Cetaceans - Mysticeti						
<i>Balaenoptera musculus</i>	Blue whale	Endangered	Migratory	Cetacean	Endangered	Conservation Management Plan for the Blue Whale - A Recovery Plan under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> 2015-2025 (Commonwealth of Australia, 2015a)
<i>Eubalaena australis</i>	Southern right whale	Endangered	Migratory	Cetacean	Vulnerable	Conservation Management Plan for the Southern Right Whale: A Recovery Plan under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> 2011-2021 (DSEWPAC, 2012d)
<i>Balaenoptera borealis</i>	Sei whale	Vulnerable	Migratory	Cetacean	Endangered	Conservation Advice <i>Balaenoptera borealis</i> sei whale (Threatened Species Scientific Committee, 2015a)
<i>Megaptera novaeangliae</i>	Humpback whale	Vulnerable	Migratory	Cetacean	Conservation dependent	Conservation Advice <i>Megaptera novaeangliae</i> humpback whale (Threatened Species Scientific Committee, 2015b)
<i>Balaenoptera physalus</i>	Fin whale	Vulnerable	Migratory	Cetacean	Endangered	Conservation Advice <i>Balaenoptera physalus</i> fin whale (Threatened Species Scientific Committee, 2015c)
<i>Balaenoptera edeni</i>	Bryde's whale	N/A	Migratory	Cetacean	N/A	N/A
<i>Balaenoptera bonaerensis</i>	Antarctic minke whale	N/A	Migratory	Cetacean	N/A	N/A
Cetaceans - Odontoceti						
<i>Physeter macrocephalus</i>	Sperm whale	N/A	Migratory	Cetacean	Vulnerable	N/A
<i>Orcinus orca</i>	Killer whale	N/A	Migratory	Cetacean	N/A	N/A
<i>Orcaella heinsohni</i>	Australian snubfin dolphin	N/A	Migratory	Cetacean	Priority	N/A
<i>Sousa chinensis</i>	Indo-Pacific humpback dolphin	N/A	Migratory	Cetacean	Priority	N/A

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Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999			WA Biodiversity Conservation Act 2016	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
<i>Tursiops aduncus</i>	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	N/A	Migratory	Cetacean	N/A	N/A
Sirenians and Pinnipeds						
<i>Dugong dugon</i>	Dugong	N/A	Migratory	Marine	Other protected fauna	N/A
<i>Neophoca cinerea</i>	Australian sea lion	Endangered	N/A	Marine	Vulnerable	Recovery Plan for the Australian Sea Lion (<i>Neophoca cinerea</i>) 2013 (DSEWPAC, 2013a) Conservation Advice <i>Neophoca cinerea</i> Australian Sea Lion (Threatened Species Scientific Committee, 2020a) (in effect under the EPBC Act from 23-Dec-2020)

7.2 Cetaceans in the NWMR

Cetaceans are generally widely distributed and highly mobile. In general, distribution patterns reflect seasonal feeding areas, characterised by high productivity, and migration routes associated with reproductive patterns. The NWMR is thought to be an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters for several cetacean species (DSEWPAC, 2012a).

From the Protected Matters search, 34 EPBC Act listed species were recorded as potentially occurring or having habitat within the NWMR (**Appendix A**). Of those, 12 cetacean species are listed as threatened and/or migratory, including baleen whales, toothed whales and dolphins that occur within the NWMR (**Table 7-2**).

7.3 Dugongs in the NWMR

The dugong is listed as migratory under the EPBC Act. Dugongs inhabit seagrass meadows in coastal waters, estuarine creeks and streams, and reef systems (DSEWPAC, 2012a).

Some of the coastal waters adjacent to the NWMR support significant populations of dugongs, including Shark Bay, Exmouth Gulf, in and adjacent to Ningaloo Reef, in coastal waters along the Kimberley coast, and on the edge of the continental shelf at Ashmore Reef (DEWHA, 2008).

Although the patterns of dugong movement in WA are not well understood, it is thought that dugongs move in response to availability of seagrass (Marsh *et al.*, 1994; Preen *et al.*, 1997) and water temperature.

There are a number of BIAs for dugong within and adjacent to waters of the NWMR (refer **Section 7.5**).

7.4 Pinnipeds in the NWMR

The Australian sea lion is listed as a species that may occur, or may have habitat within the NWMR (Protected Matters search - **Appendix A**). It is included here as the Australian sea lion is the only pinniped endemic to Australia (Strahan, 1983) and has been recorded within the southern extent of the NWMR at Shark Bay, WA (Kirkwood *et al.*, 1992). The most northern known breeding colony is at the Houtman Abrolhos Islands in the SWMR. The Australian sea lion's breeding range extends from the Houtman Abrolhos Islands, WA to The Pages Island, east of Kangaroo Island, SA. The Australian sea lion was listed as endangered in 2020 (Threatened Species Scientific Committee, 2020a). An assessment of the status and trends in abundance of this endemic, coastal pinniped species (Goldsworthy *et al.* 2021) documented an overall reduction in pup abundance over three generations, providing strong evidence that the species meets IUCN endangered criteria.

There are no BIAs for the Australian sea lion in the NWMR.

Table 7-2 Information on the threatened/migratory marine mammal species within the NWMR

Species	Key Information
Baleen whales (Mysticeti)	
Humpback whale	<p>In Australian waters two genetically distinct populations migrate annually along the west (Group IV) and east coasts (Group V) between May and November. In WA, the migration pathway for the Group IV population (also known as Breeding Stock D) extends from Albany to the Kimberley coastline, passing through the NWMR (Threatened Species Scientific Committee, 2015b). Since the 1982 moratorium on commercial whaling population numbers have recovered significantly; from approximately 2000 to 3000 individuals in 1991, to between 19,200–33,850 individuals in 2008 (Bannister and Hedley, 2001; Bejder <i>et al.</i>, 2019; Hedley <i>et al.</i>, 2011). Aerial surveys off the WA coast undertaken between 2000 and 2008 produced a population estimate for the Group IV population of 26,100 individuals (CI 20,152–33,272) in 2008 (Salgado Kent <i>et al.</i>, 2012). Current population growth for the Group IV population is estimated to be between 9.7 and 13% per annum (Threatened Species Scientific Committee, 2015b). Using the Salgado-Kent <i>et al.</i> (2012) estimate of 26,100 individuals and an annual population growth rate of ~10%, current population size could be in excess of 75,000 individuals (Woodside, 2019).</p> <p>The Group IV population migrates northward from their Antarctic feeding grounds around May each year, reaching the NWMR around early June. The southward migration subsequently starts in mid-September, around the time of breeding and calving (typically August to September) (Threatened Species Scientific Committee, 2015b). Within the NWMR there are key calving areas between Broome and the northern end of Camden Sound, and resting areas in the southern Kimberley region, Exmouth Gulf and Shark Bay. In particular, high numbers of humpback whales are observed in Camden Sound and Pender Bay from June to September each year (Threatened Species Scientific Committee, 2015b). There are reports of neonates further south, suggesting that the calving areas may be poorly defined. Aerial photogrammetric surveys in 2013 and 2015 recorded large numbers of humpback whale calves along North-west Cape, with estimated minimum relative calf abundance of 463–603 in 2013 and 557–725 in 2015 (Irvine <i>et al.</i>, 2018). The majority of calves sighted in both years (85% in 2013; 94% in 2015) were neonates, and these observations indicate that a minimum of approximately 20% of the expected number of calves of this population are born near, or south of, North-west Cape. Thus, the calving grounds for the Group IV population extend south from Camden Sound to at least North-west Cape, 1000 km south-west of the currently recognized calving area (Irvine <i>et al.</i>, 2018).</p> <p>There are BIAs for migration and breeding and calving for the humpback whale along the WA coast and within the NWMR (refer Table 7-3 and Figure 7-1).</p>
Blue whale	<p>There are two recognised sub-species of blue whale in the Southern Hemisphere, both of which are recorded in Australian waters. These are the southern (or 'true') blue whale (<i>Balaenoptera musculus</i>) and the 'pygmy' blue whale (<i>Balaenoptera musculus breviceauda</i>) (Commonwealth of Australia, 2015a). In general, southern blue whales occur in waters south of 60°S and pygmy blue whales occur in waters north of 55°S (i.e. not in the Antarctic). On this basis, nearly all blue whales sighted in the NWMR are likely to be pygmy blue whales.</p> <p>The East Indian Ocean (EIO) pygmy blue whale population is seasonally distributed from Indonesia (a potential breeding ground) to south-west of Australia and east across the Great Australian Bight and Bonney Upwelling to beyond the Bass Strait (Blue Planet Marine, 2020). Migration seems to be variable, with some individuals appearing as resident to areas of high productivity and others undertaking migrations across long distances (Commonwealth of Australia, 2015a). McCauley <i>et al.</i> (2018) describe three migratory stages around Australia for the EIO pygmy blue whale population: a 'southbound migratory stage' where whales travel southwards from Indonesian waters offshore from the WA coastline, mostly from October to December but possibly into January of the following year; a protracted 'southern Australian stage' (January to June) where animals spread across southern waters of the Indian Ocean and south of Australia; and a 'northbound migratory stage' (April to August) where animals travel north back to Indonesia again.</p> <p>There are currently insufficient data to accurately estimate population numbers of the pygmy blue whale in Australian waters (Blue Planet Marine, 2020; Commonwealth of Australia, 2015a). There are, however, two estimates of population size of the EIO pygmy blue whale for WA. McCauley and Jenner (2010) calculated the population to be between 662 and 1559 individuals in 2004 based on passive acoustics (whale vocalisations), and Jenner <i>et al.</i> (2008) (based on photographic mark and recapture) calculated between 712 and 1754 individuals, but both estimates did not account for animals</p>

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Species	Key Information
	<p>travelling further west into the Indian Ocean (McCauley <i>et al.</i>, 2018). More recent passive acoustic data estimates a 4.3% growth rate that applies to the proportion of EIO pygmy blue whales seasonally present in offshore water of the south-eastern Australia and may not reflect the full population but does imply an increasing population (McCauley <i>et al.</i>, 2018).</p> <p>The pygmy blue whale is typically present in the Perth Canyon from November to June, with an observed peak between March and May (Commonwealth of Australia, 2015a; Blue Planet Marine, 2020). The pygmy blue whale feeds in the Perth Canyon at depths of 200 to 300 m, which overlaps the typical distribution of krill (200–500 m water depth (day) to surface (night) (McCauley <i>et al.</i>, 2004; Commonwealth of Australia, 2015a). Other possible feeding grounds off the WA coast include the wider area around the Perth Canyon, and possible foraging areas off the Ningaloo Coast and at Scott Reef (Commonwealth of Australia, 2015a).</p> <p>Refer Table 7-3 and Figure 7-2 for the location and type of BIAs for blue whales in the NWMR. There is a migratory BIA for the pygmy blue whale within WA waters, which extends for most of the length of the NWMR within offshore waters.</p>
Bryde's whale	<p>The Bryde's whale is the least migratory of its genus and is restricted geographically from the equator to approximately 40°N and S, or the 20° isotherm (Bannister <i>et al.</i>, 1996). The species is known to exhibit inshore and offshore forms in other international locations that vary in morphology and migratory behaviours (Bannister <i>et al.</i>, 1996). This appears to also be the case within Australian waters. Bryde's whales have been identified as occurring in both oceanic and inshore waters, with the only key localities recognised in WA being in the Houtman Abrolhos Islands and north of Shark Bay (Bannister <i>et al.</i>, 1996). Data suggests offshore whales migrate seasonally, heading towards warmer tropical waters during the winter; however, information about migration within the NWMR is not well known (McCauley and Duncan, 2011). McCauley (2011) detected Bryde's whales using acoustic loggers deployed in and around Scott Reef from 2006 to 2009. Other acoustic logger data of Bryde's whale vocalisations recorded between Ningaloo and north of Darwin showed no apparent trends or seasonality (McCauley, 2011).</p> <p>There are no identified BIAs for this species in the National Conservation Values Atlas.</p>
Southern right whale	<p>The southern right whale occurs primarily in waters between about 20°S and 60°S and moves from high latitude feeding grounds in summer to warmer, low latitude, coastal locations in winter (Bannister <i>et al.</i>, 1996). Southern right whales aggregate in calving areas along the south coast of WA outside of the NWMR. However, there have been sightings in waters of the NWMR as far north as Ningaloo (Bannister and Hedley, 2001), and a stranding record exists for the far north Kimberley coast (ALA, 2020). Southern right whale calving grounds are found at mid to lower latitudes and are occupied during the austral winter and early-mid spring. They are regularly present on the southern Australian coast from about mid-May to mid-November, and peak periods for mating are from mid-July through August. Mating occurs within these breeding grounds as evidenced by many observations of intromission and mating behaviours. Southern right whales in south-western Australia appear to be increasing at the maximum biological rate but there is limited evidence of increase in south-eastern Australian waters (DSEWPAC, 2012d).</p> <p>There are no identified BIAs for this species in the NWMR.</p>
Antarctic minke whale	<p>The Antarctic minke whale is distributed worldwide and has been recorded off all Australian states (but not in the NT), feeding in cold waters and migrating to warmer waters to breed. It is thought that the Antarctic minke whale migrates up the WA coast to about 20°S to feed and possibly breed (Bannister <i>et al.</i>, 1996); however, detailed information about timing and location of migrations and breeding grounds within the NWMR is not well known. In the high latitudinal winter breeding grounds in other regions, the species appears to be distributed off the continental shelf edge. No population estimates are available for Antarctic minke whales in Australian waters.</p> <p>There are no identified BIAs for this species in the National Conservation Values Atlas.</p>
Sei whale	<p>The sei whale is a baleen whale with a worldwide oceanic distribution and is expected to seasonally migrate between low latitude wintering areas and high latitude summer feeding grounds (Bannister <i>et al.</i>, 1996; Prieto <i>et al.</i>, 2012). There are no known mating or calving areas in Australian waters. The species has a preference for deep waters, typically occurs in oceanic basins and continental slopes (Prieto <i>et al.</i>, 2012), and exhibits a migration pathway influenced by seasonal feeding and breeding patterns. Sei whales have been infrequently recorded in Australian waters (Bannister <i>et al.</i>, 1996). Reliable estimates of the sei whale population size in Australian waters are currently not possible due to a lack of dedicated surveys and their elusive characteristics. Similarly, the extent of occurrence and area of occupancy of sei whales in Australian waters cannot be calculated due to the</p>

Species	Key Information
	<p>rarity of sighting records. They will typically travel in small pods of three to five individuals, with some segregation by age, sex and reproductive status. Calving grounds are presumed to exist in low latitudes with mating and calving potentially occurring during winter months (Threatened Species Scientific Committee, 2015a).</p> <p>There are no known mating or calving areas in Australian waters, and there are no identified BIAs for this species in the National Conservation Values Atlas.</p>
Fin whale	<p>The fin whale is a large baleen whale distributed worldwide. Fin whales migrate annually between high latitude summer feeding grounds and lower latitude over-wintering areas (Bannister <i>et al.</i>, 1996) and follow oceanic migration paths. The species is uncommonly encountered in coastal or continental shelf waters. Australian Antarctic waters are important feeding grounds for fin whales but there are no known mating or calving areas in Australian waters (Morrice <i>et al.</i>, 2004). The species has been observed in groups of six to 10 individuals, as well as in pairs and alone (Threatened Species Scientific Committee, 2015c). Accurate distribution patterns are not known within Australian waters and the majority of data are from stranding events.</p> <p>Fin whales have been recorded vocalising off the Perth Canyon, WA, between January and April 2000 (McCauley <i>et al.</i>, 2000). It is currently not possible to accurately estimate the population size of fin whales in Australian waters predominantly due to the species' behaviour and local ecology, as the proportion of time they spend at the surface varies greatly depending on these factors. In addition, natural fluctuations of fin whales in Australian waters are unknown; however, long-range movements do appear to be prey-related. A recent study by Aulich <i>et al.</i> (2019) used passive acoustic monitoring as a tool to identify the migratory movements of fin whales in Australian waters. On the west coast, the earliest arrival of these animals occurred at Cape Leeuwin in April, and between May and October they migrated along the WA coastline to the Perth Canyon, which likely acts as a way-station for feeding (Aulich <i>et al.</i>, 2019). Some whales were found to continue migrating as far north as Dampier (Aulich <i>et al.</i>, 2019).</p> <p>There are no identified BIAs for this species in the National Conservation Values Atlas.</p>
Toothed whales (Odontoceti)	
Sperm whale	<p>Sperm whales are the largest of the toothed whales and are distributed worldwide in deep waters (greater than 200 m) off continental shelves and sometimes near shelf edges (Bannister <i>et al.</i>, 1996). The species tends to inhabit offshore areas at depths of 600 m or more and is uncommon in waters less than 300 m deep (Ceccarelli <i>et al.</i>, 2011). There is limited information about sperm whale distribution in Australian waters, however, they are usually found in deep offshore waters, with more dense populations close to continental shelves and canyons. In the open ocean, there is a generalised movement of sperm whales southwards in summer, and corresponding movement northwards in winter, particularly for males. Detailed information about the distribution and migration patterns of sperm whales off the WA coast is not available. Females with young may reside within the NWMR all year round, males may migrate through the region and the species may be associated with canyon habitats (Ceccarelli <i>et al.</i>, 2011).</p> <p>Sperm whales have been recorded in deep waters off North-west Cape and appear to occasionally venture into shallower waters in other areas. Twenty-three (23) sightings of sperm whales (variable pod sizes, ranging from one to six animals) were recorded by marine mammal observers (MMOs) during the North West Cape MC3D marine seismic survey (December 2016 to April 2017) (Woodside, 2020). These animals were observed in deep, continental slope waters of the Montebello Saddle (maximum distance of approximately 90 km from North-west Cape), and the waters overlying the Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF. The deep waters above the gully/saddle on the inner edge of the plateau (the Montebello Saddle) are thought to be important for sperm whales that may feed in the region (based on 19th Century whaling records; Townsend, 1935).</p> <p>There are no identified BIAs for this species in the NWMR.</p>
Killer whale	<p>The preferred habitat of killer whales includes oceanic, pelagic and neritic (relatively shallow waters over the continental shelf) regions, in both warm and cold waters. Killer whales appear to be more common in cold, deep waters; however, they have been observed along the continental slope and shelf, particularly near seal colonies, as well as in shallow coastal areas of WA (Bannister <i>et al.</i>, 1996; Thiele and Gill, 1999). The total number of killer whales in Australian waters is unknown, however, it may be that the total number of mature animals within waters around the continent is less than 10,000. Killer whales are known to make seasonal movements, and probably follow regular migratory routes, but no information is available for the</p>

Species	Key Information
	<p>species in Australian waters. Killer whales are top-level carnivores, and there are reports from around Australia of attacks on dolphins, juvenile humpback whales, blue whales, sperm whales, dugongs and Australian sea lions (Bannister <i>et al.</i>, 1996). Killer whales are known to target humpback whales, particularly calves, off Ningaloo Reef during the humpback southern migration season (Pitman <i>et al.</i>, 2015). Overall, observations suggest that humpback calves are a predictable, plentiful, and readily taken prey source for killer whales off Ningaloo Reef for at least five months of the year. Additionally, there are records of killer whales attacking dugongs in Shark Bay (Anderson and Prince, 1985). However, there are no recognised key localities or important habitats for killer whales within the NWMR (DSEWPAC, 2012a). There are no identified BIAs for this species in the NWMR.</p>
Australian snubfin dolphin	<p>Stranding and museum specimen records indicate that Australian snubfin dolphins occur only in waters off northern Australia, from approximately Broome on the west coast to the Brisbane River on the east coast (Parra <i>et al.</i>, 2002). Aerial and boat-based surveys indicate that Australian snubfin dolphins occur mostly in protected shallow waters close to the coast, and close to river and creek mouths (Parra, 2006; Parra <i>et al.</i>, 2006; Parra <i>et al.</i>, 2002). Within the NWMR, species has been found in the shallow coastal waters and estuaries along the Kimberley coast. Beagle and Pender bays on the Dampier Peninsula, and tidal creeks around Yampi Sound and between Kuri Bay and Cape Londonderry are important areas for Australian snubfin dolphins (DEWHA, 2008). Roebuck Bay has generally been considered the south-western limit of snubfin dolphin distribution across northern Australia, but the species has been recorded in Port Hedland harbour, the Dampier Archipelago, Montebello Islands, Exmouth Gulf and off North-west Cape (Allen <i>et al.</i>, 2012). A first comprehensive catalogue of snubfin dolphin sightings has been compiled for the Kimberley, north-west Western Australia (Bouchet <i>et al.</i> 2021) and documented that snubfin dolphins are consistently encountered in shallow water (<21 m depth) close to (<15 km) freshwater inputs with high detection rates in known hotspots such as Roebuck Bay and Cygnet Bay as well as suitable coastal habitat in the wider Kimberley region. Refer Table 7-3 and Figure 7-3 for the location and type of BIAs for Australian snubfin dolphins in the NWMR.</p>
Indo-Pacific humpback dolphin (Australian humpback dolphin)	<p>Previously included with <i>Sousa chinensis</i>, the Australian humpback dolphin (<i>S. sahalensis</i>) was elevated to a species in 2014. <i>S. chinensis</i> is now applied for humpback dolphins in the eastern Indian and western Pacific Oceans and <i>S. sahalensis</i> for humpback dolphins in the waters of the Sahul Shelf from northern Australia to southern New Guinea (Jefferson and Rosenbaum, 2014). The Australian humpback dolphin is listed as <i>S. chinensis</i> under EPBC Act.</p> <p>The Australian humpback dolphin (referred to as 'humpback dolphin' hereafter) inhabits the tropical/subtropical waters of the Sahul Shelf across northern Australia and southern Papua New Guinea (Jefferson and Rosenbaum, 2014). Based on historical stranding data, museum specimens and opportunistic sightings collected during aerial and boat-based surveys for other fauna it has been inferred that humpback dolphins occur from the WA/NT border south-west to Shark Bay (Hanf <i>et al.</i>, 2016). Allen <i>et al.</i> (2012) suggested that humpback dolphins use a range of inshore habitats, including both clear and turbid coastal waters across northern WA. The waters surrounding North-west Cape are an important area for the species. Boat-based surveys up to 5 km out from the coast (Brown <i>et al.</i>, 2012) recorded humpback dolphins from 0.3 to 4.5 km away from shore and in depths ranging from 1.2 to 20 m, with a mean of ~8 m. Other studies around North-west Cape, surveying waters up to 5 km from the coast, recorded humpback dolphins in water depths of up to 40 m (Hanf <i>et al.</i>, 2016). Based on density, site fidelity and residence patterns, North-west Cape is clearly an important habitat toward the south-western limit of this species' range (Hunt <i>et al.</i>, 2017).</p> <p>Aerial surveys targeting dugongs over the western Pilbara have recorded humpback dolphins more than 60 km from the mainland in shallow shelf waters (i.e. <30 m deep) near Barrow Island and the western Lowendal Islands (Hanf, 2015). The species has also been recorded in fringing coral reef and shallow, sheltered sandy lagoons at the Montebello Islands (Raudino <i>et al.</i>, 2018). Over the past ten years a number of studies have focused on populations of humpback dolphins along the Kimberley coast, including Roebuck Bay, the Dampier Peninsula, Cone Bay, Yampi Sound, Prince Regent River and the Cambridge Gulf (Brown <i>et al.</i>, 2016).</p> <p>Refer Table 7-3 and Figure 7-4 for the location and type of BIAs for Indo-Pacific humpback dolphins in the NWMR.</p>
Indo-Pacific bottlenose dolphin (Spotted bottlenose dolphin)	<p>There are four known sub-populations of spotted bottlenose dolphins, of which the Arafura/Timor Sea populations were identified as potentially occurring within the NWMR. The species is restricted to inshore areas such as bays and estuaries, nearshore waters, open coast environments, and shallow offshore waters including coastal areas around oceanic islands, from Shark Bay to the western edge of the Gulf of Carpentaria. The species</p>

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Species	Key Information
	forages in a range of habitats but is generally restricted to water depths of less than 200 m (DSEWPAC, 2012a). Important foraging/breeding areas include the shallow coastal waters and estuaries along the Kimberley coast and Roebuck Bay. Refer Table 7-3 the location and type of BIAs for spotted bottlenose dolphins in the NWMR.
Sirenians	
Dugong	Dugongs are distributed along the WA coast throughout the Gascoyne, Pilbara and Kimberley. Specific areas supporting dugong populations include: Shark Bay; Ningaloo and Exmouth Gulf; the Pilbara coast (Exmouth Gulf to De Grey River [Marsh <i>et al.</i> , 2002]); and Eighty Mile Beach and the Kimberley coast, including Roebuck Bay (Brown <i>et al.</i> , 2014). Dugong distribution is correlated with the seagrass habitats upon which it feeds, although water temperature has also been correlated with dugong movements and distribution (Preen <i>et al.</i> , 1997; Preen, 2004). Dugongs are known to migrate between seagrass habitats (hundreds of kilometres) (Sheppard <i>et al.</i> , 2006), and in Shark Bay they exhibit seasonal movements as a behavioural thermoregulatory response to winter water temperatures (Holley <i>et al.</i> , 2006; Marsh <i>et al.</i> , 2011). Aerial surveys since the mid-1980s indicate that dugong populations are now stable at a regional scale in Shark Bay and in the Exmouth/Ningaloo Reef. Refer Table 7-3 and Figure 7-5 for the location and type of BIAs for dugong in the NWMR.
Pinnipeds	
Australian sea lion	<p>The Australian sea lion is the only endemic pinniped (true seals, fur seals and sea lions) in Australian waters. It is a member of the Otariidae (eared seals) family. The birth interval in Australian sea lions is around 17–18 months. The Australian sea lion is unique among pinnipeds in being the only species that has a non-annual breeding cycle that is also temporally asynchronous across its range (DSEWPAC, 2013a; Threatened Species Scientific Committee, 2020a). This means the breeding period (copulation and birthing) in one colony will occur at different times to breeding in another colony. The Australian sea lion is considered to be a specialised benthic forager—that is, it feeds primarily on the sea floor. Studies have shown that the species will eat a range of prey, including fish, cephalopods (squid, cuttlefish and octopus), sharks, rays, rock lobsters and penguins (DSEWPAC, 2013a; Threatened Species Scientific Committee, 2020a). The Australian sea lion feeds on the continental shelf, most commonly in depths of 20–100 m, and they typically travel up to about 60 km from their colony on each foraging trip, with a maximum distance of around 190 km when over shelf waters.</p> <p>The current breeding distribution of the Australian sea lion extends from the Houtman Abrolhos Islands on the west coast of WA to the Pages Islands in SA. Sites for the 58 breeding colonies occurring in WA and SA are designated as habitat critical to the survival of the species under the Recovery Plan for the Australian sea lion (DSEWPAC, 2013a). Of these, four are located in the SWMR along the west coast of WA: Abrolhos Islands (Easter Group), Beagle Island, North Fisherman Island and Buller Island. There are also a number of foraging BIAs for both males and females along the west coast, extending from the Abrolhos Islands south to Rockingham.</p> <p>There is no designated habitat critical to survival or identified BIAs for this species in the NWMR. Figure 7-6 shows the foraging BIAs for the Australian sea lion to the south of the NWMR.</p>

7.5 Biological Important Areas in the NWMR

BIAs representing important life cycle stages and behaviours for six species of marine mammal in the NWMR: the humpback whale, the pygmy blue whale, Australian snubfin dolphin, Australian humpback dolphin, spotted bottlenose dolphin and dugong, are presented in **Table 7-3**.

Table 7-3 Marine mammal BIAs within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging	Breeding	Calving	Migration
Humpback whale ¹	✓	✓	✓	Shark Bay Exmouth Gulf (north migration – early June) (south migration – late Aug to Oct) Southern Kimberley region	No foraging BIA identified within the NWMR	Kimberley coast from the Lacepede Islands to north of Camden Sound (mid Aug – early Sept)	Core calving in waters off the Kimberley coast from the Lacepede Islands to north of Camden Sound (mid Aug – early Sept)	Southern border of the NWMR to north of the Kimberley (arrive June)
Blue whale and Pygmy blue whale ^{1 2}	✓	✓	✓	No resting BIA identified within the NWMR	Possible foraging areas off Ningaloo and Scott Reef	No breeding BIA identified within the NWMR	No calving BIA identified within the NWMR	Augusta to Derby. Along the shelf edge at depths of 500 m to 1000 m; appear close to Ningaloo coast Montebello Islands area on southern migration (north: April – Aug) (south: Oct – late Dec)
Australian snubfin dolphin ¹	✓	✓	-	No resting BIA identified within the NWMR	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay, Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River	No migration BIA identified within the NWMR

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Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging	Breeding	Calving	Migration
					Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry Ord River	Ord River	King George River Cape Londonderry Ord River	
Indo-Pacific humpback dolphin	✓	✓	-	No resting BIA identified within the NWMR	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island Maret Islands Bigge Island King Sound, southern sector Vansittart Bay, Anjo Peninsula	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island	Roebuck Bay Willie Creek Prince Regent River	No migration BIA identified within the NWMR
Spotted bottlenose dolphin	✓	✓	✓	No resting BIA identified within the NWMR	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound	No calving BIA identified within the NWMR	No migration BIA identified within the NWMR

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Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging	Breeding	Calving	Migration
Dugong ¹	✓	✓	✓	No resting BIA identified within the NWMR	Exmouth Gulf Ningaloo Reef Shark Bay Roebuck Bay Dampier Peninsula	No breeding BIA identified within the NWMR	Exmouth Gulf Ningaloo Reef Shark Bay	Not listed as a migratory species

¹ DSEWPAC (2012a)

² Commonwealth of Australia (2015a)

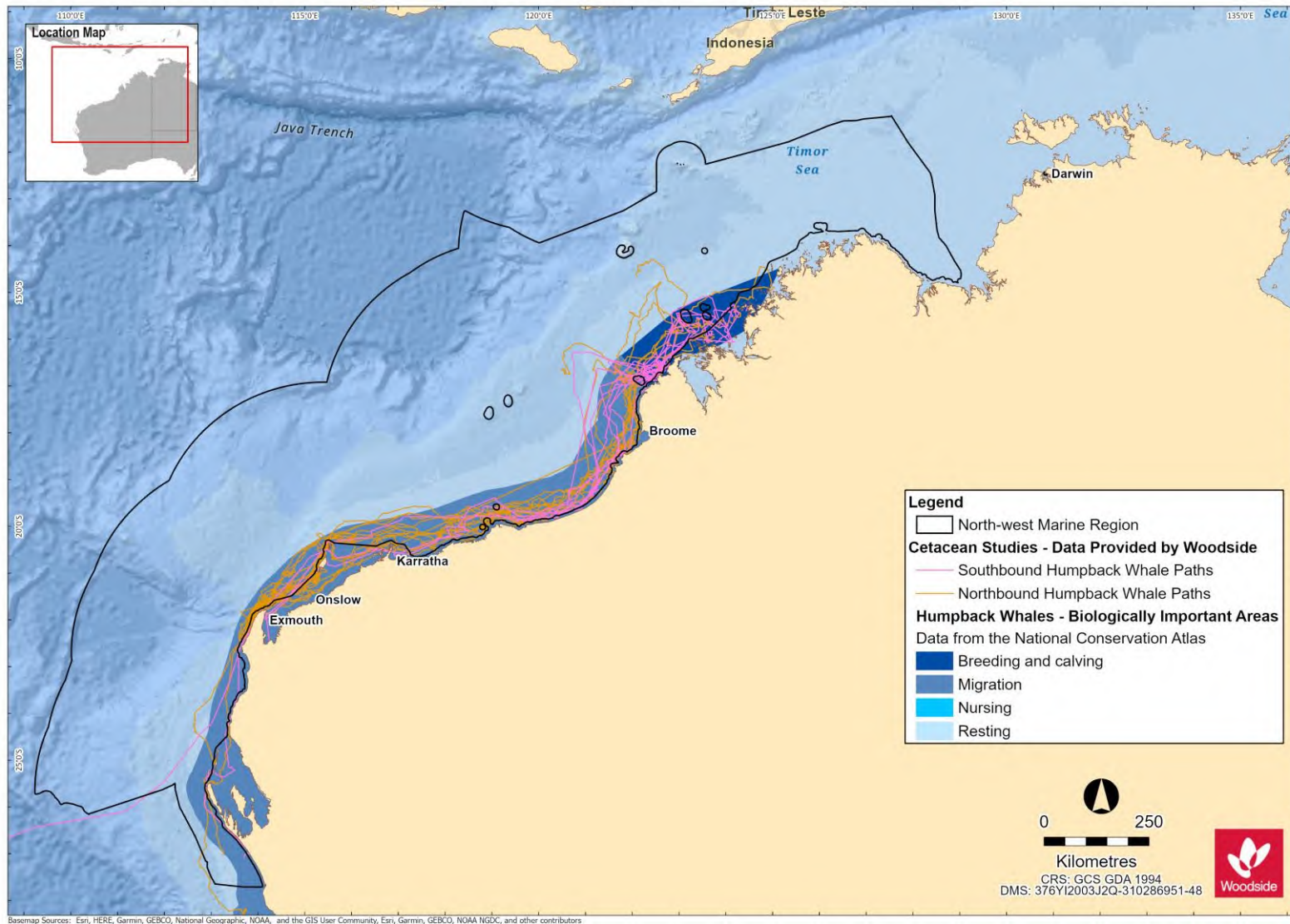


Figure 7-1 Humpback whale BIAs for the NWMR and tagged tracks for north and south bound migrations

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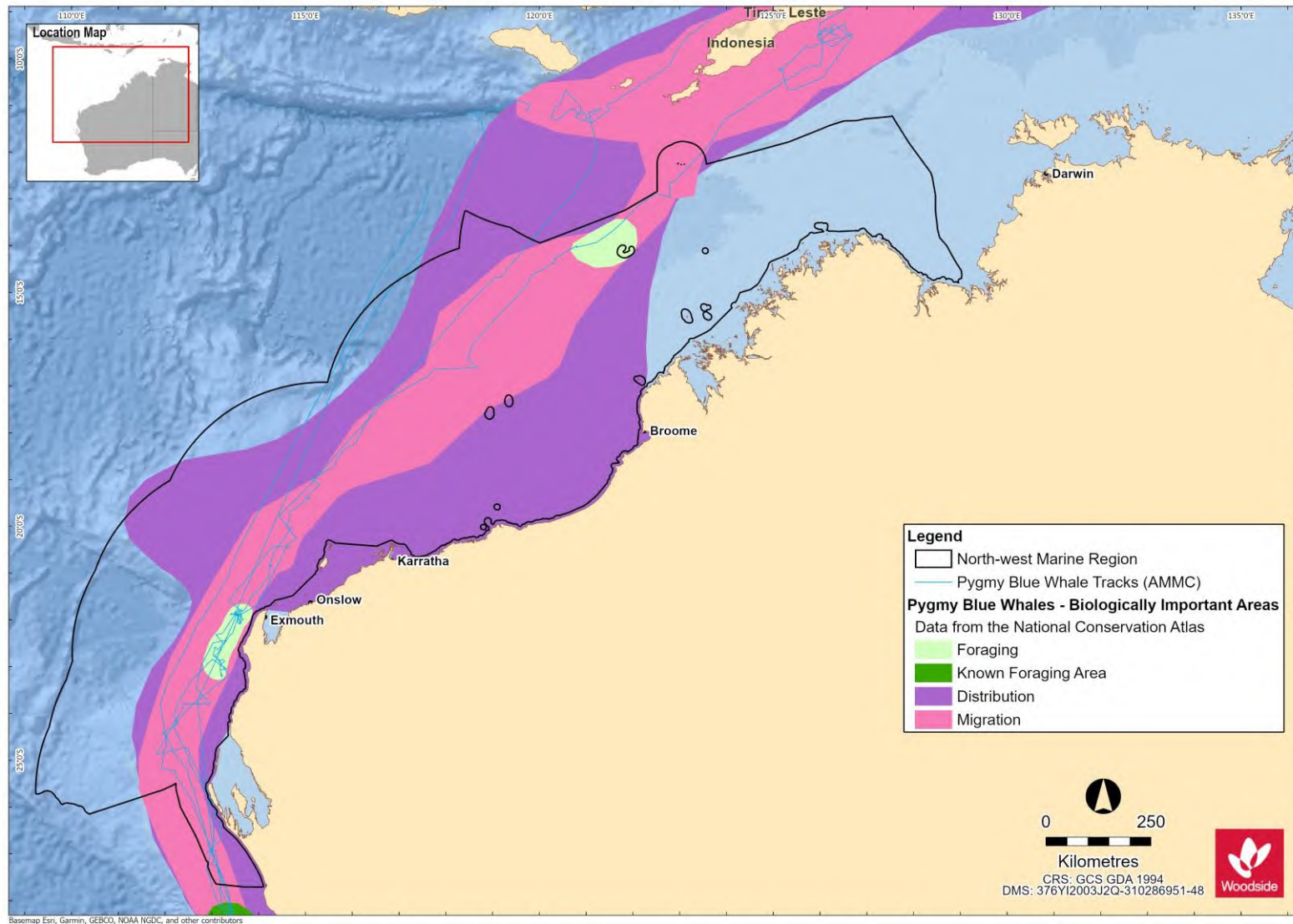


Figure 7-2 Pygmy blue whale BIAs for the NWMR and tagged whale tracks for northbound migration

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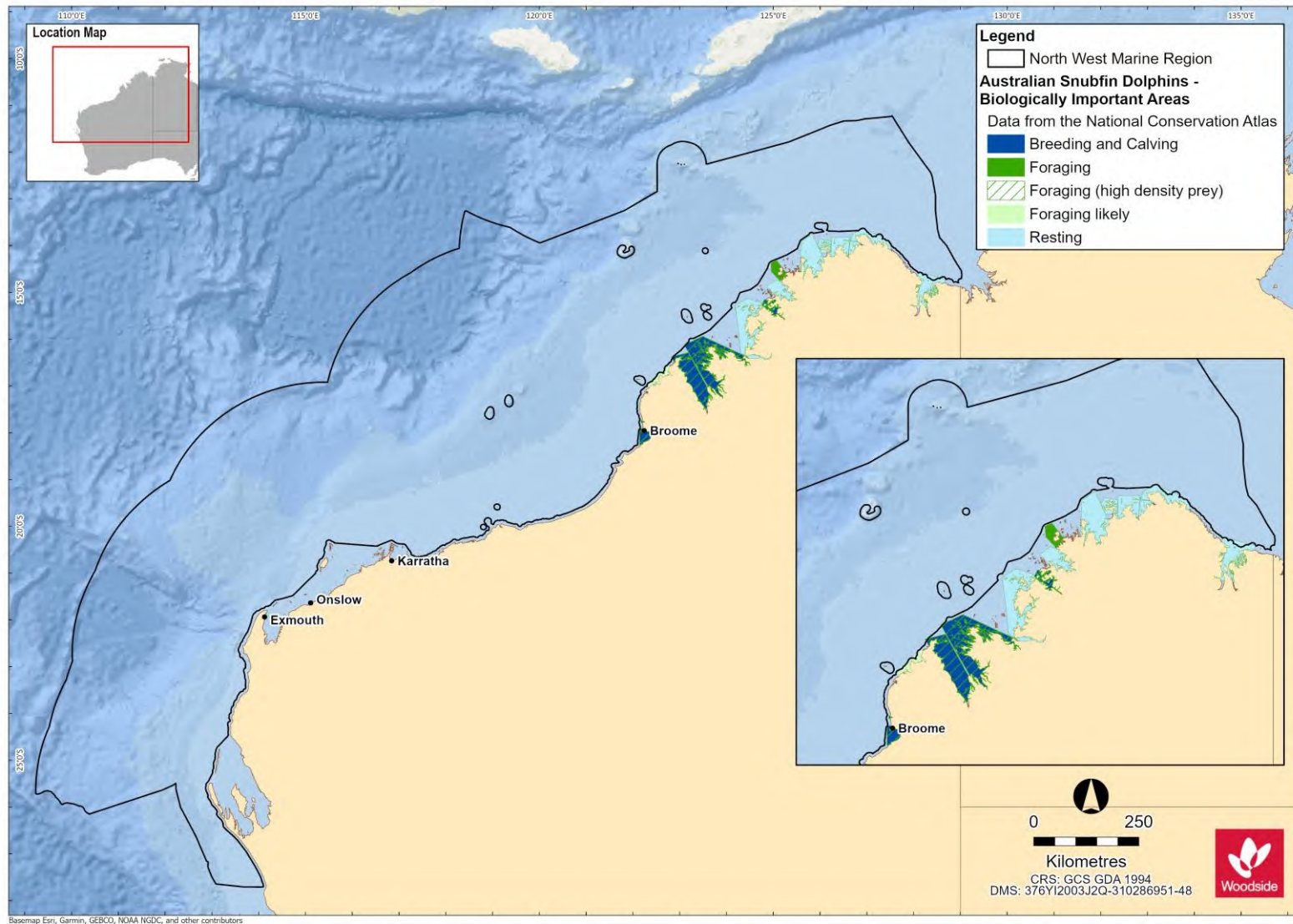


Figure 7-3 Australian snubfin dolphin BIAs for the NWMR

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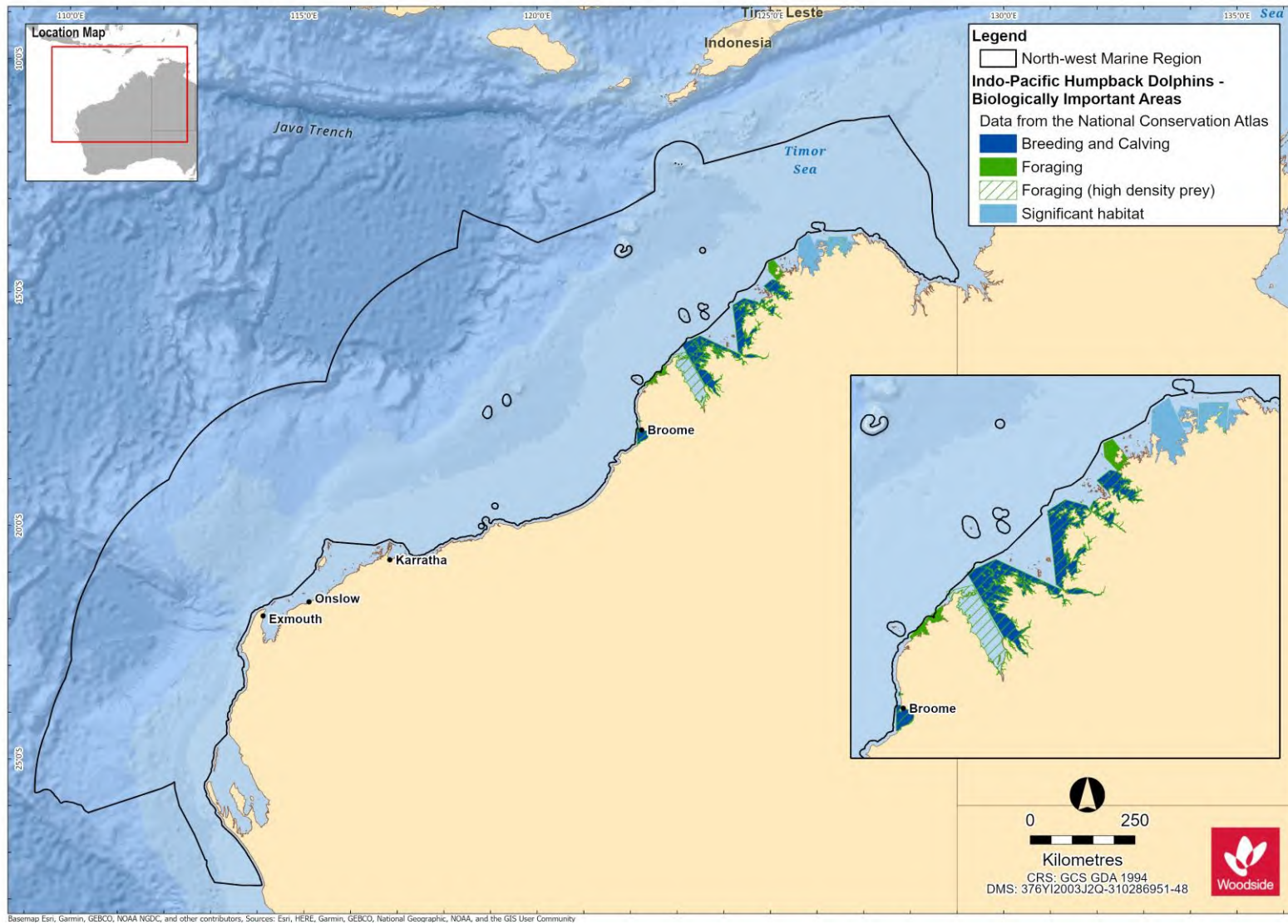


Figure 7-4 Indo-Pacific humpback dolphin BIAs for the NWMR

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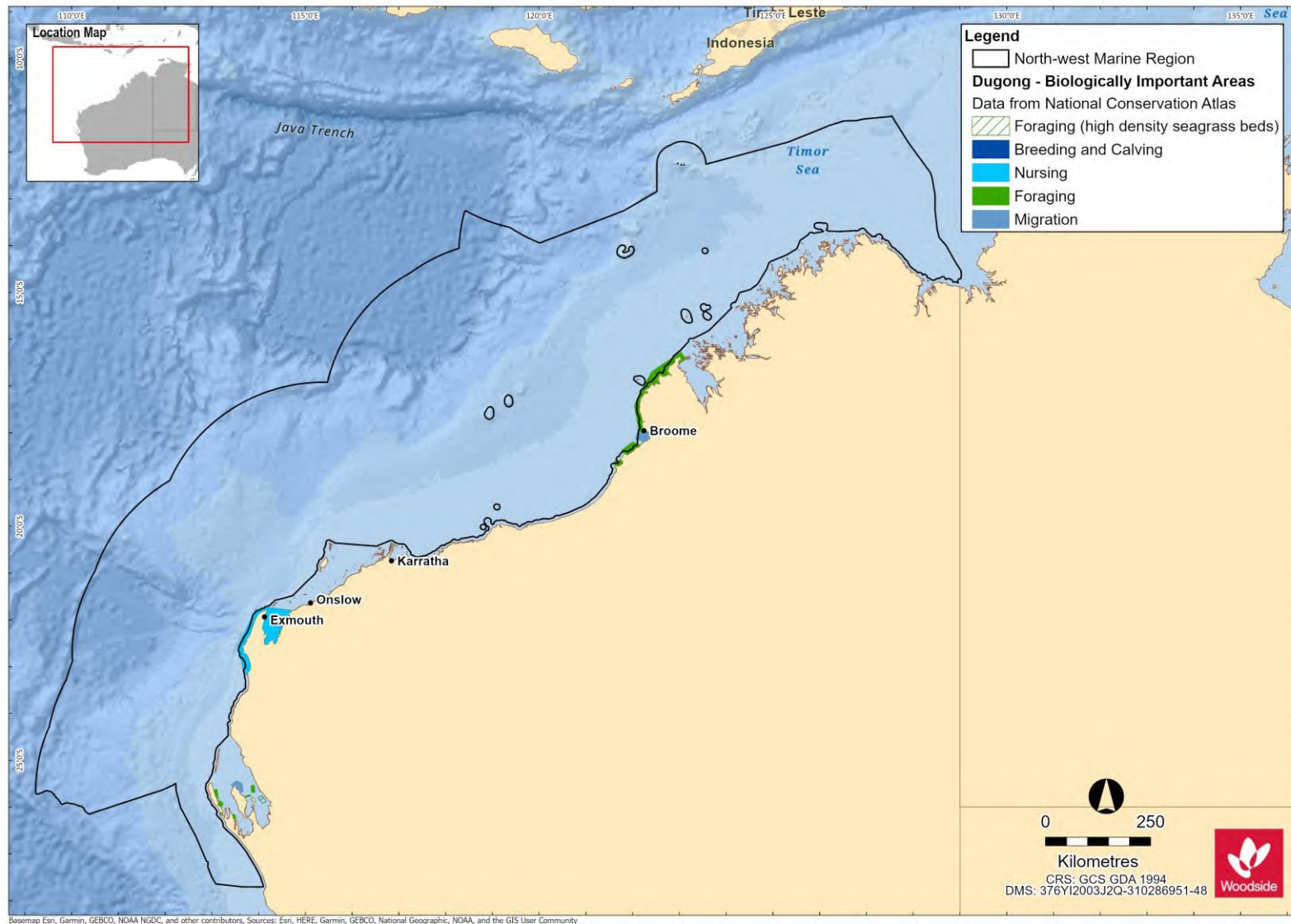


Figure 7-5 Dugong BIA for the NWMR

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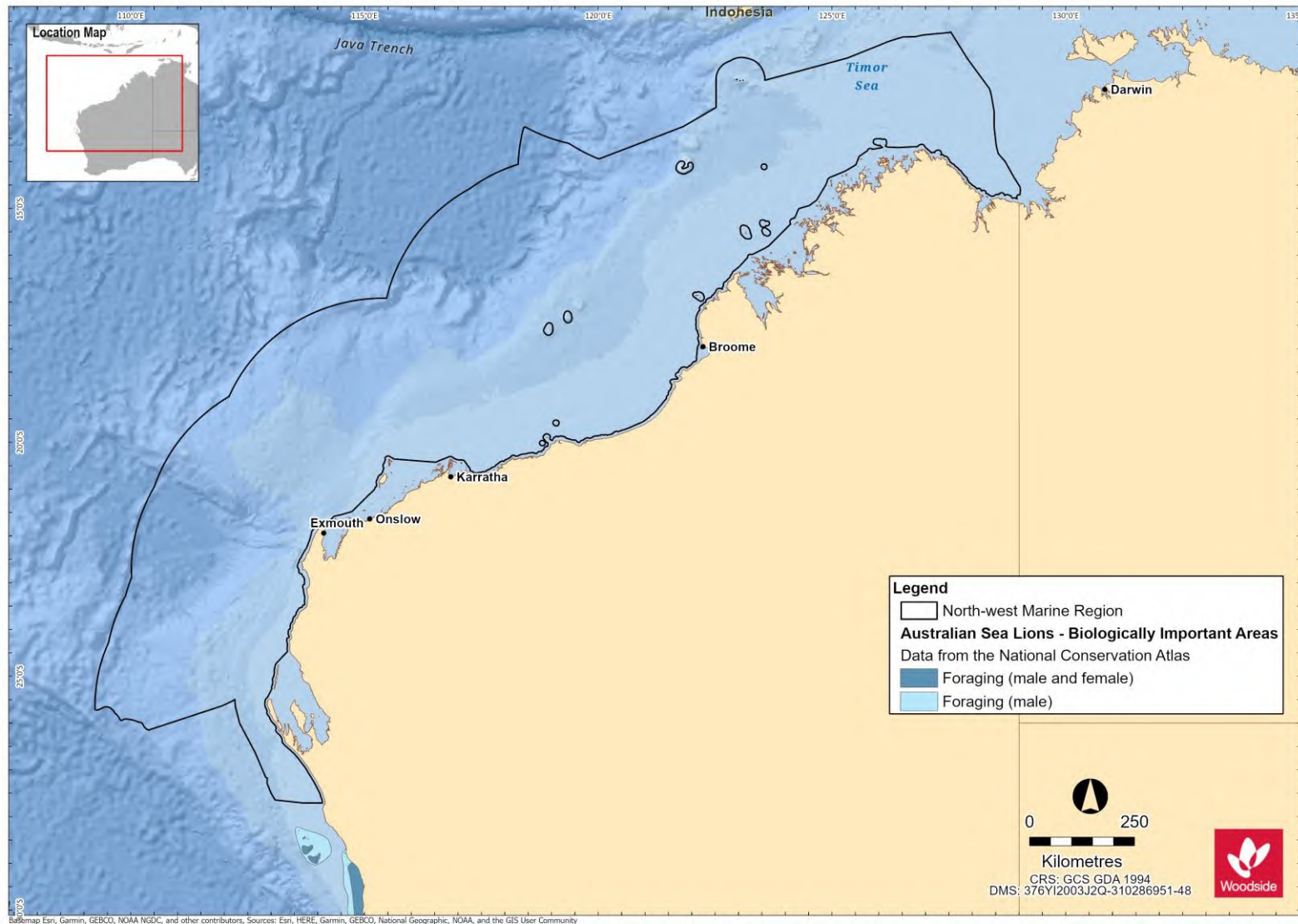


Figure 7-6 Australian sea lion BIAs in the northern extent of the SWMR closest to the NWMR

7.6 Marine Mammal Summary for the NWMR

7.6.1 Browse

The Browse activity area includes biologically important habitat for five threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (breeding, calving and migration areas);
- Indo-Pacific humpback dolphin (foraging, breeding and calving areas);
- Australian snubfin dolphin (foraging, breeding and calving areas); and
- dugong (foraging).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.6.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for five threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (resting and migration areas);
- Indo-Pacific humpback dolphin (foraging, breeding and calving areas);
- Australian snubfin dolphin (foraging, breeding and calving areas); and
- dugong (foraging and calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.6.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for three threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (resting and migration areas); and
- dugong (foraging and calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

8. SEABIRDS AND MIGRATORY SHOREBIRDS OF THE NWMR

8.1 Regional Context

The NWMR supports high numbers and species diversity of seabirds and migratory shorebirds including many that are EPBC Act listed, threatened and migratory. The NWMR marine bioregional plan reported 34 seabird species (listed as threatened, migratory and/or marine) that are known to occur, and 30 of 37 species of migratory shorebird species that regularly occur in Australia, are recorded at Ashmore Reef in the NWMR (DSEWPAC, 2012e). The NWMR marine bioregional plan also noted that Roebuck Bay and Eighty Mile Beach are internationally significant and recognised migratory shorebird locations.

Many migratory seabirds and shorebirds are protected through bilateral agreements between Australia and Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA), recognising the migratory route and important stopover and resting habitats of the East Asian-Australasian Flyway (EAAF). Important migratory bird habitats are also recognised as part of protected wetlands of the international significance under the Ramsar Convention. Important Bird Areas (IBAs) for the NWMR, which are also recognised as global Key Biodiversity Areas (KBAs) (BirdLife Australia⁴), include:

- Roebuck Bay KBA (and Ramsar site): Internationally significant migratory shorebird species.
- Mandora Marsh and Anna Plains KBA (adjacent to Eighty Mile Beach, Ramsar site): Internationally significant migratory shorebird species.
- Dampier Saltworks KBA: Internationally significant migratory shorebird species.
- Montebello Islands KBA: Shorebird and seabird species.
- Barrow Island KBA: Shorebird and seabird species.
- Exmouth Gulf Mangroves KBA: Internationally significant migratory shorebird species.

Table 8-1 presents a list of the threatened and migratory seabird and shorebird species that occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

4

[https://www.birdlife.org.au/projects/KBA#:~:text=The%20Key%20Biodiversity%20Areas%20\(KBAs,of%20advocacy%20for%20protected%20areas.](https://www.birdlife.org.au/projects/KBA#:~:text=The%20Key%20Biodiversity%20Areas%20(KBAs,of%20advocacy%20for%20protected%20areas.)

Accessed April, 2021.

Table 8-1. Bird species (threatened/migratory) identified by the EPBC Act PMST and other sources of information as potentially occurring within the NWMR

Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999			WA Biodiversity Conservation Act 2016	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Seabirds						
<i>Macronectes giganteus</i>	Southern giant petrel	Endangered	Migratory	Marine	Migratory	National recovery plan for threatened albatrosses and giant petrels 2011-2016 (DSEWPAC, 2011c)
<i>Papasula abbotti</i>	Abbott's booby	Endangered	N/A	Marine	N/A	Conservation Advice for the Abbott's booby - <i>Papasula abbotti</i> (Threatened Species Scientific Committee, 2020b)
<i>Pterodroma mollis</i>	Soft-plumaged petrel	Vulnerable	N/A	Marine	N/A	Conservation Advice <i>Pterodroma mollis</i> soft-plumaged petrel (Threatened Species Scientific Committee, 2015f)
<i>Sternula nereis nereis</i>	Australian fairy tern	Vulnerable	N/A	N/A	Vulnerable	Conservation Advice for <i>Sternula nereis nereis</i> (Fairy Tern) (DSEWPAC, 2011d)
<i>Anous tenuirostris melanops</i>	Australian lesser noddy	Vulnerable	N/A	Marine	Endangered	Conservation Advice <i>Anous tenuirostris melanops</i> Australian lesser noddy (Threatened Species Scientific Committee, 2015e)
<i>Thalassarche carteri</i>	Indian yellow-nosed albatross	Vulnerable	Migratory	Marine	Endangered	National recovery plan for threatened albatrosses and giant petrels 2011-2016 (DSEWPAC, 2011c)
<i>Anous stolidus</i>	Common noddy	N/A	Migratory	Marine	Migratory	Draft Wildlife Conservation Plan for Seabirds (Commonwealth of Australia, 2019)
<i>Fregata ariel</i>	Lesser frigatebird	N/A	Migratory	Marine	Migratory	
<i>Fregata minor</i>	Great frigatebird	N/A	Migratory	Marine	Migratory	
<i>Sula leucogaster</i>	Brown booby	N/A	Migratory	Marine	Migratory	
<i>Sula sula</i>	Red-footed booby	N/A	Migratory	Marine	Migratory	

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Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999			WA Biodiversity Conservation Act 2016	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
<i>Onychoprion anaethetus</i> (listed as <i>Sterna anaethetus</i>)	Bridled tern	N/A	Migratory	Marine	Migratory	
<i>Thalasseus bergii</i>	Greater crested tern	N/A	Migratory	Marine	Migratory	
<i>Sternula albifrons</i>	Little tern	N/A	Migratory	Marine	Migratory	
<i>Sterna dougallii</i>	Roseate tern	N/A	Migratory	Marine	Migratory	
<i>Onychoprion fuscata</i>	Sooty tern	N/A	N/A	Marine	N/A	
<i>Hydroprogne caspia</i>	Caspian tern	N/A	Migratory	Marine	Migratory	
<i>Ardenna pacifica</i>	Wedge-tailed shearwater	N/A	Migratory	Marine	Migratory	
<i>Puffinus assimillis</i>	Little shearwater	N/A	N/A	Marine	N/A	
<i>Ardenna carneipes</i>	Flesh-footed shearwater	N/A	Migratory	Marine	Vulnerable	
<i>Calonectris leucomelas</i>	Streaked shearwater	N/A	Migratory	Marine	Migratory	
<i>Phaethon lepturus</i>	White-tailed tropicbird	N/A	Migratory	Marine	Migratory	
<i>Chroicocephalus novaehollandiae</i>	Silver gull	N/A	N/A	Marine	N/A	
Migratory shorebirds						
<i>Numenius madagascariensis</i>	Eastern curlew, Far Eastern curlew	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice <i>Numenius madagascariensis</i> eastern curlew (DOE, 2015a)
<i>Calidris ferruginea</i>	Curlew sandpiper	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice <i>Calidris ferruginea</i> curlew sandpiper (DOE, 2015b)
<i>Calidris tenuirostris</i>	Great knot	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice <i>Calidris tenuirostris</i> Great knot (Threatened Species Scientific Committee, 2016a)
<i>Limosa lapponica menzbieri</i>	Bar-tailed godwit (<i>menzbieri</i>)	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice <i>Limosa lapponica menzbieri</i> Bar-tailed godwit (northern Siberia). (Threatened Species Scientific Committee, 2016c)

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Species Name	Common Name	Environment Protection and Biodiversity Conservation Act 1999			WA Biodiversity Conservation Act 2016	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
<i>Calidris canutus</i>	Red knot	Endangered	Migratory	Marine	Endangered	Conservation Advice <i>Calidris canutus</i> Red knot (Threatened Species Scientific Committee, 2016b)
<i>Charadrius mongolus</i>	Lesser sand plover	Endangered	Migratory	Marine	Endangered	Conservation Advice <i>Charadrius mongolus</i> Lesser sand plover (Threatened Species Scientific Committee, 2016e)
<i>Charadrius leschenaultii</i>	Greater sand plover	Vulnerable	Migratory	Marine	Vulnerable	Conservation Advice <i>Charadrius leschenaultia</i> Greater sand plover (Threatened Species Scientific Committee, 2016d)
All migratory shorebird species	Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c).					

8.2 Seabirds in the NWMR

Seabirds are birds that are adapted to life within the marine environment (oceanic and coastal) and are generally long-lived, have delayed breeding and have fewer young than other bird species (Commonwealth of Australia, 2019). At least 34 seabird species listed as threatened, migratory and/or marine under the EPBC Act are known to occur regularly in the NWMR and include a variety of species of terns, noddies, petrels, shearwaters, frigatebirds, and boobies. Many of these species spend most of their lives at sea (predominately pelagic species), ranging over large distances to forage. These pelagic species only come onshore to breed and raise chicks at natal or high-fidelity breeding colonies on remote, offshore island locations in and adjacent to the NWMR. Many species are ecologically significant to the NWMR, as they are endemic to the region, can be present in large numbers in breeding seasons and non-breeding seasons, and many exhibit extensive annual migrations that include marine areas outside the Australian EEZ (DSEWPAC, 2012e).

The presence of seabirds within the NWMR is influenced by seabird species that migrate and forage in the area during the non-breeding season and this includes many seabird species that breed on the Houtman Abrolhos in the SWMR. Pelagic seabirds have been documented foraging at current boundaries and seasonal upwellings within the NWMR (refer to Sutton *et al.*, 2019). The Houtman Abrolhos Islands National Park located in the SWMR, is one of the most significant seabird breeding locations in the eastern Indian Ocean. Sixteen (16) species of seabirds breed there. Eighty percent of common (brown) noddies, 40% of sooty terns and all the lesser noddies found in Australia nest at the Houtman Abrolhos (Surman, 2019). Important seabird areas in the NWMR are as identified by the KBAs (refer to **Section 8.1**) and the information on a select number of seabird species documented for the NWMR (based on the screening criteria presented in **Section 3**), as presented in **Table 8-2**.

Table 8-2 Information on threatened/migratory seabird species of the NWMR

Species	Key Information
Seabirds	
Southern giant petrel	This species is included in the National recovery plan for threatened albatrosses and giant petrels. Habitat critical to survival is defined for breeding and foraging. There are six known breeding localities under Australian jurisdiction (for all species giant petrels) and all are located in the Southern Ocean including islands off Tasmania and within the Australian Antarctic Territory (DSEWPAC, 2011c). Habitat critical to survival identified for foraging is defined as waters south of 25 degrees latitude. The giant petrel species distribution is mainly within the Southern Ocean but this species does migrate into subtropical waters during the winter and its distribution includes the southern extent of the NWMR. No BIAs for this species are located in the NWMR.
Abbott's booby	The Abbott's booby is a large, long-lived seabird known to nest only at Christmas Island. The recovery of this species is strongly dependent on the protection of breeding habitat defined habitat critical to the survival of this species on Christmas Island (Threatened Species Scientific Committee, 2020b). This species spends much of its time at sea and known to forage over large distances offshore when nesting and its range includes off the coast of Java, near the Chagos and in the Banda Sea, and may possibly extend into the north-western extent of the NWMR. No BIAs for this species are located in the NWMR.
Soft-plumaged petrel	This petrel species breeds only at two locations in Australian waters within the Southern Ocean (one off Tasmania and Macquarie Island) (Threatened Species Scientific Committee, 2015f). As a mainly sub-Antarctic species they are usually distributed in cooler seas but distribution extends into subtropical waters and its known distribution includes the southern extent of the NWMR. No BIAs for this species are located in the NWMR.
Australian fairy tern	The Australian fairy tern is listed as Vulnerable for the sub-species only recorded for WA. It has a coastal distribution from Sydney, south to Tasmania and around southern WA up to the Dampier Archipelago and out on the offshore island groups of Barrow, Montebello and the Lowendals (DSEWPAC, 2011d). The Australian fairy tern feeds on small baitfish and roosts and nests on sandy beaches below vegetation. These behaviours, generally, occur in inshore waters of island archipelagos and on the Australian mainland shores and adjacent wetlands. Fairy terns breed from August to February. The Australian fairy tern is unlikely to be present
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Species	Key Information
	within the offshore environment of the NWMR. The largest breeding colony in Western Australia for this species is in the Houtman Abrolhos Islands, SWMR (Surman, 2019). For the description and location of BIAs in the NWMR, refer to Table 8-3 and Figure 8-2 .
Australian lesser noddy	The Houtman Abrolhos, WA is an important breeding habitat for the Australian lesser noddy in the eastern Indian Ocean. This species exhibits nesting habitat specialisation (white mangrove stands) and has a limited foraging range during the breeding season. Furthermore, the lesser noddy forages over shelf waters and appears not to disperse over their non-breeding period as they remain largely in the general vicinity or slightly to the south of the colony in the non-breeding season (February to September; Surman <i>et al.</i> , 2018). No BIAs for this species are located in the NWMR.
Indian yellow-nosed albatross	This species is included in the National recovery plan for threatened albatrosses and giant petrels. Habitat critical to survival is defined for breeding and foraging. There are six known breeding localities under Australian jurisdiction (for all species of albatrosses) and all are located in the Southern Ocean including islands off Tasmania and within the Australian Antarctic Territory (DSEWPAC, 2011c). Habitat critical to survival identified for foraging is defined as waters south of 25 degrees latitude. All albatross species distribution (including the Indian yellow-nose albatross) is mainly within the Southern Ocean but this species does migrate into subtropical waters during the winter and its distribution includes the southern extent of the NWMR. No BIAs for this species are located in the NWMR.
Common noddy	This species is listed as migratory and marine. The common (or brown) noddy is the largest species of noddy found in Australian waters. The species is widespread in tropical and subtropical areas beyond Australia. This seabird species is gregarious and normally occurs in flocks, up to hundreds of individuals, when feeding or roosting. The Houtman Abrolhos, WA is the primary breeding habitat for the common noddy in the Eastern Indian Ocean. This species spends their non-breeding season (March to August) in the NWS area, around 950 km north from the breeding colony (Surman <i>et al.</i> 2018). The species occurs within NWMR waters, particularly around offshore islands such as the Montebello Island group. This species is recorded on unmanned oil and gas platforms within the NWS. No BIAs for this species are located in the NWMR.
Lesser frigatebird Great frigatebird	Both species of frigatebird are listed as migratory and marine. Within the NWMR, the lesser frigatebird is known to breed on Adele, Bedout and West Lacepede islands, Ashmore Reef and Cartier Island (Commonwealth of Australia, 2019). The lesser frigatebird feeds mostly on fish and sometimes cephalopods, and all food is taken while the bird is in flight. Lesser frigatebirds generally forage close to breeding colonies. Breeding/foraging BIAs for the lesser frigatebird are located in the NWMR; refer to Table 8-3 .
Brown booby	The brown booby is the most common booby, occurring throughout all tropical oceans bounded by latitudes 30° N and 30° S. There are large colonies on offshore islands within the NWMR such as the Lacepede Islands (one of the largest colonies in the world), Ashmore Reef, and other offshore Kimberley islands. This seabird species is a specialised plunge diver, mostly eating fish and some cephalopods (Commonwealth of Australia, 2019). Breeding/foraging BIAs for the brown booby are located in the NWMR; refer to Table 8-3 and Figure 8-3 .
Red-footed booby	Within the NWMR, its known breeding sites for this species include Ashmore Reef and Cartier Island. It is a pelagic species and generally occurs away from land. It mainly eats flying fish and squid. Prey abundance is reliant on the high productivity in slope areas off remote islands where the birds breed (Commonwealth of Australia, 2019). Breeding/foraging BIAs for the red-footed booby are located in the NWMR; refer to Table 8-3 and Figure 8-3 .
Greater crested tern	The greater crested tern has a widespread distribution recorded on islands and coastlines of tropical and subtropical areas, ranging from the Atlantic coast of South Africa, Indian Ocean and through south-east Asia and Australia. Outside the breeding season it can be found at sea throughout its range, with the exception of the central Indian Ocean (Commonwealth of Australia, 2019). The largest breeding colony in WA for this species is the Houtman Abrolhos Islands, SWMR (Surman, 2019). No BIAs for this species are located in the NWMR.
Little tern	There are three sub-populations of this species in Australia and two of these occur in the NWMR: northern Australian breeding sub-population occurring around Broome and extending across in to the NMR, and an east Asian breeding sub-population, with the terns present from Shark Bay to south-eastern Queensland during the austral summer. Little terns

Species	Key Information
	usually forage close to breeding colonies in the shallow water of estuaries (Commonwealth of Australia, 2019). For the description and location of BIAs in the NWMR, refer to Table 8-3 and Figure 8-2 .
Roseate tern	This species is generally tropical in distribution and there are many breeding populations in the NWMR, including Ashmore Reef, Napier Broome Bay, Bonaparte Archipelago, Lacepede Islands, Dampier Archipelago and the Lowendal Islands. A large number of non-breeding roseate terns have been observed at several remote locations in the Kimberley and there are high numbers also recorded for Eighty Mile Beach Ramsar site. The Kimberley colonies are likely to be another sub-species that breeds in east Asia. Roseate terns predominately eat small pelagic fish (Commonwealth of Australia, 2019). The largest breeding colony in Western Australia for this species is in the Houtman Abrolhos Islands, SWMR (Surman, 2019). For the description and location of BIAs in the NWMR, refer to Table 8-3 and Figure 8-2 .
Wedge-tailed shearwater	The wedge-tailed shearwater is a pelagic, marine seabird known from tropical and subtropical waters. Its distribution is widespread across the Indian and Pacific oceans. It is known to breed on the east and west coasts (and offshore islands) of Australia. This species is known to consume fish, cephalopods, and other biota primarily via contact-dipping. Wedge-tailed shearwaters are now understood to undertake extensive foraging trips (over thousands of kilometres over periods of days when chicking and provisioning young) and much longer and extensive pelagic travels over the north-west Indian Ocean during the non-breeding season, targeting current boundaries and upwellings. The species breeds throughout its range, mainly on vegetated islands, atolls and cays and excavates burrows in the ground where chicks are raised (Commonwealth of Australia, 2019). Large breeding colonies of the wedge-tailed shearwater are located on the Houtman Abrolhos islands (SWMR) (Surman <i>et al.</i> , 2018) and several locations in the NWMR including: Muiron Islands (North-west Cape), Varanus Island and the Dampier Archipelago in the Pilbara where burrow numbers were estimated to several hundred thousand to half a million such as on the Muiron Islands, though it is not known if all burrows are utilised on an annual basis (Birdlife Australia, 2018; Surman <i>et al.</i> , 2018). Cannell <i>et al.</i> (2019) satellite tracked adult wedge-tailed shearwaters during egg incubation and chick rearing on the Muiron Islands in January 2018. For the incubation trips, there was a strong consistency for the birds to travel towards seamounts, typically located north-west of the Muiron Islands, between Australia and Indonesia. One bird however remained south-west of the islands, in the Cape Range Canyon. A similar pattern to utilise areas associated with sea mounts was also observed for the long foraging trips during chick rearing, though some of the foraging was concentrated in deeper waters. A bimodal foraging strategy during chick-rearing was observed, with adults undertaking long foraging trips after a series of shorter foraging trips within the NWMR. Surman <i>et al.</i> (2018) reported most wedge-tailed shearwaters from the breeding colonies on the Houtman Abrolhos undertook extensive non-breeding migrations. This seabird species occupied waters adjacent or to the north of their nesting sites or migrated 4200 km north-west into the equatorial central Indian Ocean near the Ninety East Ridge during the non-breeding season (later April to mid-November). For the description and location of BIAs in the NWMR, refer to Table 8-3 and Figure 8-1 .
Flesh-footed shearwater	The species mainly occurs in the subtropics, over continental shelves and slopes and occasionally inshore waters, with individual birds pass through the tropics and over deeper waters during migration to the North Pacific and Indian oceans (Commonwealth of Australia, 2019). They are a common visitor to the waters off southern Australia, from south-western WA to south-eastern Queensland. The fleshy-footed shearwater is a trans-equatorial migrant, breeding from late September to May off south-western Australia, and migrating north by early May, across the southern Indian and possibly Indonesia to the northern Pacific Ocean. No BIAs for the flesh-footed shearwater are located in the NWMR.
Streaked shearwater	The streaked shearwater has a broad distribution in the western Pacific Ocean, breeding on the coast and offshore islands of Japan, Russia, China and the Korean Peninsula. During winter months (non-breeding season), the species undertakes trans-equatorial migration to the coasts of Vietnam, New Guinea, the Philippines, Australia, southern India and Sri Lanka. The streaked shearwater feeds mainly on fish and squid that it catches by surface-seizing and shallow plunges (Commonwealth of Australia, 2019). No BIAs for the streaked shearwater are located in the NWMR.
White-tailed tropicbird	Tropicbirds are predominately pelagic species and the white-tailed tropicbird forages in warm waters and over long distances (pan-tropical). The species is most common off north-west Australia. In the NWMR, this species is considered a sub-species and are limited in number and distribution. Nesting sites are known for Clerke Reef (Rowley Shoals) and Ashmore

Species	Key Information
	Reef. Christmas Island is also a known nesting site and the species can disperse several thousand kilometres during foraging trips. This species feeds mainly on fish and cephalopods, captured by deep plunge diving (Commonwealth of Australia, 2019). There are breeding BIAs at the Rowley Shoals and Ashmore Reef within the NWMR for the white-tailed tropicbird; refer to Table 8-3 .
Silver gull	The silver gull is typically described as an inshore and coastal foraging seabird and has an Australian-wide distribution including locations within the NWMR. It is noted as it has been recorded on unmanned oil and gas platforms located within the NWS.

8.2.1 Biologically Important Areas in the NWMR

BIAs representing important life cycle stages and behaviours for eight species of seabird in the NWMR are presented in **Table 8-3**.

Table 8-3 Seabird BIAs within the NWMR

Seabird Species	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Breeding/foraging	Foraging	Breeding	Resting
Australia fairy tern	-	✓	✓	-	No foraging BIAs in the NWMR Foraging in high numbers: the BIA is located in the SWMR including the Houtman Abrolhos Islands	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and barrier island of Shark Bay	-
Wedge-tailed shearwater	✓	✓	✓	Widespread area of the NWMR offshore and inshore waters	Foraging in high numbers: the BIA is located in the SWMR including the Houtman Abrolhos Islands	-	-
Great frigatebird	✓	-	-	Ashmore Reef, Adele Island	-	-	-
Lesser frigatebird	✓	✓	-	Off Eighty Mile Beach, Lacepedes, Adele Island, North Kimberley and Ashmore Reef	-	-	-
Brown booby	✓	✓	-	Off Eighty Mile Beach, Lacepedes, Adele Island, North Kimberley and Ashmore Reef	-	-	-
Red-footed booby	✓	-	-	Adele Island, Ashmore Reef	-	-	-
Little tern	✓	✓	-	Rowley Shoals, Adele Island	-	-	-
Roseate tern	✓	✓	✓	-	No foraging BIAs in the NWMR Foraging (provisioning young) and foraging BIAs located in the SWMR – Houtman Abrolhos Islands the	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and barrier island of Shark Bay	Eighty Mile Beach

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Seabird Species	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Breeding/foraging	Foraging	Breeding	Resting
					nearest BIA to the NWMR		
White-tailed tropicbird	✓	-	-			Rowley Shoals Ashmore Reef	

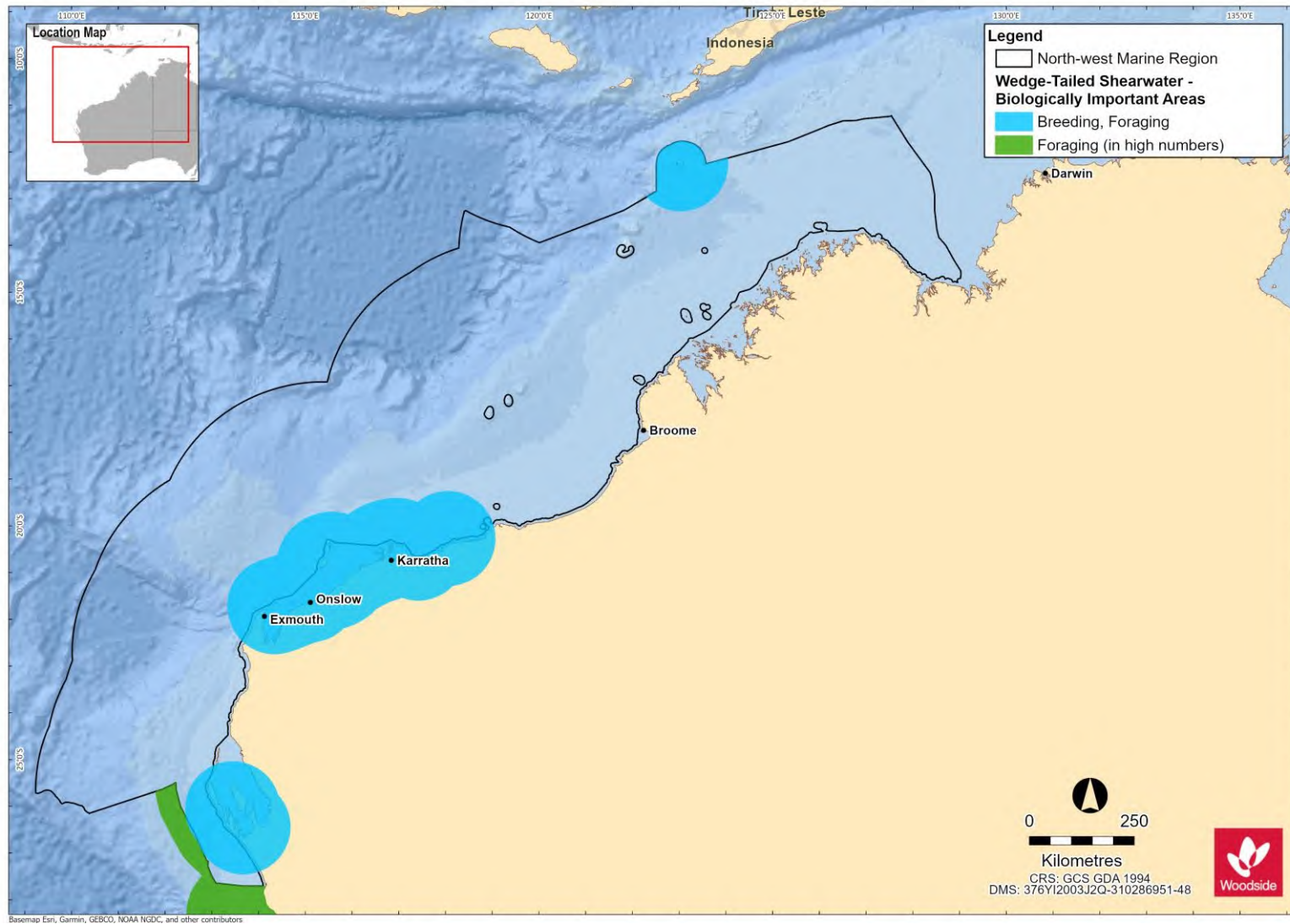


Figure 8-1 Wedge-tailed shearwater BIAs for the NWMR

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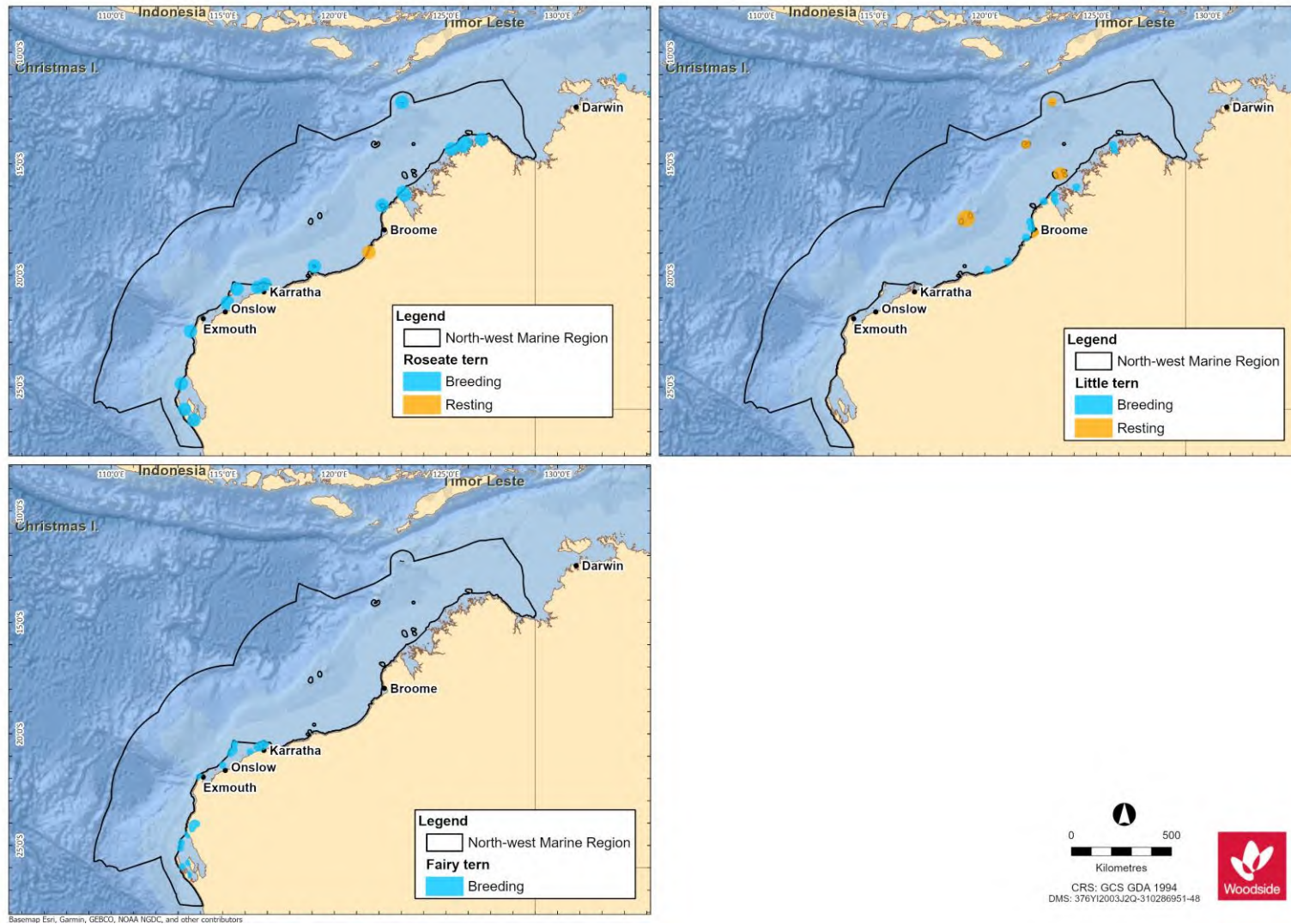


Figure 8-2 Tern species BIAs for the NWMR

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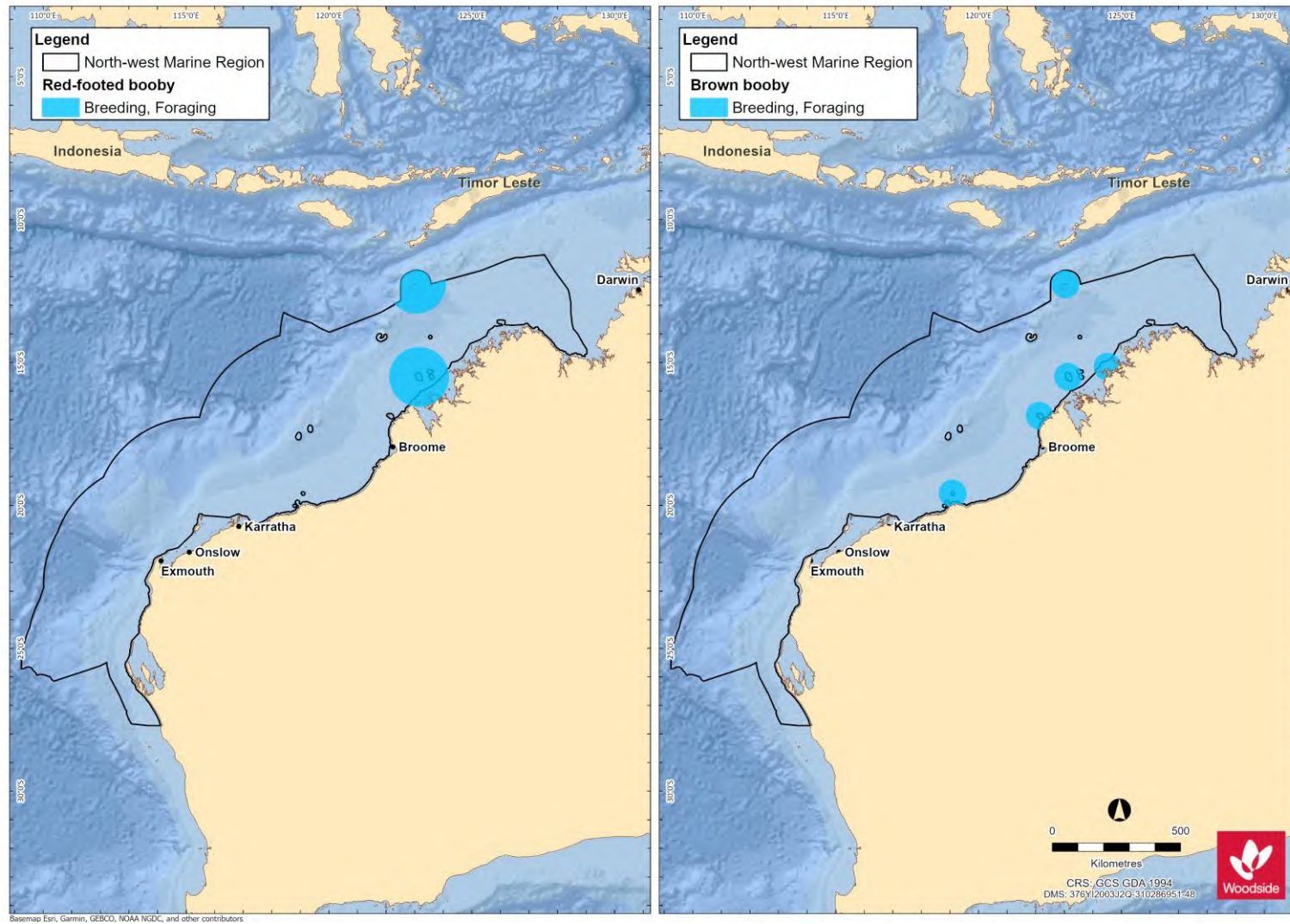


Figure 8-3 Red-footed and brown booby BIAs for the NWMR

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8.2.2 Seabird Summary for NWMR

8.2.2.1 Browse

The Browse activity area includes biologically important habitat for seven threatened and/or migratory seabird species:

- wedge-tailed shearwater (breeding/foraging);
- great and lesser frigatebirds (breeding/foraging);
- brown booby (breeding/foraging);
- red-footed booby (breeding/foraging);
- little tern (breeding/foraging);
- roseate tern (breeding and resting); and,
- white-tailed tropicbird (breeding).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.2.2 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for five threatened and/or migratory seabird species:

- wedge-tailed shearwater (breeding/foraging);
- lesser frigatebird (breeding/foraging);
- brown booby (breeding/foraging);
- little tern (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.2.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for five threatened and/or migratory seabird species:

- Australian fairy tern (breeding);
- wedge-tailed shearwater (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are outlined in **Table 8-3**.

8.3 Shorebirds

Shorebirds (migratory and resident species) are generally associated with wetland or coastal environments, and the NWMR hosts a large number of many shorebird species, particularly in the Austral summer (refer to **Appendix A** for the EPBC Act PMST reports on listed species of shorebirds). Shorebirds may use coastal environments for feeding, nesting or migratory stopovers. In coastal environments, shorebirds generally feed during low tide on exposed intertidal mud and sand flats, and roost in suitable habitat above the high water mark. Many shorebird species undergo annual migrations, typically breeding at high latitudes of the Northern Hemisphere and migrating south for the non-breeding season and Australia is part of the East Asian-Australasian Flyway (EAAF). The EAAF extends from breeding grounds in the Russian tundra, Mongolia and Alaska

southwards through east and south-east Asia, to non-breeding areas of Indonesia, Papua New Guinea, Australia and New Zealand (Weller and Lee, 2017). The EAAF is of most relevance to the NWMR. There are 37 species of shorebird which annually migrate to Australia via the EAAF and 36 of these species spend the austral summer (non-breeding season) foraging and roosting in coastal and wetland habitats (Commonwealth of Australia, 2015c; Weller and Lee, 2017).

Ashmore Reef is documented as a BIA for migratory shorebirds in the NWMR (DSEWPAC, 2012a).

Table 8-4. Information on threatened/migratory shorebird species of the NWMR

Species	Key Information
Shorebirds	
Eastern curlew, Far eastern curlew	This species is the largest, migratory shorebird in the world, with a long neck, long legs and a very long downcurved bill and is a long-haul flyer. The eastern curlew is a coastal species with a continuous distribution north from Barrow Island to the Kimberley region. The species is endemic to the EAAF and is a non-breeding visitor to Australia from August to March, primarily foraging on crabs and molluscs in intertidal mudflats. During the non-breeding season in Australia, this species is most associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (DOE, 2015a).
Curlew sandpiper	The curlew sandpiper breeds in northern Siberia but has a non-breeding range that extends from western Africa to Australia, with small numbers reaching New Zealand (Bamford <i>et al.</i> , 2008). In Australia, curlew sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states and the NT during the non-breeding period, and also during the breeding season when many non-breeding one-year old birds remain in Australia rather than migrating north along the EAAF. The species preferred habitat for foraging is mudflats and nearby shallow waters in sheltered coastal areas such as estuaries, bay, inlets and lagoons (DOE, 2015b).
Great knot	The great knot breeds in the Northern Hemisphere and undertakes biannual migrations along the EAAF to non-breeding habitat in Australia. The great knot winters in Australia and has been recorded around the entirety of the Australian coast the greatest numbers are found in northern Western Australia (Pilbara (Dampier Archipelago) and Kimberley and the Northern Territory. In Australia, this species prefers sheltered, coastal habitat with large intertidal mudflats or sandflats (inkling inlets, bays, harbours, estuaries and lagoons). High numbers (exceeding several thousand birds are regularly recorded from Roebuck Bay. The great knot feeds on a variety of invertebrates by pecking at or just below the surface of moist mud or sand (Threatened Species Scientific Committee, 2016a).
Bar-tailed godwit (<i>menzbieri</i>)	The bar-tailed godwit is a large, migratory shorebird and there are two sub-species in the EAAF (<i>Limosa lapponica baueri</i> and <i>L. l. menzbieri</i>). The sub-species <i>L. l. menzbieri</i> breeds in northern Siberia and spends its non-breeding period mostly in the north of WA but also in South-east Asia. The bar-tailed godwit (<i>menzbieri</i>) usually forages near the water in shallow water, mainly in tidal estuaries and harbours with a preference for exposed sandy or soft mud substrates on intertidal flats, banks and beaches (Threatened Species Scientific Committee, 2016c).
Red knot (<i>piersmai</i>)	This species is a small to medium migratory shorebird. There are two sub-species that cannot be distinguished from each other in nonbreeding plumage, however, <i>Calidris canutus piersmai</i> tend to overwinter almost exclusively in north-west Australia. The red knot migrates long distances from breeding grounds in high northern latitudes, where it breeds during the boreal summer, to the Southern Hemisphere during the austral summer with migration along the EAAF. Very large numbers are recorded for the north-west Australia and is common in all suitable habitats around the coast, including inland clay pans near Roebuck Bay (where the species roosts). The red knot usually forages in soft substrate along the waters edge on intertidal mudflats, sandflats and sandy beaches of sheltered coasts (Threatened Species Scientific Committee, 2016b).
Lesser sand plover	The lesser sand plover is a small to medium shorebird and one of 36 migratory shorebirds that breed in the Northern Hemisphere during the boreal summer and are known to annually migrate to the non-breeding grounds of Australia along the EAAF for the austral summer. There are five different sub-species and it is most likely the non-breeding ranges of the sub-species <i>Charadrius m. mongolus</i> overlaps with the NWMR. This species is widespread in coastal regions, preferring sandy beaches, mudflats of coastal bays and estuaries (Threatened Species Scientific Committee, 2016e).
Greater sand plover	The greater sand plover is a small to medium shorebird and in its non-breeding plumage is difficult to distinguish from the lesser sand plover. This species breeds in the Northern

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Species	Key Information
	Hemisphere and undertakes annual migrations to and from Southern Hemisphere feeding grounds in the austral summer along the EAAF. The species distribution in Australia during the non-breeding season is widespread, in WA the greater sand plover is widespread between Northwest Cape and Roebuck Bay (Threatened Species Scientific Committee, 2016d).

9. KEY ECOLOGICAL FEATURES

Key ecological features (KEFs) are elements of the Commonwealth marine environment that are considered to be important for a marine region's biodiversity or ecosystem function and integrity. KEFs have been identified by the Australian Government based on advice from scientists about the ecological processes and characteristics of the area.

KEFs meet one or more of the following criteria:

- a species, group of species, or a community with a regionally important ecological role (e.g. a predator, prey that affects a large biomass or number of other marine species),
- a species, group of species or a community that is nationally or regionally important for biodiversity,
- an area or habitat that is nationally or regionally important for:
 - enhanced or high productivity (such as predictable upwellings – an upwelling occurs when cold nutrient-rich waters from the bottom of the ocean rise to the surface),
 - aggregations of marine life (such as feeding, resting, breeding or nursery areas), or
 - biodiversity and endemism (species which only occur in a specific area),
- a unique seafloor feature, with known or presumed ecological properties of regional significance.

Thirteen KEFs are designated within the NWMR, twelve KEFs within the SWMR and eight KEFs within the NMR. These KEFs have been identified in the Protected Matters search (**Appendix A**) and outlined in **Table 9-1**, **Table 9-2** and **Table 9-3**, and **Figure 9-1**, **Figure 9-2** and **Figure 9-3**.

Table 9-1 Key Ecological Features (KEF) within the NWMM

KEF Name	Woodside Activity Area			Values ¹	Description
	Browse	NWS/S	NW Cape		
Carbonate bank and terrace system of the Sahul Shelf	✓	-	-	<p>Unique seafloor feature with ecological properties of regional significance</p> <p>Regionally important because of their role in enhancing biodiversity and local productivity relative to their surrounds. The carbonate banks and terraces provide areas of hard substrate in an otherwise soft sediment environment which are important for sessile species</p>	<p>The Carbonate banks and terrace system of the Sahul Shelf are located in the western Joseph Bonaparte Gulf and to the north of Cape Bougainville and Cape Londonderry. The carbonate banks and terraces are part of a larger complex of banks and terraces that occurs on the Van Diemen Rise in the adjacent NMR.</p> <p>The bank and terrace system of the Van Diemen Rise covers approximately 31,278 km² and forms part of the larger system associated with the Sahul Banks to the north and Londonderry Rise to the east. The feature is characterised by terrace, banks, channels and valleys (DSEWPAC, 2012c). The banks, ridges and terraces of the Van Diemen Rise are raised geomorphic features with relatively high proportions of hard substrate that support sponge and octocoral gardens. These, in turn, provide habitat to other epifauna, by providing structure in an otherwise flat environment (Przeslawski <i>et al.</i>, 2011). Plains and valleys are characterised by scattered epifauna and infauna that include polychaetes and ascidians. These epibenthic communities support higher order species such as olive ridley turtles, sea snakes and sharks (DSEWPAC, 2012c)</p>
Pinnacles of the Bonaparte Basin	✓	-	-	<p>Unique seafloor feature with ecological properties of regional significance</p> <p>Provide areas of hard substrate in an otherwise soft sediment environment and so are important for sessile species</p> <p>Recognised as a biodiversity hotspot for sponges</p> <p>The Pinnacles of the Bonaparte Basin KEF is located within both the NWMM and NMR (refer Table 9-3)</p>	<p>The Pinnacles of the Bonaparte Basin provide areas of hard substrate in an otherwise relatively featureless environment, the pinnacles are likely to support a high number of species, although a better understanding of the species richness and diversity associated with these structures is required (DSEWPAC, 2012a, 2012c). Covering >520 km² within the Bonaparte Basin, this feature contains the largest concentration of pinnacles along the Australian margin. The Pinnacles of the Bonaparte Basin are thought to be the eroded remnants of underlying strata; it is likely that the vertical walls generate local upwelling of nutrient-rich water, leading to phytoplankton productivity that attracts aggregations of planktivorous and predatory fish, seabirds, and foraging turtles (DSEWPAC, 2012a, 2012c).</p>
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	✓	-	-	<p>High productivity, biodiversity and aggregation of marine life that apply to both the benthic and pelagic habitats within the feature</p>	<p>Ashmore Reef is the largest of only three emergent oceanic reefs present in the north-eastern Indian Ocean and is the only oceanic reef in the region with vegetated islands. Ashmore contains a large reef shelf, two large lagoons, several channelled carbonate sand flats, shifting sand cays, an extensive reef flat, three vegetated islands—East, Middle and West islands—and</p>

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KEF Name	Woodside Activity Area			Values ¹	Description
	Browse	NWS/S	NW Cape		
					surrounding waters. Rising from a depth of more than 100 m, the reef platform is at the edge of the NWS and covers an area of 239 km ² . Ashmore Reef and Cartier Island and the surrounding Commonwealth waters are regionally important for feeding and breeding aggregations of birds and other marine life; they are areas of enhanced primary productivity in an otherwise low-nutrient environment (DSEWPAC, 2012a). Ashmore Reef supports the highest number of coral species of any reef off the WA coast.
Seringapatam Reef and the Commonwealth waters in the Scott Reef complex	✓	-	-	Support diverse aggregations of marine life, have high primary productivity relative to other parts of the region, are relatively pristine and have high species richness, which apply to both the benthic and pelagic habitats within the feature	Seringapatam Reef and the Commonwealth waters in the Scott Reef complex are regionally important in supporting the diverse aggregations of marine life, high primary productivity, and high species richness associated with the reefs themselves. As two of the few offshore reefs in the north-west, they provide an important biophysical environment in the region (DSEWPAC, 2012a).
Continental slope demersal fish communities	✓	✓	✓	High biodiversity of demersal fish assemblages, including high levels of endemism	The diversity of demersal fish assemblages on the continental slope in the Timor Province, the Northwest Transition and the North-west Province is high compared to elsewhere along the Australian continental slope (DSEWPAC, 2012a). The continental slope between North-west Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last <i>et al.</i> , 2005). The slope of the Timor Province and the Northwest Transition also contains more than 500 species of demersal fishes of which 64 are considered endemic (Last <i>et al.</i> , 2005), making it the second richest area for demersal fishes throughout the whole continental slope. Demersal fish species occupy two distinct demersal biomes associated with the upper slope (225–500 m water depths) and the mid-slope (750–1000 m). Although poorly known, it is suggested that the demersal slope communities rely on bacteria and detritus-based systems comprised of infauna and epifauna, which in turn become prey for a range of teleost fishes, molluscs and crustaceans (Brewer <i>et al.</i> , 2007). Higher-order consumers may include carnivorous fishes, deepwater sharks, large squid, and toothed whales (Brewer <i>et al.</i> , 2007). Pelagic production is phytoplankton-based, with hot spots around oceanic reefs and islands (Brewer <i>et al.</i> , 2007).

KEF Name	Woodside Activity Area			Values ¹	Description
	Browse	NWS/S	NW Cape		
Ancient coastline at 125 m depth contour	✓	✓	✓	<p>Unique seafloor feature with ecological properties of regional significance</p> <p>Provides areas of hard substrate and therefore may provide sites for higher diversity and enhanced species richness relative to surrounding areas of predominantly soft sediment</p>	<p>Several steps and terraces as a result of Holocene sea level changes occur in the region, with the most prominent of these features occurring as an escarpment along the NWMR and Sahul Shelf at a water depth of 125 m.</p> <p>The Ancient Coastline is not continuous throughout the NWMR and coincides with a well-documented eustatic stillstand at about 130 m worldwide (Falkner <i>et al.</i>, 2009).</p> <p>Where the Ancient Coastline provides areas of hard substrate, it may contribute to higher diversity and enhanced species richness relative to soft sediment habitat (Falkner <i>et al.</i>, 2009). Parts of the Ancient Coastline, represented as rocky escarpment, are considered to provide biologically important habitat in an area predominantly made up of soft sediment.</p> <p>The escarpment type features may also potentially facilitate mixing within the water column due to upwelling, providing a nutrient-rich environment. Although the Ancient Coastline adds additional habitat types to a representative system, the habitat types are not unique to the coastline as they are widespread on the upper shelf (Falkner <i>et al.</i>, 2009)</p>
Canyons linking the Argo Abyssal Plain and Scott Plateau	-	✓	-	<p>Facilitates nutrient upwelling, creating enhanced productivity and encouraging diverse aggregations of marine life</p>	<p>Interactions with the Leeuwin Current and strong internal tides are thought to result in upwelling at the canyon heads, thus creating conditions for enhanced productivity in the region (Brewer <i>et al.</i>, 2007). As a result, aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, predatory fishes and seabirds are known to occur in the area due to its enhanced productivity (Sleeman <i>et al.</i>, 2007).</p>
Glomar Shoal	-	✓	-	<p>An area of high productivity and aggregations of marine life including commercial and recreational fish species</p>	<p>Glomar Shoal is a submerged littoral feature located about 150 km north of Dampier on the Rowley shelf at depths of 33–77 m (Falkner <i>et al.</i>, 2009). Studies by Abdul Wahab <i>et al.</i> (2018) found a number of hard coral and sponge species in water depths less than 40 m. One hundred and seventy (170) different species of fishes were detected with greatest species richness and abundance in shallow habitats (Abdul Wahab <i>et al.</i>, 2018). Fish species present include a number of commercial and recreational species such as Rankin cod, brown striped snapper, red emperor, crimson snapper, bream and yellow-spotted triggerfish (Falkner <i>et al.</i>, 2009; Fletcher and Santoro, 2009). These species have recorded high catch rates associated with Glomar Shoal, indicating that the shoal is likely to be an area of high productivity.</p>

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KEF Name	Woodside Activity Area			Values ¹	Description
	Browse	NWS/S	NW Cape		
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	-	✓	-	Regionally important in supporting high species richness, higher productivity and aggregations of marine life	The Mermaid Reef and Commonwealth waters surrounding the Rowley Shoals KEF and is adjacent to the three nautical mile State waters limit surrounding Clerke and Imperieuse reefs, and include the Mermaid Reef Marine Park as described in Section 10 . The reefs provide a distinctive biophysical environment in the region. They have steep and distinct reef slopes and associated fish communities. In evolutionary terms, the reefs may play a role in supplying coral and fish larvae to reefs further south via the southward flowing Indonesian Throughflow. Both coral communities and fish assemblages differ from similar habitats in eastern Australia (Done <i>et al.</i> , 1994).
Exmouth Plateau	-	✓	✓	Unique seafloor feature with ecological properties of regional significance, which apply to both benthic and pelagic habitats Likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of approximately 1000 m	The Exmouth Plateau is a large, mid-slope, continental margin plateau that lies off the northwest coast of Australia. It ranges in depth from about 500 to more than 5000 m and is a major structural element of the Carnarvon Basin (Miyazaki and Stagg, 2013). The large size of the Exmouth Plateau and its expansive surface may modify deep water flow and be associated with the generation of internal tides; both of which may subsequently contribute to the upwelling of deeper, nutrient-rich waters closer to the surface (Brewer <i>et al.</i> , 2007). Satellite observations suggest that productivity is enhanced along the northern and southern boundaries of the plateau (Brewer <i>et al.</i> , 2007). Sediments on the plateau suggest that biological communities include scavengers, benthic filter feeders and epifauna (DSEWPAC, 2012a). Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton attracted to seasonal upwellings, as well as larger predators such as billfishes, sharks and dolphins (Brewer <i>et al.</i> , 2007). Protected and migratory species are also known to pass through the region, including whale sharks and cetaceans.
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	-	-	✓	Unique seafloor feature with ecological properties of regional significance The feature is an area of moderately enhanced productivity, attracting aggregations of fish and higher-order consumers such as large predatory	The canyons are associated with upwelling as they channel deep water from the Cuvier Abyssal Plain up onto the slope. This nutrient-rich water interacts with the Leeuwin Current at the canyon heads (DSEWPAC, 2012a). Aggregations of whale sharks, manta rays, sea snakes, sharks, large predatory fish, and seabirds are known to occur in this area.

KEF Name	Woodside Activity Area			Values ¹	Description
	Browse	NWS/S	NW Cape		
				fish, sharks, toothed whales and dolphins Likely to be important due to their historical association with sperm whale aggregations	
Commonwealth waters adjacent to Ningaloo Reef	-	-	✓	High productivity and diverse aggregations of marine life The Commonwealth waters adjacent to Ningaloo Reef and associated canyons and plateau are interconnected and support the high productivity and species richness of Ningaloo Reef, globally significant as the only extensive coral reef in the world that fringes the west coast of a continent	The Leeuwin and Ningaloo currents interact, leading to areas of enhanced productivity in the Commonwealth waters adjacent to Ningaloo Reef. Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish, and seabirds are known to occur in this area (DSEWPAC, 2012a). The spatial boundary of this KEF, as defined in the NCVA, is defined as the waters contained in the existing Ningaloo AMP provided in Section 10 .
Wallaby Saddle	-	-	✓	High productivity and aggregations of marine life: Representing almost the entire area of this type of geomorphic feature in the NWMR. It is a unique habitat that neither occurs anywhere else nearby (within hundreds of kilometres) nor with as large an area (Falkner <i>et al.</i> 2009)	The Wallaby Saddle may be an area of enhanced productivity. Historical whaling records provide evidence of sperm whale aggregations in the area of the Wallaby Saddle, possibly due to the enhanced productivity of the area and aggregations of baitfish (DSEWPAC, 2012a).

¹: Values description sourced from Marine bioregional plan for the North-west Marine Region (DSEWPAC, 2012a) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database.

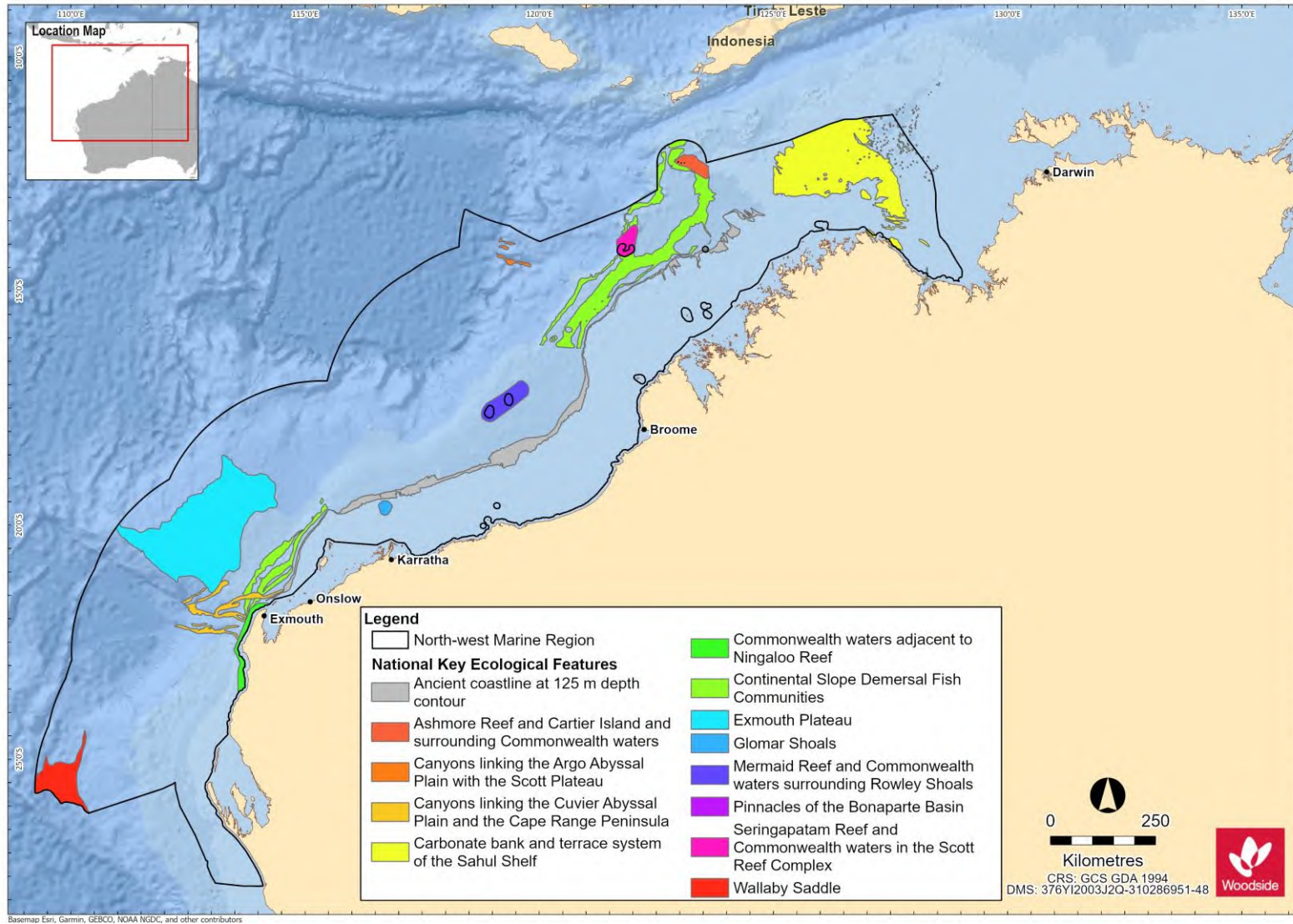


Figure 9-1 Key Ecological Features (KEFs) within the NWMR.

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Table 9-2 Key Ecological Features (KEF) within the SWMR

KEF Name	Values ¹	Description
Albany Canyons group and adjacent shelf break	High productivity and aggregations of marine life, and unique seafloor feature with ecological properties of regional significance Both benthic and demersal habitats within the feature are of conservation value	The Albany Canyons group is thought to be associated with small, periodic subsurface upwelling events, which may drive localised regions of high productivity. The canyons are known to be a feeding area for sperm whale and sites of orange roughly aggregations. Anecdotal evidence also indicates that this area supports fish aggregations that attract large predatory fish and sharks.
Ancient coastline at 90-120 m depth	Relatively high productivity and aggregations of marine life, and high levels of biodiversity and endemism The feature creates topographic complexity, that may facilitate benthic biodiversity and enhanced biological productivity	Benthic biodiversity and productivity occur where the ancient coastline forms a prominent escarpment, such as in the western Great Australian Bight, where the sea floor is dominated by sponge communities of significant biodiversity and structural complexity.
Cape Mentelle upwelling	Facilitates nutrient upwelling, supporting high productivity and diverse aggregations of marine life	The Cape Mentelle upwelling draws relatively nutrient-rich water from the base of the Leeuwin Current, up the continental slope and onto the inner continental shelf, where it results in phytoplankton blooms at the surface. The phytoplankton blooms provide the basis for an extended food chain characterised by feeding aggregations of small pelagic fish, larger predatory fish, seabirds, dolphins and sharks.
Commonwealth marine environment surrounding the Houtman Abrolhos Islands (and adjacent shelf break)	High levels of biodiversity and endemism within benthic and pelagic habitats	The Houtman Abrolhos Islands and surrounding reefs support a unique mix of temperate and tropical species, resulting from the southward transport of species by the Leeuwin Current over thousands of years. The Houtman Abrolhos Islands are the largest seabird breeding station in the eastern Indian Ocean. They support more than one million pairs of breeding seabirds.

KEF Name	Values ¹	Description
Commonwealth marine environment surrounding the Recherche Archipelago	Aggregations of marine life and high levels of biodiversity and endemism within benthic and demersal communities	The Recherche Archipelago is the most extensive area of reef in the SWMR. Its reef and seagrass habitat supports a high species diversity of warm temperate species, including 263 known species of fish, 347 known species of molluscs, 300 known species of sponges, and 242 known species of macroalgae. The islands also provide haul-out (resting areas) and breeding sites for Australian sea lions and New Zealand fur seals.
Commonwealth marine environment within and adjacent to the west-coast inshore lagoons	High productivity and aggregations of marine life within benthic and pelagic habitats Important for benthic productivity and recruitment for a range of marine species	These lagoons are important for benthic productivity, including macroalgae and seagrass communities, and breeding and nursery aggregations for many temperate and tropical marine species. They are important areas for the recruitment of commercially and recreationally important fish species. Extensive schools of migratory fish visit the area annually, including herring, garfish, tailor and Australian salmon.
Commonwealth marine environment within and adjacent to Geographe Bay	High productivity and aggregations of marine life, and high levels of biodiversity, recruitment within benthic and pelagic communities	Geographe Bay is known for its extensive beds of tropical and temperate seagrass that support a diversity of species, many of them not found anywhere else. The bay provides important nursery habitat for many species. Juvenile dusky whaler sharks use the shallow seagrass habitat as nursery grounds for several years, before ranging out to adult feeding grounds along the shelf break. The seagrass also provides valuable habitat for fish and invertebrates (Carruthers <i>et al.</i> , 2007). It is also an important resting area for migratory humpback whales.
Diamantina Fracture Zone	Unique seafloor feature with ecological properties of regional significance which apply to its benthic and demersal habitats	The Diamantina Fracture Zone is a rugged, deep- water environment of seamounts and numerous closely spaced troughs and ridges. Very little is known about the ecology of this remote, deep- water feature, but marine experts suggest that its size and physical complexity mean that it is likely to support deep-water communities characterised by high species diversity, with many species found nowhere else.
Naturaliste Plateau	Unique seafloor feature with ecological properties of regional significance including high species diversity and endemism which apply to its benthic and demersal habitats	The Naturaliste Plateau is Australia's deepest temperate marginal plateau. The combination of its structural complexity, mixed water dynamics and relative isolation indicate that it supports deep- water communities with high species diversity and endemism.
Perth Canyon and adjacent shelf break, and other west-coast canyons	An area of higher productivity that attracts feeding aggregations of deep-diving mammals and large predatory fish. It is also recognised as a unique seafloor feature with ecological properties of regional significance	The Perth Canyon is the largest known undersea canyon in Australian waters. Deep ocean currents rise to the surface, creating a nutrient-rich cold- water habitat attracting feeding aggregations of deep-diving mammals, such as pygmy blue whales and large predatory fish that feed on aggregations of small fish, krill and squid.

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KEF Name	Values ¹	Description
Western demersal slope and associated fish communities of the Central Western Province	Provides important habitat for demersal fish communities and supports species groups that are nationally or regionally important to biodiversity	The western demersal slope provides important habitat for demersal fish communities, with a high level of diversity and endemism. A diverse assemblage of demersal fish species below a depth of 400 m is dominated by relatively small benthic species such as grenadiers, dogfish and cucumber fish. Unlike other slope fish communities in Australia, many of these species display unique physical adaptations to feed on the sea floor (such as a mouth position adapted to bottom feeding), and many do not appear to migrate vertically in their daily feeding habits.
Western rock lobster	A species that plays a regionally important ecological role	This species is the dominant large benthic invertebrate in the region. The lobster plays an important trophic role in many of the inshore ecosystems of the SWMR. Western rock lobsters are an important part of the food web on the inner shelf, particularly as juveniles.

¹. Values description sourced from Marine bioregional plan for the South-west Marine Region (DSEWPAC, 2012b) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database

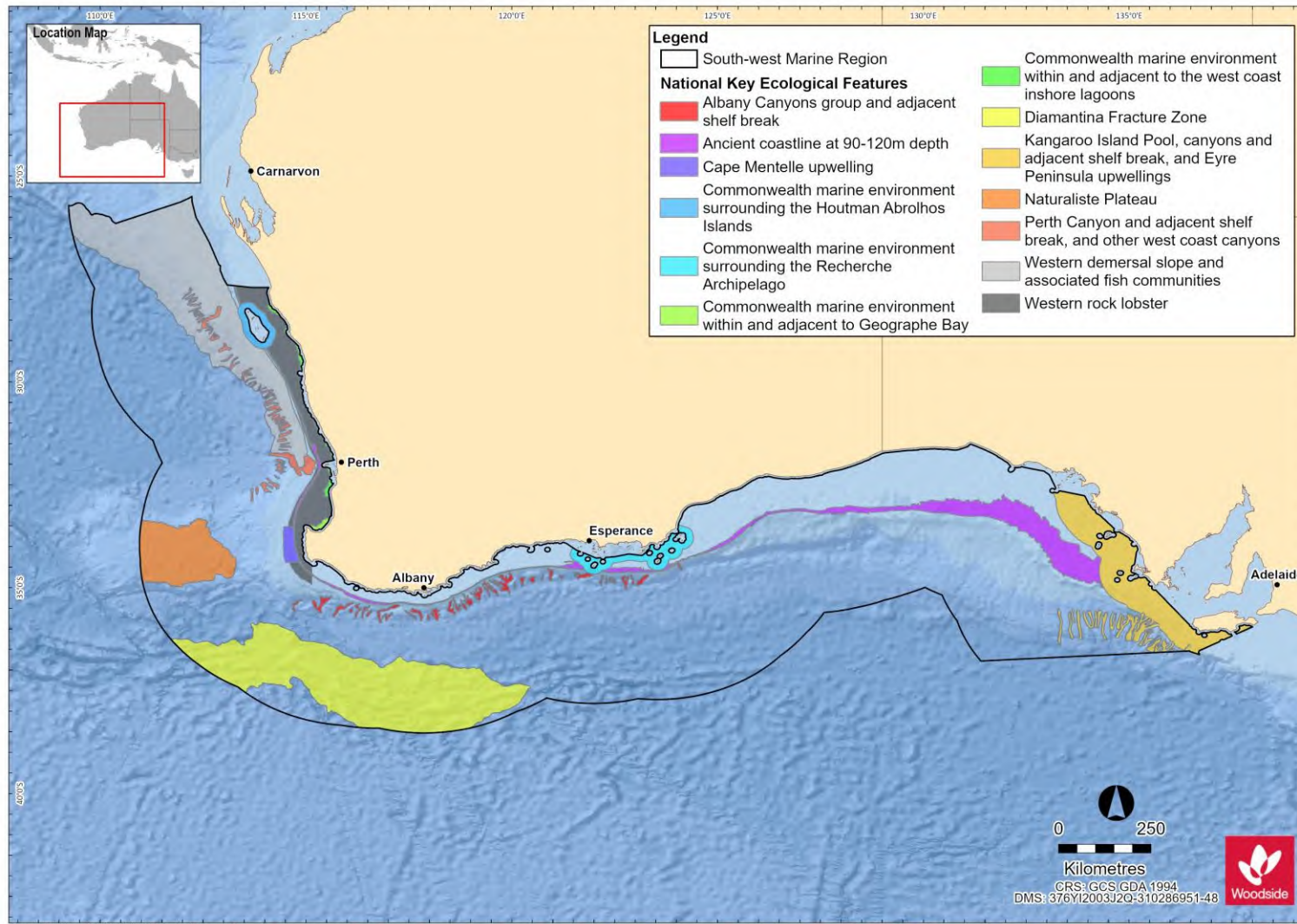


Figure 9-2. Key Ecological Features (KEFs) within the SWMR

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Table 9-3 Key Ecological Features (KEF) within the NMR

KEF Name	Values ¹	Description
Carbonate bank and terrace system of the Van Diemen Rise	Important for its role in enhancing biodiversity and local productivity relative to its surrounds and for supporting relatively high species diversity The feature has been identified as a sponge biodiversity hotspot (Przeslawski <i>et al.</i> 2014)	The bank and terrace system of the Van Diemen Rise is part of the larger system associated with the Sahul Banks to the north and Londonderry Rise to the east; it is characterised by terrace, banks, channels and valleys. The variability in water depth and substrate composition may contribute to the presence of unique ecosystems in the channels. Species present include sponges, soft corals and other sessile filter feeders associated with hard substrate sediments of the deep channels; epifauna and infauna include polychaetes and ascidians. Olive ridley turtles, sea snakes and sharks are also found associated with this feature.
Gulf of Carpentaria basin	Regional importance for biodiversity, endemism and aggregations of marine life relevant to benthic and pelagic habitats	The Gulf of Carpentaria basin is one of the few remaining near-pristine marine environments in the world. Primary productivity in the Gulf of Carpentaria basin is mainly driven by cyanobacteria that fix nitrogen but is also strongly influenced by seasonal processes. The soft sediments of the basin are characterised by moderately abundant and diverse communities of infauna and mobile epifauna dominated by polychaetes, crustaceans, molluscs, and echinoderms. The basin also supports assemblages of pelagic fish species including planktivorous and schooling fish, with top predators such as shark, snapper, tuna, and mackerel.
Gulf of Carpentaria coastal zone	High productivity, aggregations of marine life (including several endemic species) and high biodiversity compared to broader region	Nutrient inflow from rivers adjacent to the NMR generates higher productivity and more diverse and abundant biota within the Gulf of Carpentaria coastal zone than elsewhere in the region. The coastal zone is near pristine and supports many protected species such as marine turtles, dugongs, and sawfishes. Ecosystem processes and connectivity remain intact; river flows are mostly uninterrupted by artificial barriers and healthy, diverse estuarine and coastal ecosystems support many species that move between freshwater and saltwater environments.
Pinnacles of the Bonaparte Basin	Unique seafloor feature with ecological properties of regional significance Provide areas of hard substrate in an otherwise soft sediment environment and so are important for sessile species Recognised as a biodiversity hotspot for sponges The Pinnacles of the Bonaparte Basin KEF is located within both the NWMR and NMR (refer Table 9-1)	Covering more than 520 km ² within the Bonaparte Basin, this feature contains the largest concentration of pinnacles along the Australian margin. The Pinnacles of the Bonaparte Basin are thought to be the eroded remnants of underlying strata; it is likely that the vertical walls generate local upwelling of nutrient-rich water, leading to phytoplankton productivity that attracts aggregations of planktivorous and predatory fish, seabirds and foraging turtles.

KEF Name	Values ¹	Description
Plateaux and saddle north-west of the Wellesley Islands	High species abundance, diversity and endemism of marine life	Abundance and species density are high in the plateaux and saddle as a result of increased biological productivity associated with habitats rather than currents. Submerged reefs support corals that are typical of northern Australia, including corals that have bleach-resistant zooxanthellae; and particular reef fish species that are different to those found elsewhere in the Gulf of Carpentaria. Species present include marine turtles and reef fish such as coral trout, cod, mackerel, and shark. Seabirds frequent the plateaux and saddle, most likely due to the presence of predictable food resources for feeding offspring.
Shelf break and slope of the Arafura Shelf	The Shelf break and slope of the Arafura Shelf is defined as a key ecological feature for its ecological significance associated with productivity emanating from the slope It also forms part of a unique biogeographic province (Last <i>et al.</i> , 2005)	The shelf break and slope of the Arafura Shelf is characterised by continental slope and patch reefs and hard substrate pinnacles. The ecosystem processes of the feature are largely unknown in the region; however, the Indonesian Throughflow and surface wind-driven circulation are likely to influence nutrients, pelagic dispersal and species and biological productivity in the region. Biota associated with the feature is largely of Timor–Indonesian Malay affinity.
Submerged coral reefs of the Gulf of Carpentaria	High aggregations of marine life, biodiversity and endemism Twenty per cent of the reefs found in the NMR are situated within this KEF (Harris <i>et al.</i> , 2007)	The submerged coral reefs of the Gulf of Carpentaria are characterised by submerged patch, platform and barrier reefs that form a broken margin around the perimeter of the Gulf of Carpentaria basin, rising from the sea floor at depths of 30–50 m. These reefs provide breeding and aggregation areas for many fish species including mackerel and snapper and offer refuges for sea snakes and apex predators such as sharks. Coral trout species that inhabit the submerged reefs are smaller than those found in the Great Barrier Reef and may prove to be an endemic sub-species.
Tributary Canyons of the Arafura Depression	High productivity and high levels of species diversity and endemism of marine life within the benthic and pelagic habitats of the feature	The tributary canyons are approximately 80–100 m deep and 20 km wide. The largest of the canyons extend some 400 km from Cape Wessel into the Arafura Depression, and are the remnants of a drowned river system that existed during the Pleistocene era. Sediments in this feature are mainly calcium-carbonate rich, although sediment type varies from sandy substrate to soft muddy sediments and hard, rocky substrate. Marine turtles, deep sea sponges, barnacles and stalked crinoids have all been identified in the area.

¹. Values description sourced from *Marine bioregional plan for the North Marine Region (DSEWPAC, 2012c)* and *Department of Agriculture, Water and the Environment (DAWE) SPRAT database*.

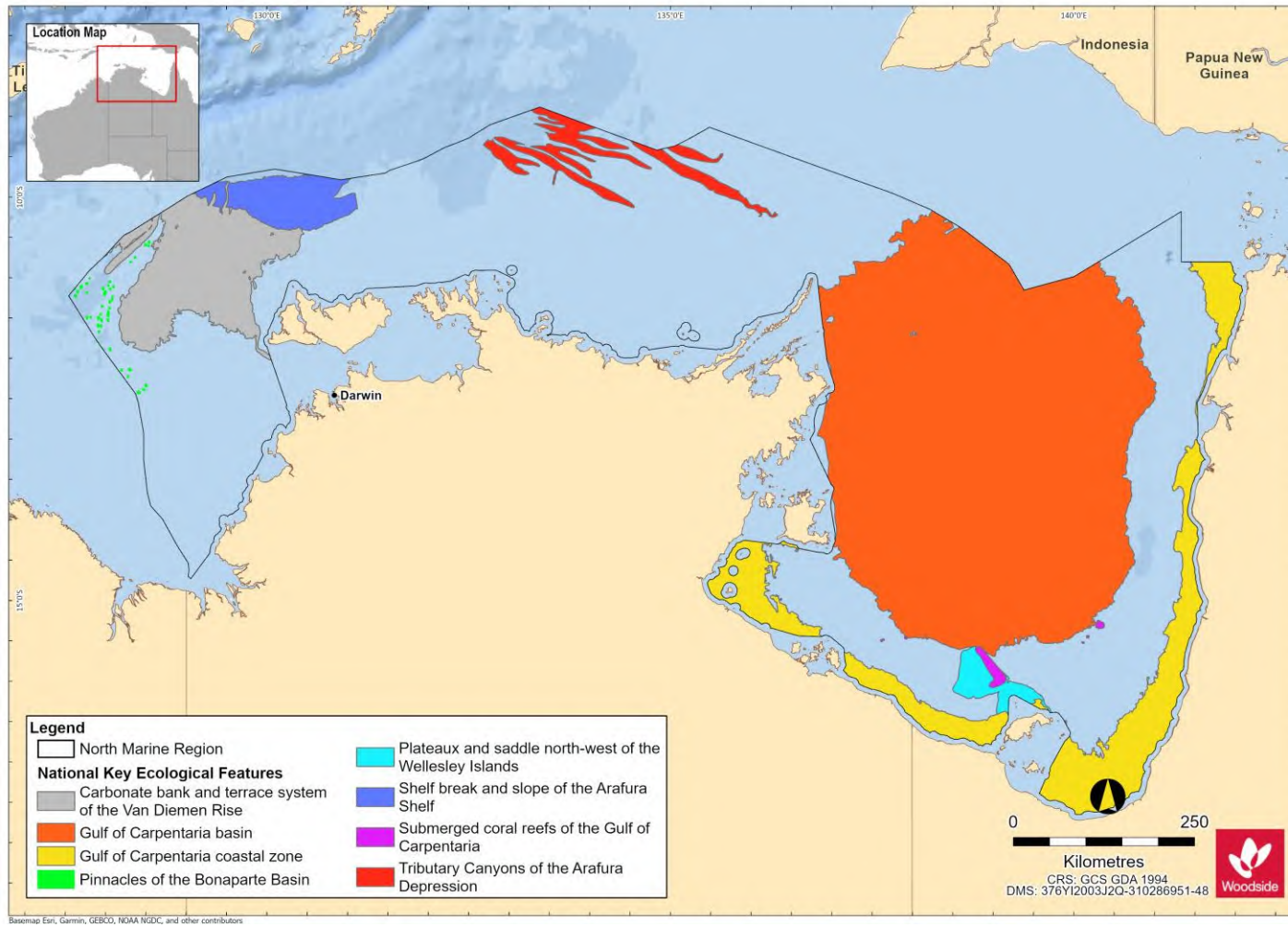


Figure 9-3. Key Ecological Features (KEFs) within the NMR

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10. PROTECTED AREAS

10.1 Regional Context

Protected areas included World Heritage Properties, National Heritage Places, Wetlands of International Importance, Australian Marine Parks, State Marine Parks and Reserves, Threatened Ecological Communities and the Australian Whale Sanctuary. The PMST Reports (**Appendix A**) shows that there are twenty-nine protected areas found in the NWMR, eighteen in the SWMR and nine in the NMR.

Table 10-1, **Table 10-2** and **Table 10-3** outline the protected areas of each of the marine regions NWMR, SWMR and NMR, respectively.

10.2 World Heritage Properties

Properties nominated for World Heritage listing are inscribed on the list only after they have been carefully assessed as representing the best examples of the world's cultural and natural heritage. Only World Heritage listings classed as natural are discussed in this section. World Heritage sites classed as cultural are discussed in **Section 11**.

The list of Australia's World Heritage Properties and the PMST Reports (**Appendix A**) show two World Heritage Properties within the NWMR (**Table 10-1**), no World Heritage Properties within the SWMR (**Table 10-2**), and though not reported in the NMR PMST Report, Kakadu National Park and World Heritage Area is included in **Table 10-3**.

10.3 National and Commonwealth Heritage Places - Natural

The National Heritage List is Australia's list of natural, historic, and Indigenous places of outstanding significance to the nation. The National Heritage List Spatial Database describes the place name, class (Indigenous, natural, historic), and status. Commonwealth Heritage Places are a collection of sites recognised for their Indigenous, historical and/or natural values which are owned or controlled by the Australian Government.

Only National and Commonwealth Heritage Places classed as natural are discussed in this section. Heritage Places classed as indigenous or historic are discussed in **Section 11**.

A search of the National Heritage List Spatial Database and the PMST Reports (**Appendix A**) identified three natural National Heritage Places in the NWMR (**Table 10-1**), three in the SWMR (**Table 10-2**) and for the NMR, Kakadu National Park (not included in the PMST report) is included in **Table 10-3**.

A search of the Commonwealth Heritage List identified four natural commonwealth heritage places within the NWMR (**Table 10-1**).

10.4 Wetlands of International Importance (listed under the Ramsar Convention)

Australia has 65 Ramsar wetlands that cover >8.3 million ha. Ramsar wetlands are those that are representative, rare, or unique wetlands, or that are important for conserving biological diversity.

The List of Wetlands of International Importance held under the Ramsar Convention and the PMST Reports (**Appendix A**) identified four Ramsar Sites with coastal features within the NWMR (**Table 10-1**), four in the SWMR (**Table 10-2**) and two for the New Territory, included for the NMR (**Table 10-3**).

10.5 Australian Marine Parks

Australian Marine Parks (AMPs), proclaimed under the EPBC Act in 2007 and 2013, are located in Commonwealth waters that start at the outer edge of State and Territory waters, generally three

nautical miles (~5.5 km) from the shore, and extend to the outer boundary of Australia's EEZ, 200 nm (~370 km) from the shore.

PMST Reports (**Appendix A**) show sixteen AMPs within the NWMR (**Table 10-1**), ten within the SWMR (**Table 10-2**) and eight within the NMR (**Table 10-3**).

10.6 Threatened Ecological Communities

No Threatened Ecological Communities (TECs) as listed under the EPBC Act are known to occur within the marine waters of the NWMR, SWMR or NMR as indicated by the PMST Reports (**Appendix A**).

10.7 Australian Whale Sanctuary

The Australian Whale Sanctuary has been established to protect all whales and dolphins found in Australian waters. Under the EPBC Act all cetaceans (whales, dolphins and porpoises) are protected in Australian waters.

The Australian Whale Sanctuary includes all Commonwealth waters from the three nautical mile State/Territory waters limit out to the boundary of the EEZ (i.e. out to 200 nm and further in some places). Within the Sanctuary it is an offence to kill, injure or interfere with a cetacean. Severe penalties apply to anyone convicted of such offences.

10.8 State Marine Parks and Reserves

State Marine Parks and Reserves, proclaimed under the *Conservation and Land Management Act 1984* (CALM Act), are located in State waters and vested in the WA Conservation and Parks Commission. State Marine Parks and Reserves of Western Australia have been considered, with 14 occurring in the NWMR (**Table 10-1**) and six occurring in the SWMR (**Table 10-2**).

10.9 Summary of Protected Areas within the NWMR

Table 10-1 Protected Areas within the NWMR

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
World Heritage Properties						
Shark Bay World Heritage Property	-	-	✓		The Shark Bay World Heritage Property is adjacent to the Shark Bay AMP and was included on the World Heritage List in 1991.	Universal values of the Shark Bay World Heritage Property include large and diverse seagrass beds, stromatolites and populations of dugong and threatened species. Inscribed under Natural Criteria vii, viii, ix and x.
The Ningaloo Coast World Heritage Property	-	-	✓		The Ningaloo Coast World Heritage Property lies within the Ningaloo AMP and was included on the World Heritage List in 2011.	Universal values of the Ningaloo Coast World Heritage Property include high marine species diversity and abundance; in particular, Ningaloo Reef supports both tropical and temperate marine reptiles and mammals. Inscribed under Natural Criteria vii and x.
National Heritage Places - Natural						
Shark Bay	-	-	✓		The Shark Bay National Heritage Place consists of the same area included in the Shark Bay World Heritage Property (refer above) and was established on the National Heritage List in 2007.	The national heritage place has a number of exceptional natural features, including one of the largest and most diverse seagrass beds in the world, colonies of stromatolites and rich marine life including a large population of dugongs, and also provides a refuge for a number of other globally threatened species. Shark Bay meets the national heritage listing criteria a, b, c, d, e, f, g, h and i.
The Ningaloo Coast	-	-	✓		The Ningaloo Coast National Heritage Place consists of the same area included in the Ningaloo	The Ningaloo Coast contains one of the best developed near-shore reefs in the world, being home to rugged limestone peninsulas, spectacular coral and sponge gardens and the whale shark.

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					Coast World Heritage Property (refer above) and was established on the National Heritage List in 2010.	The Ningaloo Coast meets the national heritage listing criteria a, b, c, d, and f.
The West Kimberley	✓	✓	-		The West Kimberley National Heritage Place covers an area of around 192,000 km ² located in the north-west of Australia from Broome to Wyndham, and was established on the National Heritage List in 2011.	The Kimberley plateau, north-western coastline and northern rivers of the West Kimberley provide a vital refuge for many native plants and animals that are found nowhere else or which have disappeared from much of the rest of Australia. In addition, Roebuck Bay is internationally recognised as one of Australia's most significant sites for migratory wading birds. The national heritage place also contains a remarkable history of Aboriginal occupation, with many places of indigenous sacred value. The West Kimberley meets the national heritage listing criteria a, b, c, d, e, f, g, h and i.
Commonwealth Heritage Places - Natural						
Mermaid Reef – Rowley Shoals	-	✓	-	N/A	The Mermaid Reef – Rowley Shoals Commonwealth Heritage Place is located within the boundary of the Mermaid Reef Marine National Nature Reserve. The site was listed as a Commonwealth Heritage Place in 2004.	The Mermaid Reef-Rowley Shoals Commonwealth Heritage Place is regionally important for the diversity of its fauna and together with Clerke and Imperieuse reefs, has biogeographical significance due to the presence of species which are at, or close to, the limits of their geographic ranges, including fishes known previously only from Indonesian waters. Rowley Shoals is important for benchmark studies as one of the few places off the north-west coast of Western Australia which have been the site of major biological collection trips by the WA Museum.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Ashmore Reef National Nature Reserve	✓	-	-		The Ashmore Reef Commonwealth Heritage Place is located within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage Place in 2004.	Ashmore Reef has major significance as a staging point for wading birds migrating between Australia and the Northern Hemisphere and supports high concentrations of breeding seabirds, many of which are nomadic and typically breed on small isolated islands. Ashmore Reef is an important scientific reference area for migratory seabirds, sea snakes and marine invertebrates. The Ashmore Reef Commonwealth Heritage Place is significant for its history of human occupation and use. The island is believed to have been visited by Indonesian fisherman since the early eighteenth century. The islands were used both for fishing and as a staging point for voyages to the southern reefs off Australia's coast.
Scott Reef and Surrounds – Commonwealth Area	✓	-	-		Scott Reef and Surrounds Commonwealth Heritage Place is located within the Western Australian Coastal Waters surrounding North and South Scott Reef. The site was listed as a Commonwealth Heritage Place in 2004.	The Scott Reef and Surrounds Commonwealth Heritage Place is regionally important for the diversity of its fauna and has biogeographical significance due to the presence of species which are at, or close to, the limits of their geographic ranges, including fish known previously only from Indonesian waters. Scott Reef is recognised as important for scientific research and benchmark studies due to its age, the extensive documentation of its geophysical and physical environmental characteristics and its use as a site of major biological collection trips and surveys by the WA Museum and the Australian Institute of Marine Science.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Ningaloo Marine Area – Commonwealth Waters	-	-	✓		The Ningaloo Marine Area Commonwealth Heritage Place is located within the Commonwealth waters of the Ningaloo Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage Place in 2004.	The Ningaloo Marine Area Commonwealth Heritage Place provides a migratory pathway for humpback whales and foraging habitat for whale sharks. The place is an important breeding area for billfish and manta ray. The Ningaloo Marine Area provides opportunities for scientific research relating to aspects of the area's unique features including tourism (marine ecology, whales, turtles, whale sharks, fish and oceanography).
Wetlands of International Importance (Ramsar)						
Ashmore Reef National Nature Reserve	✓	-	-	Ramsar	The Ashmore Reef Ramsar site is located within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed under the Ramsar Convention in 2002.	Ashmore Reef Ramsar site supports internationally significant populations of seabirds and shorebirds, is important for turtles (green, hawksbill and loggerhead) and dugong, and has the highest diversity of hermatypic (reef-building) corals on the WA coast. It is known for its abundance and diversity of sea snakes. However, since 1998 populations of sea snakes at Ashmore Reef have been in decline.
Eighty Mile Beach	-	✓	-	Ramsar	The Eighty Mile Beach Ramsar site covers an area of 1250 km ² , located along a long section of the Western Australian coastline adjacent to the Eighty Mile Beach AMP (refer below).	The Eighty Mile Beach Ramsar site includes saltmarsh and a raised peat bog more than 7000 years old. The site contains the most important wetland for waders in north-western Australia, supporting up to 336,000 birds, and is especially important as a land fall for waders migrating south for the austral summer.
Roebuck Bay	-	✓	-	Ramsar	The Roebuck Bay Ramsar site covers an area of 550	The Roebuck Bay Ramsar site is recognised as one of the most important areas for migratory shorebirds in Australia.

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					km ² , located south of Broome and adjacent to the Roebuck AMP (refer below).	The site regularly supports over 100,000 waterbirds, with numbers being highest in the austral spring when migrant species breeding in the Palearctic stop to feed during migration.
Ord River Floodplain	✓			Ramsar	The Ord River Floodplain Ramsar Site is in the East Kimberley region and encompasses an extensive system of river, seasonal creek, tidal mudflat, and floodplain wetlands. The Ramsar Site is a nursery, feeding and/or breeding ground for migratory birds, waterbirds, fish, crabs, prawns, and crocodiles.	The site represents the best example of wetlands associated with the floodplain and estuary of a tropical river system in the Tanami-Timor Sea Coast Bioregion in the Kimberley. In addition, the False Mouths of the Ord are the most extensive mudflat and tidal waterway complex in Western Australia.
Wetlands of National Importance (DAWE, 2019)						
Ashmore Reef	✓	-	-		Ashmore Reef is a shelf-edge platform reef located among the Sahul Banks of north-western Australia. It covers an area of 583 km ² and consists of three islets surrounded by intertidal reef and sand flats.	These islets are major seabird nesting sites with 20 breeding species recorded to date. The total bird population has been estimated to exceed 100,000 during the peak breeding season. The marine reserve also has the highest diversity of marine fauna of the reefs on the NWS and differs from other reefs and coastal areas in the region. The area meets criteria 1, 3, 4 and 5 for inclusion on the Directory of Important Wetlands in Australia.
Mermaid Reef	-	✓	-		Mermaid Reef Marine Park covers an area of around 540 km ² , located ~280 km west north-west of Broome, and is the most north-easterly atoll of the Rowley Shoals.	The reefs of the Mermaid Reef Marine Park have biogeographic value due to the presence of species that are at or close to the limit of their distribution. The coral communities are one of the special values of Mermaid Reef. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia.

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	Browse	NWS/S	NW Cape			
Exmouth Gulf East	-	-	✓		Exmouth Gulf East covers an area of 800 km ² and includes wetlands in the eastern part of Exmouth Gulf, from Giralia Bay; to Urala Creek, Locker Point.	The Exmouth Gulf East is an outstanding example of tidal wetland systems of low coast of north-west Australia, with well- developed tidal creeks, extensive mangrove swamps and broad saline coastal flats. The site is one of the major population centres for dugong in WA and its seagrass beds and extensive mangroves provide nursery and feeding areas for marine fishes and crustaceans in the Gulf. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia.
Hamelin Pool	-	-	✓		Hamelin Pool covers an area of 900 km ² in the far south-east part of Shark Bay.	Hamelin Pool is an outstanding example of a hypersaline marine embayment and supports extensive microbialite (subtidal stromatolite) formations, which are the most abundant and diverse examples of growing marine microbialites in the world. The area meets criteria 1 and 6 for inclusion on the Directory of Important Wetlands in Australia.
Shark Bay East	-	-	✓		Shark Bay East covers a 250 km area of coastline comprising tidal wetlands, and marine waters less than 6 m deep at low tide, in the east arm of Shark Bay.	The site is an outstanding example of a very large, shallow marine embayment, with particularly extensive occurrence of seagrass beds and substantial areas of intertidal mud/sandflats and mangrove swamp. The site supports what is probably the world's largest discrete population of dugong; it is also a major nursery and/or feeding area for turtles, rays, sharks, other fishes, prawns and other marine fauna; and is a major migration stop-over area for shorebirds. The area meets criteria 1, 2, 3, 4, 5 and 6 for inclusion on the Directory of Important Wetlands in Australia.
Australian Marine Parks (DNP, 2018a)						
Abrolhos Marine Park	-	-	✓	II, IV, VI	Abrolhos Marine Park is located adjacent to the WA Houtman Abrolhos Islands, covering a large offshore	Abrolhos Marine Park is significant because it contains habitats, species and ecological communities associated with four bioregions:

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					<p>area of 88,060 km² extending from the WA State waters boundary to the edge of Australia's EEZ.</p> <p>The Abrolhos Marine Park is located within both the NWMR and SWMR.</p>	<ul style="list-style-type: none"> • Central Western Province • Central Western Shelf Province • Central Western Transition • South-west Shelf Transition <p>It includes seven KEFs: Commonwealth marine environment surrounding the Houtman Abrolhos Islands; Demersal slope and associated fish communities of the Central Western Province; Mesoscale eddies; Perth Canyon and adjacent shelf break, and other west-coast canyons; Western rock lobster; Ancient coastline at 90-120 m depth; and Wallaby Saddle.</p> <p>The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging and breeding habitat for seabirds, foraging habitat for Australian sea lions and white sharks, and a migratory pathway for humpback and pygmy blue whales. The AMP is adjacent to the northernmost Australian sea lion breeding colony in Australia on the Houtman Abrolhos Islands.</p>
Carnarvon Canyon Marine Park	-	-	✓	IV	Carnarvon Canyon Marine Park covers an area of 6177 km ² , located ~300 km north-west of Carnarvon.	Carnarvon Canyon Marine Park is significant because it contains habitats, species and ecological communities associated with the Central Western Transition bioregion. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. There is limited information about species' use of this AMP.
Shark Bay Marine Park	-	-	✓	VI	Shark Bay Marine Park covers an area of 7443 km ² located ~60 km offshore of Carnarvon, adjacent to the Shark Bay World Heritage Property and National Heritage Place.	Shark Bay Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: <ul style="list-style-type: none"> • Central Western Shelf Province • Central Western Transition. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
						the EPBC Act. BIAs within the AMP include breeding habitat for seabirds, interesting habitat for marine turtles, and a migratory pathway for humpback whales.
Gascoyne Marine Park	-	-	✓	II, IV, VI	Gascoyne Marine Park covers an area of 81,766 km ² , located ~20 km off the west coast of the Cape Range Peninsula, adjacent to the Ningaloo Marine Park.	Gascoyne Marine Park is significant because it contains habitats, species and ecological communities associated with three bioregions: <ul style="list-style-type: none"> • Central Western Shelf Transition • Central Western Transition • Northwest Province. It includes four KEFs: Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; Commonwealth waters adjacent to Ningaloo Reef; Continental slope demersal fish communities; and Exmouth Plateau. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds, interesting habitat for marine turtles, a migratory pathway for humpback whales, and foraging habitat and migratory pathway for pygmy blue whales.
Ningaloo Marine Park	-	-	✓	II, IV	Ningaloo Marine Park covers an area of 2435 km ² , stretching ~300 km along the west coast of the Cape Range Peninsula, and is adjacent to the WA Ningaloo Marine Park and Gascoyne Marine Park.	Ningaloo Marine Park is significant because it contains habitats, species and ecological communities associated with four bioregions: <ul style="list-style-type: none"> • Central Western Shelf Transition • Central Western Transition • Northwest Province • Northwest Shelf Province. It includes three KEFs: Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; Commonwealth waters adjacent to Ningaloo Reef; and Continental slope demersal fish communities. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
						or foraging habitat for seabirds, interesting habitat for marine turtles, a migratory pathway for humpback whales, foraging habitat and migratory pathway for pygmy blue whales, breeding, calving, foraging and nursing habitat for dugong and foraging habitat for whale sharks.
Montebello Marine Park	-	✓	-	VI	Montebello Marine Park covers an area of 3413 km ² , located offshore of Barrow Island and 80 km west of Dampier extending from the WA State waters boundary, and is adjacent to the WA Barrow Island and Montebello Islands Marine Parks.	Montebello Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province bioregion. It includes one KEF: Ancient coastline at 125 m depth contour. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds, interesting, foraging, mating, and nesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for whale sharks.
Dampier Marine Park	-	✓	-	II, IV, VI	Dampier Marine Park covers an area of 1252 km ² , located ~10 km north-east of Cape Lambert and 40 km from Dampier extending from the WA State waters boundary.	Dampier Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province bioregion. The AMP provides protection for offshore shelf habitats adjacent to the Dampier Archipelago, and the area between Dampier and Port Hedland, and is a hotspot for sponge biodiversity. The AMP supports a range of species including those listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging habitat for seabirds, interesting habitat for marine turtles and a migratory pathway for humpback whales.
Eighty Mile Beach Marine Park	-	✓	-	VI	Eighty Mile Beach Marine Park covers an area of 10,785 km ² , located ~74 km north-east of Port Hedland, adjacent to the	Eighty Mile Beach Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province and consists of shallow shelf habitats, including terrace, banks and shoals.

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					WA Eighty Mile Beach Marine Park.	The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding, foraging and resting habitat for seabirds, interesting and nesting habitat for marine turtles, foraging, nursing and pupping habitat for sawfishes and a migratory pathway for humpback whales.
Argo – Rowley Terrace Marine Park	✓	✓	-	II, VI, VI (Trawl)	Argo-Rowley Terrace Marine Park covers an area of 146,003 km ² , located ~270 km north-west of Broome, and extends to the limit of Australia's EEZ. The AMP is adjacent to the Mermaid Reef Marine Park and the WA Rowley Shoals Marine Park.	Argo-Rowley Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: <ul style="list-style-type: none"> • Northwest Transition • Timor Province. It includes two KEFs: Canyons linking the Argo Abyssal Plain with the Scott Plateau; and Mermaid Reef and Commonwealth waters surrounding Rowley Shoals. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include resting and breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.
Mermaid Reef Marine Park	-	✓	-	II	Mermaid Reef Marine Park covers an area of 540 km ² , located ~280 km north-west of Broome, adjacent to the Argo-Rowley Terrace Marine Park and ~13 km from the WA Rowley Shoals Marine Park. Mermaid Reef is one of three reefs forming the Rowley Shoals. The other two are Clerke Reef and Imperieuse Reef, to the	Mermaid Reef Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Transition. It includes one KEF: Mermaid Reef and Commonwealth waters surrounding Rowley Shoals. The Rowley Shoals have been described as the best geological examples of shelf atolls in Australian waters. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					south-west of the AMP, which are included in the WA Rowley Shoals Marine Park.	
Roebuck Marine Park	-	✓	-	VI	Roebuck Marine Park covers an area of 304 km ² , located ~12 km offshore of Broome, and is adjacent to the WA Yawuru Nagulagun/Roebuck Bay Marine Park.	Roebuck Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province and consists entirely of shallow continental shelf habitat. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and resting habitat for seabirds, foraging and internesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for dugong.
Kimberley Marine Park	✓	✓	-	II, IV, VI	Kimberley Marine Park covers an area of 74,469 km ² , located ~100 km north of Broome, extending from the WA State waters boundary north from the Lacepede Islands to the Holothuria Banks offshore from Cape Bougainville.	Kimberley Marine Park is significant because it includes habitats, species and ecological communities associated with three bioregions: <ul style="list-style-type: none"> • Northwest Shelf Province • Northwest Shelf Transition • Timor Province. It includes two KEFs: Ancient coastline at 125 m depth contour; and Continental slope demersal fish communities. The AMP supports a range of species, including protected species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include 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 and foraging habitat for whale sharks.
Ashmore Reef Marine Park	✓	-	-	Ia, IV	Ashmore Reef Marine Park covers an area of 583 km ² , located ~630 km north of	Ashmore Reef Marine Park is significant because it includes habitats, species and ecological communities associated with the Timor Province. It includes two KEFs:

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					Broome and 110 km south of the Indonesian island of Roti. The AMP is located in Australia's External Territory of Ashmore and Cartier Islands and is within an area subject to a Memorandum of Understanding (MoU) between Indonesia and Australia, known as the MoU Box.	Ashmore Reef and Cartier Island and surrounding Commonwealth waters; and Continental slope demersal fish communities. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding, foraging and resting habitat for seabirds, resting and foraging habitat for migratory shorebirds, foraging, mating, nesting and internesting habitat for marine turtles, foraging habitat for dugong, and a migratory pathway for pygmy blue whales.
Cartier Island Marine Park	✓	-	-	Ia	Cartier Island Marine Park covers an area of 172 km ² , located ~45 km south-east of Ashmore Reef Marine Park and 610 km north of Broome. It is also located in Australia's External Territory of Ashmore and Cartier Islands and within an area subject to an MoU between Indonesia and Australia, known as the MoU Box.	Cartier Island Marine Park is significant because it includes habitats, species and ecological communities associated with the Timor Province. It includes two key ecological features: Ashmore Reef and Cartier Island and surrounding Commonwealth waters and continental slope demersal fish communities. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging habitat for seabirds, internesting, nesting and foraging habitat for marine turtles and foraging habitat for whale sharks. The AMP is also internationally significant for its abundance and diversity of sea snakes, some of which are listed species under the EPBC Act.
Joseph Bonaparte Gulf Marine Park	✓	-	-	VI	Joseph Bonaparte Gulf Marine Park covers an area of 8597 km ² and is located ~15 km west of Wadeye, NT, and ~90 km north of Wyndham, WA, in the Joseph Bonaparte Gulf.	Joseph Bonaparte Gulf Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Transition bioregion. It includes one KEF: Carbonate bank and terrace system of the Sahul Shelf. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					It is adjacent to the WA North Kimberley Marine Park. The Joseph Bonaparte Gulf Marine Park is located within both the NWMR and NMR.	the EPBC Act. BIAs within the AMP include foraging habitat for marine turtles and the Australian snubfin dolphin.
Oceanic Shoals Marine Park	✓	-	-	II, IV, VI	Oceanic Shoals Marine Park covers an area of 71,743 km ² and is located west of the Tiwi Islands, ~155 km north-west of Darwin, NT and 305 km north of Wyndham, WA. The Oceanic Shoals Marine Park is located within both the NWMR and NMR.	Oceanic Shoals Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Transition bioregion. It contains four KEFs: Carbonate bank and terrace systems of the Van Diemen Rise; Carbonate bank and terrace systems of the Sahul Shelf; Pinnacles of the Bonaparte Basin; and Shelf break and slope of the Arafura Shelf. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging and interesting habitat for marine turtles.
State Marine Parks and Reserves						
North Kimberley Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	The North Kimberley Marine Park covers approx. 18,450 km ² with its south-western boundary located ~270 km north-east of Derby.	The coral reefs of the north Kimberley have the greatest diversity in Western Australia and are some of the most pristine and remarkable reefs in the world. The park surrounds more than 1000 islands and is home to listed species such as dugongs, marine turtles, and sawfishes (DPAW, 2016a).
Lalang-garram / Horizontal Falls Marine Park and North Lalang-garram Marine Park (jointly managed)	✓	-	-	Sanctuary, Special Purpose and General Use Zones	The Lalang-garram / Horizontal Falls Marine Park covers ~3530 km ² from Talbot Bay in the west and Glenelg River in the east. The North Lalang-garram Marine Park covers ~1100	The Lalang-garram / Horizontal Falls Marine Park's most celebrated attraction is created by massive tides of up to 10 m and narrow gaps in two parallel tongues of land meaning the tide falls faster than the water can escape, producing 'horizontal falls'. There are also islands with fringing coral reefs and mangrove-lined creeks and bays. The North Lalang-garram Marine Park has a number of islands fringed with coral reef and has been identified as an

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					km ² between Camden Sound and North Kimberley Marine Parks.	ecological hotspot and supports more than 1% of the world's population of brown boobies, with up to 2000 breeding pairs. About 500 pairs of crested terns also nest on the island (DPAW, 2016b).
Lalang-garram / Camden Sound Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	Lalang-garram / Camden Sound Marine Park covers 7050 km ² located about 150 km north of Derby.	The Lalang-garram / Camden Sound Marine Park is the most important humpback whale nursery in the Southern Hemisphere. It also features the spectacular coastal Montgomery Reef. The marine park is home to six species of threatened marine turtle. Australian snubfin and Indo-Pacific humpback dolphins, dugongs, saltwater crocodiles, and several species of sawfish (DPAW, 2013).
Rowley Shoals Marine Park	-	✓	-	Sanctuary, Recreation and General Use Zones	The Rowley Shoals comprise of three reef systems, Mermaid Reef, Clerke Reef and Imperieuse Reef, all 30-40 km apart. These reef systems are located ~300 km west north-west of Broome.	The three coral atolls of the Rowley Shoals Marine Park comprise of shallow lagoons inhabited by diverse corals and abundant marine life, each covering around 80 km ² at the edge of Australia's continental shelf. Further offshore, the seafloor slopes away to the abyssal plain, some 6000 m below. Undersea canyons slice the slope; these features are commonly associated with diverse communities of deep-water corals and sponges and create localised upwellings that aggregate pelagic species like tunas and billfish (DEC, 2007a).
Yawuru Nagulagun / Roebuck Bay Marine Park	-	✓	-	Special Purpose Zone	Yawuru Nagulagun / Roebuck Bay Marine Park is a series of intertidal flats lying on the coast to the south-east of Broome.	Roebuck Bay is an internationally significant wetland and one of the most important feeding grounds for migratory shorebirds in Australia. Australian snubfin and Australian humpback dolphins frequent the waters and humpback whales pass through on their annual migration. Flatback turtles nest on the shores and are found in the bay's waters with other sea turtle species. Seagrass and macroalgae communities provide food for protected species such as the dugong and flatback turtle (DPAW, 2016c).
Eighty Mile Beach Marine Park	-	✓	-	Sanctuary, Recreation, Special	Eighty Mile Beach Marine Park covers ~2000 km ² stretching across 220km of	Eighty Mile Beach Marine Park is one of the world's most important feeding grounds for small wading birds that migrate to the area each summer, travelling from countries

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	Browse	NWS/S	NW Cape			
				Purpose and General Use Zones	coastline between Port Hedland and Broome.	thousands of kilometres away. The marine park is a major nesting area for flatback turtles which are found only in northern Australia. Sawfishes, dugongs, dolphins and millions of invertebrates inhabit the sand and mud flats, seagrass meadows, coral reefs and mangroves (DPAW, 2014).
Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area (jointly managed)	-	✓	-	Sanctuary, Recreation, General Use and Special Purpose Zones	The Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area are located off the north-west coast of WA, ~1600 km north of Perth, and cover areas of ~583 km ² , 42 km ² and 1,147 km ² , respectively.	The Montebello/Barrow islands marine conservation reserves have very complex seabed and island topography, resulting in a myriad of different habitats subtidal coral reefs, macroalgal and seagrass communities, subtidal soft-bottom communities, rocky shores and intertidal reef platforms, which support a rich diversity of invertebrates and finfish. The reserves are important breeding areas for several species of marine turtles and seabirds, which use the undisturbed sandy beaches for nesting. Humpback whales migrate through the reserves and dugongs occur in the shallow warm waters (DEC, 2007b).
Ningaloo Marine Park and Muiron Islands Marine Management Area (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	The Ningaloo Marine Park and Muiron Islands Marine Management Area are located off the North-west Cape of WA, ~1200 km north of Perth, and cover areas of ~2633 km ² and 286 km ² , respectively.	Ningaloo Reef is the largest fringing coral reef in Australia. Temperate and tropical currents converge in the Ningaloo region resulting in highly diverse marine life including spectacular coral reefs, abundant fishes and species with special conservation significance such as turtles, whale sharks, dugongs, whales and dolphins. The region has diverse marine communities including mangroves, algae and filter-feeding communities and has high water quality. These values contribute to the Ningaloo Marine Park being regarded as the State's premier marine conservation icon. The Muiron Islands Marine Management Area is also important, containing a very diverse marine environment, with coral reefs, filter-feeding communities and macroalgal beds. In addition, the Islands are important seabird and green turtle nesting areas. (CALM, 2005a).

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Shark Bay Marine Park and Hamelin Pool Marine Nature Reserve (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	The Shark Bay Marine Park and Hamelin Pool Marine Nature Reserves are located 400 km north of Geraldton, covering areas of ~7487 km ² and 1270 km ² , respectively.	Seagrass covers over 4000 km ² of the Shark Bay Marine Park, with 12 different species making it one of the most diverse seagrass assemblages in the world. Dugongs regularly use this habitat, with the bay containing one of the largest dugong populations in the world. Humpback whales also use the bay as a staging post in their migration along the coast. Green and loggerhead turtles occur in the bay with Dirk Hartog Island providing the most important nesting site for loggerheads in Western Australia. Hamelin Pool contains the most diverse and abundant examples of stromatolites found in the world. These are living representatives of stromatolites that existed some 3500 million years ago (CALM, 1996).

*Conservation objectives for IUCN categories include:

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: national Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

VI: Protected area with sustainable use of natural resources – allow human use but prohibits large scale development.

IUCN categories for the marine park are provided and, in brackets, the IUCN categories for specific zones within each Marine Park as assigned under the North-west Marine Parks Network Management Plan 2018 (DNP, 2018a)

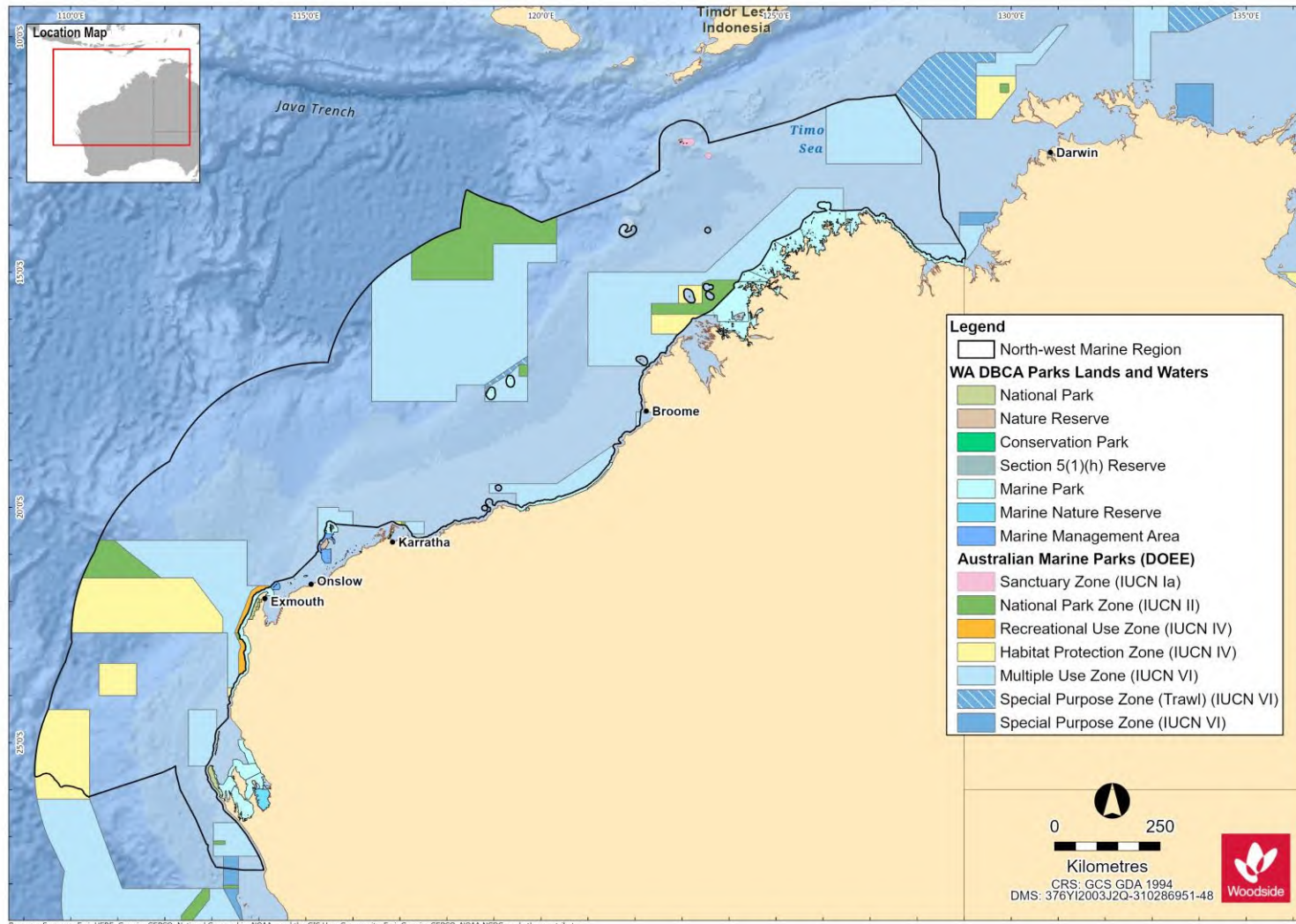


Figure 10-1 Commonwealth and State Marine Protected Areas for the NWMR

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10.10 Summary of Protected Areas within the SWMR

Table 10-2 Protected Areas within the SWMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
World Heritage Properties			
N/A			
National Heritage Places - Natural			
N/A			
Commonwealth Heritage Places - Natural			
N/A			
Wetlands of International Importance (Ramsar)			
Beecher Point Wetlands	Ramsar	Beecher Point Wetlands is a system of about sixty small wetlands located near Rockingham in south-west WA, covering an area of around 7 km ² . The site was listed under the Ramsar Convention in 2001.	The wetlands support sedgeland, herbland, grassland, open-shrubland and low open-forest. The sedgeland that occurs within the linear wetland depressions of the Ramsar site are a nationally listed TEC. At least four species of amphibians and twenty-one (21) species of reptiles have been recorded on the site. The site also supports the southern brown bandicoot. The site meets criteria 1 and 2 of the Ramsar Convention.
Forrestdale and Thomsons Lakes	Ramsar	Forrestdale Lake is located in the City of Armadale and Thomsons Lake is located in the City of Cockburn both of which lie within the southern Perth metropolitan area, in Western Australia. The site was listed under the Ramsar Convention in 1990.	The lakes are surrounded by medium density urban development and some agricultural land. The sediments of Thomsons Lake are between 30,000 and 40,000 years old, which are the oldest lake sediments discovered in WA to date. These lakes are the best remaining examples of brackish, seasonal lakes with extensive fringing sedgeland, typical of the Swan Coastal Plain. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention.
Peel-Yalgorup System	Ramsar	Peel-Yalgorup System, located adjacent to the City of Mandurah in	Peel-Yalgorup System Ramsar site is the most important area for waterbirds in south-western Australia. It supports a large number of waterbirds, and a

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		WA, is a large and diverse system of shallow estuaries, coastal saline lakes and freshwater marshes. The site was listed under the Ramsar Convention in 1990.	wide variety of waterbird species. It also supports a wide variety of invertebrates, and estuarine and marine fish. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention.
Vasse-wonnerup system	Ramsar	Vasse-Wonnerup System Ramsar wetland is situated in the Perth Basin, south-western WA. The site was listed under the Ramsar Convention in 1990.	Vasse-Wonnerup System is an extensive, shallow, nutrient-enriched wetland system of highly varied salinities. Large areas of the wetland dry out in late summer. Vasse-Wonnerup System supports tens of thousands of resident and migrant waterbirds of a wide variety of species. More than 80 species of waterbird have been recorded in the System such as red-necked avocets and black-winged stilts, wood sandpiper, sharp-tailed sandpiper, long-toed stint, curlew sandpiper and common greenshank. Thirteen waterbird species are also known to breed at the Ramsar site, including the largest regular breeding colony of black swans in south-western Australia. The site meets criteria 5 and 6 of the Ramsar Convention.
Wetlands of National Importance (DAWE, 2019)			
Rottneest Island Lakes		The Rottneest Island Lakes site is the cluster of 18 lakes and swamps on the north-east part of Rottneest Island.	An outstanding example of a series of lakes/swamps of varied depth and salinity located on an offshore island; the only island among 200 plus in WA exceeding 10 ha in area, that has a salt-lake complex; the only known example of seasonally meromictic lakes in Australia. The area meets criteria 1, 2, 3 and 6 for inclusion on the Directory of Important Wetlands in Australia.
Australian Marine Parks (DNP, 2018b)			
Abrolhos Marine Park	II, IV, VI	The Abrolhos Marine Park is located within both the NWMR and SWMR. Refer Table 10-1 for description and conservation values.	
Bremer Marine Park	II, VI	Bremer Marine Park covers an area of 4472 km ² and is located approximately half-way between Albany and Esperance, offshore from the Fitzgerald River National Park, extending from the WA State waters boundary.	Bremer Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: <ul style="list-style-type: none"> • Southern Province • South-west Shelf Province. It includes two KEFs: Albany Canyon group and adjacent shelf break; and Ancient coastline at 90-120 m depth.

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
			The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions, and white sharks, a migratory pathway for humpback whales, and a significant calving area for southern right whales. The AMP includes canyons—important aggregation areas for killer whales.
Eastern Recherche Marine Park	II, VI	Eastern Recherche Marine Park covers an area of 20,575 km ² and is located ~135 km east of Esperance, adjacent to the Recherche Archipelago, close to the WA Cape Arid National Park.	Eastern Recherche Marine Park is significant because it contains habitats, species and ecological communities associated with three bioregions: <ul style="list-style-type: none"> • South-west Shelf Province • Southern Province • Great Australian Bight Shelf Transition. It includes three KEFs: Mesoscale eddies; Ancient coastline at 90-120 m depth; and Commonwealth marine environment surrounding the Recherche Archipelago. <p>The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right whales.</p>
Geographe Marine Park	II, IV, VI	Geographe Marine Park covers an area of 977 km ² and is located in Geographe Bay, ~8 km west of Bunbury and 8 km north of Busselton, adjacent to the WA Ngari Capes Marine Park.	Geographe Marine Park is significant because it contains habitats, species and ecological communities associated with the South-west Shelf Province bioregion. <p>It includes two KEFs: Commonwealth marine environment within and adjacent to Geographe Bay; and Western rock lobster.</p> <p>The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right whales.</p>
Great Australian Bight Marine Park	II, VI	Great Australian Bight Marine Park covers an area of 45,822 km ² and is located ~12 km south-east of Eucla and 174 km west of Ceduna, adjacent to the SA Far West Coast and Nuyts Archipelago Marine Parks.	Great Australian Bight Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: <ul style="list-style-type: none"> • Great Australian Bight Shelf Transition • Southern Province. <p>It includes three KEFs: Ancient coastline at 90-120 m depth; Benthic invertebrate communities of the eastern Great Australian Bight; and Small pelagic fish of the South-west Marine Region.</p> <p>The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions, white sharks and</p>

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
			pygmy blue and sperm whales, and a calving area, migratory pathway and large aggregation area for southern right whales.
Jurien Marine Park	II, VI	Jurien Marine Park covers an area of 1851 km ² and is located ~148 km north of Perth and 155 km south of Geraldton, adjacent to the WA Jurien Bay Marine Park.	<p>Jurien Marine Park is significant because it includes habitats, species and ecological communities associated with two bioregions:</p> <ul style="list-style-type: none"> • South-west Shelf Transition • Central Western Province. <p>It includes three KEFs: Ancient coastline at 90-120 m depth; Demersal slope and associated fish communities of the Central Western Province; and Western rock lobster</p> <p>The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions and white sharks, and a migratory pathway for humpback and pygmy blue whales.</p>
Perth Canyon Marine Park	II, IV, VI	Perth Canyon Marine Park covers an area of 7409 km ² and is located ~52 km west of Perth and ~19 km west of Rottnest Island.	<p>Perth Canyon Marine Park is significant because it includes habitats, species and ecological communities associated with four bioregions:</p> <ul style="list-style-type: none"> • Central Western Province • South-west Shelf Province • Southwest Transition • South-west Shelf Transition. <p>It includes four KEFs: Perth Canyon and adjacent shelf break, and other west-coast canyons; Demersal slope and associated fish communities of the Central Western Province; Western rock lobster; and Mesoscale eddies.</p> <p>The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Antarctic blue, pygmy blue and sperm whales, a migratory pathway for humpback, Antarctic blue and pygmy blue whales, and a calving buffer area for southern right whales.</p>
South-west Corner Marine Park	II, IV, VI	South-west Corner Marine Park covers an area of 271,833 km ² and is located adjacent to the WA Ngari Capes Marine Park. It covers an extensive offshore area that is closest to WA State waters ~48 km west of Esperance, 73 km west of Albany and 68 km west of Bunbury.	<p>South-west Corner Marine Park is significant because it contains habitats, species and ecological communities associated with three bioregions:</p> <ul style="list-style-type: none"> • Southern Province • South-west Transition • South-west Shelf Province. <p>It includes six KEFs: Albany Canyon group and adjacent shelf break; Cape Mentelle upwelling; Diamantina Fracture Zone; Naturaliste Plateau; Western rock lobster; and Ancient coastline at 90 m-120 m depth.</p>

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
			The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions, white sharks and sperm whales, a migratory pathway for Antarctic blue, pygmy blue and humpback whales, and a calving buffer area for southern right whales.
Twilight Marine Park	II, VI	Twilight Marine Park covers an area of 4641 km ² and is located ~245 km south-west of Eucla and 373 km north-east of Esperance, adjacent to the WA State waters boundary.	Twilight Marine Park is significant because it contains habitats, species and ecological communities associated with the Great Australian Bight Shelf Transition bioregion. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right whales.
Two Rocks Marine Park	II, VI	Two Rocks Marine Park covers an area of 882 km ² and is located ~25 km north-west of Perth, to the north-west of the WA Marmion Marine Park.	Two Rocks Marine Park is significant because it includes habitats, species and ecological communities associated with the South-west Shelf Transition bioregion. It includes three KEFs: Commonwealth marine environment within and adjacent to the west-coast inshore lagoons; Western rock lobster; and Ancient coastline at 90-120 m depth. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds and Australian sea lions, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right whales.
State Marine Parks and Reserves			
Jurien Bay Marine Park	Sanctuary, Special Purpose and General Use Zones.	The Jurien Bay Marine Park is located on the central west coast of WA ~200 km north of Perth and covers an area of 824 km ² .	An extensive limestone reef system parallel to the shore has created a huge shallow lagoon that provides perfect habitat for Australian sea lions, dolphins and a myriad of juvenile fish. Extensive seagrass meadows inside the reef shelter many marine animals such as western rock lobsters, octopus and cuttlefish that make up the diet of young sea lions. The marine park also surrounds dozens of ecologically important islands that contain rare and endangered animals found nowhere else in the world (CALM, 2005b).
Marmion Marine Park	Sanctuary, Recreation and Special Use Zones.	The Marmion Marine Park lies within State waters between Trigg Island and Burns Beach and encompasses a coastal area of ~95 km ² . Marmion	The marine park has a number of sanctuary zones including Little Island, The Lumps and the Boyinaboat Reef protecting a variety of habitats from limestone reefs, seagrass beds and clear shallow lagoons that support a diversity of marine life. In addition, to a general use zone and the Waterman Recreation Area. The marine park contains important habitat for the endemic Australian

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		Marine Park was the State's first marine park, declared in 1987.	sea lion, an array of seabird species migratory whales are regular visitors (CALM, 1992; DPAW, 2016d).
Swan Estuary Marine Park	Special Purpose and Nature Reserve Zones.	Three biologically important areas of Perth's Swan River make up the Swan Estuary Marine Park, including Alfred Cove, Pelican Point and Crawley. These three sites cover a total area of 3.4 km ² .	The sand flats, mud flats and beaches at the three locations of the Swan Estuary Marine Park provide the only remaining significant feeding and resting areas in the Swan Estuary, for trans-equatorial migratory wading and waterbirds. The Park and adjacent reserves also provide habitat for a diverse assemblage of aquatic and terrestrial flora and fauna (CALM, 1999).
Shoalwater Islands Marine Park	Sanctuary, Special Purpose and General Use Zones.	The Shoalwater Islands Marine Park is located adjacent to Rockingham on the south-west coast of WA, ~50 km south of Perth and covers an area of ~66 km ² .	The Shoalwater Islands Marine Park consists of a complex seabed and coastal topography consisting of islands, limestone ridges and reef platforms, protected inshore areas and deeper basins, sandbars and beaches, and is home to five species of cetacean and 14 species of sea and shore bird. The waters of the marine park are also used to access feeding grounds for the little penguin (<i>Eudyptula minor</i>) colony on Penguin Island, which is close to the northernmost limit of the species' range and is the largest known breeding colony in Western Australia (DEC, 2007c).
Ngari Capes Marine Park	Sanctuary, Special Purpose and Recreation Zones.	The Ngari Capes Marine Park is located off the south-west coast of WA, ~250 km south of Perth, covering ~1238 km ² .	The Ngari Capes Marine Park consists of a complex arrangement of sandy bays, high energy limestone and granite reefs bordered by headlands and cliffs and two weathered capes. Coral communities consist of both tropical and temperate species. Cetaceans and pinnipeds are resident in and/or transient through the marine park as well as a diverse range of seabirds and shorebirds (DEC, 2013).
Walpole and Nornalup Inlets Marine Park	Recreation Zone.	The Walpole and Nornalup Inlets Marine Park is located adjacent to the towns of Walpole and Nornalup on the south coast of WA, ~120 km west of Albany, and covers ~14 km ² .	The Walpole and Nornalup Inlets Marine Park consists of a geologically complex lagoonal estuarine system comprising three significant rivers and two connected inlets that are permanently open to the ocean. Approximately 40 marine and estuarine finfish species commonly inhabit the inlet system, as well as a variety of shark and ray species and numerous seabirds and shorebirds. The sandy beaches and shoreline vegetation of the inlet system are of high ecological and social importance to the marine park (DEC, 2009).

*Conservation objectives for IUCN categories include:

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: national Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

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VI: Protected area with sustainable use of natural resources – allow human use but prohibits large scale development.

IUCN categories for the marine park are provided and, in brackets, the IUCN categories for specific zones within each Marine Park as assigned under the South-west Marine Parks Network Management Plan 2018 (DNP, 2018b)

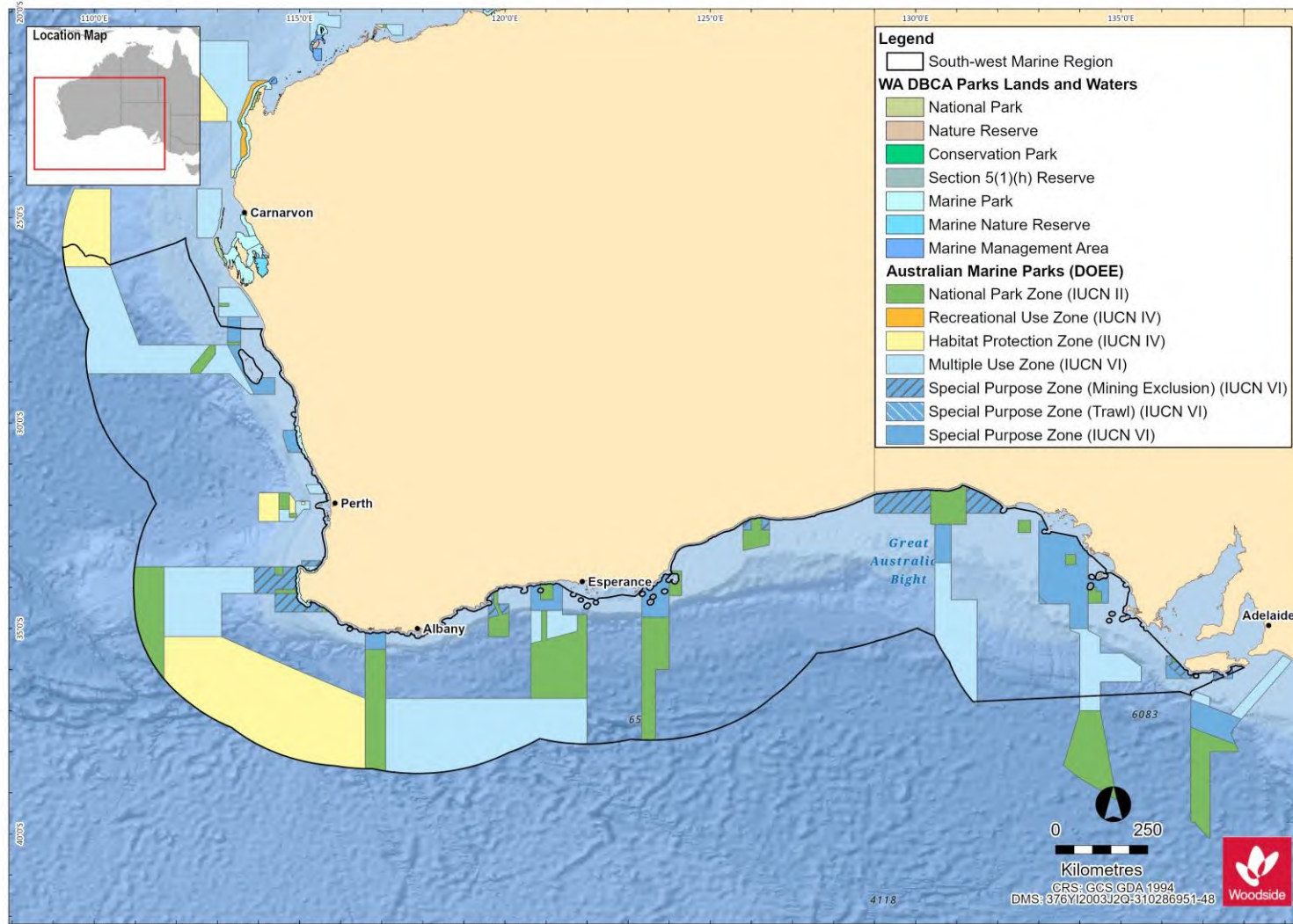


Figure 10-2. Commonwealth and State Marine Protected Areas for the SWMR

10.11 Summary of Protected Areas within the NMR

Table 10-3 Protected Areas within the NMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
World Heritage Properties			
Kakadu National Park		Kakadu National Park is a living landscape with exceptional natural and cultural values. It is the largest National Park in Australia and preserves the greatest variety of ecosystems on the Australian continent including extensive areas of floodplains, mangroves, tidal mudflats, coastal areas and monsoon forests. The park was inscribed the World Heritage list in three stages over 11 years. It is located in tropical north Australia covering a total area of 19,804 square kilometres.	The conservation values reflect the WHA Criterion: (i), (vi), (vii) and (ix): Natural features relate to Criterion (vii) – the remarkable contrast between the internationally recognised Ramsar-listed wetlands and the spectacular rocky escarpment and its outliers and Criterion (ix) – four major river systems of tropical Australia and floodplains that are dynamic environments, shaped by changing sea levels and big floods every wet season. These floodplains illustrate the ecological and geomorphological effects that have accompanied Holocene climate change and sea level rise. Kakadu National Park contains important and significant habitats supporting a diverse range of flora and fauna.
National Heritage Places - Natural			
Kakadu National Park		Refer to World Heritage property description above.	Refer to World Heritage property conservation values above
Commonwealth Heritage Places - Natural			
N/A			
Wetlands of International Importance (Ramsar)			
Kakadu National Park		Australian Ramsar site number 2. The stage 1 and 2 Ramsar sites, established in 1980, 1985 and 1989, respectfully were combined into a single Ramsar site in 2010.	The Kakadu National Park Ramsar site straddles the western edge of the Arnhem Land Plateau encompassing a range of landforms and extensive floodplains. It is a mosaic of contiguous wetlands comprising the catchments of two large river systems, the East and South Alligator rivers and encompasses extensive tidal mudflat areas. It is an internationally important site for migratory shorebirds as part of the EAAF.
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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
Cobourg Peninsula		Australian Ramsar site number 1 established in 1974. This Ramsar site includes freshwater and extensive intertidal areas but excludes subtidal areas. It is in a remote location and there has been minimal human impact on the site.	The wetlands encompassed in the Ramsar site are some of the better protected and near-natural wetlands in the bioregion and there is a diverse array of wetland in a confined area. The site supports important turtle nesting habitat and habitat for coastal dolphin species and is an internationally significant migratory shorebird habitat as part of the EAAF and an important location for seabird breeding colonies.
Wetlands of National Importance (DAWE, 2019)			
Southern Gulf Aggregation		The site is a complex continuous wetland aggregation in the Gulf of Carpentaria, covering an area of ~5460 km ² located 58 km east of Burketown, Queensland.	The Southern Gulf Aggregation is the largest continuous estuarine wetland aggregation of its type in northern Australia. It is one of the three most important areas for shorebirds in Australia. The area meets criteria 1, 2, 3, 4, 5 and 6 for inclusion on the Directory of Important Wetlands in Australia.
Australian Marine Parks (DNP, 2018c)			
Arafura Marine Park	VI	Arafura Marine Park covers an area of 22,924 km ² is located ~256 km north-east of Darwin and 8 km offshore of Croker Island, NT. It extends from NT waters to the limit of Australia's EEZ.	The AMP is significant because it contains habitats, species and ecological communities associated with two bioregions: <ul style="list-style-type: none"> •Northern Shelf Province •Timor Transition. It includes one KEF: Tributary canyons of the Arafura Depression. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include interesting habitat for marine turtles and important foraging and breeding habitat for seabirds.
Arnhem Marine Park	VI	Arnhem Marine Park covers an area of 7125 km ² and is located ~100 km south-east of Croker Island and 60 km south-east of the Arafura Marine Park. It extends from NT waters surrounding the Goulburn Islands, to the waters north of Maningrida.	Arnhem Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf Province bioregion. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat and a migratory pathway for marine turtles and seabirds.
Gulf of Carpentaria Marine Park	II, VI	Gulf of Carpentaria Marine Park covers an area of 23,771 km ² and is located ~90 km north-west of Karumba, Queensland and is adjacent to the Wellesley Islands in	Gulf of Carpentaria Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf Province bioregion.

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		the south of the Gulf of Carpentaria basin.	It includes four KEFs: Gulf of Carpentaria basin; Gulf of Carpentaria coastal zone; Plateaux and saddle north-west of the Wellesley Islands; and Submerged coral reefs of the Gulf of Carpentaria. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging areas for seabirds and interesting and foraging areas for turtles.
Joseph Bonaparte Gulf Marine Park	VI	The Joseph Bonaparte Gulf Marine Park is located within both the NWMR and NMR. Refer Table 10-1 for description and conservation values.	
Limmen Marine Park	IV	Limmen Marine Park covers an area of 1399 km ² and is located ~315 km south-west of Nhulunbuy, NT, in the south-west of the Gulf of Carpentaria. It extends from NT waters, between the Sir Edward Pellew Group of Islands and Maria Island in the Limmen Bight, adjacent to the NT Limmen Bight Marine Park.	Limmen Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf bioregion. It includes one KEF: Gulf of Carpentaria coastal zone. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include interesting and foraging habitat for marine turtles.
Oceanic Shoals Marine Park	II, IV, VI	The Oceanic Shoals Marine Park is located within both the NWMR and NMR. Refer Table 10-1 for description and conservation values.	
Wessel Marine Park	IV, VI	Wessel Marine Park covers an area of 5908 km ² and is located ~22 km east of Nhulunbuy, NT. It extends from NT waters adjacent to the tip of the Wessel Islands to NT waters adjacent to Cape Arnhem.	Wessel Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf bioregion. It includes one KEF: Gulf of Carpentaria basin. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds and interesting and foraging habitat for marine turtles.
West Cape York Marine Park	II, IV, VI	West Cape York Marine Park covers an area of 16,012 km ² and is located adjacent to the northern end	West Cape York Marine Park is significant because it contains species and ecological communities associated with two bioregions: • Northeast Shelf Transition

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Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		of Cape York Peninsula ~25 km south-west of Thursday Island and 40 km north-west of Weipa, Queensland.	<ul style="list-style-type: none"> Northern Shelf Province. It includes two KEFs: Gulf of Carpentaria basin; and Gulf of Carpentaria coastal zone. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging habitat for seabirds, internesting and foraging habitat for marine turtles and dugong, and foraging, breeding and calving habitat for dolphins.
Territory Marine Parks and Reserves			
Cobourg Marine Park	II, IV, VI	Cobourg Marine Park covers an area of 2,290 km ² and is located in the waters surrounding the Cobourg Peninsula ~220 km north-east of Darwin. The Marine Park is part of the larger Garig Gunak Barlu National Park. Garig Gunak Barlu National Park includes both the Marine Park and the Cobourg Sanctuary.	Cobourg Marine Park is located in the Cobourg and Van Diemen Gulf marine bioregions with the northern portion of the Park covered by the Cobourg marine bioregion and the southern portion covered by the Van Diemen Gulf marine bioregion. The Marine Park is characterised by a number of deeply incised bays and estuaries on its northern shores. These bays are ancient river valleys that were drowned during periods of sea level rise and provide a varied environment and habitat that is quite distinct from the open water areas of the Park. The areas of the Park that have been studied and where extensive collections have been made indicates that the Park supports rich and diverse marine life including live coral reefs, seagrass, diverse reef and pelagic fish populations, marine turtles and dugong.

*Conservation objectives for IUCN categories include:

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: National Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

VI: Protected area with sustainable use of natural resources – allow human use but prohibits large scale development.

IUCN categories for the marine park are provided and, in brackets, the IUCN categories for specific zones within each Marine Park as assigned under the North Marine Parks Network Management Plan 2018 (DNP, 2018c)

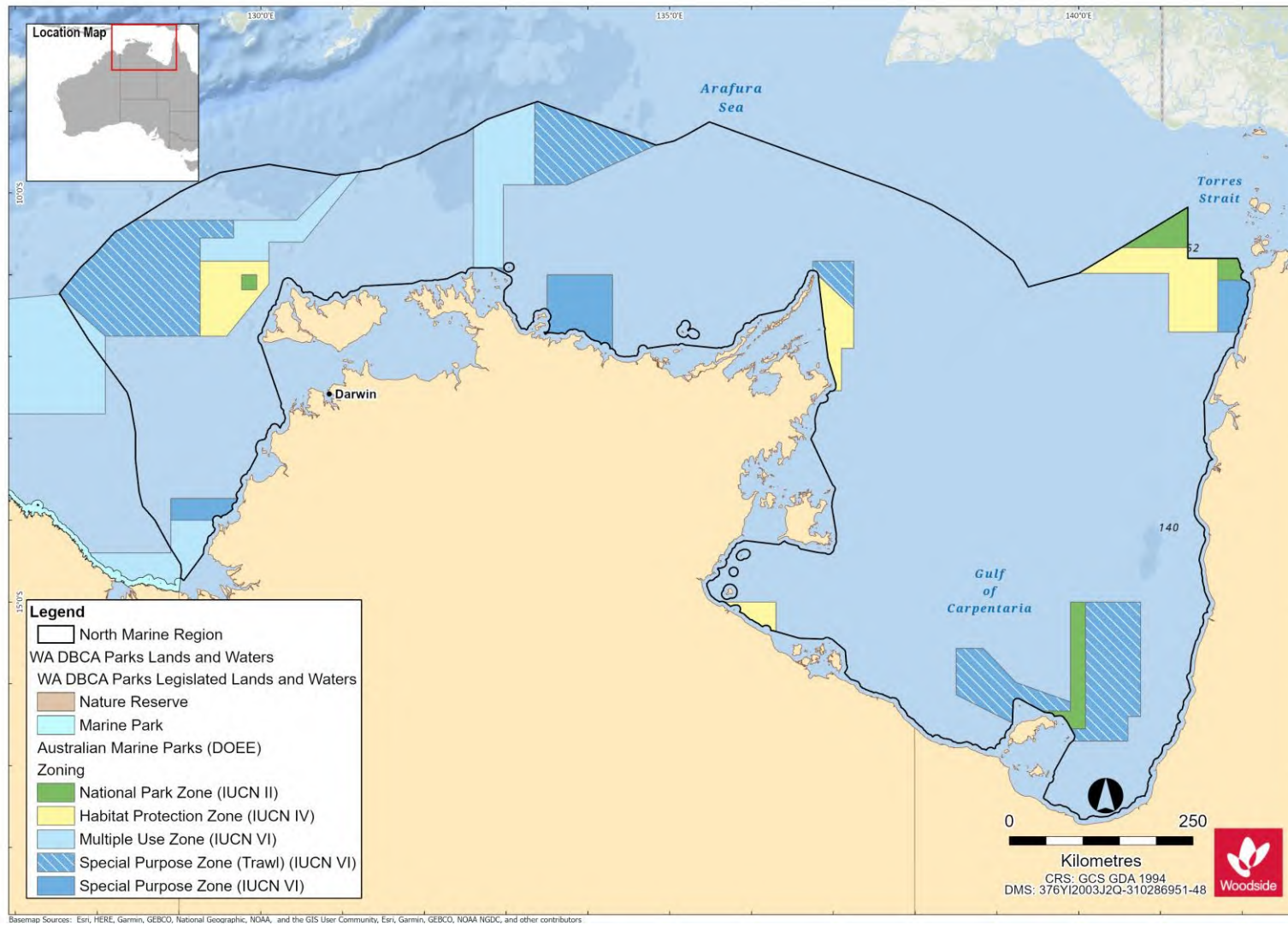


Figure 10-3. Commonwealth and State Marine Protected Areas within the NMR

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11. SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

This section summarises the information relating to the socio-economic and cultural environment of the regions offshore Western Australia, with a focus on the NWMR and to a lesser extent the SWMR and NWR.

The cultural environment includes Indigenous and European heritage values, including underwater values such as historic shipwrecks. Socio-economic values include commercial and traditional fishing, tourism and recreation, shipping, oil and gas activities and defence activities.

11.1 Cultural Heritage

11.1.1 Indigenous Sites of Significance

Murujuga (the Burrup Peninsula) has a very high density of significant Indigenous heritage sites and places with tangible and intangible heritage values. The area has one of the largest, densest, and most diverse collections of rock art in the world. It is estimated that the peninsula and surrounding islands contain over a million petroglyphs (rock engravings) covering a broad range of styles and subjects. The landscape also contains quarries, middens, fish traps, rock shelters, ceremonial sites, artefact scatters, grinding patches and stone arrangements that evidence tens of thousands of years of human occupation. These places are linked to Aboriginal cosmology, Dreaming stories and songs through the stories, knowledge and customs that are still held by traditional custodians.

In 2007 the Dampier Archipelago (including the Burrup Peninsula) was included on the National Heritage List due to outstanding heritage values relating to Australia's cultural history contained in the large number, density, diversity, distribution and fine execution of rock art. Within the National Heritage Place, the Murujuga National Park covers 4913 ha and is co-managed by the Murujuga Aboriginal Corporation and the Department of Biodiversity, Conservation and Attractions. The Murujuga Cultural Landscape was also added to Australia's Tentative World Heritage List in 2020, with full World Heritage Listing anticipated in 2024.

Woodside also recognises the potential for heritage to survive in submerged landscapes. Sea-level rises since the last ice age mean that areas now under the sea were once exposed, that many of today's islands would have been connected to the mainland, and that Aboriginal people are highly likely to have inhabited these places. Woodside works with traditional custodians, academics and heritage professionals to identify tangible and intangible heritage values in the submerged landscape to avoid disturbing heritage where possible and to minimise impacts where heritage cannot be avoided.

It is an offence to excavate, destroy, damage, conceal or alter Indigenous heritage onshore or in state waters under section 17 of the *Aboriginal Heritage Act 1972 (WA) (AHA)* without ministerial authorisation. Where there is a risk of injury or desecration to a significant Aboriginal area, even where permitted under the AHA, any Aboriginal person may apply to the federal Environment Minister for a declaration under sections 9 or 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* for the protection and preservation of that area.

The Department of Planning, Lands and Heritage maintains a register of registered sites and heritage places including middens, burial, ceremonial [sites], artefacts, rock shelters, mythological [sites] and engraving sites. There are over 1600 registered sites on Murujuga and the Dampier Archipelago with around 1100 other heritage places. This register is not comprehensive and will be complemented by heritage surveys where necessary. Protection of National and World Heritage values is also legislated through various provisions of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*. Murujuga National Park is managed under the *Conservation and Land Management Act 1984 (WA)*.

11.1.2 European Sites of Significance

European sites of significance and heritage value are found along adjacent foreshores of the SWMR, NWMR and NWR. Heritage values are protected in Western Australia under the *Heritage Act 2018*.

11.1.3 Underwater Cultural Heritage

Places of historic cultural significance are protected under Commonwealth, State and local regimes. Places inscribed on the National or World Heritage list are protected through various provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). Historic places may also be protected under the *Heritage Act 2018* (WA); under section 129 the prohibited alteration, demolition, damage, despoilment or removal of objects from a registered place may result in a fine of A\$1 million. Protection of heritage by local government typically emanates from local planning schemes produced under Part 5 of the *Planning and Development Act 2005* (WA).

The remains of vessels and aircraft in Commonwealth waters, along with any associated article, are automatically protected under the *Underwater Cultural Heritage Act 2018* (Cth) after 75 years. Remains and relics of any ship lost, wrecked or abandoned in Western Australian waters before 1900 are protected by the *Maritime Archaeology Act 1973* (WA).

The Australian National Shipwreck Database and the WA Maritime Museum Shipwreck Database list these protected wrecks.

11.1.4 National and Commonwealth Listed Heritage Places

Australia's National Heritage Sites are those of outstanding natural, historic and/or Indigenous significance to Australia. National Heritage places classed as natural are discussed in **Section 10.3**. Historic and/or Indigenous National Heritage Listed Places of the NWMR include:

- Dampier Archipelago (including Burrup Peninsula)
- Dirk Hartog Landing Site/Cape Inscription
- HMAS Sydney II and the HSK Kormoran Shipwreck Sites
- Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos

Commonwealth Heritage Places are a collection of sites recognised for their Indigenous, historical and/or natural values, which are owned or controlled by the Australian Government. A number of these sites are owned or controlled by the Department of Defence, as well as Government agencies relating to maritime safety, customs and communication. Commonwealth Heritage places classed as natural are discussed in **Section 10.3**. Listed Heritage Places in the NWMR include:

- Mermaid Reef – Rowley Shoals (refer **Section 10.3**)
- Ashmore Reef National Nature Reserve (refer **Section 10.3**)
- Scott Reef and Surrounds – Commonwealth Area (refer **Section 10.3**)
- Ningaloo Marine Area (refer **Section 10.3**)

World Heritage Properties are those sites that hold universal value which transcends any value they may be held by any one nation. These sites and their qualities are detailed in the Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), to which Australia is a founding member. The Protected Matters Search Report (**Appendix A**) lists two natural World Heritage Properties in the NWMR (refer **Section 10.2**). There are no cultural heritage listings located within the NWMR.

Summary tables of heritage places for NWMR, SWMR and NMR are presented in **Table 11-1, Table 11-2** and **Table 11-3**.

11.2 Summary of Heritage Places within the NWMR

Table 11-1 Heritage Places (Indigenous and Historic) within the NWMR

Heritage Places	Woodside Activity Area			Class	Description	Conservation Values
	Browse	NWS/S	NW Cape			
National Heritage Properties						
Dampier Archipelago (including Burrup Peninsula)	-	✓	-	Indigenous	The Dampier Archipelago (including the Burrup Peninsula) contains one of the densest concentrations of rock engravings in Australia with some sites containing thousands or tens of thousands of images.	The rock engravings comprise images of avian, marine and terrestrial fauna, schematised human figures, figures with mixed human and animal characteristics and geometric designs. At a national level it has an exceptionally diverse and dynamic range of schematised human figures some of which are arranged in complex scenes. The fine execution and dynamic nature of the engravings, particularly some of the composite panels, exhibit a degree of creativity that is unusual in Australian rock engravings.
Dirk Hartog Landing Site 1616 – Cape Inscription Area	-	-	✓	Historic	Cape Inscription is the site of the oldest known landings of Europeans on the WA coastline.	The Cape Inscription area displays uncommon aspects of Australia's cultural history because of the cumulative effect its association with these explorers and surveyors had on growing knowledge of the great southern continent in Europe. The association of the site with these early navigators stimulated the development of the European view of the great southern continent at a time when they began to look at the world with a modern scientific outlook.
Commonwealth Heritage Properties						
N/A						

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11.3 Summary of Heritage Places within the NMR

Table 11-2 Heritage Places (Indigenous and Historic) within the NMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
None			
Commonwealth Heritage Properties			
None			

11.4 Summary of Heritage Places within the SWMR

Table 11-3 Heritage Places (Indigenous and Historic) within the SWMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
Cheetup Rock Shelter	Indigenous	Cheetup meaning “place of the birds” is the name of a spacious rock shelter located in Cape Le Grand National Park, about 55 km east of Esperance in WA. Aboriginal people associated with the place identify themselves as Nyungar/Noongar, Ngadju (shortened from Ngadjunmaia) or Mirning.	Cheetup rock shelter provides outstanding evidence for the antiquity of processing and use of cycad seeds by Aboriginal people. The seeds of the cycad are extremely toxic and can cause speedy death if eaten fresh without proper preparation to remove the toxins. The presence of <i>Macrozamia riedlei</i> seeds in a pit lined with Xanthorrhoea (grass tree) leaf bases indicates that the Aboriginal people in the Esperance region had the knowledge to remove the toxins of this important source of carbohydrate and protein at least 13,200 years ago.

Heritage Places	Class	Description	Conservation Values
Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos	Historic	The Batavia and its associated sites hold an important place in the discovery and delineation of the WA coastline. The wreck of the Batavia, and other Dutch ships like her, convinced the VOC (Dutch East India Company) of the necessity of more accurate charts of the coastline and resulted in the commissioning of Vlamingh's 1696 voyage.	Because of its relatively undisturbed nature the archaeological investigation of the wreck itself has revealed a range of objects of considerable value as well as to artefact specialists and historians.
HMAS Sydney II and HSK Kormoran Shipwreck Sites	Historic	The naval battle fought between the Australian warship HMAS Sydney II and the German commerce raider HSK Kormoran off the WA coast during World War II was a defining event in Australia's cultural history. HMAS Sydney II was Australia's most famous warship of the time and this battle has forever linked the stories of these warships to each other. The loss of HMAS Sydney II along with its entire crew of 645 following the battle with HSK Kormoran, remains as Australia's worst naval disaster.	The shipwreck sites of HMAS Sydney II and HSK Kormoran have outstanding heritage value to the nation because of their importance in a defining event in Australia's cultural history and for their part in development of the process of the defence of Australia.
Commonwealth Heritage Properties			
Cliff Point Historic Sites	Historic	Cliff Head is a limestone bluff on the east coast of Garden Island. Evidence of occupation has been reported from the beach just north of the head, the immediate hinterland, the ridge above and on the south face of the ridge.	The Cliff Point Historic Site, individually significant within the area of Garden Island is important as the first site inhabited by Governor Stirling's party in 1829 when founding the colony of WA, and as WA's first official non-convict settlement. The site was occupied in the first instance by Captain Charles Fremantle before the arrival of Captain Stirling. The party occupied the site for two months before a move was made to the Swan River settlement on the mainland.
HMAS Sydney II and HSK Kormoran Shipwreck Sites	Historic	As above	As above
J Gun Battery	Historic	J Battery comprised two 155 mm long range guns, the other similar battery being at Cape Peron on the mainland at the entrance to Cockburn Sound. Located in the dune systems at the north western	J Gun Battery (1942) is individually significant within the area of Garden Island (Register No. 019544) and is historically important as the first gun battery constructed on Garden Island and as one of two long range gun batteries which played a

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Heritage Places	Class	Description	Conservation Values
		corner of Garden Island elements of the J Battery complex are now covered in part by sand.	strategic role in the coastal defences of Cockburn Sound and Fremantle following the entry of Japan into the Second World War (1939-45).

11.5 Fisheries - Commercial

11.5.1 Commonwealth and State Fisheries

The diverse range of habitats and species offshore WA has allowed for various fisheries to develop and operate throughout the region.

The Australian Fisheries Management Authority (AFMA) manages fisheries on behalf of the Commonwealth Government and is bound by objectives under the Commonwealth *Fisheries Management Act 1991*.

WA State commercial fisheries are managed by the WA Department of Primary Industries and Regional Development (WA DPIRD) under the WA *Fish Resources Management Act 1994* (FRMA), Fisheries Resources Management Regulations 1995, relevant gazetted notices and licence conditions, and applicable Fishery Management Plans.

Commonwealth and State managed fisheries that operate within the NWMR and in areas beyond this region are summarised in the **Table 11-4**.

Table 11-4 Commonwealth and State managed fisheries

Fishery	Woodside Activity Area			Description																				
	Browse	NWS/S	NW Cape																					
Commonwealth Managed Fisheries																								
Southern Bluefin Tuna Fishery	✓	✓	✓	<table border="1"> <tr> <td>Management area</td> <td colspan="3">The Southern Bluefin Tuna Fishery (SBTF) covers the entire EEZ around Australia, out to 200 nm from the coast. They do not fish in the Woodside activity area.</td> </tr> <tr> <td>Species targeted</td> <td>Fishing methods</td> <td colspan="2">Fishing depth</td> </tr> <tr> <td>Southern bluefin tuna (<i>Thunnus maccoyii</i>)</td> <td>Longline and purse seine fishing.</td> <td colspan="2">Southern bluefin tuna is a pelagic species which can be found to depths of 500 m (AFMA, 2021a)</td> </tr> <tr> <td>Fishing effort</td> <td colspan="3"> <p>Most of the Australian fishing effort is by purse-seine vessels in the Great Australian Bight and waters off South Australia during summer months, and by longline off the New South Wales coastline during winter months (Patterson <i>et al.</i>, 2020).</p> <p>SBTF is a fishery that is shared amongst many countries. Australia currently has a 35% share of the total global allowable catch, and while wild capture fishing in Australia to sell directly to market can occur anywhere throughout the SBTF's range, currently the vast majority of that quota is value-added through ranching (on-growing the wild captured fish for extra 5-6 months). Ranching requires significant infrastructure, a resident labour force, plus proximity to a fishery able to supply a large quantity of natural feed/sardines (40,000+ tonnes) (for example as available in Port Lincoln). North-west WA is critically important regardless of how the quota is fished because of the proximity to the single spawning ground of this global roaming species.</p> <p>The stock remains classified as overfished.</p> </td> </tr> <tr> <td>Active licences/vessels</td> <td colspan="3">Seven purse seine vessels, 20 longline vessels (Patterson <i>et al.</i>, 2020).</td> </tr> </table>	Management area	The Southern Bluefin Tuna Fishery (SBTF) covers the entire EEZ around Australia, out to 200 nm from the coast. They do not fish in the Woodside activity area.			Species targeted	Fishing methods	Fishing depth		Southern bluefin tuna (<i>Thunnus maccoyii</i>)	Longline and purse seine fishing.	Southern bluefin tuna is a pelagic species which can be found to depths of 500 m (AFMA, 2021a)		Fishing effort	<p>Most of the Australian fishing effort is by purse-seine vessels in the Great Australian Bight and waters off South Australia during summer months, and by longline off the New South Wales coastline during winter months (Patterson <i>et al.</i>, 2020).</p> <p>SBTF is a fishery that is shared amongst many countries. Australia currently has a 35% share of the total global allowable catch, and while wild capture fishing in Australia to sell directly to market can occur anywhere throughout the SBTF's range, currently the vast majority of that quota is value-added through ranching (on-growing the wild captured fish for extra 5-6 months). Ranching requires significant infrastructure, a resident labour force, plus proximity to a fishery able to supply a large quantity of natural feed/sardines (40,000+ tonnes) (for example as available in Port Lincoln). North-west WA is critically important regardless of how the quota is fished because of the proximity to the single spawning ground of this global roaming species.</p> <p>The stock remains classified as overfished.</p>			Active licences/vessels	Seven purse seine vessels, 20 longline vessels (Patterson <i>et al.</i> , 2020).		
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Western Skipjack Tuna Fishery	✓	✓	✓	<table border="1"> <tr> <td>Management area</td> <td colspan="3">The combined western and eastern skipjack tuna (<i>Katsuwonus pelamis</i>) fisheries (STF) encompass the entire Australian EEZ. The Western Skipjack Tuna Fishery (WSTF) extends westward from the SA/Victorian border across the Great Australian Bight and around the west coast of WA to the Cape York Peninsula.</td> </tr> </table>	Management area	The combined western and eastern skipjack tuna (<i>Katsuwonus pelamis</i>) fisheries (STF) encompass the entire Australian EEZ. The Western Skipjack Tuna Fishery (WSTF) extends westward from the SA/Victorian border across the Great Australian Bight and around the west coast of WA to the Cape York Peninsula.																		
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Western Tuna and Billfish Fishery	✓	✓	✓	<table border="1"> <thead> <tr> <th>Management area</th> <td>The Western Tuna and Billfish Fishery (WTBF) extends to the Australian EEZ boundary in the Indian Ocean.</td> </tr> <tr> <th>Species targeted</th> <th>Fishing methods</th> <th>Fishing depth</th> </tr> </thead> <tbody> <tr> <td>Bigeye tuna (<i>Thunnus obesus</i>) Yellowfin tuna (<i>Thunnus albacares</i>) Swordfish (<i>Xiphias gladius</i>) Albacore (<i>Thunnus alalunga</i>) Striped marlin (<i>Kajikia audax</i>)</td> <td>Fishers mainly use pelagic longline fishing gear to catch the targeted species. Minor line (including handline, troll, rod and reel) can also be used.</td> <td>Species have a broad depth distribution, with tuna occurring at 150 – 300 m, striped marlin at 150 m and swordfish at up to 600 m (BRS, 2007).</td> </tr> <tr> <td>Fishing effort:</td> <td colspan="2">The WTBF operates in Australia’s EEZ and high seas of the Indian Ocean. Fishing effort in recent years has been concentrated off south-west WA, with occasional activity off SA.</td> </tr> <tr> <td>Active licences/vessels:</td> <td colspan="2">Two pelagic longline vessels and two minor longline vessels (Patterson <i>et al.</i>, 2020).</td> </tr> </tbody> </table>	Management area	The Western Tuna and Billfish Fishery (WTBF) extends to the Australian EEZ boundary in the Indian Ocean.	Species targeted	Fishing methods	Fishing depth	Bigeye tuna (<i>Thunnus obesus</i>) Yellowfin tuna (<i>Thunnus albacares</i>) Swordfish (<i>Xiphias gladius</i>) Albacore (<i>Thunnus alalunga</i>) Striped marlin (<i>Kajikia audax</i>)	Fishers mainly use pelagic longline fishing gear to catch the targeted species. Minor line (including handline, troll, rod and reel) can also be used.	Species have a broad depth distribution, with tuna occurring at 150 – 300 m, striped marlin at 150 m and swordfish at up to 600 m (BRS, 2007).	Fishing effort:	The WTBF operates in Australia’s EEZ and high seas of the Indian Ocean. Fishing effort in recent years has been concentrated off south-west WA, with occasional activity off SA.		Active licences/vessels:	Two pelagic longline vessels and two minor longline vessels (Patterson <i>et al.</i> , 2020).	
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North-west Slope Trawl Fishery	✓	✓		Management area	The North-west Slope Trawl Fishery (NWSTF) extends, from 114 °E to 125 °E, from the 200 m isobath to the outer limit of the AFZ (200 nm from the coastline, which is the boundary of the Australian EEZ).											
				Species targeted	Fishing methods	Fishing depth										
				Australian scampi (<i>Metanephrops australiensis</i>) and smaller quantities of velvet and Boschma's scampi (<i>M. velutinus</i> and <i>M. boschmai</i>) Mixed snappers have historically been an important component of the catch.	Demersal trawl.	Typically at depths of 350 to 600 m (Patterson <i>et al.</i> , 2017), however stakeholder consultation has indicated that this may be to depths of 800 m.										

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p>Fishing effort: The NWSTF commenced in 1985 and the number of active vessels peaked at 21 in the 1986-1987 season and declined through the 1990s before increasing to 10 vessels in 2000-2001 and 2002-2002 seasons. Four vessels operated in the 2017-2018 and 2018-2019 seasons (Patterson <i>et al.</i> 2020). Fishing for scampi occurs over soft, muddy sediments or sandy habitats, using demersal trawl gear on the continental slope (Patterson <i>et al.</i>, 2017).</p> <p>Active licences/vessels: Four vessels (Patterson <i>et al.</i>, 2020).</p>		
State Managed Fisheries						
Pilbara Fish Trawl (Interim) Managed Fishery		✓		<p>Management area The Pilbara Trawl (Interim) Managed Fishery is of high intensity and is divided into two zones and an area governed by Schedule 5 (prohibited to trawling). In addition to the Prohibited Trawl Fishing area, no fish trawl units are allocated for use in Zone 1 or Areas 3 and 6 of Zone 2 (which comprises six management areas) (Newman <i>et al.</i>, 2020a). No fish trawl units have been allocated for use in Area 6 of Zone 2 since the management plan commenced operation in 1998.</p>		
				<p>Species targeted</p> <p>The Pilbara Fish Trawl (Interim) Managed Fishery (PFTIMF) targets more than 50 scalefish species. The five main demersal scalefish species landed by the fisheries in the Pilbara region are blue-spotted emperor, crimson snapper, rosy threadfin bream, red emperor and goldband snapper in 2018 (Newman <i>et al.</i>, 2020a).</p>	<p>Fishing methods</p> <p>Demersal trawl.</p>	<p>Fishing depth</p> <p>The Pilbara Fish Trawl Fishery lands the largest component of the catch and operates in waters between 50 and 200 m water depth (Allen <i>et al.</i>, 2014, Newman <i>et al.</i> 2015). Stakeholders have advised that trawling can occur in depths of up to approximately 800 m.</p>
				<p>Fishing effort:</p> <p>Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years:</p>		

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Fishery	Woodside Activity Area			Description						
	Browse	NWS/S	NW Cape							
				<p>Pilbara Trawl (Interim) Managed Fishery caught 1996 t in 2018-19, 1780 t in 2017-18, 1529 t in 2016-17, 1172 t in 2015-16, 1105 t in 2014-15.</p> <p>Active licences/vessels: Two Pilbara Trawl (Interim) Managed Fishery vessels in 2017 (Newman <i>et al.</i>, 2020a). Active vessels data are confidential as there were fewer than three vessels in the Pilbara Fish Trawl Interim Managed Fishery (Newman <i>et al.</i>, 2020a).</p>						
Pilbara Trap Managed Fishery		✓	✓	<p>Management area The Pilbara Trap Fishery covers the area from Exmouth northwards and eastwards to the 120° line of longitude, and offshore as far as the 200 m isobath. Like the trawl fishery, the trap fishery is also managed using input controls in the form of individual transferable effort allocations monitored with a satellite-based vessel management system. The fishery includes six licences allocated to three vessels, operating principally from Onslow.</p> <table border="1"> <thead> <tr> <th>Species targeted</th> <th>Fishing methods</th> <th>Fishing depths</th> </tr> </thead> <tbody> <tr> <td> Pilbara Trap Managed Fishery catch is made up of around 45-50 different fish species. The four main species landed by the fisheries in the Pilbara region are blue-spotted emperor, red emperor, goldband snapper and Rankin cod. </td> <td>Demersal fish traps.</td> <td>Greatest effort in waters less than 50 m depth targeting high value species such as red emperor and goldband snapper.</td> </tr> </tbody> </table> <p>Fishing effort Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years: Pilbara Trap Managed Fishery caught 563 t in 2018-19, 573 t in 2017-18, 495 t in 2016-17, 510 t in 2015-16, 268 t in 2014-15. In 2018, the total catch for the Pilbara Trap Managed Fishery was 563 t, making up 21% of the total catch by the Pilbara Demersal Scale Fishery (Newman <i>et al.</i>, 2019).</p>	Species targeted	Fishing methods	Fishing depths	Pilbara Trap Managed Fishery catch is made up of around 45-50 different fish species. The four main species landed by the fisheries in the Pilbara region are blue-spotted emperor, red emperor, goldband snapper and Rankin cod.	Demersal fish traps.	Greatest effort in waters less than 50 m depth targeting high value species such as red emperor and goldband snapper.
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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p>Active licences/vessels</p> <p>In the 2019 season, there were six licences in the Pilbara Trap Managed Fishery, (Newman <i>et al.</i>, 2020a). Active vessels data are confidential as there were fewer than three vessels in the Pilbara Trap Managed Fishery (Newman <i>et al.</i>, 2019).</p>		
Pilbara Line Managed Fishery		✓	✓	<p>Management area</p> <p>The Pilbara Line Managed Fishery boat licences are permitted to operate anywhere within "Pilbara waters", bounded by a line commencing at the intersection of 21°56'S latitude and the high water mark on the western side of the North-west Cape on the mainland of WA; west along the parallel to the intersection of 21°56'S latitude and the boundary of the AFZ and north to longitude 120°E.</p>		
				<p>Species targeted</p> <p>The Pilbara Line Managed Fishery catch is made up around 45-50 different fish species.</p> <p>The Pilbara Line Managed Fishery targets similar demersal species to the Pilbara Trap and Trawl fisheries, as well as some deeper offshore species such as ruby snapper and eightbar grouper</p> <p>The Pilbara Line Managed Fishery operates on an exemption basis that enables licence holders to fish for any nominated five-month block during the year.</p>	<p>Fishing method</p> <p>Demersal long line.</p>	<p>Fishing depths</p> <p>Pilbara Line Fishing Depth: Operates up to a depth of 600 m.</p>
				<p>Fishing effort</p> <p>Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years:</p> <p>Pilbara Line Managed Fishery caught 93 t in 2018-19, 143 t in 2017-18, 126 t in 2016-17, 97 t in 2015-16, 40 t in 2014-15.</p> <p>The total catch in 2018 for the Pilbara Line Managed Fishery was 93 t, making up 3% of the total catch by the Pilbara Demersal Scalefish Fishery (Newman <i>et al.</i>, 2019).</p>		

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Active licences/vessels In the 2018 season there are nine individual licences in the Pilbara Line Fishery, held by seven operators. Active vessels data is confidential as there were fewer than three vessels in the Pilbara Line Fishery (Newman <i>et al.</i> , 2018).		
Mackerel Managed Fishery	✓	✓	✓	Management area The commercial fishery extends from Geraldton to the Northern Territory border. There are three managed fishing areas: Kimberley (Area 1), Pilbara (Area 2), and Gascoyne and West Coast (Area 3).		
				Species targeted Spanish mackerel (<i>Scomberomorus commerson</i>) Grey mackerel (<i>S. semifasciatus</i>) Other species from the genus <i>Scomberomorus</i>	Fishing methods Near-surface trawling gear. Jig fishing.	Fishing depth Previous engagement with WAFIC suggests that the depth of fisheries may extend to 70 m.
				Fishing effort: Most of the catch is taken from waters off the Kimberley coasts (Lewis and Brand-Gardner, 2018), reflecting the tropical distribution of mackerel species (Molony <i>et al.</i> , 2015). Most fishing activity occurs around the coastal reefs of the Dampier Archipelago and Port Hedland area, with the seasonal appearance of mackerel in shallower coastal waters most likely associated with feeding and gonad development before spawning (Mackie <i>et al.</i> , 2003). Based on State of the Fisheries annual reports provided by DPIRD, catch trends are as follows: 213 t in 2018-19 (the lowest on record (Lewis <i>et al.</i> , 2020), 283 t in 2017-18, 276 t in 2016-17, 302 t in 2015-16, 322 t in 2014-15.		
				Active licences/vessels: Fifteen boats fished in 2018, with approximately 35-40 people directly employed in the Mackerel Managed Fishery, primarily from May-November (Lewis <i>et al.</i> , 2020).		
Marine Aquarium Managed Fishery	✓	✓	✓	Management area The Marine Aquarium Managed Fishery is able to operate in all State waters. The fishery is typically more active in waters south of Broome and higher levels of effort around the Capes region, Perth, Geraldton, Exmouth, Dampier and Broome (Newman <i>et al.</i> , 2020b).		
				Species targeted	Fishing methods	Fishing depth

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Finfish, hard coral, soft coral, tridacnid clams, syngnathids (seahorses and pipefish), other invertebrates (including molluscs, crustaceans, echinoderms etc.), algae, seagrasses and 'live rock'.	The fishery is diver-based, which typically restricts effort to safe diving depths (less than 30 m).	Less than 30 m, as advised by WAFIC.
				Fishing effort:	Total catch for the Marine Aquarium Managed Fishery in 2018 was 156,188 fishes, 32.025 t of coral, live rock and living sand and 176.02 L of marine plants and live feed.	
				Active licences/vessels:	Eleven licences were active in 2019 (Newman <i>et al.</i> , 2020b).	
Beche-de-mer Fishery	✓	✓	✓	Management area	Fishing occurs in the northern half of WA from Exmouth Gulf to the NT border and is managed under Ministerial Exemptions.	
				Species targeted	Fishing methods	Fishing depth
				The sea cucumber fishery targets two main species: sandfish (<i>Holothuria scabra</i>) and redfish (<i>Actinopyga echinites</i>).	Diving	The targeted species typically inhabit nearshore in shallow depths.
				Fishing effort	Based on State of the Fisheries annual reports provided by DPRID, catch trends are as follows: 62t in 2018 (Gaughan and Santoro, 2020), 135t in 2017, 93t in 2016, 38t in 2015	
				Active licences/vessels	Six active licences in 2019 (Hart <i>et al.</i> , 2019). Active vessels data is confidential as there were fewer than three vessels.	
Onslow Prawn Managed Fishery		✓		Management area	The Onslow Prawn Managed Fishery encompasses a portion of the continental shelf off the Pilbara.	
				Species targeted	Fishing methods	Fishing depth

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Fishery	Woodside Activity Area			Description						
	Browse	NWS/S	NW Cape							
				<p>The fishery targets: Western king prawns (<i>Penaeus esculentus</i>) Brown tiger prawns (<i>Penaeus esculentus</i>) Blue endeavour prawns (<i>Metapenaeus endeavouri</i>)</p> <p>Low opening, otter prawn trawl systems.</p> <p>Prawn trawling takes place in water depths of approximately 30 metres and less (licence holder feedback). Fishery and or fishing activity overlaps the Beadon Creek dredging scope (Sporer <i>et al.</i>, 2015).</p> <p>Fishing effort: The total landings for the Onslow Prawn Managed Fishery in 2018 were less than 60 t below the target catch range (Kangas <i>et al.</i>, 2020a).</p> <p>Active licences/vessels: One vessel (Kangas <i>et al.</i>, 2020a).</p>						
Pearl Oyster Managed Fishery	✓	✓	✓	<p>Management area Located in shallow coastal waters with the pearl oyster managed fishery designated by four zones extending from Exmouth to Kununurra and the seaward boundary demarcated by the 200 nm EEZ.</p> <table border="1"> <thead> <tr> <th>Species targeted</th> <th>Fishing methods</th> <th>Fishing depth</th> </tr> </thead> <tbody> <tr> <td>Pearl oysters (<i>Pinctada maxima</i>).</td> <td>Drift diving.</td> <td>Fishing effort is mostly focussed in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs <i>et al.</i> 2002).</td> </tr> </tbody> </table> <p>Fishing effort: In 2018, catch was taken from Zones 2 and 3 with no fishing in Zone 1. The number of pearl oysters caught for 2018-19 was 614,002. Total effort was 15,637 dive hours, this was an increase from 2017 effort of 12,845 hours. No fishing occurred in Zone 1 in 2017 and 2018 (Gaughan and Santoro, 2020).</p> <p>Active licences/vessels: 15,637 diver hours (Hart <i>et al.</i>, 2020a).</p>	Species targeted	Fishing methods	Fishing depth	Pearl oysters (<i>Pinctada maxima</i>).	Drift diving.	Fishing effort is mostly focussed in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs <i>et al.</i> 2002).
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Pearl oysters (<i>Pinctada maxima</i>).	Drift diving.	Fishing effort is mostly focussed in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs <i>et al.</i> 2002).								
		✓	✓	<p>Management area The Pilbara Crab Managed Fishery comprises WA waters off the north-western coast of WA north of 23° 34' south latitude and west of 120° 00' east longitude. Areas of the fishery north and east of Exmouth and</p>						

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
Pilbara Crab Managed Fishery				nearshore are currently closed as per Schedule 2 of the Draft Management Plan for the Pilbara Crab Managed Fishery.		
				Species targeted	Fishing methods	Fishing depth
				Crabs of the Family Portunidae, excluding crabs of the genus <i>Scylla</i> .	Traps.	Up to 50 m deep.
				Fishing effort:	The capacity of the fishery is 600 traps.	
				Active licences/vessels:	No information available at this time.	
South-west Coast Salmon Managed Fishery	✓	✓	✓	Management area		
				Species targeted	Fishing methods	Fishing depth
				Western Australian salmon (<i>Arripis truttaceus</i>)	Beach seine nets.	Information not available however, species generally found in shallow waters (up to 30 m).
				Fishing effort:	No fishing occurs north of the Perth metropolitan area, despite the managed fishery boundary extending to Cape Beaufort (WA/Northern Territory border), as advised by WAFIC. The 2018 commercial catch was 191 t, with 72% taken by the South West Coast Salmon Managed Fishery, 25% by the South Coast Salmon Managed Fishery and 3% by other fisheries (Duffy and Blay, 2020a).	
				Active licences/vessels:	Six licences.	
	✓	✓	✓	Management area		
				The Specimen Shell Managed Fishery (SSMF) encompasses the entire WA coastline, but effort is concentrated in areas adjacent to the population centres such as Broome, Exmouth, Shark Bay,		

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Specimen Shell Managed Fishery				Geraldton, Perth, Mandurah, the Capes area and Albany (Hart <i>et al.</i> , 2020b). There are a number of closed areas where the SSMF is not permitted to operate. These include various marine parks and aquatic reserves, such as Ningaloo Marine Park.			
				Species targeted	Fishing methods	Fishing depth	
				The Specimen Shell Managed Fishery targets the collection of specimen shells for display, collection, cataloguing and sale.	Collection is predominantly by hand when diving to wading in shallow, coastal waters, though in deeper water collection may be conducted by remotely operated vehicles (limited to one per licence).	For collection by hand, (diver-based) this typically restricts effort to safe diving depths (less than 30 m). ROV collection could enable depths up to 300 m (Hart <i>et al.</i> , 2017). In the past there has been one licence holder in the Specimen Shell Managed Fishery who has trialled ROV means of shell collection, WAFIC have provided advice that this fishery is no longer active.	
				Fishing effort:	Information not available.		
				Active licences/vessels:	In 2018 there were 31 licences with only two divers allowed in the water per licences at one time (Hart <i>et al.</i> , 2018). The number of people employed regularly in the fishery is likely to be about 21 (Hart <i>et al.</i> , 2018).		
West Australian Abalone Fishery	✓	✓	✓	Management area			
				The Western Australian Abalone Fishery includes all coastal waters from the WA and SA border to the WA and NT border. The fishery is concentrated on the south coast and the west coast.			
				Species targeted	Fishing methods	Fishing depth	
Greenlip abalone (<i>Haliotis laevis</i>) Brownlip abalone (<i>Haliotis conicopora</i>) Roe's abalone (<i>Haliotis roei</i>)	Divers.	Distribution to 5 m depth for Roe's abalone and 40 m depth for greenlip / brownlip abalone (DOF, 2011).					

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Fishery	Woodside Activity Area			Description						
	Browse	NWS/S	NW Cape							
				<p>Fishing effort: In 2018, the total commercial catch was 48 t, 1 t less than the catch in each of the last two seasons. No commercial fishing for abalone north of Moore River (Zone 8 of the managed fishery) has occurred since 2011–2012 (Strain <i>et al.</i>, 2018).</p> <p>Active licences/vessels: 26 vessels active in Roe’s abalone fishery (WAFIC⁵).</p>						
West Coast Deep Sea Crustacean Managed Fishery	✓	✓	✓	<p>Management area The West Coast Deep Sea Crustacean Managed Fishery extends north from Cape Leeuwin to the WA/NT border in water depths greater than 150 m within the AFZ.</p>						
				<table border="1"> <thead> <tr> <th>Species targeted</th> <th>Fishing methods</th> <th>Fishing depth</th> </tr> </thead> <tbody> <tr> <td> <p>The fishery targets deepwater crustaceans. Catches were dominated by crystal crabs of which 99% of their Total Allowable Catch (TAC) was landed (How and Orme, 2020a). Crystal (snow) crab (<i>Chaceon albus</i>) Giant (king) crab (<i>Pseudocarcinus gigas</i>) Champagne (spiny) crabs (<i>Hypothalassia acerba</i>)</p> </td> <td> <p>Baited pots, or traps, are operated in long-lines which have between 80 and 180 pots attached to a main line marked by a float at each end.</p> </td> <td> <p>Deeper than 150 m (and mostly at depths of between 500 m – 800 m). Most of the commercial Crystal crab catch is taken in depths of 500 m – 800 m (WAFIC⁶).</p> </td> </tr> </tbody> </table>	Species targeted	Fishing methods	Fishing depth	<p>The fishery targets deepwater crustaceans. Catches were dominated by crystal crabs of which 99% of their Total Allowable Catch (TAC) was landed (How and Orme, 2020a). Crystal (snow) crab (<i>Chaceon albus</i>) Giant (king) crab (<i>Pseudocarcinus gigas</i>) Champagne (spiny) crabs (<i>Hypothalassia acerba</i>)</p>	<p>Baited pots, or traps, are operated in long-lines which have between 80 and 180 pots attached to a main line marked by a float at each end.</p>	<p>Deeper than 150 m (and mostly at depths of between 500 m – 800 m). Most of the commercial Crystal crab catch is taken in depths of 500 m – 800 m (WAFIC⁶).</p>
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				<p>Fishing effort: The total landings in 2018 was 168. t. Two vessels operated in the fishery in 2017, using baited pots operated in a longline formation in the shelf edge waters, mostly in depths between 500 and 800 m (How and Orme, 2020a). Fishing effort was concentrated between Fremantle and Carnarvon.</p>						
<p>Active licences/vessels: There were four active vessels in 2018 (How and Orme, 2020a).</p>										

⁵ <https://www.wafic.org.au/fishery/roes-abalone-fishery/>

⁶ <https://www.wafic.org.au/fishery/west-coast-deep-sea-crustacean-fishery/>

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
Abrolhos Islands and Mid-West Trawl Fishery			✓	Management area	The Abrolhos Islands and Mid-West Trawl Fishery (AIMWTMF) operates around the Abrolhos Islands within the SWMR.	
				Species targeted	Fishing methods	Fishing depth
				Saucer scallops (<i>Ylistrum balloti</i> , formerly <i>Amusium balloti</i>)	Trawl.	Information not available, however, the species occurs at depth of around 30-60 m and therefore fishing effort would likely be at these depths (Himmelman <i>et al.</i> , 2009).
				Fishing effort:	The scallop landings in the AIMWTMF were 31.0 t meat weight (154.8 t whole weight). Between 2011 and 2015, the annual pre-season surveys showed very low recruitment (1-year old), as a result of the 2011 extreme marine heatwave and subsequent poor spawning stock (Kangas <i>et al.</i> , 2020b). The fishery was closed between 2011 and 2016.	
				Active licences/vessels:	Information about licences or vessels is not available but the Department of Primary Industry and Regional Development reported 774 t of catch from this fishery in the 2019 annual report (DPIRD, 2019).	
Broome Prawn Managed Fishery	✓			Management area	The Broome Prawn Managed Fishery (BPMF) operates off Broome and forms part of the North Coast Prawn Fishery.	
				Species targeted	Fishing methods	Fishing depth
				Western king prawn (<i>Penaeus latisulcatus</i>) Coral prawn	Trawl.	Trawling is generally in waters between 30 and 60 m deep, however can occur down to 100 m (DOEH, 2004).
				Fishing effort:	BPMF recorded extremely low fishing effort in 2018. Only two vessels undertook trial fishing to investigate whether the catch rates were sufficient for commercial fishing. This resulted in negligible landings of Western king prawn (Kangas <i>et al.</i> , 2020a).	

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels: Two vessels conducting fishing trial operated in 2018 (Kangas <i>et al.</i> , 2020a).			
Exmouth Gulf Prawn Managed Fishery			✓	Management area The estimated employment in the fishery in 2017 was 18 people including skippers and other crew (Kangas <i>et al.</i> , 2018). The fishery occupies a total area of 4000 km ² , with only half of this area being trawled (Fletcher and Santoro, 2015).			
				Species targeted	Fishing methods	Fishing depth	
				Western king prawn (<i>Penaeus latisulcatus</i>) Brown tiger prawn (<i>Penaeus esculentus</i>) Blue endeavour prawn (<i>Metapenaeus endeavouri</i>) Banana prawn (<i>Penaeus merguinensis</i>)	Trawl.	Information not available.	
				Fishing effort:	The total landings of prawns in 2018 were 880 t (Kangas <i>et al.</i> , 2020a). In the 2016 season, a fishing effort of about 23,000 hours resulted in a catch of 822 t.		
				Active licences/vessels:	The precise number of vessels is unreported. Eighteen people were said to be employed in this fishery in 2018 (Kangas <i>et al.</i> , 2019); however, in 2013 it was reported that 18 skippers as well as other crew and support staff were employed (WAFIC ⁷).		
Gascoyne Demersal Scalefish Managed Fishery			✓	Management area The Gascoyne Demersal Scalefish Fishery (GDSF) is located between the southern Ningaloo Coast to south of Shark Bay (23°07.30'S to 26°.30'S) with a closure area at Point Maud to Tantabiddi (21°56.30'S) (WAFIC ⁸).			
				Species targeted	Fishing methods	Fishing depth	

⁷ <https://www.wafic.org.au/fishery/exmouth-gulf-prawn-fishery/>

⁸ <https://www.wafic.org.au/fishery/gascoyne-demersal-scalefish-fishery/>

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Pink snapper (<i>Chrysophrys auratus</i>) Goldband snapper (<i>Pristipomoides multidentis</i>) Red emperor (<i>Lutjanus sebae</i>) Cods (<i>Gadus morhua</i>) Emperors (<i>Lethrinus miniatus</i>)	Mechanised handlines.	Information not available.
				Fishing effort:	The GDSF reported a total commercial catch of 210 t in 2017-18.	
				Active licences/vessels:	In 2018, 13 vessels fished during the season, in the 2017 season there were 16 vessels (Gaughan and Santoro, 2018).	
Kimberley Developing Mud Crab Fishery	✓			Management area	The Kimberley Developing Mud Crab Fishery is one of two small trap-based crab fisheries that exist in the North Coast Bioregion between Cambridge Gulf and Broome (Gaughan and Santoro, 2018).	
				Species targeted	Fishing methods	Fishing depth
				Brown mud crab (<i>Scylla olivacea</i>) Green mud crab (<i>Scylla serrata</i>)	Trap.	Information not available.
				Fishing effort:	The catch landed represents all commercially caught mud crabs landed in WA for 2018. A nominal catch rate of 0.66 kg/traplift was recorded for 2018, which is a 28% decrease from 2017 but remains above the harvest strategy threshold (Johnston <i>et al.</i> , 2020).	
				Active licences/vessels:	There are currently three licences issued to commercial operators (600 trap limit), and three exemptions issued to Indigenous groups (total of 210 traps currently allocated of a maximum 600 traps) (Johnston <i>et al.</i> , 2020).	
Nickol Bay Prawn Managed Fishery		✓		Management area	The Nickol Bay Prawn Managed Fishery operates in nearshore and offshore waters of the Pilbara region along the NWS.	
				Species targeted	Fishing methods	Fishing depth

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Banana prawn (<i>Penaeus merguianus</i>) Western king prawn (<i>Penaeus latisulcatus</i>) Brown tiger prawn (<i>Penaeus esculentus</i>) Blue endeavour prawn (<i>Metapenaeus endeavouri</i>)	Trawl.	Information not available.
				Fishing effort:	Trawling has been reported to occur at several locations along the Pilbara coast to the east of the Burrup Peninsula, including within the waters of Nickol Bay (Fletcher and Santoro, 2015). The total landings for the 2018 season were 81 t. Fishing effort was less than half at 138 days, compared to 281 boat days in 2017 (Kangas <i>et al.</i> , 2020a).	
				Active licences/vessels:	The precise number of vessels is unreported, though low effort produced a catch of 17 t in 2016 (Kangas <i>et al.</i> , 2018).	
Northern Demersal Scalefish Managed Fishery	✓			Management area	The fishery is divided into two fishing areas: an inshore sector (Area 1) and an offshore sector (Area 2) (Newman <i>et al.</i> , 2018). Area 1 permits line fishing only, between the high water mark and the 30 m isobath. Area 2 permits handline, dropline and fish trap fishing methods and is further divided into zones. Zone A is an inshore area, Zone B comprises the area with most historical fishing activity, and Zone C is an offshore deep slope area representing waters deeper than 200 m (Fletcher <i>et al.</i> , 2017).	
				Species targeted	Fishing methods	Fishing depth
				Goldband snapper (<i>Pristipomoides multidentis</i>) Blue-spotted emperor (<i>Lethrinus punctulatus</i>) Red emperor (<i>Lutjanus sebae</i>) Rankin cod (<i>Epinephelus multinotatus</i>)	Line fishing, handline, dropline and fish trap fishing.	Information not available.

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				<p>Fishing effort: In 2018, the fishery reported a total catch of 1297 t. Most of the catch is landed from Zone B, with a catch of 1106 t in 2018. The level of catch in Zone B is the highest reported since zoning was implemented in 2006 (Newman <i>et al.</i>, 2019).</p> <p>Active licences/vessels: Six vessels fished in the 2018 season and at least 20 people were directly employed (Gaughan and Santoro, 2018).</p>			
Octopus Interim Management Fishery				<p>Management area The developing Octopus Fishery operates from Kalbarri Cliffs in the north to Esperance in the south.</p>			
				<p>Species targeted</p>	<p>Fishing methods</p>	<p>Fishing depth</p>	
				<p><i>Octopus sp. cf. tetricus</i></p>	<p>Passive shelter pots and active traps.</p>	<p>In inshore waters to a depth of 70 m (DPIRD, 2018).</p>	
				<p>Fishing effort:</p>	<p>In 2019, the total commercial octopus catch was 314 t, which was 22% higher than the 2017 catch of 257 t. In 2016, about 200 vessels reported a total catch of 252 t (Hart <i>et al.</i>, 2020c).</p>		
				<p>Active licences/vessels:</p>	<p>About 21 vessels fish within the octopus specific fisheries, and about 200 vessels from the West Coast Rock Lobster Fishery catch octopus as bycatch (Gaughan and Santoro, 2018).</p>		
Shark Bay Beach Seine and Mesh Net Managed Fishery				<p>Management area The Shark Bay Beach Seine and Mesh Net Managed Fishery operates from Denham.</p>			
				<p>Species targeted</p>	<p>Fishing methods</p>	<p>Fishing depth</p>	
				<p>Whiting (yellowfin <i>Sillago schomburgkii</i> and goldenline <i>S. analis</i>) Sea mullet (<i>Mugil cephalus</i>) Tailor (<i>Pomatomus saltatrix</i>) Western yellowfin bream (<i>Acanthopagrus australis</i>)</p>	<p>Beach seine and mesh net.</p>	<p>Information not available.</p>	

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p>Fishing effort: In 2018, the total catch was 176 t (Gaughan and Santoro, 2020). The fishery currently employs about 14 fishers based on the seven fishery licences in operation (WAFIC⁹).</p> <p>Active licences/vessels: Six vessels operated employing around 12 fishers (Gaughan and Santoro, 2018).</p>		
Shark Bay Crab Managed Fishery				<p>Management area The Shark Bay Crab Managed Fishery operates within the NWMR.</p>		
				<p>Species targeted</p>	<p>Fishing methods</p>	<p>Fishing depth</p>
				Blue swimmer crab (<i>Portunus armatus</i>)	Trap and trawl.	Information not available.
				<p>Fishing effort: Commercial fishing for blue swimmer crabs in Shark Bay was voluntarily halted by industry in 2012 to facilitate stock rebuilding. The stock is still in a recovery phase; however, the fishery has resumed and reported a total commercial catch of 518 t in the 2017/18 season. The average commercial trap catch rate was 1.5 kg/traplift during 2017/18 (Chandrapavan <i>et al.</i>, 2017).</p>	<p>Active licences/vessels: The precise number of vessels in the Shark Bay Blue Swimmer Crab Fishery is unreported. There are five crab trap permits. These permits are consolidated onto three active vessels (WAFIC¹⁰).</p>	
				<p>Management area The Shark Bay Prawn Managed Fishery is the highest producing WA fishery for prawns.</p>		
Shark Bay Prawn and Scallop Managed Fishery				<p>Species targeted</p>	<p>Fishing methods</p>	<p>Fishing depth</p>
				Western king prawn (<i>Penaeus latisulcatus</i>) Brown tiger prawn (<i>Penaeus esculentus</i>)	Low-opening otter trawls.	Information not available.
				<p>Management area The Shark Bay Prawn Managed Fishery is the highest producing WA fishery for prawns.</p>		

⁹ <https://www.wafic.org.au/fishery/inner-shark-bay-scalefish-fishery/>

¹⁰ <https://www.wafic.org.au/fishery/shark-bay-prawn-and-scallop-managed-fisheries/>

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p>Endeavour prawns (<i>Metapenaeus endeavouri</i>) Coral prawns (<i>Metapenaeopsis sp.</i>) Saucer scallop (<i>Amusium balloti</i>)</p> <p>Fishing effort: The Shark Bay Scallop Managed Fishery is currently in a recovery phase due to the results from the pre-season survey of stock abundance (Fletcher and Santoro, 2015; Kangas <i>et al.</i>, 2018).</p> <p>Active licences/vessels: The precise number of vessels in the Shark Bay Prawn Managed Fishery is unreported; however, about 100 people are employed in this fishery (Gaughan and Santoro, 2018). About 20 skippers and crew are employed in scallop fishing in the Shark Bay and South Coast fisheries across 18 vessels in 2015 (Sporer <i>et al.</i>, 2015).</p>		
South Coast Crustacean Managed Fishery	-	-	-	<p>Management area The South Coast Crustacean Managed Fishery comprises four fisheries: the Windy Harbour/Augusta Rock Lobster Managed Fishery, the Esperance Rock Lobster Managed Fishery, the Southern Rock Lobster Pot Regulation Fishery and the South Coast Deep-Sea Crab Fishery.</p>		
				<p>Species targeted</p>	<p>Fishing methods</p>	<p>Fishing depth</p>
				<p>Southern rock lobster (<i>Jasus edwardsii</i>) Western rock lobster (<i>Panulirus cygnus</i>) Giant crab (<i>Pseudocarcinus gigas</i>) Crystal crab (<i>Chaceon albus</i>) Champagne crab (<i>Hypothalassia acerba</i>)</p>	<p>Pots.</p>	<p>Information not available.</p>
				<p>Fishing effort: The South Coast Crustacean Managed Fishery reported a total catch of 101.2 t in 2018 season and the value of the fishery for 2017/2018 was about \$5.9 million (Howe and Orme, 2020b).</p>	<p>Active licences/vessels: The number of vessels is unknown; however, a total of 1977 pots are licensed to be used.</p>	
				<p>Management area The fishery is active in coastal waters between Cape Leeuwin and the South Australia border. Landings are primarily at Albany, Bremer Bay and Esperance (Norriss and Blazeski, 2020).</p>		
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Fishery	Woodside Activity Area			Description												
	Browse	NWS/S	NW Cape													
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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
The South Coast Salmon Managed Fishery	-	-	-	Management area	The South Coast Salmon Managed Fishery is one of two fisheries operating in the South Coast Bioregion that target nearshore and estuarine finfish.	
				Species targeted	Fishing methods	Fishing depth
				Western Australian salmon (<i>Arripis truttaceus</i>) Southern school whiting (<i>Sillago bassensis</i>) Australian herring (<i>Arripis georgianus</i>) King George whiting (<i>Sillaginodes punctatus</i>) Sea mullet (<i>Mugil cephalus</i>) Estuary cobbler (<i>Cnidoglanis macrocephalus</i>) Black bream (<i>Acanthopagrus butcheri</i>)	Beach seines, haul nets and gill nets.	Information not available.
				Fishing effort:	The total catch for 2018 was 243 t (Duffy and Blay, 2020b).	
				Active licences/vessels:	Number of vessels is unknown; however, 12 commercial fishers were employed in 2018 (Duffy and Blay, 2020b).	
West Coast Beach Bait Managed Fishery	-	-	-	Management area	Primarily active in the Bunbury areas in the SWMR.	
				Species targeted	Fishing methods	Fishing depth
				Whitebait	Beach-based haul nets.	Information not available.
				Fishing effort:	In recent years the fishery is primarily active in the Bunbury area. Total catch of whitebait in 2015 was 40.2 t (Duffy and Blay, 2020c).	

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p>Offshore species – more than 250 m water depth.</p> <p>Fishing effort: In 2016, the West Coast Demersal Scalefish (interim) Managed Fishery reported a total catch of 256 t.</p> <p>Active licences/vessels: The precise number of vessels in the West Coast Demersal Scalefish Fisheries is unreported; however, it is restricted to 60 interim managed fishery permit holders.</p>		
West Coast Purse Seine Managed Fishery	-	-	-	<p>Management area Located in waters from Cape Bouvard extending to Lancelin.</p>		
				<p>Species targeted</p>	<p>Fishing methods</p>	<p>Fishing depth</p>
				<p>Small pelagic finfish such as: Scaly mackerel (<i>Sardinella lemuru</i>) Pilchards (<i>Sardinops sagax</i>) Australian anchovy (<i>Engraulis australis</i>) Yellowtail scad (<i>Trachurus novaezelandiae</i>) Maray (<i>Etrumeus teres</i>)</p>	<p>Purse seine.</p>	<p>Information not available.</p>
				<p>Fishing effort: Information not available</p>	<p>Active licences/vessels: Seven vessels in 2017 (Gaughan and Santoro, 2018).</p>	
West Coast Rock Lobster Managed Fishery			✓	<p>Management area The West Coast Rock Lobster Fishery operates from Shark Bay south to Cape Leeuwin. The fishery is managed using zones, seasons and total allowable catch. The recreational fishery targets the western rock lobsters using baited pots and by diving between North-west Cape and Augusta.</p>		

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Species targeted	Fishing methods	Fishing depth
				Western rock lobster (<i>Panulirus cygnus</i>)	Baited pots.	Less than 20 m.
				Fishing effort:	In 2018, 234 vessels reported a total catch of 6400 t in 2017 (de Lestang <i>et al.</i> , 2018). In 2016, 226 vessels reported a total catch of 6,086 t (Gaughan and Santoro, 2018).	
				Active licences/vessels:	234 vessels operated in 2017 and 233 vessels operated in 2018 (Gaughan and Santoro, 2018).	

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11.5.2 Aquaculture

Aquaculture operations in the northwest are typically restricted to inland and shallow coastal waters.

West Coast Bioregion

Aquaculture activities in the West Coast bioregion, defined by the Department of Primary Industries and Regional Development (DPIRD) (as the government body responsible management of primary industries in WA) are focused on blue mussels and edible oysters (mainly in Cockburn Sound) and marine algae for production of beta-carotene, used as a food additive and as a nutritional supplement. Offshore marine finfish production is also being developed, initially focusing on yellowtail kingfish.

There is also an emerging black pearl industry (from the *Pinctada margaritifera* oyster) in the Abrolhos Islands. As well as expansion in the production of Akoya pearls (small white pearls from *Pinctada fucata martensi*), *Pinctada albina* (small, yellow pearls) and *Pteria penguin*, which are often used to produce half (mabe) pearls in pink and bluish shades.

Aquaculture licences for producing coral and live rock (pieces of old coral reefs colonised by marine life, such as beneficial bacteria, for aquariums) at the Abrolhos Islands have also been issued and other applications are being assessed.

Gascoyne Coast Bioregion

In the Gascoyne Coast bioregion, aquaculture activities are focused on the blacklip oyster (*Pinctada margaritifera*) and Akoya pearl oyster (*Pinctada imbricata*) (Gaughan and Santoro, 2020). Several hatcheries supply *P. margaritifera* juveniles to the region's developing black pearl farms.

Other aquaculture developments in the Gascoyne Coast bioregion include emerging producers of coral and live rock species for aquariums.

North Coast Bioregion

Aquaculture activities in the North Coast bioregion is dominated by the production of pearls. A large number of pearl oysters for seeding are obtained from wild stocks and supplemented by hatchery produced oysters, with major hatcheries operating at Broome and around the Dampier Peninsula (Gaughan and Santoro, 2018). Primary spawning of the pearl oyster occurs from mid-October to December. A smaller secondary spawning occurs in February and March (Gaughan and Santoro, 2020).

Other aquaculture developments in the North Coast include emerging producers of coral and live rock species for aquariums as well as barramundi (*Lates calcarifer*) farms and microalgae culturing for Omega-3, biofuels and protein biomass (Gaughan and Santoro, 2020).

11.6 Fisheries – Traditional

Traditional or customary fisheries are typically restricted to shallow coastal waters and/or areas with structures such as reef.

Dugong, fish and marine turtles that move between coastal and Commonwealth waters are important components of the Aboriginal people's culture and diet. Aboriginal people continue to actively manage their sea country in coastal waters of WA in order to protect and manage the marine environment, its resources and cultural values.

Indonesian fishers can fish within designated areas under the Australia-Indonesia Memorandum of Understanding regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974 (MoU 74). Traditional fishing is allowed within the MoU Box (**Figure 11-1**), which encompasses: Ashmore Reef (Pulau Pasir), Cartier Island (Pulau Baru), Seringapatam Reef (Afringan), Scott Reef (Pulau Dato) and Browse Island (Berselan). Restrictions have since been introduced around Ashmore Reef and Cartier Island following their

designation as Nature Reserves under the Commonwealth's *National Parks and Wildlife Conservation Act 1975* in 1983 and 2000, respectively.

The MoU allows Indonesian fishers to fish in designated areas using traditional methods only. These methods include reef gleaning, free-diving, hand lining and other non-mechanised methods. Scott Reef is currently the principal reef in the MoU 74 Box and is utilised seasonally by Indonesian fishers to harvest trepang, trochus shells and other reef species. The peak season is July to October due to more favourable wind conditions, and to allow fishers to sun dry their catch on their boat decks (ERM, 2009). Browse Island is also frequently visited by shark fishers who mostly fish along the eastern margin of the MoU 74 Box.

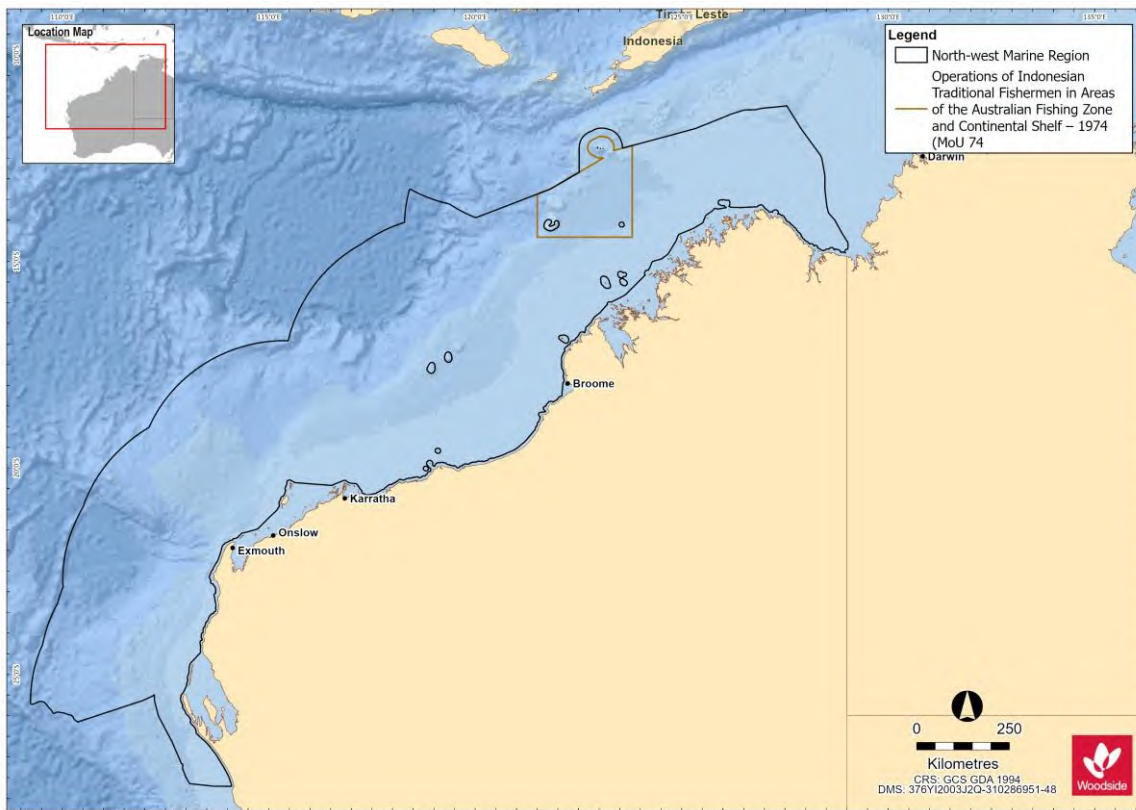


Figure 11-1 MOU 74 Box. Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974

11.7 Tourism and Recreation

There are growing tourism and recreational sectors in WA. The Kimberley, Pilbara and Gascoyne regions are popular visitor destinations for Australian and international tourists. Tourism is concentrated in the vicinity of population centres including Broome, Dampier, Exmouth, Coral Bay and Shark Bay.

Recreational and tourism activities include: charter fishing, other recreational fishing, diving, snorkelling, marine fauna watching, and yachting.

11.7.1 Gascoyne Region

Outside the petroleum industry, tourism is the largest revenue earner of all the major industries of the Gascoyne region. It contributes significantly to the local economy in terms of both income and

employment. In 2018 there was an average of 337,400 visitors with a visitor spend of \$359 million (Gascoyne Development Commission¹¹).

In 2018-19, the Ningaloo region (Ningaloo Reef and the surrounding coastal region Exmouth Gulf, communities of Exmouth and Coral Bay, and adjacent proposed southern coastal reserves and pastoral leases) contributed an estimated \$110 million in value added to the WA economy (DCBA, 2020). Ningaloo's economic contribution to WA is attributed to four key types of economic activity, tourism expenditure by international, interstate and WA visitors to the Ningaloo region, commercial fishing in the Exmouth Gulf, recreation activity involving the Reef by residents of the Ningaloo region and management and research relating to the Reef (DCBA, 2020). More than 90% of this value added is attributed to the domestic and international tourists who visit Ningaloo each year (DCBA, 2020). The main marine nature-based tourist activities are concentrated around and within the Ningaloo WHA.

11.7.2 Pilbara region

Recreation and tourism activities within the Pilbara are of high social value. Tourism is a key economic driver for the Pilbara with more than 1 million visitors to the region every year, generating \$413 million in gross revenue annually (Pilbara Development Commission¹²).

Recreational fishing within the Pilbara region tends to be concentrated in State waters adjacent to population centres. Recreational fishing is known to occur around the Dampier Archipelago with boats launched from boat ramps around Dampier and Karratha (Williamson *et al.*, 2006). Once at sea, charter vessels may also frequent the waters surrounding the Montebello Islands.

11.7.3 Kimberley Region

Recreation and tourism activities in the Kimberley region occur predominantly in WA State waters (extending offshore 3 nm from the mainland), adjacent to coastal population centres (e.g. Broome), with a peak in activity during the winter months (dry season). These activities include recreational fishing, diving, snorkelling, wildlife watching and boating.

Primary dive locations in the Kimberley region include the Rowley Shoals, including Mermaid Reef AMP, Scott Reef, Seringapatam Reef, Ashmore Reef AMP and Cartier Island.

11.8 Shipping

Commercial shipping traffic is high within the NWMR with vessel activities including commercial fisheries, tourism such as cruises, international shipping and oil and gas operations. There are 12 ports adjacent to the NWMR, including the major ports of Dampier, Port Hedland and Broome, which are operated by their respective port authorities. These ports handle large tonnages of iron ore and petroleum exports in addition to salt, manganese, feldspar chromite and copper (DEWHA, 2008).

Heavy vessel traffic exists within the Pilbara Port Authority management area which recorded 10,064 vessel movements in Port of Dampier 2019/20 annual reporting period (PPA, 2020). Twenty-six designated anchorages for bulk carriers, petroleum and gas tankers, drilling rigs, offshore platforms, and pipelay vessels are located offshore of Rosemary Island.

In 2012, AMSA established a network of shipping fairways off the northwest coast of Australia. The shipping fairways, while not mandatory, aim to reduce the risk of collision between transiting vessels and offshore infrastructure. The fairways are intended to direct large vessels such as bulk carriers and LNG ships trading to the major ports into pre-defined routes to keep them clear of existing and planned offshore infrastructure (AMSA, 2013).

¹¹ <https://www.gdc.wa.gov.au/industry-profiles/tourism/>

¹² <https://www.pdc.wa.gov.au/our-focus/strategicinitiatives/tourism>

11.9 Oil and Gas Infrastructure

The NWMR supports a number of industries including petroleum exploration and production.

Within the NWMR there are seven sedimentary petroleum basins: Northern and Southern Carnarvon basins, Perth, Browse, Roebuck, Offshore Canning and Bonaparte basins. Of these, the Northern Carnarvon, Browse and Bonaparte basins hold large quantities of gas and comprise most of Australia's reserves of natural gas (DEWHA, 2008), which is reflected by the level of development in the area. In addition to existing facilities, there are proposed developments in the region. This includes proposals to develop gas and condensate from a number of fields within the NWMR.

In addition to the oil and gas industry, other land-based industries depend upon the marine environment in the nearshore area. These include ports, salt mines such as Karratha and Onslow, LNG onshore processing facilities such as Burrup Hub, Thevenard Island, Barrow Island, Varanus Island, and small-scale desalination plants at Barrow Island, Burrup, Cape Preston, and Onslow.

11.10 Defence

Key Australian Department of Defence (DoD) operational areas and facilities areas of the NWMR for training and operational activities, include:

- An operating logistics base has been established in Dampier to support vessels patrolling the waters around offshore oil and gas facilities. A dedicated navy administrative support facility is also being constructed at the nearby township of Karratha.
- The Royal Australian Air Force currently maintains two 'bare bases' in remote areas of WA that are used for military exercises. One of these is the Royal Australian Air Force Base in Learmonth. The Royal Australian Air Force maintains the Commonwealth Heritage listed Learmonth Air Weapons Range Facility, which is located between Ningaloo Station and the Cape Range National Park. The air training area associated with the Learmonth base extends over the offshore region.
- The Royal Australian Air Force Base Curtin is located on the north coast of WA, south-east of Derby and 170 km east of Broome. It provides support for land, air and sea operations aimed to support Australia's northern approaches.
- The Naval Communications Station Harold E. Holt is located ~6 km north of Exmouth. The main role of the station is to communicate at very low frequencies (19.8 kHz) with Australian and United States submarines and ships in the eastern Indian Ocean and the western Pacific Ocean.

12. REFERENCES

- [AFMA] Australian Fisheries Management Authority 2021a. Southern Blue Fin Tuna. Accessed 3 June 2021 www.afma.gov.au/fisheries-management/species/southern-bluefin-tuna
- [AFMA] Australian Fisheries Management Authority 2021b. Western Skipjack Tuna. Accessed 3 June 2021 www.afma.gov.au/fisheries-management/species/skipjack-tuna
- [ALA] Atlas of Living Australia 2020. *Eubalaena australis* (Desmoulins, 1822). Available at: <https://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:99e19958-7c6e-4f22-ad50-44027af1e418>
- [AMSA] Australian Maritime Safety Authority 2013. Australian Government Maritime Safety Authority Annual Report 2012/13. Available at: <https://www.amsa.gov.au/sites/default/files/amsa191-annual-report-2012-13.pdf>
- [BOM] Bureau of Meteorology 2021a. Climatology of tropical cyclones in Western Australia. <http://www.bom.gov.au/cyclone/climatology/wa.shtml> [Accessed 05 May 2021].
- [BOM] Bureau of Meteorology 2021b. Climate statistics for Troughton Island, monthly mean maximum air temperatures. http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=36&p_display_type=dayFile&p_startYear=&p_c=&p_stn_num=001007 [Accessed 05 June 2021].
- [BOM] Bureau of Meteorology 2021c. Climate Statistics for Troughton Island, monthly mean rainfall. http://www.bom.gov.au/climate/averages/tables/cw_001007.shtml [Accessed 05 June 2021].
- [BRS] Bureau of Rural Sciences 2007. Fishery Status Reports 2007. Status of Fish Stocks Managed by the Australian Government. Australian Government Department of Agriculture, Fisheries and Forestry, Bureau of Rural Sciences. 304 pp.
- [CALM] Department of Conservation and Land Management 1992. Marmion Marine Park Management Plan 1992-2002, Management Plan No 23. Department of Conservation and Land Management.
- [CALM] Department of Conservation and Land Management 1996. Shark Bay Marine Reserves Management Plan 1996-2006. Department of Conservation and Land Management.
- [CALM] Department of Conservation and Land Management 1999. Swan Estuary Marine Park and Adjacent Nature Reserves Management Plan 1999-2009, Management Plan No 41. Department of Conservation and Land Management.
- [CALM] Department of Conservation and Land Management 2005a. Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005 – 2015. Department of Conservation and Land Management.
- [CALM] Department of Conservation and Land Management 2005b. Jurien Bay Marine Park Management Plan 2005-2015, Management Plan No 49. Department of Conservation and Land Management.
- [DAWE] Department of Agriculture, Water and the Environment 2019. Directory of Important Wetlands. <https://www.environment.gov.au/cgi-bin/wetlands/search.pl?smode=DOIW>
- [DAWE] Department of Agriculture, Water and the Environment 2020. National Conservation Values Atlas. Available at: <https://www.environment.gov.au/marine/marine-bioregional-plans/conservation-values-atlas>
- [DBCA] Department of Biodiversity Conservation and Attractions 2020. Economic contribution of Ningaloo: one of Australia's best kept secrets. Deloitte Access Economics. June 2020. 58 pp.

- [DEC] Department of Environment and Conservation 2007a. Rowley Shoals Marine Park Management 2007-2017 Management Plan No. 56. Department of Environment and Conservation, Perth, Western Australia.
- [DEC] Department of Environment and Conservation 2007b. Management Plan for the Montebello/Barrow Islands Marine Conservation Reserves 2007-2017. Management Plan No 55. Department of Environment and Conservation, Perth, Western Australia.
- [DEC] Department of Environment and Conservation 2007c. Shoalwater Islands Marine Park Management Plan 2007-2017, Management Plan No 58. Department of Environment and Conservation, Perth, Western Australia.
- [DEC] Department of Environment and Conservation 2009. Walpole and Nornalup Inlets Marine Park Management Plan 2009–2019, Management Plan No 62. Department of Environment and Conservation, Perth, Western Australia.
- [DEC] Department of Environment and Conservation 2013. Ngari Capes Marine Park management plan 2013– 2023, Management plan number 74. Department of Environment and Conservation,
- [DEWHA] Department of Environment, Water, Heritage and the Arts 2007a. A characterisation of the marine environment of the North-west Marine Region. A summary of an expert workshop convened in Perth, Western Australia, 5-6 September 2007. Prepared by the North-west Marine Bioregional Planning section, Marine and Biodiversity Division, Department of the Environment, Water, Heritage and the Arts. 47 pp.
- [DEWHA] Department of Environment, Water, Heritage and the Arts 2007b. Characterisation of the marine environment of the North Marine Region. Outcomes of an Expert Workshop, Darwin, Northern Territory, 2-3 April 2007. Prepared by the North Marine Bioregional Planning Section, Marine Division, Department of the Environment, Water, Heritage and the Arts. 37 pp.
- [DEWHA] Department of Environment, Water, Heritage and the Arts 2008. The North-west Marine Bioregional Plan, Bioregional Profile. A Description of the Ecosystems, Conservation Values and Uses of the North-west Marine Region. Prepared by the Marine Bioregional Planning – North-west, Marine and Biodiversity Division. Department of the Environment, Water, Heritage and the Arts. 288 pp.
- [DEWR] Department of the Environment and Water Resources 2007. A characterisation of the marine environment of the South-west Marine Region: A summary of an expert workshop convened in Perth, Western Australia, September 2006. 40 pp.
- [DNP] Director of National Parks 2018a. North-west Marine Parks Network Management Plan 2018, Director of National Parks, Canberra.
- [DNP] Director of National Parks 2018b. South-west Marine Parks Network Management Plan 2018, Director of National Parks, Canberra.
- [DNP] Director of National Parks 2018c. North Marine Parks Network Management Plan 2018, Director of National Parks, Canberra.
- [DOE] Department of the Environment 2014. Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*). Canberra, ACT: Department of the Environment. Available from: <http://www.environment.gov.au/resource/recovery-plan-grey-nurse-shark-carcharias-taurus>
- [DOE] Department of the Environment 2015a. Conservation Advice *Numenius madagascariensis* eastern curlew. Canberra: Department of the Environment. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/847-conservation-advice.pdf>
- [DOE] Department of the Environment 2015b. Conservation Advice *Calidris ferruginea* curlew sandpiper. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/856-conservation-advice.pdf>

- [DOEH] Department of Environment and Heritage 2004. Assessment of the Onslow and Nickol Bay Prawn Managed Fisheries, November 2004. 24 pp.
- [DOF] Department of Fisheries 2011. State of the Fisheries and Aquatic Resources Report 2010/11. Fletcher, W.J. and Santoro, K. (eds), Department of Fisheries, Perth, Western Australia.
- [DPAW] Department of Parks and Wildlife 2013. Lalang-garram / Camden Sound Marine Park management plan 73 2013–2023, Department of Parks and Wildlife, Perth.
- [DPAW] Department of Parks and Wildlife 2014. Eighty Mile Beach Marine Park Management Plan 2014-2024. Management Plan No. 80. Department of Parks and Wildlife, Perth, Western Australia.
- [DPAW] Department of Parks and Wildlife 2016a. North Kimberley Marine Park Joint Management Plan 2016 Unguu, Balanggarra, Miriuwung Gajerrong and Wilinggin management areas, Number Plan 89. Department of Parks and Wildlife, Perth.
- [DPAW] Department of Parks and Wildlife 2016b. Lalang-garram / Horizontal Falls and North Lalang-garram Marine Parks joint management plan 2016, Management Plan 88. Department of Parks and Wildlife, Perth
- [DPAW] Department of Parks and Wildlife 2016c. Yawuru Nagulagun / Roebuck Bay Marine Park joint management plan 2016. Department of Parks and Wildlife, Perth.
- [DPAW] Department of Parks and Wildlife 2016d. Marmion Marine Park. Visitor Guide.
- [DPIRD] Department of Primary Industries and Regional Development 2018. Western Australian Marine Stewardship Council Report Series No. 14. Resource Assessment Report Western Australian Octopus Resource.
- [DPIRD] Department of Primary Industries and Regional Development 2019. Annual Report. Western Australia.
- [DSEWPAC] Department of Sustainability, Environment, Water, Population and Communities 2011a. Approved Conservation Advice for *Aipysurus apraefrontalis* (Short-nosed Sea Snake). Canberra, ACT: Department of Sustainability, Environment, Water, Population and Communities. Available from:
<http://www.environment.gov.au/biodiversity/threatened/species/pubs/1115-conservation-advice.pdf>
- [DSEWPAC] Department of Sustainability, Environment, Water, Population and Communities 2011b. Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake). Canberra, ACT: Department of Sustainability, Environment, Water, Population and Communities. Available from:
<http://www.environment.gov.au/biodiversity/threatened/species/pubs/1118-conservation-advice.pdf>
- [DSEWPAC] Department of Sustainability, Environment, Water, Population and Communities 2011c. National recovery plan for threatened albatrosses and giant petrels 2011-2016. Commonwealth of Australia, Hobart. Available from:
<http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-threatened-albatrosses-and-giant-petrels-2011-2016>
- [DSEWPAC] Department of Sustainability, Environment, Water, Population and Communities 2011d. Approved Conservation Advice for *Sternula nereis nereis* (Fairy Tern). Canberra, ACT: Department of Sustainability, Environment, Water, Population and Communities. Available

from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/82950-conservation-advice.pdf>

- [DSEWPAC] Department of Sustainability, Environment, Water Population and Communities 2012a. Marine bioregional plan for the North-west Marine Region. Prepared under the *Environment Protection and Biodiversity Conservation Act 1999*. 269 pp.
- [DSEWPAC] Department of Sustainability, Environment, Water Population and Communities 2012b. Marine bioregional plan for the South-west Marine Region. Prepared under the *Environment Protection and Biodiversity Conservation Act 1999*. 216 pp.
- [DSEWPAC] Department of Sustainability, Environment, Water Population and Communities 2012c. Marine bioregional plan for the North Marine Region. Prepared under the *Environment Protection and Biodiversity Conservation Act 1999*. 200 pp.
- [DSEWPAC] Department of Sustainability, Environment, Water, Population and Communities 2012d. Conservation Management Plan for the Southern Right Whale. A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999 2011-2021. Canberra, ACT: Department of Sustainability, Environment, Water, Population and Communities. Available from: <http://www.environment.gov.au/resource/conservation-management-plan-southern-right-whale-recovery-plan-under-environment>
- [DSEWPAC] Department of Sustainability, Environment, Water, Populations and Communities 2012e. Species group report card – seabirds and migratory shorebirds. Supporting the marine bioregional plan for the North-west Marine Region.
- [DSEWPAC] Department of Sustainability, Environment, Water, Population and Communities 2013a. Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) 2013. Department of Sustainability, Environment, Water, Population and Communities. Available from: <http://www.environment.gov.au/system/files/resources/1eb9233c-8474-40bb-8566-0ea02bbaa5b3/files/neophoca-cinerea-recovery-plan.pdf>
- [DSEWPAC] Department of Sustainability, Environment, Water, Population and Communities 2013b. Recovery Plan for the White Shark (*Carcharodon carcharias*). Department of Sustainability, Environment, Water, Population and Communities. Available from: <http://www.environment.gov.au/biodiversity/threatened/recovery-plans/recovery-plan-white-shark-carcharodon-carcharias>
- [ERM] Environmental Resources Management 2009. Browse LNG Development: Social Study on Indonesian Fishers (Phase 2) 2008. Report produced for Woodside Energy Limited.
- [PPA] Pilbara Ports Authority 2020. 2019-20 Annual Report. Available at: <https://www.pilbaraports.com.au/about-ppa/publications/annual-report>
- Abascal, F.J., Quintans, M., Ramos-Cartelle, A. and Mejuto, J. 2011. Movements and environmental preferences of the shortfin mako, *Isurus oxyrinchus*, in the southeastern Pacific Ocean. *Marine Biology* 158: 1175–1184.
- Abdul Wahab, M.A., Radford, B., Cappel, M., Colquhoun, J., Stewart, M., Depczynski, M., Miller, K. and Heyward, A. 2018. Biodiversity and spatial patterns of benthic habitat and associated demersal fish communities at two tropical submerged reef ecosystems. *Coral Reefs* 37: 327–343. <https://doi.org/10.1007/s00338-017-1655-9>
- Allen, G.R. and Swainston, R. 1988. The Marine Fishes of North-Western Australia. A Field Guide for Anglers and Divers. Published by the Western Australian Museum, Perth, WA 6000.
- Allen, S.J., Cagnazzi, D.D., Hodgson, A.J., Loneragan, N.R. and Bejder, L. 2012. Tropical inshore dolphins of north-western Australia: Unknown populations in a rapidly changing region. *Pacific Conservation Biology* 18: 56-63. <https://doi.org/10.1071/PC120056>

- Allen, S.J., Tyne, J.A., Kobry, H.T., Bejder, L., Pollock, K.H. and Lonergan, N.R. 2014. Patterns of Dolphin Bycatch in a North-Western Australian Trawl Fishery. PLoS ONE 9(4): e93178. <https://doi.org/10.1371/journal.pone.0093178>
- Anderson, P.K. and Prince, R.I.T. 1985. Predation on dugongs: attacks by killer whales. Journal of Mammalogy 66(3): 554-556.
- Andrzejaczek, S., Gleiss, A.C., Jordan, L.K.B. Pattiaratchi, C.B., Howey, L.A., Brooks, E.J. and Meekan, M.G. 2018. Temperature and the vertical movements of oceanic whitetip sharks, *Carcharhinus longimanus*. Scientific Reports 8, 8351. <https://doi.org/10.1038/s41598-018-26485-3>
- Aulich, M.G., McCauley, R.D., Saunders, B.J., and Parsons, M.J.G. 2019. Fin whale (*Balaenoptera physalus*) migration in Australian waters using passive acoustic monitoring. Scientific Reports 9: 8840. <https://doi.org/10.1038/s41598-019-45321-w>
- Baker, C., Potter, A., Tran, M. and Heap, A.D. 2008. Sedimentology and Geomorphology of the North-west Marine Region of Australia. Geoscience Australia, Canberra. 24 pp.
- Bamford, M., Watkins, D., Bancroft, W., Tischler, G. and Wahl, J. 2008. Migratory shorebirds of the East Asian-Australasian flyway: population estimates and internationally important sites. Wetlands International – Oceania, Canberra.
- Bannister, J., Kemper, C.M. and Warneke, R.M. 1996. The action plan for Australian cetaceans. Australian Nature Conservation Agency, Canberra.
- Bannister, J.L. and Hedley, S.L. 2001. Southern Hemisphere group IV humpback whales: their status from recent aerial survey. Memoirs of the Queensland Museum 47(2): 587–98.
- Bejder, L., Videsen, S., Hermannsen, L., Simon, M., Hanf, D. and Madsen, P.T. 2019. Low energy expenditure and resting behaviour of humpback whale mother-calf pairs highlights conservation importance of sheltered breeding areas. Scientific Reports 9: 771. <https://doi.org/10.1038/s41598-018-36870-7>
- BirdLife Australia 2018. Seabird and Shorebird Baseline Studies, Ningaloo Region – Report on January 2018 bird surveys.
- Blue Planet Marine 2020. Australian Blue Whale Species Assessment Report (No. v4). Unpublished report to Woodside Energy Ltd.
- Bouchet, P.J., Thiele, D., Marley, S.A., Waples, K., Weisenberger, F., Balangarra Rangers, Bardi Jawi Rangers, Dambimangari Rangers, Nyamba Buru Yawuru Rangers, Nyul Nyul Rangers, Uunguu Rangers and Raudino, H. 2021. Regional assessment of the conservation status of Snubfin Dolphins (*Orcaella heinsohni*) in the Kimberley Region, Western Australia. Frontiers in Marine Science 7:article 614852.
- Braccini, M. and Blay, N. 2020. Temperate Demersal Gillnet and Demersal Longline Fisheries Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 214-220.
- Brewer, D., Lyne, V., Skewes, T. and Rothlisberg, P. 2007, Trophic Systems of the North West Marine Region, Report to the Department of the Environment and Water Resources, CSIRO Marine and Atmospheric Research, Cleveland. 167 pp.
- Brown, A., Bejder, L., Cagnazzi, D., Parra, G.J. and Allen, S.J. 2012. The North West Cape, Western Australia: a potential hotspot for Indo-Pacific humpback dolphins *Sousa chinensis*? Pacific Conservation Biology 18: 240–246.
- Brown, A.M., Bejder, L., Pollock, K.H. and Allen, S.J. 2016. Site-specific assessments of the abundance of three inshore dolphin species to inform conservation and management. Frontiers in Marine Science <https://doi.org/10.3389/fmars.2016.00004>

- Brown, A.M., Kopps, A.M., Allen, S.J., Bejder, L., Littleford-Colquhoun, B., Parra, G.J., Cagnazzi, D., Thiele, D., Palmer, C. and Frère, C.H. 2014. Population differentiation and hybridisation of Australian snubfin (*Orcaella heinsohni*) and Indo-Pacific humpback (*Sousa chinensis*) dolphins in north-western Australia. PLoS ONE 9: e101427.
- Bruce, B.D. 2008. The biology and ecology of the white shark, *Carcharodon carcharias*. In: Camhi, M.D., Pikitch, E.K., Babcock, E.A. (eds.), *Sharks of the Open Ocean: Biology, Fisheries and Conservation*. Blackwell Publishing Limited, Oxford, pp. 69–81.
- Bruce, B.D., Stevens, J.D., Malcolm, H. 2006. Movements and swimming behaviour of white sharks (*Carcharodon carcharias*) in Australian waters. *Marine Biology* 150: 161–172.
- Bulman, C., 2006. Trophic webs and modelling of Australia's North West Shelf. North West Shelf Joint Environmental Management Study (NWSJEMS) Technical Report No. 9. CSIRO Marine and Atmospheric Research, Hobart. 49 pp.
- Campana, S. and W. Joyce. 2004. Temperature and depth associations of porbeagle shark (*Lamna nasus*) in the northwest Atlantic. *Fisheries Oceanography* 13 (1): 52-64.
- Campana, S.E., Marks, L. and Joyce, W. 2005. The biology and fishery of shortfin mako sharks (*Isurus oxyrinchus*) in Atlantic Canadian waters. *Fisheries Research* 73: 341–352.
- Campana, S.E., Joyce, W. and Fowler, M. 2010. Subtropical pupping ground for a cold-water shark. *Canadian Journal of Fisheries and Aquatic Sciences* 67: 769-773.
- Cannell, B., Hamilton, S. and Driessen, J. 2019. Wedge-tailed shearwater foraging behaviour in the Exmouth Region. BirdLife Australia and University of Western Australian study. Available from: <https://www.birdlife.org.au/documents/wedge-tailed%20shearwater%20foraging%20behaviour.pdf>
- Carruthers, T.J.B., Dennison, W.C., Kendrick, G., Waycott, M., Walker, D.I. and Cambridge, M. 2007. Seagrasses of south west Australia: a conceptual synthesis of the world's most diverse and extensive seagrass meadows. *Journal of Experimental Marine Biology & Ecology* 350: 21-45.
- Ceccarelli, D., McCrea, I., Collis, M. and Nicoll, R. 2011. Australia's Last Great Whale Haven – Cetacean distribution and conservation needs in the north-west marine region. International Fund for Animal Welfare, November 2011. 72 pp.
- Chandrapavan, A., Sporer, E., Oliver R. and Cavalli, P. 2017. Shark Bay Blue Swimmer Crab Resource Status Report 2016. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2015/16: The State of the Fisheries* eds. W.J. Fletcher, M.D. Mumme and F.J. Webster, Department of Fisheries, Western Australia. pp. 95-98.
- Chevron Australia. 2010. Draft Environmental Impact Statement/Environmental Review and Management Programme for the Proposed Wheatstone Project. Appendix Q7 –Baseline water quality assessment report. Chevron Australia, Perth, Western Australia. Available from: <https://australia.chevron.com/our-businesses/wheatstone-project/environmental-approvals> [Accessed 14 May 2021].
- Chidlow, J., Gaughan, D. and McAuley, R. 2006. Identification of Western Australian Grey Nurse Shark Aggregation Sites: Final Report to the Australian Government, Department of the Environment and Heritage. In: Fisheries Research and Development Corporation (ed.), Fisheries Research Report, Perth, Department of Fisheries, Perth.
- Cliff, G. and Wilson, G. 1994. Natal sharks board's guide to sharks and other marine animals. Natal Sharks Board, 33 pp.
- Commonwealth of Australia 2006. A guide to the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) version 4.0. Department of Environment and Heritage, Canberra, Australia. 16 pp.

- Commonwealth of Australia 2015a. Conservation Management Plan for the Blue Whale: A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2015-2025. Canberra, ACT: Commonwealth of Australia. Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/recovery/blue-whale-conservation-management-plan>
- Commonwealth of Australia 2015b. Sawfish and River Sharks Multispecies Recovery Plan. Canberra, ACT: Commonwealth of Australia. Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/recovery/sawfish-river-sharks-multispecies-recovery-plan>
- Commonwealth of Australia 2015c. Wildlife Conservation Plan for Migratory Shorebirds. Canberra, ACT: Commonwealth of Australia. Available from: <https://www.environment.gov.au/system/files/resources/9995c620-45c9-4574-af8e-a7cfb9571deb/files/wildlife-conservation-plan-migratory-shorebirds.pdf>
- Commonwealth of Australia 2017. Recovery Plan for Marine Turtles in Australia. Australian Government, Canberra. Available from: <http://www.environment.gov.au/marine/publications/recovery-plan-marine-turtles-australia-2017>
- Commonwealth of Australia 2018. Threat abatement plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans. Canberra, ACT: Commonwealth of Australia. Available from: <https://www.environment.gov.au/biodiversity/threatened/publications/tap/marine-debris-2018>
- Commonwealth of Australia 2019. Draft Wildlife Conservation Plan for Seabirds. Canberra, ACT: Commonwealth of Australia. Available from: <https://www.environment.gov.au/biodiversity/threatened/comment/draft-wildlife-conservation-plan-for-seabirds>
- Condie, S.A, Andrewartha, J., Mansbridge, J. and Waring, J.R. 2006. Modelling circulation and connectivity on Australia's North West Shelf, Technical Report No. 6, North West Shelf Joint Environmental Management Study, CSIRO Marine and Atmospheric Research, Hobart, Tasmania.
- D'Alberto, D.M., Chin, A., Smart, J.J., Baje, L., White, W.T. and Simpfendorfer, C.A. 2017. Age, growth and maturity of oceanic whitetip shark (*Carcharhinus longimanus*) from Papua New Guinea. *Marine and Freshwater Research* 68: 1118–1129.
- D'Anastasi, B., Simpfendorfer, C.A. and van Herwerden, L. 2013. In: The IUCN Red List of Threatened Species. Version 2013.2. *Anoxypristis cuspidata* (Narrow Sawfish). <http://www.iucnredlist.org/details/39389/0>
- Dawson, C.E. 1985. Indo-Pacific pipefishes (Red Sea to the Americas). Gulf Coast Research Laboratory, Ocean Springs, Mississippi, USA.
- de Lestang, S., Rossbach, M. and Blay, N. 2018. West Coast Rock Lobster Resource Status Report 2017. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 32-36.
- Done, T.J., Williams, D.McB., Speare, P.J., Davidson, J., DeVantier, L.M., Newman, S.J. and Hutchins, J.B. 1994. Surveys of coral and fish communities at Scott Reef and Rowley Shoals., Australian Institute of Marine Science, Townsville.
- Duffy, R. and Blay, N. 2020a. West Coast Nearshore and Estuarine Finfish Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 55-64.

- Duffy, R. and Blay, N. 2020b. South Coast Estuarine and Nearshore Scalefish and Invertebrate Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 201-209.
- Duffy, R. and Blay, N. 2020c. West Coast Nearshore And Estuarine Finfish Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 55-64.
- Fairclough, D. and Walters, S. 2018. West Coast Demersal Scalefish Resource Status Report 2018. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 56-62.
- Falkner, I., Whiteway, T., Przeslawski, R. and Heap, A.D. 2009. Review of ten key ecological features (KEFs) in the North-west Marine Region. Record 2009/13, Geoscience Australia, Canberra.
- Ferreira, L.C., Thums, M., Fossette, S., Wilson, P., Shimada, T., Tucker, A.D., Pendoley, K., Waayers, D., Guinea, M.L., Loewenthal, G., King, J., Speirs, M., Rob, D. and Whiting, S.D. 2021. Multiple satellite tracking datasets inform green turtle conservation at a regional scale. *Diversity and Distributions* 27(2): 249-266. <https://doi.org/10.1111/ddi.13197>
- Field, I.C., Charters, R., Buckworth, R.C., Meekan, M.G. and Bradshaw, C.J.A. 2008. Distribution and abundance of *Glyphis* and sawfishes in northern Australia and their potential interactions with commercial fisheries. Report to Australian Government, Department of the Environment, Water, Heritage and the Arts. Canberra. 39 pp.
- Fletcher, W.J. and Santoro, K. (eds) 2015. *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries*. Department of Fisheries, Western Australia.
- Fletcher, W.J. and Santoro, K. (eds) 2009. State of the fisheries report 2008/09. Western Australian Department of Fisheries, Perth.
- Fletcher, W.J., Mumme, M.D. and Webster, F.J. (eds) 2017. *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2015/16: The State of the Fisheries*. Department of Fisheries, Western Australia.
- Francis, M., Natanson, L. and Campana, S. 2002. The Biology and Ecology of the Porbeagle Shark, *Lamna nasus*. In: Camhi, M., E. Pikitch and E. Babcock, eds. *Sharks of the Open Ocean: Biology, Fisheries and Conservation*: 105-113.
- Gaughan, D.J. and Santoro, K. (eds), 2018. *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2016/17: The State of the Fisheries*. Department of Primary Industries and Regional Development, Western Australia.
- Gaughan, D.J. and Santoro, K. (eds). 2020. *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2018/19: The State of the Fisheries*. Department of Primary Industries and Regional Development, Western Australia.
- Gelsleichter, J., Musick, J.A. and Nichols, S. 1999. Food habits of the smooth dogfish, *Mustelus canis*, dusky shark, *Carcharhinus obscurus*, Atlantic sharpnose shark, *Rhizoprionodon terraenovae*, and the sand tiger, *Carcharias taurus*, from the northwest Atlantic Ocean. *Environmental Biology of Fishes* 54: 205–217.
- Goldsworthy, S.D., Shaughnessy, P.D., MacKay, A.I., Bailleul, F., Holman, D., Lowther, A.D., Page, B., Waples, K., Raudino, H., Bryars, S. and Anderson, T. 2021. Assessment of the status and trends in abundance of a coastal pinniped, the Australian sea lion, *Neophoca cinerea*. *Endangered Species Research* 44: 421-437.

- Guinea, M.L. 2006. Sea Turtles, Sea Snakes and Dugongs of Scott Reef, Seringapatam Reef and Browse Island with Notes on West Lacepede Island. Report to URS, Charles Darwin University.
- Guinea, M.L. 2007a. Marine snakes: species profile for the north-western planning area, report for the Australian Government Department of the Environment, Water, Heritage and the Arts, Charles Darwin University, Northern Territory.
- Guinea, M.L. 2007b. Final report survey March 16 – April 2 2007: sea snakes of Ashmore Reef, Hibernia Reef and Cartier Island with comments on Scott Reef, Charles Darwin University, Darwin.
- Guinea, M.L. 2009. Long Term Marine Turtle Monitoring at Scott Reef. Report prepared for Woodside Pty Ltd.
- Guinea, M. 2011. Long term monitoring of the marine turtles of Scott Reef satellite tracking of green turtles from Scott Reef #1 (p. 35). Appendix F27. Report prepared by Sinclair Knight Merz. Browse LNG Development.
- Guinea, M.L. and Whiting, S.D. 2005. Insights into the distribution and abundance of sea snakes at Ashmore Reef. *The Beagle* (Supplement 1): 199-206.
- Hallegraef, G.M. 1995. Marine phytoplankton communities in the Australian region: current status and the future threats. *Our sea, our future: major findings of the State of the Marine Environment Report for Australia*. Great Barrier Reef Marine Park Authority, Canberra, Australia.
- Hanf, D.M. 2015. Species Distribution Modelling of Western Pilbara Inshore Dolphins. Masters Research thesis. Murdoch University, Perth, Western Australia.
- Hanf, D., Hunt, T. and Parra, G.J. 2016. Humpback dolphins of Western Australia: a review of current knowledge and recommendations for future management. *Advances in Marine Biology* 73: 193–218. <https://doi.org/10.1016/bs.amb.2015.07.004>
- Hanson, C.E., Pattiaratchi, C.B. and Waite, A.M. 2005. Seasonal production regimes off south-western Australia: influence of the Capes and Leeuwin Currents on phytoplankton dynamics. *Marine and Freshwater Research* 56(7): 1011-1026.
- Hanson, C.E., Waite, A.M., Thompson, P.A. and Pattiaratchi, C.B. 2007. Phytoplankton community structure and nitrogen nutrition in Leeuwin Current and coastal waters off the Gascoyne region of Western Australia. *Deep Sea Research Part II: Topical Studies in Oceanography* 54 (8–10): 902-924.
- Harris, P., Heap, A., Passlow, V., Sbaffi, L. Fellows, M., Porter-Smith, R., Buchanan, C., and Daniell, J. 2005. Geomorphic Features of the Continental Margin of Australia. *Geoscience Australia, Record 2003/30*, 142 pp.
- Harris, P.T., Heap, A., Marshall, J., Hemer, M., Daniell, J., Hancock, A., Buchanan, C., Brewer, D. and Heales, D. 2007. Submerged coral reefs and benthic habitats of the southern Gulf of Carpentaria: post survey report GA survey 276, RV Southern Surveyor, Record 2007/02, Geoscience Australia, Canberra.
- Hart, A., Ferridge, R., Syers, C. and Kalinowski, P. 2017. Statewide Specimen Shell Resources Status Report 2017. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2016/17*: The State of the Fisheries eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 204-206.
- Hart, A., Bruce, C., Kalinowski, P. and Steele, A. 2018. Statewide Specimen Shell Resources Status Report 2018. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18*: The State of the Fisheries eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 204-206.

- Hart, A., Murphy, D. and Steele, A. 2019. Sea Cucumber Resource Status Report 2019. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2018/19: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 173-175.
- Hart, A., Murphy, D. and Steele, A. 2020a. Pearl Oyster Managed Fishery Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 165-169.
- Hart, A., Bruce, C. and Steele, A. 2020b. Statewide Specimen Shell Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 253-255.
- Hart, A., Murphy, D. and Wiberg, L. 2020c. West Coast Octopus Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 50-54.
- Heck Jr., K.L., Hays, G. and Orth, R.J. 2003. Critical evaluation of the nursery role hypothesis for seagrass meadows. *Marine Ecology Progress Series* 253: 123-136.
- Hedley, S.L., Bannister, J.L. and Dunlop, R.A. 2011. Abundance estimates of Breeding Stock 'D' humpback whales from aerial and land-based surveys off Shark Bay, Western Australia, 2008. *Journal of Cetacean Research Management (special issue 3)*: 209–21.
- Heyward, A.J., Halford, A.R., Smith, L.D. and Williams, D.M. 1997. Coral reefs of north west Australia: baseline monitoring of an oceanic reef ecosystem. In: *Proceedings on 8th International Coral Reef Symposium 1*: 289–294.
- Heyward, A.J., Revill, A.T. and Sherwood, C.R. 2000. Review of Research and Data Relevant to Marine Environmental Management of Australia's North West Shelf, Produced for the Western Australian Department of Environmental Protection. (Unpublished report).123 pp.
- Himmelman, J.H., Guderley, H.E. and Duncan, P.F. 2009. Responses of the saucer scallop *Amusium balloti* to potential predators. *Journal of Experimental Marine Biology and Ecology* 378(1–2): 58-61.
- Holley, D.K., Lawler, I.R. and Gales, N.J. 2006. Summer survey of dugong distribution and abundance in Shark Bay reveals additional key habitat area. *Wildlife Research* 33: 243-250. <https://doi.org/10.1071/WR05031>
- Holloway, P. and Nye, H.C. 1985. Leeuwin Current and wind distributions on the southern part of the Australian North West Shelf between January 1982 and July 1983. *Australian Journal of Marine and Freshwater Research* 36: 123-137.
- Holloway, P. 2001. A regional model of the semidiurnal internal tide on the Australian North West Shelf. *Journal of Geophysical Research* 106: 19625-19638.
- How, J. and Orme, L. 2020a. West Coast Deep Sea Crustacean Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 113-117.
- How, J. and Orme, L. 2020b. South Coast Crustacean Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 189-194.

- Howey-Jordan, L.A., Brooks, E.J., Abercrombie, D.L., Jordan, L.K., Brooks, A., Williams, S., Gospodarczyk, E. and Chapman, D.D. 2013. Complex movements, philopatry and expanded depth range of a severely threatened pelagic shark, the oceanic whitetip (*Carcharhinus longimanus*) in the western North Atlantic. *PloS One* 8:e56588. <https://doi:10.1371/journal.pone.0056588>
- Hunt, T.N., Bejder, L., Allen, S.J., Rankin, R.W., Hanf, D. and Parra, G.J. 2017. Demographic characteristics of Australian humpback dolphins reveal important habitat toward the southwestern limit of their range. *Endangered Species Research* 32: 71-88. <https://doi.org/10.3354/esr00784>
- Irvine, L.G., Thums, M., Hanson, C.E., McMahon, C.R. and Hindell, M.A. 2018. Evidence for a widely expanded humpback whale calving range along the Western Australian coast. *Marine Mammal Science* 34(2): 294-310. <https://doi.org/10.1111/mms.12456>
- James, N.P., Bone, Y., Kyser, T.K., Dix, G.R. and Collins, L.B. 2004. The importance of changing oceanography in controlling late Quaternary carbonate sedimentation on a high-energy, tropical, oceanic ramp: north-western Australia. *Sedimentology* 51: 1179–1205.
- Jefferson, T.A. and Rosenbaum, H.C. 2014. Taxonomic revision of the humpback dolphins (*Sousa* spp.), and description of a new species from Australia. *Marine Mammal Science* 30(4): 1494-1541.
- Jenner, K., Jenner, M. and McCabe, K. 2001. Geographical and temporal movements of humpback whales in Western Australian waters. *APPEA Journal* 41: 692–707.
- Jenner, C., Jenner, M., Burton, C., Sturrock, V., Salgado Kent, C., Morrice, M., Attard, C., Möller, L. and Double, M. 2008. Mark recapture analysis of pygmy blue whales from the Perth Canyon, Western Australia 2000-2005. Paper SC/60/SH16 presented to the Scientific Committee of the International Whaling Commission.
- Johnston, D., Harris, D. and Blazeski, S. 2020. North Coast Crab Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 113-117.
- Joyce, W., Campana, S., Natanson, L., Kohler, N., Pratt Jr., H. and Jensen, C. 2002. Analysis of stomach contents of the porbeagle shark (*Lamna nasus* Bonnaterre) in the northwest Atlantic. *ICES Journal of Marine Science* 53: 1263-1269.
- Kangas, M., Sporer, E., Wilkin, S., Shanks, M., Cavalli, P., Pickles, L. and Oliver, R. 2018. North Coast Prawn Resource Status Report 2017. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2016/17: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 119-122.
- Kangas, M., Wilkin, S., Shanks, M. and Brand-Gardner, S. 2019. North Coast Prawn Resource Status Report 2019. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 145-153.
- Kangas, M., Wilkin, S., Shanks, M. and Brown, S. 2020a. North Coast Prawn Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 143-150.
- Kangas, M., Wilkin, S., Breheny, N., Cavalli, P., Grounds, G. and Brown S. 2020b. Saucer Scallop Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 95-101.

- Kirkwood, R., Pemberton, D. and Copson, G. 1992. The conservation and management of seals in Tasmania. Hobart: Department of Parks, Wildlife and Heritage. 48 pp.
- Last, P., Lyne, V., Yearsley, G., Gledhill, D., Gommon, M., Rees, T. and White, W. 2005. Validation of national demersal fish datasets for the regionalisation of the Australian continental slope and outer shelf (>40 m depth). Australian Government Department of the Environment and Heritage and CSIRO Marine Research, Australia.
- Last, P.R., and Stevens, J.D. 2009. Sharks and rays of Australia, 2nd edition, CSIRO Publishing, Melbourne.
- Lewis, P. and Brand-Gardner, S. 2018. Statewide Large Pelagic Finfish Resource Status Report 2017. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2016/17: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 195-199.
- Lewis, P., Blay, N. and Watt, M. 2020. Statewide Large Pelagic Finfish Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 241-247.
- Limpus, C.J. 1992. Estimation of tag loss in marine turtle research. *Wildlife Research* 19: 457-469. <https://doi.org/10.1071/WR9920457>
- Limpus, C.J. 2009. A biological review of Australian marine turtles. Environmental Protection Agency, Brisbane, QLD.
- Limpus, C.J., Parmenter, C.J., Baker, V. and Fleay, A. 1983. The Flatback Turtle, *Chelonia depressa*, in Queensland: Post-Nesting Migration and Feeding Ground Distribution. *Wildlife Research* 10: 557-561. <https://doi.org/10.1071/WR9830557>
- Liu, Q.Y., Feng, M., Wang, D. and Wijffels, S. 2015. Interannual variability of the Indonesian Throughflow transport: a revisit based on 30 year expendable bathythermograph data. *Journal of Geophysical Research: Oceans* 120: 8270-8282.
- Lourie, S.A., Foster, S.J., Cooper, E.W.T. and Vincent, A.C.J. 2004. A guide to the identification of seahorses. Project Seahorse and TRAFFIC North America, University of British Columbia and World Wildlife Fund. Available from: <https://cites.unia.es/cites/file.php/1/files/guide-seahorses.pdf> [Accessed 22 Sep 2020]
- Lourie, S.A., Vincent, A.C.J. and Hall, H.J. 1999. Seahorses: an identification guide to the world's species and their conservation. Project Seahorse, London, UK.
- Lukoschek, V., Beger, M., Ceccarelli, D., Richards, Z. and Pratchett, M. 2013. Enigmatic declines of Australia's sea snakes from a biodiversity hotspot. *Biological Conservation* 166: 191e202.
- Lulofs, H.M.A. and Sumner, N.R. 2002. Historical diving profiles for pearl oyster divers in Western Australia. Fisheries Research Report, 138.
- Mackie, M., Gaughan, D.J. and Buckworth, R.C. 2003. Stock assessment of narrow-barred Spanish mackerel (*Scomberomorus commerson*) in Western Australia. FRDC Project No. 1999/151.
- Mackie, M., Nardi, A., Lewis, P. and Newman, S. 2007. Small pelagic fishes of the north-west marine region. Department of Fisheries, Perth.
- Marsh, H., Prince, R.I.T., Saafeld, W.K. and Shepherd, R. 1994. The distribution and abundance of the dugong in Shark Bay, Western Australia. *Wildlife Research* 21: 149-161. <https://doi.org/10.1071/WR9940149>

- Marsh, H., Penrose, H., Eros C. and Hugues, J. 2002. Dugong Status Report and Action Plans for Countries and Territories. Early Warning Assessment Reports. United Nations Environment Programme, Nairobi.
- Marsh, H., O'Shea, T.J. and Reynolds, J.R. 2011. The ecology and conservation of sirenia; dugongs and manatees. Cambridge University Press, London.
- Marshall, A., Bennett, M., Kodja, G., Hinojosa-Alvarez, S., Galvan-Magana, F., Harding, M., Stevens, G. and Kashiwaga, T. 2011. *Manta birostris* (Chevron Manta Ray, Giant Manta Ray, Oceanic Manta Ray, Pacific Manta Ray, Pelagic Manta Ray) [WWW Document]. The IUCN Red List of Threatened Species. Accessed at <http://www.iucnredlist.org/details/198921/0>
- Marshall, A.D., Compagno, L.J. and Bennett, M.B. 2009. Redescription of the genus *Manta* with resurrection of *Manta alfredi* (Krefft, 1868) (Chondrichthyes; Myliobatoidei; Mobulidae). *Zootaxa* 2301: 1–28.
- Martin, R.A. 2007. A review of behavioural ecology of whale sharks. *Fisheries Research* 84: 10–16.
- McAuley, R. 2004. Western Australian Grey Nurse Shark Pop Up Archival Tag Project. Final Report to Department of Environment and Heritage. Department of Fisheries, Western Australia. 49 pp.
- McCauley, R.D. 2009. Sea Noise Logger Deployment Scott Reef: 2006–2008 – Whales, Fish and Seismic Survey. Report produced for Woodside Energy Ltd.
- McCauley, R. 2011. Woodside Kimberley sea noise logger program, Sept-2006 to June-2009: Whales, Fish and Man-made Noise. Report produced for Woodside Energy Ltd.
- McCauley, R. and Jenner, C. 2010. Migratory patterns and estimated population size of pygmy blue whales (*Balaenoptera musculus brevicauda*) traversing the Western Australian coast based on passive acoustics. Paper SC/62/SH26 presented to the IWC Scientific Committee, June 2010, Agadir, Morocco (unpublished). 9 pp.
- McCauley, R. and Duncan, A. 2011. Sea noise logger deployment, Wheatstone and Onslow, April 2009 to November 2010 (Technical Report No. R2011-23). Centre for Marine Science and Technology, Curtin University of Technology, Perth.
- McCauley, R., Jenner, C., Bannister, J., Cato, D. and Duncan, A. 2000. Blue whale calling in the Rottneest trench, Western Australia, and low frequency sea noise. *Acoustics Australia / Australian Acoustical Society*: 245-250.
- McCauley, R., Salgado Kent, C., Gavrilov, A., Recalde-Salas, A., Burton, C. and Marley, S. 2004. Passive acoustic monitoring of baleen whales in Geographe Bay, Western Australia. *Acoustics Australia Proceedings of Acoustics 2004 November Gold Coast*.
- McCauley, R.D., Gavrilov, A.N., Jolliffe, C.D., Ward, R. and Gill, P.C. 2018. Pygmy blue and Antarctic blue whale presence, distribution and population parameters in southern Australia based on passive acoustics. *Deep-Sea Research Part II: Topical Studies in Oceanography* 157-158: 154-168.
- McClatchie, S., Middleton, J.F. and Ward, T.M. 2006. Water mass analysis and alongshore variation in upwelling intensity in the eastern Great Australian Bight. *Journal of Geophysical Research, Oceans* 111(C8). <https://doi.org/10.1029/2004JC002699>
- McCosker, J. 1975. Feeding behavior of Indo-Australian hydrophiidae. *The biology of sea snakes* 1: 217-232.
- Menezes, V.V., Phillips, H.E., Schiller, A., Domingues, C.M. and Bindoff, N.L. 2013. Salinity dominance on the Indian Ocean Eastern Gyral current. *Geophysical Research Letters* 40: 5716-5721.

- MetOcean Engineers, 2005, Preliminary metocean conditions for the Browse Development (Prospective Production Facilities/Areas, Pipeline Routes/Shore Crossings and Flow-Lines/Seabed Manifolds), Scott Reef Vicinity to Shore. Report produced for Woodside Energy Limited.
- Minton, S., Heatwole, H. and Dunson, W. 1975. Sea snakes from reefs of the Sahul Shelf. University of Maryland Press, 1: 141-144.
- Miyazaki, S. and Stagg, H. 2013. Exmouth Plateau [WWW Document]. Geoscience Australia: National Geological Provinces Online Database. Available at: <http://www.ga.gov.au/provexplorer/provinceDetails.do?eno=30351>
- Mollet, H., Cliff, G., Pratt Jr, H. and Stevens, J. 2000. Reproductive biology of the female shortfin mako, *Isurus oxyrinchus* Rafinesque, 1810, with comments on the embryonic development of lamnoids. Fishery Bulletin – National Oceanic and Atmospheric Administration 98(2): 299-318.
- Molony, B., Lai, E., and Jones, R. 2015. Mackerel Managed Fishery Report: Statistics Only. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries* eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 207-210.
- Morrice, M.G., Gill, P.C., Hughes, J. and Levings, A.H. 2004. Summary of aerial surveys for the Santos Ltd EPP32 seismic survey, 2–13 December 2003. Report WEG-SO 02/2004 to Santos Ltd. Whale Ecology Group, Deakin University, Warrnambool.
- Newman, S.J., Wakefield, C., Skepper, C., Boddington, D., Blay, N., Jones, R. and Dobson, P. 2015. North Coast Demersal Fisheries Status Report 2015. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries* eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 189-206.
- Newman, S.J., Wakefield, C., Skepper, C., Boddington, D. and Smith, E. 2018. North Coast Demersal Resource Status Report 2017. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2016/17: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 125-133.
- Newman, S.J., Wakefield, C., Skepper, C., Boddington, D. and Blay, N. 2019. North Coast Demersal Fisheries Status Report 2019. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2018/19: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 159-168.
- Newman, S., Wakefield, C., Skepper, C., Boddington D. and Steele, A. 2020a. North Coast Demersal Fisheries Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 156-165.
- Newman, S., Bruce, C. and Wiberg, L. 2020b. Statewide Marine Aquarium Fish and Hermit Crab Resources Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 247-252.
- Norriss, J. and Blazeski, S. 2020. South Coast Small Pelagic Scalefish Resource Status Report 2020. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2019/20: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 209-213.

- Parra, G.J. 2006. Resource partitioning in sympatric delphinids: Space use and habitat preferences of Australian snubfin and Indo-Pacific humpback dolphins. *Journal of Animal Ecology* 75: 862-874.
- Parra, G.J., Corkeron, P.J. and Marsh, H. 2002. The Indo-Pacific humpback dolphin, *Sousa chinensis* (Osbeck, 1765) in Australian waters: a summary of current knowledge and recommendations for their conservation. Unpublished Report to the Scientific Committee of the International Whaling Commission, SC/54/SM27.
- Parra, G.J., Corkeron, P.J. and Marsh, H. 2006. Population sizes, site fidelity and residence patterns of Australian snubfin and Indo-Pacific humpback dolphins: implications for conservation. *Biological Conservation* 129: 167-180.
- Patterson, H., Noriega, R., Georgeson, L., Larcombe, J. and Curtotti, R. 2017. Fishery status reports 2017, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra. CC BY 4.0.
- Patterson, S.H., Larcombe, J., Woodhams, J. and Curtotti, R. 2020. Fishery status reports 2020, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra. CC BY 4.0. <https://doi.org/10.25814/5f447487e6749>
- Pearce, A., Buchan, S., Chiffings, T., D'Adamo, N., Fandry, C., Fearn, P., Mills, D., Phillips, R. and Simpson, C. 2003. A review of the oceanography of the Dampier Archipelago, Western Australia, in: Wells, F., Walker, D., Jones, D. (Eds.), *The Marine Flora and Fauna of Dampier, Western Australia*. Western Australian Museum, Perth, pp. 13–50.
- Pendoley, K.L. 2005. Sea turtles and the environmental management of industrial activities in North West Western Australia. PhD thesis, Murdoch University.
- Pendoley, K., Vitenbergs, A., Whittock, P. and Bell, C. 2016. Twenty years of turtle tracks: marine turtle nesting activity at remote locations in the Pilbara region, Western Australia. *Australian Journal of Zoology* 64. <https://doi.org.10.1071/ZO16021>
- Pillans, R.D., Stevens, J.D., Peverell, S. and Edgar, S. 2008. Spatial distribution and habitat utilisation of the spartooth shark *Glyphis glyphis* in relation to fishing in Northern Australia. Department of the Environment, Water, Heritage and the Arts, Canberra. 47 pp.
- Pillans, R.D., Stevens, J.D., Kyne, P.M. and Salini, J. 2009. Observations on the distribution, biology, short-term movements and habitat requirements of river sharks *Glyphis* spp. in northern Australia. *Endangered Species Research* 10: 321–332.
- Pitman, R.L., Totterdell, J.A., Fearnbach, H., Ballance, L.T., Durban, J.W. and Kemps, H. 2015. Whale killers: Prevalence and ecological implications of killer whale predation on humpback whale calves off Western Australia. *Marine Mammal Science* 31(2): 629-657. <https://doi.org/10.1111/mms.12182>
- Pogonoski, J.J., Pollard, D.A. and Paxton, J.R. 2002. Conservation Overview and Action Plan for Australian Threatened and Potentially Threatened Marine and Estuarine Fishes. Canberra, ACT: Environment Australia. Available from: <http://www.environment.gov.au/coasts/publications/marine-fish-action/pubs/marine-fish.pdf>
- Preen, A. 2004. Distribution, abundance and conservation status of dugongs and dolphins in the southern and western Arabian Gulf. *Biological Conservation* 118(2): 205-218.
- Preen, A., Marsh, H., Lawler, I., Prince, R. and Shepherd, R. 1997. Distribution and abundance of dugongs, turtles, dolphins and other megafauna in Shark Bay, Ningaloo Reef and Exmouth Gulf, Western Australia. *Wildlife Research* 24: 185–208.
- Prieto, R., Janiger, D., Silva, M.A., Waring, G.T. and Gonçalves, J.M. 2012. The forgotten whale: a bibliometric analysis and literature review of the North Atlantic sei whale *Balaenoptera borealis*. *Mammal Review* 42: 235–272. <https://doi.org.10.1111/j.1365-2907.2011.00195.x>

- Przeslawski, R., Daniell, J., Nichol, S., Anderson, T. and Barrie, J.V. 2011. Seabed Habitats and Hazards of the Joseph Bonaparte Gulf and Timor Sea, Northern Australia. Record 2011/040. Geoscience Australia, Canberra.
- Przeslawski, R., Alvarez, B., Battershill, C. and Smith, T. 2014. Sponge biodiversity and ecology of the Van Diemen Rise and eastern Joseph Bonaparte Gulf, northern Australia. *Hydrobiologia* 730: 1-16.
- Raudino, H., Hunt, T.N. and Waples, K.A. 2018. Records of Australian humpback dolphins (*Sousa sahalensis*) from an offshore island groups in Western Australia. *Marine Biodiversity Records* 11:14-20.
- Reardon, M.B., Gerber, L. and Cavanagh, R.D. 2006. *Isurus paucus*. The IUCN Red List of Threatened Species 2006.
- Reinhold, L. and Whiting, A. 2014. High-density Loggerhead Sea Turtle Nesting on Dirk Hartog Island, Western Australia. *Marine Turtle Newsletter* 141: 7-10.
- Rob, D., Barnes, P., Whiting, S., Fossette, S., Tucker, T. and Mongan, T. 2019. Turtle activity and nesting on the Muiron Islands and Ningaloo Coast: Final Report 2018, Ningaloo Turtle Program. Report prepared for Woodside Energy Limited. Department of Biodiversity, Conservation and Attractions, Exmouth. 51 pp.
- Rochester, W.A., Moeseneder, C.H., Miller, M.J., Milton, D.A., Fry, G.C., Griffiths, S.P, Pillans, R.D., Rothlisberg, P.C., Bustamante, R.H. and Butler, A.J. 2007. The North Marine Region marine bioregional plan: Information and analysis for the regional profile. Final report to the Department of the Environment and Water Resources. CSIRO Marine and Atmospheric Research.
- Rosser, N.L. and Gilmour, J.P. 2008. New insights into patterns of coral spawning on Western Australian reefs. *Coral Reefs* 27: 345-349.
- RPS 2016. Metocean Criteria Guidelines for MODU Mooring on Australia's North West Shelf.
- Salgado Kent, C., Jenner, C., Jenner, M., Bouchet, P. and Rexstad, E. 2012. Southern Hemisphere breeding stock D humpback whale population estimates from North West Cape, Western Australia. *Journal of Cetacean Research and Management* 12(1): 29–38.
- Saunders, R., Royer, F. and Clarke, M. 2011. Winter migration and diving behaviour of Porbeagle shark, *Lamna nasus*, in the Northeast Atlantic. *ICES Journal of Marine Science* 68(1): 166-174.
- Schroeder, T., Lyne, V., Dekker, A.G. and Rathbone, C. 2009. Regional MODIS Satellite Data Study: Scott Reef. CSIRO report produced for Woodside Energy Ltd. CSIRO.
- Sheppard, J., Preen, A.R., Marsh, H., Lawler, I.R., Whiting S. and Jones, R.E. 2006. Movement heterogeneity of dugongs, *Dugong dugon* (Muller) over large spatial scales. *Journal of Experimental Marine Biology and Ecology* 334: 64-83.
- Simpson, C.J., Cary, J.L. and Masini, R.J. 1993. Destruction of corals and other reef animals by coral spawn slicks on Ningaloo Reef, Western Australia. *Coral Reefs* 12: 185–191. <https://doi.org/10.1007/BF00334478>
- Sleeman, J.C., Meekan, M.G., Wilson, S.G., Jenner, K.C.S., Jenner, M.N., Boggs, G. and Bradshaw, C.J.A. 2007. Biophysical correlates of relative abundances of marine megafauna at Ningaloo Reef, Western Australia. *Marine and Freshwater Research* 58: 608-623.
- Smale, M.J. 2005. The diet of the ragged-tooth shark *Carcharias Taurus* Rafinesque 1810 in the Eastern Cape, South Africa. *African Journal of Marine Science* 27: 331–335. <https://doi:10.2989/18142320509504091>
- Sporer, E., Kangas, M., Shanks, M. and Blay, N. 2015. North Coast Prawn Managed Fisheries Status Report. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia*

- 2014/15: The State of the Fisheries eds. Fletcher, W.J. and Santoro, K., Department of Fisheries, Western Australia, pp. 173-188.
- Stevens, J.D., Pillans, R.D. and Salini, J.P. 2005. Conservation assessment of *Glyphis glyphis* (spear-tooth shark), *Glyphis garicki* (northern river shark), *Pristis microdon* (freshwater sawfish) and *Pristis zijsron* (green sawfish). Report to Department of Environment and Heritage. Canberra. Australia. 84 pp.
- Stevens, J., McAuley, R., Simpfendorfer, C. and Pillans, R. 2008. Spatial distribution and habitat utilisation of sawfish (*Pristis* spp.) in relation to fishing in northern Australia. CSIRO Marine and Atmospheric Research, Hobart.
- Stevens, J.D., Bradford, R.W. and West, G.J. 2010. Satellite tagging of blue sharks (*Prionace glauca*) and other pelagic sharks off eastern Australia: depth behaviour, temperature experience and movements. *Marine Biology* 157: 575–591.
- Strahan, R. 1983. The Australian Museum Complete Book of Australian Mammals. London, United Kingdom: Angus and Robertson.
- Strain, L., Brown, J. and Walters, S. 2018. West Coast Roe's Abalone Resource Status Report 2017. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2016/17: The State of the Fisheries* eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia. pp. 36–40.
- Surman, C.A. 2019. Houtman Abrolhos – A Natural History. Halfmoon Biosciences. 192 pp.
- Surman, C.A., Nicholson, L.W. and Philipps, R.A. 2018. Distribution and patterns of migration of a tropical seabird community in the Eastern Indian Ocean. *Journal of Ornithology* 158: 867-877.
- Sutton, A.L., Jenner, K.C.S. and Jenner, M.-N.M. 2019. Habitat associations of cetaceans and seabirds in the tropical eastern Indian Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography* 166: 171-186.
- Thiele, D. and Gill P.C. 1999. Cetacean observations during a winter voyage into Antarctic sea ice south of Australia. *Antarctic Science* 11(1): 48-53.
- Thorburn, D.C. 2006. Biology, ecology and trophic interactions of elasmobranchs and other fishes in riverine waters of northern Australia. PhD Thesis, Murdoch University, Perth, Western Australia.
- Thorburn, D.C. and Morgan, D.L. 2004. The northern river shark *Glyphis* sp. C. (Carcharhinidae) discovered in Western Australia. *Zootaxa* 685: 1–8.
- Thorburn, D.C., Peverell, S.C., Stevens, J.D., Last, P.R. and Rowland, A.J. 2003. Status of freshwater and estuarine elasmobranchs in Northern Australia. Final Report to the Natural Heritage Trust, pp. 1–75.
- Thorburn, D.C., Morgan, D.L., Rowland, A.J., Gill, H.S. and Paling, E. 2008. Life history notes of the critically endangered dwarf sawfish, *Pristis clavata*, Garman 1906 from the Kimberley region of Western Australia. *Environmental Biology of Fishes* 83: 139–145.
- Threatened Species Scientific Committee 2009. Commonwealth Listing Advice on *Galeorhinus galeus*. Department of the Environment, Water, Heritage and the Arts. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/68453-listing-advice.pdf>
- Threatened Species Scientific Committee 2010. Commonwealth Listing Advice on *Thunnus maccoyii* (Southern Bluefin Tuna). Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/69402-listing-advice.pdf>
- Threatened Species Scientific Committee 2013. Commonwealth Listing Advice on *Centrophorus zeehaani* (southern dogfish). Department of Sustainability, Environment, Water, Population and

Communities. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/82679-listing-advice.pdf>

Threatened Species Scientific Committee 2014. Listing Advice *Isurus oxyrinchus* shortfin mako shark. Department of Sustainability, Environment, Water, Population and Communities.

Department of the Environment and Energy. Accessed at

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/79073-listing-advice.pdf>

Threatened Species Scientific Committee 2015a. Conservation Advice *Balaenoptera borealis* sei whale. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/34-conservation-advice-01102015.pdf>

Threatened Species Scientific Committee 2015b. Conservation Advice *Megaptera novaeangliae* humpback whale. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/38-conservation-advice-10102015.pdf>

Threatened Species Scientific Committee 2015c. Conservation Advice *Balaenoptera physalus* fin whale. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/37-conservation-advice-01102015.pdf>

Threatened Species Scientific Committee 2015d. Conservation Advice *Rhincodon typus* whale shark. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/66680-conservation-advice-01102015.pdf>

Threatened Species Scientific Committee 2015e. Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/26000-conservation-advice-01102015.pdf>

Threatened Species Scientific Committee 2015f. Conservation Advice *Pterodroma mollis* soft-plumaged petrel. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/1036-conservation-advice-01102015.pdf>

Threatened Species Scientific Committee 2016a. Conservation Advice *Calidris tenuirostris* Great knot. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/862-conservation-advice-05052016.pdf>

Threatened Species Scientific Committee 2016b. Conservation Advice *Calidris canutus* Red knot. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/855-conservation-advice-05052016.pdf>

Threatened Species Scientific Committee 2016c. Conservation Advice *Limosa lapponica menzibieri* Bar-tailed godwit (northern Siberian). Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/86432-conservation-advice-05052016.pdf>

Threatened Species Scientific Committee 2016d. Conservation Advice *Charadrius leschenaultii* Greater sand plover. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/877-conservation-advice-05052016.pdf>

Threatened Species Scientific Committee 2016e. Conservation Advice *Charadrius mongolus* Lesser sand plover. Canberra: Department of the Environment. Available from:

<http://www.environment.gov.au/biodiversity/threatened/species/pubs/879-conservation-advice-05052016.pdf>

- Threatened Species Scientific Committee 2018. Listing Advice *Sphyrna lewini* scalloped hammerhead. Canberra: Department of the Environment and Energy. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/85267-listing-advice-15032018.pdf>
- Threatened Species Scientific Committee 2020a. Conservation Advice *Neophoca cinerea* Australian Sea Lion. Canberra: Department of Agriculture, Water and the Environment. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/22-conservation-advice-23122020.pdf>
- Threatened Species Scientific Committee 2020b. Conservation Advice for the Abbott's Booby - *Papasula abbotti*. Canberra: Department of Agriculture, Water and the Environment. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/59297-conservation-advice-19102020.pdf>
- Townsend, C.H. 1935. The distribution of certain whales as shown by logbook records of American whaleships. *Zoologica* 19: 3–50.
- Udyawer, V., Read, M., Hamann, M., Heupel, M.R., and Simpfendorfer, C.A. 2016. Importance of shallow tidal habitats as refugia from trawl fishing for sea snakes. *Journal of Herpetology* 50: 527–533. <https://doi.org/10.1670/15-026>
- Udyawer, V., Somaweera, R., Nitschke, C., d'Anastasi, B., Sanders, K., Webber, B.L., Hourston, M. and Heupel, M.R. 2020. Prioritising search effort to locate previously unknown populations of endangered marine reptiles. *Global Ecology and Conservation* 22. <https://doi.org/10.1016/j.gecco.2020.e01013>
- Vincent, A.C.J. 1996. The international trade in seahorses. TRAFFIC International, Cambridge, UK. Available from: http://www.trafficj.org/publication/96_International_Trade_Seahorse.pdf [Accessed 22 Sep 2020].
- Voris, H.K. 1972. The role of sea snakes (Hydrophiidae) in the trophic structure of coastal ocean communities. *Journal of the Marine Biological Association of India* 14(2): 429- 442.
- Voris, H.K. and Voris, H.H. 1983. Feeding strategies in marine snakes: an analysis of evolutionary, morphological, behavioral and ecological relationships. *American Zoology* 23: 411–425. <https://doi.org/10.1093/icb/23.2.411>
- Waayers, D., Smith, L. and Malseed, B. 2011. Internesting distribution of green turtles (*Chelonia mydas*) and flatback turtles (*Natator depressus*) at the Lacepede Islands, Western Australia. *Journal of the Royal Society of Western Australia* 94: 359–364.
- Weller, D.R and Lee, C.V. 2017. Migratory shorebird conservation action plan. BirdLife Australia, unpublished report, September 2017.
- Whiting, S.D. 2000. The foraging ecology of juvenile green and hawksbill sea turtles in north-western Australia. PhD thesis, Northern Territory University, Darwin, NT.
- Whiting, A.U., Thomson, A., Chaloupka, M. and Limpus, C.J. 2008. Seasonality, abundance and breeding biology of one of the largest populations of nesting flatback turtles: Cape Domett. Western Australia. *Australian Journal of Zoology* 56: 297-303.
- Whitty, J.M., Phillips, N.M., Morgan, D.L., Chaplin, J.A., Thorburn, D.C. and Peverell, S.C. 2008. Habitat associations of Freshwater Sawfish (*Pristis microdon*) and Northern River Sharks (*Glyphis garricki*): including genetic analysis of freshwater sawfish across northern Australia. Report to Australian Government, Department of the Environment, Water, Heritage and the Arts. Murdoch University Centre for Fish and Fisheries Research. Perth, Western Australia. 75 pp.

- Wijeratne, S. Pattiaratchi, C. and Proctor, R. 2018. Estimates of surface and subsurface boundary current transport around Australia. *Journal of Geophysical Research: Oceans* 123: 3444-3466.
- Williamson, P.C., Sumner, N.R. and Malseed, B.E. 2006. A 12-month survey of recreational fishing in the Pilbara region of Western Australia during 1999-2000, Fisheries Research Report No. 153, Department of Fisheries, Western Australia. 61 pp.
- Wilson, B.R. 2013. The biogeography of the Australian North West Shelf: Environmental Change and Life's Response. Western Australian Museum, Perth, Australia. 415 pp.
- Wilson, S., Carleton, J. and Meekan, M. 2003. Spatial and temporal patterns in the distribution and abundance of macrozooplankton on the southern North West Shelf, Western Australia. *Estuarine, Coastal and Shelf Science* 56: 897-908.
- Wilson, S.K., Depczynski, M. and Fisher, R. 2010. Habitat associations of juvenile fish at Ningaloo Reef, Western Australia: the importance of coral and algae. *PLoS ONE* 5(12): e15185. <https://doi.org/10.1371/journal.pone.0015185>
- Woodside 2012. Eastern Flank – Preliminary Metocean Design and Operating Criteria. Controlled reference number A9650RT7964290. Woodside Energy Limited, Perth, Western Australia.
- Woodside 2016. Vincent – basic design data specification sheet – metocean (No. V0000ST9650826). Woodside Energy Limited, Perth, Western Australia.
- Woodside 2019. Proposed Browse to NWS Project Draft EIS/ERD. EPA Assessment No. 2191, EPBC 2018/8319. December 2019. 1986 pp.
- Woodside 2020. Scarborough Offshore Project Proposal, Revision 5 Submission, February 2020. Woodside Energy Ltd. 806 pp.
- Wynen. L., Larson, H., Thorburn, D., Peverell, S., Morgan, D., Field, I. and Gibb, K. 2009. Mitochondrial DNA supports the identification of two endangered river sharks (*Glyphis glyphis* and *Glyphis garricki*) across northern Australia. *Marine and Freshwater Research* 60: 554-562.

APPENDIX A. PROTECTED MATTER SEARCH REPORTS FOR NWMR, SWMR AND NMR



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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

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[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

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Summary

Matters of National Environmental 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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	33
Listed Migratory Species:	70

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 <http://www.environment.gov.au/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 Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	127
Whales and Other Cetaceans:	25
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	15

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	1
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	8

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 the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

Name

EEZ and Territorial Sea
Extended Continental Shelf

Marine Regions

[\[Resource Information \]](#)

If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

Name

[North](#)

Listed Threatened Species

[\[Resource Information \]](#)

Name	Status	Type of Presence
Birds		
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	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
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat may occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-	Vulnerable	Species or species

Name	Status	Type of Presence
tailed Godwit [86380]		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
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Mammals		
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
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Notomys aquilo Northern Hopping-mouse, Woorrentinta [123]	Endangered	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat may occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Cryptoblepharus gurrumul Arafura Snake-eyed Skink [83106]	Endangered	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Sharks		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to 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 known to 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	Species or species habitat may occur within area

Listed Migratory Species

[[Resource Information](#)]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Foraging, feeding or related behaviour known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely 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]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to 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 may occur within area

Name	Threatened	Type of Presence
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 known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding 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	Breeding known to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat likely to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
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 known to 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	Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
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 may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
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
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	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
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		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
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species

Name	Threatened	Type of Presence
Tringa nebularia Common Greenshank, Greenshank [832]		habitat known to occur within area Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Foraging, feeding or related behaviour known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		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
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Hirundo daurica Red-rumped Swallow [59480]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Sterna bengalensis Lesser Crested Tern [815]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Stiltia isabella Australian Pratincole [818]		Species or species habitat known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area

Fish

Name	Threatened	Type of Presence
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys 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 ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		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
Cosmocampus maxweberi Maxweber's Pipefish [66209]		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
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
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
Halicampus spirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribbioned Pipehorse, Ribbioned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys parvicarinatus Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippichthys spicifer Belly-barred Pipefish, Banded Freshwater Pipefish [66232]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Hippocampus zebra Zebra Seahorse [66241]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
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
Microphis brachyurus Short-tail Pipefish, Short-tailed River Pipefish [66257]		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
Mammals		
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Enhydrina schistosa Beaked Seasnake [1126]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Seasnake [1101]		Species or species habitat may occur within area
Hydrophis caeruleus Dwarf Seasnake [1103]		Species or species habitat may occur within area
Hydrophis coggeri Slender-necked Seasnake [25925]		Species or species habitat may occur within area
Hydrophis czebukovi Fine-spined Seasnake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis gracilis Slender Seasnake [1106]		Species or species habitat may occur within area
Hydrophis inornatus Plain Seasnake [1107]		Species or species habitat may occur within area
Hydrophis mcdowelli null [25926]		Species or species habitat may occur within area
Hydrophis melanosoma Black-banded Robust Seasnake [1109]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Large-headed Seasnake, Pacific Seasnake [1112]		Species or species habitat may occur within area
Hydrophis vorisi a seasnake [25927]		Species or species

Name	Threatened	Type of Presence
Lapemis hardwickii Spine-bellied Seasnake [1113]		habitat may occur within area Species or species habitat may occur within area
Laticauda colubrina a sea krait [1092]		Species or species habitat may occur within area
Laticauda laticaudata a sea krait [1093]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Parahydrophis mertoni Northern Mangrove Seasnake [1090]		Species or species habitat may occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans

[[Resource Information](#)]

Name	Status	Type of Presence
Mammals		
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 may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia simus Dwarf Sperm Whale [58]		Species or species habitat may occur within area

Name	Status	Type of Presence
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcaella brevirostris Irrawaddy Dolphin [45]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks		[Resource Information]
Name	Label	
Arafura	Multiple Use Zone (IUCN VI)	
Arafura	Special Purpose Zone (Trawl) (IUCN VI)	
Arnhem	Special Purpose Zone (IUCN VI)	
Gulf of Carpentaria	National Park Zone (IUCN II)	
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)	
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)	

Name	Label
Joseph Bonaparte Gulf	Special Purpose Zone (IUCN VI)
Limmen	Habitat Protection Zone (IUCN IV)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)
Wessel	Habitat Protection Zone (IUCN IV)
Wessel	Special Purpose Zone (Trawl) (IUCN VI)
West Cape York	Habitat Protection Zone (IUCN IV)
West Cape York	National Park Zone (IUCN II)
West Cape York	Special Purpose Zone (IUCN VI)

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Anindilyakwa	NT
Marthakal	NT

Invasive Species [\[Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Plants		
Andropogon gayanus		
Gamba Grass [66895]		Species or species habitat likely to occur within area

Nationally Important Wetlands [\[Resource Information \]](#)

Name	State
Southern Gulf Aggregation	QLD

Key Ecological Features (Marine) [\[Resource Information \]](#)

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
Carbonate bank and terrace system of the Van	North
Gulf of Carpentaria basin	North
Gulf of Carpentaria coastal zone	North
Pinnacles of the Bonaparte Basin	North
Plateaux and saddle north-west of the Wellesley	North
Shelf break and slope of the Arafura Shelf	North
Submerged coral reefs of the Gulf of Carpentaria	North
Tributary Canyons of the Arafura Depression	North

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

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 Act 1999. It holds 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 and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making 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 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 distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

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 as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- 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:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-14.758882 129.178077,-13.960657 128.826514,-13.768665 128.606788,-12.484784 128.496924,-11.183724 127.563087,-10.460737 128.233253,-9.746889 129.518653,-9.660256 130.254737,-9.779371 130.935889,-9.280976 132.528907,-8.901286 133.385841,-9.411062 134.858008,-9.129149 135.473243,-10.363488 138.582374,-11.129831 139.395362,-10.190527 141.339942,-10.806262 141.317969,-10.817053 141.922217,-11.10827 142.087012,-12.527687 141.559669,-13.330764 141.515723,-13.960657 141.40586,-15.045535 141.570655,-15.945419 141.317969,-17.22994 140.823585,-17.513041 140.53794,-17.659661 140.032569,-17.429205 139.593116,-16.630864 139.966651,-16.409675 139.812842,-16.177683 139.208594,-16.820251 138.966895,-15.924291 137.165137,-15.575354 137.132178,-15.458909 136.934424,-15.289418 136.11045,-14.822615 135.45127,-14.269641 135.846778,-14.418655 136.97837,-13.608551 137.011329,-12.784952 136.780616,-12.388227 137.055274,-10.957305 136.76963,-10.957305 136.703712,-11.399198 136.407081,-11.679068 135.824805,-11.904912 135.616065,-11.947909 134.473487,-11.679068 133.869239,-11.700585 133.50669,-11.431505 133.528663,-11.442273 133.363868,-11.64679 133.254005,-11.313028 132.979346,-11.04358 133.067237,-10.90337 132.583839,-11.151389 131.221534,-11.3238 130.782081,-11.054363 130.287696,-11.474575 130.111915,-11.765126 129.958106,-11.947909 130.067969,-11.894162 130.760108,-12.119827 130.913917,-12.441874 130.474464,-12.870649 130.100928,-13.939333 129.584571,-13.971319 129.419776,-14.47185 129.28794,-14.631358 129.507667,-14.843856 129.452735,-14.769505 129.178077,-14.758882 129.178077

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](#)
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- [-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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 10/05/21 13:07:00

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

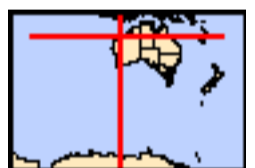
[Acknowledgements](#)



This map may contain data which are
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[Coordinates](#)

[Buffer: 1.0Km](#)



Summary

Matters of National Environmental 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:	2
National Heritage Places:	5
Wetlands of International Importance:	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	70
Listed Migratory Species:	84

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 <http://www.environment.gov.au/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 Land:	None
Commonwealth Heritage Places:	1
Listed Marine Species:	149
Whales and Other Cetaceans:	34
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	17

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	10
Regional Forest Agreements:	None
Invasive Species:	23
Nationally Important Wetlands:	3
Key Ecological Features (Marine)	5

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Status
Shark Bay, Western Australia	WA	Declared property
The Ningaloo Coast	WA	Declared property

National Heritage Properties		[Resource Information]
Name	State	Status
Natural		
Shark Bay, Western Australia	WA	Listed place
The Ningaloo Coast	WA	Listed place
The West Kimberley	WA	Listed place
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place
Historic		
Dirk Hartog Landing Site 1616 - Cape Inscription Area	WA	Listed place

Wetlands of International Importance (Ramsar)		[Resource Information]
Name	Proximity	
Eighty-mile beach	Within Ramsar site	
Ord river floodplain	Within 10km of Ramsar	

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 the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.		

Name
EEZ and Territorial Sea
Extended Continental Shelf

Marine Regions		[Resource Information]
If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.		

Name
North-west

Listed Threatened Ecological Communities		[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, 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.		

Name	Status	Type of Presence
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Endangered	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species

Name	Status	Type of Presence
Calidris tenuirostris Great Knot [862]	Critically Endangered	habitat known to occur within area 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
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii blaauwi Partridge Pigeon (western) [66501]	Vulnerable	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Malurus leucopterus leucopterus White-winged Fairy-wren (Dirk Hartog Island), Dirk Hartog Black-and-White Fairy-wren [26004]	Vulnerable	Species or species habitat likely 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
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
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
Bettongia lesueur lesueur Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat likely to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat may occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Isodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
Lagostrophus fasciatus fasciatus Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Translocated population known to occur within area
Leporillus conditor Wopilkara, Greater Stick-nest Rat [137]	Vulnerable	Translocated population known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Perameles bougainville bougainville Western Barred Bandicoot (Shark Bay) [66631]	Endangered	Translocated population known to occur within area
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat known to occur within area
Phascogale tapoatafa kimberleyensis Kimberley brush-tailed phascogale, Brush-tailed Phascogale (Kimberley) [88453]	Vulnerable	Species or species habitat likely to occur within area
Rhinonictes aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat likely to occur

Name	Status	Type of Presence within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding 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
Lerista neviniae Nevin's Slider [85296]	Endangered	Species or species habitat known to occur within area
Liasis olivaceus barroni Olive Python (Pilbara subspecies) [66699]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Sharks

Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Listed Migratory Species

[[Resource Information](#)]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species

Name	Threatened	Type of Presence
Diomedea exulans Wandering Albatross [89223]	Vulnerable	habitat likely to occur within area Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Foraging, feeding or related behaviour likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]		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
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding 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
Lamna nasus Porbeagle, Mackerel Shark [83288]		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
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat known to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur

Name	Threatened	Type of Presence within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
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 may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	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
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		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
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Heritage Places [\[Resource Information \]](#)

Name	State	Status
Natural		
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species

Name	Threatened	Type of Presence
Calidris canutus Red Knot, Knot [855]	Endangered	habitat known to occur within area 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 known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Hirundo daurica Red-rumped Swallow [59480]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Foraging, feeding or related behaviour likely to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or

Name	Threatened	Type of Presence
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	related behaviour known to occur within area Foraging, feeding or related behaviour likely to occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Puffinus pacificus Wedge-tailed Shearwater [1027]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		Breeding known to occur within area
Sterna anaethetus Bridled Tern [814]		Breeding known to occur within area
Sterna bengalensis Lesser Crested Tern [815]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sterna fuscata Sooty Tern [794]		Breeding known to occur within area
Sterna nereis Fairy Tern [796]		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
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area
Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		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 latispinosus Muiron Island Pipefish [66196]		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

Name	Threatened	Type of Presence
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 multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		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 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 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
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		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
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		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
Mammals		
Dugong dugon Dugong [28]		Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Aipysurus foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Seasnake [66061]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Seasnake [1121]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Enhydrina schistosa Beaked Seasnake [1126]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Seasnake [1101]		Species or species habitat may occur within area
Hydrophis coggeri Slender-necked Seasnake [25925]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Hydrophis czeblukovi Fine-spined Seasnake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis inornatus Plain Seasnake [1107]		Species or species habitat may occur within area
Hydrophis mcdowelli null [25926]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
Lapemis hardwickii Spine-bellied Seasnake [1113]		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	Breeding known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans

[[Resource Information](#)]

Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within

Name	Status	Type of Presence area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Globicephala melas Long-finned Pilot Whale [59282]		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 simus Dwarf Sperm Whale [58]		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]	Vulnerable	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 Ginkgo-toothed Beaked Whale, Ginkgo-toothed Whale, Ginkgo Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Orcaella brevirostris Irrawaddy Dolphin [45]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species

Name	Status	Type of Presence
Stenella longirostris Long-snouted Spinner Dolphin [29]		habitat may occur within area Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [\[Resource Information \]](#)

Name	Label
Abrolhos	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Special Purpose Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Dampier	Habitat Protection Zone (IUCN IV)
Dampier	Multiple Use Zone (IUCN VI)
Eighty Mile Beach	Multiple Use Zone (IUCN VI)
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Multiple Use Zone (IUCN VI)
Gascoyne	National Park Zone (IUCN II)
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)
Ningaloo	Recreational Use Zone (IUCN IV)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Roebuck	Multiple Use Zone (IUCN VI)
Shark Bay	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Bardi Jawi	WA
Dambimangari	WA
Dambimangari	WA
Dirk Hartog Island	WA
Faure Island	WA
Little Rocky Island	WA
Tent Island	WA
Unnamed WA36913	WA
Unnamed WA36915	WA
Uunguu	WA

Invasive Species

[[Resource Information](#)]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat may occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Andropogon gayanus Gamba Grass [66895]		Species or species habitat likely to occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species

Name	Status	Type of Presence
Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507]		habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Reptiles

Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat likely to occur within area
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Nationally Important Wetlands

[[Resource Information](#)]

Name	State
Exmouth Gulf East	WA
Hamelin Pool	WA
Shark Bay East	WA

Key Ecological Features (Marine)

[[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
Carbonate bank and terrace system of the Sahul	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Pinnacles of the Bonaparte Basin	North-west
Wallaby Saddle	North-west

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

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 Act 1999. It holds 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 and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making 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 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 distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

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 as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- 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:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-11.269933 127.440005,-12.516962 128.274966,-13.416271 128.362857,-13.854015 128.406802,-14.652617 128.879214,-14.833236 128.956119,-14.737633 128.439761,-14.280288 127.769595,-13.864681 127.385074,-13.864681 127.143375,-13.67261 126.934634,-13.875347 126.418277,-13.843348 126.242496,-13.896678 125.967837,-14.077907 125.934878,-14.34416 125.836001,-14.216398 125.649234,-14.461212 125.099918,-14.641988 125.044986,-14.88633 125.143863,-14.971254 124.990054,-15.257624 124.649478,-15.268222 124.231998,-15.416549 124.16608,-15.490673 124.407779,-16.293713 124.286929,-16.072142 123.616763,-16.219884 123.429996,-16.567693 123.408023,-16.778181 123.561832,-16.914874 123.704654,-17.114478 123.397037,-16.546631 123.034488,-16.251529 123.078433,-16.704537 122.540103,-17.135476 122.144595,-17.502564 122.056705,-18.244939 122.078677,-18.432649 121.738101,-18.76585 121.551334,-19.45099 121.100894,-19.999097 119.584781,-19.906155 119.101382,-20.236365 118.727847,-20.308506 118.112613,-20.648142 117.321597,-20.555589 116.948062,-20.360014 117.01398,-20.318809 116.816226,-20.802273 116.26691,-20.822812 116.113101,-21.468342 115.377017,-21.754335 114.629947,-22.344932 114.355289,-22.202601 114.146548,-21.67268 114.245425,-21.886924 113.849918,-22.669716 113.586246,-23.003846 113.751041,-23.458145 113.696109,-24.031352 113.300601,-24.51208 113.311587,-25.893759 114.135562,-26.258875 114.003726,-25.953045 113.926822,-25.398562 113.45441,-25.686027 113.366519,-26.249022 113.641177,-26.229314 113.509341,-25.378711 112.949039,-25.557248 112.839175,-26.485263 113.256656,-27.161748 113.816959,-27.571531 114.036685,-27.552052 113.113834,-27.151972 112.981998,-25.368784 112.278873,-26.022173 110.389224,-25.893759 110.323306,-25.804776 109.872867,-25.537424 109.587222,-25.626608 109.23566,-24.582033 109.389468,-23.306884 109.872867,-22.882439 110.026675,-21.621623 110.169498,-20.945986 110.510074,-20.030065 110.949527,-19.025706 112.092105,-17.816621 112.981998,-17.271909 113.773013,-16.935895 115.442935,-15.681156 116.014224,-14.790751 116.89313,-14.056594 118.266421,-13.266614 118.42023,-13.949995 120.046207,-13.234532 121.825992,-12.838516 122.529117,-12.15205 122.51813,-11.883411 122.726871,-11.786636 123.067447,-11.926411 123.440982,-12.248693 123.583804,-11.63603 125.737125,-11.334573 126.539126,-11.280707 127.440005,-11.269933 127.440005

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](#)
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- [-Australian Tropical Herbarium, Cairns](#)
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- [-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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 10/05/21 12:51:00

[Summary](#)

[Details](#)

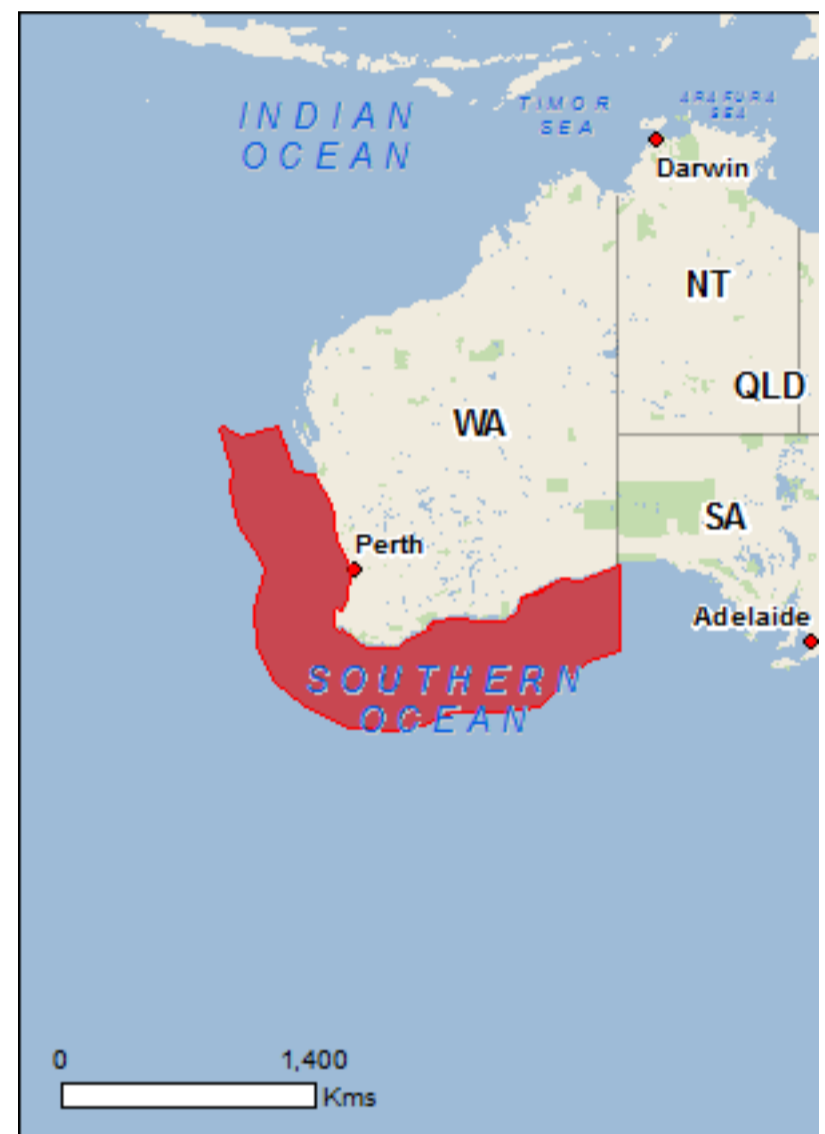
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

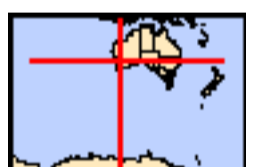
[Acknowledgements](#)



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[Coordinates](#)

[Buffer: 1.0Km](#)



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	65
Listed Migratory Species:	67

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 <http://www.environment.gov.au/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 Land:	2
Commonwealth Heritage Places:	1
Listed Marine Species:	106
Whales and Other Cetaceans:	40
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	21

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	10
Regional Forest Agreements:	None
Invasive Species:	42
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	8

Details

Matters of National Environmental Significance

National Heritage Properties		[Resource Information]
Name	State	Status
Indigenous		
Cheetup Rock Shelter	WA	Listed place

Wetlands of International Importance (Ramsar)		[Resource Information]
Name	Proximity	
Becher point wetlands	Within 10km of Ramsar	
Forrestdale and thomsons lakes	Within 10km of Ramsar	
Peel-yalgorup system	Within 10km of Ramsar	
Vasse-wonnerup system	Within 10km of Ramsar	

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 the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.	

Name
EEZ and Territorial Sea
Extended Continental Shelf

Marine Regions	[Resource Information]
If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.	

Name
South-west

Listed Threatened Ecological Communities	[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, 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.	

Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area
Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community may occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species	[Resource Information]	
Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Atrichornis clamosus Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel	Endangered	Species or species

Name	Status	Type of Presence
[1060]		habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pezoporus flaviventris Western Ground Parrot, Kyloring [84650]	Critically Endangered	Species or species habitat likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Mammals		
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
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat known to occur within area
Petrogale lateralis hacketti Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat known to occur within area
Potorous gilbertii Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	Translocated population known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat may occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
Plants		
Caladenia elegans Elegant Spider-orchid [56775]	Endangered	Species or species habitat may occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat may occur within area
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat may occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
Drummondita ericoides Morseby Range Drummondita [9193]	Endangered	Species or species habitat likely to occur within area
Eucalyptus insularis Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
Isopogon uncinatus Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat likely to occur within area
Reptiles		
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

Name	Status	Type of Presence
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area
Liopholis pulchra longicauda Jurien Bay Skink, Jurien Bay Rock-skink [83162]	Vulnerable	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
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat may occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
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
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to 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 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
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat known to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	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
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species

Name	Threatened	Type of Presence
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		habitat may occur within area Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	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
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Glareola maldivarum Oriental Pratincole [840]		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 likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

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.

Name
Commonwealth Land - Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND

Commonwealth Heritage Places [\[Resource Information \]](#)

Name	State	Status
Natural Garden Island	WA	Listed place

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Species or species

Name	Threatened	Type of Presence
Calidris canutus Red Knot, Knot [855]	Endangered	habitat known to occur within area 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 likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area

Name	Threatened	Type of Presence
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma macroptera Great-winged Petrel [1035]		Breeding known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely

Name	Threatened	Type of Presence
Puffinus assimilis Little Shearwater [59363]		to occur within area Breeding known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Breeding known to occur within area
Puffinus griseus Sooty Shearwater [1024]		Species or species habitat may occur within area
Puffinus pacificus Wedge-tailed Shearwater [1027]		Breeding known to occur within area
Puffinus tenuirostris Short-tailed Shearwater [1029]		Breeding known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Sterna anaethetus Bridled Tern [814]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sterna fuscata Sooty Tern [794]		Breeding known to occur within area
Sterna nereis Fairy Tern [796]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Fish

Name	Threatened	Type of Presence
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		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 breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		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
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptiles		
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Seasnake [66061]		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 known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans [Resource Information]

Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Berardius arnuxii Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to 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
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within

Name	Status	Type of Presence area
Hyperoodon planifrons Southern Bottlenose Whale [71]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia simus Dwarf Sperm Whale [58]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Ginkgo-toothed Beaked Whale, Ginkgo-toothed Whale, Ginkgo Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		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]		Foraging, feeding or related behaviour known to occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
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
Tasmacetus shepherdi Shepherd's Beaked Whale, Tasman Beaked Whale [55]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops 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]

Name	Label
Abrolhos	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Special Purpose Zone (IUCN VI)
Bremer	National Park Zone (IUCN II)
Bremer	Special Purpose Zone (Mining)
Eastern Recherche	National Park Zone (IUCN II)
Eastern Recherche	Special Purpose Zone (IUCN VI)
Geographe	Habitat Protection Zone (IUCN IV)
Geographe	Multiple Use Zone (IUCN VI)
Geographe	National Park Zone (IUCN II)
Geographe	Special Purpose Zone (Mining)
Great Australian Bight	Special Purpose Zone (Mining)
Jurien	Special Purpose Zone (IUCN VI)
South-west Corner	Habitat Protection Zone (IUCN IV)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	Special Purpose Zone (IUCN VI)
South-west Corner	Special Purpose Zone (Mining)
Twilight	National Park Zone (IUCN II)
Twilight	Special Purpose Zone (Mining)
Two Rocks	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Bald Island	WA
Boullanger, Whitlock, Favourite, Tern And Osprey Islands	WA
Eclipse Island	WA
Escape Island	WA
Flinders Bay	WA
Penguin Island	WA
Recherche Archipelago	WA
St Alouarn Island	WA
Unnamed WA44682	WA
Unnamed WA48968	WA

Invasive Species [\[Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
------	--------	------------------

Birds

Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area

Mammals

Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
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Name	Status	Type of Presence
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Key Ecological Features (Marine)

[[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 90-120m depth	South-west
Commonwealth marine environment surrounding	South-west
Commonwealth marine environment within and	South-west
Commonwealth marine environment within and	South-west
Diamantina Fracture Zone	South-west
Naturaliste Plateau	South-west
Western demersal slope and associated fish	South-west
Western rock lobster	South-west

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

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 Act 1999. It holds 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 and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making 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 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 distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

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 as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- 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:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-25.765206 109.237891,-25.725623 109.501563,-25.992551 109.732276,-25.992551 109.875098,-26.071525 110.182716,-26.229314 110.325538,-25.656321 112.127296,-27.717513 112.984229,-27.814726 114.02793,-28.202708 114.159766,-28.483117 114.445411,-28.695347 114.577247,-28.974447 114.599219,-29.147305 114.818946,-29.530391 114.950782,-29.921554 114.89585,-30.746498 115.082618,-31.517621 115.533057,-31.863505 115.730811,-32.523601 115.67588,-32.634692 115.544044,-33.16049 115.620948,-33.619137 115.302344,-33.49096 114.994727,-33.737988 114.928809,-34.275319 114.972755,-34.46575 115.126563,-34.366055 115.269385,-34.818257 115.917579,-34.908402 116.060401,-35.106373 116.598731,-35.11536 117.389747,-35.169263 117.774268,-35.169263 118.081885,-34.980447 118.312598,-34.402321 119.663917,-34.30255 119.56504,-34.029844 119.883643,-33.938746 120.960303,-33.911398 121.399757,-34.011632 121.949073,-34.102652 122.476417,-34.038948 123.432227,-33.591687 124.091407,-33.10529 124.212257,-32.902593 125.014258,-32.319576 126.134864,-32.375265 127.123633,-31.760809 129.035255,-35.294897 129.068214,-35.634921 127.541114,-37.453004 125.157081,-37.696807 123.058692,-37.688114 120.817481,-38.46644 118.664161,-38.337294 115.697852,-37.418109 113.368751,-36.584603 112.028419,-34.998448 111.061622,-33.545916 110.973731,-31.984725 111.512061,-31.414542 111.270362,-30.026241 110.182716,-28.396173 109.798194,-27.756409 109.875098,-25.765206 109.237891,-25.765206 109.237891

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 B. SUPPORTING FIGURES FOR SECTION 2.3 METEOROLOGY AND OCEANOGRAPHY

Browse

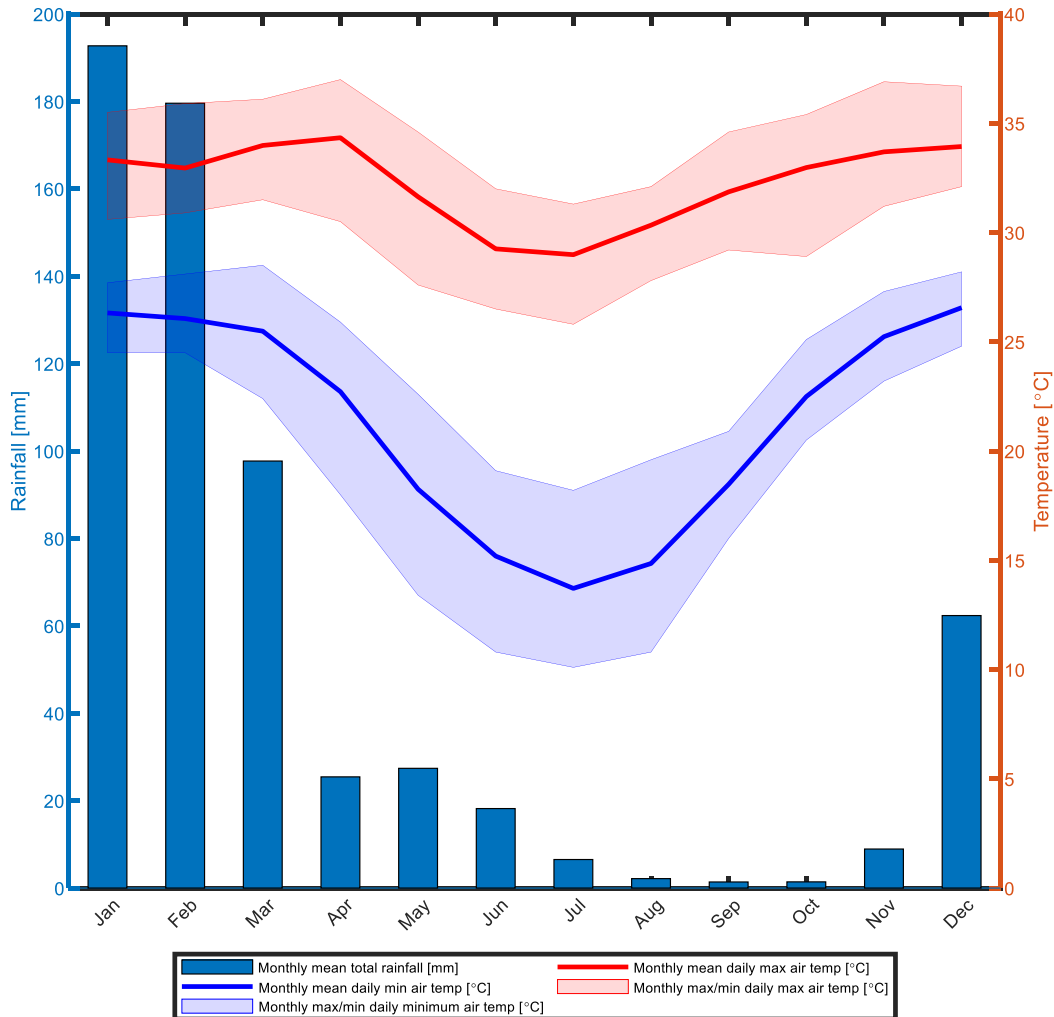
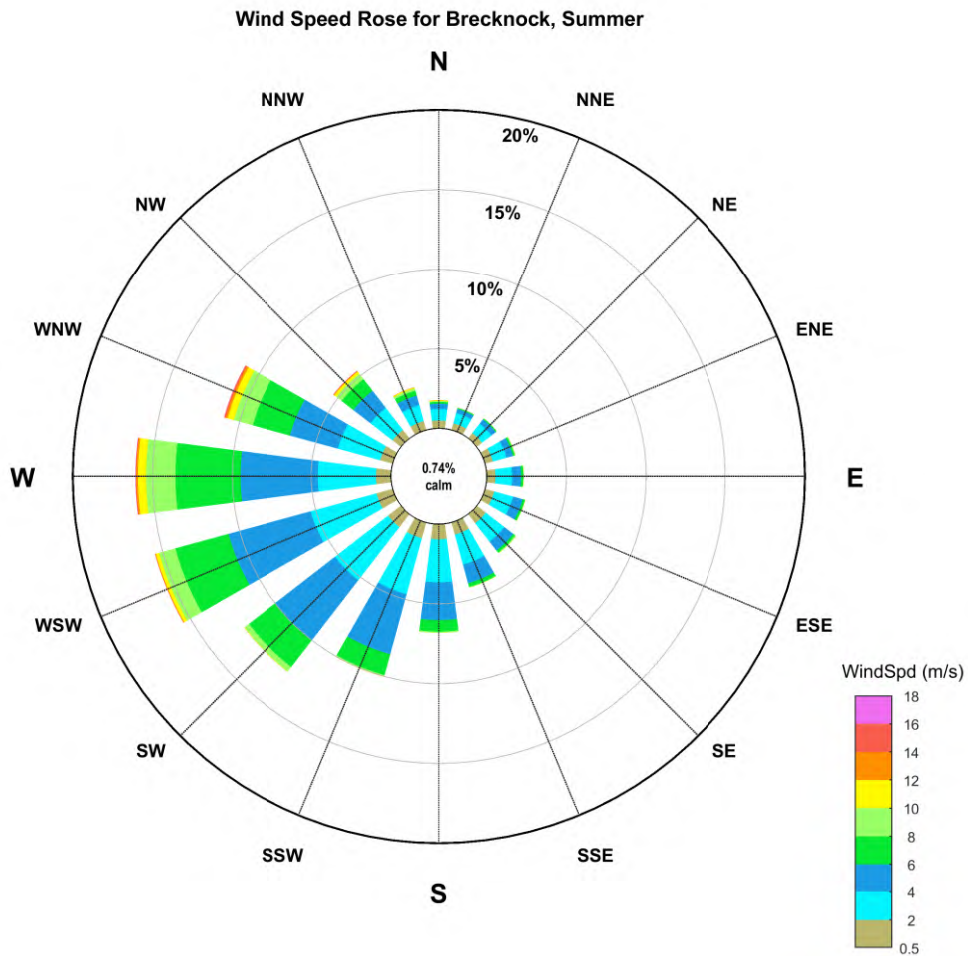


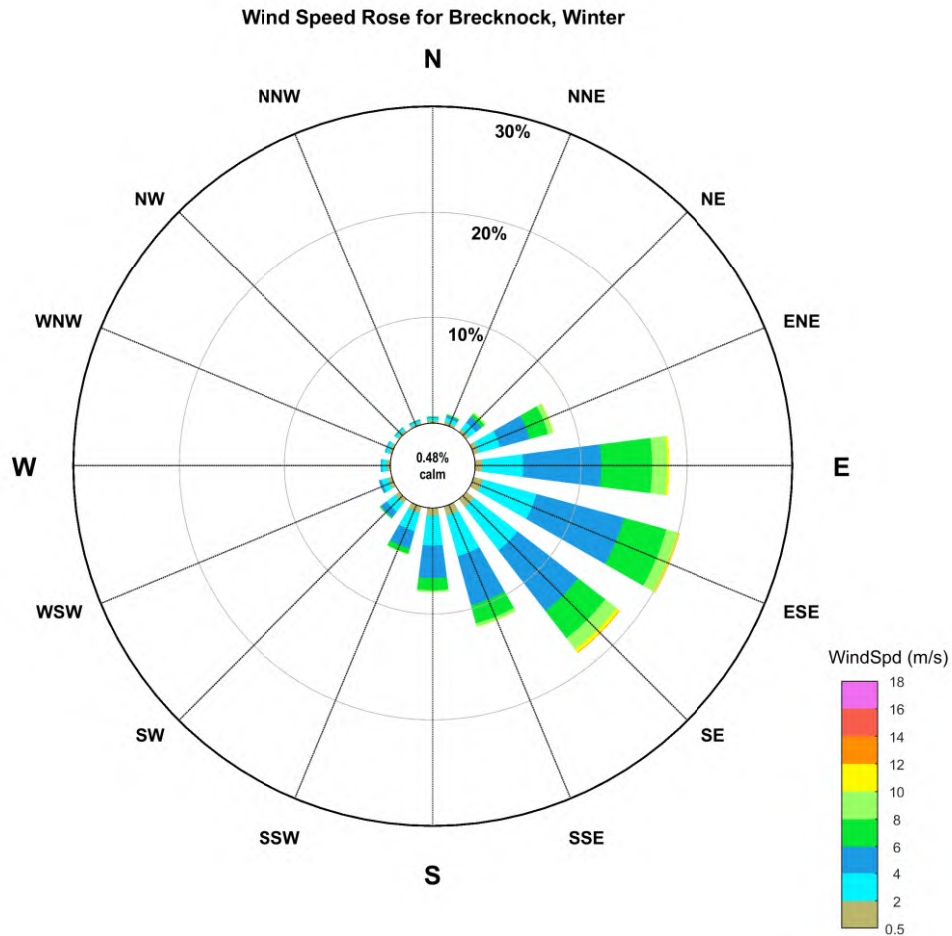
Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Broome Airport weather station from 1939-2020 (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.



<p>Data Information: Project: Browse Location: Brecknock [121.6500°E, 14.5300°S] Data Period: Summer (01-Jan-1979 to 01-Jan-2019) Data Source: Modelled Hindcast Record Elevation: 10 m AMSL Local Water Depth (m): 560 Data Summary: Summer Number of Records: 164812 Missing Data (%): 5.80 Calm (% < 0.50m/s): 0.74 Measurement Format: 10-minute avg.</p>	<p>Key Statistics for Data Shown: Max Wind Speed: 20.60 m/s Mean Wind Speed: 4.55 m/s StdDev. Wind Speed: 2.31 m/s</p>
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Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in summer are predominantly from the WNW to SW due to the North West Monsoon (WEL, 2019).




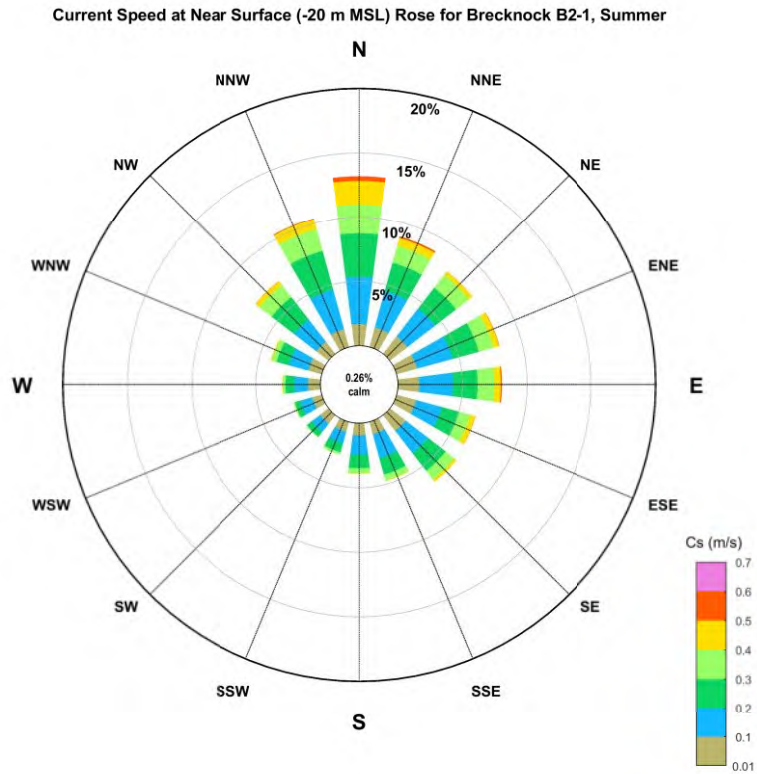
<p>Data Information: Project: Browse Location: Brecknock [121.6500°E, 14.5300°S] Data Period: Winter (01-Apr-1979 to 30-Sep-2018) Data Source: Modelled Hindcast Record Elevation: 10 m AMSL Local Water Depth (m): 560 Data Summary: Winter Number of Records: 173751 Missing Data (%): 1.10 Calm (% < 0.50m/s): 0.48 Measurement Format: 10-minute avg.</p>	<p>Key Statistics for Data Shown: Max Wind Speed: 14.34 m/s Mean Wind Speed: 4.71 m/s StdDev. Wind Speed: 2.01 m/s</p> <div style="text-align: right;">  </div>
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Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in winter are predominantly from the E to SE due to the South East Trade Winds coming from the Australian mainland (WEL, 2019).




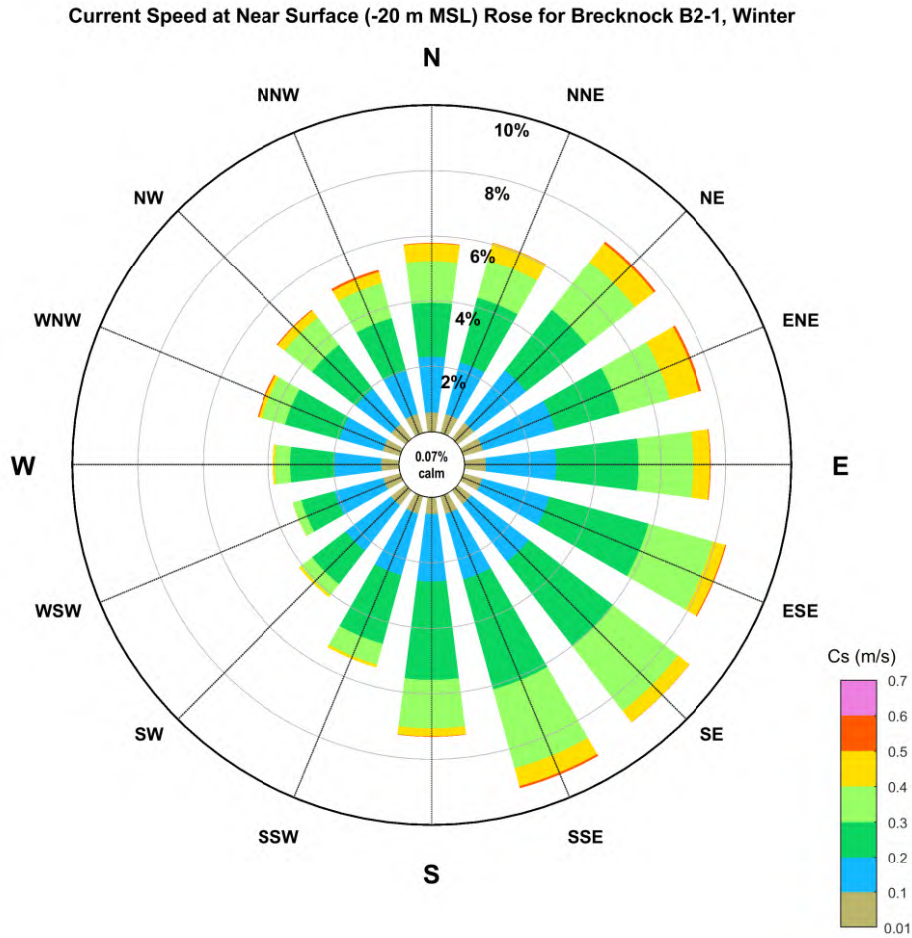
<p>Data Information: Project: Browse Location: Brecknock B2-1 [121.5700°E, 14.5100°S] Data Period: Summer (01-Oct-2006 to 31-Mar-2007) Data Source: CM04 Measured Record Elevation: Near Surface (-20 m MSL) Local Water Depth (m): 560 Data Summary: Summer Number of Records: 243472 Missing Data (%): 7.10 Calm (% < 0.01m/s): 0.26</p>	<p>Key Statistics for Data Shown: Max Curr Spd: 0.63 m/s Mean Curr Spd: 0.20 m/s StdDev. Curr Spd: 0.11 m/s</p> 
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Figure 4. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).




<p>Data Information: Project: Browse Location: Brecknock B2-1 [121.5700°E, 14.5100°S] Data Period: Winter (17-Sep-2006 to 08-Sep-2007) Data Source: CM04 Measured Record Elevation: Near Surface (-20 m MSL) Local Water Depth (m): 560 Data Summary: Winter Number of Records: 246184 Missing Data (%): 1.46 Calm (% < 0.01m/s): 0.07</p>	<p>Key Statistics for Data Shown: Max Curr Spd: 0.62 m/s Mean Curr Spd: 0.24 m/s StdDev. Curr Spd: 0.10 m/s</p>
	

Figure 5. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

North-west Shelf/Scarborough

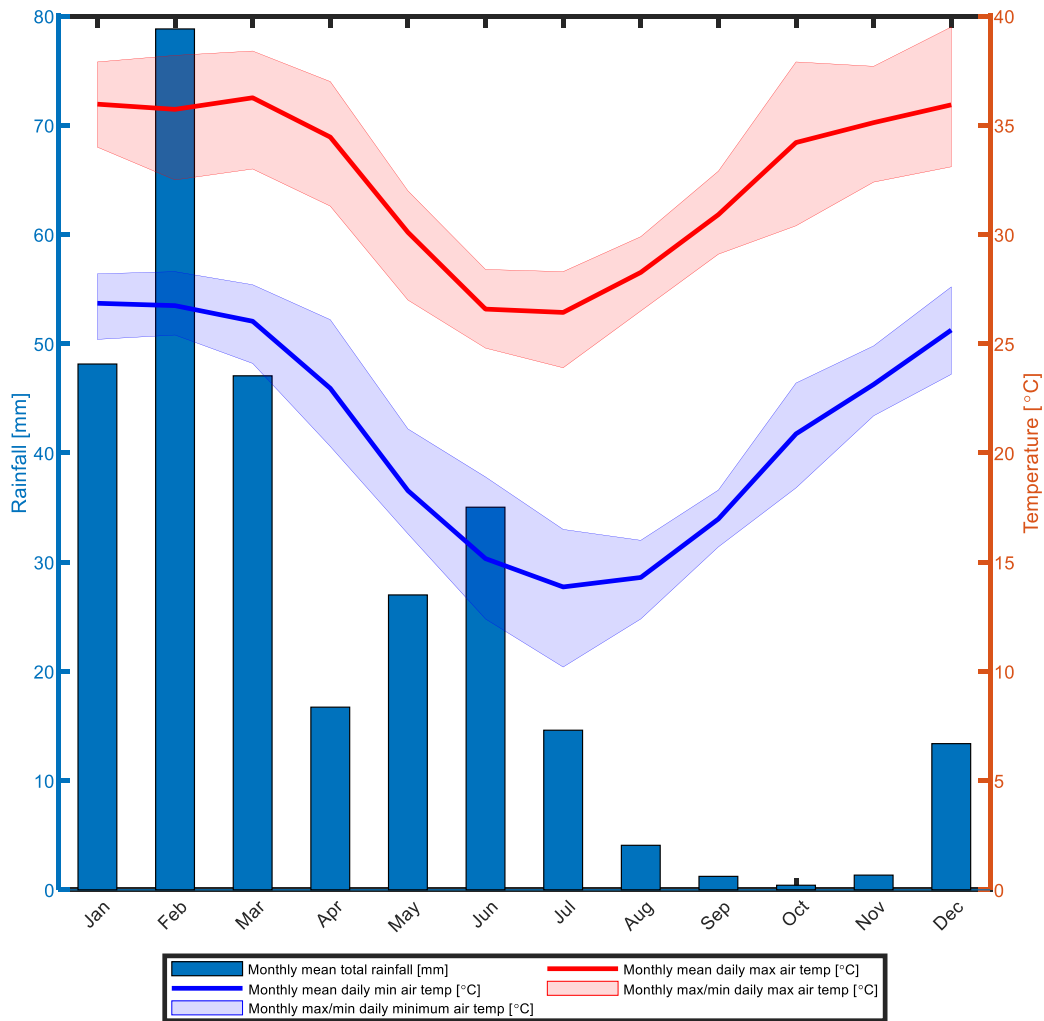
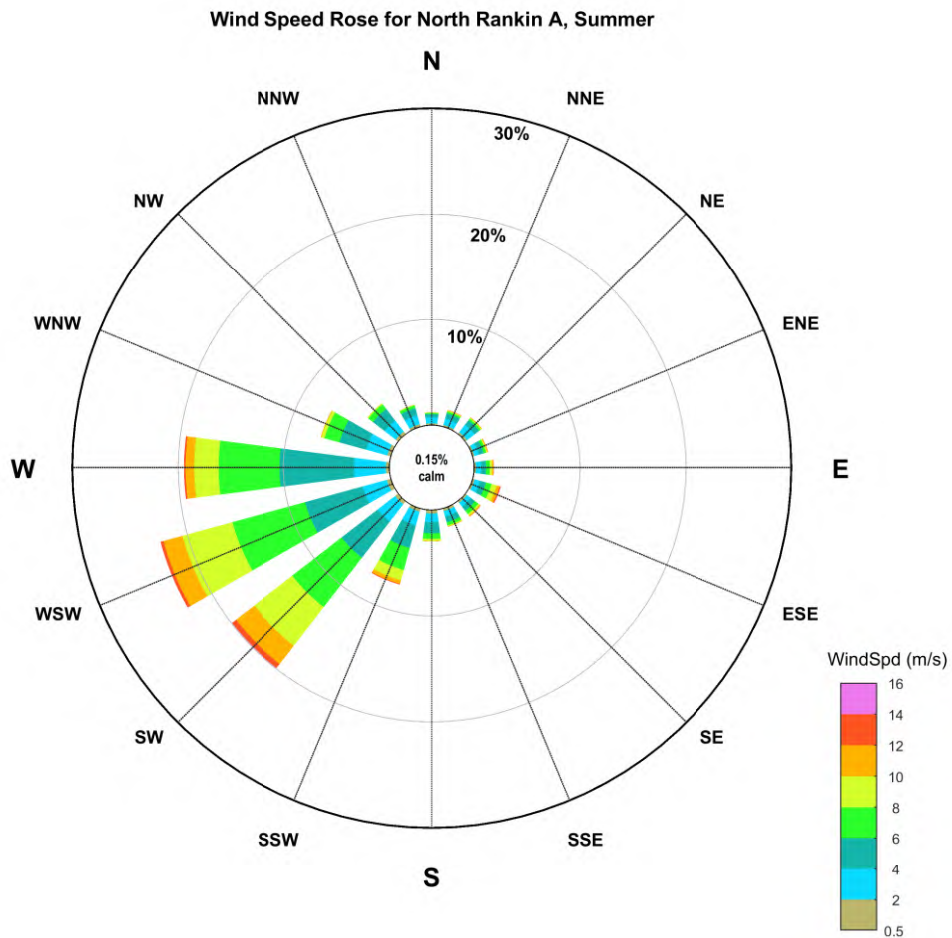


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Karratha Aero weather station from 1972-2020 and 1993-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.




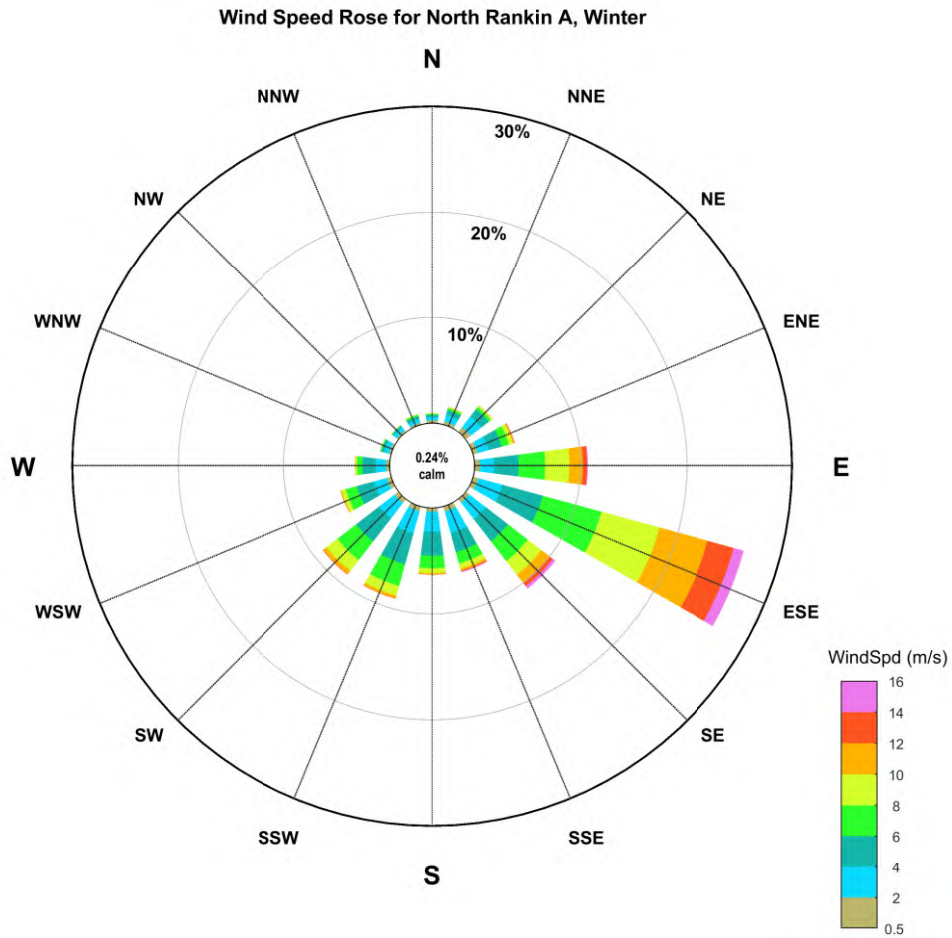
<p>Data Information: Project: North West Shelf Location: North Rankin A [116.1200°E, 19.6100°S] Data Period: Summer (01-Oct-1995 to 30-Nov-2015) Data Source: Measured Winds Record Elevation: 10 m AMSL Local Water Depth (m): 125 Data Summary: Summer Number of Records: 674659 Missing Data (%): 7.24 Calm (% < 0.50m/s): 0.15 Measurement Format: 10-minute avg.</p>	<p>Key Statistics for Data Shown: Max Wind Speed: 18.50 m/s Mean Wind Speed: 6.04 m/s StdDev. Wind Speed: 2.55 m/s</p> <div style="text-align: right;">  </div>
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Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin A in summer are characterised by W to SW driven by the North West Monsoon (RPS, 2016).




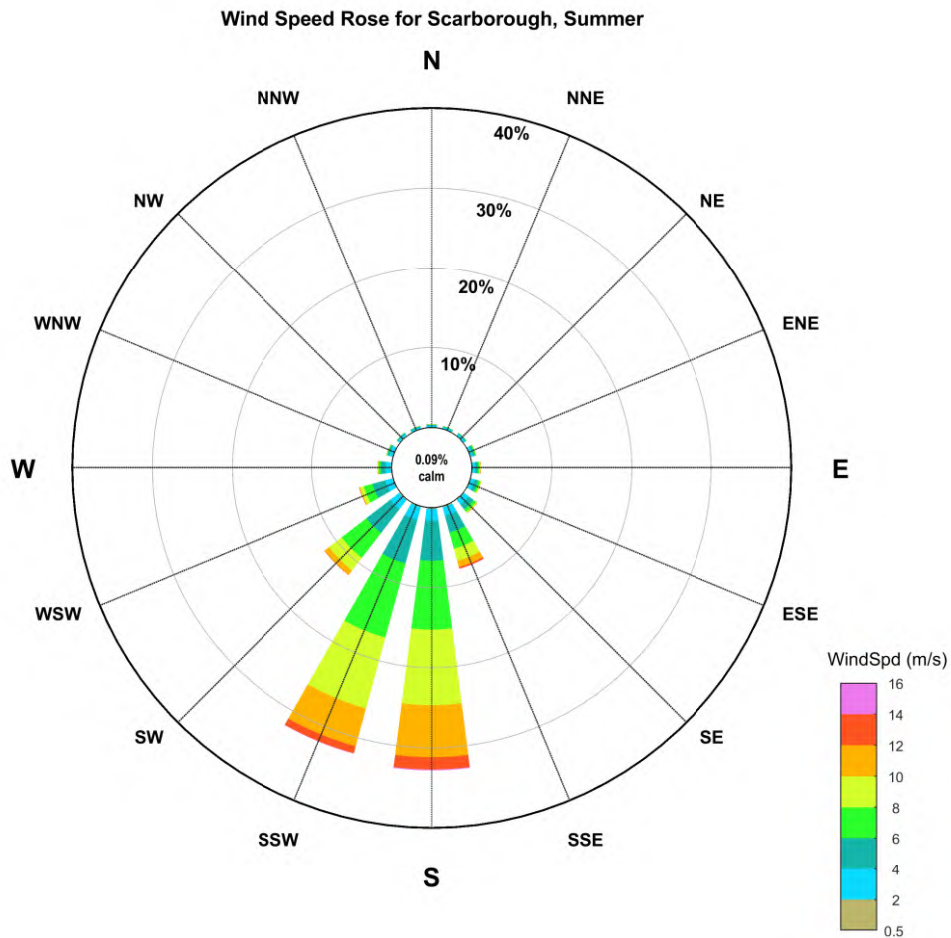
<p>Data Information: Project: North West Shelf Location: North Rankin A [116.1200°E, 19.6100°S] Data Period: Winter (22-Jun-1995 to 30-Sep-2015) Data Source: Measured Winds Record Elevation: 10 m AMSL Local Water Depth (m): 125 Data Summary: Winter Number of Records: 673213 Missing Data (%): 4.43 Calm (% < 0.50m/s): 0.24 Measurement Format: 10-minute avg.</p>	<p>Key Statistics for Data Shown: Max Wind Speed: 24.23 m/s Mean Wind Speed: 6.25 m/s StdDev. Wind Speed: 3.16 m/s</p> 
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Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin in winter are predominantly influenced by the South East Trade Winds over Australia (RPS, 2016).

Scarborough




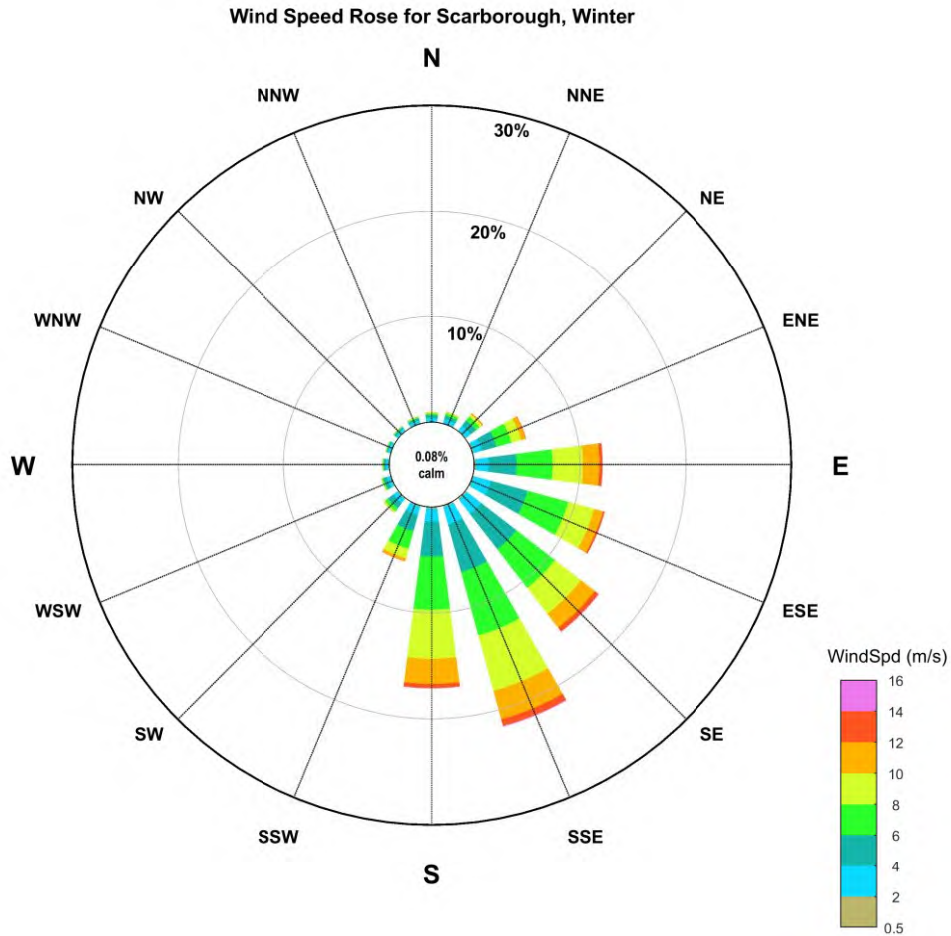
<p>Data Information: Project: North West Shelf Location: Scarborough [113.2000°E, 19.8800°S] Data Period: Summer (01-Jan-1979 to 01-Jan-2011) Data Source: CSFR Record Elevation: 10 m AMSL Local Water Depth (m): 950 Data Summary: Summer Number of Records: 129521 Missing Data (%): 7.46 Calm (% < 0.50m/s): 0.09 Measurement Format: 10-minute avg.</p>	<p>Key Statistics for Data Shown: Max Wind Speed: 16.75 m/s Mean Wind Speed: 7.23 m/s StdDev. Wind Speed: 2.64 m/s</p>	
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Figure 4. Summer distributions of wind speeds (10-minute at 10m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in summer are predominantly from the S to SSW due to a Pilbara Heat Low forming over the northwest coast of Western Australia [R8] SW winds are also experienced at this site due to the monsoon trough.

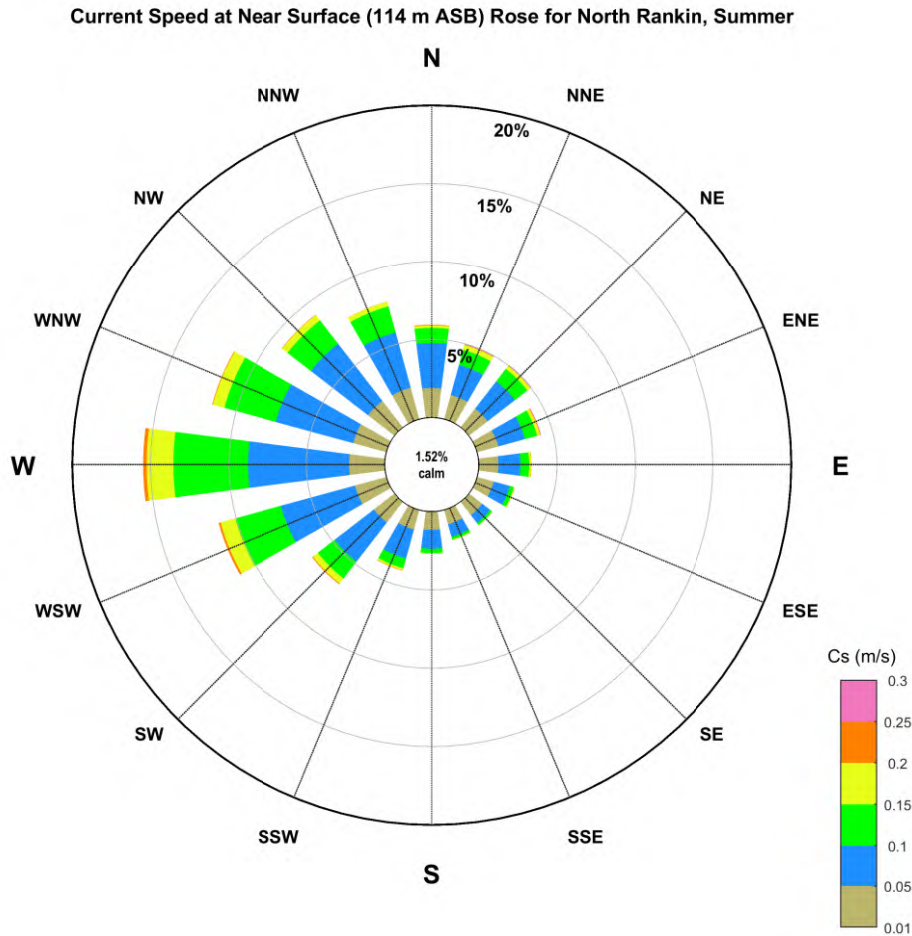


<p>Data Information: Project: North West Shelf Location: Scarborough [113.2000°E, 19.8800°S] Data Period: Winter (01-Apr-1979 to 30-Sep-2010) Data Source: CSFR Record Elevation: 10 m AMSL Local Water Depth (m): 950 Data Summary: Winter Number of Records: 138863 Missing Data (%): 1.20 Calm (% < 0.50m/s): 0.08 Measurement Format: 10-minute avg.</p>	<p>Key Statistics for Data Shown: Max Wind Speed: 19.15 m/s Mean Wind Speed: 6.90 m/s StdDev. Wind Speed: 2.57 m/s</p>
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Figure 5. Winter distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in winter are predominantly from the S to E driven by the South East Trade Winds over Australia (RPS, 2016).

North-west Shelf




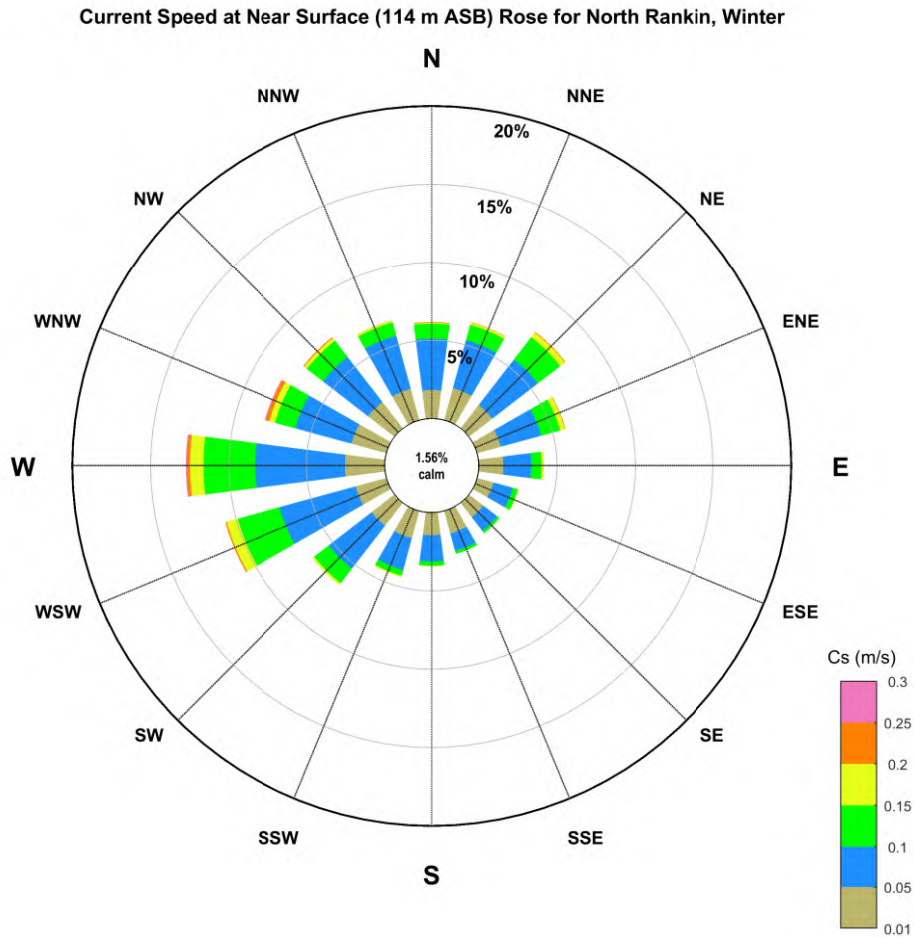
<p>Data Information: Project: North West Shelf Location: North Rankin [116.1400°E, 19.5800°S] Data Period: Summer (01-Oct-2004 to 31-Mar-2009) Data Source: Measured Data Record Elevation: Near Surface (114 m ASB) Local Water Depth (m): 124.5 Data Summary: Summer Number of Records: 496705 Missing Data (%): 6.63 Calm (% < 0.01m/s): 1.52</p>	<p>Key Statistics for Data Shown: Max Curr Spd: 0.49 m/s Mean Curr Spd: 0.08 m/s StdDev. Curr Spd: 0.04 m/s</p> <div style="text-align: right; margin-top: 10px;">  </div>
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Figure 6. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).




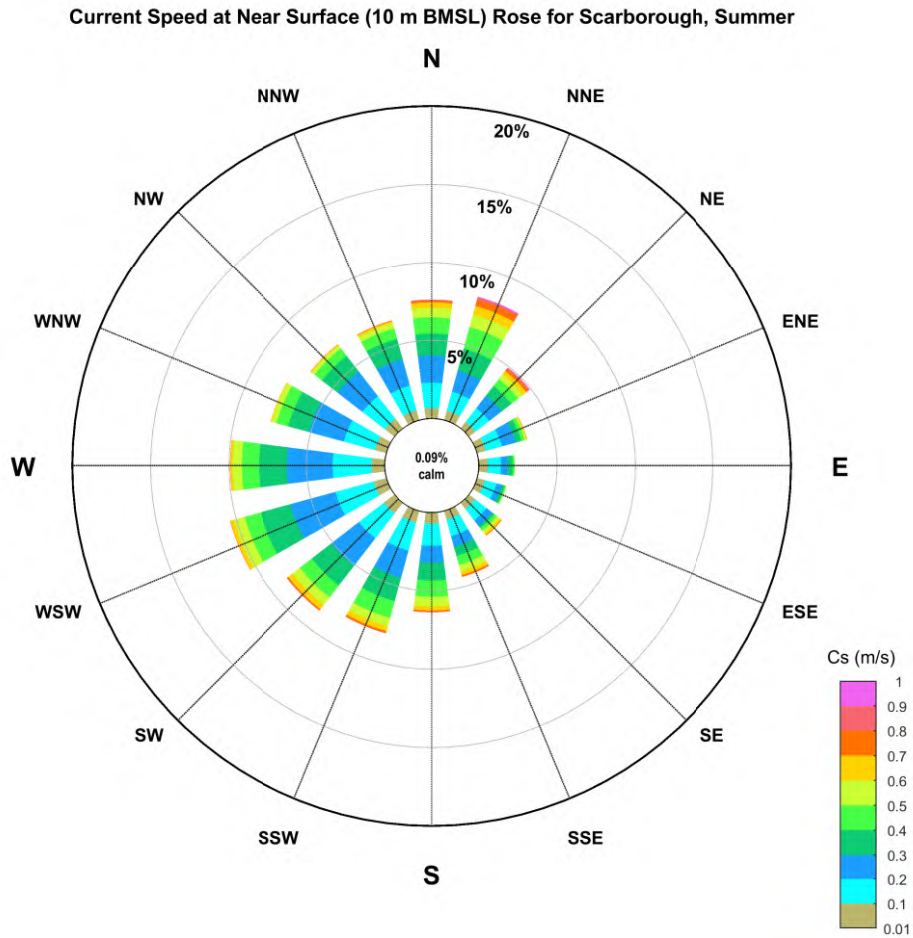
<p>Data Information: Project: North West Shelf Location: North Rankin [116.1400°E, 19.5800°S] Data Period: Winter (21-Sep-2004 to 08-May-2009) Data Source: Measured Data Record Elevation: Near Surface (114 m ASB) Local Water Depth (m): 124.5 Data Summary: Winter Number of Records: 337723 Missing Data (%): 0.88 Calm (% < 0.01m/s): 1.56</p>	<p>Key Statistics for Data Shown: Max Curr Spd: 0.32 m/s Mean Curr Spd: 0.07 m/s StdDev. Curr Spd: 0.04 m/s</p> <div style="text-align: right;">  </div>
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Figure 7. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

Scarborough




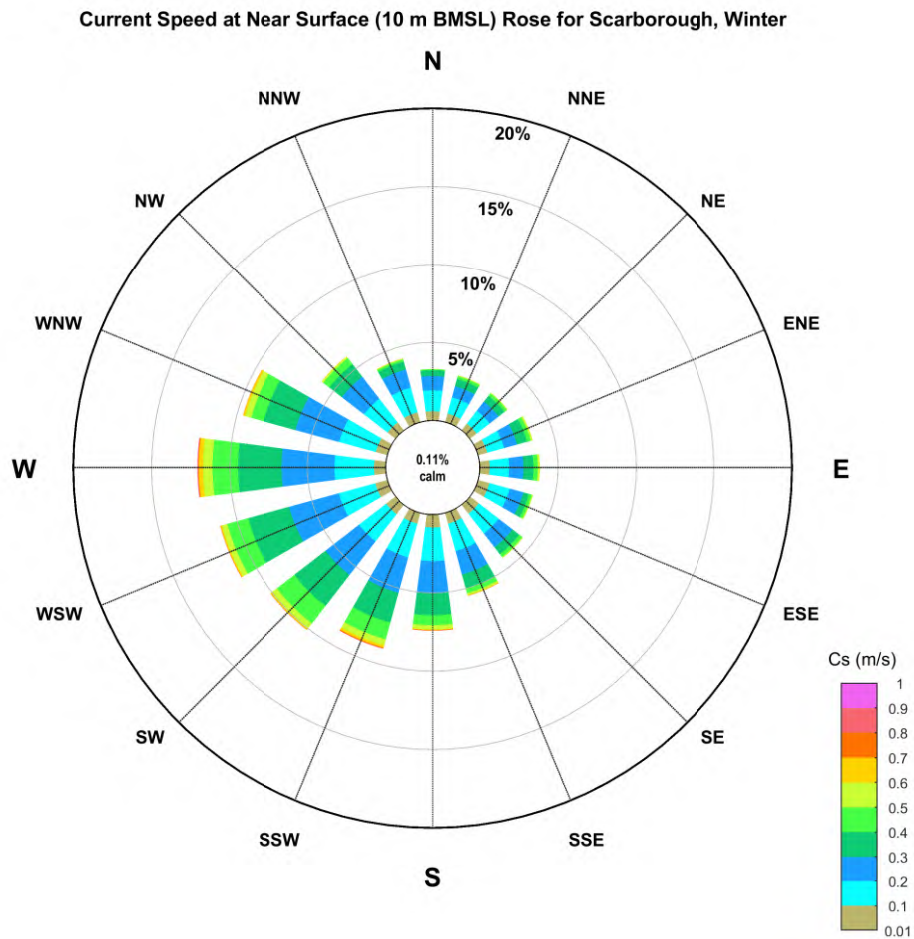
<p>Data Information: Project: North West Shelf Location: Scarborough [113.2000°E, 19.8800°S] Data Period: Summer (15-Jan-2010 to 29-Feb-2012) Data Source: Measured Data Record Elevation: Near Surface (10 m BMSL) Local Water Depth (m): 950 Data Summary: Summer Number of Records: 43600 Missing Data (%): 7.11 Calm (% < 0.01m/s): 0.09</p>	<p>Key Statistics for Data Shown: Max Curr Spd: 1.03 m/s Mean Curr Spd: 0.29 m/s StdDev. Curr Spd: 0.17 m/s</p> <div style="text-align: right;">  </div>
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Figure 8. Summer (Nov - April) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).




<p>Data Information: Project: North West Shelf Location: Scarborough [113.2000°E, 19.8800°S] Data Period: Winter (01-Apr-2010 to 30-Sep-2011) Data Source: Measured Data Record Elevation: Near Surface (10 m BMSL) Local Water Depth (m): 950 Data Summary: Winter Number of Records: 49345 Missing Data (%): 3.01 Calm (% < 0.01m/s): 0.11</p>	<p>Key Statistics for Data Shown: Max Curr Spd: 1.03 m/s Mean Curr Spd: 0.25 m/s StdDev. Curr Spd: 0.13 m/s</p> <div style="text-align: right; margin-top: 10px;">  </div>
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Figure 9. Winter (May-Sep) near surface combined frequency of 1-min mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

North-west Cape

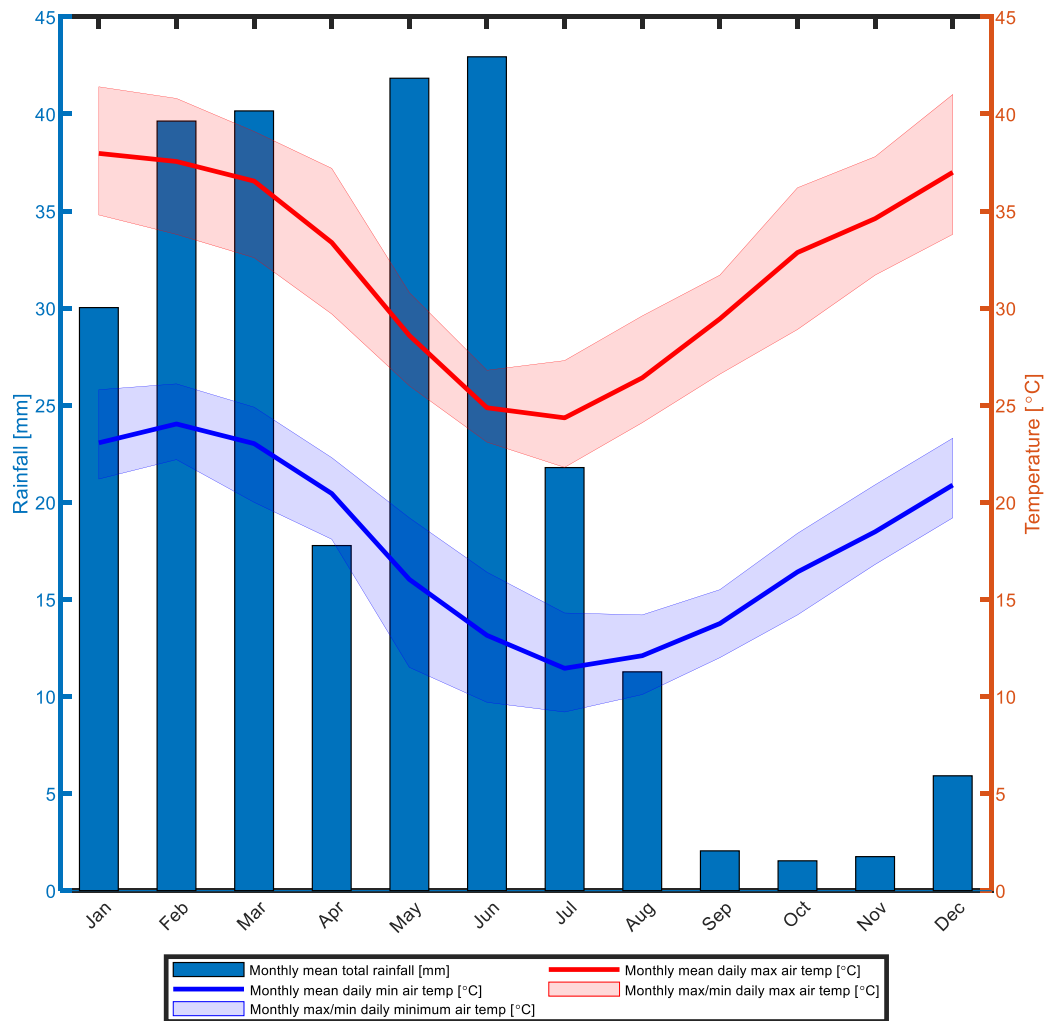
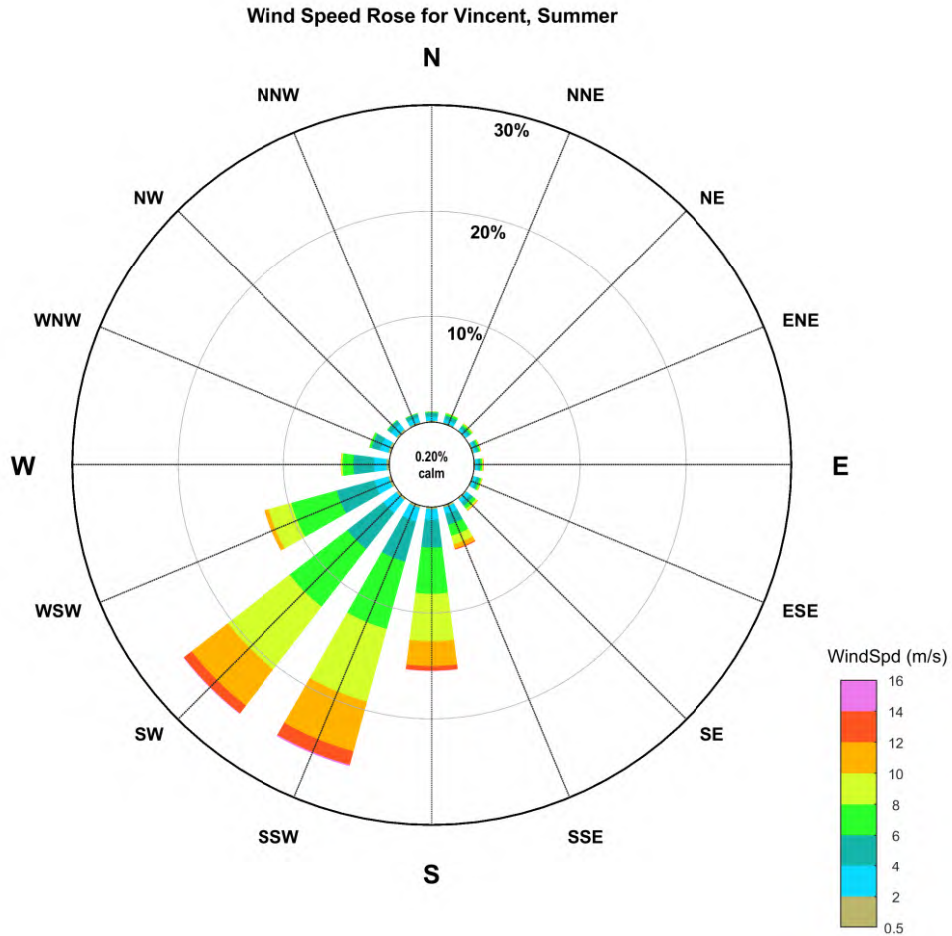


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Learmonth Airport weather station from 1945-2020 and 1975-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.




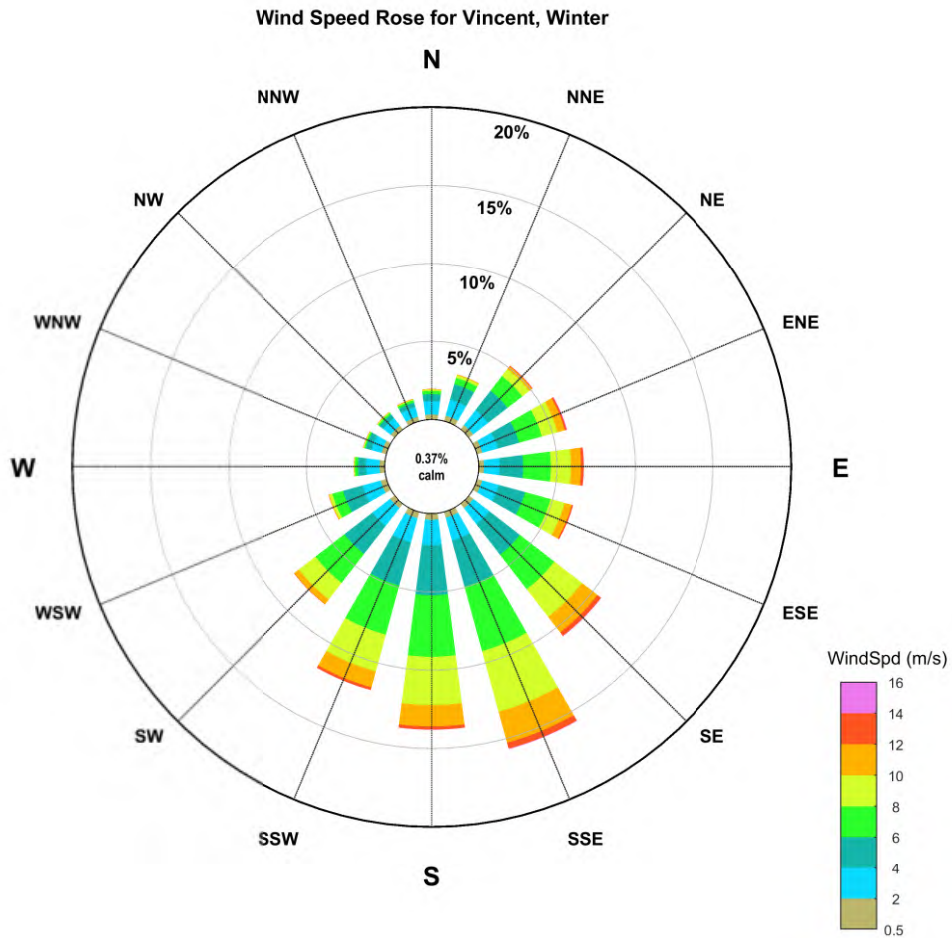
<p>Data Information: Project: North West Cape Location: Vincent [114.0600°E, 21.4400°S] Data Period: Summer (01-Jan-1979 to 01-Jan-2019) Data Source: Modelled Hindcast Record Elevation: 10 m AMSL Local Water Depth (m): 350 Data Summary: Summer Number of Records: 159379 Missing Data (%): 8.91 Calm (% < 0.50m/s): 0.20 Measurement Format: 10-minute avg.</p>	<p>Key Statistics for Data Shown: Max Wind Speed: 18.86 m/s Mean Wind Speed: 7.10 m/s StdDev. Wind Speed: 2.75 m/s</p> 
---	--

Figure 2. Summer distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. Winds at Vincent in summer are predominantly from the SW to SSW in summer due to the presence of the Pilbara Heat Low (MetOcean Engineers, 2005).




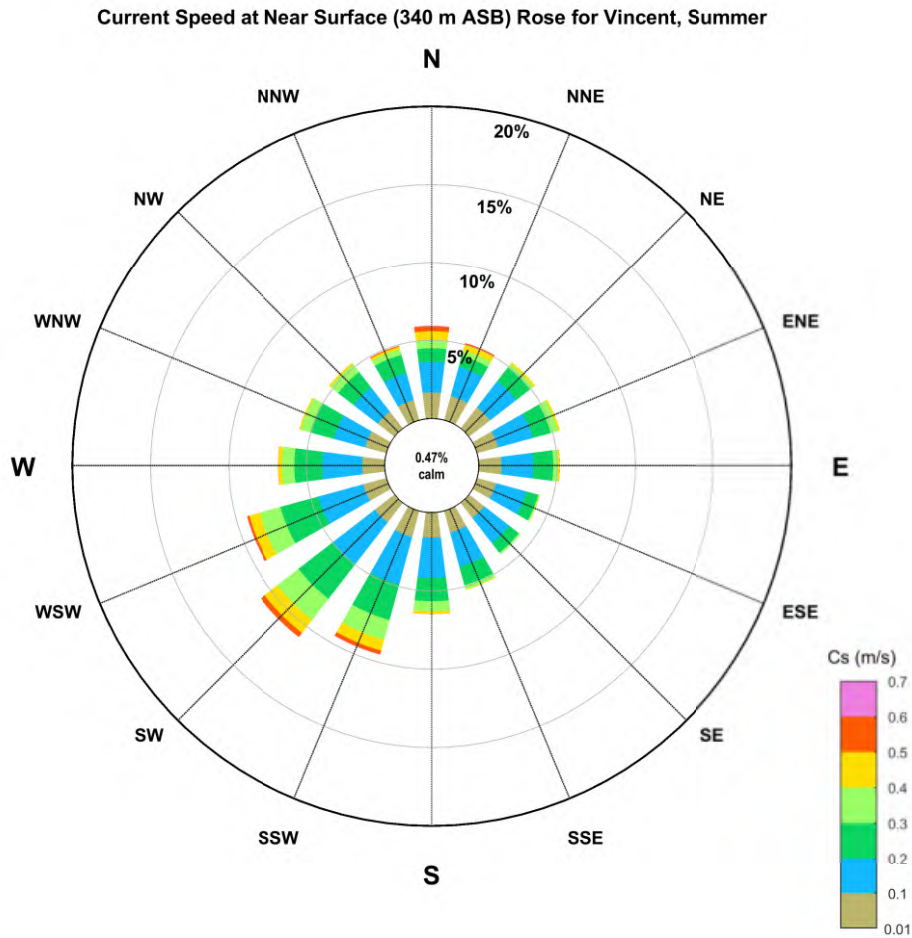
<p>Data Information: Project: North West Cape Location: Vincent [114.0600°E, 21.4400°S] Data Period: Winter (01-Apr-1979 to 30-Sep-2018) Data Source: Modelled Hindcast Record Elevation: 10 m AMSL Local Water Depth (m): 350 Data Summary: Winter Number of Records: 173626 Missing Data (%): 1.17 Calm (% < 0.50m/s): 0.37 Measurement Format: 10-minute avg.</p>	<p>Key Statistics for Data Shown: Max Wind Speed: 19.39 m/s Mean Wind Speed: 6.23 m/s StdDev. Wind Speed: 2.78 m/s</p> 
---	--

Figure 3. Winter distributions of wind speeds (10-minute at 10 m ASL) 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. In winter, winds are predominantly from the S to SE, associated with the South East Trades. Easterly gales are experienced at the Vincent location due to high pressure systems generating from the Great Australian Bight area to the site (MetOcean Engineers, 2005).




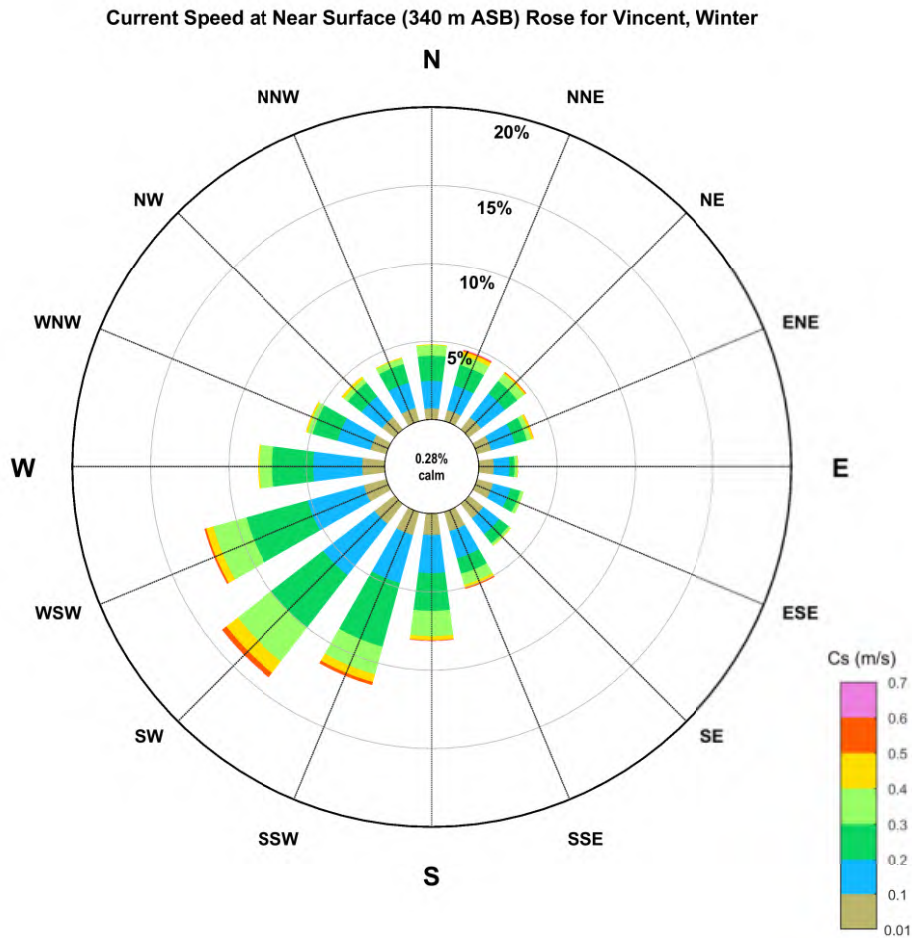
<p>Data Information: Project: North West Cape Location: Vincent [114.0600°E, 21.4400°S] Data Period: Summer (21-Nov-2000 to 13-Dec-2001) Data Source: Measured Data Record Elevation: Near Surface (340 m ASB) Local Water Depth (m): 350 Data Summary: Summer Number of Records: 144668 Missing Data (%): 1.59 Calm (% < 0.01m/s): 0.47</p>	<p>Key Statistics for Data Shown: Max Curr Spd: 0.75 m/s Mean Curr Spd: 0.19 m/s StdDev. Curr Spd: 0.11 m/s</p> <div style="text-align: right;">  </div>
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Figure 4. Summer (May – Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).




<p>Data Information: Project: North West Cape Location: Vincent [114.0600°E, 21.4400°S] Data Period: Winter (01-Apr-2001 to 30-Sep-2001) Data Source: Measured Data Record Elevation: Near Surface (340 m ASB) Local Water Depth (m): 350 Data Summary: Winter Number of Records: 126313 Missing Data (%): 4.13 Calm (% < 0.01m/s): 0.28</p>	<p>Key Statistics for Data Shown: Max Curr Spd: 0.64 m/s Mean Curr Spd: 0.20 m/s StdDev. Curr Spd: 0.11 m/s</p>
	

Figure 5. Winter (Nov – Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

REFERENCES

- AFMA 2021. Southern Blue Fin Tuna. Accessed 3 June 2021 www.afma.gov.au/fisheries-management/species/southern-bluefin-tuna
- Bureau of Meteorology 2020. Climate Statistics for Australian Locations, Summary Statistics Broome Airport Accessed 1 October 2020 <http://www.bom.gov.au/climate/averages/tables/cw_003003.shtml>.
- MetOcean Engineers 2005. Vincent Development Metocean Criteria Report No. R1276.
- Metocean Solutions Ltd 2019. "Australia North-West Shelf wave hindcast: Description and Validation of SWAN ST6 Wave Model", DRIMS 1401150817.
- RPS 2016. Metocean Criteria Guidelines for Modu Mooring on Australia's North West Shelf, DRIMS 1400522719.
- RPS Metocean Pty Ltd 2008. "Browse LNG Development - Offshore MetOcean Measurement Programme: September 2006 to February 2008 Final Data Report." CRN: JB0020RT0019.
- Vincent Metocean – 40 Year Non-Cyclonic Metocean Database for Design Studies CRN: VA0000RT1400067309.
- WEL 2011. Greater Western Flank Detailed Metocean Design Criteria, Rev 2. CRN: A3000RG5492827.
- WEL 2016. Vincent – Basic Design Data Specification sheet – Metocean CRN: VA0000RT1400067309.
- WEL 2015. Winds Measured at North Rankin A 1995-2015.
- WEL 2018. Scarborough Development - Non-Cyclonic and Operational Metocean Design Criteria – Spreadsheet, Revision A, CRN: SA0009CT1400722569.
- WEL 2019. "Browse Development – Metocean Design Basis" CRN: JJ0013ST1400274448.

Appendix I **FIRST STRIKE PLAN**

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Scarborough 4D Baseline (B1) Marine Seismic Survey (MSS) Oil Pollution First Strike Plan

Corporate HSE

Hydrocarbon Spill Preparedness

October 2023

Revision 1a

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SCARBOROUGH FOUR-DIMENSIONAL MARINE SEISMIC SURVEY OIL POLLUTION FIRST STRIKE PLAN

SPILL FROM VESSEL

(Note: Shipboard Oil Pollution Emergency Plan should be implemented in conjunction with this document)

LEVEL 1
CONTROL AGENCY: Australian Marine Safety Authority
INCIDENT CONTROLLER: VESSEL MASTER (with response assistance from Woodside)

LEVEL 2 & 3
CONTROL AGENCY: Australian Marine Safety Authority (Commonwealth waters)
Department of Transport (State waters)
INCIDENT CONTROLLER: Australian Marine Safety Authority / Department of Transport (with response assistance from Woodside)

Guidance to Oil Spill Incident Levels

The most significant characteristic of the below guidance should be considered when determining level or escalation potential.

Characteristic	Level 1 Indicators	Level 2 Indicators	Level 3 Indicators
General Description	Generally able to be resolved within 24-48 hours.	Generally a response is required beyond 48 hours.	Response may extend beyond weeks.
Woodside Emergency Management (EM)/ EM)/Crisis Management Team (CMT) Activation	Onsite Incident Controller (IC) activated. Use of ICC support may be required.	Handover of Control from Onsite IC Corporate Incident Management Team (CIMT) Duty Manager (DM) in Perth.	Includes Perth based CMT activation.
Number of Agencies	First-response agency and Incident Management Team (IMT).	Multi-agency response.	Agencies from across government and industry.
Environment	Isolated impacts or with natural recovery expected within weeks.	Significant impacts and recovery may take months.	Significant area and recovery may take months. Remediation required.
Economy	Business level disruption (i.e. Woodside).	Business failure or 'Channel' impacts.	Disruption to a sector.
Public Affairs	Local and regional media coverage (WA).	National media coverage.	International media coverage.

For guidance on credible spill scenarios and hydrocarbon characteristics refer to [APPENDIX A](#).

For Spills Entering State Waters

If the spill impacts State waters/shorelines and is a Level 1, AMSA will remain the Control Agency. If the spill is a Level 2/3 then DoT will become the Control Agency for the response in State waters/shorelines only. In the event DoT become the Control Agency they will appoint an Incident Controller and form a separate Incident Management Team to manage the State waters/shorelines response only. The coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State waters/shorelines is shown in [APPENDIX E](#) – Coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State waters/ shorelines.

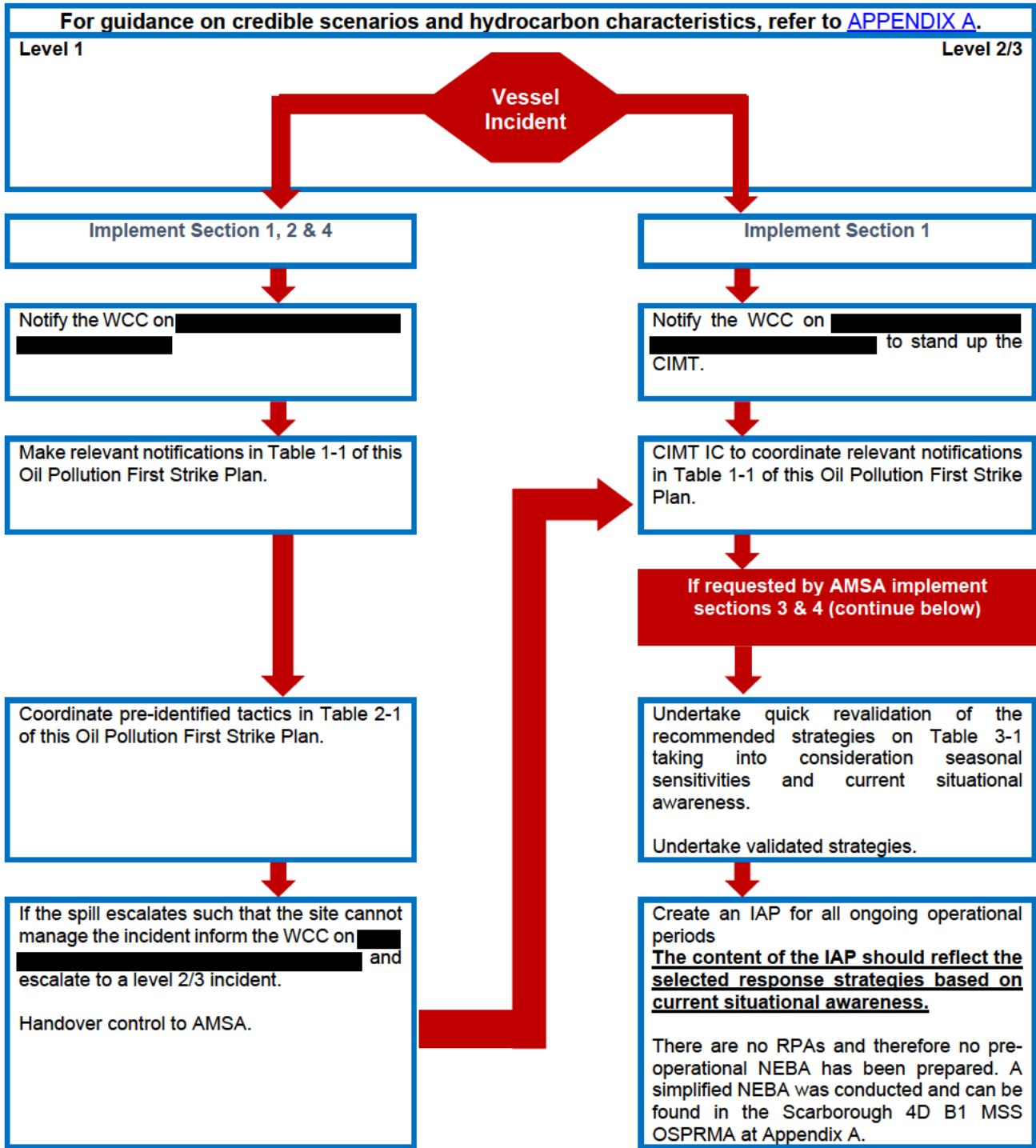
Initially Woodside will be required to make available an appropriate number of suitably qualified persons to work in the DoT IMT (see [APPENDIX G](#)). DoT's role as the Controlling Agency/HMA for Level 2 and 3 spills in State waters/shorelines does not negate the requirement for Woodside to have appropriate plans and resources in place to adequately respond to a Marine Hydrocarbon Spill incident in State waters/shorelines or to commence the initial response actions to a spill prior to DoT establishing incident control in line with DoT Offshore Petroleum Industry Guidance Note - Marine Oil Pollution: Response and Consultation Arrangements (July 2020). Cost recovery arrangements for offshore marine pollution incidents (MOP) are in accordance with Section 9 of the Guidance Note:

https://www.transport.wa.gov.au/mediaFiles/marine/MAC_P_Westplan_MOP_OffshorePetroleumIndGuidance.pdf

Woodside's Incident Management Structure for a Hydrocarbon Spill, including Woodside Liaison Officer's command structure within DoT can be seen at [APPENDIX F](#).

Response Process Overview

Use the below to determine which parts of this plan are relevant to the incident.



1. NOTIFICATIONS (ALL LEVELS)

The Incident Controller or delegate must ensure the below notifications (**Table 1-1**) are completed within the designated timeframes.

For other environmental notifications required refer to the Scarborough 4D B1 MSS Environment Plan.

Table 1-1: Immediate Notifications

Notification timing	Responsibility	Authority /Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
Notifications to be made for ALL LEVELS of spill							
<i>(For spills from a vessel the following notifications must be undertaken by a WEL representative).</i>							
Immediately	Vessel master/ Woodside Site Rep (WSR)	Woodside Communication Centre (WCC)	GTO Duty Manager	[REDACTED]	Verbally notify WCC of event and estimated volume and hydrocarbon type.	Verbal	
Within 2 hours	GTO Duty Manager	National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA ¹)	Incident notification office	[REDACTED]	Verbally notify NOPSEMA for spills >80L. Record notification using Initial Verbal Notification Form or equivalent and send to NOPSEMA as soon as practicable (cc to NOPTA and DMIRS).	[REDACTED]	
Within 3 days	WSR, CIMT IC or Delegate			Provide a written NOPSEMA Incident Report Form as soon as practicable (no later than 3 days after notification) (cc to NOPTA and DMIRS) NOPSEMA: [REDACTED] NOPTA: [REDACTED]	[REDACTED]		

¹ Notification to NOPSEMA must be from a Woodside Representative.

Notification timing	Responsibility	Authority /Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
					DMIRS: [REDACTED]		
As soon as practicable	CIMT IC or Delegate	Woodside	Environment Unit Leader	As per roster	Verbally notify Environment Unit Leader of event and seek advice on relevant performance standards from EP	Verbal	
As soon as practicable	CIMT IC or Delegate	Department of Climate Change, Energy, the Environment and Water (DCCEEW) (Director of National Parks)	Marine Park Compliance Duty Officer	[REDACTED]	The Marine Park Compliance Duty Officer is notified in the event of oil pollution within a marine park, or where an oil spill response action must be taken within a marine park, so far as reasonably practicable, prior to response action being taken. This notification should include: <ul style="list-style-type: none"> • titleholder details • time and location of the incident • proposed response arrangements and locations as per the OPEP • contact details for the response coordinator. 	Verbal	
Without delay as per protection of the Sea Act, part II, section 11(1)	Vessel Master	Australian Maritime Safety Authority (AMSA)	Response Coordination Centre (RCC)	[REDACTED]	Verbally notify AMSA RCC of the hydrocarbon spill. Follow up with a written Marine Pollution Report (POLREP) as soon as practicable following verbal notification.	[REDACTED]	
ADDITIONAL LEVEL 2/3 NOTIFICATIONS							
As soon as practicable	CIMT IC or Delegate	AMOSC	AMOSC Duty Manager	[REDACTED]	Notify AMOSC that a spill has occurred and follow-up with an email from the CIMT IC/ CIMT Deputy IC/ CMT Leader to formally activate AMOSC. Determine what resources are required consistent with the	[REDACTED]	

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Notification timing	Responsibility	Authority /Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
					AMOSPlan and detail in a Service Contract that will be sent to Woodside from AMOSC upon activation.		
As soon as practicable	CIMT IC or Delegate	Oil Spill Response Limited (OSRL)	OSRL Duty Manager	██████████	Contact OSRL duty manager and request assistance from technical advisor in Perth. Send the notification form to OSRL as soon as practicable. For mobilisation of resources, send the Mobilisation Form to OSRL as soon as practicable.	Notification: ██████████ Mobilisation: ██████████	
Within 2 hours of becoming aware of a marine oil pollution incident (MOP) that occurs in or may impact State waters	CIMT IC or Delegate	WA Department of Transport	DoT Maritime Environmental Emergency Response Unit (MEER) Duty Officer	██████████	Marine Duty Manager to verbally notify DoT that a spill has occurred and request use of equipment stored in the Karratha supply shed. Follow up with a written POLREP as soon as practicable following verbal notification. Additionally DoT to be notified if spill is likely to extend into WA State waters. Request DoT to provide Liaison to WEL IMT.	██████████	
As soon as practicable if there is potential for oiled wildlife or the spill is expected to contact land or waters managed by WA Department of Biodiversity, Conservation and Attractions	CIMT IC or Delegate	WA Department of Biodiversity, Conservation and Attractions (DBCA)	Duty Officer	██████████	Phone call notification	Verbal	

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Notification timing	Responsibility	Authority /Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
As soon as practicable	Public Information	Relevant persons/ organisations	To be determined	To be determined	Should it be identified that additional persons such as, but not limited to, commercial fishers, or tourism operators may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for Scarborough 4D Baseline Marine Seismic Survey. Relevant persons/ organisations will be re-assessed throughout the response period.	Verbal initially	
As soon as practicable	Public Information	Relevant cultural authorities	To be determined	To be determined	Should it be identified that relevant cultural authorities may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for Scarborough 4D Baseline Marine Seismic Survey. Relevant cultural authorities will be re-assessed throughout the response period.	Verbal initially	
As soon as practicable	CIMT IC or Delegate	Marine Spill Response Corporation (MSRC)	MSRC Response Manager	██████████ ██████████	Activate the contract with MSRC (in full) for the provision of up to 30 personnel depending on what skills are required. Please note that provision of these personnel from MSRC are on a best endeavours basis and are not guaranteed.	Verbal	

2. LEVEL 1 RESPONSE

2.1 Mobilisation of Response Techniques

For the relevant hydrocarbon type, undertake quick revalidation of the recommended techniques and pre-identified tactics indicated with a 'Yes' in **Table 2-1**. Undertake all validated pre-identified tactics immediately. These tactics should be carried out using the associated plan identified under **Table 2-1** Operational Plan column.

All response techniques and pre-identified tactics have been identified from the pre-operational Net Environmental Benefits Analysis (NEBA) presented in the Scarborough 4D B1 MSS Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).

Table 2-1: Level 1 Response Summary

Response Techniques	Hydrocarbon Type	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel Oil					
Monitor and evaluate – tracking buoy (OM02)	Yes	Tracking buoy to be deployed from onsite vessel.	Chief Officer/ Marine Crew	DAY 1: Tracking buoy deployed within two hours.		Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02 of The Operational Monitoring Operational Plan).
Please consider instructing the CIMT IC to activate or implement any of the following Pre-Identified tactics. The following tactics will assist in answering the '7 Questions of Spill Assessment' identified in Appendix C to increase situational awareness.						
Monitor and evaluate – predictive modelling (OM01)	Yes	Undertake initial modelling using the Rapid assessment oil spill tool and weathering fate analysis using ADIOS (or refer to the hydrocarbon information in Appendix A).	Situation or Environment	DAY 1: Initial modelling within six hours using the Rapid Assessment Tool.		Predictive Modelling of Hydrocarbons to Assess Resources at Risk (OM01 of The Operational Monitoring Operational Plan). <i>Planning to download immediately and follow steps</i>
	Yes	Send Oil Spill Trajectory Modelling (OSTM) form (Appendix B Form 7) to RPS Response team (email: [redacted] and call RPS Response Duty Officer Phone [redacted]).	Situation	DAY 1: Detailed modelling within four hours of RPS receiving information from Woodside.		
Monitor and evaluate – aerial surveillance (OM02)	Yes	Instruct Aviation Unit Leader to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in [redacted].	Logistics - Aviation	DAY 1: Two trained aerial observers. One aircraft available.		Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02 of The Operational Monitoring Operational Plan). <i>Planning to download immediately and follow steps</i>
Monitor and evaluate – satellite tracking (OM02)	Yes	The Situation Unit Leader should be instructed to stand up KSAT to provide satellite imagery of the spill. [redacted]	Situation	DAY 1: Service provider will confirm availability of an initial		

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Response Techniques	Hydrocarbon Type	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel Oil					
				acquisition within two hours. Data received to be uploaded into Woodside Common Operating Picture.		
Monitor and evaluate – monitoring hydrocarbons in water (OM03)	Yes	Consider the need to mobilise resources to undertake water quality monitoring (OM03).	Planning or Environment	DAY 3: Water quality assessments access and capability.		Detecting and Monitoring for the Presence and Properties of Hydrocarbons in the Marine Environment (OM03 of The Operational Monitoring Operational Plan).
Monitor and evaluate – pre-emptive assessment of receptors at risk (OM04)	Yes	Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk (OM04).	Planning or Environment	In agreement with WA DoT, deployment of two specialists for each of the Response Protection Areas (RPA) within 10 days of predicted impacts.		Pre-emptive Assessment of Sensitive Receptors (OM04 of The Operational Monitoring Operational Plan).
Monitor and evaluate – shoreline assessment (OM05)	Yes	Consider the need to mobilise resources to undertake shoreline assessment surveys (OM05).	Planning or Environment	In agreement with WA DoT, deployment of two specialists for each of the Response Protection Areas (RPA) within 10 days		Shoreline Assessment (OM05 of The Operational Monitoring Operational Plan).

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Response Techniques	Hydrocarbon Type	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel Oil					
				of predicted impacts.		

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3. LEVEL 2/3 RESPONSE

3.1 Mobilisation of Response Techniques

For the relevant hydrocarbon type, undertake quick revalidation of the recommended techniques and pre-identified tactics indicated with a 'Yes' in **Table 3-1**. Undertake all validated pre-identified tactics immediately. These tactics should be carried out using the associated plan identified under **Table 3-1** Operational Plan column.

All response techniques and pre-identified tactics have been identified from the pre-operational Net Environmental Benefits Analysis (NEBA) presented in the Scarborough 4D B1 MSS Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).

Table 3-1: Level 2/3 Response Summary

Response Techniques	Hydrocarbon Type	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel Oil					
Monitor and evaluate – tracking buoy (OM02)	Yes	If a vessel is on location, consider the need to deploy the oil spill tracking buoy. If no vessel is on location, consider the need to mobilise oil spill tracking buoys from the King Bay Supply Base (KBSB) Stockpile. If a surface sheen is visible from the facility, deploy the satellite tracking buoy within two hours.	Chief Officer/ Marine Crew	DAY 1: Tracking buoy deployed within two hours.		Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02) of The Operational Monitoring Operational Plan. Deploy tracking buoy in accordance with APPENDIX D – Tracking buoy deployment instructions .
Monitor and evaluate – predictive modelling (OM01)	Yes	Undertake initial modelling using the Rapid assessment oil spill tool and weathering fate analysis using ADIOS (or refer to the hydrocarbon information in Appendix A).	Situation or Environment	DAY 1: Initial modelling within six hours using the Rapid Assessment Tool. Detailed modelling within four hours of APASA receiving information from Woodside.		Predictive Modelling of Hydrocarbons to Assess Resources at Risk (OM01 of The Operational Monitoring Operational Plan).
	Yes	Send Oil Spill Trajectory Modelling (OSTM) form (██████████) to RPS Response (██████████).	Situation	DAY 1: Detailed modelling within 4 hours of APASA receiving information from Woodside.		
Monitor and evaluate – aerial surveillance (OM02)	Yes	Instruct Aviation Unit Leader to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in ██████████	Logistics - Aviation	DAY 1: Two trained aerial observers. One aircraft available.		Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02 of The Operational Monitoring Operational Plan). <i>Planning to download immediately and follow steps</i>
Monitor and evaluate – satellite tracking (OM02)	Yes	The Situation Unit Leader should be instructed to stand up Kongsberg Satellite Services (KSAT) to provide satellite imagery of the spill. ██████████ ██████████	Situation	DAY 1: Service provider will confirm availability of an initial acquisition within two hours. Data received to be uploaded into Woodside Common Operating Picture.		

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Response Techniques	Hydrocarbon Type	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel Oil					
Monitor and evaluate – monitoring hydrocarbons in water (OM03)	Yes	Consider the need to mobilise resources to undertake water quality monitoring (OM03).	Planning or Environment	DAY 3: Water quality assessment access and capability Daily fluorometry reports will be provided to IMT.		Detecting and Monitoring for the Presence and Properties of Hydrocarbons in the Marine Environment (OM03 of The Operational Monitoring Operational Plan).
Monitor and evaluate – pre-emptive assessment of receptors at risk (OM04)	Yes	Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk (OM04).	Planning or Environment	In agreement with WA DoT, deployment of two specialists for each of the Response Protection Areas (RPA) within 10 days of predicted impacts.		Pre-emptive Assessment of Sensitive Receptors (OM04 of The Operational Monitoring Operational Plan).
Monitor and evaluate – shoreline assessment (OM05)	Yes	Consider the need to mobilise resources to undertake shoreline assessment surveys (OM05).	Planning or Environment	In agreement with WA DoT, deployment of two specialists in SCAT for each of the RPAs within 10 days of predicted impacts.		Shoreline Assessment (OM05 of The Operational Monitoring Operational Plan).
Surface Dispersant	No	This response strategy is not recommended.				
Mechanical Dispersion	No	This response strategy is not recommended.				
Containment and Recovery	No	This response strategy is not recommended.				
In-situ Burning	No	This response strategy is not recommended.				
Shoreline Protection and Deflection	No	This response strategy is not recommended.				
Shoreline Clean Up	No	This response strategy is not recommended.				

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Response Techniques	Hydrocarbon Type	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel Oil					
Oiled Wildlife Response	Yes	If oiled wildlife is a potential impact, request AMOSC to mobilise containerised oiled wildlife first strike kits and relevant personnel. Refer to relevant Tactical Response Plan for potential wildlife at risk. Mobilise AMOSC Oiled Wildlife Containers. Consider whether additional equipment is required from local suppliers.	Logistics and Planning	DAY 5: Contracted capability to treat up to an additional 250 individual fauna within a five-day period. Facilities for oiled wildlife rehabilitation are operational 24/7		Oiled Wildlife Response Operational Plan
Scientific Monitoring (Type II)	Yes	Notify Woodside science team of spill event.	Environment			Oil Spill Scientific Monitoring Programme – Operational Plan Link

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4. PRIORITY RECEPTORS

Based on hydrocarbon spill risk modelling results the sensitive receptors outlined in **Table 4-2** are identified as priority protection areas, as they have the potential to be contacted by hydrocarbon at or above impact threshold levels within 48 hours of a spill. Please note that impact thresholds (10 g/m² surface hydrocarbon concentration, 100 g/m² shoreline accumulation, and 100 ppb entrained hydrocarbon concentration) are used to determine the Zone of Consequence (ZoC) identified in the Environment Plan and are lower than response thresholds (**Table 4-1**).

Table 4-1 Response Thresholds

Surface Hydrocarbon (g/m ²)	Description
>10	Predicted minimum threshold for commencing operational monitoring
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application ²
100	Predicted optimum floating oil threshold for containment and recovery and surface dispersant application
100	Predicted minimum shoreline accumulation threshold for shoreline assessment operations
250	Predicted minimum threshold for commencing shoreline clean-up operations

Table 4-2 Receptors for priority protection with potential impact within 48 hours (Credible Scenario-01)

Receptor	Distance and Direction from Operational Area (km)	Minimum time to shoreline contact (above 100g/m ²) in days	Maximum shoreline accumulation (above 100g/m ²) in m ³	Tactical Response Plans (also available within the Data Directory DRIMS#9542566)
Open Ocean – Commonwealth Waters	Overlaps	N/A	N/A	N/A

Hydrocarbon spill modelling results indicate the sensitive receptors listed below have the potential to be contacted by hydrocarbons beyond 48 hours of a spill:

- Open Commonwealth waters
- Gascoyne AMP (entrained hydrocarbon concentrations ≥100 ppb)

Tactical Response Plans are prepared by Woodside for shoreline locations and can be accessed via the [Oil Spill Tactical Response Plans](#)³. These contain the details of potential forward operating bases and staging areas that may be used in the event that an offshore oiled wildlife response is required, or if operational monitoring indicates that additional response techniques are required. Tactical Response Plans are not available for offshore locations.

Oil Spill Trajectory Modelling specific to the spill event will be required to determine the regional sensitive receptors to be contacted beyond 48 hours of a spill.

Figure 4-1 illustrates the location of regional sensitive receptors in relation to the Scarborough 4D B1 MSS operational area and identifies priority protection areas.

² At 50g/m² containment and recovery and surface dispersant application operations are not expected to be particularly effective. This threshold represents a conservative approach to planning response capability and displaying the spread of surface oil.

³ The Tactical Response Plans for the RPA's identified contain the details of potential forward operating bases and staging areas. Incident Command Centre: For Level 1 incidents the in-field team and asset operator will lead the response on-scene. For level 2/3 Incident the Incident command centre will be located in Perth at Woodside's Building. The Woodside CICC is fully equipped with communications equipment and technology to ensure the coordination of response activities for the overall response.

Consideration should be given to other stakeholders (including mariners) in the vicinity of the spill location. There are no oil and gas facilities located within 50 km of the Operational Area.

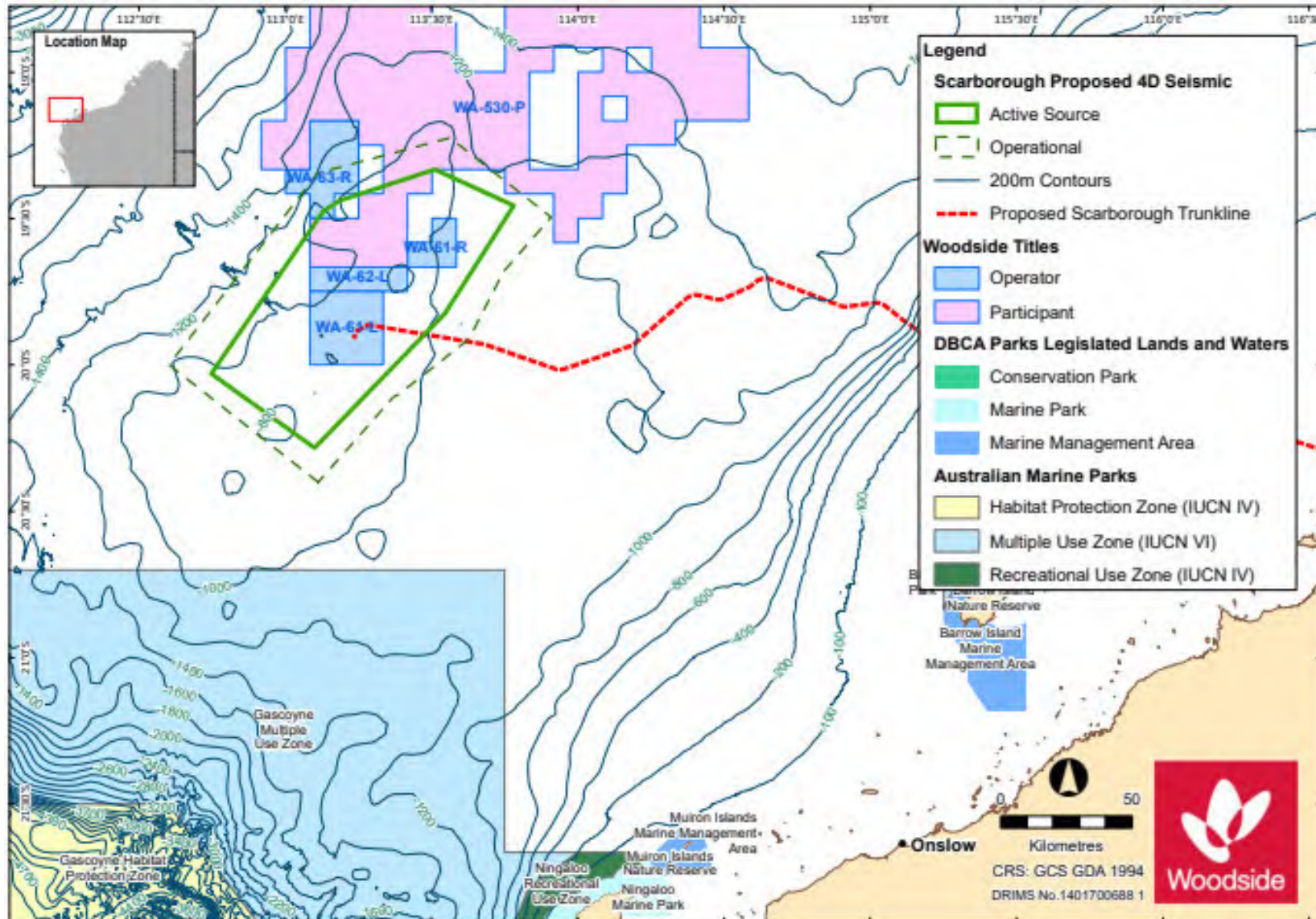


Figure 4-1 Regional Sensitive Receptors – Scarborough 4D B1 MSS

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5. DISPERSANT APPLICATION

Dispersant is not considered an appropriate response strategy for this activity as described in the Scarborough 4D B1 MSS Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).

APPENDIX A – CREDIBLE SPILL SCENARIOS AND HYDROCARBON INFORMATION

For more detailed hydrocarbon information see the [Hydrocarbon Data Directory](#)

Credible Spill Scenarios

Scenario	Product	Maximum Volumes	Suggested ADIOS2 Analogue*
CS-01 Unplanned hydrocarbon release caused by marine vessel collision (Project support vessel)	Marine diesel (API 37.2°)	250 m ³	Diesel Fuel Oil (API 37.2°)
CS-03 Loss of containment caused by refuelling hose failure, coupling failure or operator error.	Marine diesel (API 37.2°)	8 m ³	Diesel Fuel Oil (API 37.2°)

*Initial screening of possible ADIOS2 analogues was done by considering hydrocarbons with similar APIs. Suggested selection was based on the closest distillation cut to WEL hydrocarbon. Only hydrocarbons with distillation cuts that showed results for > 380°C were included in selection process.

Marine Diesel (Group 2 Oil)

Marine diesel is a mixture of volatile and persistent hydrocarbons, with approximately 45% by mass predicted to evaporate over the first 24h under low wind speeds (5 kn), with further evaporation slowing over time. Under variable windspeeds, where the winds are of greater strength, the proportion of evaporation would be lower. The heavier components of diesel have a strong tendency to entrain into the upper water column due to wind waves, but can refloat to the surface if wind waves abate.

A series of model weather tests were conducted to illustrate the potential behaviour of marine diesel when exposed to idealised and representative environmental conditions:

- Instantaneous release (1-hour discharge) onto the water surface at a discharge rate of 50 m³/hr under calm wind conditions (constant 5 knots), assuming low seasonal water temperature (27 °C) and average air temperature (25 °C). Slick also subject to ambient tidal and drift currents (Figure A-1).
- Instantaneous release (1-hour discharge) onto the water surface at a discharge rate of 50 m³/hr under variable wind conditions (4-19 knots, drawn from representative data files), assuming low seasonal water temperature (27 °C) and average air temperature (25 °C). Slick also subject to ambient tidal and drift currents (Figure A-2).

The first case is indicative of cumulative weathering rates under calm conditions that would not generate entrainment, while the second case may represent conditions that could cause a minor degree of entrainment. Both scenarios provide examples of potential behaviour during periods of a spill event.

The mass balance forecast for the 5 kn constant-wind case (Figure A-1) for marine diesel shows that approximately 45% of the oil is predicted to evaporate within 24 hours. Under these calm conditions the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes.

Under the variable-wind case (Figure A-2), where the winds are of greater strength, entrainment of marine diesel into the water column is indicated to be significant. Approximately 24 hours after the spill, around 45% of the oil mass is forecast to have entrained and a further 35% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The residual compounds will tend to remain entrained beneath the surface under conditions that generate wind waves (approximately >6m/s).

The increased level of entrainment in the variable-wind case will result in a higher percentage of biological and photochemical degradation, where the decay of the floating slicks and oil droplets in the water column occurs at an approximate rate of 1.8% per day with an accumulated total of ~13% after 7 days, in comparison to a rate of ~0.2% per day and an accumulated total of 1.5% after 7 days in the constant-wind case. Given the large proportion of entrained oil and the tendency for it to remain mixed in the water column, the remaining hydrocarbons will decay and/or evaporate over time scales of several weeks to a few months. This long weathering duration will extend the area of potential effect, requiring the break-up and dispersion of the slicks and droplets to reduce concentrations below the thresholds.

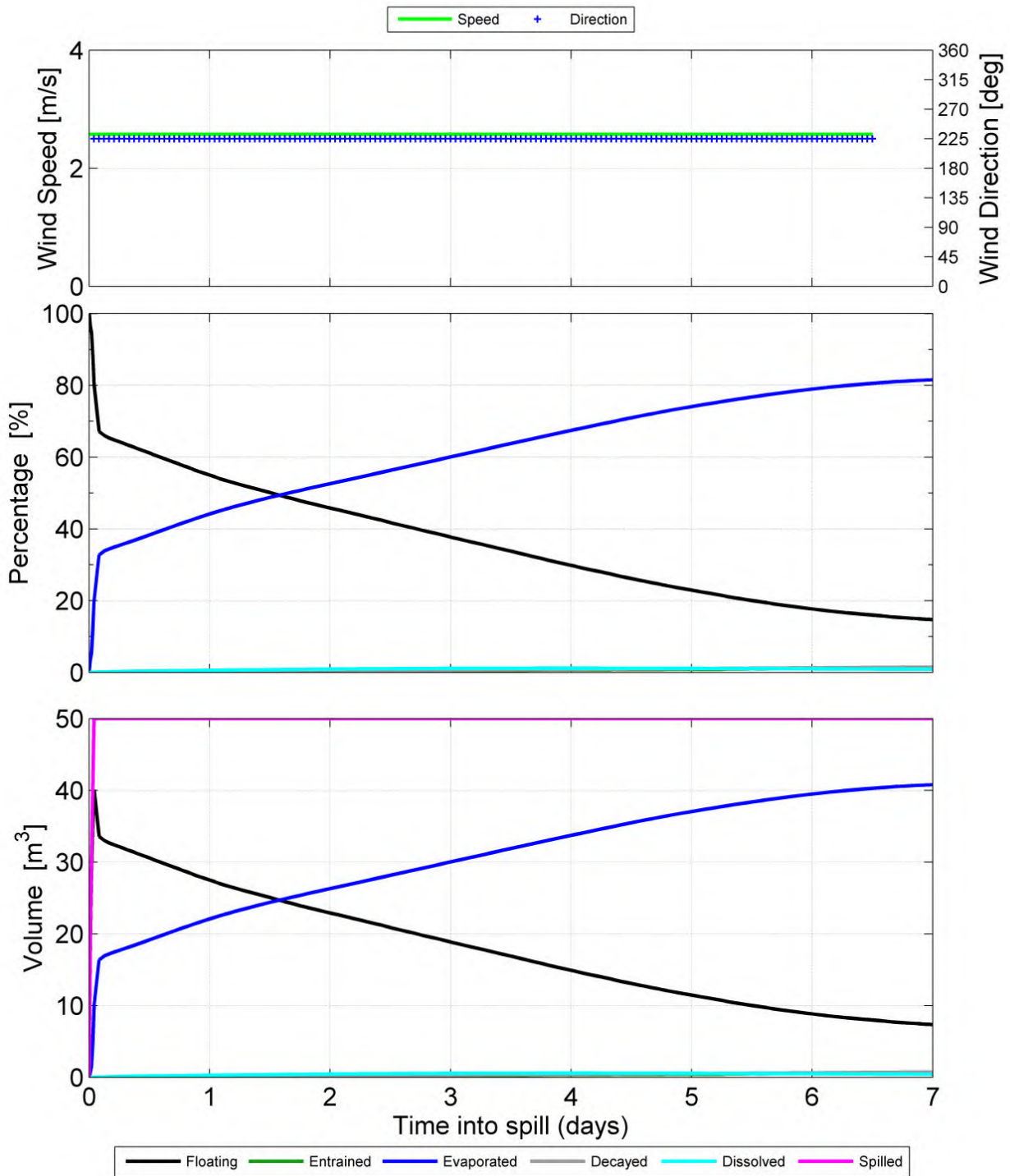


Figure A-1: Mass balance plot representing, as proportion (middle panel) and volume (bottom panel), the weathering of marine diesel spilled onto the water surface as a one-off release (50 m³ over 1-hour) and subject to a constant 5kn (2.6 /s) wind at 27°C water temperature and 25°C air temperature.

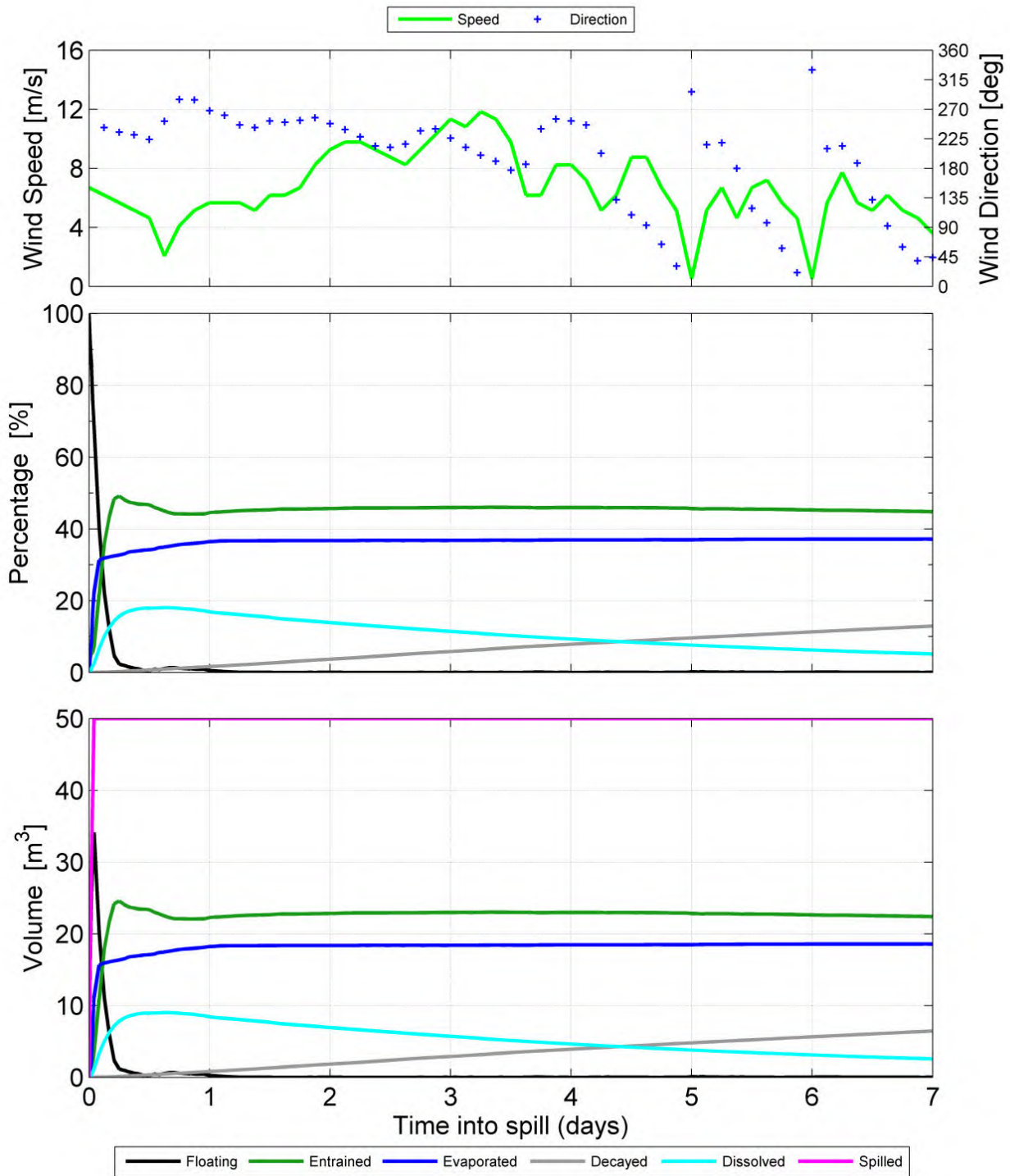


Figure A-2 Mass balance plot representing, as proportion (middle panel) and volume (bottom panel), the weathering of marine diesel spilled onto the water surface as a one-off release (50 m³ over 1 hour) and subject to variable wind at 27°C water temperature and 25°C air temperature.

APPENDIX B – FORMS

Form No.	Form Name	Link
1	Record of Verbal Notification to Regulator Template	■
2	NOPSEMA Notification Template	■
3	Marine Pollution Report (POLREP – AMSA)	■
4	AMOSOC Service Contract Note	■
5	Marine Pollution Report (POLREP – DoT)	■
6a	OSRL Initial Notification Form	■
6b	OSRL Mobilisation Activation Form	■
7	RPS Response Oil Spill Trajectory Modelling Request	■
8	Aerial Surveillance Observer Log	■

FORM 1

Record of initial verbal notification to NOPSEMA



NOPSEMA ph: [REDACTED]

Date of call	
Time of call	
Call made by	
Call made to	

Information to be provided to NOPSEMA:

Date and Time of incident/time caller became aware of incident	
Details of incident	<ol style="list-style-type: none"> 1. Location _____ 2. Title _____ 3. Hydrocarbon source <ul style="list-style-type: none"> <input type="checkbox"/> Platform _____ <input type="checkbox"/> Pipeline _____ <input type="checkbox"/> FPSO _____ <input type="checkbox"/> Exploration drilling _____ <input type="checkbox"/> Well _____ <input type="checkbox"/> Other (please specify) _____ 4. Hydrocarbon type _____ 5. Estimated volume of hydrocarbon _____ 6. Has the discharge ceased? _____ 7. Fire, explosion or collision? _____ 8. Environment Plan(s) _____ 9. Other Details _____
Actions taken to avoid or mitigate environmental impacts	

Corrective actions taken or proposed to stop, control or remedy the incident	
---	--

After the initial call is made to NOPSEMA, please send this record as soon as practicable to:

- 1. NOPSEMA [REDACTED]
- 2. NOPTA [REDACTED]
- 3. DMIRS [REDACTED]

FORM 2

[insert NOPSEMA Notification Template when printing]



FORM 3

[insert Marine Pollution Report (POLREP – AMSA) when printing]



FORM 4

[insert AMOSC Service Contract note when printing]



FORM 5

[insert Marine Pollution Report (POLREP – DoT) when printing]



FORM 6a

[insert OSRL Initial Notification Form when printing]



FORM 6b

[insert OSRL Mobilisation Activation Form when printing]



FORM 7

[insert RPS Response Oil Spill Trajectory Modelling Request form when printing]



FORM 8

[insert Aerial Surveillance Observer Log when printing]



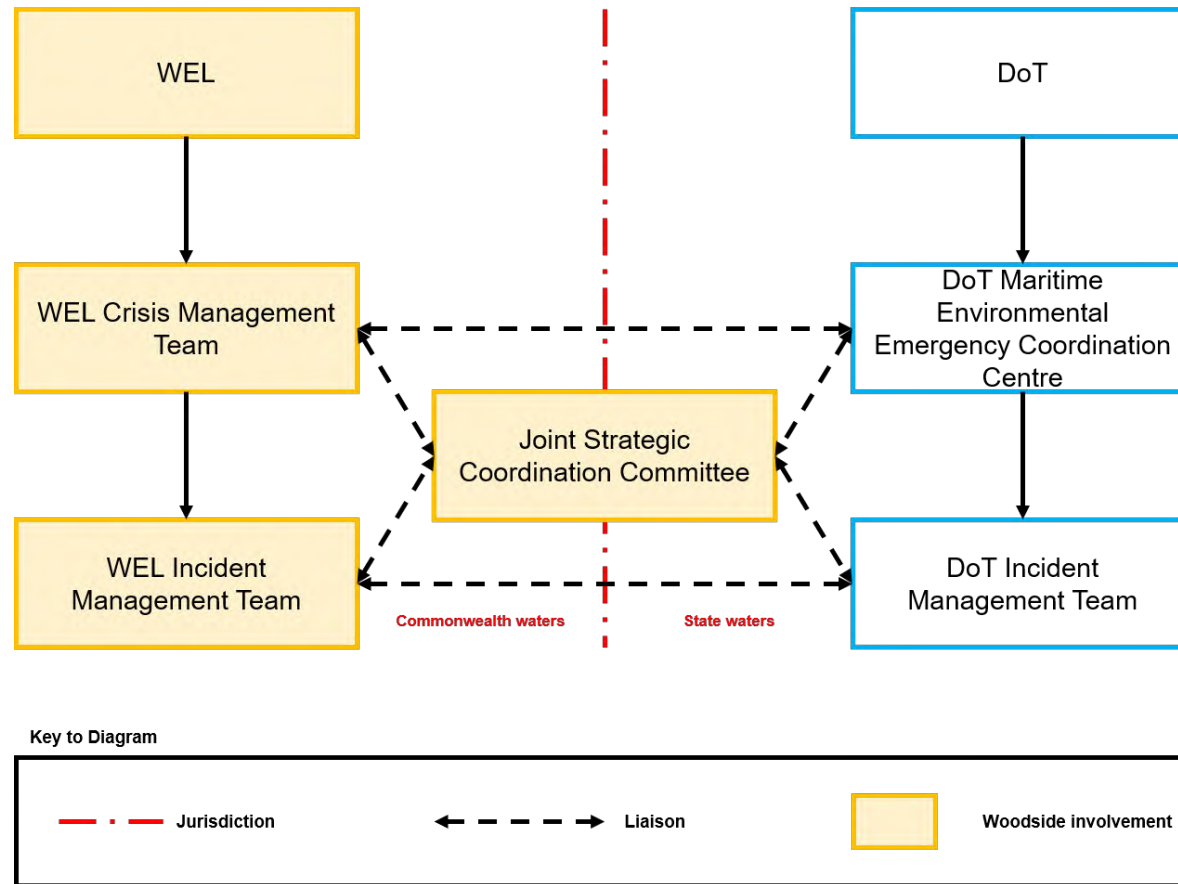
APPENDIX C – 7 QUESTIONS OF SPILL ASSESSMENT

<p>WHAT IS IT? Oil Type/name Oil properties Specific gravity / viscosity / pour point / asphaltines / wax content / boiling point</p>	
<p>WHERE IS IT? Lat/Long Distance and bearing</p>	
<p>HOW BIG IS IT? Area Volume</p>	
<p>WHERE IT IS GOING? Weather conditions Currents and tides</p>	
<p>WHAT IS IN THE WAY? Resources at risk</p>	
<p>WHEN WILL IT GET THERE? Weather conditions Currents and tides</p>	
<p>WHAT'S HAPPENING TO IT? Weathering processes</p>	

APPENDIX D – TRACKING BUOY DEPLOYMENT INSTRUCTIONS

(Insert  when printing)

APPENDIX E – COORDINATION STRUCTURE FOR A CONCURRENT HYDROCARBON SPILL IN BOTH COMMONWEALTH AND STATE WATERS/ SHORELINES⁴



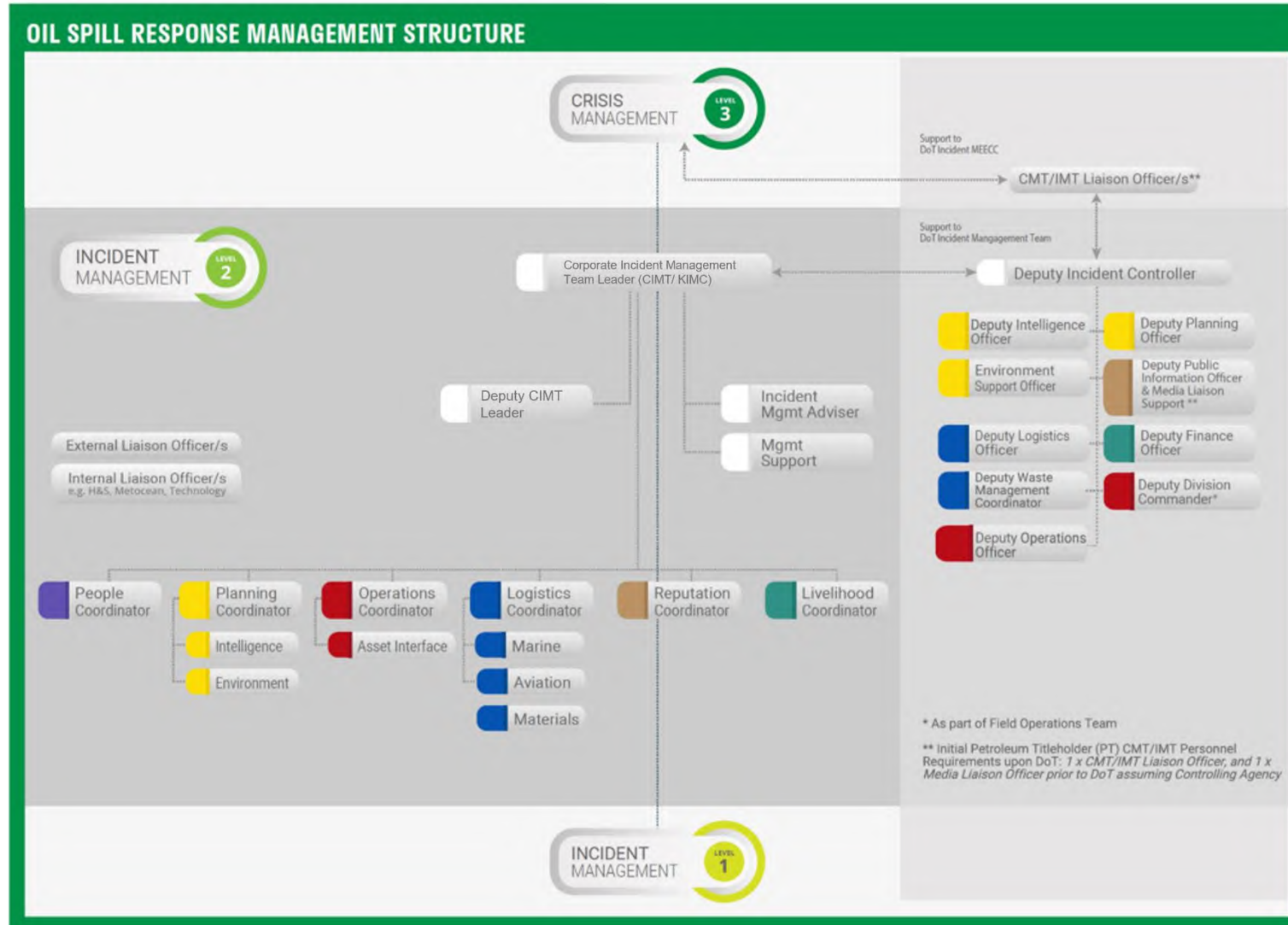
The Control Agency for a hydrocarbon spill in Commonwealth waters resulting from an offshore petroleum activity is AMSA. The Control Agency for a hydrocarbon spill in State waters/shorelines resulting from an offshore petroleum activity in Commonwealth waters is DoT for a Level 2/3 spill. DoT will appoint an Incident Controller and form a separate IMT to only manage the spill within State waters/shorelines.

⁴Adapted from DoT Offshore Petroleum Industry Guidance Note, Marine Oil Pollution: Response and Consultation Arrangements July 2020. Note: For full structure up to Commonwealth Cabinet/Minister refer to Marine Oil Pollution: Response and Consultation Arrangements Section 6.5, Figure 3.

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APPENDIX F – WOODSIDE INCIDENT MANAGEMENT STRUCTURE

Woodside Incident Management Structure for Hydrocarbon Spill (including Woodside Liaison Officers Command Structure within DoT IMT if required).



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APPENDIX G – WOODSIDE LIAISON OFFICER RESOURCES TO DOT

In the event that DoT is required to establish an IMT, Woodside will make available an appropriate number of appropriately qualified persons to work within the DoT IMT. In the event the PPA is the Control Agency within the Dampier Port Limits, Woodside will make available similar roles as requested.

It is an expectation that Woodside's nominated CMT Liaison Officer and the Deputy Incident Controller attend the DoT Fremantle ICC as soon as possible after the formal request has been made by the State Marine Pollution Coordinator (SMPC), and no later than 8am on the day following the request being formally made. For Woodside personnel designated to serve in DoT's Forward Operating Base (FOB), it is expected that they arrive at the FOB no later than 24 hours from the formal request being made by the SMPC.

Area	Woodside Liaison Role ⁵	Key Duties	#
DoT Maritime Environmental Emergency Coordination Centre (MEECC)	CIMT Liaison	<ul style="list-style-type: none"> Provide a direct liaison between the CIMT and the MEECC. Facilitate effective communications and coordination between the CIMT Leader and SMPC. Offer advice to SMPC on matters pertaining to Petroleum Titleholder (PT) crisis management policies and procedures. 	1
DoT IMT Incident Control	Deputy Incident Commander (Deputy IC)	<ul style="list-style-type: none"> Provide a direct liaison between the PT IMT and DoT IMT. Facilitate effective communications and coordination between the PT IC and the DoT IC. Offer advice to the DoT IC on matters pertaining to PT incident response policies and procedures. Offer advice to the Safety Coordinator on matters pertaining to PT safety policies and procedures, particularly as they relate to PT employees or contractors operating under the control of the DoT IMT. 	1
DoT IMT Intelligence	Deputy Situation Unit Leader (Intelligence)	<ul style="list-style-type: none"> As part of the Intelligence Team, assist the Intelligence Officer in the performance of their duties in relation to situation and awareness. Facilitate the provision of relevant modelling and predications from the PT IMT. Assist in the interpretation of modelling and predictions originating from the PT IMT. Facilitate the provision of relevant situation and awareness information originating from the DoT IMT to the PT IMT. Facilitate the provision of relevant mapping from the PT IMT. Assist in the interpretation of mapping originating from the PT IMT. Facilitate the provision of relevant mapping originating from the DoT IMT to the PT IMT. 	1
DoT IMT Intelligence – Environment	Deputy Environment Unit Leader	<ul style="list-style-type: none"> As part of the Intelligence Team, assist the Environment Coordinator in the performance of their duties in relation to the provision of environmental support into the planning process. 	1

⁵ These positions would be mobilised, in consultation with DoT, to align to the actual spill scenario. The selected roles and/or individual personnel would be subject to continued evaluation to ensure continued 'best fit'. For CIMT roster arrangements, contact the WCC. During a prolonged response, additional personnel may be sourced through internal resourcing and mutual Aid agreements such as the AMOSC Core Group via [REDACTED]

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Area	Woodside Liaison Role ⁵	Key Duties	#
		<ul style="list-style-type: none"> Assist in the interpretation of the PT OPEP and relevant TRP plans. Facilitate in requesting, obtaining and interpreting environmental monitoring data originating from the PT IMT. Facilitate the provision of relevant environmental information and advice originating from the DoT IMT to the PT IMT. 	
DoT IMT Planning-Plans/ Resources	Deputy Planning Section Chief	<ul style="list-style-type: none"> As part of the Planning Team, assist the Planning Officer in the performance of their duties in relation to the interpretation of existing response plans and the development of incident action plans and related sub plans. Facilitate the provision of relevant incident action plan (IAP) and sub plans from the PT IMT. Assist in the interpretation of the PT OPEP from the PT. Assist in the interpretation of the PT IAP and sub plans from the PT IMT. Facilitate the provision of relevant IAP and sub plans originating from the DoT IMT to the PT IMT. Assist in the interpretation of the PT existing resource plans. Facilitate the provision of relevant components of the resource sub plan originating from the DoT IMT to the PT IMT. <p>(Note this individual must have intimate knowledge of the relevant PT OPEP and planning processes)</p>	1
DoT IMT Public Information-Media/ Community Engagement	Deputy Public Information Officer	<ul style="list-style-type: none"> As part of the Public Information Team, provide a direct liaison between the PT Media team and DoT IMT Media team. Facilitate effective communications and coordination between the PT and DoT media teams. Assist in the release of joint media statements and conduct of joint media briefings. Assist in the release of joint information and warnings through the DoT Information and Warnings team. Offer advice to the DoT Media Coordinator on matters pertaining to PT media policies and procedures. Facilitate effective communications and coordination between the PT and DoT Community Liaison teams. Assist in the conduct of joint community briefings and events. Offer advice to the DoT Community Liaison Coordinator on matters pertaining to the PT community liaison policies and procedures. Facilitate the effective transfer of relevant information obtained from through the Contact Centre to the PT IMT. 	1
DoT IMT Logistics	Deputy Logistics Section Chief	<ul style="list-style-type: none"> As part of the Logistics Team, assist the Logistics Officer in the performance of their duties in relation to the provision of supplies to sustain the response effort. Facilitate the acquisition of appropriate supplies through the PTs existing OSRL, AMOSC and private contract arrangements. Collects Request Forms from DoT to action via PT IMT. 	1

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Area	Woodside Liaison Role ⁵	Key Duties	#
		(Note this individual must have intimate knowledge of the relevant PT logistics processes and contracts)	
DoT IMT Finance-Accounts/ Financial Monitoring	Deputy Finance Section Chief	<ul style="list-style-type: none"> As part of the Finance Team, assist the Finance Officer in the performance of their duties in relation to the setting up and payment of accounts for those services acquired through the PTs existing OSRL, AMOSC and private contract arrangements. Facilitate the communication of financial monitoring information to the PT to allow them to track the overall cost of the response. Assist the Finance Officer in the tracking of financial commitments through the response, including the supply contracts commissioned directly by DoT and to be charged back to the PT. 	1
DoT IMT Operations	Deputy Operations Section Chief	<ul style="list-style-type: none"> As part of the Operations Team, assist the Operations Officer in the performance of their duties in relation to the implementation and management of operational activities undertaken to resolve an incident. Facilitate effective communications and coordination between the PT Operations Section and the DoT Operations Section. Offer advice to the DoT Operations Officer on matters pertaining to PT incident response procedures and requirements. Identify efficiencies and assist to resolve potential conflicts around resource allocation and simultaneous operations of PT and DoT response efforts. 	1
DoT IMT Operations – Waste Management	Deputy Waste Coordinator (Materials)	<ul style="list-style-type: none"> As part of the Operations Team, assist the Waste Management Coordinator in the performance of their duties in relation to the provision of the management and disposal of waste collected in State waters. Facilitate the disposal of waste through the PT's existing private contract arrangements related to waste management and in line with legislative and regulatory requirements. Collects Request Forms from DoT to action via PT IMT. 	1
DoT FOB Operations Command	FOB Deputy IC	<ul style="list-style-type: none"> As part of the Field Operations Team, assist the Division Commander in the performance of their duties in relation to the oversight and coordination of field operational activities undertaken in line with the IMT Operations Section's direction. Provide a direct liaison between the PT FOB and DoT FOB. Facilitate effective communications and coordination between the PT Division Commander and the DoT Division Commander. Offer advice to the DoT Division Commander on matters pertaining to PT incident response policies and procedures. Assist the Safety Coordinator deployed in the FOB in the performance of their duties, particularly as they relate to PT employees or contractors. Offer advice to the Safety Coordinator deployed in the FOB on matters pertaining to PT safety policies and procedures. 	1
Total			11

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APPENDIX H – DOT LIAISON OFFICER RESOURCES TO WOODSIDE

Once DoT activates a State waters/shorelines IMT, DoT will make available the following roles to Woodside.

Area	DoT Liaison Role	Personnel Sourced from:	Key Duties	#
Woodside CIMT	DoT Liaison Officer (prior to DoT assuming Controlling Agency)/ Deputy Incident Controller – State waters (after DoT assumes Controlling Agency)	DoT	<ul style="list-style-type: none"> Facilitate effective communications between DoT's SMPC/ Incident Controller and the Petroleum Titleholder's appointed CMT Leader / Incident Controller. Provide enhanced situational awareness to DoT of the incident and the potential impact on State waters. Assist in the provision of support from DoT to the PT. Facilitate the provision technical advice from DoT to the Petroleum Titleholder Incident Controller as required. 	1
Woodside Public Information FST (Media Room)/ Public Information – Media	DoT Media Liaison Officer	DoT	<ul style="list-style-type: none"> Provide a direct liaison between the PT Media team and DoT IMT Media team. Facilitate effective communications and coordination between the PT and DoT media teams. Assist in the release of joint media statements and conduct of joint media briefings. Assist in the release of joint information and warnings through the DoT Information & Warnings team. Offer advice to the PT Media Coordinator on matters pertaining to DoT and wider Government media policies and procedures. 	1
Total DoT Personnel Initial Requirement to Woodside				2

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Appendix J PROGRAM OF ONGOING ENGAGEMENT WITH TRADITIONAL CUSTODIANS

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Uncontrolled when printed. Refer to electronic version for most up to date information.

Proposed Program of Ongoing Engagement with Traditional Custodians

This Program of Ongoing Engagement with Traditional Custodians (“Program”) has been developed to demonstrate Woodside’s commitment to ongoing engagement and support of Traditional Custodians’ capacity to care for and manage Country, including Sea Country, and has been directly informed by Traditional Custodians’ feedback regarding their capacity to engage and consult on Environment Plans.

It is a living document designed to evolve with ongoing consultation and feedback from Traditional Custodians and, at a minimum, will be subject to annual review. In addition to this Program, Woodside will continue to participate in, and support collective industry engagement with Traditional Owners on the development of a future, sustainable, industry wide Program. Through the Program, Woodside actively supports Traditional Custodians’ capacity for, and involvement in, ongoing engagement and feedback on environment plans.

The Program has been developed so that Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the possible consequences of an activity to be carried out under an environment plan on their functions, interests and activities as they relate to cultural values. This feedback will be evaluated in conjunction with Traditional Custodians and, where necessary, avoidance or mitigation strategies will be developed in collaboration with Traditional Custodians. How the Program is implemented with specific Traditional Custodians will depend on their stated needs and priorities

The Program is underpinned by Woodside’s First Nations Communities Policy (woodside.com), the objective of which is to ensure Woodside partners and engages with First Nations communities to create positive economic, social and cultural outcomes that leave a lasting legacy. Woodside does this through building respectful relationships and partnerships with First Nations communities where we are active, in the areas where they are most interested in. We acknowledge the unique connection that First Nations communities have to land, waters and the environment. .

The Program will include, as agreed with relevant communities, reasonable commitment to:

1. Support for ongoing dialogue and engagement

Woodside will support the capacity of Traditional Custodians to participate in ongoing dialogue and engagement about the environment plans and to enable the ongoing and future identification of cultural values potentially impacted by Woodside’s activities. Woodside further commits to agreeing consultation protocols with individual Traditional Custodians to ensure the material provided is appropriate in level of detail such that the potential for cultural impact from Woodside activities can be determined and as required measures can be adopted to avoid or minimise impact.

In addition, Woodside will receive feedback on cultural values from an individual person or organisation that identifies as a Traditional Custodian, at any stage during the development and implementation of activities. This feedback will be evaluated, in conjunction with the Traditional Custodian individual or group and if required, control measures will put in place to avoid impacts to cultural values, or where avoidance is not possible, to minimise and mitigate the impacts to an acceptable level.

Where cultural values are identified post activity completion, any controls relevant to value management will be implemented during the next relevant activity.

2. Support for the identification and recording of cultural features

Woodside will support Traditional Custodians to record and articulate their Sea Country values and will invest in cultural assessments codesigned with Traditional Custodians, where required, to inform potential risks to cultural values from our petroleum activities.

This may include supporting cultural mapping by Traditional Custodians to identify and map significant cultural features including archaeological sites and other cultural values. The scoping of the mapping process will be codesigned with Traditional Custodians.

Woodside understands that cultural knowledge remains the intellectual property of Traditional Custodians and will agree with Traditional Custodians at the outset how that information from surveys will be used to feedback into and inform the environment plan's design and implementation.

In addition, Woodside applies the Cultural Heritage Management Procedure 2019, updated in 2023, to the Program which:

- provides a process for the identification, protection, and management of Cultural Heritage taking into account relevant standards, in particular, the United Nations Declaration on the Rights of Indigenous Peoples, the Charter for the Protection and Management of the Archaeological Heritage, the Convention for the Safeguarding of the Intangible Cultural Heritage, and the Convention on the Protection of the Underwater Cultural Heritage;
- applies to underwater cultural heritage and, consistent with current practice, provides for the commissioning of (where appropriate) both archaeological and ethnographic assessments of cultural values over the submerged landscape; and
- the process includes the following:
 - early engagement with relevant Traditional Custodians
 - identification of potential heritage, this could include desktop and field surveys undertaken with the Traditional Custodians.
- the development of cultural management strategies; and, where it is determined cultural heritage may be impacted, the development of Cultural Heritage Management Plans codesigned with Traditional Custodians and implemented by Woodside's First Nations team which:
 - focus on avoidance or minimisation of impacts; and
 - provide regular reviews and for inclusion of new information and further development of the Cultural Heritage Management Plan.

Woodside is committed to continue to receive feedback on cultural values for the life of an environment plan, the inclusion of new information and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians. This information will be recorded via the Woodside Management of Knowledge Process and any potential impacts to the accepted Environment Plan evaluated via the Woodside Management of Change Process.

3. Building capacity for the ongoing protection of country

Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups. This is guided by Woodside's Indigenous Affairs Strategy 2019 ("Strategy"), which is designed to enable the building and maintaining of relationships with Traditional Custodians to leave a lasting legacy, including strengthening of Traditional Custodians' capacity to care for and manage Country, including Sea Country. The Strategy was developed with inputs from Traditional Custodians and contains four pillars that direct Woodside's social investment, policies relating to economic development, procurement and employment, and Woodside's agreement making and implementation of agreements. The pillars are:

1. Culture and Heritage Management: support social outcomes through protection, recognition and respect for culture and heritage;
2. Economic Participation: provide training, jobs, and business opportunities;

3. Capability and capacity: ensure strong corporate governance, leadership development and education initiatives to support self-determination; and
4. Safer and Healthier Communities: partner with Aboriginal people and service providers to maximise safer and healthier community outcomes.

Woodside is committed to an ongoing relationship between Woodside and the Traditional Custodian groups. Through consultation with Traditional Custodians Woodside will continue to:

- establish support for Indigenous ranger programs via social investment;
- establish support for Indigenous oil spill response capability via investigating training models;
- establish support for identification and recording of cultural values and the management of that information by Traditional Custodians;
- establish support for programs identified by the Traditional Custodians as important to them and as agreed by Woodside.

4. Support for capacity and capability in relation to governance

Pillar 3 of the Indigenous Affairs Strategy 2019 focuses on ensuring strong corporate governance, leadership development and education initiatives to support self-determination. To enable this, Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups, including in relation to governance and management systems.

The nature of this support will be informed by the individual needs of Traditional Custodian groups, but may include:

- funding or other support for community meetings, particularly where consultation with representative bodies lies outside of that body's core business and cultural authority or mandate needs to be secured,
- resourcing internal expertise so that information is managed consistently and internally, including ensuring appropriate record keeping of consultation to provide stakeholders with a lasting record of discussions, and
- development or upgrade of IT systems to manage information.

5. Program Reporting and Review of Effectiveness

Woodside will undertake an annual review of the Program to assess its effectiveness and adapt the Program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.

Progress of the Program will be reported annually in line with annual sustainability reporting via the Woodside website.

A commitment to the Program will be included in all new and revised Environment Plans in the format below:

Environmental Performance Outcome	Environmental Performance standards	Measurement Criteria
<p>EPO 1 Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values</p>	<p>Applicable to all EPs:</p> <p>EPS 1.1 Implement a program, which is compliant with Corporate Woodside Policies Strategies and procedures, to undertake ongoing consultation with Traditional Custodians whose functions, interests and activities may be affected by the Petroleum Activities Program. The Program will include, where agreed with relevant Traditional Custodians:</p> <ul style="list-style-type: none"> • Social investment to support Indigenous ranger programs • Support for Indigenous oil spill response capabilities • Support for recording Sea Country values • Support to Traditional Custodian groups to build capabilities and capacity with respect to ability to engage with Woodside and the broader O&G industry on activities • Development of ongoing relationships with Traditional Custodian groups • Any other initiatives proposed for the purpose of protecting country including cultural values • Consideration of new cultural values / new information, through the life of the EP, and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians if impacts to cultural values are identified. Where avoidance is not possible, impact minimisation will be prioritised and demonstrated through a written options analysis / ALARP to ensure an acceptable level of impact. This will be documented through Woodside's Management of Change and Management of Knowledge processes. 	<p>MC1.1 Records demonstrate discussions with relevant Traditional Custodian Groups on proposed partnerships and/or initiatives initiated by Woodside, and responses to feedback provided by Woodside within 4 weeks</p> <p>MC 1.2 Progress of the Program will be reported in line with annual sustainability reporting via the Woodside website.</p> <p>MC 1.3 Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified</p>
	<p>EPS 1.2 Undertake an annual review of the program to determine its effectiveness and adapt the program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.</p>	<p>MC 1.4 Records demonstrate an annual review of the Program has been undertaken</p>

6. Current Status

Following distribution of this proposed Program, Woodside is now participating in a number of specific ongoing consultation activities with Traditional Custodian Relevant Persons. Specific ongoing activities are tabulated below:

Traditional Custodian Relevant Person	Ongoing Consultation Description	Forward Plan	Estimated Timeframes
Buurabalayji Thalanyji Aboriginal Corporation	Refer to EP Section 7.5 – Thalanyji Sea Country Management. BTAC proposed a Collaboration Agreement in May 2023, Woodside agreed in principle, and exchanged correspondence to understand details of the proposal. The Collaboration Agreement would enable support for BTAC to undertake an ethnographic assessment to articulate values, and ensure appropriate cost recovery	Refer to EP Section 7.5 – Thalanyji Sea Country Management Woodside and BTAC have executed a Costs Acceptance Letter. Woodside has developed a Collaboration Agreement which is currently under internal Woodside review. Once settled internally it will be put to BBTAC for their consideration.	Refer to EP Section 7.5 – Thalanyji Sea Country Management. The draft Collaboration Agreement will be provided to BTAC for consideration in October 2023. Woodside will follow up on a monthly basis for at least six months with BTAC once they are in receipt of the draft proposed Collaboration Agreement from Woodside, or until the Agreement is in place.
Yamatji Marlpa Aboriginal Corporation	In June 2023, YMAC provided Woodside a proposed draft Framework Agreement, and a proposal to fund in-house expertise to support consultation and implement the Collaboration Framework. In July 2023, Woodside agreed in principle to the proposed Collaboration Framework and the funding proposal and requested a meeting to work together on details. Woodside provided the Proposed Program of Ongoing Consultation to complement the proposed Collaboration Framework.	Woodside will continue to communicate with YMAC, seeking to collaborate and reach agreement on the proposed Collaboration Framework and funding agreement. At the point of EP submission, Woodside is seeking a meeting with YMAC at YMAC's earliest convenience.	Woodside will follow up with YMAC on a monthly basis for at least six months, seeking to progress the Collaboration Framework and funding agreement.
WAC	In August 2023, WAC proposed a Framework Agreement with Woodside to provide a streamlined, formalised approach to consultation between WAC and Woodside. Woodside has confirmed receipt of the proposed framework from WAC.	Woodside is in contact with the WAC CEO and is currently developing a response to the proposed Framework Agreement put forward by WAC. WAC do not object to Woodside progressing environmental plans on the proviso that both parties enter into an Agreement suitable to each party. WAC have suggested a timeframe to settle the Agreement over the next 2-3 months. Woodside will be aiming to reach agreement within a shorter timeframe.	Ongoing Framework Agreement settled in 2023.
Ngarluma Aboriginal Corporation	In September 2023, NAC proposed a Joint Working Group to practically manage consultation processes. It was proposed that the group would meet monthly for 2023 and quarterly thereafter, meetings would include NAC CEO and NAC Directors and potentially independent SME/s, the proposal was that Woodside draft a Framework Agreement, and included a request for funding for this approach. Woodside provided in-principle support for the proposal.	Woodside has provided in-principle support for NAC's proposal and is currently developing a draft Framework Agreement which once settled internally will be sent to NAC for their response.	In accordance with NAC's proposed timeframe, Woodside aims to prepare a draft Framework Agreement, settle internally and then meet to discuss in 2023.

<p>Nganhurra Thanardi Garbu Aboriginal Corporation</p>	<p>In a meeting during August 2023, NTGAC proposed a Framework Agreement. This included terms for ongoing engagement such as frequency of consultation, participation, and content. NTGAC has also requested Woodside provide funding for an in-house environmental scientist to review material. Woodside agreed in principle to this approach, and has requested a first draft of the Framework Agreement for consideration. Woodside have agreed to pay for YMAC's in-house scientist to attend NTGAC meetings to advise NTGAC.</p>	<p>Woodside and NTGAC/YMAC have agreed in writing to develop a Framework Agreement. Woodside have been responding to queries from NTGAC who have passed information provided by Woodside onto their Environmental Scientist. Woodside are awaiting a proposed draft of a Framework Agreement and general report. YMAC's preference is to prepare the drafts, Woodside have offered to assist with drafting and remain ready to respond on receipt of documents.</p>	<p>Woodside will follow up with NTGAC on a monthly basis for at least six months, seeking to progress the Framework Agreement and General report.</p>
<p>Yinggarda Aboriginal Corporation</p>	<p>In August 2023, YAC requested Woodside provide a draft Framework Agreement for their consideration. Woodside has provided a draft Framework Agreement to YAC for review.</p>	<p>Woodside's Proposal suggests meeting with YAC every 3 months to progress matters. The Proposal suggests committing to work continuing between meetings with each party nominating focal points. A Scope of Work and schedule of rates is included to re-imburse the cost of ongoing consultation. Woodside's Proposal includes timeframes for anticipated milestones and has suggested the Proposal be in place for an initial 2-year period. Woodside has provided the draft Framework Agreement to YAC; they have advised that they will seek direction from the YAC Board on the proposal.</p>	<p>Woodside will continue following up with YAC on a monthly basis for at least six months, seeking to progress the Framework Agreement.</p>
<p>Robe River Kuruma Aboriginal Corporation</p>	<p>RRKAC have noted that they are insufficiently resourced to engage further and respond to Woodside regarding EPs. Woodside assesses that a Framework Agreement could address this.</p>	<p>Woodside has on several occasions written to RRKAC offering to fund consultation meetings. Woodside will offer RRKAC a Framework Agreement which will propose funding, scope of work and timeframes to assist with consultation and ongoing consultation. If RRKAC are open to the proposal, it is intended to put forward a draft Framework Agreement to RRKAC within the next 2 months.</p>	<p>Woodside will follow up with RRKAC monthly for at least six months, seeking to progress a Framework Agreement.</p>
<p>Ngarluma Yindjibarndi Foundation Limited</p>	<p>NYFL and Woodside have an existing Agreement in place which enables quarterly communication about Woodside activities. NYFL has said they are working with other First Nations organisation and representative Bodies developing a Framework Agreement.</p>	<p>Woodside has not yet seen a draft of the Framework Agreement. Woodside's expectation is that it will outline principles of engagement, details of resourcing, timeframes to meet agreed outcomes etc. Woodside look forward to receiving a draft Agreement and will engage with NYFL to settle on the details of any proposal.</p>	<p>Woodside will continue to follow up monthly with NYFL for at least six months, seeking to progress a Framework Agreement.</p>

Appendix K DPLH's Aboriginal Cultural Heritage Inquiry

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Uncontrolled when printed. Refer to electronic version for most up to date information.

List of Registered Aboriginal Sites

Search Criteria

No Registered Aboriginal Sites in Custom search area - Polygon - 114.711346061272°E, 20.8366319386942°S (GDA94) : 113.887371451897°E, 21.6557914540822°S (GDA94) : 113.392986686272°E, 22.2569669067452°S (GDA94) : 112.821697623772°E, 22.9163008856403°S (GDA94) : 113.019451530022°E, 21.0213387070791°S (GDA94) : 114.711346061272°E, 20.8366319386942°S (GDA94)

Disclaimer

The *Aboriginal Heritage Act 1972* preserves all Aboriginal sites in Western Australia whether or not they are registered. Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at AboriginalHeritage@dplh.wa.gov.au and we will make every effort to rectify it as soon as possible.

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Coordinate Accuracy

Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

List of Registered Aboriginal Sites

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Aboriginal Heritage Inquiry System

Map of Registered Aboriginal Sites

