



# **Crux Seabed Survey**

**ENVIRONMENT PLAN**

**2023**



**SGH** | Energy

	<b>Shell Australia Pty Ltd</b>	Revision 6
	<b>Crux Seabed Survey Environment Plan</b>	16/11/2023

**Crux Seabed Survey Environment Plan**

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## 1 Environment Plan Summary Statement

This Environment Plan (EP) summary has been prepared from material provided in this EP. The summary consists of the following as required by Regulation 11(4):

<b>EP Summary material requirement</b>	<b>Relevant section of EP containing EP Summary material</b>
The location of the activity	6.2
A description of the receiving environment	7
A description of the activity	6
Details of the environmental impacts and risks	9
The control measures for the activity	9
The arrangements for ongoing monitoring of the titleholders environmental performance	10.4.1
Response arrangements in the oil pollution emergency plan	9.13 and 10.7
Consultation already undertaken and plans for ongoing consultation	5
Details of the titleholders nominated liaison person for the activity	10.5.4



## 2 Introduction

Shell Australia Pty Ltd (Shell), together with Joint Venture Participant Seven Group Holdings (SGH) Energy, is progressing planning for the prospective development of the Crux gas field, located approximately 160 km north-east of the Prelude field in the northern Browse Basin, offshore the Kimberley coast, Western Australia (WA) (Figure 2-1).

The Crux field is located in Commonwealth marine waters in the northern Browse Basin, 190 km offshore north-west Australia and 620 km north-north-east of Broome.

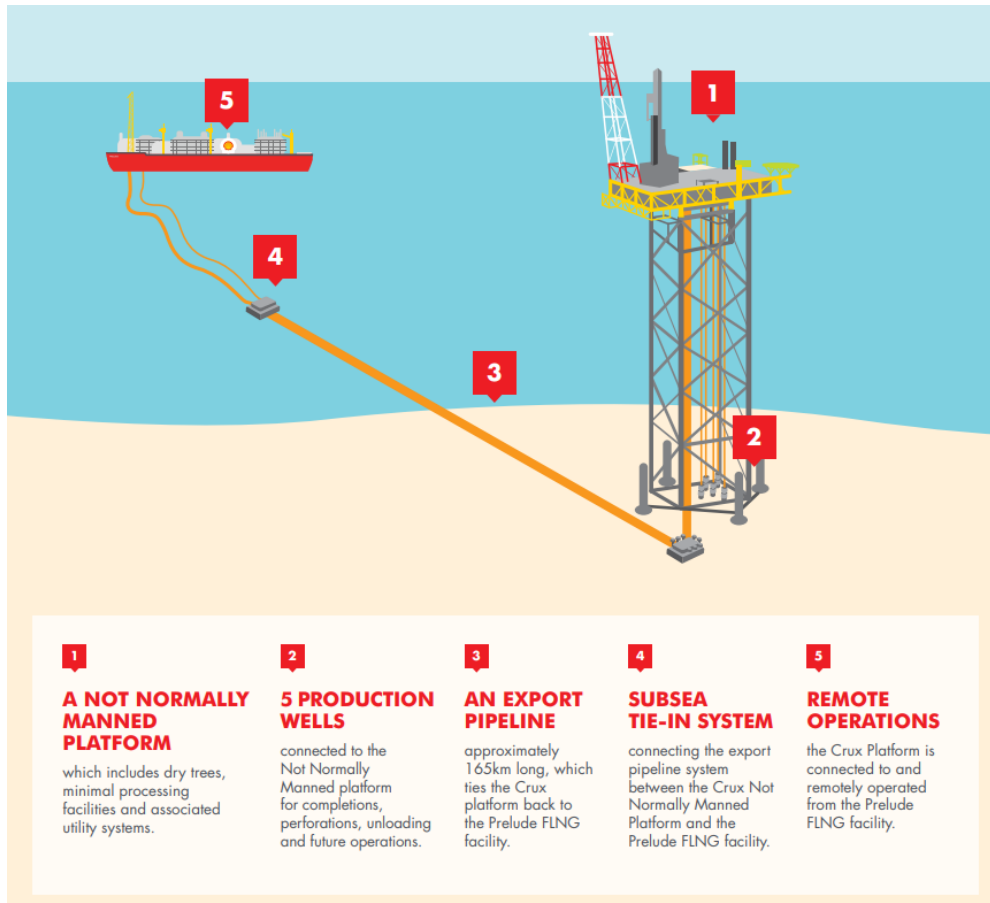


Figure 2-1: Location of the Crux Seabed Survey Operational Area

The Crux project has been identified as the primary source of backfill gas supply to the Prelude Floating Liquefied Natural Gas (FLNG) facility. The proposed Crux project consists of a Not Normally Manned (NNM) platform in approximately 165 m water depth; with five production wells, minimal processing and utility systems, tied back to the existing Prelude FLNG facility via a 165 km export pipeline. Crux will be operated remotely from the Prelude FLNG facility.

The first environmental approval for Crux was the Crux Offshore Project Proposal (OPP), which was accepted in August 2020 by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). Subsequent to the acceptance of the OPP, Shell is required to obtain acceptance of an Environment Plan/s (EP) prior to the execution of any petroleum activities within the project area. During the execution phase of the project, Shell proposes to develop a number of sperate EPs which incorporate the various stages of the project (Figure 2-2). Table 2.1 provides a road map of these EPs and the indicative submission timing to NOPSEMA, which are required to support the project activities.

This EP is for seabed survey activities linked to the Crux trunkline detailed design and supporting installation activities which are described in detail in Section 6.



**Figure 2-2: Crux Infrastructure Schematic**

**Table 2-1: Crux project indicative Environment Plan road map**

Environment Plan	Activity descriptor	Indicative Submission Timing (to NOPSEMA)
Crux Drilling Template Installation EP	Installation of the Crux Drilling template.	July 2023
Crux Seabed Survey EP [this EP]	Geotechnical and geophysical survey activities along the proposed Crux pipeline route.	July 2023
Crux Development Drilling EP	Drilling and suspension of the five Crux development wells.	July 2023
Crux Installation and Cold Commissioning EP	Installation of all remaining Crux infrastructure and commissioning activities prior to the introduction of hydrocarbons.	Quarter four 2023
Crux Hot Commissioning, Start-up and Operations EP	Well completions, hot commissioning (introduction of hydrocarbons), start-up and operations of the Crux infrastructure.	Quarter four 2024
Prelude FLNG Operations EP (revision)	Revision to existing EP to enable the acceptance and processing of Crux gas.	Quarter one 2025



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### 3 Requirements

This section is intended to fulfil the requirements of Regulation 13 (4) of the OPGGS(E) Regulations and meet NOPSEMA's expectations stated in the Environment Plan Content Requirements Guidance Note (2019). Regulation 13 (4) – Requirements of the OPGGS(E) Regulations stipulates that an EP must:

*“(a) describe the requirements, including legislative requirements, that apply to the activity and are relevant to the environmental management of the activity; and*

*(b) demonstrate how those requirements will be met.”*

The Environment Plan Content Requirements Guidance Note (NOPSEMA 2019a) provides additional information on NOPSEMA's expectations of EP content relating to Regulation 13 (4). NOPSEMA does not expect that requirements that are not relevant to the environmental management of petroleum activities be included in the EP.

This section contains the following, which are intended to meet the requirements stated above:

Legislation

Standards and guidelines

International agreement and conventions.

#### 3.1 Legislation

This section describes the Australian legislation that is applicable to the environmental management of the petroleum activities within the scope of this EP. The name of each piece of legislation is provided, along with a description of its relevance to the petroleum activities. A link to the section of the EP related to how these legislative requirements have been considered is also provided.

As the planned activities considered in the EP take place entirely in Commonwealth waters, legislation relating to the environmental management of the petroleum activities considered in this EP are primarily Commonwealth Acts and subsidiary legislation. Key Acts include the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) (OPGGS Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). These Acts and subsidiary legislation are discussed in Sections 3.1.1 and 3.1.2 respectively; additional Commonwealth legislation is considered in Section 3.1.3.

Large volume unplanned hydrocarbon releases may under some circumstances impact upon the environment within the jurisdiction of the State of Western Australia. Western Australian legislation that may be applicable to the environmental management of such hydrocarbon releases has also been considered in Section 3.1.3.

##### 3.1.1 Offshore Petroleum and Greenhouse Gas Storage Act 2006

The OPGGS Act provides the regulatory framework for petroleum exploration, production and greenhouse gas activities in Commonwealth waters. The OPGGS Act is supported by a range of subsidiary legislation, including:

the *Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009* (Cth) which ensure that facilities are designed, constructed, installed, operated, modified and decommissioned in Commonwealth waters only in accordance with Safety Cases that have been accepted by NOPSEMA; and

the OPGGS(E) Regulations.

Of particular relevance to this EP are the OPGGS(E) Regulations, which require the environmental impacts and risks of offshore petroleum and greenhouse gas storage activities be managed to a level that is acceptable and ALARP. The OPGGS(E) Regulations are discussed further below.

##### 3.1.1.1 Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009

The OPGGS(E) Regulations provide for the protection of the environment in Commonwealth waters by requiring that petroleum and greenhouse gas storage activities be managed in a way that:

- reduces the environmental impacts and risks of the activity to a level that is ALARP;
- reduces the environmental impacts and risks of the activity to an acceptable level; and

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- is consistent with the principles of Ecologically Sustainable Development (ESD), as defined in section 3A of the EPBC Act, which includes:
  - decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
  - if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
  - the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
  - the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making
  - improved valuation, pricing and incentive mechanisms should be promoted.

The methodology applied to assess environmental impacts and risks from the petroleum activities considered in this EP details how impacts and risks are managed to a level that is acceptable, ALARP and consistent with the principles of ESD. This methodology is described in Section 8 and Sections 9.1 to 9.2, with aspect-specific demonstrations provided in each of the impact and risk assessment in Sections 9.3 to 9.13.

Regulation 13(3) of the OPGGS(E) Regulations requires EPs to consider Matters of National Environmental Significance (MNES) protected under the EPBC Act, including the following:

- the world heritage values of a declared World Heritage property within the meaning of the EPBC Act
- the national heritage values of a National Heritage place within the meaning of that Act
- the ecological character of a declared Ramsar wetland within the meaning of that Act
- the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act
- the presence of a listed migratory species within the meaning of that Act
- any values and sensitivities that exist in, or in relation to, part or all of:
  - a Commonwealth marine area within the meaning of that Act
  - Commonwealth land within the meaning of that Act.

MNES that may credibly be impacted, or are at risk of being impacted, are described in Section 7 and are considered in the assessment of environmental impacts and risks.

Regulation 10A of the OPGGS(E) Regulations states the criteria for acceptance of an EP. These are summarised in Table 3-1, along with the sections of this EP that relate to each of the criteria.

**Table 3-1: Relationships between OPGGS(E) Regulation 10A requirements and EP sections**

OPGGS (E) Regulation	Requirement	Relevant Section of EP
10A (a)	The EP is appropriate for the nature and scale of the activity	Sections 6 and 9 detail the nature and scale of the petroleum activities considered within this EP. Section 7 describes the environmental receptors that may credibly be impacted, or are at risk of being impacted, by the planned and unplanned activities. Sections 9.3 to 9.13 provides the environmental impact and risk assessments based on the context provided by Sections 6, 7 and 8 (as well as Shell's internal context and the context provided by Relevant Persons).

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OPGGS (E) Regulation	Requirement	Relevant Section of EP
10A (b)	The EP demonstrates that the environmental impacts and risks of the activity will be reduced to ALARP	Sections 9.1 and 9.2 details the method by which Shell demonstrates environmental impacts and risks are managed to a level that is ALARP. Aspect-specific ALARP demonstrations are provided in the impact and risk assessments provided in Sections 9.3 to 9.13.
10A (c)	The EP demonstrates that the environmental impacts and risks of the activity will be of an acceptable level	Section 8 details the method by which Shell demonstrates environmental impacts and risks are managed to a level that is acceptable. Aspect-specific demonstrations of acceptability are provided in the impact and risk assessments provided in Sections 9.3 to 9.13.
10A (d)	The EP provides or appropriate environmental performance outcomes (EPOs), environmental performance standards (EPSs) and measurement criteria (MCs)	EPOs, EPSs and MCs are detailed in Sections 9.3 to 9.13.
10A (e)	The EP includes an appropriate implementation strategy and monitoring, recording and reporting arrangements	The implementation strategy for the EP is provided in Section 10.
10A (f)	The EP does not involve the activity or part of the activity, other than arrangements for environmental monitoring or for responding to an emergency, being undertaken in any part of a declared World Heritage property within the meaning of the EPBC Act.	Section 6 detail the planned petroleum activities considered in this EP, none of which will occur within a World Heritage Area.
10A (g) (i) & 10A (g) (ii)	The EP demonstrates that: (i) the titleholder has carried out the consultations required by Division 2.2A; and (ii) the measures (if any) that the titleholder has adopted, or proposes to adopt, because of the consultations are appropriate	The consultation undertaken in relation to the EP are detailed in Section 5, including Shell's responses to any claims or objections made by Relevant Persons. Any management measures adopted in response to Relevant Person consultation outcomes are considered in the aspect-specific impact and risk assessments in Section 9.3 to Section 9.13.
10A (h)	The EP complies with the Act and the regulations.	Section 3.1.1 (i.e. this section) shows the relationship between the Act, regulations and components of the EP.

### 3.1.2 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act and supporting regulations provide for the protection of the environment and the conservation of biodiversity in Australia. Amendments to the OPGGS Act and OPGGS(E) Regulations in February 2014, undertaken as part of the streamlining of environmental approvals for petroleum activities in Commonwealth waters, require impacts and risks to matters protected under Part 3 of the EPBC Act (i.e. MNES) be considered in the EP. Following the streamlining arrangements, NOPSEMA became the sole environmental regulator for petroleum activities (i.e. regulates activities under the OPGGS Act and EPBC Act) in Commonwealth waters.

The matters protected under Part 3 of the EPBC Act that are required by the OPGGS(E) Regulations are outlined above in Section 3.1.1.1. As part of the streamlining arrangements, matters protected under Part 3 of the EPBC Act must be considered by NOPSEMA when assessing an EP.

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### 3.1.2.1 Australian Marine Park Management Plans

The EPBC Act provides for the declaration of Australian Marine Parks (AMPs) based on the International Union for the Conservation of Nature (IUCN) principles and guidelines for categorising protected areas. Australia has established a network of AMPs throughout Commonwealth waters, which are managed under a series of region-based management plans. These plans detail the management objectives of the AMPs, the environmental values within each of the AMPs and the activities that area permissible within the zones of the AMPs. AMPs are part of the Commonwealth Marine Area, which is an MNES.

The planned petroleum activities considered within this EP will not credibly impact upon any AMPs, however an unplanned hydrocarbon spill from a worst-case loss of well containment was identified as potentially impacting upon several AMPs. These AMPs are described in Section 7.3.4 and managed under the Australian Marine Parks - North Marine Parks Network Management Plan 2018 (Director of National Parks 2018a) and Australian Marine Parks - North-west Marine Parks Network Management Plan 2018 (Director of National Parks 2018b).

The requirements of the management plans for AMPs are considered as part of Shell's determination of the acceptability of environmental impacts and risks. Refer to Sections 9.3 to 9.13 for further information.

### 3.1.2.2 Recovery Plans and Conservation Advice

Species and communities listed as threatened under the EPBC Act are MNES and receive protection under Commonwealth law. The Threatened Species Scientific Committee may publish conservation advice for a threatened species, which provides information on threats and conservation management. Recovery plans relating to threatened species may also be published by the Commonwealth Department of the Environment and Energy. Recovery plans are intended to provide a framework to prevent further decline, and facilitate the recovery, of threatened species. Recovery plans may contain actions that warrant consideration during the assessment of environmental impacts and risks. Recovery plans may also identify habitat critical for the survival of a species; such habitat is protected under the EPBC Act.

Shell has identified a number of threatened species that may credibly be impacted, or are at risk of being impacted, by the petroleum activities considered in this EP. Details on these species, along with relevant information from recovery plans and conservation advice, are provided in Section 7.2.8.

### 3.1.3 Other Legislation

Other legislation applicable to the environmental management of the petroleum activities considered in this EP, along with a justification as to why they are relevant, are provided in Table 3-2.

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**Table 3-2: Summary of Relevant Legislation**

Legislation	Summary	Relevance to the Project
<i>Australian Heritage Council Act 2003</i>	This Act identifies areas of heritage value, including those listed on the World Heritage List, National Heritage List and the Commonwealth Heritage List (all of which are MNES under the EPBC Act).	The EP will take into consideration any heritage values (see Section 7.3 for details).
<i>Australian Maritime Safety Authority Act 1990</i>	Provides that a function of AMSA is to combat pollution in the marine environment. AMSA is the control agency for vessel-based non-petroleum activity spills in commonwealth waters.	Vessel emergencies, including oil spills in Commonwealth waters.
<i>Biodiversity Conservation Act 2016 (WA)</i> Biodiversity Conservation Regulations 2018	Requires WA conservation management agencies to take a lead role in oiled wildlife response in Western Australia. DBCA has the responsibility and statutory authority to treat, protect and destroy wildlife.	Oiled wildlife response will comply with this Act.
<i>Biosecurity Act 2015</i>	The Act and its supporting legislation are the primary legislative means for managing risk of pests and diseases entering Australian territory. The Act includes requirements for pre-arrival reporting, ballast water management plans and certificates.	The EP will comply with biosecurity requirements, specifically in relation to biofouling and ballast water requirements.
<i>Emergency Management Act 2005 (WA)</i>	Requires the WA DoT (Hazard Management Agency) shall be the Control Agency for spills within or entering WA state waters. It is the legislative basis for the WA WestPlan – MOP.	Emergencies including oil spills which enter state waters.
<i>Environment Protection (Sea Dumping) Act 1981</i>	This Act protects is intended to prevent pollution of the sea by prohibiting the discharge of potentially harmful materials to the sea.	Chemical inventories onboard the vessel may potentially breach this convention if unpermitted via this EP and deliberately discharged to the sea.
<i>Hazardous Waste (Regulation of Exports and Imports) Act 1989</i>	This Act regulates the export, import and transport of hazardous waste to ensure that hazardous waste is managed appropriately so that human health and the environment are protected from the harmful effects of the waste.	The project will comply with the export, import and transport requirements for hazardous waste.





Legislation	Summary	Relevance to the Project
National Environment Protection (National Pollutant Inventory) Measure 1998 (established under the <i>National Environment Protection Council Act 1994</i> )	This measure provides the framework for the development and establishment of the National Pollutant Inventory (NPI), which provides publicly available information on the types and amounts of 93 toxic substances being emitted into the Australian environment. These substances have been identified as important due to their possible effect on human health and the environment.	The project will comply with the NPI NEPM through the reporting of relevant NPI substances.
<i>National Environment Protection Council Act 1994</i>	This Act establishes the National Environment Protection Council (NEPC). The primary functions of the NEPC are to define National Environment Protection Measures (NEPMs) to ensure that Australians have equivalent protection from air, water, soil and noise pollution, and assess and report the implementation and effectiveness of NEPMs.	The project will comply with the requirements of the relevant NEPMs.
<i>National Greenhouse and Energy Reporting Act 2007</i> National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015	The Act provides a single, national framework for the reporting and distribution of information related to greenhouse gas (GHG) emissions, GHG projects, energy production and energy consumption. Reporting obligations are imposed upon corporations that meet emissions/energy thresholds.  The Act includes National Greenhouse and Energy Reporting (NGER) requirements and the Safeguard Mechanism requirements.	Shell reports as a corporate group under the Act which includes emissions from activities under its operational control. Where operational control is determined to sit with Shells contractors, it is the contractor's responsibility to adhere to the Act.
<i>Navigation Act 2012</i> Navigation Regulations 2013 Marine Order 21 (Safety and emergency arrangements) 2016 Marine Order 27 (Safety of navigation and radio equipment) 2016 Marine Order 28 (Operations standards and procedures) 2015 Marine Order 30 (Prevention of collisions) 2016 Marine order 60 (Floating offshore facilities) 2001 Marine Order 71 (Masters and deck officers) 2014	This Act relates to maritime safety and the prevention of pollution of the marine environment in Australian waters. It gives effect to several international conventions relating to maritime issues to which Australia is a signatory. The Act also has subordinate legislation contained in Regulations and Marine Orders.	The project, including the vessel, will adhere to the Act and subsidiary legislation enabled by the Act, such as Marine Orders relating to the international conventions listed in Section 3.3.



Legislation	Summary	Relevance to the Project
<i>Ozone Protection and Synthetic Greenhouse Gas Management Act 1989</i> and Regulations 1995	The Act protects the environment by reducing emissions of ozone depleting substances (ODSs) and synthetic greenhouse gases (SGGs). It controls the manufacture, import and export of ODSs and SGGs and products containing these gases.	The project will adhere to restrictions on import and use of ODSs/SGGs through implementing appropriate measures that control procuring of products which contain these gases.
<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) 2014 Marine Order 93 (Marine pollution prevention — noxious liquid substances) 2014 Marine Order 94 (Marine pollution prevention — packaged harmful substances) 2014 Marine Order 95 (Marine pollution prevention — garbage) 2018 Marine Order 96 (Marine pollution prevention — sewage) 2018 Marine Order 97 (Marine pollution prevention — air pollution) 2013	The Act regulates discharges from ships to protect the sea from pollution. This includes regulation of discharges of oil or oily mixtures, noxious liquid substances, packaged harmful substances, sewage and garbage to the sea. The Act imposes a duty to report certain incidents involving prohibited discharges and to maintain record books and management plans.  The Act and subsidiary Marine Orders enact the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (MARPOL).	The vessel operating within the Operational Area is subject to this Act and will adhere to the requirements for discharges and waste management outlined in the relevant MARPOL and Marine Orders (as appropriate to vessel class).
<i>Underwater Cultural Heritage Act 2018</i>	An Act to protect Australia’s underwater cultural heritage. The Act came into effect on 1 July 2019, replacing the <i>Historic Shipwrecks Act 1976</i> . This act protects Australia’s shipwrecks, and broadens protection to sunken aircraft and other types of underwater cultural heritage.	Planned petroleum activities will not interfere with any underwater cultural heritage sites (see Section 7.3 for details).

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## 3.2 Standards and Guidelines

### 3.2.1 Industry Good Practice Standards

In Australia, the petroleum exploration and production industry operates within an industry code of environmental practice developed by the Australian Petroleum Production and Exploration Association (APPEA) (APPEA 2008). This code provides guidelines for activities and has evolved from the collective knowledge and experience of the oil and gas industry both nationally and internationally. The code provides the Australian petroleum industry with guidance on management measures to protect the environment during exploration, production and decommissioning phases. Shell is a signatory to the APPEA guidelines and will align with their intent in the implementation of this EP.

The following Australian guidelines are also applicable to the project:

- GN1344 Environment Plan Content Requirements Guidance Note (NOPSEMA 2019a)
- GN1785 Petroleum activities and Australia marine parks (NOPSEMA 2018a)
- GN1488 Oil Pollution Risk Management (NOPSEMA 2018b)
- IP1349 Operational and Scientific Monitoring Programs (NOPSEMA 2016)
- IP1765 Acoustic impact evaluation and management (NOPSEMA 2018c)
- Australian Ballast Water Management Requirements (Department of Agriculture and Water Resources 2017)
- National Biofouling Management Guidance for the Petroleum Production and Exploration Industry 2009 (Department of Agriculture, Fisheries and Forestry 2009)
- Technical Guideline for the Preparation of Marine Pollution Contingency Plans for Marine and Coastal Facilities (AMSA 2015)
- Advisory Note for Offshore Petroleum Industry Consultation with Respect of Oil Spill Contingency Plans (AMSA 2018), and the corresponding Marine Oil Pollution: Response and Consultation Arrangements (Department of Transport 2020).
- The following international guidelines are also applicable to the project:
- Improving Social and Environmental Performance: Good Practice Guidance for the Oil and Gas Industry (IPIECA 2017)
- Environmental Management in Oil and Gas Production (United Nations Environment Program and Oil Industry International Exploration and Production Forum 1997).

### 3.2.2 International Standards and Guidelines

Shell refers to World Bank (WB)/International Finance Corporation (IFC) guidelines as the basis for many of its operation guidelines, as aligned with the Shell HSSE & SP Control Framework. The WB/IFC guidelines are the minimum environmental, social and health standards for WB funded projects, unless the standards of the host country are more stringent.

The WB/IFC guidelines of primary relevance to the project include:

- IFC Performance Standards on Environmental and Social Sustainability (IFC 2012)
- General Environmental, Health, and Safety (EHS) Guidelines (IFC 2007)
- EHS Guidelines for Offshore Oil and Gas Development (IFC 2015).

### 3.2.3 Shell Health, Security, Safety, Environment and Social Performance Management Framework

Shell maintains and implements a Health, Security, Safety, Environment and Social Performance Management Framework, which contains a range of standards and guidelines. It is the means by which Shell ensures that

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the industry good practice standards and international standards and guidelines detailed in Sections 3.2.1 and 3.2.2 are implemented. It forms the basis of the implementation strategy of this EP. Refer to Section 4 for further information.

### 3.3 International Agreements and Conventions

Australia is signatory to several international conventions and agreements that are relevant to the environmental management of the petroleum activities considered in this EP. These are typically implemented by Commonwealth legislation, much of which is detailed above in Section 3.1. Relevant international agreements and conventions, along with a justification of their relevance to the petroleum activities considered in this EP, are provided in Table 3-3.



**Table 3-3: Summary of relevant international agreements and conventions**

Agreement / Convention	Summary	Relevance to the Project
Convention on the Conservation of Migratory Species of Wild Animals 1979 (the Bonn Convention)	This convention aims to conserve migratory fauna species throughout their ranges, particularly where their range crosses international jurisdictional boundaries. It is implemented in Commonwealth law by the EPBC Act, which makes provision for species listed under the Bonn Convention to be listed as migratory under the EPBC Act. Species listed as migratory under the EPBC Act are MNES.	Several species listed as migratory under the EPBC Act were identified as potentially being impacted by the petroleum activities considered in this EP. Refer to Section 7.2.8.
The East Asian - Australasian Flyway Partnership 2006 (EAAFP)	Adopted in the list of the World Summit on Sustainable Development as a Type II initiative which is informal and voluntary, the Partnership was launched on 6 November 2006 and aims to protect migratory waterbirds, their habitat and the livelihoods of people dependent upon them. There are currently 37 Partners including 18 countries, 6 intergovernmental agencies, 12 international non-governmental organisations (NGOs) and 1 international private enterprise.	Several migratory birds species that utilise the East Asian - Australasian Flyway were identified as potentially being impacted by the petroleum activities considered in this EP. Refer to Section 7.2.8.
The Agreement on the Conservation of Albatrosses and Petrels (ACAP)	ACAP through its 13 Parties strives to conserve albatrosses and petrels by coordinating international activities to mitigate threats to their populations.	Several albatross and petrel species were identified as potentially being impacted by the petroleum activities considered in this EP. Refer to Section 7.2.8.
Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment 1974 (JAMBA)	This agreement aims to conserve migratory bird species that travel between Japan and Australia. This includes many species of shorebirds that use the East Asian - Australasian Flyway. It is implemented in Commonwealth law by the EPBC Act, which makes provision for species listed under JAMBA to be listed as migratory under the EPBC Act. Species listed as migratory under the EPBC Act are MNES.	Several birds listed as migratory under the EPBC Act were identified as potentially being impacted by the petroleum activities considered in this EP. Refer to Section 7.2.8.
Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment 1986 (CAMBA)	This agreement aims to conserve migratory bird species that travel between China and Australia. This includes many species of shorebirds that use the East Asian - Australasian Flyway. It is implemented in Commonwealth law by the EPBC Act, which makes provision for species listed under CAMBA to be listed as migratory under the EPBC Act. Species listed as migratory under the EPBC Act are MNES.	Several birds listed as migratory under the EPBC Act were identified as potentially being impacted by the petroleum activities considered in this EP. Refer to Section 7.2.8.
Agreement between the Government of Australia and the Government of the Republic for Korea for the Protection of	This agreement aims to conserve migratory bird species that travel between the Republic of Korea and Australia. This includes many species of shorebirds that use the East Asian - Australasian Flyway. It is implemented in Commonwealth law by the EPBC Act, which makes	Several birds listed as migratory under the EPBC Act were identified as potentially being impacted by the petroleum activities considered in this EP. Refer to Section 7.2.8.



Agreement / Convention	Summary	Relevance to the Project
Migratory Birds and their Environment 2007 (ROKAMBA)	provision for species listed under ROKAMBA to be listed as migratory under the EPBC Act. Species listed as migratory under the EPBC Act are MNES.	
International Convention on Wetlands of International Importance 1975 (Ramsar)	This convention aims to conserve and promote the sustainable human use of wetlands. Many wetlands have been identified as important habitat for migratory bird species, and Ramsar wetlands are of importance in conserving many species of migratory shorebirds and waders. Ramsar wetlands are protected under the EPBC Act and are MNES.	The Ashmore Reef Ramsar wetland was identified as potentially being impacted in the event of an unplanned release of large volumes of hydrocarbons (e.g. loss of well control). Refer to Section 7.2.5.
Memorandum of Understanding between the Government of Australia and the Government of the Republic of Indonesia Regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Exclusive Fishing Zone and Continental Shelf 1974	This memorandum recognises the long history of traditional Indonesian fishermen exploiting biological resources within Timor Sea waters within Australia's exclusive economic zone. The memorandum provides for an area (commonly referred to as the MoU box) within which traditional Indonesian fishing is permitted. The area includes several offshore reefs, including Ashmore Reef, Cartier Island, Scott Reef and Seringapatam Reef.	The Operational Area is situated within the MoU box. Refer to Section 7.3.5.
London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention)	This convention is an agreement to control pollution of the sea by intentional disposal at sea of potentially harmful materials. It is implemented under Commonwealth law by the <i>Environment Protection (Sea Dumping) Act 1981</i> .	Chemical inventories onboard the survey vessel may potentially breach this convention if unpermitted via this EP and deliberately discharged to the sea.
International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (MARPOL)	This convention is an agreement to minimise the pollution of the marine environment by ships. The convention provides a standardised approach to the environmental management of international and domestic shipping. The convention is implemented in Commonwealth law by the <i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i> and a series of Marine Orders made under this Act.	The survey vessel is required to comply with MARPOL.
International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 (STCW)	This convention provides a standardised approach to the qualifications and competencies of masters, officers and watch personnel. It is implemented in Commonwealth law by the <i>Navigation Act 2012</i> and a series of Marine Orders made under this Act.	The survey vessel and crew are required to comply with STCW.
International Convention for the Safety of Life at Sea 1974 (SOLAS)	This convention provides internationally agreed minimum standards for the construction, equipment and operation of vessels. It is implemented	The survey vessel is required to comply with SOLAS.





Agreement / Convention	Summary	Relevance to the Project
	in Commonwealth law by the <i>Navigation Act 2012</i> and a series of Marine Orders made under this Act.	
International Regulations for Preventing Collisions at Sea 1972 (COLREGS)	These regulations provide internationally agreed rules for the navigation of vessels, which are intended to reduce the likelihood of vessel collisions. COLREGS are implemented in Commonwealth law by the <i>Navigation Act 2012</i> and a series of Marine Orders made under this Act.	The survey vessel is required to comply with COLREGS.
Paris Agreement on Climate Change (2015)	<p>The Paris Agreement is an instrument made under the UNFCCC, with the central aim of strengthening the global response to the threat of climate change by keeping the global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius in order to prevent dangerous human caused interference with the climate system. It deals with GHG emissions mitigation, adaptation, and finance. The agreement's language was negotiated by representatives of 196 state parties, including Australia, and adopted by consensus on 12 December 2015, before entering in to force in late 2016. Australia has since ratified the Paris Agreement. The Paris Agreement requires each party to:</p> <p>volunteer its own Nationally Determined Contributions (NDCs), to report against them annually, and improve them if it is determined that the collective commitment to NDCs is considered ineffective or insufficient to keep global temperature increases to less than 2°C below pre-industrial levels. This allows for variation in emissions reduction performance according to the development status of the country; and</p> <p>determine, plan, and regularly report on the contribution that it undertakes to mitigate global warming. No mechanism forces a country to set a specific emissions target by a specific date, but each target should go beyond previously set targets.</p> <p>Australia has set Nationally Determined Contribution under the Paris Agreement of 26% to 28% reduction over 2005 levels. (Source: climatetracker.org – LULUCF means land use, land-use change, and forestry).</p> <p>The Intergovernmental Panel on Climate Change (IPCC) released a report in October 2018 on the 1.5 degrees Celsius target; it concluded</p>	The Paris Agreement provides the international framework and context around Australia's NDC, which is important to establishing the defined acceptable level of GHG emissions from the Prelude facility.



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Agreement / Convention	Summary	Relevance to the Project
	that global emissions need to reach net zero around mid-century to give a reasonable chance of limiting warming to 1.5 degrees Celsius.	

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## 4 Shell Environmental Management Framework

### 4.1 Shell Health, Security, Safety, Environment and Social Performance Management Framework

Shell, as a subsidiary of Shell plc, is a member of the Shell group of companies (and in this EP, where there is reference to Shell's activities globally, the term "Shell Group" is used).

The Shell Group operates under a common set of business principles, supported by policies, standards and business controls which are implemented throughout the organisation structure. In support of the business principles, there is a Shell Group Health, Security, Safety, Environment and Social Performance Policy which requires every Shell Company to manage HSSE and SP in a systematic manner.

The Shell Group HSSE and SP Control Framework is a corporate management framework which applies to every Shell Group company, contractor and joint venture under Shell's operational control.

### 4.2 HSSE & SP Policy

The Shell Commitment and Policy on HSSE & SP applies across the Shell Group and is designed to protect people and the environment. The policy, endorsed and adopted by Shell, is presented in Figure 4-1. The policy illustrates the commitment made by the senior management and all staff of Shell to achieve not only compliance with environmental standards set by the Australian Government and the Company, but also to seek continual improvements in performance.

Key features of the policy are:

- Systematic approach to HSSE and SP management designed to ensure compliance with the law and to achieve continuous performance improvement
- Targets for improvement and measurement, appraisal and performance reporting
- Requirement for contractors to manage HSSE and SP in line with this policy
- Effective engagement with neighbours and impacted communities.

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## Shell Commitment and Policy on Health, Security, Safety, the Environment, and Social Performance

### Commitment

In Shell we are all committed to:

- Pursue the goal of no harm to people;
- Respect nature by protecting the environment, reducing waste, making a positive contribution to biodiversity, and reducing Greenhouse Gases;
- Use material and energy efficiently to provide our products and services;
- Respect our neighbours and contribute to the societies in which we operate;
- Develop energy resources, products and services consistent with these aims;
- Operate assets safely, efficiently and responsibly;
- Publicly report on our performance;
- Play a leading role in promoting best practice in our industries;
- Manage HSSE & SP matters as any other critical business activity; and
- Create a working environment which is psychologically safe and enables learning in support of this commitment.

In this way we aim to achieve a performance we can be proud of, to earn the confidence of customers, shareholders and society at large, to be a good neighbour and to contribute to sustainable development.

### Policy

Every Shell Company:

- Has a systematic approach designed to ensure compliance with the law and achieve continuous performance improvement;
- Sets targets for improvement and measures, appraises and reports performance;
- Requires Contractors to manage HSSE & SP in line with this policy;
- Requires joint ventures under its operational control to apply this policy, and uses its influence to promote it in its other ventures;
- Engages effectively with neighbours and impacted communities; and
- Includes HSSE & SP performance in the appraisal of staff and rewards accordingly.

Originally published in March 1997 and updated January 2023.



Wael Sawan  
Chief Executive Officer - Shell



Cecile Wake  
SVP / Country Chair - Shell Australia

**Figure 4-1: Shell Australia's HSSE & SP Policy**

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### 4.3 HSSE & SP Control Framework

All Shell's operations are conducted in accordance with Shell's HSSE & SP Control Framework, a comprehensive corporate management framework. This Framework defines a set of mandatory requirements that define minimum HSSE & SP principles and expectations, which are documented in a set of manuals. Figure 4-2 outlines the various control framework manuals applicable to Crux.

#### HSSE & SP Control Framework

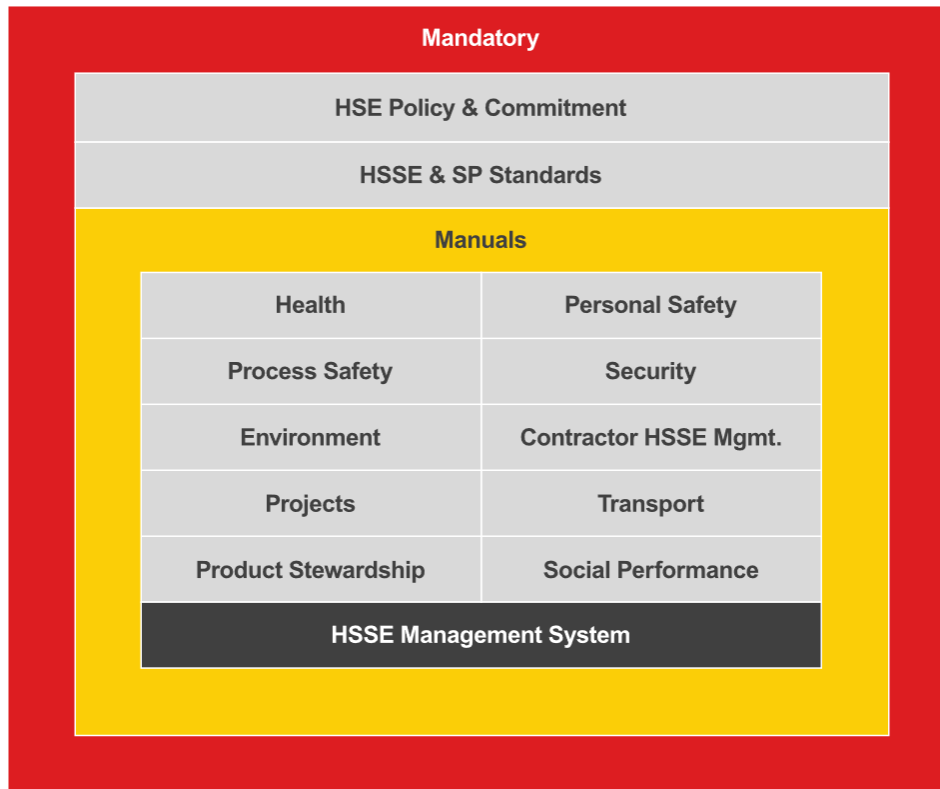


Figure 4-2: Shell HSSE & SP Control Framework

### 4.4 HSSE & SP Management System (MS)

The Shell HSSE & SP-MS provides a structured and documented system for the effective management of impacts and risks and demonstrates how the requirements of the Shell Group HSSE & SP Control Framework are implemented throughout Shell. The Shell HSSE & SP-MS Manual consists of the following elements:

- Leadership and Commitment.
- Policy and Objectives.
- Organisation, Responsibility and Resources, Standard and Documents.
- Risk Management.
- Planning and Procedures.
- Implementation, Monitoring and Reporting.
- Assurance.

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- Management Review.

The HSSE & SP-MS is subject to a continuous improvement 'plan, do, check, review' loop, with the eight elements as listed above. There are numerous, specific ongoing (typically annual) assurance activities against each of the eight elements in the HSSE & SP-MS Manuals, to ensure that the system is being implemented, is effective and to identify areas for improvement.

Environmental management for Crux is through the implementation of the Shell HSSE & SP-MS, supplemented by facility/asset specific HSSE systems/procedures (e.g. Shell Permit to Work system and associated procedures such as Confined Space Entry, Isolations, etc. as appropriately developed at the stage of project implementation).

Shell implements specific pre- and post-contract award processes and activities aimed at ensuring that contracts consistently and effectively cover the management of HSSE & SP risks and deliver effective management of HSSE & SP risks for contracted activities. Contractor HSSE & SP Management is governed by the Shell HSSE & SP Control Framework.

As a minimum, all relevant field active contractors' HSSE & SP-MS will be assessed to ensure they meet materially equivalent outcomes to Shell's HSSE & SP-MS.

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## 5 Relevant Persons Consultation

### 5.1 Background

Pursuant to the OPGGS(E) Regulations a titleholder must carry out consultation in the course of preparing an Environment Plan (EP).

In carrying out the duty to consult with relevant persons the titleholder must:

- i. give each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on the functions, interests, or activities of the relevant person.
- ii. allow a relevant person a reasonable period for the consultation; and
- iii. inform the relevant person that they may request information not be published.

Effective consultation enables relevant authorities, persons, and organisations whose functions, interests or activities may be affected by the proposed activity to put forward their views and to contribute to a titleholder's understanding of the environment that may be affected by the proposed activity and any associated impacts and risks. Effective consultation enables a titleholder to adopt appropriate measures in response to any concerns conveyed by the relevant person.

As the source of backfill to Prelude FLNG, proactive engagement has been ongoing for the Crux project since the Prelude gas field was first discovered in early 2007. A range of relevant persons have been consulted throughout this time, including the State and Federal Government, commercial fishing associations, industry bodies, non-government organisations and local relevant persons in Broome and the Dampier Peninsula as well as Indigenous peoples, including Yawuru, Bardi Jawi and Larrakia people.

As part of the ongoing stakeholder engagement Shell undertakes, specific consultation for the Crux project commenced in relation to the drilling of the first appraisal wells in 2007. Consultation carried out includes:

- August 2020: public invited to comment on the Crux Offshore Project Proposal accepted and published by NOPSEMA.
- July 2021: consultation undertaken for the FDP, Production and Pipeline Licences submitted to NOPTA.
- February 2022: consultation commenced for the Crux Development Drilling EP.

Figure 5-1 provides a timeline for the consultation completed during the course of preparing the EPs. This timeline is provided by way of illustration only and does not capture all of Shell's consultation activities (which are discussed in detail below).





ID	Activity	Start date	End date	Timeline (Days)																																																
				Mar-23					Apr-23					May-23					Jun-23					Jul-23					Aug-23					Sep-23					Oct-23													
				10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
<b>1 Advertising / Public Notices</b>																																																				
1.1	Print advertising campaign – calling out for self-identification of RPs	13-Mar-23	31-Mar-23	[Green bars from 13-Mar to 31-Mar]																																																
1.2	Radio advertising campaign - calling out for self-identification of RPs	3-Apr-23	28-Apr-23	[Green bars from 3-Apr to 28-Apr]																																																
1.3	Social media campaign– calling out for self-identification of RPs	12-Mar-23	7-Apr-23	[Green bars from 12-Mar to 7-Apr]																																																
1.4	Drop-in session promotion print publication																																																			
1.41	Derby (advertised on social media)	24-Mar-23		[Green bar on 24-Mar]																																																
1.42	Broome	20-Apr-23		[Green bar on 20-Apr]																																																
1.43	Port Hedland	26-Apr-23		[Green bar on 26-Apr]																																																
1.44	Exmouth	3-May-23		[Green bar on 3-May]																																																
1.45	Darwin	10-May-23		[Green bar on 10-May]																																																
<b>2 Website</b>																																																				
2.1	Website optimisations	14-Mar-23		[Green bar on 14-Mar]																																																
2.2	Draft Crux Drilling Template installation Environment Plan published	28-Apr-23		[Green bar on 28-Apr]																																																
2.3	Draft Crux Seabed Survey Environment Plan published	28-Apr-23		[Green bar on 28-Apr]																																																
2.4	Draft Crux Development Drilling Environment Plan published	3-May-23		[Green bar on 3-May]																																																
<b>3 Consultation Material</b>																																																				
3.1	Consultation material mail out - sufficient information	27-Mar-23	28-Apr-23	[Green bars from 27-Mar to 28-Apr]																																																
3.2	Follow up emails, Phone calls, texts or other channels	28-Apr-23	27-Oct-23	[Green bars from 28-Apr to 27-Oct]																																																
<b>4 Drop-in sessions</b>																																																				
4.01	Derby	4-Apr-23		[Green bar on 4-Apr]																																																
4.02	Broome	27-Apr-23		[Green bar on 27-Apr]																																																
4.03	Port Hedland	3-May-23		[Green bar on 3-May]																																																
4.04	Exmouth	10-May-23		[Green bar on 10-May]																																																
4.05	Darwin	17-May-23		[Green bar on 17-May]																																																
<b>5 Community Information Sessions</b>																																																				
5.01	Broome	27-Apr-23		[Green bar on 27-Apr]																																																
5.02	Darwin	17-May-23		[Green bar on 17-May]																																																
<b>5 Indigenous Forums</b>																																																				
5.01	Perth	19-Apr-23		[Green bar on 19-Apr]																																																
5.02	Broome	10-May-23		[Green bar on 10-May]																																																
5.03	Darwin	31-May-23		[Green bar on 31-May]																																																
5.04	Specific, targeted consultation sessions with NTRB, RNTBCs, PBCs or Aboriginal Corporations	18-May-23	17-Oct-23	[Green bars from 18-May to 17-Oct]																																																
<b>6 Industry Forums</b>																																																				
6.01	Perth	27-Apr-23		[Green bar on 27-Apr]																																																

Figure 5-1: Crux Project consultation timeline

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In compliance with Regulation 3 of the OPGGS(E) Regulations, Shell ensures the environmental impacts and risks of the activity are reduced to As Low As Reasonably Practicable (ALARP) and to an acceptable level.

The consultation process enables the titleholder to ascertain, understand, and address all the environmental impacts and risks that might arise from its proposed activity, including information that the titleholder would otherwise not be aware of. The consultation process informs the titleholder's understanding of the environment, including (amongst other things) people and communities, the heritage value of places, and their social and cultural features which may be affected by a titleholder's proposed activities.

Shell recognises the need to consult on both planned and unplanned activities. The Environment that May Be Affected (EMBA), which in this EP is defined as the 'Planning Area', has been determined based on the unlikely event of a hydrocarbon release from Shell's activities described in this EP. The Planning Area is further described and depicted in Section 7. The Planning Area is used as an initial input to develop a broad list of persons and organisations that may have functions, interests or activities in the geographical area that may be affected by Shell's activities. Each person or organisation's functions, interests or activities are then further assessed in the context of the effect that Shell's activities may have on their functions, interests or activities, to determine whether the person or organisation is a relevant person for the purposes of consultation.

The scope and duration of Shell's operations in Commonwealth and State waters in Australia, along with a track record of consistent engagement with a diverse group of individuals and organisations, has allowed Shell to compile a comprehensive list of contacts for this consultation process. This list was not intended to be an exhaustive list of those to be consulted, but rather served as a starting point to identify relevant persons for consultation on Shell's proposed activities. The list has been developed through years of experience and contains valuable insights on the specific information that different individuals and organisations want to receive during consultation. Additionally, it includes the most appropriate means of communication and up-to-date contact information, which Shell regularly reviews and updates.

For all relevant persons, Shell consults on the basis of informed consultation, participation and co-design:

- Relevant persons are free to raise issues without being under pressure (e.g., unreasonable timeframes due to approval timeline) or duress.
- Consultation ensures that all relevant persons are aware of the consultation period and have had the opportunity to be consulted.
- Sufficient and appropriate information is provided to enable persons to identify whether they are relevant or have a connection to the EP.
- Shell will advise each relevant person that they may request information provided during consultation not be published, reflecting the legal requirements in regulation 11A(4).

Shell recognises the *Consultation in the course of preparing an environment plan* guidance released by NOPSEMA in May 2023 and the recent judicial guidance in *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Tipakalippa Decision), on the purpose of consultation as follows:

- At paragraph 54 of the Tipakalippa Decision: *... the information that the titleholder is obliged to provide NOPSEMA is also designed to provide a basis for NOPSEMA's considerations of the measures, if any, that a titleholder proposes to take or has taken to lessen or avoid the deleterious effect of its proposed activity on the environment, as expansively defined.*
- At paragraph 89 of the Tipakalippa Decision: *...its purpose [regulation 11A] is to ensure that the titleholder has ascertained, understood and addressed all the environmental impacts and risks that might arise from its proposed activity. Consultation facilitates this outcome because it gives the titleholder an opportunity to receive information that it might not otherwise have received from others affected by its proposed activity. Consultation enables the titleholder to better understand how others with an objective stake in the environment in*

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*which it proposes to pursue the activity perceive those environmental impacts and risks. As the Regulations expressly contemplate, it enables the titleholder to refine or change the measures it proposes to address those impacts and risks by taking into account the information acquired through the consultations. Objectively, the scheme intends that this is likely to improve the minimisation of environmental impacts and risks from the activity.*

Consultation supports this outcome by providing the titleholder an opportunity to receive information from relevant persons that may be affected by its proposed activity. Consultation enables the titleholder to gain a better understanding of how relevant persons with an objective stake in the Planning Area perceive those environmental impacts and risks. Consultation enables the titleholder to refine or modify the measures it proposes to address those impacts and risks by taking into account the information gained through the consultations. This is likely to improve the minimisation of environmental impacts and risks from the activity.

The consultation process also assists the titleholder to meet its obligation under section 280 or section 460 of the OPGGS Act which requires that it must carry out the petroleum or greenhouse gas activity respectively in a manner that does not interfere with navigation, fishing, conservation of resources of the sea and seabed, other offshore electricity infrastructure and petroleum activities, and the enjoyment of native title rights and interests (within the meaning of the *Native Title Act 1993 (Cth) (NTA)*) to a greater extent than is necessary for the reasonable exercise of the titleholder's rights and obligations.

Shell recognises that whilst it is required to consult with each relevant person pursuant to the OPGGS(E) Regulations, participating in consultation is not obligatory for relevant persons and the OPGGS(E) Regulations do not impose any obligation to seek or reach an agreement on the subject for consultation. Shell understands there may be individuals within a community (who hold communal interests) who are unable to participate for various reasons and the absence of their participation does not invalidate the consultation process, provided that reasonable efforts were made to identify the relevant persons and to consult with them.

An overview of Shell's consultation methodology for EPs is set out below, including how sub-regulation 11A(1) of the OPGGS(E) Regulations has been applied to identify relevant persons, the application of the consultation methodology and assessment of relevant persons for this EP, as well as the consultation information provided to relevant persons, feedback provided and Shell's assessment of the merit of objections or claims. This section also includes engagement with persons or organisations that Shell contacted directly on an individual basis.

The consultation methodology set out in this EP demonstrates that consultation has occurred with relevant persons in accordance with regulation 11A of the OPGGS(E) Regulations. The consultation methodology incorporates Shell's increased understanding of relevant persons through updates to its known relevant persons list, experience with other EPs, and other external feedback. Other adjustments were made in response to discussions, regulations, and suggestions made during the regulatory process of submitting and assessing this EP.

To ensure that organisations and individuals who may be affected by the proposed activity are aware of Shell's consultation process for the EP and can provide feedback in accordance with the intended outcome of consultation, an adaptive methodology has been implemented. This approach includes advertising in local, state, and national newspapers. This section summarises consultation activities with relevant persons, as well as engagement with individuals or organisations that were not relevant persons but Shell still chose to contact.

## 5.2 Key Principles for Effective Consultation

Key principles for consultation in preparation of an EP in accordance with regulation 11A are outlined in Table 5-1.

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**Table 5-1: Key Principles for EP Consultation**

Key principle	Key concept
<p>Consultation provides an opportunity for free and open exchange of information to occur between a titleholder and relevant person that may be affected by a proposed activity.</p>	<ul style="list-style-type: none"> <li>• The process provides a genuine opportunity for relevant persons to be heard and provide feedback.</li> <li>• An inclusive approach is taken by which the titleholder seeks to identify and consult with relevant persons throughout the development of the EP, takes reasonable measures to allow relevant persons an opportunity to self-identify, and identifies potentially relevant persons taking a broad (rather than narrow) approach to functions, interests or activities within the Planning Area.</li> <li>• The process includes mechanisms for titleholders to receive information from relevant persons that they might not have otherwise received.</li> <li>• The process enables a titleholder to gain better understanding about the environment that may be affected and measures that may be necessary to mitigate the potential environmental impacts and risks associated with the petroleum activity.</li> <li>• Consultation does not carry with it any obligation on the titleholder either to seek or reach agreement; nor requires consent on the activity subject to the consultation; however, the titleholder should be receptive to suggestions from a relevant person, where these may improve the overall environmental outcome.</li> </ul> <p>Appropriate engagement techniques are selected and consultation is tailored to the needs of relevant persons, including location, timing, cultural sensitivities, and the most suitable way to conduct engagements.</p>
<p>The consultation process must be capable of practicable and reasonable discharge.</p>	<ul style="list-style-type: none"> <li>• The obligation to consult is a real-world obligation that must be construed in a practical and pragmatic way that makes a process both reasonable and workable.</li> <li>• Where communal interests are held, the process of consultation needs to reasonably reflect the characteristics of the communal interests affected, and does not necessarily require communications with each and every person who is a member of the relevant community.</li> <li>• The obligation to identify relevant persons for the purpose of consultation must be reasonably capable of being discharged (i.e.</li> </ul>

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Key principle	Key concept
	relevant persons need to be ascertainable) within a reasonable time.
Consultation involves provision of sufficient information on a proposed activity to relevant persons and allows for a reasonable period of time for a relevant person to consider the information.	<ul style="list-style-type: none"> <li>• Information provided to a relevant person should be sufficient to allow them to make an informed assessment of the possible consequences of the proposed activity on their functions, interests or activities.</li> <li>• The nature, scale, and complexity of a proposed activity, as well as the extent of potential impacts and risks on a relevant person's functions, interests, or activities, is considered when determining a reasonable period for consultation.</li> </ul>
Relevant person participation in the consultation process is voluntary	<ul style="list-style-type: none"> <li>• The voluntary participation of relevant persons in the consultation process is respected. The titleholder collaborates with them to determine their preferred method of consultation where possible.</li> <li>• Relevant persons are not obligated to respond to a titleholder's request to participate in the consultation process.</li> <li>• A titleholder is not required to wait indefinitely for a response where sufficient information and reasonable period of time has been afforded to the relevant person.</li> </ul>

### 5.3 Regulations and Guidance

This methodology has been developed in accordance with the relevant regulations and guidelines, including:

- Tipakalippa Decision
- NOPSEMA Guideline GL2086 – Consultation in the course of preparing an environment plan – May 2023
- NOPSEMA Guidance Note GN1847 – Responding to public comment on environment plans – July 2022
- NOPSEMA Guidance Note GN1344 – Environment plan content requirements – December 2022
- NOPSEMA Guideline GL1721 – Environment Plan Decision Making Guideline – December 2022
- NOPSEMA Guidance Note GN1488 – Oil pollution risk management – July 2021
- NOPSEMA Guidance Note GN1785 – Petroleum activities and Australian Marine Parks – June 2020
- NOPSEMA Guideline GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023

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- NOPSEMA Brochure – Consultation on offshore petroleum environmental plans – May 2023
- NOPSEMA Policy PL2098 – Engaging gender-restricted information Draft Policy – May 2023
- NOPSEMA Policy PL1347 – Environment Plan Assessment Policy – December 2022
- Department of Climate Change, Energy, the Environment and Water (DCCEEW): Sea Countries of the North-West; Literature review on Indigenous connection to and uses of the North-West Marine Region
- DCCEEW – Draft Guidelines for working in the near and offshore environment to protect Underwater Cultural Heritage – 2023
- DCCEEW – The Interim Engaging with First Nations People and Communities on Assessments and Approvals under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (interim guidance)
- International Finance Corporation Performance Standard 7 - 2012
- Australian Fisheries Management Authority: Petroleum industry consultation with the commercial fishing industry – 2023
- Commonwealth Department of Agriculture, Fisheries and Forestry (DAFF) - Guidance framework for supporting cooperative coexistence of seismic surveys and commercial fisheries in Australia's Commonwealth marine area DAFF - Offshore Installations Biosecurity Guide - 2020
- Commonwealth Department of Industry, Science and Resources - Streamlining Offshore Petroleum Environmental Approvals: Program Report – February 2021
- WA Department of Primary Industries and Regional Development: Guidance statement for oil and gas industry consultation with the Department of Fisheries – 2013
- WA Department of Transport: Offshore Petroleum Industry Guidance Note, Marine Oil Pollution: Response and Consultation Arrangements – July 2020
- WA Department of Mines, Industry Regulation and Safety - Consultation Guidance Note (for the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009) – April 2012
- Northern Territory Environment Protection Authority – Stakeholder Engagement and Consultation: Environmental Impact Assessment – Guidance for Proponents – January 2021
- Western Australian Fishing Industry Council – Consultation approach for unplanned events
- IAP2 Public Participation Spectrum

As operator, Shell has consulted with relevant persons identified in accordance with the NOPSEMA Decision-making guideline (N-04750-GL1721 December 2022) under the OPGGS(E) Regulations for this EP.

The term 'relevant person' is defined in Regulation 11A of the OPGGS(E) Regulations. The methodology outlined in this EP sets out the processes that have been applied to identify and determine who are relevant persons for the purposes of Regulation 11A(1)(a) to (e) of the OPGGS(E) Regulations.

These requirements are summarised in Table 5-2.



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**Table 5-2: Division 2.2A, Regulation 11A of the OPGGS(E) Regulations**

Legislation	Summary	Requirement
Division 2.2A— Consultation in preparing an environment plan  11A Consultation with relevant authorities, persons and organisations, etc	Relevant Persons	<ol style="list-style-type: none"> <li>1. In the course of preparing an environment plan, or a revision of an environment plan, a titleholder must consult each of the following (a <i>relevant person</i>):               <ol style="list-style-type: none"> <li>a. each Department or agency of the Commonwealth to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant;</li> <li>b. each Department or agency of a State or the Northern Territory to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant;</li> <li>c. the Department of the responsible State Minister, or the responsible Northern Territory Minister;</li> <li>d. a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the environment plan, or the revision of the environment plan;</li> <li>e. any other person or organisation that the titleholder considers relevant.</li> </ol> </li> </ol>
	Sufficient Information	<ol style="list-style-type: none"> <li>2. For the purpose of the consultation, the titleholder must give each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on the functions, interests, or activities of the relevant person.</li> </ol>
	Reasonable period	<ol style="list-style-type: none"> <li>3. The titleholder must allow a relevant person a reasonable period for the consultation.</li> </ol>
	Sensitive information	<ol style="list-style-type: none"> <li>4. The titleholder must tell each relevant person the titleholder consults that:               <ol style="list-style-type: none"> <li>a. the relevant person may request that particular information the relevant person provides in the consultation not be published; and</li> <li>b. information subject to such a request is not to be published under this Part.</li> </ol> </li> </ol>

Source: OPGGS(E) Regulations

### 5.3.1 Tipakalippa Decision

In its decision handed down on 2 December 2022, the Full Court of the Federal Court of Australia considered the meaning of 'relevant person' within regulation 11A(d) of the OPGGS(E) Regulations.

The proceedings (brought by Mr Tipakalippa) challenged NOPSEMA's decision to accept Santos' Drilling and Completions EP, submitted as part of the Barossa Project. Mr Tipakalippa alleged that Santos did not consult with him or his clan and, as a result, NOPSEMA's approval was invalid.

The OPGGS(E) Regulations do not define what is meant by 'functions, interests or activities', and the construction of the words in this phrase was clarified by the Full Court. The meaning of these words is discussed in further detail in Table 5-3 below.



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The Full Court also made observations on other aspects of consultation which are set out below.<sup>1</sup>

- Superficial or tokenistic consultation will not be enough.
- Where interests are held communally, or across a group, the titleholder has a degree of 'decisional choice' in identifying which persons are to be approached within the group, the manner of communication and the method of consultation.

The Federal Courts decision also clarifies that EPs must demonstrate that consultation has occurred as required by regulation 11A. In practice, this means that:

- Once titleholders have proactively identified and engaged in consultation with relevant persons, the titleholder must demonstrate to NOPSEMA that the requisite consultation has occurred, i.e., by ensuring that the EP sets out its understanding of who a relevant person is (with reference to the Full Court's reasons).
- If the titleholder has proceeded on an incorrect interpretation of the regulations, it may not be possible for NOPSEMA to be satisfied that the titleholder has carried out the consultations required by the OPGGS(E) Regulations.

### 5.3.2 NOPSEMA Consultation Guideline

NOPSEMA released a Guideline titled '*Consultation in the course of preparing an environment plan*' (the NOPSEMA Consultation Guideline) following the Tipakalippa Decision. The NOPSEMA Consultation Guideline clarifies the legal requirements for consultation by titleholders while preparing their EPs prior to submission to NOPSEMA.

In particular, the NOPSEMA Consultation Guideline provides guidance on the following aspects:

- the interpretation of 'relevant person' and each term in the phrase 'functions, interests or activities' as contained in regulation 11A(1)(d) of the OPGGS(E) Regulations; and
- matters that should be considered in designing and implementing consultation processes.

### 5.3.3 Key Terms and Definitions

The meaning of key terms and definitions are summarised in Table 5-3 below by reference to the NOPSEMA Consultation Guideline (which is informed by the Full Court's observations in the Tipakalippa Decision).

**Table 5-3: List of Key Definitions**

Term	Definition
Activities	In relation to subregulation 11A(1)(d), activities are considered to be what other persons or organisations are already doing.
Claims	Assertion or information about the potential adverse impacts from the petroleum activities to which the EP relates.
Environment	OPGGS(E) Regulations defines this as:  (a) ecosystems and their constituent parts, including people and communities; and  (b) natural and physical resources; and

<sup>1</sup> Since the Tipakalippa Decision was handed down, regulation 11A has been the subject of two further Federal Court decisions (Cooper v NOPSEMA [2023] FCA 1112; Cooper v NOPSEMA [2002] FCA 1158). The Federal Court's observations on the requirements of consultation in the Cooper proceedings are consistent with the Tipakalippa Decision and emphasise the importance of consultation in ensuring that titleholders provide NOPSEMA with relevant information about the environmental impacts and risks of a proposed activity.

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Term	Definition
	<p>(c) the qualities and characteristics of locations, places and areas; and</p> <p>(d) the heritage value of places; and includes</p> <p>(e) the social, economic and cultural features of the matters mentioned in paragraphs (a), (b), (c) and (d).</p>
Functions	In relation to subregulation 11A(1)(d), functions refer to a power or duty to do something.
Interests	In relation to subregulation 11A(1)d, “interest” includes an interest possessed by an individual, whether or not the interest amounts to a legal right or is a proprietary or financial interest or relates to reputation. However, an interest does not extend to general public interest in an activity <sup>2</sup> .
Nature and scale of effect on relevant persons functions, interests or activities	<p>This is a broad screening assessment done for some selected relevant persons where a clearer distinction is warranted between the nature of a relevant persons functions, interests or activities may be affected. This is split into two categories;</p> <p><b>High (nature and scale):</b> Planned impacts which may be significant will occur to a known interest such as a cultural value or feature. Impacts are likely to be long term.</p> <p><b>Low (nature and scale):</b> Impacts are either from highly unlikely events, such as a major spill or planned impacts are not likely to be significant, nor long term and does not involve the direct desecration of a cultural feature.</p>
Objection	A reason or argument about the potential adverse impacts arising from the petroleum activities to which the EP relates.
Planning Area	This is the environment that may be affected by the activity. The spatial extent of the Planning Area is determined from stochastic spill modelling or National Energy Resources Australia (NERA) reference cases using the low hydrocarbon exposure thresholds (no ecological impact) as recommended by NOPSEMA. Note, the Planning Area does not define the area of affect to a relevant person’s functions, interest or activities, but instead it is used as an initial input to develop a broad list of possible relevant persons that may be affected in a geographical area for the activity. Each potentially relevant person is then further assessed in direct context of the effect the activity may have on their own specific functions, interests and activities.
Reasonable period (also known as the consultation window)	<p>A reasonable time for relevant persons to identify the effect of a proposed activity on their functions, interests or activities and provide a response detailing their objections or claims.</p> <p>Shell generally defines a reasonable period for a relevant person to review and provide an initial response as being 30 calendar days, subject to the nature and scale of the proposed activity (however, Shell has provided Indigenous relevant persons with a minimum consultation window of three months). Where dialogue with relevant persons is ongoing after this period, Shell will continue to consult with these persons until Shell believes that it has provided sufficient</p>

<sup>2</sup> Tipakalippa Decision, paragraph [154].

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Term	Definition
	evidence/justification to close the consultation (i.e. they have been provided sufficient information and a reasonable period).
Reasonable efforts	During the consultation window, Shell will make all reasonable efforts to make contact with all identified relevant persons for the EP (where a reasonable and workable avenue exists). Shell recognises that specific consultation channels to pass on information may be more appropriate for certain groups of relevant persons.
Relevant matter	The matter raised does not fit the criteria descriptions for objections or claims with/without merit. However, the matter raised is relevant to the planned activity, comprises a request to Shell for further relevant information, or provides information to Shell that is relevant to the activity or the EP.
Not a relevant matter	Input does not relate to the planned activity or the relevant person's or organisation's functions, interests or activities affected by the activity. Matters that are not relevant may also be generic in nature with no specific issues raised (e.g. salutations, acknowledgements, meeting arrangements, etc.).
Relevant person	Can be a person, organisation, department or agency that falls within one of the categories defined by subregulation 11A(1) of the OPGGS(E) Regulations; however, it does not include those whose functions, interests or activities will only be affected by an activity in an immaterial or negligible way <sup>3</sup> .

## 5.4 Overview of Relevant Person Methodology Workflow

Figure 5-2 presents Shell Australia's workflow for the identification of and consultation with Relevant Persons. Identifying, categorising and engaging with Relevant Persons is shown in Steps 1 to 17. Assessment of objections or claims and relevant matters are dealt with in Steps 18 – 25. Refer to Section 5.6.9 for more details on assessment of merit of objections or claims.

## 5.5 Identifying Relevant Persons

The NOPSEMA Consultation Guideline provides the following key guidance as to the process for the identification of relevant persons:

- The process must provide for sufficiently broad capture of ascertainable persons and organisations whose functions, interests or activities may be affected by the activity.
- The process should include reference to multiple sources of information, such as publicly available materials, review of databases and registers, published guidance, previous history, as well as advice from authorities and other relevant persons.
- Titleholders must clearly identify in their EPs who is a relevant person and the rationale the titleholder has used to determine who they consider falls within that definition.

Relevant person identification as an inherently iterative process as Shell may become aware of relevant persons both during the process of consultation and also after the development and submission of an EP. Nonetheless, outlined elsewhere in this EP, Shell has done extensive work to ensure it identified relevant persons in the course of preparation of this EP, for the purpose of complying with regulation 11A of the OPGGS(E) Regulations.

<sup>3</sup> Tipakalippa Decision paragraph [67], noting that, subregulation 3(c) of the OPGGS(E) provides that the petroleum activity is to be carried out in a manner by which the environmental impacts and risks of the activity will be of an acceptable level.

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A broad capture of relevant persons was augmented by advertisements in local, regional and national print, social media and broadcast, encouragement of identified relevant persons during engagement activities, such as the forums and community sessions as outlined in this EP, to share and communicate with those who they may think were relevant, those who self-identified, and also information shared with Shell through other third parties (such as industry).

To identify relevant persons, Shell's methodology first identified a person or organisation's functions, interests, or activities then based on their overlap with the Planning Area described in this EP, identified persons or organisations that may be affected by Shell's planned or unplanned activities. This includes government departments or agencies that may be involved in incident response or a regulatory or decision-making capacity regarding planning for the unlikely event of a worst-case hydrocarbon release incident response.

Where Shell identifies persons or organisations such as commercial fishers, tourism operators, or relevant cultural authorities whose functions, interests or activities within the Planning Area may be affected by a hydrocarbon release, Shell would, at the relevant time of this unlikely event occurring, engage in the context of emergency response with these parties as appropriate to the nature and scale of the incident, as per the procedures and contact lists in the Oil Pollution Emergency Plan.

During the consultation process, new information may become available to inform the extent of effect of Shell's activity on a person's functions, interests or activities, which may result in an identified relevant person being removed from the relevant persons list. For example, new information may become available which further informs/clarifies a person's actual functions, interests or activities and how they could be affected which are not to the extent as previously perceived by Shell during the initial identification process.

As noted above, Shell used oil spill modelling to assist in the process of identifying potentially relevant persons for the activities proposed to be conducted under this EP. Shell adopted a conservative approach to this modelling, which is explained further below. If less conservative and, arguably, more appropriate oil spill modelling was used, the Planning Area would be significantly reduced and fewer potentially relevant persons would have been identified.

Shell also notes that there may be persons who have functions, interests or activities within the Planning Area, as calculated by the oil spill modelling included in the EP at the initial time of submission, but those functions, interests or activities may not be affected by Shell's activities. Where no environmental or ecological impacts are predicted within a geographical area, there can be no corresponding impacts on a person's functions, interests or activities. There may also be instances where potential environmental or ecological impacts are predicted to occur within an area; however, despite a geographical overlap this will not necessarily equate to an impact on a person's functions, interests or activities.

In other cases, Shell may identify a group of relevant persons that may be potentially affected; however, is unable to confirm individual contact details as these are not ascertainable through normal mechanisms (e.g. associated government agencies, organisations or groups who hold these details or who can advise who these individuals are). As such, consulting with such relevant persons is not capable of being discharged within a reasonable time due to the "opacity as to the identity of those with whom consultations are to take place"<sup>4</sup>. The opportunity exists for such persons to contact Shell, via Shell's publicly accessible website.

### 5.5.1 Identification of Relevant Persons

The identification of relevant persons was completed by adopting a systematic research approach which is outlined in Figure 5-3.

<sup>4</sup> Tipakalippa Decision, paragraph [136].

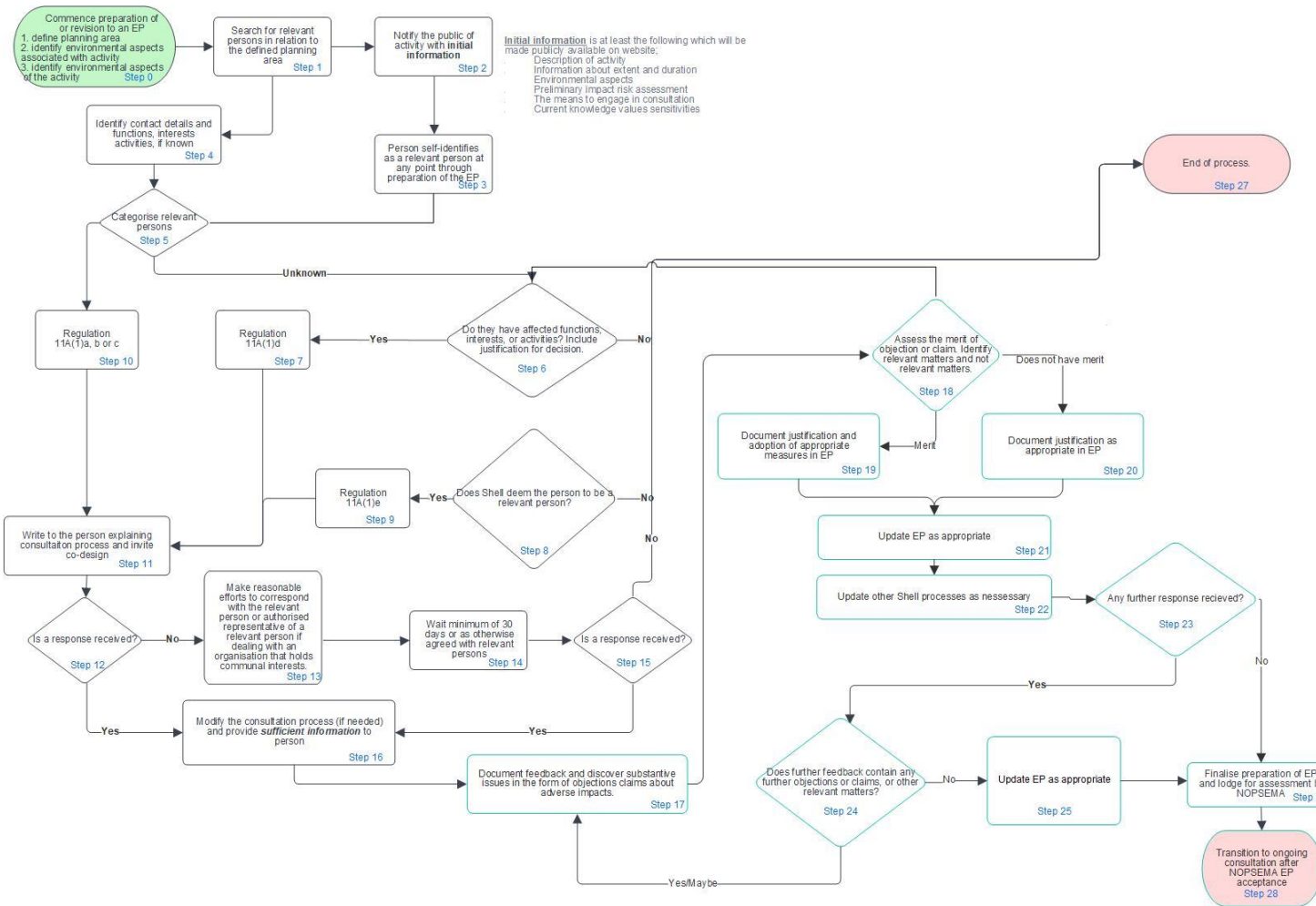
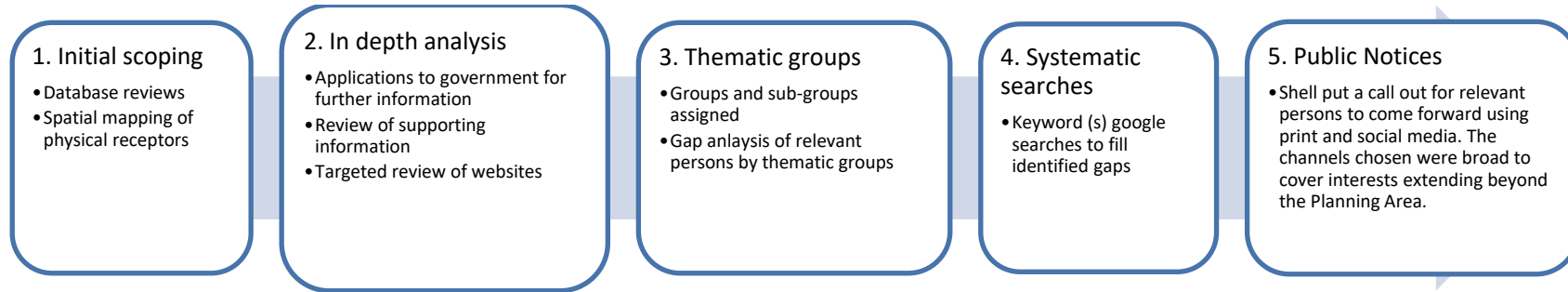


Figure 5-2: Relevant Persons Workflow



**Figure 5-3: Methodology for the Identification of Relevant Persons**



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The initial scoping of relevant persons involved a comprehensive assessment of the following aspects:

- Project activities related to the EP.
- Potential spatial extent of the Planning Area and the different zones and thresholds within those areas.
- Environmental, cultural, economic, and social attributes of the Planning Area.

The initial scoping task informed Shell's understanding of:

- The potential cultural and social values and sensitivities of the Planning Area
- The potential functions, interests, or activities that may be affected by Shell's proposed activities.

This, in turn, enabled a more granular search for potentially relevant persons.

Each identified potentially relevant person was assigned to a thematic group e.g., commercial operators, Indigenous People.

These thematic groups and subgroups were tracked across the relevant persons identification process to ensure the process was capturing a broad range of potentially relevant persons. For example, early review of identified relevant persons in the thematic grouping of commercial operators highlighted limited geographic and thematic (subgroup) coverage and a corresponding need for increased search efforts in this thematic area.

Hence, targeted key word searches were also used to identify potentially relevant persons, such as Indigenous and non-Indigenous tourism operators with activities in the marine environment. As each thematic grouping evolved, it became the target of systematic on-line searches to identify additional persons or organisations whose functions, interests, or activities may be affected by the project activities.

Other initiatives included (see Table 5-4):

- posting public notices;
- convening drop-in sessions and indigenous forums; and
- asking already identified relevant persons whether they were aware of any other persons Shell should contact.

### 5.5.2 Description of Research Methodology

Table 5-4 presents the research methodology used during the search for relevant persons. A comprehensive review was conducted using a range of research activities to inform the identification of relevant persons. The details of, and methodology adopted during each research activity is presented in Table 5-4.

**Table 5-4: Research Methodology**

<b>Research Activity</b>	<b>Detail</b>
1. Existing Shell Australia database reviews	Shell holds an extensive database of organisations and persons identified for projects and existing operations, including from the Crux Offshore Project Proposal and Prelude Floating Liquefied Natural Gas (FLNG) facility) located off the Western Australian coastline. Existing relevant person datasets and associated recent relevant persons correspondence were reviewed in January 2023. These were merged into a register of potentially relevant persons.
2. Review of public databases and spatial	A comprehensive review of publicly available databases to identify physical receptors, environmental, social and cultural values and sensitivities overlapping with the Planning Area and a further 50 km

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mapping of datasets	<p>buffer was conducted. Searches of databases were also undertaken for cultural heritage (Indigenous and non-Indigenous). The 50 km buffer allowed us to be prudent by going beyond the Planning Area in case a relevant person or social and cultural values could be identified at the edge of the Planning Area.</p> <p>Searches included the following:</p> <ul style="list-style-type: none"> <li>• National Native Title Tribunal (NNTT) register of Native Title Registrations, Claims, Determinations (including Prescribed Body Corporates (PBCs) and Registered Native Title Bodies Corporate (RNTBC) for the determinations), Future Acts and Indigenous Land Use Agreements.</li> <li>• Spatial data from the NNTT database to identify Land Councils and NT Aboriginal Trusts, and any additional Native Title material was extracted for the Planning Area.</li> <li>• Protected Areas including legislated lands and waters of WA and NT (e.g. Commonwealth and National Parks and Reserves), WA Lands of Interest, RAMSAR Wetlands, Australian Marine Parks, Indigenous Protected Areas (IPAs).</li> <li>• Heritage Areas including world and national heritage listed places, WA Heritage Council State Register, WA Heritage List, WA Heritage Council Local Heritage Survey, NT Heritage Register.</li> <li>• WA Aboriginal Cultural Heritage database and WA Aboriginal Cultural Heritage Survey database. (Where available information on knowledge holders was also extracted.)</li> <li>• Application made to the Aboriginal Areas Protection Authority (AAPA) requesting Abstract of Record for the Planning Area within Territorial waters.</li> <li>• Petroleum exploration and operations license holders.</li> <li>• Key Ecological Features (KEFs) and Biologically Important Areas (BIAs).</li> <li>• Underwater cultural heritage including the Australasian Underwater Cultural Heritage Database.</li> <li>• Local Government Authorities and Town Councils.</li> <li>• Population centres including Indigenous communities (Indigenous, remote, town based, seasonal and permanent).</li> <li>• Military land.</li> <li>• Commonwealth fisheries, state and territory fishers, aquaculture license holders and pearl lease holders.</li> </ul> <p>Spatial mapping of datasets enabled an understanding of overlaps with the Planning Area.</p>
3. Review of background reports and supporting information for database searches	<p>Using the outcomes of the initial database searches (refer to research activity 2.), relevant supporting information was accessed and reviewed to inform the identification of potentially relevant persons and organisations, their functions, interests, or activities. Key supporting information reviewed included:</p> <ul style="list-style-type: none"> <li>• Native Title application documents and any associated court documents, Indigenous Land Use Agreements (ILUAs) and Future Acts. This review identified potentially relevant RNTBCs, PBCs and RATSIBs organisations as well as individual Indigenous people and family groups. Saturation was reached once all identified Native Title claims, determinations etc. within the Planning Area (including the additional 50 km buffer) were exhausted.</li> </ul>

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	<ul style="list-style-type: none"> <li>• WA Aboriginal cultural heritage survey reports overlapping with the Planning Area. Research organisations, Indigenous organisations and Indigenous Knowledge Holders were identified as potentially relevant persons. This review informed an understanding of overlapping cultural and social values in the Planning Area.</li> <li>• Management plans associated with identified protected areas, KEFs and BIAs, such as Australian Marine Parks. This process identified relevant persons (people and organisations) including Indigenous Groups with research interests in the marine environment.</li> <li>• Management plans and future application plans for all identified IPAs.</li> <li>• Health Country Plans for all Land Councils identified through database searches.</li> <li>• WA State of the Fisheries Report (2020/21) (DPIRD, 2021) with a focus on the WA fisheries overlapping with the Planning Area and Bio Regions.</li> <li>• Commonwealth Fisheries reports.</li> </ul>
4. Review of research journals	An online search for journal articles related to Saltwater People, Totems and Indigenous use of sea-country was conducted to inform an understanding of cultural values potentially overlapping with the Planning Area. This process also identified potentially relevant persons (persons and organisations) (e.g., Indigenous groups who identify as Saltwater People).
5. Targeted review of websites and other sources associated with Indigenous Organisations	<p>In addition to searches and assessments listed above in points 2, 3 &amp; 4, also considered was:</p> <p><b>Representation:</b></p> <ul style="list-style-type: none"> <li>• By whom and what organisation as well as legal standing of the organisation;</li> <li>• Parties to ILUAs that have since had a native title determination made over the Planning Area;</li> <li>• If an Aboriginal Corporation was an appointed LACHS;</li> <li>• A targeted review of all Land Council, RNTBC and PBC websites and social media platforms was undertaken to identify potentially relevant persons (persons and organisations) and their interests, functions or activities overlapping with the Planning Area;</li> <li>• Importantly this process enabled the outcomes of the KEFs and BIA database searches (refer to research activity 2.) to be considered within the context of Indigenous cultural values (i.e., totems, cultural activities and Indigenous land and resource use activities). This process informed the identification of some geographically remote organisations as potentially relevant persons.</li> </ul>
6. Targeted review of websites for peak bodies	A targeted review of the websites and social media platforms associated with a range of peak bodies, representing interests identified through database searches (e.g., recreational fishing, commercial fishing, commonwealth fisheries) was undertaken to confirm functions, interests, or activities, and to identify additional and related potential relevant persons (persons and organisations) and their interests, functions or activities overlapping with the Planning Area. This review included recreational and commercial fisheries including aquaculture activities.
7. Targeted review of websites for Local	A targeted review of the websites and social media platforms associated with Local Government Authorities (LGAs) identified

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Government Authorities	through the database searches and spatial mapping was undertaken to identify additional potentially relevant persons and to scope functions, interests, or activities of each relevant local government authority. This process, representing interests identified through database searches (such as recreational fishing, commercial fishing, commonwealth fisheries), was conducted to confirm functions, interests, or activities, and to identify additional and related potentially relevant persons (persons and organisations) and their interests, functions or activities overlapping with the Planning Area.
8. Review of local community directories	Where available on the internet, a search of local community services directories for each Local Government Area with an area intersecting the Planning Area for potentially relevant persons (people and organisations) and associated functions, interests or activities was conducted. This process identified a number of interest groups, service providers, sport and recreation organisations as well as accommodation providers.
9. Targeted keyword search for Indigenous and non-Indigenous commercial operations	An online search for potentially relevant persons (persons and organisations) using key words and place-based search terms (e.g. fish+Broome, swim+Eighty Mile Beach) was conducted. Table 5-5 lists the key search terms used.
10. Broad based keyword search	Online searches for potentially relevant persons (persons and organisations) were deployed systematically, with search terms such as 'Broome + water sports' and 'Exmouth + tourism'. Table 5-5 lists the key search terms used. Search results were interrogated until limitations became evident.
11. Public advertising campaign and engagement with identified relevant persons	Shell also sought to identify potentially relevant persons by placing advertisements in local, regional and national print, social media and broadcast media. During engagement activities, such as the forums and community sessions outlined in this EP, Shell also encouraged relevant persons to share and communicate with those whom they considered may be relevant and those who self-identified.
12. Crux Offshore Project Proposal persons or organisation who made public comment	The Crux Offshore Project Proposal was published for public comment during the assessment process. There were no limitations on where public comments could come from.

**Table 5-5: Key Internet Search Terms**

Search Terms
aboriginal art centres + Broome
aboriginal art centres + Derby
beach accommodation + Broome /Kimberley/Eighty Mile Beach/Exmouth/Quondong Beach/Dampier Peninsula
beachfront accommodation + Broome /Kimberley/Eighty Mile Beach/Exmouth/Quondong Beach/Dampier Peninsula
bird watching + Broome /Kimberley/Eighty Mile Beach/Exmouth/Quondong Beach/Dampier Peninsula
Broome + helicopter
Broome academic + research organisation
caravan parks + Kimberley + Western Australia

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Search Terms
coastal accommodation + Kimberley Western Australia
commercial fishing + Northern Territory
commercial fishing + Western Australia
conservation + Broome /Kimberley/Eighty Mile Beach/Exmouth/Quondong Beach/Dampier Peninsula
cultural experiences + Broome
cultural experiences + Carnarvon
cultural experiences + Ningaloo
cultural tours + Karratha
Exmouth academic + research organisation
fishing tours + Broome
Indigenous fishing + Northern Territory
Indigenous Protected Areas + Australia
Land Council + Northern Territory
Land Council + Western Australia
Mud Bay + Northern Territory
[name of Local Government] + community directory
Native Title + Northern Territory
Native Title + Western Australia
ocean views hotel + Broome /Kimberley/Eighty Mile Beach/Exmouth/Quondong Beach/Dampier Peninsula
Sea Country + Northern Territory
Sea Country + Totems
Sea Country + Western Australia
surf + Broome /Kimberley/Eighty Mile Beach/Exmouth/Quondong Beach, Dampier Peninsula
surf lifesavers + Broome/Kimberley/Eighty Mile Beach/Exmouth/Quondong Beach/Dampier Peninsula
things to do + Broome /Kimberley/Eighty Mile Beach/Exmouth/Quondong Beach/Dampier Peninsula
Tiwi Island Charters
totem + Tiwi/sawfish/whale/dolphin/turtle
tourism + Beachfront accommodation + Broome /Kimberley/Eighty Mile Beach/Exmouth/Quondong Beach, /Dampier Peninsula
tours + Broome
tours + Exmouth
volunteer and emergency services + Broome
volunteer and emergency services + Darwin
volunteer and emergency services + Exmouth
volunteer and emergency services + Onslow
water sports + Kimberley + Western Australia
watersports or water sports +Broome /Kimberley/Eighty Mile Beach/Exmouth/Quondong Beach/Dampier Peninsula

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During the initial scoping task, two thematic groupings of relevant persons were identified as having particularly defined functions, interests and activities in the Crux Seabed Survey EP Planning Area: Indigenous people and commercial fishing operators.

Further and targeted effort was taken to identify relevant persons within each of these thematic groups. A further two thematic groups: Interest groups and commercial operators, were also identified as having potential relevant persons (particularly organisations) with defined interests and activities in the Planning Area. Further efforts were applied to identify relevant persons in these thematic groups.

A description of the methodology for the identification of relevant persons in the thematic groups of Indigenous People, commercial fisheries, commercial operators and interest groups, and the relevance of these groups for the Crux project, is set out below.

### 5.5.2.1 Indigenous People

Shell has a history of engaging with Indigenous People at various levels, including local communities, Indigenous groups (Native Title determined or otherwise), and governing bodies. Shell has a deep appreciation and respect for the Traditional Owners and Custodians of the land and seas where it operates, and the importance of all Indigenous People nationwide. This extends to the Crux project. For the purposes of consultation all the differing attributes described above encompass “Indigenous People”.

Offshore project activities can intersect with Sea Country – a part of the landscape that is equally important to Indigenous People as Land Country. Many elements within Sea Country are deeply rooted in Indigenous cultures, including their history and creation stories. Marine life, cultural sites, and places of significance are directly connected to the wellbeing and everyday life of Indigenous Peoples. Further, the health and wellbeing of Sea Country is one and the same as the health and wellbeing of the Indigenous People themselves. The approach to the identification of Indigenous People as relevant persons is guided by Indigenous relationship to Sea Country. These features, values and sensitivities are described in detail within Sections 7.3.1 and 7.3.2.

Additional methods (apart from those described in Figure 5-3) of identifying Indigenous People that may be relevant persons included the following activities:

- Identification and review of the total values and sensitivities of the physical environment that may be affected by the planned activities for each EP, including the spatial extent of the activities;
- Desktop research to identify any published Sea Country research (including anthropological reports where available) that could identify marine and avian species that may represent spiritual totems, relevant to the activities in the EP;
- Review of available Indigenous cultural heritage survey reports (including ethnographic reports) and supporting information for selected Indigenous cultural heritage sites identified within the Planning Area.
- Further research based around sub groupings as described below.
- Direct requests to relevant land councils or representative bodies to further identify any relevant persons.
- Any person identified by another relevant person or representative body where they consider it appropriate for cultural or other reasons (i.e. ownership of a particular site).

Shell acknowledges that existing data or information relating to Sea Country values and sensitivities both public and from other sources is currently limited and does not exist to the same degree as research on Land Country.



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#### **5.5.2.1.1 Native Title Holders**

Native Title recognises the traditional rights and interests to land and waters of Indigenous People. Native Title Holders are recognised by Australian legal systems as being the true owners of land and sea within determination boundaries. For the purposes of the relevant persons identification process, all Native Title applicants, determined or otherwise, were regarded as relevant for the EP consultation process. The identification process was extended beyond the western construct of mappable boundaries and approached the concept of relevance of Indigenous groups and individuals with a degree of flexibility. Where one group's Native Title boundaries may not intersect with the Planning Area, they may still hold values and interests within that Planning Area. To this end, initial searches conducted included all Native Title applications and determinations adjacent or intersecting the Planning Area.

Using spatial data from the NNTT database, all relevant Native Title information (i.e., claims, registrations, determinations and ILUAs) were extracted for the Planning Area. All applications, supporting information (where available) and court outcomes (where available) were interrogated. Saturation was reached once all identified Native Title applicants within the Planning Area were exhausted. A description of Native Title holders and their proximity to the Planning Area are described in Section 7.3.1.2 and Figure 7-9.

The names of Native Title holders were identified on the extracted Native Title information. Identified relevant persons included individuals and organisations (drawing on the NOPSEMA Consultation Guidelines that relevant persons can indeed be individuals, organisations or groups).

#### **5.5.2.1.2 Native Title and First Nations Representative Bodies**

Using the same process as described in Section 5.5.2.1.1, together with the strong working knowledge of Native Title and Indigenous governance structures held by Shell personnel, Native Title Representative Bodies (NTRB), Prescribed Bodies Corporate (PBCs), Registered Native Title Body Corporate (RNTBCs) and Native Title Service Providers (NTSPs) were identified. NTRBs and NTSPs are funded by the National Indigenous Australians Agency to assist native title claimants and holders. The NTRB and NTSPs can also be referred to as RNTBCs, PBCs and can also be within site within Representative Aboriginal/Torres Strait Islander Body Areas (RATSIBs).

NTRB and NTSPs were generally identified directly from the NNTT catalogue entries and included the Northern Land Council (NTRB) within the Northern Territory RATSIB Area, Kimberley Land Council (NTRB) within the Kimberley RATSIB Area, Yamatji Marlpa Aboriginal Corporation (NTRB) within the Pilbara RATSIB Area and NTRB within the Geraldton RATSIB Area. These NTRBs have a function in relation to the administration of Native Title and represent Native Title Holder interests in relation to existing Native Title claims and determinations that extend into Sea Country. They may also be the contact point for specific RNTBCs, PCBs or native title applicants for the purpose of consultation. Where this is the case, it is identified for the particular person or organisation in Appendix B.

#### **5.5.2.1.3 Land Councils**

Aboriginal Land Councils (Land Councils) have the legal power to help Indigenous People negotiate with governments and private companies over projects on their land. They also support Indigenous People to manage their land and sea, including issuing permits to enter, fish, film and perform other activities on Aboriginal land. Land Council boundaries in the WA and NT were reviewed through the databases searches and Land Councils with area intersecting the Planning Area were identified as potentially relevant persons. Saturation was achieved through spatial mapping and the identification of Land Council areas with borders or overlap with the Planning Area.

Systematic searching of the websites of potentially relevant Land Councils enabled further interrogation of potential functions, interests, or activities. Land and Sea Ranger Groups and programs associated with Land Councils were identified through these searches. Health Country



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Plans were also identified and reviewed and provided vital information to understand values and sensitivities (e.g., Sea Country use and/or totems that potentially overlapped with the Planning Area).

#### **5.5.2.1.4 Aboriginal Trusts**

Aboriginal Trusts were established under the *Aboriginal Land Rights (Northern Territory) Act 1976* (ALRA). ALRA recognises the traditional ownership and occupation of the land by Indigenous People and the importance of their connection to land. In the NT, Traditional Owners can be granted Aboriginal freehold land ownership under the ALRA. The ownership of this land is held by Land Trusts, which are in turn managed by Land Councils.

Under the ALRA Traditional Owners have exclusive rights over their land and they have a level of say about what happens on that land and the ability to make conditions for how their land is used should they agree to an organisation using it. Spatial mapping of Aboriginal freehold land across the NT, and the identification of the associated Aboriginal Trusts was undertaken as part of the search for potentially relevant persons. This also included a search for any Aboriginal Trusts associated with Aboriginal freehold land that intersected with or was adjacent to the Planning Area.

#### **5.5.2.1.5 Aboriginal Corporations**

Aboriginal and Torres Strait Islander Corporations (Aboriginal Corporations) are registered under the *Corporations (Aboriginal and Torres Strait Islander) Act 2006* (CATSI Act) and includes RNTBCs. The identification of Aboriginal Corporations was conducted primarily through the interrogation of Traditional Owner websites and Healthy Country Plans. When a Traditional Owner group did not have a website, searches were conducted through search engines and social media to identify Facebook accounts and/or news or media articles.

#### **5.5.2.1.6 Family Groups and Individuals**

Family groups and Individuals were identified independent of Native Title information. The rationale for this is based on the Tipakalippa Decision; family groups and individuals may hold different values and interests from those of the Native Title Holders as a collective group. These relevant persons are difficult to identify through desktop research and other communications channels, such as public advertisements and community consultation was also conducted in order to enable other relevant persons to self-identify. The list of relevant persons was derived from a comprehensive review of Native Title information, Health Country Plans, Land Council websites, plans of management for protected areas including National Parks and Marine Parks, WA Aboriginal cultural heritage survey reports, government websites and media. An abstract of records for all land intersecting with the Planning Area from NT AAPA provided further information used to identify potential sacred sites (recorded and registered) and enable sourcing of knowledge holder information.

#### **5.5.2.2 Commercial Fisheries**

One of the primary relevant persons with activities that may be impacted by project activities in the Planning Area is commercial fishers. Shell used a variety of resources, including data files and fishery reports, to identify relevant persons according to the criteria set out above. The method of identifying potential commercial fishers that may be relevant persons included the following activities:

- Identified and mapped designated State, Territory (where available) and Commonwealth Fisheries overlapping with the Planning Area and identified spatial overlaps with the four Crux Planning Areas.
- Identified concession holders for overlapping Commonwealth Fisheries and obtained concession holder contact details from AFMA (letters were sent to all in the EP Planning Areas).
- For WA Managed Fisheries:

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- o Identified 60Nm fish cube areas overlapping with each Planning Area and applied to DPIRD for effort and catch data for each WA fishery for fish cubes that were within a planned impact area (e.g. noise) based on modellings.
- o Obtained concession holder contact details for overlapping WA Managed fisheries within the EP Planning Areas (letters were sent to all in the EP Planning Areas)
- Applied to NT Fisheries for information on effort and catch data and concession holder contact details within the identified NT commercial fisheries.
- Reviewed WA State of the Fisheries Report 2020/21 to inform an understanding of effort and catch in the identified WA fisheries, including permit holders.
- Systematic on-line search and review for the websites of peak commercial fishing industry bodies including Western Australia Fishing Industry Council Inc (WAFIC), Northern Territory Seafood Council and the Northern Prawn Fisheries Industry (NPMI).
- Engagement of WAFIC to assist in identification and consultation with relevant WA managed fisheries.

### 5.5.2.3 Traditional Indonesian Fishers

As described in Section 7.3.5.1, Traditional Fishing, the planning area overlaps the MoU Box. However, Indonesian traditional fishing effort is focussed on shallow waters such as those at Seringapatam Reef and the Scott Reef complex where target sedentary reef-species are generally encountered, rather than the deep waters of the operational area.

The MoU Box overlaps Australian waters, and the majority of traditional fishing activities occur at locations such as reefs and islands within AMPs whose values are described in Section 7.3.4. The AMPs are managed by the Director of National Parks with whom Shell has consulted with on this activity.

During consultation in September 2023, AFMA confirmed that it does not directly license or regulate the traditional fishers that may be operating in the MoU Box, nor do they maintain a register of contact details for these Indonesian traditional fishers. As there is no requirement for traditional fishers to be licensed by either the Australian or Indonesian governments, there is no publicly available information to identify these individuals.

The obligation to identify relevant persons for the purpose of consultation must be reasonably capable of discharge within a reasonable time, and all relevant persons must be ascertainable. The opacity as to the identity of any traditional fishers operating within the MoU Box has meant that Shell has been unable to identify or make contact with traditional fishers in a manner which is considered to be both reasonable and workable.

Shell has identified a group of relevant persons that may be potentially affected, but is unable to confirm individual contact details as these are not ascertainable through normal mechanisms (e.g. associated Australian or Indonesian government agencies, organisations or representative bodies who hold these details or who can advise who these individuals are). As such, consulting with such relevant persons is not capable of being discharged within a reasonable time due to the “opacity as to the identity of those with whom consultations are to take place”<sup>5</sup>.

Nevertheless, it can be inferred that the interests of traditional fishers (healthy fish communities) would be the same as those licensed commercial fishers operating in Australia that Shell has been able to contact via Commonwealth and State/Territory agencies such as AFMA, WA DPIRD, DITT and WAFIC. It is considered that feedback received by Shell, in relation to potential impacts to fish communities (toxicity) and damage to fish stocks, would be similar to traditional fishers in the MoU Box who share the same interests.

<sup>5</sup> Appeal Decision paragraph [136].

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Consultation outcomes from Commonwealth and State/Territory agencies in relation to commercial fisheries included some aspects of Shell’s preparedness in response to an unplanned oil spill event and impacts to fisheries. Shell confirmed that its operational and scientific monitoring plan (OSMP) includes suitable monitoring programs to determine the impact of oil spill on commercial, traditional and recreational fisheries, which includes various assessments depending on type, nature and scale of the spill. In the event of an unplanned oil spill, consultation with the Indonesian government will be managed by DFAT.

#### **5.5.2.4 Commercial Operators**

Commercial operators form a large group of identified relevant persons for this EP. Commercial operators include tourism operators and marine transport operators. Commercial operators were primarily identified through online searches (including purposive and snowballing searching) coupled with expert and local knowledge. Online searches were deployed systematically, with search terms such as ‘Broome + water sports’ and ‘Exmouth + tourism’ used (see Table 5-5 for full list of search terms used). Search results were interrogated until saturation became evident.

#### **5.5.2.5 Interest Groups**

Interest groups form a large proportion of relevant persons who are difficult to identify through desktop research. Interest groups are defined as casual and formal collections comprised of members of the public who have an interest that lies within one or more of the Planning Areas. Examples of formal interest groups include conservation and environment focused groups as well as activity-based groups (e.g., Fishing Clubs). Examples of informal interest groups include bird watchers, wreck diving, and history enthusiasts.

Identification of these relevant persons was conducted in two ways: through local knowledge of interest groups likely to exist in the Western Australian setting, and through internet searching key terms (described elsewhere). Saturation is difficult to reach and identify in this category through desktop research alone. Therefore, community consultation and interrogating hyper-local knowledge will be a critical element of the identification process.

### **5.5.3 Identification of Relevant Persons by Category**

The relevant persons identified for the EP as related to the OPGGS(E) Regulations, including the rationale for inclusion, are described in Table 5-6. The research methodology used by Shell to identify relevant persons is described in Table 5-4. Further detail about specific categories of relevant persons referred to in regulation 11A is set out below.

#### **5.5.3.1 Relevant Persons – Regulation 11A(1)(a) (b) and (c)**

These include relevant persons as outlined in the regulation:

- (a) each Department or agency of the Commonwealth to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant.
- (b) each Department or agency of a State or the Northern Territory to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant.
- (c) the Department of the responsible State Minister, or the responsible Northern Territory Minister

#### **5.5.3.2 Relevant Persons – Regulation 11A(1)(d)**

Persons whose functions, interests or activities may be affected by the activities to be carried out under an environment plan are relevant persons under regulation 11A(1)(d). Relevant persons considered to meet the requirements of regulation 11A(1)(d) have been identified based on:

- An assessment of the totality of the relevant environment, values and sensitivities and potential activity impacts and risks.

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- The overlap of functions, interests, or activities with the operational and planning areas.
- Desktop research, as summarised above.
- Advertisements and other public publications and broadcasts, described below.

Persons or organisations were contacted directly through email, telephone and/or mail. This included information on consultation method and channels available for communication.

The list of relevant persons identified was not exhaustive and was further refined as consultation progressed, including any additional relevant persons that self-identified such as through the broadcast and print media advertising campaign.

#### **5.5.3.3 Relevant Persons – Regulation 11A(1)(e)**

Regulation 11A(1)(e) pertains to any other person or organisation that the titleholder considers relevant. Persons or organisations who self-identified were considered if they should be identified as relevant persons assigned to this category, this consideration is further detailed in Table 5-6.

#### **5.5.3.4 Not relevant persons - Regulation 11A**

Where Shell received feedback relevant to general project or business operations, these questions or comments were responded to and managed as part of Shell's standard community consultation mechanisms and processes. Most of these queries related to job opportunities or enquiries on becoming a supplier to Shell. All persons who self-identified through the public advertisement campaign, were provided an information pack, including factsheets on the EPs, to enable them to determine whether their functions, interests or activities would be impacted. Where no further response was received, these persons were not categorised as relevant persons for the purposes of this EP.

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**Table 5-6: Assessment of Relevant Persons for the Seabed Survey Environment Plan**

<b>Organisation Name</b>	<b>Group</b>	<b>Rationale</b>	<b>Relevant for the Seabed Survey EP</b>	<b>Link to OPGGS(E)R 2009 Regulation 11A Category</b>
<b>Commonwealth and State Government Departments or Agencies</b>				
<b>Department of Defence</b> Including the Australian Hydrographic Office	Defence	Manage the development, maintenance and disposal of the Defence estate, including unexploded ordnance. AHO is a relevant agency for consultation when nautical products or other maritime safety information is required to be updated.	Yes	11A 1(a)
<b>Australian Maritime Safety Authority (AMSA)</b>	Maritime	Responsible for maritime safety, adherence to advice, protocols, regulations. Issue radio-navigation warnings.	Yes	11A 1(a)
<b>Australian Communications and Media Authority (ACMA)</b>	Media	Responsible for matters relating to maritime communications and licensing, as well as matters relating to telecommunications networks.	Yes	11A 1(a)
<b>Australian Fisheries Management Authority (AFMA)</b>	Environment	Responsible for the efficient management and sustainable use of Commonwealth fish resources. Activity is within a Commonwealth fishery area. AFMA expects petroleum operators to consult directly with fishing operators or via their fishing association body about all activities and projects which may affect day to day fishing activities.	Yes	11A 1(a)
<b>Director of National Parks (DNP)</b>	Environment	The Director of National Parks is a corporation established under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), the principal Commonwealth legislation for establishing and managing protected areas. The corporation is constituted by the person appointed to the office named the Director of National Parks.	Yes	11A 1(a)
<b>National Native Title Tribunal (NNTT)</b>	Native Title	Commonwealth government authority responsible for administering the Native Title Act 1993 (Cth) across multiple functions including reviews, mediations, and determinations for: Native title applications, and ILUAs.	Yes	11A 1(a)
<b>Australian Border Force (Maritime Border Command)</b>	Maritime	Responsible for maritime security. Deters and prevents illegal activities in the Australian Marine Domain.	Yes	11A 1(a)
<b>Department of Foreign Affairs (DFAT)</b>	National	Facilitates international relations with governments and other organisations. Specifically, DFAT will have functions relating to oil spills in international waters or foreign countries jurisdictions.	Yes	11A 1(a)
<b>Clean Energy Regulator (CER)</b>	Regulator	Responsible for the administration of schemes legislated by the Australian Government for measuring, managing, reducing, or offsetting Australia's GHG emissions.	Yes	11A 1(a)

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<b>Department of Jobs, Tourism, Science and Innovation (JTSI)</b>	WA Department	Deliver initiatives on behalf of the WA Government that supports the full spectrum of economic activity in WA, including large-scale mining and industrial operations.	Yes	11A 1(b)
<b>Department of Primary Industries and Region Development (DPIRD) – Fisheries Division</b>	WA Department	Department responsible for management of WA State fisheries - including licence holders, and maintenance of fisheries.	Yes	11A 1(b)
<b>Department of Climate Change, Energy, the Environment and Water (DEECCW)</b>	Commonwealth Department	Responsible for preventing, responding to and recovering pests and diseases that threaten the economy and environment. Responsible for protecting Australia's ocean systems, threatened marine species and coastal blue carbon ecosystems.	Yes	11A 1(a)
<b>Department of Industry, Science, and Resources (DISR)</b> Including NOPTA	Commonwealth Department	Responsible for the OPGGSA. They are the policy maker for the offshore petroleum sector.	Yes	11A 1(a)
<b>The Department of Agriculture Fisheries and Forestry's (DAFF)</b>	Commonwealth Department	DAFF maintain and create agricultural export opportunities, to provide gains for Australian agriculture, fishing and forestry. They manage biosecurity risks to Australia to protect our multi-billion-dollar industries and our way of life. They engage with international counterparts to reinforce Australia's role in shaping how the global agriculture and fibre sector addresses food security, productivity, trade, sustainability and the impacts of climate change.	Yes	11A 1(a)
<b>Department of Transport (DoT)</b>	WA Department	Legislated responsibility for oil pollution response in State Waters.	Yes	11A 1(b)
<b>Department of Water &amp; Environmental Regulation (DWER)</b>	WA Department	The department is responsible for environment and water regulation, serving as a 'one stop shop' for industry and developers, with the aim of streamlining and simplifying regulation.	Yes	11A 1(b)
<b>Federal Member for Kimberley - Melissa Price</b>	WA Federal Member	Member for region that borders or includes much of the Planning Area. Likely to be interested in constituent values and interests.	Yes	11A 1(b)
<b>State Member for Kimberley - Divina Grace D'Anna</b>	WA State Member	State Member for region very close to project area. Likely to have an interest in various aspects of the project.	Yes	11A 1(b)
<b>Environment Protection Authority (EPA)</b>	WA Department	Primary environmental regulator for WA. They partner with business, government and the community to reduce pollution and waste, protect human health, and prevent degradation of the environment.	Yes	11A 1(b)

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<b>Department of Environment, Parks and Water Security (DEPWS)</b>	NT Department	Northern Territory Department of Environment, Parks and Water Security is responsible for the protection of the environment and natural resources in the Northern Territory (NT)	Yes	11A 1(b)
<b>Indigenous Land and Sea Corporation (ILSC)</b>	Statutory Body (First Nations)	An Australian federal government statutory authority with national responsibilities to assist Aboriginal and Torres Strait Islander people to acquire land and to manage assets to achieve cultural, social, environmental and economic benefits for Indigenous peoples and future generations.	Yes	11A 1(a)
<b>Department of Planning Lands and Heritage (DPLH)</b> Including Heritage Council of WA and Aboriginal Cultural Material Committee (ACMC)	WA Department	Responsible for planning and managing all land use and heritage considerations within the state	Yes	11A 1(b)
<b>Aboriginal Areas Protection Authority NT (AAPA)</b>	Non-Government Organisation	The Aboriginal Areas Protection Authority ('the Authority') is an independent statutory authority established under the Northern Territory Aboriginal Sacred Sites Act. The Authority is responsible for overseeing the protection of Aboriginal sacred sites on land and sea across the whole of Australia's Northern Territory.	Yes	11A 1(b)
<b>Department of Biodiversity, Conservation and Attractions (DBCA)</b>	WA Department	Responsible for managing WA's parks, forests, and reserves. Planned activities do not impact DBCA's functions, interests, or activities.	Yes	11A 1(b)
<b>Department of Mines, Industry Regulation and Safety (DMIRS)</b>	WA Department	Its mission is to support a safe, fair and responsible future for the Western Australian community, industry, energy and resources sector.	Yes	11A 1(c)
<b>Department of Industry Tourism and Trade (DITT)</b> Marine safety branch	NT Department	The department supports industry development through globally competitive strategy, policy and promotion and delivers a regulatory framework that enables responsible growth, market access and stakeholder certainty.	Yes	11A 1(c)
<b>Indigenous Organisations and People</b>				
<b>Bardi and Jawi Niimidiman Aboriginal Corporation</b>	RNTBC / Native Title Determination	Statutory function, activities and interests due to role as RNTBC/ PBC for Bardi and Jawi people	Yes	11A 1(d)
<b>Bardi Jawi Rangers</b>	Land and Sea Management	Indigenous Rangers have functions, activities and interests to maintain the health of country and sea - linked to Native Title Determinations, IPA agreements or Federal/ State funding	Yes	11A 1(d)



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<b>Balanggarra Aboriginal Corporation</b>	Native Title Determination	Statutory function, activities and interests due to role as RNTBC/ PBC. KLC confirmed they are the correct contact point.	Yes	11A 1(d)
<b>Dambimangari Wanjina-Wunggurr (Native Title) Aboriginal Corporation</b>	RNTBC	Statutory function, activities and interests due to role as RNTBC/ PBC. Land located adjacent to the Planning Area.	Yes	11A 1(d)
<b>Djarindjin Aboriginal Corporation (DAC)</b>	Aboriginal Corporation	Djarindjin Aboriginal Corporation (DAC) operate the airport for Prelude.	Yes	11A 1(d)
<b>Gogolanyngor Aboriginal Corporation</b>	RNTBC	Statutory function, activities and interests due to role as RNTBC/ PBC. KLC confirmed they are the correct contact point.	Yes	11A 1(d)
<b>Jabirr Jabirr/Ngumbarl</b>	Native Title Determination	Statutory function, activities and interests due to role as RNTBC/ PBC	Yes	11A 1(d)
<b>Jaru PBC</b>	PBC	Self-identified through the process.	Yes	11A 1(e)
<b>Joombarn-Buru Aboriginal Corporation</b>	Aboriginal Corporation	Self-identified through the process.	Yes	11A 1(e)
<b>Karajarri People (including Area B)</b>	Native Title Holders/ RNTBC	Statutory function, activities and interests due to role as RNTBC/ PBC. KLC confirmed they are the correct contact point for both Karajarri Traditional Lands Association and Nyangumarta Karajarri Aboriginal Corporation.	Yes	11A 1(d)
<b>Kimberley Indigenous Saltwater Advisory Group (ISWAG)</b>	Advisory Committee	Activities, interests. Peak body representing Balanggarra, Bardi Jawi, Dambimangari, Karajarri, Nyul Nyul, Wunambal, Gaambera, Yawuru, Mayala, Nyangumarta	Yes	11A 1(d)
<b>Kimberley Land Council (KLC)</b>	Land Council	<p>KLC is the peak Indigenous body in the Kimberley region working with Indigenous people to secure native title, conduct conservation and land management activities and develop cultural business enterprises. Also a Native Title Representative Body.</p> <p>KLC identified the following organisations that would have an interest:</p> <ul style="list-style-type: none"> <li>• Nyangumarta Karajarri Aboriginal Corporation;</li> <li>• Karajarri Traditional Lands Association Aboriginal Corporation;</li> <li>• Yawuru Aboriginal Corporation;</li> <li>• Gogolanyngor Aboriginal Corporation;</li> <li>• Wanjina Wunggurr (Native Title) Aboriginal Corporation;</li> <li>• Mayala Inninalang Aboriginal Corporation;</li> <li>• Balanggarra Aboriginal Corporation; and</li> </ul>	Yes	11A 1(d)

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Organisation Name	Group	Rationale	Relevant for the Seabed Survey EP	Link to OPGGS(E)R 2009 Regulation 11A Category
		<ul style="list-style-type: none"> <li>Miriuwung &amp; Gajerrong #1 (Native Title Prescribed Body Corporate) Aboriginal Corporation.</li> <li>Nyul Nyul Aboriginal Corporation;</li> <li>Nimanburr Aboriginal Corporation;</li> <li>Walalakoo Aboriginal Corporation;</li> <li>Warra People Aboriginal Corporation; and</li> <li>Bardi &amp; Jawi Niimidiman Aboriginal Corporation</li> </ul>		
<b>Kimberley Ranger Network</b>	Land and Sea Management	Indigenous Rangers have functions, activities and interests to maintain the health of country and sea - linked to Native Title Determinations, IPA agreements or Federal/ State funding. Activities, interests	Yes	11A 1(d)
<b>KRED</b>	Aboriginal Corporation	Social and economic development across the Kimberley. Functions, activities, interests.	Yes	11A 1(d)
<b>Kullari Regional Communities Incorporated (KRCI)</b>	Community Development	Indigenous not for profit organisation predominantly funded by the Federal Government. A mission to provide Aboriginal People with assistance, programs and activities to enhance individual skills, community self-management, economic development and a pathway to accredited training and employment.	Yes	11A 1(d)
<b>Lombadina Aboriginal Corporation</b>	Aboriginal Corporation	Tourism and commercial activities/ interests	Yes	11A 1(d)
<b>Lombadina Accommodation &amp; Tours</b>	Tourism Operator	Indigenous Tourism Operator near the Planning Area.	Yes	11A 1(d)
<b>Mayala Inninalang Aboriginal Corporation (incl Mayala 2)</b>	RNTBC	Statutory function, activities and interests due to role as RNTBC/ PBC. KLC confirmed they are the correct contact point..	Yes	11A 1(d)
<b>Mowanjum Aboriginal Art &amp; Culture Centre</b>	Art Gallery - Aboriginal Artists	Aboriginal art gallery and representative for Derby artists.	Yes	11A 1(d)
<b>Nagula Jarndu Women's Arts and Resource Centre</b>	Art Gallery - Aboriginal Artists	Commercial Operator with activities in or adjacent to the Planning Area	Yes	11A 1(d)
<b>Ngarrawanji Aboriginal Corporation</b>	PBC	Self-identified through the process.	Yes	11A 1(e)
<b>Northern Australian Indigenous Land and Sea Management Alliance</b>	Land and Sea Management	Indigenous led not-for-profit assisting Indigenous people manage their country.	Yes	11A 1(d)

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<b>Northern Land Council</b>	Land Council	NLC is the peak Indigenous body in the north part of the Northern Territory working with Indigenous people to secure native title, conduct conservation and land management activities and develop cultural business enterprises. Also a Native Title Representative Body.	Yes	11A 1(d)
<b>Nyamba Buru Yawuru and Yawuru Native Title Holders Aboriginal Corporation (include Rubibi Community)</b>	RNTBC	Statutory function, activities and interests due to role as RNTBC/ PBC. KLC confirmed they are the correct contact point.	Yes	11A 1(d)
<b>Nyikina Mangala Rangers</b>	Land and Sea Management	Indigenous Rangers have functions, activities and interests to maintain the health of country and sea - linked to Native Title Determinations, IPA agreements or Federal/ State funding.	Yes	11A 1(d)
<b>Nyul Nyul PBC Aboriginal Corporation</b>	RNTBC	Statutory function, activities and interests due to role as RNTBC/ PBC. This group was identified by the KLC to Shell, including that the KLC is the correct contact point.	Yes	11A 1(d)
<b>Pudakul Aboriginal Cultural Tours</b>	Tourism Operator	Tourism Operator with activities in or adjacent to the Planning Area. Cumulative interests due to being Indigenous operated.	Yes	11A 1(d)
<b>Specialised Indigenous Services</b>	Individual	Descendant and elder of the Bardi Jawi and Karajarri from the West Kimberley. Has strong cultural interest in traditional land and sea country	Yes	11A 1(d)
<b>Walalakoo Aboriginal Corp</b>	RNTBC	Statutory function, activities and interests due to role as RNTBC/ PBC. KLC confirmed they are the correct contact point.	Yes	11A 1(d)
<b>Wanjina-Wunggurr Aboriginal Corporation</b>	RNTBC	Statutory function, activities and interests due to role as RNTBC/ PBC. KLC confirmed they are the correct contact point.	Yes	11A 1(d)
<b>Warrwa Mawadjala Gadjidgar</b>	Native Title Determination	Statutory function, activities and interests due to role as RNTBC/ PBC. KLC confirmed they are the correct contact point.	Yes	11A 1(d)
<b>Individual Indigenous person.</b>	Individual	Self-identified through the process	Yes	11A 1(e)
<b>Wilinggin Aboriginal Corporation</b>	Aboriginal Corporation	Wilinggin Aboriginal Corporation is the agent of Wanjina-Wunggurr Aboriginal Corporation in relation to the interests of the Ngarinyin people and activities on Country, which includes, but is not limited to, management of Indigenous Protected Area (IPA) as well as fire and carbon projects within the Wilinggin native title determination.	Yes	11A 1(d)

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<b>Commercial Fisheries</b>				
<b>Abalone Managed Fishery Licence</b> (25 licence holders)	WA Commercial Fishery	Commercial fishing activities and interests in the Planning Area.	Yes	11A 1(d)
<b>Aquatic Life Group</b>	WA Commercial Fishery	Concession holder for fishing	Yes	11A 1(d)
<b>Broome Prawn</b>	WA Commercial Fishery	Commercial fishing activities and interests in the Planning Area.	Yes	11A 1(d)
<b>Commonwealth Fisheries Association</b>	Industry Representative	Peak body representing the collective rights, responsibilities and interests of a diverse commercial fishing industry in Commonwealth regulated fishers. There are commonwealth regulated fisheries in the Planning Area.	Yes	11A 1(d)
<b>Individual Fishing Licence Holder</b>	Individual	Fishing vessel operator. Self-identified through online form.	Yes	11A 1(e)
<b>Kimberley Crab Managed Fishery Licence</b> (1 licence holder)	WA Commercial Fishery	Commercial fishing activities and interests in the Planning Area	Yes	11A 1(d)
<b>Kimberley Prawn Managed Fishery Licence</b> (65 licence holders)	WA Commercial Fishery	Commercial fishing activities and interests in the Planning Area	Yes	11A 1(d)
<b>Mackerel Managed Fishery Licence</b> (24 licence holders)	WA Commercial Fishery	Commercial fishing activities and interests in the operational area for the Crux project.	Yes	11A 1(d)
<b>Marine Aquarium Fish Managed Fishery Licence</b> (11 licence holders)	WA Commercial Fishery	Commercial fishing activities and interests in the Planning Area	Yes	11A 1(d)

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<b>Northern Demersal Scalefish Managed Fishery Licence</b> (6 licence holders)	WA Commercial Fishery	Commercial fishing activities and interests in the Planning Area.	Yes	11A 1(d)
<b>North-West Slope Trawl Fishery</b> (3 licence holders)	Commonwealth Fishery	Concession holder with permission to fish in Commonwealth Fisheries that intersect with the Planning Area	Yes	11A 1(d)
<b>Pearl Oyster</b>	WA Commercial Fishery	Commercial fishing activities and interests in the Planning Area.	Yes	11A 1(d)
<b>Seafood Industry Association</b>	Industry Representative	Industry representative for Seafood Industry.	Yes	11A 1(d)
<b>South-West Coast Salmon</b> (7 licence holders)	WA Commercial Fishery	Commercial fishing activities and interests in the Planning Area.	Yes	11A 1(d)
<b>Specimen Shell Managed Fishery Licence</b> (30 licence holders)	WA Commercial Fishery	Commercial fishing activities and interests in the Planning Area	Yes	11A 1(d)
<b>West Coast Deep Sea Crustacean Managed Fishery Licence</b> (4 licence holders)	WA Commercial Fishery	Commercial fishing activities and interests in the Planning Area.	Yes	11A 1(d)
<b>Western Australian Fishing Industry Council (WAFIC)</b>	Industry Representative	Industry representative for WA Fishing Industry.	Yes	11A 1(d)
<b>Western Tuna and Billfish Fishery</b> (59 licence holders)	Commonwealth Fishery	Concession holder with permission to fish in Commonwealth Fisheries that intersect with the Planning Area	Yes	11A 1(d)
<b>Australian Southern Bluefin Tuna Industry Association</b>	Industry Representative	Industry representative for commercial fishing of Bluefin Tuna in southern waters of Australia.	Yes	11A 1(d)

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<b>Southern Bluefin Tuna Management Advisory Committee (SBTMAC)</b>	Industry Representative	Industry representative for Southern Bluefin Tuna Management Industry.	Yes	11A 1(d)
<b>Tropical Tuna Management Advisory Committee</b>	Industry Representative	Industry representative for Tropical Tuna Management.	Yes	11A 1(d)
<b>TUNA Australia</b>	Industry Representative	Represents statutory fishing right owners, holders, fish processors and sellers, and associate members of the Eastern and Western tuna and billfish fisheries of Australia.	Yes	11A 1(d)
<b>Titleholders and Operators</b>				
<b>Carnarvon Energy Ltd</b>	Industry	Petroleum proponent holders within the Planning Area	Yes	11A 1(d)
<b>Finder No 1</b>	Industry	Petroleum proponent holders within the Planning Area	Yes	11A 1(d)
<b>Jadestone Energy</b>	Industry	Petroleum proponent holders within the Planning Area	Yes	11A 1(d)
<b>Melbana Energy AC/P70</b>	Industry	Petroleum proponent holders within the Planning Area	Yes	11A 1(d)
<b>PTTEP Australasia (Ashmore Cartier)</b>	Industry	Petroleum proponent holders within the Planning Area	Yes	11A 1(d)
<b>Santos Ltd</b>	Industry	Petroleum proponent holders within the Planning Area	Yes	11A 1(d)
<b>Vulcan Exploration P/L</b>	Industry	Petroleum proponent holders within the Planning Area	Yes	11A 1(d)
<b>INPEX</b>	Industry	Petroleum proponent holders within the Planning Area	Yes	11A 1(d)
<b>Commercial Operators</b>				
<b>Mudz Enterprise</b>	Tourism Operator	Indigenous Tourism Operator near the Planning Area.	Yes	11A 1(d)
<b>Oolin Sunday Island Cultural Tours</b>	Tourism Operator	Indigenous Tourism Operator near the Planning Area.	Yes	11A 1(d)
<b>The Great Escape Charter Company</b>	Tourism Operator	Tourism Operator with activities in or adjacent to the Planning Area.	Yes	11A 1(d)
<b>True North Kimberley Cruises</b>	Tourism Operator	Tourism Operator with activities in or adjacent to the Planning Area.	Yes	11A 1(d)
<b>Unreel Adventure Safaris</b>	Tourism Operator	Tourism Operator with activities in or adjacent to the Planning Area.	Yes	11A 1(d)

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<b>Interest Groups</b>				
<b>Australian Wildlife Conservancy</b>	Environment	NFP focused on conservation of threatened wildlife and ecosystems in Australia.	Yes	11A 1(d)
<b>10,000 Birds</b>	Environment (Birding)	Likely to have interests in project activities that may impact the health, feeding, and breeding grounds of any migratory or seabirds in the Planning Areas.	Yes	11A 1(d)
<b>Australasian Seabird Group</b>	Environment	Established to promote seabird research and conservation in Australasia and the South Pacific.	Yes	11A 1(d)
<b>BirdLife WA</b>	Environment	Peak Body for Birdwatching in WA. Area covers WA as well as Cocos (Keeling) Islands, Christmas Island and Ashmore Reef. 6 regional groups. Carry out research projects with DBCA e.g., Australasian Bittern Recovery Team	Yes	11A 1(d)
<b>Maritime Archaeological Association of Western Australia</b>	History	Interest Group focused on Maritime Archaeology - potential for interests to intersect if Project activities impact any archaeological sites.	Yes	11A 1(d)
<b>North Kimberley Land Conservation Committee</b>	Environment	Environment interest group that intersects on Planning Areas.	Yes	11A 1(d)
<b>Recfishwest</b>	Peak Body	Peak Body for Recreational Fishing in Western Australia.	Yes	11A 1(d)
<b>Non-Government Organisations</b>				
<b>Ben and Jerry's</b>	Environment	Activist with strong interest in climate change, supporting action against sea country petroleum and gas activities.	Yes	11A 1(d)
<b>Exmouth Sea Shepherd</b>	Environment	Environmental activists	Yes	11A 1(d)
<b>Surfrider Foundation Australia</b>	Environment	Dedicated to the protection and enjoyment of the world's ocean, waves and beaches, for all people	Yes	11A 1(d)
<b>Astron Environmental</b>	Consultancy	Environmental consultancy group specialising in environmental management, energy, government, land development and conservation projects	Yes	11A 1(d)
<b>Australian Conservation Foundation</b>	Environment	Recognised conservation organisation with interests in marine environment that likely extent into Planning Area.	Yes	11A 1(d)
<b>Australian Marine Conservation Society</b>	Environment	The Australian Marine Conservation Society (AMCS) is a peak conservation body with strong interest in activities in the marine environment.	Yes	11A 1(d)




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<b>Australian Marine Oil Spill Centre (AMOSC)</b>	Industry	AMOSC has an interest and a function in relation to the management of the oil industry's response to major oil spill. AMOSC's also play a role in training and coordinating industry personnel ready to provide immediate emergency oil spill response.	Yes	11A 1(d)
<b>Conservation Council of WA</b>	Environment	NGO in WA with an Environment focus.	Yes	11A 1(d)
<b>Environmental Defenders Office WA</b>	Environment	The Environmental Defender's office of WA (EDOWA) is a not-for-profit and non-Government organisation that specialises in public interest environmental law.	Yes	11A 1(d)
<b>Environs Kimberley</b>	Environment	Environs Kimberley. Saving the nature of the Kimberley. Donate. As the peak environmental NGO for the Kimberley region in far north-west Australia, Environs Kimberley is dedicated to looking after the health of the land and waters of the region.	Yes	11A 1(d)
<b>Greenpeace</b>	Environment	Activist with strong interest in climate change, supporting action against sea country petroleum and gas activities.	Yes	11A 1(d)
<b>High Seas Alliance</b>	International	The High Seas Alliance is a partnership of organizations and groups aimed at building a strong common voice and constituency for the conservation of the high seas.	Yes	11A 1(d)
<b>Martuwarra Fitzroy River Council</b>	Environment	NGO in WA with an Environment focus.	Yes	11A 1(d)
<b>Protect Ningaloo</b>	Environment	NGO in WA with an Environment focus.	Yes	11A 1(d)
<b>Protecting the Kimberley</b>	Environment	NGO in WA with an Environment focus.	Yes	11A 1(d)
<b>Save the Kimberley</b>	Environment	NGO in WA with an Environment focus.	Yes	11A 1(d)
<b>Sea Turtle.org</b>	Environment	NGO in WA with an Environment focus.	Yes	11A 1(d)
<b>The Wilderness Society</b>	Environment	NGO in WA with an Environment focus.	Yes	11A 1(d)
<b>United Nations</b>	International	The United Nations is an international organisation founded in 1945. Currently made up of 193 Member States, the UN and its work are guided by the purposes and principles contained in its founding Charter. It is a place where all the world's nations can gather together, discuss common problems, and find shared solutions that benefit all of humanity.	Yes	11A 1(d)
<b>WA Marine Science Institute</b>	Environment	NGO with Environment protection focus that will have interest in Planning Area and project activities.	Yes	11A 1(d)
<b>WA Parks Foundation</b>	Environment	NGO in WA with an Environment focus.	Yes	11A 1(d)

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<b>Wilderness Society</b>	Environment	NGO with Environment protection focus that will have interest in Planning Area and project activities.	Yes	11A 1(d)
<b>WWF</b>	Environment	NGO with Environment protection focus that will have interest in Planning Area and project activities.	Yes	11A 1(d)
<b>Academic and Research</b>				
<b>Deep History of Sea Country Research Project</b>	Academic Project	The Deep History of Sea Country Research Project is a collaborative research initiative that aims to document and preserve the cultural and environmental heritage of Indigenous Sea Countries in northern Australia. The project involves a range of Indigenous and non-Indigenous researchers, community members, and relevant persons, and focuses on using traditional knowledge, scientific research, and technological innovation to better understand and protect Australia's marine environments.	Yes	11A 1(d)
<b>Fisheries Research and Development Corporation (FRDC)</b>	Fisheries	Statutory corporation that manages research and development investment by the Australian Government and the Australian fishing and aquaculture commercial, recreational and Indigenous sectors	Yes	11A 1(d)
<b>Industry Representative Bodies</b>				
<b>Australian Petroleum Production &amp; Exploration Association (APPEA)</b>	Industry Representative	APPEA is the peak national body representing Australia's upstream oil and gas sector.	Yes	11A 1(d)
<b>Self-identified via online form</b>				
Person 1	Individual	Interested in the Crux Installation and Cold Commissioning EP.	No	-
Person 2	Individual	Seeking a job at Shell.	No	-
Person 3	Individual	Interested in the Crux project.	No	-
Person 4	Individual	Interested in the Crux project.	No	-
Person 5	Individual	Interested in the Crux project.	No	-
Person 6	Individual	Seeking a job at Shell.	No	-
Person 7	Individual	Interested in the Crux project.	No	-

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Person 8	Individual	Seeking a job at Shell.	No	-
Person 9	Individual	Seeking a job at Shell.	No	-
Person 10	Individual	Seeking a job at Shell.	No	-
Person 11	Individual	Interest in Broome for the Crux Seabed Survey EP.	No	-
Person 12	Individual	Seeking a job at Shell.	No	-
Person 13	Individual	Seeking a job at Shell.	No	-
Person 14	Individual	Interested in the Crux project.	No	-
Person 15	Individual	Interested in the Crux project.	No	-
Person 16	Individual	Seeking a job at Shell.	No	-
Person 17	Individual	Seeking a job at Shell.	No	-
Person 18	Individual	Interested in the seabed.	No	-
Person 19	Individual	Interested in Crux.	No	-
Person 20	Individual	Seeking a job at Shell.	No	-
Person 21	Individual	Seeking a job at Shell.	No	-
Person 22	Individual	Interested in Environmental Plans	No	-
Person 23	Individual	Interested in Telecom Commissioning.	No	-
Person 24	Individual	Seeking a job at Shell.	No	-
Person 25	Individual	Seeking a job at Shell.	No	-
Person 26	Individual	Interested in the Crux project.	No	-
Person 27	Individual	Seeking a job at Shell.	No	-
Person 28	Individual	Seeking a job at Shell.	No	-
Person 29	Individual	Drilling.	No	-

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<b>Organisation Name</b>	<b>Group</b>	<b>Rationale</b>	<b>Relevant for the Seabed Survey EP</b>	<b>Link to OPGGS(E)R 2009 Regulation 11A Category</b>
Person 30	Individual	Seeking a job at Shell.	No	-
Person 31	Individual	Interested in the Crux project.	No	-
Person 32	Individual	Seeking a job at Shell.	No	-
Person 33	Individual	Interested in Subsea operations.	No	-
Person 34	Individual	Seeking a job at Shell.	No	-
Person 35	Individual	Not relevant – just anti oil and gas	No	-
Person 36	Individual	Interested in monitoring equipment	No	-
Person 37	Individual	Interested in offshore projects.	No	-
Person 38	Individual	Interested in laboratory / production	No	-
Person 39	Individual	Seeking a job at Shell.	No	-
Person 40	Individual	Seeking a job at Shell.	No	-
Person 41	Individual	Interested in the Crux project.	No	-
Person 42	Individual	Seeking a job at Shell.	No	-
Person 43	Individual	Interested in the Crux project.	No	-
Person 44	Individual	Interested in the Crux project.	No	-
Person 45	Individual	Interested in the Crux project.	No	-
Person 46	Individual	Seeking a job at Shell.	No	-
Person 47	Individual	Seeking a job at Shell.	No	-
Person 48	Individual	Seeking a job at Shell.	No	-
Person 49	Individual	Interested in the Crux project.	No	-
Person 50	Individual	Seeking a job at Shell.	No	-
Person 51	Individual	Environmental Harm.	No	-

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<b>Organisation Name</b>	<b>Group</b>	<b>Rationale</b>	<b>Relevant for the Seabed Survey EP</b>	<b>Link to OPGGS(E)R 2009 Regulation 11A Category</b>
Person 52	Individual	Seeking a job at Shell.	No	-
Person 53	Individual	Interested in the Crux project.	No	-
Person 54	Individual	Interested in the project timeline.	No	-
Person 55	Individual	Seeking a job at Shell.	No	-
Person 56	Individual	Interested in the Crux project.	No	-
Person 57	Individual	Interested in the Crux project.	No	-
Person 58	Individual	Interested in the Crux project.	No	-
Person 59	Individual	Interested in the Crux project.	No	-
Person 60	Individual	Seeking a job at Shell.	No	-
Person 61	Individual	Interested in the Crux project.	No	-
Person 62	Individual	Interested in the Crux project.	No	-
Person 63	Individual	Interested in the Crux project.	No	-
Person 64	Individual	Interested in the Crux project.	No	-
Person 65	Individual	Interested in the Crux project.	No	-
Person 66	Individual	Seeking a job at Shell.	No	-
Person 67	Individual	Interested in the Crux project.	No	-
Person 68	Individual	Seeking a job at Shell.	No	-
Person 69	Individual	Interested in the Crux project.	No	-
Person 70	Individual	Interested in the Crux project.	No	-
Person 71	Individual	Seeking a job at Shell.	No	-

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## 5.6 Consultation Approach

### 5.6.1 Providing sufficient information

Sub-regulation 11A (2) requires titleholders to provide relevant persons with sufficient information to allow relevant persons to make an informed assessment of the possible consequences of the proposed activities on their functions, interests, or activities. This section demonstrates that Shell has provided sufficient information to relevant persons because:

- Information provided was detailed enough to allow people to make an informed decision as to how their functions, interests or activities may be affected
- Information provided to relevant persons was tailored to their functions, interests, and activities.
- Further information requested was provided as requested.
- Raised awareness of NOPSEMA's guideline for relevant persons.
- Published the draft EP.

The reasons listed above are expanded on in the following sections.

#### 5.6.1.1 Information given allowed informed decisions by relevant persons

The initial call out for relevant persons, and the iterations of information provided throughout the consultation process was developed to ensure that the relevant person could make an informed decision as to how the activities proposed within the EP could affect their functions interest and activities. This includes the sequencing of information being available to relevant persons from the initial broad advertisements, where links to the EP webpage allowed access to the EP factsheet, so that anyone who was prompted to seek further information from the initial advertisements could access the information detailed within Section 5.6.1.2 below.

#### 5.6.1.2 Tailored information to the relevant persons functions, interests, and activities

In determining information requirements, Shell considered the functions, interests and activities of the relevant persons and the nature and scale of environmental impacts and risks that affect them. Shell recognised that different categories of relevant persons required different levels of consultation effort on this basis. Further, Shell adheres to published guidance for good practice consultation relevant to different sectors and disciplines, as described below. The methodology used by Shell to provide relevant persons with sufficient information is outlined below and the evidence of the information provided can be found in Appendix A.

Materials were developed with subject matter experts, including communications professionals, to ensure the content was comprehensible and appropriate for the recipient. Instead of a 'one size fits all' approach, a suite of materials was developed to support the following communications:

- Crux advertising campaign across print, radio and social media
- Factsheets (sent directly as well as being available on Shell's website);
- Additional information materials, such as additional factsheets or online materials, as well as tailored information requested by a specific relevant person or group, such as Indigenous persons or groups;
- Emails;
- Letters;
- Phone-calls;
- Face-to-face meetings (virtually or face-to-face) with presentation slides and/or take-away materials;

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- Maps outlining the proposed activity and overlaps with a relevant person's area of interest, for example fisheries maps;
- Animations and videos showing the proposed activity;
- Images providing a reference for the proposed activity;
- NOPSEMA's Consultation Brochure;
- Community drop-in sessions;
- Industry briefings;

Further information was provided throughout the consultation process in response to questions or concerns raised, in an iterative manner. The details of this tailored information for each relevant persons depended on the nature of the question or concerns raised.

All these materials were made available to relevant persons through correspondence. The same materials were made available on Shell's website for others (Refer to Appendix A).

- an overview of the activity.
- a location map with relevant exclusion zones.
- the description of the environment.
- a summary of the environmental impacts and risks.
- a summary of the risk mitigation and management control measures.

In addition, Shell also prepared and published factsheets with further information on:

- the obligations of titleholders in consulting on Environment Plans
- the roles and responsibilities of relevant persons.
- the various means relevant persons can self-identify and/or provide feedback or ask questions about the proposed activity.
- specific areas or issues of interest to relevant persons, based on their feedback

#### **5.6.1.3 Provided further information for relevant persons on request**

Shell created targeted consultation material that was appropriate to the category of persons, such as specific information sheets or presentation materials. This was prepared on Shell's own initiative or due to information requested by the relevant person. For example, commercial fishing licence holders and representative bodies received additional information relevant to their fishery, or bespoke information and materials created for Indigenous People, as appropriate (Refer to Appendix A).

To ensure information was appropriately provided to relevant persons, Shell invited feedback, sought advice, provided information, and invited participation in forums or community drop-in sessions. Feedback on the clarity, relevance and usefulness of the materials was adopted from relevant persons throughout the consultations and the information provided was refined and improved because of that feedback (Refer to Appendix A).

#### **5.6.1.4 Raise awareness of NOPSEMA's guideline for relevant persons**

NOPSEMA released its Guideline: *Consultation in the course of preparing an environment plan* (N-04750-GL2086) on 12 May 2023, during the preparation of this EP. The Guideline encourages titleholders to provide relevant persons with a copy of the NOPSEMA Consultation on offshore environment plans Brochure as part of consultation. As soon as Shell became aware of the Brochure, it was posted on Shell's public website and was included in follow-up communications with relevant persons (Refer to Appendix A).



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### 5.6.1.5 Publication of the draft EP

Shell made the draft EP publicly available on the Crux project website on 03 May 2023 as the EP was already drafted at the time the Tipakalippa appeal decision was handed down by the Federal Court. The EP was published to enable relevant persons to self-select additional information, if needed. In doing so, relevant persons were also able to see any information provided in context, and in further detail than the summaries.

### 5.6.2 Providing a reasonable period for consultation

Sub-regulation 11A(3) provides that titleholders must give relevant persons a reasonable period for consultation to occur. Shell allows a minimum of 30 days from the date that sufficient information is provided to a relevant person, for the person to review the information and respond to Shell on the impact that Shell's proposed activities may have on their functions, interests or activities. As noted below, in many cases, where no response is received within a 30 day period, Shell has sent follow-up communications to the relevant persons in question.

Shell recognises that additional time may be required for relevant persons to provide feedback due to availability and accessibility issues and assesses requests for additional time on a case-by-case basis. Shell also recognises that where interests are held communally, such as with Indigenous people, more than 30 days may be required. Where this occurred, it is documented in Table 5-10.

Shell acknowledges that participating in consultation is voluntary for relevant persons, and that in some circumstances Shell may be limited in the form of consultation it can undertake, e.g. if a relevant person does not make contact details available.

If comments are received from relevant persons after submission of the final version of the EP to NOPSEMA they will not have been considered or incorporated into the preparation of appropriate control measures included in the EP. In this event, Shell will consider comments and feedback as part of the Implementation Strategy for the EP (refer Section 10). Should the feedback or comments identify a significant measure or control that requires implementation or update to meet the intended outcome of consultation, Shell will apply its Management of Change and Review process (noting the obligations under regulations 8 and 17 of the OPGGS(E) Regulations).

### 5.6.3 Consultation Channels

**Table 5-7: Consultation Channels**

<b>Channel</b>	<b>Purpose</b>
<b>Consultation emails</b>	This is the initial contact made to relevant persons and contains project and EP information, including contact details with various options to obtain more information, ask questions or provide feedback. All relevant persons identified through the relevant person search were sent an initial email that advised on obligation of titleholders to undertake consultation and the role of relevant persons, including inviting feedback on how they would like to be consulted. Consultation emails also included follow-up emails to ensure potentially relevant persons were aware of where to find information where they might consider and assess potential impacts. Relevant email communications following the publishing of the NOPSEMA consultation broacher, included a reference or link to that for the relevant persons information.
<b>Factsheets</b>	Short sharp digestible documents that give the key facts. They should never be considered the sole way to communicate and may not be appropriate for all relevant persons.
<b>Information Booklet</b>	An overview of the Crux project in one booklet, outlining all the various stages of the project and relevant activities and EP that Shell was consulting on.
<b>Indigenous People Forum</b>	A forum designed for Indigenous People in two stages with the first to present the information and the second a few weeks later to allow for Indigenous People to

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	digest and share the information and come back with their feedback in an environment that provides for Indigenous-only discussions. These forums are available to Indigenous People in addition to other mechanisms available including on-country visits and direct meetings. These were offered to Indigenous relevant persons in addition to any other request for engagement (e.g., one on one, on-Country visits) and the other channels outlined in this table.
<b>Industry Briefing</b>	An opportunity for relevant persons in Regulation 11A(1)(a) (b) and (c) to hear directly from Shell and ask questions. The briefing was held at Shell's offices in Perth with a Teams link as dial-in.
<b>Information Sessions</b>	A means to gather similar relevant persons and present to them the content they require from the EP submission with an opportunity to ask questions. These were held in: <ul style="list-style-type: none"> <li>• Broome</li> <li>• Darwin</li> </ul>
<b>Drop-in Sessions</b>	Allows appropriate and adapted consultation delivered in a flexible way to offer relevant persons an opportunity to have two-way dialogue with Shell and view information on the project. These drop-in sessions were widely advertised to ensure appropriate representation and locations chosen appropriate to the relevant persons group: <ul style="list-style-type: none"> <li>• Derby</li> <li>• Broome</li> <li>• Darwin</li> <li>• Port Hedland</li> <li>• Exmouth</li> </ul>
<b>Tailored face to face / Teams meetings</b>	Where requested by relevant persons or where Shell deemed it was appropriate to suggest the option during initial contact communications for the consultation process, such as with Indigenous Organisation relevant persons including NTRB, RNTBC, PBC's and associated Aboriginal Corporations. These provided an additional opportunity to provide formal EP consultation materials and discuss any questions or feedback and any relevant matters of interest to the relevant person or organisation in a two-way forum. Meetings were attended by Indigenous Affairs and Cultural Heritage, Social Performance and Environmental subject matter experts as considered relevant to the meeting.
<b>Online materials and information</b>	The website allows for more information to be included than a factsheet and allows relevant persons to handpick what interests them. Time was invested prior to each EP submission to ensure the website was up to date. The addition of a form to allow relevant persons to self-identify. A summary of website traffic during the consultation period is provided in Appendix A.
<b>Sharing the entire draft EP via Shell's website</b>	This ensures a transparent approach to what is included in the EP for those who want more detail.
<b>Newspaper adverts / Local radio</b>	Adverts placed in print media or local radio where print media was not available to allow relevant persons to self-identify. These ads were placed in regional locations along the geographic spread of the largest Planning Area. Ads were also placed to raise awareness of local drop-in sessions.
<b>Social Media</b>	Social media posts were placed tactically across social media to allow relevant persons to self-identify. These ads targeted regional locations across the geographic spread of the largest Planning Area. A summary of the results of the social media activity are provided in Appendix A.

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<b>Industry support</b>	Sharing information via membership/industry groups. For example, recfish west or APPEA.
<b>WAFIC</b>	WAFIC provided fee for service consultation to directly engage with WA managed fisheries who had activities or interests in the EP operations areas. Tailored materials were provided to relevant fisheries and two sessions (hosted at WAFIC's office and over Microsoft Teams) were offered to those seeking further information.
<b>Traditional communications</b>	Email, telephone, posted mail

#### 5.6.4 Government Departments or Agencies

Consultation channels used for relevant Commonwealth and State Government Departments or Agencies were email and the industry briefing. If no response was received to the initial email, at least one follow up email was sent. If there was again no response it was assumed that the department of agencies has no objection or comment on the proposed activity. This was considered reasonable effort as government departments have systems and the resources to consult on matters of relevance to their portfolio.

In addition, Shell held a targeted information session for relevant persons from Government Departments or Agencies. A formal presentation on the relevant EPs was completed followed by an open forum discussion where attendees were provided with an opportunity to ask questions.

#### 5.6.5 Indigenous People and Organisations

Shell acknowledges that Indigenous peoples are Australia's First Peoples and the Traditional Owners of the land and waters on which we work and live. Shell has been operating in Australia for over 120 years, developing proud partnerships with more than thirty indigenous communities. Shell is committed to building meaningful relationships with Indigenous communities based on honesty, integrity, and respect.

The Full Federal Court has held that there is good reason to adopt pragmatic and practical approaches to consultation conducted in accordance with regulation 11A. Consultation may be through properly notified and conducted meetings, or other engagements that facilitate genuine two-way dialogue between the titleholder and relevant persons such as approaches suggested by NTRBs, RNTBCs or PBCs. Meetings should be widely advertised to ensure appropriate representation. However, it is recognised that meetings may not be attended by all members of a group.

When approaching consultation with Indigenous relevant persons, Shell started with a broad approach, reviewing the Planning Area, which overlaps a one Native Title determination (Figure 5-5) further described within Section Land and Sea Tenure and Ownership 7.3.1.2, with a further 50km buffer for all searches to ensure a broad capture of potentially relevant persons.

This identified more than 100 Aboriginal organisations as fitting the criteria of relevant persons comprising:

- Land Councils
- Aboriginal Land Trusts – which exist in the Northern Territory and include land held in trust for use by Aboriginal people by another entity.
- Native Title Representative Bodies (NTRB)
- Registered Native Title Bodies Corporate (RNTBCs – the formal name given to a group once Native Title has been determined),
- Prescribed Bodies Corporate (PBCs – the legal entity formed by a group of Native Title Claimants during the determination process, but used interchangeably with RNTBC),

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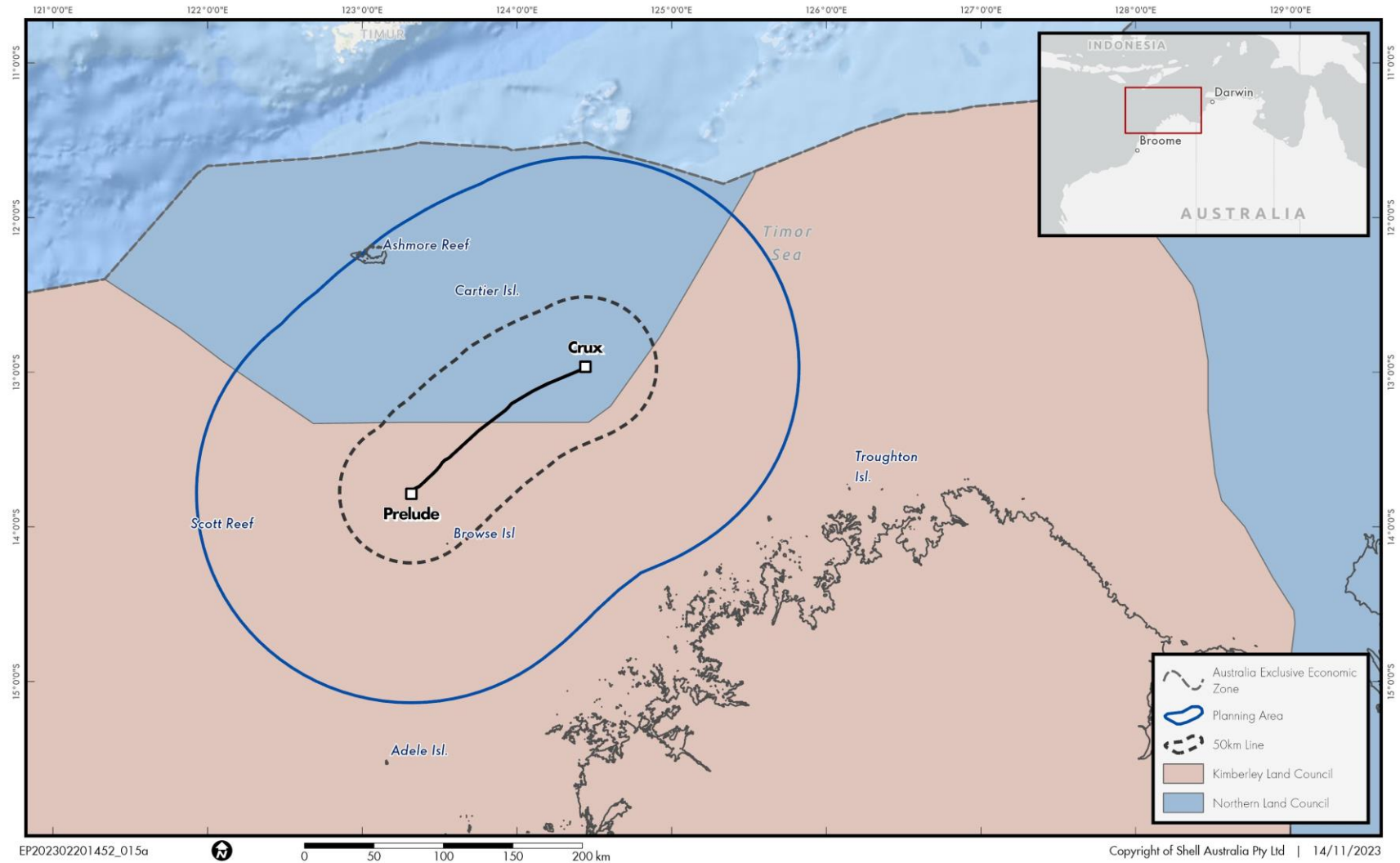
- Aboriginal Corporations – Aboriginal run or managed businesses, often operating on behalf of, or under a RNTBC, but also independently, and including Aboriginal Tourism providers.
- Land and Sea Management Groups – primarily Ranger Groups, many of whom operate under a RNTBC, but some who operate independently on an IPA, or as the result of an ILUA.
- Aboriginal Arts and Cultural centres
- Native Title Claim groups.
- Advisory Committees
- Individuals

Following extensive research and community consultation, it was clear that not all groups considered themselves responsible for cultural and spiritual care of land and sea to equal or similar degrees. For example:

1. NTRBs including NLC, KLC and YMAC often provide administration services such as payroll, legal and human resource services to RNTBCs or PBCs who have chosen to use the NTRB as an umbrella organisation under which to function, in addition to their primary role of assisting with matters pertaining to Native Title claims and determinations. NTRBs were used by Shell where appropriate to advise on indigenous groups that could be relevant or have sea country or are located on the coast, preferred consultation approaches to advise on potential indigenous persons or organisations who are relevant persons and to distribute consultation information to RNTBCs where deemed appropriate by the NTRB. However, the NTRBs do not consider it appropriate to represent the views of the RNTBCs or other groups who use their services, or in some circumstances they represent as a conduit or contact for RNTBCs.
2. Where an Aboriginal corporation operates under the umbrella of a RNTBC, they tend to be focused on running a business or service, and Native Title responsibilities (land and sea care and management) falls to the RNTBC and other appropriate sub-groups. This includes most (but not all) tourism service providers.
3. Advisory Committees are comprised of individual RNTBs, ranger groups and other Land Management groups, and do not speak with one voice on land, sea and cultural values.
4. Arts and Cultural Centres tend to be focused on their business, and again, defer land and sea cultural issues to the appropriate PBC or RNTBC.

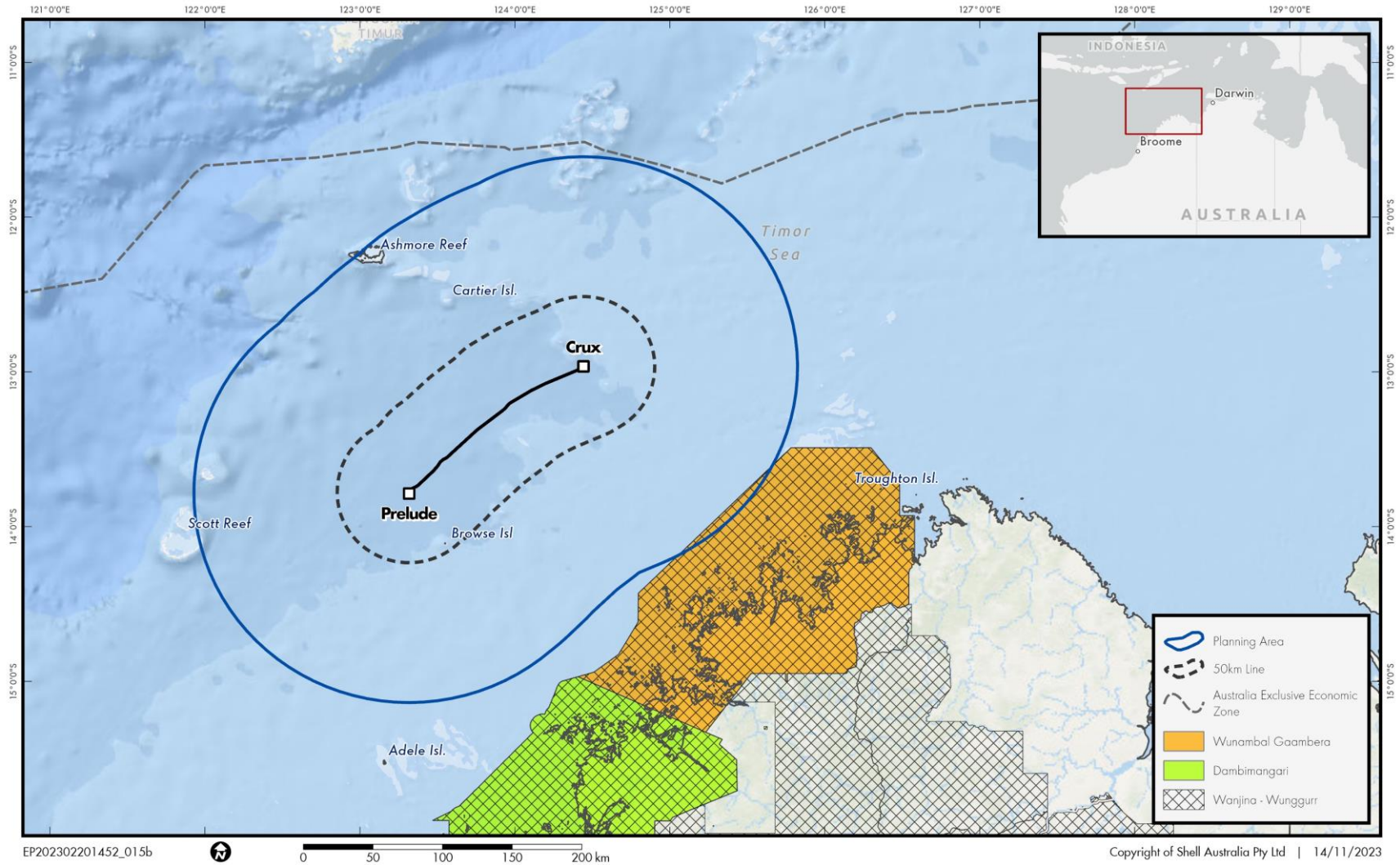
Shell has very conservatively considered that planned impacts, given the negligible nature and scale of the activities in this EP, to Indigenous Peoples functions, interests or activities (including cultural values or features) are extremely unlikely to extend beyond 50km from the Crux operational area (Figure 5-4 and Figure 5-5). This was considered a reasonable basis for including this distance as a criteria in the tier 1 contact methodology, as described in Table 5-8, to focus consultation efforts on those closest to the planned activities outlined in this EP. This ensured that those who could provide inputs into cultural features closest to our planned activities were subject to focused consultation efforts. However, regardless of which tier group Indigenous relevant persons were placed in, Shell's overarching approach was to be collaborative and responsive in consultation, taking on Indigenous Persons or Organisations feedback were provided about the method of consulting, this is further explained later in this section.

The tiering approach identified two Indigenous groups who were categorised into Tier 1 and three who were categorised into Tier 2 (Figure 5-4 and Figure 5-5). These groups formed the priority for Shell's consultation approach and are outlined in Table 5-8 below.



**Figure 5-4: Tier one indigenous relevant persons in relation to the Operational Area, 50 km line and Planning Area.**





**Figure 5-5: Tier two indigenous relevant persons in relation to the Operational Area, 50 km line and Planning Area.**

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**Table 5-8: Approach to consultation with relevant Indigenous persons and organisations**

Contact methodology	Overview of Indigenous relevant person	Indigenous relevant persons	Consultation Efforts
<b>Tier 0</b>	<ul style="list-style-type: none"> <li>Direct planned impact to functions, interests, or activities of PBC, NTRB or RNTBC or those they represent.</li> <li>Includes planned desecration or potential significant impacts to known cultural values or features.</li> </ul>	<ul style="list-style-type: none"> <li>There are no Indigenous relevant persons who have functions, interests or activities such as cultural values or features within the operational area of this EP which will be impacted by the planned impacts of the activities. This is supported by the fact an independent underwater cultural heritage survey by Cosmos Archaeology in 2023 stated there are not tangible Indigenous features in the Crux project area as it is beyond the ancient coastline at 130m below LAT, where there has never been any human occupation.</li> </ul>	As a minimum, this would include genuine two-way dialogue with a representative of the communal interest affected seeking to reach agreement on the levels of proposed impacts to the cultural feature or value.
<b>Tier 1</b>	<p>Relevant person may have function, interests or activities which may be affected located within 50km of the operational area.</p> <ul style="list-style-type: none"> <li>PBC, NTRB or RNTBC (excluding tier 0).</li> <li>Aboriginal corporation functioning under the authority of an RNTBC (excluding tier 0).</li> </ul>	<ul style="list-style-type: none"> <li>Kimberley Land Council (KLC)</li> <li>Northern Land Council (NLC)</li> </ul>	Precedence placed on consultation with these groups with focused efforts, including attempting to contact by multiple forms of communication and seeking to establish long term relationships, where not already established and sought by relevant group.
<b>Tier 2</b>	<ul style="list-style-type: none"> <li>PBC, NTRB or RNTBC who are coastally adjacent to the planning area (excluding tier 0, tier 1 and tier 3).</li> <li>Aboriginal corporations who are coastally adjacent to the planning area (excluding tier 0, tier 1 and tier 3).</li> </ul>	<ul style="list-style-type: none"> <li>Wanjina-Wunggurr Aboriginal Corporation</li> <li>Wunambal Gaambera Aboriginal Corporation</li> <li>Dambimangari Aboriginal Corporation</li> </ul>	<p>Concerted effort to contact these groups by attempting multiple forms of communication as necessary, to gather inputs on cultural values or features and other matters to inform preparation of the EP.</p> <p>Where more efforts were given to some Indigenous persons or organisations to consult in this tier, it related to either building improved relationships or perhaps consultation in preparation of a different EP.</p>
<b>Tier 3</b>	<ol style="list-style-type: none"> <li>PBC, NTRB or RNTBC whose members are at the periphery of the Planning Area (excluding tier 0, tier 1 and tier 2).</li> <li>All other Indigenous people or organisations</li> </ol>	<ul style="list-style-type: none"> <li>Remaining Indigenous RPs.</li> </ul>	<p>Emailed sufficient information with at least one follow-up.</p> <p>Where more efforts were given to some Indigenous persons or organisations to consult in this tier, it related to either building improved relationships or perhaps consultation in preparation of a different EP.</p>



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When engaging with Indigenous relevant persons, Shell adopted a culturally appropriate tailored approach, in addition to the broader community engagement plan outlined in this EP. For example, where many face to face meetings occurred with RNTBC's and Aboriginal Corporations, Shell tailored the presentation material or verbal delivery of information to what Shell considered to be the primary ways their functions, interests or activities could be affected, or what was considered to be culturally appropriate to a particular group, such as have a local photo representing the title slide and acknowledgement of country. Tailoring of a verbal nature can be evidenced within meeting summaries, emails or minutes within the consultation summary (Appendix B).

At the commencement of consultation, Shell approached Indigenous relevant persons, including NTRB's, with a co-design strategy, offering various options (such as on-country visits, meetings, yarning circles, phone calls, Indigenous Forums) to consult. This offered the opportunity for consultation to be led by Indigenous relevant persons, or the groups like NTRBs which represented them. This helped ensure that engagements could be culturally appropriate, respectful and tailored to meet the needs of each person or group. We then conducted consultation on co design feedback. A summary of the relevant persons consultation approach taken with Indigenous Persons and Organisations is outlined in Table 5-9. Shell is also cognisant to varying degrees of potential communication barriers experienced by relevant persons and as such ensured information was delivered in layman's terms across several methods including verbal, visual and written. See section 5.6.5.1 on Indigenous Forums.

The consultation co-design approach aimed to minimise negative impacts being experienced by relevant Indigenous persons and organisations, primarily due to consultation fatigue.

### Consultation summary

Table 5-9 outlines a summary of the relevant persons consultation approach taken with Indigenous persons and organisations. Further details of the consultation carried out with Indigenous persons and organisations is found in Table 5-10, along with full details of all consultation provided in Appendix B.

**Table 5-9: Summary of the consultation approach taken with Indigenous Persons and Organisations**

Date	Detail	Location in Appendix A
<b>March/April 2023</b>	<p><b>Initial contact:</b> Shell's initial contact by email focussed on a co-design approach to consultation for this EP and other Crux project EPs. The email was an invite to an Indigenous Forum with a survey attached with the purpose of seeking feedback on how Indigenous relevant persons preferred to be contacted. The survey included:</p> <ul style="list-style-type: none"> <li>attendance options for the Indigenous Forums</li> <li>travel and accommodation support</li> <li>a vote on the preferred location for the forum</li> <li>request for feedback on preferred consultation method</li> <li>an offer for on-country consultation as an alternative to the Indigenous Forums</li> </ul>	7.01 – 7.02
<b>19 April 2023</b>	Indigenous Forum held in Perth.	7.03
<b>End of April 2023</b>	<p>Reminder emails were sent about the Indigenous Forum in Broome including links to the Crux website and offer of travel assistance.</p> <p>Shell also asked for relevant persons to share this with others who may be interested.</p>	7.09

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Date	Detail	Location in Appendix A
<b>10 May 2023</b>	Indigenous Forum held in Broome.	7.04
<b>Late May</b>	Reaching out again to share: <ul style="list-style-type: none"> <li>• video footage from the first Indigenous forum</li> <li>• details of the Independent environmental panel</li> <li>• offer to meet with Shell.</li> <li>• factsheets</li> </ul>	7.10
<b>31 May 2023</b>	Indigenous Forum held in Darwin	7.05
<b>May-October 2023</b>	Follow-ups through phone and/or email seeking consultation meetings. Consultation meetings occurred with multiple RNTBCs, PBCs and Aboriginal Corporations as summarised in Appendix B.	
<b>May-October 2023</b>	Email correspondence included attachment of the NOPSEMA Consultation on Offshore Petroleum Environment Plans Brochure after publication.	8.01

Shell explored alternative approaches to consultation to achieve an effective and culturally respectful engagement method. To implement the co-design approach, which also helps demonstrate reasonable efforts, Shell adopted specific suggestions by Indigenous people or organisations, including and in particular, NTRBs like KLC, where these occurred through the consultation period. This is because Shell relied significantly on the direction and input received from NTRB's, in the consultation approach which was used with the Indigenous people and organisations they support and represent. For example, following feedback from Indigenous organisations including KLC, Yawuru, Djarindjin (at TO Forum 2 on the 10 May) and one individual Indigenous person, Shell adopted more focused consultation measures as suggested by the feedback, including but not limited to:

1. Specific advice from NTRBs on consulting and obtaining appropriate contact details to consult with certain RNTBC's was received.
2. Prioritising face to face meetings where possible.
3. Prioritising phone call contact with known leaders of different Indigenous groups to establish rapport and relationship where contact details are freely available.
4. Offering to meet at a time and location of choice with people identified by them as appropriate.
5. Holding meetings that followed a format and approach determined and agreed by both parties (Indigenous person/organisation and Shell). For example, Bardi Jawi, Walalakoo and Mayala expressed a desire to meet as one group initially, as they consider themselves a coherent people group. Shell met with representatives of the three RNTBCs in Broome, in a format and location of their choosing. To illustrate further, Shell suggested meeting at Nyamba Buru Yawuru – but the representatives from these three RNTBCs specified they did not want to meet there, but at the Mangrove Hotel. This request was accommodated.
6. The Tiwi Land Council expressed a desire that Shell meet with them at Wurrumiyanga (their offices). This request was accommodated.
7. NTGAC requested a meeting at their offices in Exmouth during a scheduled board meeting. This request was accommodated.
8. Wanparta requested a meeting with the Board members in Port Hedland. This request was accommodated.

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Full details on consultation co-design measures adopted during consultation with Indigenous persons and organisations is outlined in Section 5.6.5 and Appendix B.

#### 5.6.5.1 Indigenous Forums

Following feedback from initial discussions with Indigenous Peoples there were several requests made to facilitate the consultations. A forum was designed with input from Indigenous People in two stages, with the first to present the information and the second a few weeks later to allow for Indigenous People to digest and share the information and come back with their feedback in an environment that provides for Indigenous only discussions. These forums were available to Indigenous People in addition to other mechanisms available including on-country visits and direct meetings. These were offered to Indigenous relevant persons in addition to any other request for engagement (e.g. one on one, on-Country visits).

To support informed participation by invited relevant Indigenous persons and organisations, including attendance at the forums and/or any other engagement identified by them as preferred, the following measures were put in place:

- All Indigenous participants were provided with travel allowance support to travel to the forums in April and May.
- The Registered Native Title Body Corporates or Prescribed Body Corporates could receive an administrative fee for participation in the forums and any other tailored consultation as required by them, including legal representation.
- Indigenous service providers were also sourced, such as local Indigenous facilitators for both forums in WA and NT, including a Welcome to Country being performed and a 100% Indigenous owned and operated Indigenous business specialising in group conference travel and accommodation support to Indigenous People and organisations living in metropolitan, regional, or remote areas of Australia.
- A panel of four environmental subject matter experts, including three who were wholly independent of Shell, was established. The panel was made available to all relevant Indigenous persons and Indigenous organisations identified, and associated costs covered by Shell. The key role of the four environmental panel members was to provide advice to all relevant Indigenous persons and organisations, with no obligation or expectation to feedback the content or advice to Shell. Representatives from the panel attended the Perth and Broome forums and the panel's availability was further reiterated to many Indigenous relevant persons during follow-up communications.
- Where relevant Indigenous persons and organisations indicated a preference to be engaged on-Country (or other locations) with Shell leaders, additional meetings were accommodated according to each request.
- A Recording of the Perth presentation was made available for further dissemination within Indigenous persons and organisations' broader communities and groups alongside further information on this EP in response to feedback and questions received from First Nations relevant persons.

#### 5.6.5.2 Summary of Consultation with Indigenous Relevant Persons

A consultation completion statement for the Indigenous relevant persons that meet the threshold for contact methodology Tier 1 and 2 are summarised in Table 5-10 (refer to Appendix B for the full consultation summary).

**Table 5-10: Indigenous relevant persons consultation completion statement**

Relevant person ID	Contact Methodology Tier	Indigenous relevant person	Relevant person's functions, interests and activities	Petroleum activity impacts and risks which may affect relevant persons functions, interests, or activities	Nature and scale of effect on relevant persons functions, interests, or activities	Sufficient information provided	Consultation overview <i>For a full summary of contact, see Appendix B</i>	Reasonable period provided	Appropriate measures adopted
114	1	Northern Land Council (NLC)	NLC has a function as the NTRB in relation to the Ashmore and Cartier Islands area.	Spill risks have the potential to affect NLC's functions, interests, or activities.	Low, in accordance with Table 5.3. NLC's area of responsibility as an NTRB overlaps with the operational area and planning area. There are no planned impacts predicted to NLC's functions, interests, and activities. They may be affected to a limited extent if a major spill event were to occur.	Fact sheets and draft EP provided to NLC on 19 May 2023. Face to face meeting occurred on the 26 May 2023. Shell published in social media, radio and newspapers which were targeted at groups or individuals within this region from March to April 2023 – Appendix A.	Shell has consulted with NLC since March 2023 when an invitation to consult on the EP was first sent. The request suggested multiple ways which consultation could occur, from on country meetings through to attendance at Indigenous forums which were run at 3 locations.  As the peak Indigenous body in the Northern Territory and Ashmore and Cartier Island territories, NLC were requested by Shell to forward information to NLC members.  On the 26 May 2023 Shell met face to face with the NLC. At the meeting, Shell explained the activities of this EP and the impacts and risks which may affect their functions, interests or activities. Shell also asked for input on particular values or features which may be affected by Shell's activities which we were not aware of (Refer to Appendix A and the measures adopted column of this table). No input was provided to Shell by this request. However, NLC did raise relevant matters they would like addressed within the EP related to provision of further information related to oil spill preparedness and response. It also included adding NLC to the notification table in the EP for contact in the event of a level 2 or 3 spill. Shell addressed all the requests made by NLC to their satisfaction.  From the end of March 2023, Shell undertook a targeted media campaign in the region, using print, geotargeted social media and radio ads. The campaign urged potential relevant persons to contact Shell and provided a link to the Crux project on the Shell website with access to draft Environment Plans. These materials enabled relevant persons to make an informed decision about how their functions, interests, or activities may be affected, and a mechanism to consult with Shell on the EP – Appendix A.  Shell's further reasonable efforts to consult with all these relevant persons has been demonstrated through offers to all relevant persons to cover all reasonable costs associated with attending consultation meetings/forums (e.g. accommodation, travel and where appropriate reasonable costs of time) and also contact details for environmental consultants, some independent, paid for by Shell to support the relevant persons in assessing information and providing feedback to Shell.  Shell considers that NLC have been afforded a reasonable opportunity to consult with Shell in preparing this EP.	Shell has been reaching out to NLC since March 2023.  Sufficient information (such as factsheets and website as well as a published version of the draft EP) was provided to NLC in May 2023.  Consultation with NLC is considered to be complete, noting a two-way dialogue with feedback which was incorporated into this EP.  NLC was provided reasonable time to digest information and to access the offer of a consultant panel to support them in reviewing information and raising issues or input on Shell's proposed activity.  Shell considers that NLC have been afforded a reasonable period to understand how this EP impacts their functions, interests or activities and engage with	EP Table 10-5 includes requirement for NLC to be notified in the event of an emergency spill event which has the potential to impact communities and environments in the Top End.

Relevant person ID	Contact Methodology Tier	Indigenous relevant person	Relevant person's functions, interests and activities	Petroleum activity impacts and risks which may affect relevant persons functions, interests, or activities	Nature and scale of effect on relevant persons functions, interests, or activities	Sufficient information provided	Consultation overview <i>For a full summary of contact, see Appendix B</i>	Reasonable period provided	Appropriate measures adopted
								Shell for further discussion.	
<p>Justification that consultation is complete.</p> <p>NLC is the peak Indigenous body and NTRB in the north part of the Northern Territory and Ashmore and Cartier Island Territories. Shell has provided sufficient information and a reasonable period for consultation with the NLC as demonstrated by the provision of the information, followed by a face-to-face meeting and follow-up information requests and incorporation of NLC input into the development of this EP. Shell has adopted appropriate measures related to all relevant matters raised by NLC during consultation. Therefore, Shell believe consultation has been completed in accordance with Regulation 10A(g).</p>									
38.	1	<b>Kimberley Land Council (KLC)</b>	<p>KLC has a function as the NTRB in relation to the administration of Native Title and may represent Native Title applicants and holders' interests in relation to existing Native Title claims and determinations that extend into Sea Country. They are also the contact point for the following specific RNTBCs, PBCs or native title applicants identified as relevant persons for the purposes of this EP;</p> <ul style="list-style-type: none"> <li>33. Gogolanyngor Aboriginal Corporation</li> <li>44. Mayala Inninalang Aboriginal Corporation (incl Mayala 2)</li> <li>51. Nyul Nyul PBC Aboriginal Corporation</li> <li>55. Wanjina-Wunggurr Aboriginal Corporation</li> <li>56. Warrwa Mawadjala Gadjidgar</li> <li>105. Miriuwung-Gajerrong</li> <li>113. Nimanburr Aboriginal Corporation</li> <li>122. Balanggarra Aboriginal Corporation</li> <li>125. Wunambal Gaambera Aboriginal Corporation</li> </ul> <p>KLC's interests and activities include, for example:</p> <ul style="list-style-type: none"> <li>Sea Country</li> <li>Cultural values</li> <li>Cultural Features</li> <li>Indigenous traditional activities (e.g., fishing)</li> <li>Have responsibility for sea country within the Kimberley Marine Park.</li> </ul>	<p>Spill risks have the potential to affect KLC's functions, interests, or activities or the RNTBCs, PBCs or Aboriginal Corporations they represent.</p>	<p>Low, in accordance with Table 5-3.</p> <p>KLC's area of responsibility as an NTRB overlaps with the operational area and planning area.</p> <p>KLC's interests and activities do not extend near the operational area for this activity.</p> <p>There are no planned impacts predicted to KLC's functions, interests, and activities.</p> <p>They may be affected to a limited extent if a major spill event were to occur..</p>	<p>Fact sheets and draft EP provided to KLC on 26 May 2023.</p> <p>Multiple phone calls occurred throughout May 2023.</p> <p>Shell published in social media, radio and newspapers which were targeted at groups or individuals within this region from March to April 2023 – Appendix A.</p>	<p>Shell has consulted with KLC since March 2023 when an invitation to consult on the EP was first sent. The request suggested multiple ways which consultation could occur, from on country meetings through to attendance at Indigenous forums which were run at 3 locations. Shell has also made multiple attempts to meet face to face with KLC.</p> <p>As the peak Indigenous body in the Kimberley, KLC were also used to make contact with the RNTBCs, PBCs and Aboriginal Corporations they represent. The KLC is the formal contact point for the following groups;</p> <ul style="list-style-type: none"> <li>33. Gogolanyngor Aboriginal Corporation</li> <li>44. Mayala Inninalang Aboriginal Corporation (incl Mayala 2)</li> <li>51. Nyul Nyul PBC Aboriginal Corporation</li> <li>55. Wanjina-Wunggurr Aboriginal Corporation</li> <li>56. Warrwa Mawadjala Gadjidgar</li> <li>105. Miriuwung-Gajerrong</li> <li>113. Nimanburr Aboriginal Corporation</li> <li>122. Balanggarra Aboriginal Corporation</li> <li>125. Wunambal Gaambera Aboriginal Corporation</li> </ul> <p>Shell therefore determined that the appropriate way to consult with these organisations was through their formal contact point, KLC. While KLC is the formal contact point, Shell also welcomed any opportunity for direct consultation, as was demonstrated with the Mayala meeting on 15 August 2023.</p> <p>KLC also provided an additional conduit to contact other groups in the region for which it was not a formal contact point (recognising KLC's ability to assist Shell in identifying First Nations relevant persons and organisations).</p> <p>Throughout all consultation with KLC, and the groups it is the formal contact point for, no objections or claims have been raised.</p> <p>From the end of March 2023, Shell undertook a targeted media campaign in the region, using print, geotargeted social media and radio ads. The campaign urged potential relevant persons to contact Shell and provided a link to the Crux project on the Shell website with access to draft Environment Plans. These materials enabled relevant persons to make an informed decision about</p>	<p>Shell has been reaching out to KLC since March 2023.</p> <p>Sufficient information (such as factsheets and website as well as a published version of the draft EP) was provided to KLC in April 2023. The KLC was also requested to forward it on to other RNTBCs, PBCs and Aboriginal Corporations.</p> <p>KLC had more than 6 months to review the information, and make an informed assessment about how their functions, interests or activities may be affected.</p> <p>It also allowed reasonable time to digest information provided and to access the offer of a consultant panel to support them in reviewing information and raising issues or input on Shell's</p>	<p>Shell has incorporated feedback from KLC related to how best to identify and contact Indigenous relevant persons that they have functions to represent as an NTRB.</p> <p>There has been no other feedback which has required updates to the EP from KLC.</p>



Relevant person ID	Contact Methodology Tier	Indigenous relevant person	Relevant person's functions, interests and activities	Petroleum activity impacts and risks which may affect relevant persons functions, interests, or activities	Nature and scale of effect on relevant persons functions, interests, or activities	Sufficient information provided	Consultation overview <i>For a full summary of contact, see Appendix B</i>	Reasonable period provided	Appropriate measures adopted
							<p>how their functions, interests, or activities may be affected, and a mechanism to consult with Shell on the EP – Appendix A.</p> <p>Shell's further reasonable efforts to consult with all these relevant persons has been demonstrated through offers to all relevant persons to cover all reasonable costs associated with attending consultation meetings/forums (e.g. accommodation, travel and where appropriate reasonable costs of time) and also contact details for environmental consultants, some independent, paid for by Shell to support the relevant persons in assessing information and providing feedback to Shell.</p> <p>Shell considers that KLC and the organisations it is the formal contact point for have been afforded a reasonable opportunity to consult with Shell in preparing this EP.</p>	<p>proposed activity.</p> <p>Shell considers that KLC and the community it represents have been afforded a reasonable period to understand how this EP impacts their functions, interests or activities and engage with Shell for further discussion.</p>	

**Justification that consultation is complete.**

KLC is the peak Indigenous body and NTRB in the Kimberley region working with Indigenous people to secure native title, conduct conservation and land management activities and develop cultural business enterprises. KLC have received sufficient information and whilst they didn't have any claims or objections themselves, they have shared the information with the groups they represent to ensure they also received sufficient information and reasonable period to provide input, claims or objections. Shell believes we have adopted appropriate measures related to all relevant matters raised by KLC during consultation where suggestions were made on how to better reach members they support which may be affected by the activities of this EP. Therefore, Shell believes consultation has been completed in accordance with Regulation 10A(g).

55	2	<p><b>Wanjina-Wungurr Aboriginal Corporation (WWAC)</b></p> <p>Wanjina-Wungurr Aboriginal Corporation is the formal RNTBC for the Dambimangari, Uunguu Part A, Uunguu - Area B, Wanjina - Wungurr Wilinggin Native Title claim, determined between 2004 and 2012. However, day to day management of the Determined area is in the hands of three separate Aboriginal Corporations:</p> <ol style="list-style-type: none"> <li>Dambimangari Aboriginal Corporation</li> <li>Wunambal Gaambera</li> </ol>	Approx 140 km from the Crux operational area to closest part of WWAC.	Spill risks have the potential to affect WWAC functions, interests, or activities.	<p>Low, in accordance with Table 5-3.</p> <p>WWAC's functions, interests and activities do not extend near the operational area for this activity.</p> <p>There are no planned impacts predicted to WWAC's functions, interests, and activities.</p> <p>They may be affected to a limited extent if a major spill</p>	<p>Fact sheets and draft EP provided to WWAC through KLC for onward distribution on 26 May.</p> <p>Shell published in social media, radio and newspapers which were targeted at groups or individuals within this region from March to April 2023 – Appendix A.</p>	<p>Wanjina Wungurr Aboriginal Corporation (WWAC) is the RNTBC for the Dambimangari, Wanjina Wungurr Wilinggin and Uunguu Part A and Part B Native Title Determination.</p> <p>WWAC it is a non-active RNTBC. KLC is the administrative focal point for WWAC, as WWAC has no employees or income as listed on the ORIC website.</p> <p>Given that WWAC have no staff or employees, Shell carried out consultation with WWAC through KLC as its formal contact point. The KLC confirmed in May 2023 that it had passed information on to the WWAC.</p> <p>Further, Dambimangari Aboriginal Corporation (DAC), Wunambal Gaambera Aboriginal Corporation (WGAC) and Wilinggin Aboriginal Corporation (WAC) together represent the Wanjina Wungurr community. They are all active Aboriginal Corporations who manage their own country, culture and business. Shell consulted with these three groups separately, see relevant persons numbers 31, 57 and 125.</p> <p>From the end of March 2023, Shell undertook a targeted media campaign in the region, using print, geotargeted social media and radio ads. The campaign urged potential relevant persons to contact Shell and provided a link to the Crux project on the Shell website with access to draft Environment Plans. These materials enabled relevant persons to make an informed decision about how their functions, interests, or activities may be affected, and a mechanism to consult with Shell on the EP – Appendix A.</p> <p>Shell's further reasonable efforts to consult with all these relevant persons has been demonstrated through offers to all relevant persons to cover all reasonable costs associated with attending consultation meetings/forums (e.g. accommodation, travel and where appropriate reasonable costs of time) and also contact details for environmental consultants, some independent, paid for</p>	<p>Shell has been reaching out to WWAC through KLC since March 2023.</p> <p>Sufficient information (such as factsheets and website as well as a published version of the draft EP) was provided to WWAC via KLC in May 2023.</p> <p>WWAC had more than 5 months to review the information, and make an informed assessment about how their functions, interests or</p>	No measures were required to be adopted as a result of consultation with WWAC for this EP.
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Relevant person ID	Contact Methodology Tier	Indigenous relevant person	Relevant person's functions, interests and activities	Petroleum activity impacts and risks which may affect relevant persons functions, interests, or activities	Nature and scale of effect on relevant persons functions, interests, or activities	Sufficient information provided	Consultation overview <i>For a full summary of contact, see Appendix B</i>	Reasonable period provided	Appropriate measures adopted
		Aboriginal Corporation and 3. Wilinggin Aboriginal Corporation.  The KLC is the formal contact point for WWAC.			event were to occur.		by Shell to support the relevant persons in assessing information and providing feedback to Shell.	activities may be affected.  It also allowed reasonable time to digest information provided and to access the offer of a consultant panel to support them in reviewing information and raising issues or input on Shell's proposed activity.  Shell considers that WWAC and the community it represents have been afforded a reasonable period to understand how this EP impacts their functions, interests or activities and engage with Shell for further discussion.	
<p><b>Justification that consultation is complete.</b></p> <p>WWAC's functions, interests and activities are only potentially impacted by the spill risk from Shell's activities (through dissolved/entrained oil). Any impact to WWAC's functions, interests and activities is predicted to be Low. Other than source control options which are already planned to be implemented by Shell in the event of a spill, there are no other available options to directly mitigate or reduce the impacts of dissolved/entrained oil during spills which could occur from this activity. Therefore, further consultation is unlikely to improve risk management or further reduce the environmental impacts of a spill in accordance with the objects of consultation in preparing an EP. Given the remote likelihood and scale of potential risks to WWAC's functions, interests and activities, Shell provided sufficient information to inform WWAC how their functions, interests and activities may be affected, provided information to make WWAC sufficiently informed of their rights and their opportunity to be consulted, made reasonable efforts to consult WWAC. Shell also provided a reasonable period for WWAC to determine if their functions, interests, and activities may be affected and to review information and provide feedback to Shell. Shell supported WWAC in this process by providing access to reasonable support in the form of environmental consultants to support advising WWAC and offers of reasonable financial support to attend forums. Since Shell has provided WWAC sufficient information and a reasonable period to consider the information and be able to respond, Shell believes that consultation has been carried out in accordance with Regulation 10A(g).</p>									
125.	2	<b>Wunambal Gaambera Aboriginal Corporation (WGAC)</b>  Wanjina-Wunggurr Aboriginal Corporation is the formal RNTBC for the Dambimangari, Uunguu Part A, Uunguu - Area B,	<ul style="list-style-type: none"> <li>Approximately 140km from the Crux operational area to closest part of WGAC country</li> <li>WGAC represents the northern part of the Wanjina Wunggurr Native Title Determination and the interests of the Uunguu People.</li> <li>Cultural values</li> <li>Cultural features</li> </ul>	Spill risks have the potential to affect WGAC's functions, interests, or activities.	Low, in accordance with Table 5-3.  WGAC's functions, interests and activities do not extend near the operational	Fact sheets and draft EP provided to WGAC on 26 May 2023.  Direct contact made with WGAC on 01 September 2023.	Shell has been offering to meet face to face with WGAC since March 2023 when an invitation to consult on the EP was first sent to them. The request suggested multiple ways which consultation could occur, from on country meetings through to attendance at indigenous forums which were run at 3 locations.  Eight further follow-up emails between March and the end of August 2023, through multiple available means including the KLC, existing contact networks which Shell's Indigenous Engagement adviser made contact with WGAC. Subsequent to this, a consultation meeting with a Wunambal Gaambera representatives occurred on 15 September 2023. At the meeting, Shell explained the activities of this EP and the impacts and risks which may affect their functions, interests or activities. Shell also asked for input on particular	Shell has been reaching out to WGAC since March 2023.  Sufficient information (such as factsheets and website as well as a published version of the draft EP) was	Shell updated its environment description of cultural values based on information provided by the WGAC representative during a face-to-face meeting.



Relevant person ID	Contact Methodology Tier	Indigenous relevant person	Relevant person's functions, interests and activities	Petroleum activity impacts and risks which may affect relevant persons functions, interests, or activities	Nature and scale of effect on relevant persons functions, interests, or activities	Sufficient information provided	Consultation overview <i>For a full summary of contact, see Appendix B</i>	Reasonable period provided	Appropriate measures adopted
		<p>Wanjina - Wunggurr Wilinggin Native Title claim, determined between 2004 and 2012. However, day to day management of the Determined area is in the hands of three separate Aboriginal Corporations:</p> <ol style="list-style-type: none"> <li>Dambimangari Aboriginal Corporation</li> <li>Wunambal Gaambera Aboriginal Corporation and</li> <li>Wilinggin Aboriginal Corporation.</li> </ol>	<ul style="list-style-type: none"> <li>Indigenous traditional activities (e.g., fishing)</li> <li>Have responsibility for sea country within the Kimberley Marine Park.</li> </ul>		<p>area for this activity.</p> <p>There are no planned impacts from Shell's activities predicted to occur to WGAC's functions, interests, and activities.</p> <p>They may be affected to a limited extent if a major spill event were to occur.</p>	<p>Face to face meeting held on 15 September 2023, with a tailored presentation pack – Appendix A</p> <p>Shell published in social media, radio and newspapers which were targeted at groups or individuals within this region from March to April 2023 – Appendix A.</p>	<p>values or features which may be affected by Shell's activities which we were not aware of and some input was provided as a result of this (Refer to Appendix A) and the measures adopted column of this table). Following an agreement at this meeting on 15 September to meet again at a face-to-face on country on 25 October 2023, multiple further attempts through phone calls and emails were made throughout September and October 2023 attempting to arrange this further meeting with the WGAC Board on country. Shell's attempts did not result in a further meeting occurring with WGAC.</p> <p>Shell provided a further opportunity on the 17 October 2023 for WGAC to provide input to Shell for EP preparation, clearly restating the purpose of consultation, the request for their input on matters we may not be aware of, such as cultural values or features, or objections or claims they may have about the activity. Shell asserted that sufficient information and a reasonable period had been provided for WGAC to provide a response, however Shell offered a further 10 days to provide the requested input, before Shell needed to make final preparations of the EP in readiness of resubmission of the EP to NOPSEMA. WGAC did not respond to the offer even with a further call made before the period closed.</p> <p>From the end of March 2023, Shell undertook a targeted media campaign in the region, using print, geotargeted social media and radio ads. The campaign urged potential relevant persons to contact Shell and provided a link to the Crux project on the Shell website with access to draft Environment Plans. These materials enabled relevant persons to make an informed decision about how their functions, interests, or activities may be affected, and a mechanism to consult with Shell on the EP – Appendix A.</p> <p>Shell's further reasonable efforts to consult with all these relevant persons has been demonstrated through offers to all relevant persons to cover all reasonable costs associated with attending consultation meetings/forums (e.g. accommodation, travel and where appropriate reasonable costs of time) and also contact details for environmental consultants, some independent, paid for by Shell to support the relevant persons in assessing information and providing feedback to Shell.</p> <p>Shell considers that WGAC and the community it represents have been afforded a reasonable opportunity to consult with Shell in preparing this EP.</p>	<p>provided to WGAC in May 2023.</p> <p>WGAC had more than 3 months to review the information, and make an informed assessment about how their functions, interests or activities may be affected.</p> <p>It also allowed reasonable time to digest information provided and to access the offer of a consultant panel to support them in reviewing information and raising issues or input on Shell's proposed activity.</p> <p>Shell considers that WGAC and the community it represents have been afforded a reasonable period to understand how this EP impacts their functions, interests or activities and engage with Shell for further discussion.</p>	

**Justification that consultation is complete.**

WGAC's functions, interests and activities are only potentially impacted by the spill risk from Shell's activities (through dissolved/entrained oil). Any impact to WGAC's functions, interests and activities is predicted to be Low. Other than source control options which are already planned to be implemented by Shell in the event of a spill, there are no other available options to directly mitigate or reduce the impacts of dissolved/entrained oil during spills which could occur from this activity. Therefore, further consultation is unlikely to improve risk management or further reduce the environmental impacts of a spill in accordance with the objects of consultation in preparing an EP. Given the remote likelihood and scale of potential risks to WGAC's functions, interests and activities, Shell provided sufficient information to inform WGAC how their functions, interests and activities may be affected, provided information to make WGAC sufficiently informed of their rights and their opportunity to be consulted, made reasonable efforts to consult WGAC. Shell also provided a reasonable period for WGAC to determine if their functions, interests, and activities may be affected and to review information and provide feedback to Shell. Shell supported WGAC in this process by providing access to reasonable support in the form of environmental consultants to support advising WGAC and offers of reasonable financial support to attend forums. Shell has also adopted appropriate measures as a result of consultation carried out with WGAC. Since Shell has provided WGAC sufficient information, a reasonable period to consider the information and be able to respond and appropriate measures have been adopted, Shell believes that consultation has been carried out in accordance with Regulation 10A(g).

Relevant person ID	Contact Methodology Tier	Indigenous relevant person	Relevant person's functions, interests and activities	Petroleum activity impacts and risks which may affect relevant persons functions, interests, or activities	Nature and scale of effect on relevant persons functions, interests, or activities	Sufficient information provided	Consultation overview <i>For a full summary of contact, see Appendix B</i>	Reasonable period provided	Appropriate measures adopted
31.	2	<p><b>Dambimangari Aboriginal Corporation (DAC)</b></p> <p>Wanjina-Wunggurr Aboriginal Corporation is the formal RNTBC for the Dambimangari, Uunguu Part A, Uunguu - Area B, Wanjina - Wunggurr Wilinggin Native Title claim, determined between 2004 and 2012. However, day to day management of the Determined area is in the hands of three separate Aboriginal Corporations:</p> <ol style="list-style-type: none"> <li><b>Dambimangari Aboriginal Corporation</b></li> <li>Wunambal Gaambera Aboriginal Corporation and</li> <li>Wilinggin Aboriginal Corporation.</li> </ol>	<ul style="list-style-type: none"> <li>Approx 190 km from the operational area to closest part of DAC country</li> <li>Represents Indigenous people located in the North Kimberley region of Australia.</li> <li>KLC is the NTRB for DAC, via WWAC.</li> <li>Sea Country</li> <li>Cultural values</li> <li>Cultural Features</li> <li>Indigenous traditional activities (e.g., fishing)</li> <li>Have responsibility for sea country within the Kimberley Marine Park.</li> </ul>	<p>Spill risks have the potential to affect DAC's functions, interests, or activities.</p>	<p>Low, in accordance with Table 5-3.</p> <p>DAC's functions, interests and activities do not extend near the operational area for this activity.</p> <p>There are no planned impacts predicted to DAC's functions, interests, and activities.</p> <p>They may be affected to a limited extent if a major spill event were to occur.</p>	<p>Fact sheets and draft EP provided to DAC on 19, 25, 26 May, and 28, 31 August.</p> <p>Face to face meeting held with DAC Advisor on 19 September 2023, with a tailored presentation pack – Appendix A.</p> <p>Shell published in social media, radio and newspapers which were targeted at groups or individuals within this region from March to April 2023 – Appendix A.</p>	<p>Shell has been attempting to meet DAC face to face since March 2023 when an invitation to consult on the EP was first sent to them as well as their representative body, KLC. The request suggested multiple ways which consultation could occur, from on country meetings through to attendance at Indigenous forums which were run at 3 locations (Table 5-9). DAC was invited to attend a specific meeting in Broome on 2 May 2023, this was also shared via the KLC with Wanjina-Wunggurr Aboriginal Corporation.</p> <p>DAC was phoned on multiple occasions between May and August 2023. In addition, during this time, Shell brought to the attention of DAC the NOPSEMA <a href="#">Consultation on offshore petroleum environmental plans</a> which Shell posted a link to on the EP webpage soon after it was published in May 2023 in order for them to be sufficiently informed about the objective of consultation and their rights in the process.</p> <p>A consultation meeting with a DAC advisor occurred on 19 September 2023 where Shell explained the activities of this EP and the impacts and risks which may affect DAC's functions, interests or activities. Shell also asked for input on particular values or features which may be affected by Shell's activities which we may not be aware of, and some input was provided as a result of this. Shell also asked if any other issues or input on the EP by DAC. No response was provided. Shell also reiterated the availability of independent environmental consultants which DAC could use free of charge to help them through as assessment of information related to the EP (Refer to Appendix A and the measures adopted column of this table). Shell received no further feedback or correspondence from DAC until Shell provided a further opportunity on the 17 October 2023 to provide input to Shell to support EP preparation. DAC confirmed they were not in a position to provide input on the EPs soon to be submitted to NOPSEMA. Following this, multiple attempts through phone calls and emails up to 6 November 2023, were made to clarify some items and the requirements for consultation in preparation of the EP and Shell's obligations to this end, as distinct to engagement on other matters, and ongoing consultation related to the EP. Shell also assured DAC that suitable processes and procedures were in place to address any relevant new information DAC may raise relevant to this EPs impacts and risks. Shell also made our position clear that consultation had been carried out with DAC as required by the regulations in preparation of this EP.</p> <p>From the end of March 2023, Shell undertook a targeted media campaign in the region, using print, geotargeted social media and radio ads. The campaign urged potential relevant persons to contact Shell and provided a link to the Crux project on the Shell website with access to draft Environment Plans. These materials enabled relevant persons to make an informed decision about how their functions, interests, or activities may be affected, and a mechanism to consult with Shell on the EP – Appendix A.</p> <p>Shell's further reasonable efforts to consult with all these relevant persons has been demonstrated through offers to all relevant persons (Indigenous people or organisations) to cover all reasonable costs associated with attending consultation meetings/forums (e.g. accommodation, travel and where appropriate reasonable costs of time) and also contact details for environmental consultants, some independent, paid for by Shell to support the relevant persons in assessing information and providing feedback to Shell.</p>	<p>Shell has been reaching out to DAC both directly and through KLC since March 2023.</p> <p>Sufficient information (such as factsheets and website as well as a published version of the draft EP) was provided to DAC in May 2023.</p> <p>DAC had more than 5 months to review the information, and make an informed assessment about how their functions, interests or activities may be affected.</p> <p>It also allowed reasonable time to digest information provided and to access the offer of a consultant panel to support them in reviewing information and raising issues or input on Shell's proposed activity. Shell has also agreed to pay reasonable costs to support their participation and attendance</p>	<p>Shell adopted measures, through suggestions to consult in a face-to-face meeting in Perth in September 2023.</p> <p>Shell also updated the acceptable levels of impact from a major spill. The update was to reflect and reinforce it is unacceptable for a spill from Crux activities to impact DAC sea country.</p>

Relevant person ID	Contact Methodology Tier	Indigenous relevant person	Relevant person's functions, interests and activities	Petroleum activity impacts and risks which may affect relevant persons functions, interests, or activities	Nature and scale of effect on relevant persons functions, interests, or activities	Sufficient information provided	Consultation overview <i>For a full summary of contact, see Appendix B</i>	Reasonable period provided	Appropriate measures adopted
							<p>DAC were requested multiple times between March and September 2023 to provide contacts for other RPs we should consult (no response provided).</p> <p>Shell considers that DAC and the community it represents have been afforded a reasonable opportunity to consult with Shell in preparing this EP.</p>	<p>in consultation meetings.</p> <p>Shell considers that DAC and the community it represents have been afforded a reasonable period to understand how this EP impacts their functions, interests or activities and engage with Shell for further discussion.</p>	

**Justification that consultation is complete.**

DAC's functions, interests and activities are potentially impacted by the spill risk from Shell's activities. The predicted impact to DAC's functions, interests and activities is predicted to be slight. Other than source control options which are already planned to be implemented by Shell in the event of a spill, there are no other available options to directly mitigate or reduce the impacts of dissolved/entrained oil during spills which could occur from this activity. The nature and scale of how DAC's functions, interests or activities is predicted to be affected is low. Therefore, further consultation is unlikely to improve risk management or further reduce the environmental impacts of a spill in accordance with the objects of consultation in preparing an EP. Shell has provided sufficient information to inform DAC how their functions, interests and activities may be affected, made reasonable efforts to consult, provided a reasonable period for DAC to determine if their functions, interests, and activities may be affected and to review information and provide feedback to Shell. Given the remote likelihood and scale of potential risks to DAC's functions, interests and activities, sufficient information and a reasonable period for consultation has been provided and appropriate measures adopted, consultation has been carried out in accordance with Regulation 10A(g).

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### 5.6.6 Commercial Fisheries

Based on the nature of Commercial Fisheries and their interests, Shell approached consultation with these relevant persons separately to broader community consultation.

In addition to the processes outlined above for general community and industry consultation, Shell employed a variety of resources to identify and classify relevant commercial fisheries. This included fisheries that overlap the Planning Area, as well as fisheries whose interests or activities overlap the Planning Area but not the location of Shell’s planned activities. Shell also determined that where licence holders are active or potentially active within the Planning Area, the licence holder should be engaged as a potentially relevant person to provide them with sufficient information to assess whether they have any interest in or may be impacted by Shell’s proposed activities.

In summary, identification and consultation with commercial fisheries was conducted as follows:

- Government authorities (AFMA, DCCEEW, WA DPIRD, and NT DITT) were engaged regarding the proposed activity and engagement with potentially relevant persons from commercial fisheries groups. Materials were made available by government authorities, including WA FishCube (fishing effort) data files and fishing reports.
- Fishing industry associations that represent fisheries with license areas that overlapped the Planning Area, such as WAFIC and Commonwealth Fisheries Association, were consulted with regarding the proposed activity and engagement with their members.

In addition, WAFIC was engaged on a fee-for-service basis to engage with their members with regards the proposed activity and this EP. A summary of their feedback is set out in the Summary of Consultation Table in Appendix B.

This summary includes acknowledgment from NOPSEMA that WAFIC is the appropriate body to carry out these duties. In addition, Shell consulted directly with licence holders in order to provide an additional means of assurance that all relevant persons had received sufficient information to assess the proposed activity in terms of their own interests and any potential impacts.

Licence holders in commercial fisheries were consulted using the following methodology:

- Letters (WA and NT managed Fisheries in the Planning Area)
- Email and letters via registered post (Commonwealth registered fisheries)
- Tailored relevant fact sheets and information describing the proposed activity, including relevant location coordinates.
- Consultation via relevant peak industry group WAFIC, including a virtual session for those seeking further information.

### 5.6.7 Titleholders and Operators

Email was used to consult with petroleum titleholders and operators. If there was no response it was assumed they had no objection or comment on the proposed activity. This was considered reasonable effort as titleholders and operators have systems and the resources to consult on matters of interest to them.

### 5.6.8 Community and other

This encompasses the groups identified in the relevant person search under Commercial Operators, Interest Groups, NGOs, Community Groups and academic research. Consultation and awareness channels used were email, media campaigns, community drop in and targeted information sessions.

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### 5.6.8.1 Community drop-in sessions

These sessions were held at accessible public locations in relevant communities and attended by Subject Matter experts (SMEs) from relevant Shell disciplines.

Criteria for selection of locations for drop-in sessions was based on:

- whether there is a community located within or immediately adjacent to the coastal boundary of the Planning Area;
- Where there are several small communities in close proximity, the most populated community in these areas was selected as the representative location;

Awareness was generated via appropriate targeted public advertisements (both print, and social media) for each session and information was also provided to local level government, local business chambers and community organisations for dissemination to amplify awareness.

Sessions were supported with consultation materials for the Crux Seabed Survey EP Planning Area. Materials were appropriate to the audience to maximise their understanding of relevant EP activities (including activity description/location, the EP process and environmental management (potential aspect and proposed control). The materials encouraged high-level two-way discussions with subject matter experts and attendees to ensure adequate consultation and opportunity for RP to provide feedback and inform the relevant EP. Materials included videos, factsheets and maps.

Community Drop-in sessions were held in the following locations:

- Broome
- Darwin
- Port Hedland
- Derby
- Exmouth

To complement these sessions, proactive visits to local organisations such as local shires, chambers of commerce, local port authorities, police and tourism offices at each of the above locations were completed to provide further opportunity for consultation.

Shell offered community sessions in the various locations above in order to provide an opportunity for relevant persons who may interested in the activity set out in this EP but may be geographically located outside of the Planning Area.

### 5.6.8.2 Targeted Information Sessions

In addition to community drop in session consultation, targeted information sessions were held with relevant persons from the community, including the business community (via chambers of commerce). A formal presentation on the relevant EPs was completed followed by an open forum discussion where attendees were provided with an opportunity to ask questions. These sessions also acted as an awareness amplification method for community drop-in sessions and the broader EP consultation process with potentially relevant persons.


Information sessions were held in the following locations:

- Broome
- Darwin

### 5.6.9 Assessment of Merit of Objections and Claims

Shell's assessment of relevance and assessment of merit considers four broad categories:



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1. objection or claim has merit – the objection or claim raised is relevant to both the planned activity and the relevant person’s or organisation’s functions, activities or interests. The objection or claim has merit if there is a reasonable / scientific basis for related effects or impacts to occur and/or there is a reasonable basis for the objection or claim to be addressed in the EP.
2. objection or claim does not have merit – the objection or claim raised may be relevant to the planned activity or the relevant person’s or organisation’s functions, activities, or interests, however, the objection or claim raised has no credible or scientific basis.
3. relevant matter – the matter raised does not fit the criteria descriptions for objections or claims with/without merit. However, the matter raised is relevant to the planned activity, comprises a request to Shell for further relevant information, or provides information to Shell that is relevant to the activity or the EP.
4. not a relevant matter – correspondence does not relate to the planned activity or the relevant person’s, or organisation’s functions, interests or activities being affected by the activity. Non relevant matters may also be generic in nature with no specific issues raised (e.g., salutations, acknowledgements, meeting arrangements, etc.).

The summary of consultation table in Appendix B contains Shell's assessment of the feedback received from relevant persons during consultation, the merits of objections or claims, measures adopted, and any changes incorporated into the EP as a result of the feedback.

In compliance with sub-regulation 9(8) of the OPGGS(E) Regulations, sensitive information (if any) contained in an EP, as well as the full text of any response by a relevant individual to consultation under regulation 11A during the preparation of the EP, must be included in the sensitive information section of the EP and not elsewhere.

## 5.7 Summary of Consultation for the Environment Plan

Shell considers that consultation will be complete when:

- each relevant person has received sufficient information and reasonable time to assess the impacts of the activity on their functions, interests, or activities; and
- all objections or claims have been discussed and, where reasonably practicable, resolved by Shell.

Appendix B contains a summary of all consultation carried out with relevant persons during the preparation of the EP in accordance with OPGGS(E) Regulation 11A.

## 5.8 Ongoing Consultation as part of EP Implementation Strategy

Consistent with Regulation 14(9) of the OPGGS(E) Regulations, Shell will undertake consultation as part of the EP Implementation Strategy (refer Section 10), with the intent to acquire and preserve an up-to-date understanding of relevant persons’ functions, interests, and activities during the execution of Shell’s proposed activities. Specific ongoing consultation activities Shell has undertaken to carry out are set out in Table 5-11 below. It should be noted that this is not an exhaustive list of all ongoing consultation activities Shell may undertake in the future.

The ongoing consultation under the Implementation Strategy will enable Shell to maintain relationships with relevant persons and foster a continued improvement in Shell’s understanding of the features and values of the existing environment, and where new risks or impacts are identified, the establishment of appropriate controls to reduce risks and/or impacts to ALARP.

Matters raised post-acceptance of the EP will be assessed as detailed in Section 5, to confirm if the matter raised is a relevant matter or if objections and claims have merit. Any new risks or impacts that are discovered through ongoing consultation will be subject to Shell’s Environment MOC process, which considers the requirements of Regulation 17 of the OPGGS(E)R and establishes the mechanisms to assess change to the EP. Section 10.1.4 describes this MOC

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process in detail. Further ongoing consultation requirements, in the form of notifications of various kinds, are outlined within Sections 10.5 and Table 10-5.



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**Table 5-11: Ongoing Consultation Programme for the Crux Project**

Ongoing Consultation Topic	Relevant persons	Timing	Nature of Ongoing Consultation
Underwater cultural heritage survey will be progressively completed. Once completed, Shell will utilise the initial outputs as part of Shell's ongoing consultations in a culturally appropriate manner, with indigenous people and organisation who want to help Shell better understand the tangible and intangible cultural heritage values and features within the Operational Area and Planning Area.	Consultation with relevant persons (including indigenous relevant persons and other organisation such as DCCEEW) on this topic will occur where they chose to voluntarily participate.	The cultural heritage survey will be progressively completed between July 2023 and Q1 2024. As agreed with relevant persons and at their request ongoing throughout 2023 and 2024 as a minimum starting point.	This ongoing consultation will occur through co-design, at the expressed preference of the relevant persons concerned. Where relevant persons are Indigenous People, it is anticipated this would on country of the relevant Indigenous persons.
Industry collaboration on indigenous people involvement in oil spill preparedness. Given the program is a novel approach, the activity is planned to be a pilot project initially. Shell believes an industry collaboration with involvement from AMOSC (or similar organisation) is the best vehicle to progress this request in a mutually beneficial manner. Shell will seek to work with AMOSC in establishing an industry collaboration and if successful, progress ongoing consultation with traditional owners in the codesign of a suitable training program, with input from WA DoT, as the control agency for oil spill response within WA state waters.	It is not reasonably practical to implement a pilot such as this with many Indigenous people. However, Shell acknowledges that importance of ongoing consultation in relation to this matter with Indigenous people.  However, subject to confirmation, as of October 2023, it is planned to primarily be with Bardi-Jawi people.	This is a long-term commitment, which is subject to the success of a pilot program planned to commence in 2023.  Due to a number of influencing factors which are outside of Shells control such as appetite for industry collaboration, DoT's acceptance of the program (given they are the control agency) a more specific timeframe cannot be committed to.  Shell has commenced planning, with initial industry engagement completed, and DoT engagement (outside of EP 11A consultation requirements) have started.	This ongoing consultation will occur through co-design, at the expressed preference of the specific indigenous people.

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Ongoing Consultation Topic	Relevant persons	Timing	Nature of Ongoing Consultation
<p>Social Investment and Community Contributions: Where Shell has operational footprints it provides a range of social investment and community contributions to create a positive legacy. Through consultation Shell heard from numerous relevant persons that social investment was important. Shell considered this and will raise greater awareness and invite participation in its existing social investment and community contribution programs for suitable relevant persons. Shell is also evaluating its social programs (programs, budgets, and geographical reach) to achieve a greater reach.</p> <p>The programs are designed on the pillars of regional economic development, supporting stronger first nations and jobs for the future. Current programs being delivered or planned for 2023 include:</p> <ul style="list-style-type: none"> <li>- Kimberly Business Network</li> <li>- Supporting stronger first n leadership and governance program</li> <li>- Disaster Resilience fund</li> <li>- Deadly Sister Girlz</li> <li>- Bardi Jawi Womens Rangers</li> <li>- Rise up to work program: Nyambu Buru Yawuru</li> <li>- Preludes Communities Fund</li> <li>- Prelude to the Future Group Training NT</li> <li>- Indigenous Business Support Program NT</li> </ul> <p>These programs have been communicated to the relevant persons as part of the consultation to date and will play an ongoing role</p>	<p>Kimberley Land Council</p> <p>Bardi Jawi Aboriginal Corporation</p> <p>Broome Shire (including Djarindjin community)</p> <p>Nyamba Buru Yawuru</p> <p>Darwin Community</p>	<p>Shell is currently implementing these social investment and community contribution programs and are continuing to build awareness and encourage participation in these on an ongoing basis</p>	<p>Ongoing consultation will be achieved through delivery of Shells social investment programs and invitation to applicable relevant persons to participate / apply for community contributions</p>

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Ongoing Consultation Topic	Relevant persons	Timing	Nature of Ongoing Consultation
Local Content and supply opportunities were a topic of interest for numerous relevant persons during the community and Traditional Owner consultations. Shell is committed to giving Australian suppliers, local regional and indigenous businesses genuine opportunities to participate in our supply chain. It uses a supplier portal to publish work packages.	Bardi Jawi Aboriginal Corporation  Broome Shire (including Djarindjin community)  Nyamba Buru Yawuru	A full time Shell resource is responsible for this remit and will communicate relevant dates of events to the relevant persons as they arise and continue to raise awareness of opportunities via emails and phone calls.	Shell will continue to raise awareness of its supplier portal.  Supplier Information sessions will also be held in the project support bases of Broome and Darwin to encourage local content via discussion of procurement categories and upcoming work tenders
Shell will carry out ongoing consultations with Indigenous people in the Kimberly, adjacent to the planning area for the Crux Project, outside of this activity scope, to better understand cultural features and values of the environment to better inform current and future impact and risk assessments on the Crux Project.	Bardi Jawi Aboriginal Corporation  Walalakoo  Mayala  Djarindjin  Wunambal Gaambera	Subject to agreement with each specific group, Shell is aiming to set-up bi-annual meetings with these Indigenous groups.	This consultation will be driven by the preferences of the Indigenous people e.g., on country meetings.
Where Indigenous people have identified cultural features and values which may be affected by major spills, Shell has committed to further ongoing consultation with them in the event of a major spill which threatens the identified cultural features or values to better inform an effective response to mitigate the effects of a major spill.	Bardi Jawi Aboriginal Corporation  Walanadi	Further consultation will occur in the event of a major spill which threatens the area were identified significant songlines and ceremonial sites occur.	This consultation will be driven by the preferences of the Indigenous people e.g., on country meetings.
In preparation of the EP, DCCEEW requested that ongoing consultation with the Departments Underwater Cultural Heritage Team occur in relation to activities that have the potential to impact UCH.	DCCEEW Underwater Cultural Heritage Team	During the execution of the activity, where potential impacts to underwater cultural heritage are established.	This consultation will be driven by the discovery of potential impacts to underwater cultural heritage. To date, through RP consultation and the execution of a First Nations Underwater Cultural Heritage Impact Assessment (Cosmos Archaeology, 2023), no planned impacts to UCH have been established. Shell has committed to a chance find process as detailed in Table

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Ongoing Consultation Topic	Relevant persons	Timing	Nature of Ongoing Consultation
			9-26, which may trigger this ongoing consultation requirement, should a discovery be made. Additionally, through ongoing consultation to Indigenous persons, if an impact to UCH is established, Shell will consult the DCCEE Underwater Cultural Heritage Team.

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## 6 Description of the Activity

### 6.1 Scope of the EP

This section provides a description of the petroleum activity, including the details of the location in which the activities will occur, in accordance with Regulation 13(1) of the OPGGS(E)R.

This Environment Plan covers the following activities within the Operational Area (Figure 6-1) located within pipeline licence areas AC/PL1 & WA-33-PL.

The seabed assessment will compose of a geophysical and geotechnical survey (referred to collectively as “the survey”) with the objective to:

- investigate sub-seabed geological conditions for the purposes of understanding conditions at the proposed pipeline pipelay initiation and the Pipeline End Manifold (PLEM) locations for the Crux pipeline;
- check geological conditions for proposed pipeline end terminations (PLET) foundations at the Prelude ends of the proposed Crux pipeline;
- identify potential seabed debris and obstructions;
- identify and map the nature and distribution of seabed surface types along potential pipeline routes; and
- accurately measure water depth and map seabed topography.

As defined in the Crux Offshore Project Proposal, the Operational Area (Figure 6-1) includes a 1 km buffer either side of the nominal pipeline route and a slightly larger buffer (approximately 2 km) has been allowed at the Prelude end of the pipeline to allow for tie-in to the northern quadrant of the FLNG turret. Non-petroleum activities are outside of the scope of this EP.



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This EP does not include the general transit of the vessel to or from the Operational Area. These activities will be undertaken in accordance with relevant maritime legislation, such as the Commonwealth Navigation Act 2012, and are within the jurisdiction of AMSA. Activities undertaken by the vessel which is not carrying out petroleum activities are not considered in this EP. Any impacts and risks outside of these activities are provided for via the HSSE and SP Control Framework, outside of the formal EP acceptance and implementation process, to support the transparent, whole-of-project assessment process.

## 6.2 Location and Timing

The Crux seabed survey location is located in Commonwealth and Ashmore Cartier marine waters, 200 km offshore northwest Australia and 460 km north-north east of Broome (Figure 6-2, in 160 m to ~260 m from Mean Sea Level (MSL) water depth). The survey activities will be executed along or adjacent to the nominal Crux pipeline route which is approximately 160 km in length as depicted in Figure 6-3.



**Figure 6-2: EP Operational Area in context of North West Australia**



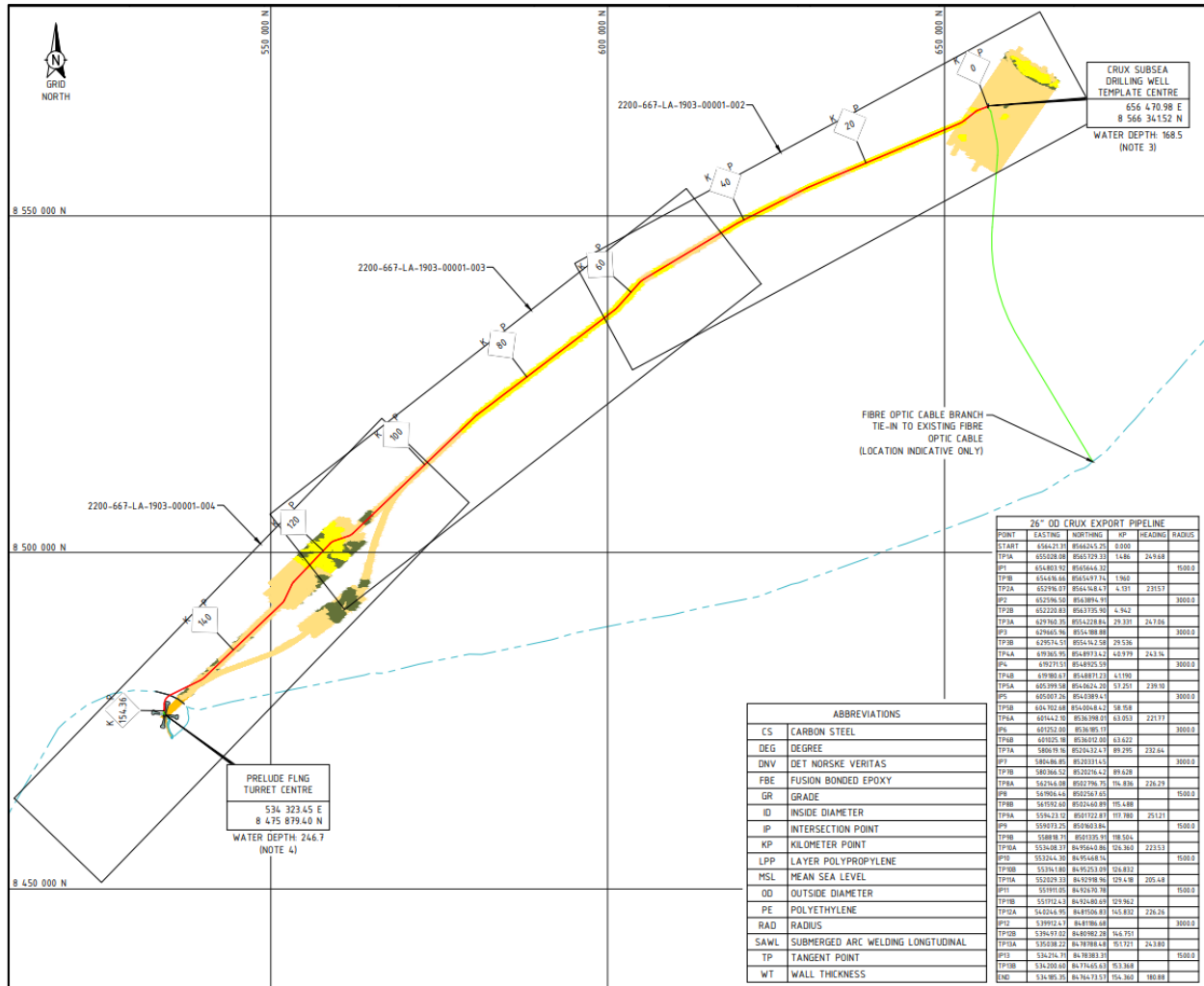


Figure 6-3: Location of the nominal pipeline route for the Crux Seabed Survey

The survey is expected to be completed within a five day period during a single vessel based campaign operating 24 hrs/day. To allow for contingencies in field execution of each component of the survey, due to weather, resampling or other unplanned delays, the survey activities may occur for up to 15 days as described in detail within Section 6.3. The window for conducting the survey is currently planned to occur in a single campaign in 2024 pending regulatory approval of this EP.

The timing and duration for the survey is contingent on the availability of a suitable vessel, weather and the receipt of environmental approvals. To account for potential shifts in schedule, the environmental assessment is not seasonally specific and assumes the activities described in this EP may occur at any time during the life of the EP.

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## 6.3 Survey Activities

### 6.3.1 Geophysical survey

The geophysical survey component of the survey will adopt a number of data acquisition techniques which are depicted in Figure 6-4 and described in Table 6.1 below. Figure 6-4 is intended to provide an overview of the various geophysical survey equipment deployed from a vessel, noting that it is not intended to represent how the survey will be executed in the field (i.e. not all equipment will be deployed and used at the same time). The geophysical survey will target areas along the pipeline route where additional data acquisition is required to support detailed design. These locations and types of geophysical survey activities undertaken at each site are summarised in Table 6-1. This summary includes expected durations (inclusive of contingency) for each of the survey activities and indicates where they will be executed concurrently.

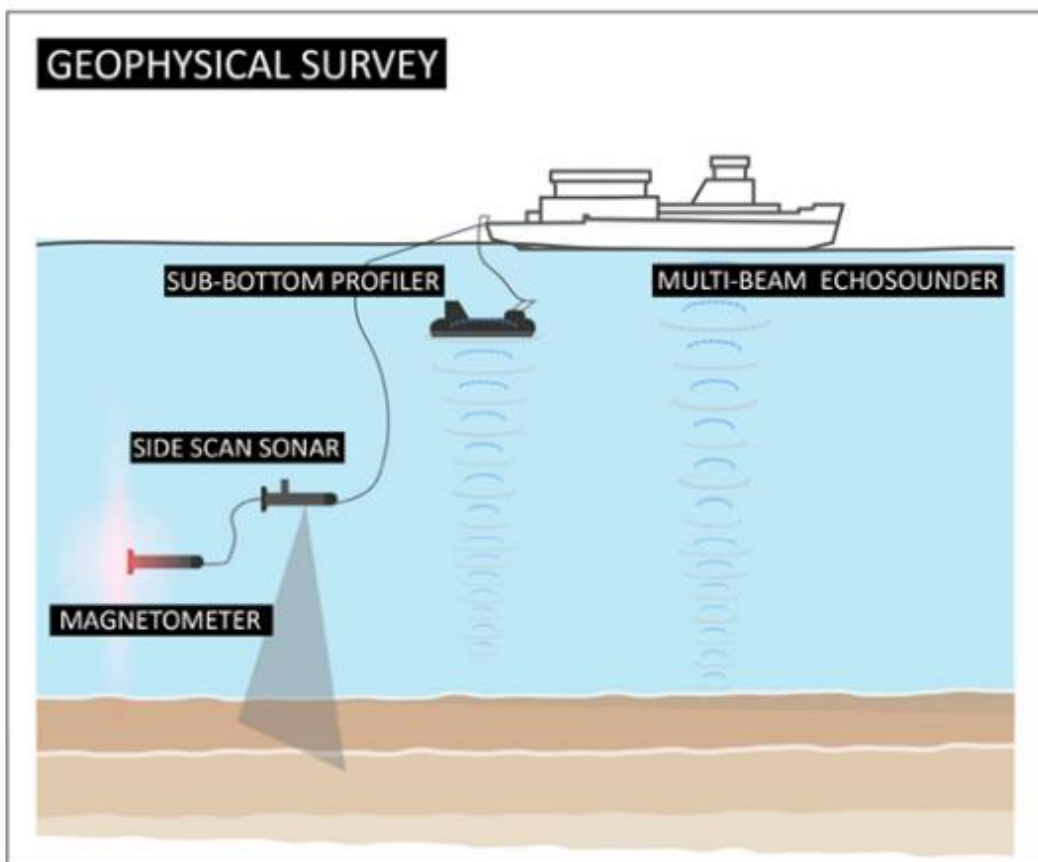


Figure 6-4: Geophysical survey equipment



**Table 6-1: Description of geophysical survey activities**

Equipment	Purpose	Equipment Description	Planned Activities	Location	Duration
Multi-beam echosounder (MBES)	Measure bathymetry	<p>A MBES mounted on the vessel hull or via moonpool pole mount is typically used. A MBES acquires a wide swath (strip) of bathymetry data perpendicular to the vessel track and provides total seabed coverage with no gaps between vessel tracks.</p> <p>A MBES transmits a broad acoustic pulse from a transducer over a swath across a vessel track at a frequency output range of 200-400 kHz. The MBES then forms a series of received beams that are each much narrower and form a 'fan' (with a half-angle of 30-60°) across the seabed, perpendicular to the vessel track. The transducer(s) then 'listen' for the reflected energy from the seabed. The fans of seabed coverage produce a series of strips along each track, which are lined up side-by-side to generate two dimensional georeferenced bathymetric maps of the seabed.</p>	<p>The selected MBES has a frequency range of 200-400 kHz with a planned operational frequency of 300 kHz</p> <p>The MBES is planned to be used at the operational frequency concurrently with all other geophysical activities described below.</p>	<p>Full pipeline route Crux to Prelude.</p> <p>Alternate Pipeline Route near Prelude (within described Operational Area)</p>	<p>5 days under expected conditions.</p> <p>Contingencies: 3 days to account for repeat survey activities due to detected anomalies.</p> <p>Total: 8 days</p>
Side scan sonar (SSS)	Detects hazards such as existing pipelines, lost shipping containers, boulders, debris, unmarked wrecks, reefs and craters.	<p>The SSS method of surveying generates oblique acoustic images of the seabed by towing a sonar 'towfish.' The towfish is provided with power and digital telemetry services and towed from the vessel using a reinforced or armoured tow cable.</p> <p>The towfish is equipped with a linear array of transducers that emit, and later receive, an acoustic energy pulse in a specific frequency range (either 100/400, 300/600 or 300/900 kHz dual simultaneous frequencies). Typically, a dual-channel, dual-frequency SSS is used. SSS is like MBES but operates at a wider fan angle.</p> <p>The acoustic energy received by the towfish (backscatter) provides information as to the general distribution and characteristics of the surficial sediment and outcropping strata. Shadows result from areas of no energy return, such as shadows from large boulders or sunken ships, and aid in interpretation of the sonogram image.</p> <p>The towfish is constructed of stainless steel and is a cylindrical torpedo-like device. It is typically towed 50-100 m above the seabed depending on water depth and the frequency range.</p> <p>The SSS is operated at the same time as the MBES.</p>	<p>The selected SSS provides for data accusation across a range of frequencies, either 100/400, 300/600 or 300/900 kHz dual simultaneous.</p> <p>The planned operational frequency for the survey is 300/600 kHz.</p> <p>The towfish will be launched and retrieved from the stern of the vessel towed at the typical depth of 50-100 m.</p> <p>The SSS is planned to be operated at the same time as the MBES and SBP systems.</p>		



Equipment	Purpose	Equipment Description	Planned Activities	Location	Duration
Sub-bottom profiler (SBP)	SBP is used to investigate the layering and thickness of the uppermost seabed sediments. The SBP imagery penetrates to a minimum depth of at least 30 m below the seabed.	<p>The SPB system is a wideband frequency modulated sub-bottom profiler utilising Full Spectrum Compressed High-Intensity Radar Pulse (CHIRP) technology. SBP generates high resolution images of the sub-bottom stratigraphy in oceans, lakes, and rivers.</p> <p>The SBP uses a low output frequency (between 500 Hz–16 kHz), high ping rate, parametric echo sounding CHIRP which produces a swept-frequency signal. The transducer that emits the acoustic energy also receives the reflected signal. CHIRP signals typically penetrate only about 5-10 m into the seabed and provide the best resolution, but lowest penetration.</p> <p>The SBP will be mounted on a towfish and towed from the stern of the vessel at a depth that allows adequate data acquisition.</p> <p>The SBP system will be operated at the same time as the MBES and SSS.</p>	<p>The selected SBP system will be towed and operated concurrently with the MBES and SSS.</p> <p>The SBP will be used within an operational frequency range of approximately 500 Hz-16 kHz.</p>		
Magnetometer	This equipment detects metallic objects on or below the seabed (e.g. buried pipelines, petroleum wellheads, shipwreck debris and dropped objects such as unexploded ordnance, cables, anchors, chains) that may not be identified using acoustic techniques.	<p>A magnetometer sensor is housed in a towfish and is towed as close to the seabed as possible and sufficiently far away from the vessel to isolate the sensor from the magnetic field of the vessel.</p> <p>The magnetometer survey will be conducted at the same time as the MBES, SSS and SBP.</p> <p>The magnetometer towfish is constructed of stainless steel and is a cylindrical torpedo-like type device.</p>	<p>The magnetometer towfish will be deployed at the stern of the vessel as part of the Fibre Optic Cable (FOC) crossing survey (Prelude End)</p> <p>The magnetometer will be used concurrently with the geophysical techniques described above during the FOC crossing survey. The magnetometer may be left in the geophysical survey spread during the remainder of the geophysical campaign (noting that there are no credible environmental risks or impacts associated with this equipment).</p>	FOC crossing location (Prelude End)	1 day.



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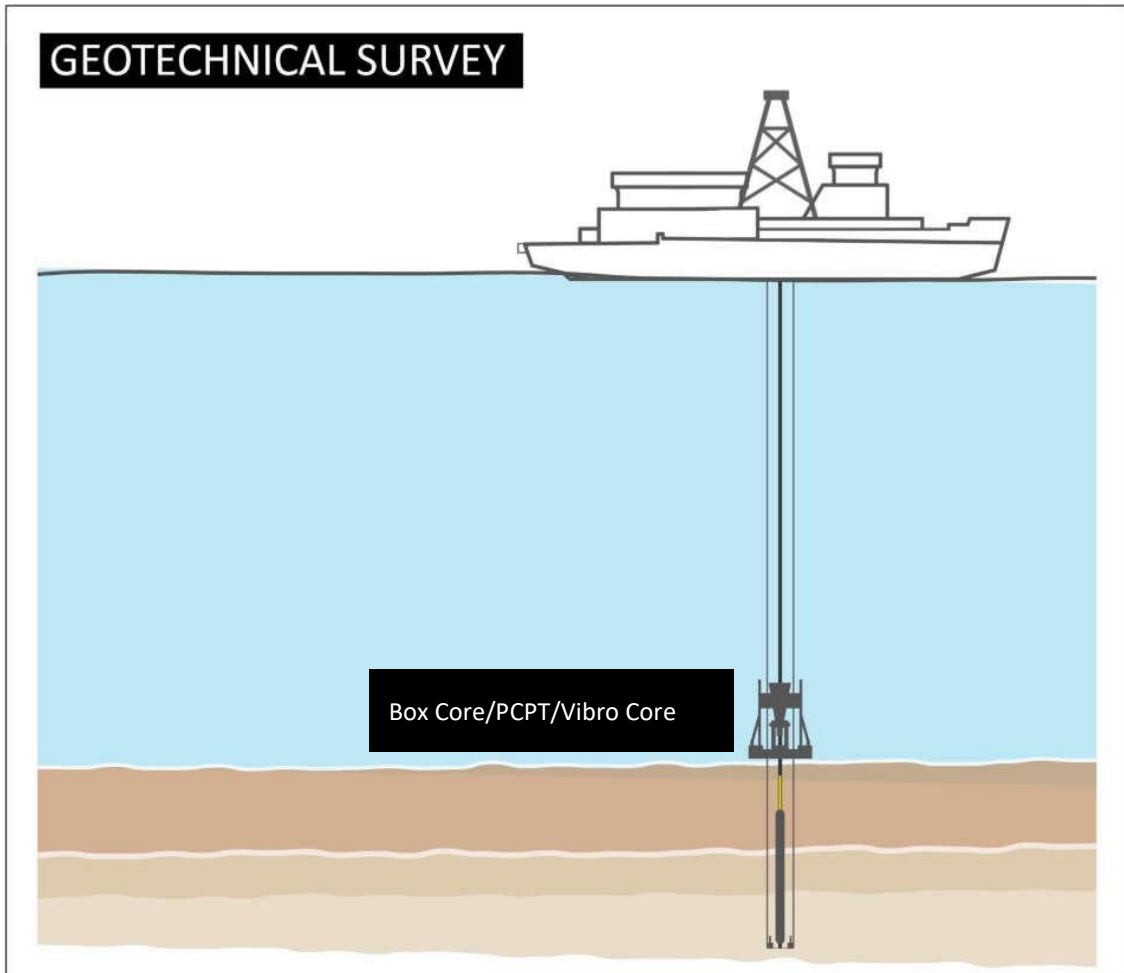
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Equipment	Purpose	Equipment Description	Planned Activities	Location	Duration
Tow camera/ Drop camera	To visually observe the physical and biological environment	Cameras may be operated off the back of the survey vessel. No impacts.	The drop/tow camera will be deployed at up to 5 locations on the alternate route to gather bathymetric data.	Alternate Pipeline Route near Prelude (within described Operational Area)	2 days
				<b>Total Duration:</b>	<b>11 days</b>

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### 6.3.2 Geotechnical survey

The geotechnical scope will use three generic methods to gather information on the seabed structure, including, Piezo Cone Penetration Test (PCPT), vibro core sampling and box core sampling. The details of these activities, including the description of equipment used, planned activities, duration and location are displayed in Figure 6-5 and described within Tables 6-2 and 6-3.



**Figure 6-5: Geotechnical survey equipment**



Table 6-2: Description of geotechnical survey activities

Equipment	Purpose	Equipment Details	Planned Activities	Duration
Piezo Cone Penetration Test (PCPT)	Determine soil strength and helps to delineate soil stratigraphy.	<p>PCPT involves the in-situ measurement of the resistance of ground to continuous penetration. This process involves lowering a frame to the seabed and pushing the PCPT unit into the sediment at a steady penetration rate (usually 2 cm per second) via hydraulic actuation operated on the vessel.</p> <p>A frame is lowered to the seabed with the PCPT unit integrated into it and operated remotely. When the required penetration depth is reached, all equipment is withdrawn from the seabed. A small hole will remain in the seabed, which will eventually collapse and infill with the movement of seabed sediments.</p> <p>The PCPT frame is ~ 5 m x 1 m with a footprint of ~ 5 m<sup>2</sup>. The piezo cone is ~ 10 cm in diameter and penetrates the seabed from 10 to 60 m.</p>	<p>There are two survey locations at the Prelude end of the pipeline that will be subject to PCPT activities. These locations are based on the nominal pipelay initiation plie location and an alternate location.</p> <p>Up to 3 PCPT will be conducted at each of these sites (6 PCPT in total).</p> <p>Total footprint: 35 m<sup>2</sup></p>	2 days
Vibro core	Obtain core samples for geological analysis.	<p>Vibro coring is a technique for collecting core samples in unconsolidated sediments by using a vibrating device to drive a coring tube into the seabed. Typically, two electrical motors power two concentric weights, which produce the necessary vibration. Once the unit is on the seabed, the vibrator motors are engaged and drive the core barrel with PVC liner into the seabed.</p> <p>The vibro core frame is ~ 5 m x 5 m with a footprint of ~25 m<sup>2</sup>. The vibro core has a diameter of ~ 15 cm and penetrates the seabed to ~ 4 m.</p>	<p>There are two survey locations at the Prelude end of the pipeline that may be subject to Vibro core activities. These locations are based on the nominal pipelay initiation plie location and an alternate location.</p> <p>Up to 3 vibro cores will be conducted at each of these two sites (6 core samples in total).</p> <p>Total footprint: 150 m<sup>2</sup></p>	2 days
Box core	Obtain core samples for geological analysis.	<p>A box core is used to collect core samples from soft, unconsolidated sediment. The corer is lowered to the seabed and then the instrument is triggered by a trip as the main coring stem passes through its frame. The stem has a weight of up to 800 kg to aid penetration. While pulling the corer out of the sediment a spade swings underneath the sample to prevent loss of the core.</p> <p>The box core is ~ 0.8 m x 0.8 m with a footprint of ~0.64 m<sup>2</sup>. The box core penetrates the seabed to ~ 1 m.</p>	<p>Box core sampling will occur at five locations along the pipeline route to supplement the existing survey data. Each location may be subject to re-sampling.</p> <p>Total footprint: ~10 m<sup>2</sup></p>	2 days



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**Table 6-3: Geospatial coordinates (GDA 2020) of core activities within the Operational Area**

Location	GDA2020 /MGA Zone 51		Activity		
	Easting [m]	Northing [m]	PCPT	Vibro Core sample	Box Core sample
Future Initiation Pile Location 1	5341854	8476434	✓	✓	
Future Initiation Pile Location 2	5341843	8476394	✓	✓	
Nominal Route Near IP-11	556940	8499358			✓
Nominal Route Near IP-15	534506	8478199			✓
Alternate Route 1	551212	8493195			✓
Alternate Route 2	544495	8486762			✓
Alternate Route 3	537359	8479933			✓
Nominal Route Near IP-11	556940	8499358			✓
Nominal Route Near IP-15	534506	8478199			✓
Alternate Route 1	551212	8493195			✓
Alternate Route 2	544495	8486762			✓
Alternate Route 3	537359	8479933			✓

## 6.4 Vessel activities

The survey will be conducted using a single offshore service vessel of suitable size and class to undertake the activity. The preferred offshore service vessel for the survey campaign is the MV Offshore Solution, however this may be substituted for a similar size/class vessel depending on availability and the outcome of Shells marine assurance process. Table 6-4 provides specifications for the Offshore Solution which are indicative of the class of vessel which will be used to execute the survey campaign.

**Table 6-4: Typical Survey Vessel Details – the Offshore Solution**

Vessel Type	Detail	Example General Specifications
Offshore Service Vessel	Main Engine Capacity	2 x 650 kW
	Engine Configuration	Diesel Electric
	POB	40
	Weight	902 GT
	Draft	2.8 m (average)
	Dynamic Positioning	DP2
	<b>Tank Capacities</b>	
	MDO	120 m <sup>3</sup>
	Fresh Water	70 m <sup>3</sup>

The vessel based survey is planned to be conducted in a single campaign where each of the survey elements will be executed within the operational area as described in Section 6.3 above. While undertaking the geophysical survey the vessel will travel at approximately 4–5 knots (7–9 km/hr). For the geotechnical survey

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the vessel will be stationary and use dynamic positioning (DP) or propellers to maintain position as water depths are too deep for anchoring.

Vessel refuelling and crew change will not occur during the petroleum activity.

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## 7 Description of the Receiving Environment

As required by regulations 13(2) and 13(3) of the OPGGS(E) Regulations, a description of the receiving environment that may be affected by the activities (both planned and unplanned) covered by this EP is provided in this section. The information contained in this section has been used to inform the assessment of environmental impacts and risks presented in Section 9.3 to 9.13.

The spatial extent of the receiving environment encompasses the physical, biological and socio-economic receptors that may be affected by planned and unplanned activities. The largest spatial extent of any impact or risk will be a credible worst-case hydrocarbon release. The NERA Reference Case on consequence analysis for an accidental release of diesel (NERA 2018) was considered and determined to be suitable to apply to this activity. The reasons for this are that Seabed Survey has a credible worst-case diesel release of 120m<sup>3</sup>, which is considerably smaller than the limits within the reference case which provides the justification that a Planning Area of 150km radius can be applied to diesel release volumes less than or equal to 700m<sup>3</sup>. Therefore, the 150km radius around the pipeline route has been used as the outer boundary for the description of the receiving environment as shown in Figure 7-1.

The text for this description of the receiving environment has been amended from the credible worst-case scenarios much larger potential worst credible spill events from the adjacent Prelude FLNG. Refer to Section 9.12 for additional information on hydrocarbon spill modelling and risk management and associated impact thresholds applied for the assessment.

The description of the receiving environment considers environmental receptors that are protected under the EPBC Act, including:

- World heritage and national heritage values
- Ramsar wetlands
- listed threatened species, migratory species and threatened ecological communities
- values and sensitivities within the Commonwealth marine environment.

The EPBC Act Protected Matters Search Tool (PMST) was used to identify environmental receptors protected under the Act. Two EPBC Act PMST reports were generated; one based on the Operational Area and one based on the combined entrained, dissolved and surface Planning Area. PMST Reports for both the Operational Area and Planning Area are provided in 0.

The Operational Area as mentioned throughout Sections 7 and 9 as defined by Figure 6-1, where referenced through text in relation to the presence of receptors or other features, is taken from the closest point of the Operational Area to that receptor.

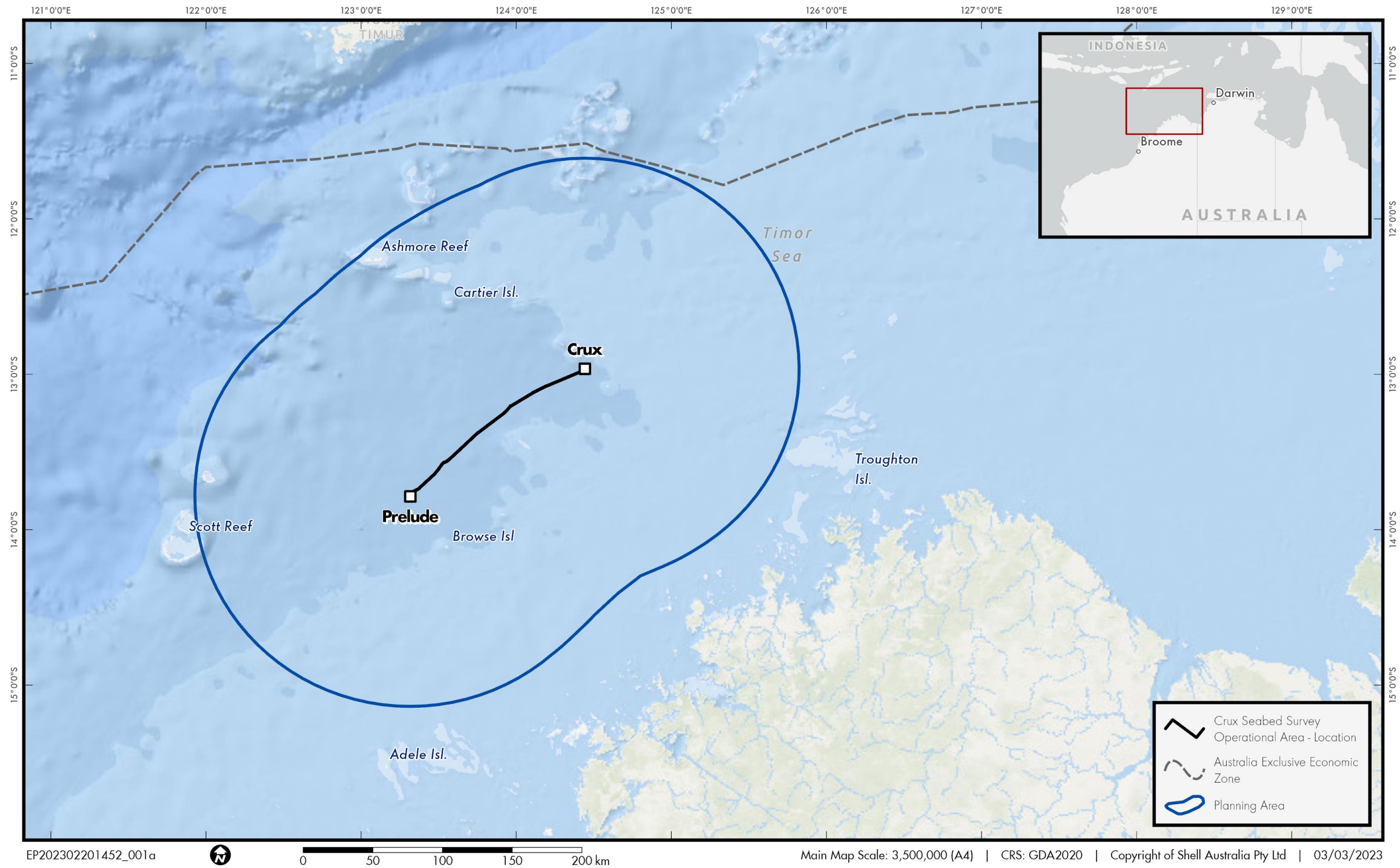


Figure 7-1: Planning Area for the Petroleum Activities

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## 7.1 Physical Environment

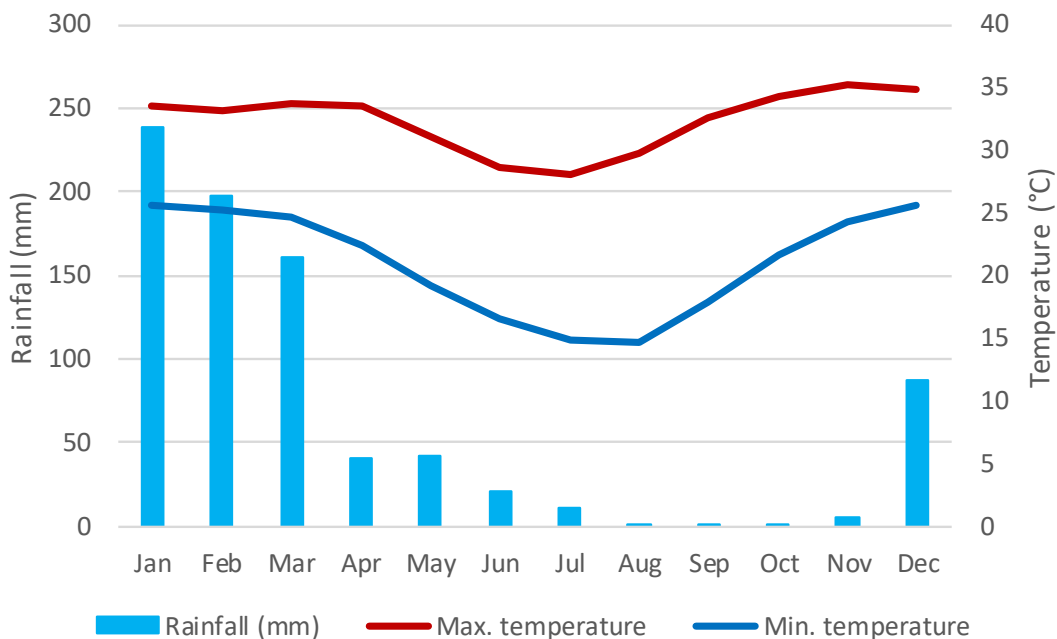
### 7.1.1 Seabed

The Operational Area is located in the Timor Sea on the outer continental slope between 160 and 300 m depth. The seabed within the Operational Area is relatively flat and featureless. Baseline environmental study results for the Prelude development show the seabed is characterised by unconsolidated sand, silt and mud (Shell 2009). No reefs or extensive areas of rocky substrate have been observed.

Notable seabed features in the Planning Area beyond the Operational Area include the coral reefs and islands that occur throughout the region. There are numerous reefs, banks and shoals throughout the Timor Sea, which host diverse biological communities. Other notable seabed features in the Planning Area include Ashore Reef, Cartier Island, Scott Reef, the Rowley Shoals, and numerous reefs, banks and islands off the Kimberley and Pilbara coasts. Refer to Section 7.2 for further discussion of the biological communities associated with these seabed features.

### 7.1.2 Climate

The Operational Area is situated in the tropics and experiences a monsoonal climate with two seasons. The Australian northern monsoon generally occurs between December and March (Figure 7-2). It is associated with the inflow of moist west to north-westerly winds into the monsoon trough, producing convective cloud and heavy rainfall over northern Australia. During the cooler months (June - September), the sub-tropical ridge that lies over continental Australia drives stable and persistent easterly winds over the region. The Australian cyclone season officially runs from November to April, although very few storms have occurred in November. The chance of experiencing an intense category 4 or 5 cyclone is highest in March and April. At the start of the cyclone season, the most likely area to be affected is the Kimberley and Pilbara coastline and offshore areas including the Operational Area, with the area threatened later in the season extending further south.



**Figure 7-2: Long-term maximum and minimum temperatures and mean rainfall from Cygnet Bay (closest Bureau of Meteorology climate station to Operational Area)**

Data sourced from Bureau of Meteorology (n.d.)

### 7.1.3 Oceanography

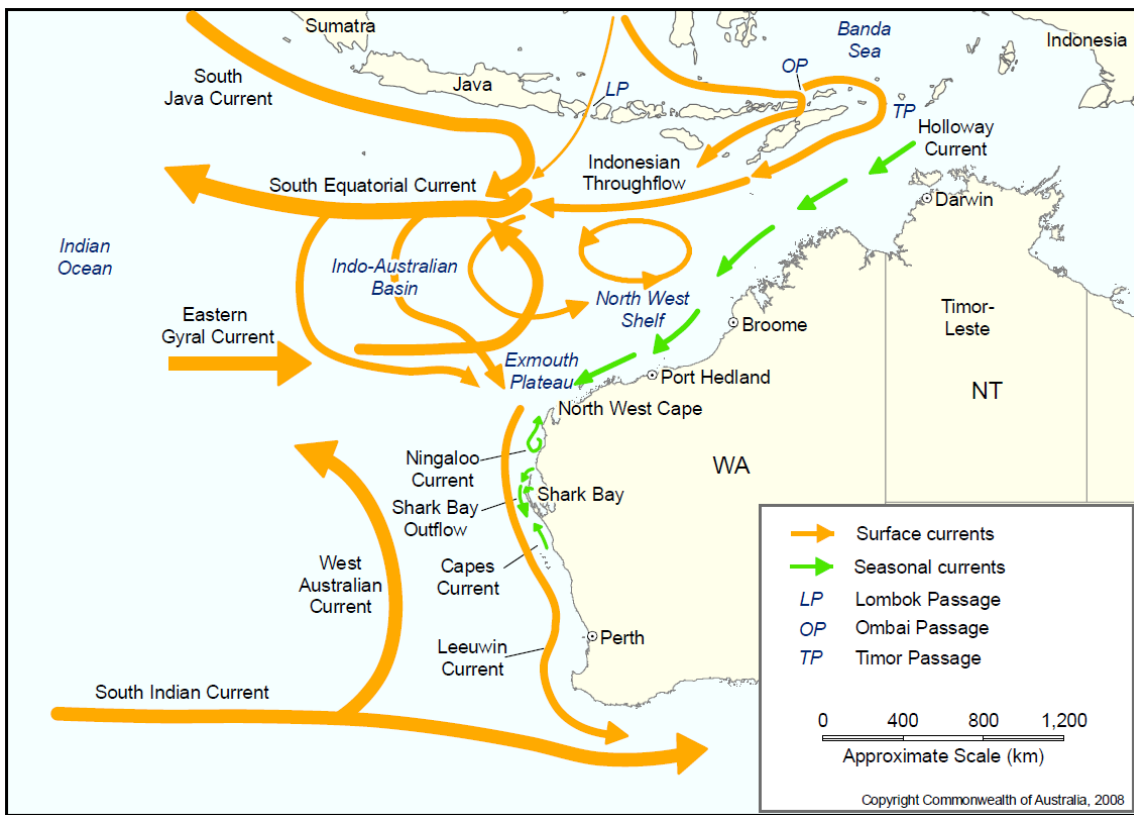
The regional currents influencing the offshore waters off northern and western Australia are shown in Figure 7-3. The majority of water movement off northern Western Australia is poleward, with the water being relatively



warm and low in nutrients (Department of the Environment, Water, Heritage and the Arts (DEWHA) 2008). A strong seasonal wind regime is closely associated with seasonality in surface currents in the region, including the seasonal strength of trade winds in the equatorial Pacific Ocean which drive the Indonesian Throughflow (ITF).

The project is located within the North West Marine Region (NWMR)<sup>6</sup> which experiences semi-diurnal tides. Tidal ranges are large - 0.8 m neaps and 5 m springs (RPS 2018) - and strongly influence currents in the region. Notably, tidal amplitudes seem to be retained at large distances offshore and travel initially in a north-east direction in the deeper waters of the region (RPS 2018). The tidal current component is imposed over the synoptic-scale flow.

In addition to synoptic-scale and tidal currents, locally generated wind-driven currents also influence water movement within the Operational Area and Planning Area. These are more variable and are superimposed over large-scale flows.



**Figure 7-3: Regional synoptic-scale currents off north-western Australia (from DEWHA 2008)**

### 7.1.4 Water Quality

Water quality in the vicinity of the Operational Area is generally high. A field survey in 2018 was carried out in the Operational Area.

Water samples were collected using Niskin water samples at depths of 5 m (surface), 150 m (mid-depth) and 5 m above the seabed (bottom) for in-situ and lab analyses. Additional in-situ samples were taken at each site

<sup>6</sup> A series of bioregional plans have been developed by the Commonwealth government. These plans are intended to help improve the way decisions are made under the EPBC Act. The Operational Area (and much of the Planning Area) overlaps the area covered in the Marine bioregional plan for the North-west Marine Region: prepared under the Environment Protection and Biodiversity Conservation Act 1999 (Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2012a); hence the Operational Area is within the NWMR.

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at depths ranging from 1 m-200 m. Upon surfacing, in-situ measurements were immediately collected using a Hydrolab minisonde 5 probe.

Results from this 2018 baseline water quality survey, in conjunction with the Prelude EIS indicated potential contaminants, such as metals and hydrocarbons, were low and often below the laboratory detection limits (Shell 2009), refer to Table 7-1 for survey results. These results are consistent with other survey results in the Timor Sea (Ross et al. 2017). Nutrient and turbidity levels in the water column were also low compared to nearshore waters, which is typical for offshore waters and is consistent with other surveys in the region (Ross et al. 2017). The average salinity for the receiving water is approximately 34.5ppt (ERM 2008).

**Table 7-1: Water quality**

Parameter	Range value (min – max)	Sample location/ condition
pH Range (min-max)	7.15 – 8.21	In-situ measurement collected in and around the development area
Dissolved Oxygen (mg/L)	7.27 – 4.19	DO was found to be same along the sampling point but varied by depth
TSS (mg/l)	Near surface: 3.7 Mid depth: 5.0 Near seabed: 3.8	Data obtained from a study conducted for INPEX in Exploration Permit WA-285-P (RPS, 2007b) located immediately adjacent to WA-371-P
Heavy Metals	Observed little spatial or vertical variation in seawater barium, nickel, iron, zinc and cadmium concentrations	Mean concentration of metals in all sampling zones were below trigger values identified in ANZECC guidelines

Water quality in the immediate vicinity of the Prelude FLNG facility is slightly lower due to routine discharges from the facility (e.g. grey water, sewage, PFW etc.). The area impacted by these discharge streams is localised.

### 7.1.5 Sediment Quality

This section provides an overview of the baseline sediment survey conducted within the project area in October/November 2016 (AECOM 2017). Twenty sample sites were chosen within the in-field development area, 16 which aligned with or were perpendicular to the prevailing tidal current axis and four reference sites located at each corner of AC/LR9. Eleven sample sites were selected at 10 km–15 km intervals along the export pipeline corridor to account for existing sediment variability.

In summary, concentrations of metals, hydrocarbons and radionuclides were generally consistent across all sites, indicating no obvious existing anthropogenic impacts on sediment quality in the area.

### 7.1.6 Air Quality

No specific information concerning air quality in the local airshed area is available. However, the Operational Area is approximately 200 km from the Kimberley coastline, which itself is a remote and unindustrialised area. Therefore, the air quality is unlikely to be subject to considerable anthropogenic effects with the exception of the Prelude FLNG facility. Emissions from commercial shipping are likely to represent the main source of localised and temporary impacts on air quality. Production facilities in the broader region, such as the Montara FPSO facility (approximately 30 km from the Operational Area), the Ichthys FPSO (approximately 17 km from the Operational Area) are also expected to incrementally influence local and regional air quality.

In a regional context, the main contributors to particulate levels are ambient wind-borne dust and smoke from seasonal bush fires that are characteristic across the Kimberley regions. International contributors to reduced air quality in the project area may also include the likes of ‘slash-and-burn’ agricultural methods and other large forest fires in South-East Asian countries (Vadrevu et al. 2014; Kim Oanh et al. 2018).



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### 7.1.7 Underwater Noise

The baseline underwater noise monitoring program in support of the Prelude EIS recorded the following natural and anthropogenic features of:

- several regular fish choruses (i.e. schooling fish calling en masse)
- several great whale calls including humpback whales, pygmy blue whales in late October 2006 and possible minke whale calls
- persistent vessel noise
- seismic survey noise associated with marine seismic survey signals.

The biological noise sources recorded in the nearby Ichthys field were similar and included regular fish choruses, infrequent calls from nearby fish and several whale calls from humpback whales, pygmy blue whales, minke whales and other unidentifiable species (INPEX Browse 2010). Anthropogenic noise sources recorded included low frequency noise from vessels and that generated from seismic surveys being conducted in the region (INPEX Browse 2010).

## 7.2 Biological Environment

### 7.2.1 Benthic Communities

#### 7.2.1.1 Bare Sediment

Surveys of benthic habitats within the Operational Area showed low density epibenthic communities of deposit and filter feeders on bare sediments, which is typical of this habitat in the region (Baker et al. 2008). Infauna were dominated by polychaete worms, which accounted for approximately 80% of individual infauna sampled (Shell 2009). This finding is consistent with other studies across the region, which showed infauna communities in similar water depths are dominated by polychaetes and crustaceans (Heyward et al. 1997). Given the water depth within the Operational Area, no benthic primary producers will occur due to the lack of photosynthetically active radiation reaching the seabed.

Bare sediment habitats are also the most common habitat type within the Operational Area, although there are discrete areas of other benthic habitat types associated with features such as islands and shoals, such as corals, macroalgae, seagrasses and mangroves within the Planning Area (discussed below).

#### 7.2.1.2 Corals

While hard (zooxanthellate) corals are not present within the Operational Area, they are widespread throughout the Planning Area in relatively shallow (< 50 m) waters. There are a large number of shoals and banks within the Browse Basin and open offshore waters off northern Australia. The shoals closest to the Operational Area are:

- Goeree Shoal – located approximately 13 km north-west of the Operational Area
- Eugene McDermott Shoals – located approximately 18 km south-east of the Operational Area
- Vulcan Shoal – located approximately 22 km north-west of the Operational Area
- Barracouta Shoals – located approximately 63 km north-west of the Operational Area
- Browse Island – location approximately 39km south-east of the Operational Area
- Heywood Shoals – located approximately 21 km from Operational Area, and
- Echuca Shoals – located approximately 53 km north of the Operational Area.

Corals, particularly reef-forming corals, form an important component of benthic communities by providing habitat. In turn, this habitat supports relatively diverse associated communities, such as fish assemblages and macroalgal communities. Coral rubble from dead hard coral colonies also results in in-situ sediment production, which may be an important source of biogenic sediments at banks and shoals in the Timor Sea (Heyward et al. 2012).

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Corals in the region are thought to spawn seasonally, with two distinct mass spawning events in autumn and spring observed (Gilmour et al. 2009, Rosser and Gilmour 2008). This contrasts with other coral reef communities in the Indo-Pacific, such as the Great Barrier Reef and Ningaloo Reef, which typically exhibit a single annual mass spawning event. Coral reefs in the Timor Sea exhibit recruitment from both local (i.e. self-seeding) and distant (e.g. reefs located 10s to 100s of kilometres away) propagules (Gilmour et al. 2013). This has implications for the recovery of coral reefs following disturbance, such as bleaching events or cyclones.

### 7.2.1.3 Macroalgae & Seagrasses

Like corals, much of the Planning Area does not receive sufficient photosynthetically active radiation at the seabed to support macroalgae and seagrass communities. The areas that do are typically associated with physical features such as reefs, banks, shoals, islands and the mainland coasts of Australia, Indonesia and Timor-Leste. Macroalgae and seagrass communities in these areas provide relatively complex habitat structure that supports greater species richness and diversity. Primary productivity from these communities also supports food webs through direct grazing and consumption of detritus.

Macroalgae are an important feature in the seabed communities at several offshore banks and shoals in the Planning Area, particularly calcareous green algae in the genus *Halimeda*. Geological coring studies of several Timor Sea banks and shoals indicates extensive deposition of carbonate sediments from *Halimeda* spp. (Heyward et al. 1997), which may account for the creation and maintenance of these geological structures near the sea surface. Seagrasses at banks and shoals tends to be less common and more ephemeral than macroalgae, with surveys showing considerable temporal variability at the scale of years (Heyward et al. 2012).

### 7.2.1.4 Mangroves

Mangroves are widely distributed along the coastlines outside of the Planning Area. Mangroves habitats are of environmental value due to the shoreline stabilisation and habitat they provide. Many fauna species either complete their life cycles within mangrove habitats, or utilise mangroves during particular life history stages (e.g. nursery habitat for juveniles (Robertson and Duke 1987). The nearest potential mangrove habitat to the Operational Area are the islands and mainland coast of the Kimberley region, over 200 km away.

## 7.2.2 Pelagic Communities

### 7.2.2.1 Plankton

Plankton are organisms, typically small in size, whose movements are determined largely by currents rather than active movement (e.g. swimming). Plankton communities are often categorised into two groups: phytoplankton (drifting plants) and zooplankton (drifting animals).

Surveys in the Operational Area found phytoplankton communities to be highly diverse but low in abundance. Key groups identified include dinoflagellates (Dinophyceae), diatoms (Bacillariophyceae) and Prasinophyceae. The most abundant species included *Prasinophyte* sp. (Prasinophyceae); *Gyrodinium* sp. and *Heterocapsa* sp. (Dinophyceae); *Pseudonitzschia* sp., *Cylindrotheca closterium*, *Chaetoceros* sp., *Thalassionema frauenfeldii* and *Nitzschia longissima* (Bacillariophyceae) (Shell 2009). Phytoplankton in the wider region is similar to that observed in the project area with relatively high diversity in certain groups recorded such as diatoms, dinoflagellates and coccolithophorids (Hallegraeff and Jeffrey 1984).

Zooplankton samples collected in July 2008 found crustacean assemblages to be primarily dominated by copepod species (Shell 2009). Overall densities of zooplankton assemblages were relatively low and typical of low nutrient open ocean environments in the region. A few samples were dominated by euphausiids or chaetognaths (Shell 2009).

Some fauna groups, such as fish and crustacean species, often have a planktonic larval stage following which they assume a free-swimming or benthic existence. The larval fish community within the Operational Area was relatively diverse and abundant; however, species composition was primarily dominated by neritic species, which have little or no commercial value (Shell 2009). Commercial species identified came from groups typical of a range of marine habitats including pelagic shelf systems and both coastal and deep sea demersal habitats. Larvae were identified from the following groups which have commercially targeted species: Berycidae, Carangidae (trevally and jacks), Lutjanidae (tropical snappers), Serranidae (cods), and Scombridae (mackerels and tunas).

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### 7.2.2.2 Pelagic Fish & Invertebrates

Free swimming pelagic fauna within the Operational Area and Planning Area are expected to include pelagic fishes, marine turtles, seasnakes, squid, and cetaceans. Several of these fauna groups (e.g. whale sharks, several cetacean species, marine turtles) are listed threatened and/or migratory under the EPBC Act; these species are considered in Section 7.2.4.

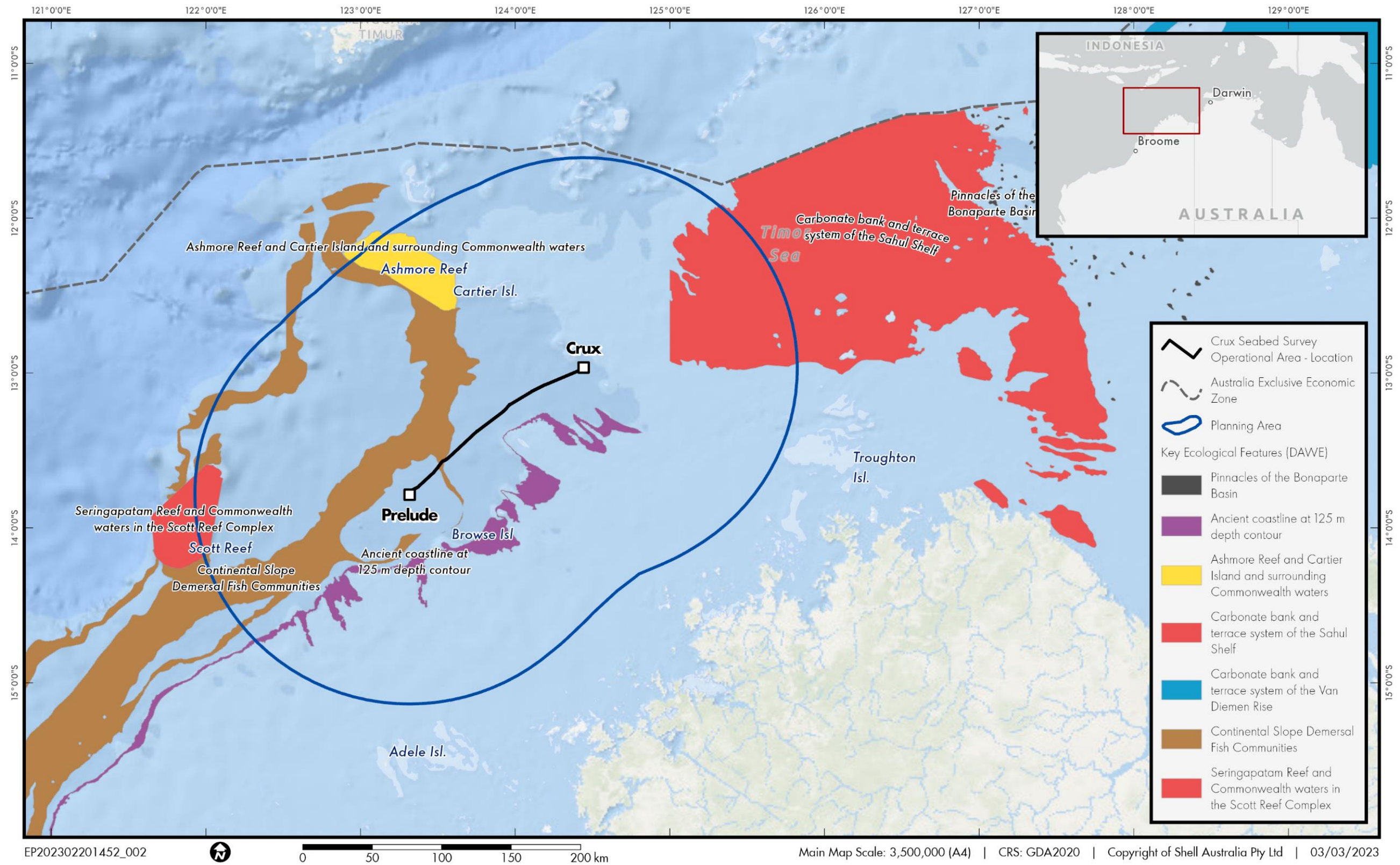
Small pelagic fishes, such as sardines and anchovies, form an important trophic link between microscopic planktonic communities (e.g. zooplankton feeding on phytoplankton) and larger consumers (e.g. tunas). Small pelagic fishes are expected to be broadly distributed throughout the tropical pelagic environment given the relatively homogeneous nature of the open sea, with food availability and predation also influencing the distribution and abundance of these species.

The distribution of larger pelagic fishes (e.g. tunas, bonito, blue sharks etc.) are expected to mirror the distribution of small pelagic fishes, as small pelagic fishes are the primary prey of these larger species. Several pelagic fish species, such as marlin, swordfish and mackerel, are important for commercial and recreational fisheries, although fishing effort in the Operational Area and much of the Planning Area is very low. The commercially important southern bluefin tuna is thought to spawn in the north-eastern Indian Ocean, although this species is not fished within the Operational Area or Planning Area.

### 7.2.3 Key Ecological Features

Key Ecological Features (KEFs) are elements of the Commonwealth marine environment that are considered to be of regional importance for either a region's biodiversity or its ecosystem function and integrity. The Operational Area intersects one KEF (Continental Slope Demersal Fish Communities) and is adjacent to the Ancient coastlines at 125 m depth contour KEF (closest point approximately 12 km). Several KEFs identified within the region are shown in Figure 7-4 and all the KEFs identified within the wider Planning Area are described in Table 7-2.





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**Table 7-2: KEFs Relevant to the Project**

KEF	Relevance to Operational Area	Summary of Key Values
Ancient coastline at 125 m depth contour	Located 12 km to the SE of the pipelines corridor at its closest point.	<p><i>Unique seafloor feature with ecological properties of regional significance</i></p> <p>The areas of hard substrate along this ancient coastline, which follows the 125 m depth contour, are thought to provide biologically important habitats in areas otherwise dominated by soft sediments; thereby providing for higher species diversity and richness relative to the wider region. The topographic complexity of these escarpments may also facilitate vertical mixing of the water column providing a relatively nutrient-rich environment for species present on the escarpment. The KEF encompasses an area of approximately 16,190 km<sup>2</sup>.</p>
Ashmore Reef and Cartier Islands and surrounding Commonwealth waters	Located 80 km north-west of the Operational Area and occurs within the Planning Area	<p><i>High productivity and aggregations of marine life</i></p> <p>Ashmore Reef is the largest of only three emergent oceanic reefs present within the north-eastern Indian Ocean and is the only oceanic reef in the region with vegetated islands. The emergent reefs are known to provide areas of enhanced primary productivity in otherwise oligotrophic environments.</p> <p>Ashmore Reef and Cartier Islands and the surrounding Commonwealth waters are regionally important for feeding and breeding aggregations of seabirds and shorebirds, and other marine life. Ashmore Reef regularly supports more than 40,000 waterbirds (those ecologically dependant on wetlands) and is estimated to support as many as 100,000 seabirds in a twelve month period (Hale 2013).</p> <p>The marine habitats supported by the reefs are nationally and internationally significant, providing habitat for diverse and abundant marine reptile (including feeding, nesting and internesting areas for green, hawksbill and loggerhead turtles) and marine mammal populations, including dugongs.</p> <p>Species at Ashmore and Cartier include more than 225 reef-building corals, 433 molluscs, 286 crustaceans, 192 echinoderms, and 709 species of fish. Thirteen species of sea snakes occur in high numbers at Ashmore and Cartier reefs but are in decline.</p> <p>Additionally, Ashmore Reef supports the highest number of coral species of any reef off the WA coast and plays a primary role in the maintenance of the biodiversity of reef systems in the region.</p>
Carbonate bank and terrace system of the Sahul Shelf	Located 60 km north-east of the Operational Area and occurs within the Planning Area	<p><i>Unique seafloor feature with ecological properties of regional significance</i></p> <p>While little is known about this KEF, the carbonate banks and terrace system of the Sahul Shelf is considered regionally important because of their role in enhancing biodiversity and local productivity relative to their surroundings, largely due to the presence of elevated hard substrates. The seabed features are thought to create enhanced productivity and biodiversity as a result of upwellings of cold nutrient-rich water at the heads of the channels.</p> <p>The KEF covers an area of approximately 41,158 km<sup>2</sup>. The banks rise to depths of 150 m – 300 m and are separated from each other by narrow meandering channels which are up to 150 m deep. The hard substrates of the banks are thought to support a high diversity of organisms including reef-fish, sponges, soft and hard corals, gorgonians, bryozoans, ascidians and other sessile filter feeders.</p>
Continental slope demersal fish communities	Intersected by a small portion of the Operational Area (about 7km of the pipeline corridor).	<p><i>Communities with high species biodiversity and endemism</i></p> <p>There is a high diversity of demersal fish assemblages on the Australian continental slope from the North West Cape to the edge of the NMR. Specifically, 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 the whole of Australia (DEHWA 2008). The Timor Province and Northwest Transition bioregions, in which the Crux project is located, are the second-richest areas for demersal fish across the entire continental slope.</p> <p>The KEF covers a vast area of approximately 33,182 km<sup>2</sup>.</p>

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KEF	Relevance to Operational Area	Summary of Key Values
Seringapatam Reef and Commonwealth waters in the Scott Reef complex	Located 143 km from the Operational Area and partially occurs within the planning area.	<p><i>High productivity and aggregations of marine life</i></p> <p>The coral communities at Seringapatam and Scott Reefs play a key role in maintaining species richness and aggregations of marine life. The reefs and the waters surrounding them attract aggregations of marine life including humpback whales on their northerly migration, Bryde's whales, pygmy blue whales, Antarctic minke whales, dwarf minke whales, minke whales, dwarf sperm whales, spinner dolphins and whale sharks. Green and hawksbill turtles nest during the summer months on Sandy Islet on South Scott Reef. These species also interest and forage in the surrounding waters.</p> <p>Scott Reef is a particularly biologically diverse system and includes more than 300 species of reef-building corals, approximately 400 mollusc species, 118 crustacean species, 117 echinoderm species, around 720 fish species and several species of sea snakes.</p>

#### 7.2.4 Threatened Ecological Communities

No Threatened Ecological Communities (TECs) were identified within the Planning Area.

#### 7.2.5 Ramsar Wetlands

Sites recognised under the Convention on Wetlands of International Importance (the Ramsar Convention), referred to as Ramsar wetlands, are protected under Part 3 of the EPBC Act and are MNES. One Ramsar wetland was identified within the Planning Area (Figure 7-5); Ashmore reef national nature reserve. The environmental values for Ramsar wetlands are summarised in Table 7-3.



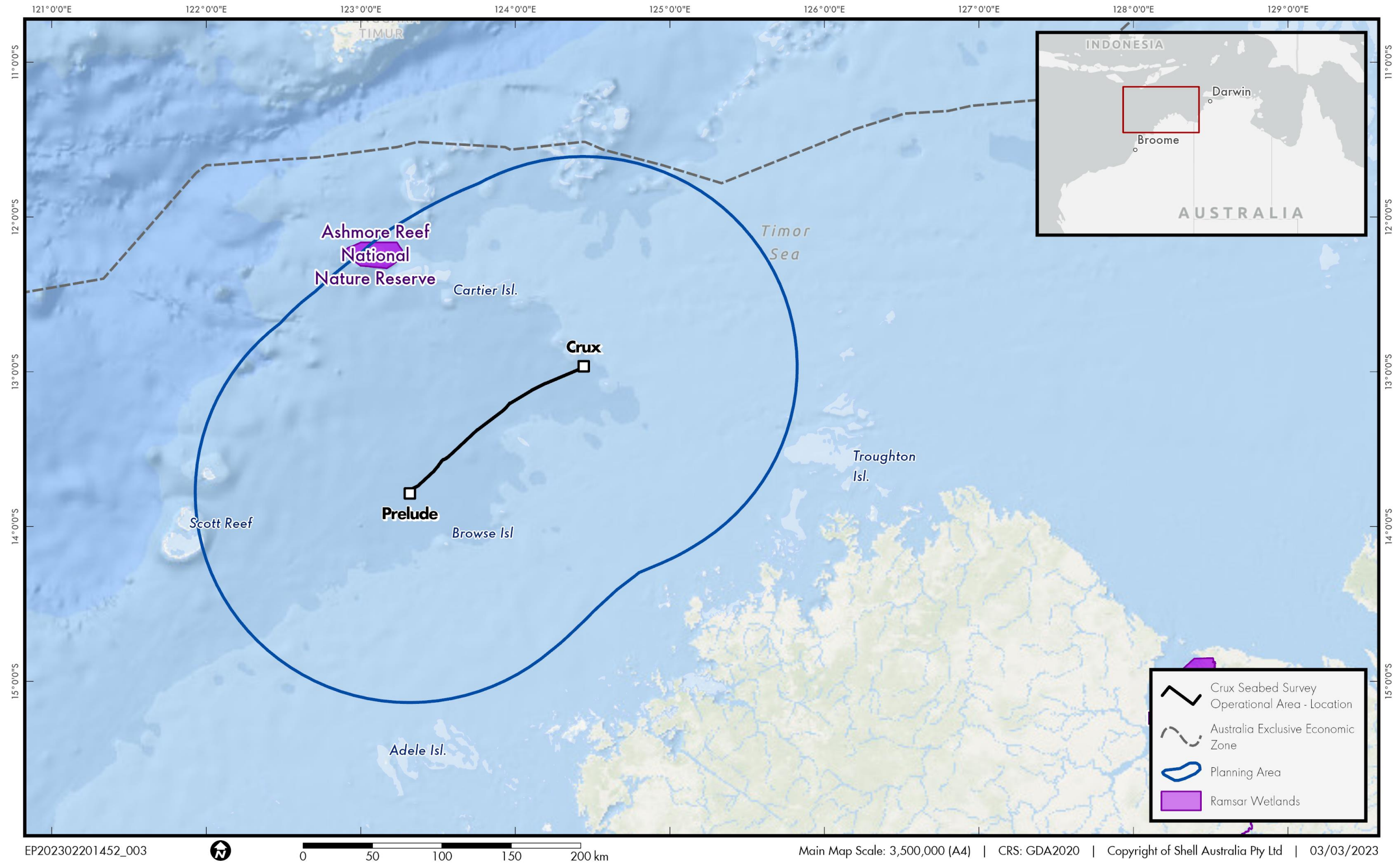


Figure 7-5: Ramsar Wetlands within the Planning Area



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**Table 7-3: Descriptions of Ramsar Wetlands within the Planning Area, including distance from Operational Area**

Ramsar Wetland	Distance from Operational Area (km)	Description
Ashmore reef national nature reserve	128	<p>Ashmore Reef supports an abundance and diversity of birds; 72 species have been recorded at this Ramsar site, with 12 recorded breeding (Hale and Butcher 2013). Ashmore Reef was designated as a Ramsar wetland based on the following characteristics:</p> <ul style="list-style-type: none"> <li>• Ashmore is the largest of the atolls in the region and has been managed for the purposes of conservation for three decades.</li> <li>• Each of the wetland types is in near natural condition, with low densities of coral predators and disease.</li> <li>• The three islands represent the only vegetated island within the Timor Province bioregion.</li> <li>• It supports 64 threatened species.</li> <li>• It is considered a true 'hotspot' of biological diversity within the Timor Province bioregion and within the broader north-west marine region.</li> <li>• It supports 47 species of waterbird listed as migratory under international treaties and three species of migratory turtle (green, hawksbill and loggerhead). It also supports breeding of green and hawksbill turtles, dugongs and 20 species of waterbird.</li> <li>• It regularly supports over 40,000 waterbirds including large numbers of migratory shorebirds and breeding seabirds (Hale and Butcher 2013).</li> </ul> <p>Ashmore Reef is also recognised as a KEF and is within the Ashmore Reef Australian Marine Park (AMP) (refer to 7.2.3).</p>

## 7.2.6 Commonwealth Marine Area

The Operational Area is located within the Commonwealth marine area, which includes any part of the sea, including the waters, seabed and airspace, within Australia's exclusive economic zone and/or over the continental shelf of Australia, that is not state or NT waters. The Commonwealth marine area stretches from three to 200 nm from the coast.

## 7.2.7 WA and NT Mainland Coastline

The WA and NT mainland coastline are over 200 km from the Operational Area at the closest point therefore there are no relevant environmental values and sensitivities to consider further in this EP.

## 7.2.8 Threatened and Migratory Species

An online EPBC Protected Matters Database Search was conducted for the operational area and Planning Area (Appendix C). A summary of the results is presented below:

- Operational Area - the search identified 23 listed threatened fauna species and 36 listed migratory species that may occur or have habitat in the area (Appendix C).
- Planning Area – the search identified 27 listed threatened fauna species and 59 listed migratory species that may occur or have habitat in the area (Appendix C).

A number of species included in PMST results presented in Appendix C are not considered relevant to the project, given they are commonly associated with terrestrial habitats that are generally not present on shorelines (e.g. wetlands, forests).

The PMST results presented in Appendix C also list a number of marine and other cetacean species, which are not listed as MNES under the EPBC Act. With regards to marine mammals, a sub-set of these species, and an additional cetacean species (pantropical spotted dolphin; *Stenella attenuata*), have been observed in the NWMR region through surveys and opportunistic observations (pers. comm. R. Clarke, Monash University, 2018). An

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additional four marine bird species are also known to breed at Ashmore Reef; the eastern great egret (*Ardea modesta*), little egret (*Egretta garzetta*), eastern reef egret (*Egretta sacra*) and nankeen night-heron (*Nycticorax caledonicus*) (Clarke et al. 2011).

A further seven listed migratory species have been noted as potentially transiting the Barossa project area (approximately 713 km north-east of the Crux platform end of the pipeline) on an annual basis as part of their migration, and therefore may also transit the project area; wedge-tailed shearwater (*Ardena pacifica*), Bulwer's petrel (*Bulweria bulwerii*), Matsudaira's storm-petrel (*Hydrobates matsudairae*), Swinhoe's storm-petrel (*Hydrobates monorhis*), Wilson's storm-petrel (*Oceanites oceanicus*), red-tailed tropicbird (*Phaethon rubricauda*), white-winged black tern (*Chlidonias leucopterus*), bridled tern (*Onychoprion anaethetus*) and common tern (*Sterna hirundo*) (ConocoPhillips 2018).

### 7.2.8.1 Listed Threatened Species Conservation Advice & Species Recovery Plans

The Commonwealth publishes recovery plans and conservation advice for a number of species listed as threatened under the EPBC Act. These documents are intended to assist in preventing the decline, and enhance the recovery, of threatened species. The requirements of the species recovery plans and conservation advice (Table 7-4) for threatened species identified within the Planning Area were considered to identify any aspects that may be applicable to the impact and risk assessment (Sections 9.3 to 9.13).

**Table 7-4: Conservation advice for EPBC Act listed threatened species identified within the Planning Area considered during environmental risk assessment**

Species / Sensitivity	Recovery plan / conservation advice (date issued)	Key threats identified in the recovery plan/conservation advice	Relevant Conservation Actions
<b>All Vertebrate Fauna</b>			
All vertebrate fauna	Threat abatement plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (Commonwealth of Australia 2018)	Marine debris	No explicit management actions for non-fisheries related industries (note that management actions in the plan relate largely to management of fishing waste (e.g. "ghost" gear), and state and Commonwealth management through regulation.
<b>Marine Mammals</b>			
Sei whale	Approved conservation advice <i>Balaenoptera borealis</i> (sei whale) (Threatened Species Scientific Committee 2015a)	Noise interference	Assess and manage acoustic disturbance
		Vessel disturbance	Assess and manage physical disturbance and development activities
Blue whale	Conservation management plan for the blue whale: A recovery plan under the Environment Protection and Biodiversity Conservation Act 1999 2015-2025 (Commonwealth of Australia 2015a)	Noise interference	Assessing and addressing anthropogenic noise
		Vessel disturbance	Minimising vessel collisions
Fin whale	Approved conservation advice for <i>Balaenoptera physalus</i> (fin whale) (Threatened Species Scientific Committee 2015b)	Noise interference	Assessing and addressing anthropogenic noise
		Vessel disturbance	Minimising vessel collisions
<b>Marine Reptiles</b>			
		Light pollution	Minimise light pollution



Species / Sensitivity	Recovery plan / conservation advice (date issued)	Key threats identified in the recovery plan/conservation advice	Relevant Conservation Actions
Loggerhead turtle, green turtle, leatherback turtle, hawksbill turtle, flatback turtle, olive ridley turtle	Recovery plan for marine turtles in Australia (Commonwealth of Australia 2017)	Chemical and terrestrial discharge (oil pollution)	Ensure that spill risk strategies and response programs include management for turtles and their habitats
		Vessel disturbance	Vessel interactions identified as a threat; no specific management actions in relation to vessels prescribed in the plan
		Noise interference	No explicit relevant management actions; noise interference identified as a threat
Leatherback turtle	Approved conservation advice for <i>Dermochelys coriacea</i> (Leatherback Turtle) (Threatened Species Scientific Committee 2008a)	Vessel disturbance	No explicit relevant management actions; vessel strikes identified as a threat
Short-nosed seasnake	Approved conservation advice for <i>Aipysurus apraefrontalis</i> (short-nosed sea snake) (Threatened Species Scientific Committee 2010a)	No additional threats identified (ex. marine debris)	None applicable
Leaf-scaled seasnake	Approved conservation advice for <i>Aipysurus foliosquama</i> (leaf-scaled sea snake) (Threatened Species Scientific Committee 2010b)	No additional threats identified (ex. marine debris)	None applicable
<b>Sharks and Rays</b>			
White shark	Recovery plan for the white shark ( <i>Carcharodon carcharias</i> ) (DSEWPaC 2013)	No additional threats identified (ex. marine debris)	None applicable
Northern river shark	Approved conservation advice for <i>Glyphis garricki</i> (northern river shark) (Threatened Species Scientific Committee 2014a)	Habitat degradation / modification	Implement measures to reduce adverse impacts of habitat degradation and/or modification
	Sawfish and river shark multispecies recovery plan (Commonwealth of Australia 2015b)		Identify risks to important sawfish and river shark habitat and measures need to reduce those risks
Green sawfish	Approved conservation advice for green sawfish (Threatened Species Scientific Committee 2008b)	Habitat degradation / modification	No explicit relevant management actions; habitat loss, disturbance and modification identified as a threat
	Sawfish and river shark multispecies recovery plan (Commonwealth of Australia 2015b)		Identify risks to important sawfish and river shark habitat and measures need to reduce those risks
Whale shark	Approved conservation advice <i>Rhincodon typus</i> whale shark (Threatened Species Scientific Committee 2015d)	Vessel disturbance	Minimise offshore developments and transit time of large vessels in areas close to marine features likely to correlate with whale shark aggregations and along the northward migration route that follows the northern Western



Species / Sensitivity	Recovery plan / conservation advice (date issued)	Key threats identified in the recovery plan/conservation advice	Relevant Conservation Actions
			Australian coastline along the 200 m isobath
Grey nurse shark (west coast population)	Recovery plan for the grey nurse shark ( <i>Carcharias taurus</i> ) (Department of the Environment 2014)	No additional threats identified (ex. marine debris)	None applicable
Dwarf sawfish	Approved conservation advice for <i>Pristis clavata</i> (dwarf sawfish) (Threatened Species Scientific Committee 2009)	Habitat degradation / modification	No explicit relevant management actions; habitat loss, disturbance and modification identified as a threat
	Sawfish and river shark multispecies recovery plan (Commonwealth of Australia 2015b)		Identify risks to important sawfish and river shark habitat and measures need to reduce those risks
Freshwater sawfish	Approved conservation advice for <i>Pristis</i> (targettooth sawfish) (Threatened Species Scientific Committee 2014b)	Habitat degradation / modification	No explicit relevant management actions; habitat loss, disturbance and modification identified as a threat
	Sawfish and river shark multispecies recovery plan (Commonwealth of Australia 2015b)		Identify risks to important sawfish and river shark habitat and measures need to reduce those risks
<b>Birds</b>			
Migratory shorebird species <sup>7</sup>	Wildlife conservation plan for migratory shorebirds (Commonwealth of Australia 2015c)	Habitat degradation / modification	Ensure all areas important to migratory shorebirds in Australia continue to be considered in development assessment processes
Seabirds including albatrosses and giant petrels <sup>8</sup>	National recovery plan for albatrosses and petrels (DCCEEW 2022)	Marine pollution Artificial lighting Climate variability and change	No explicit relevant management actions
Seabirds	Wildlife Conservation Plan for Seabirds (DCCEEW 2022)	Habitat Modification Climate Change Resource Extraction	Ensure all areas of important habitat for seabirds are considered appropriately and consistently in the development assessment process  Enhance contingency plans to prevent and/or respond to environmental emergencies that have an impact on seabirds and their habitats
Australian lesser noddy	Approved Conservation Advice for <i>Anous tenuirostris melanops</i> (Australian lesser noddy) (Threatened Species Scientific Committee 2015e)	Habitat degradation / modification	No explicit relevant management actions; habitat degradation/ modification identified as a threat

<sup>7</sup> Red knot, great knot, greater sand plover, lesser sand plover and bar-tailed godwit.

<sup>8</sup> Several albatrosses and giant petrels were identified as potentially occurring: Amsterdam albatross, southern royal albatross, wandering albatross, southern giant-petrel, northern giant petrel, soft-plumaged petrel, Indian yellow-nosed albatross, Tasmanian shy albatross, white-capped albatross, Campbell albatross, black-browed albatross, white-capped albatross.



Species / Sensitivity	Recovery plan / conservation advice (date issued)	Key threats identified in the recovery plan/conservation advice	Relevant Conservation Actions
Red knot, knot	Approved Conservation Advice for <i>Calidris canutus</i> (Red knot) (Threatened Species Scientific Committee 2016a)	Pollution / contamination	No explicit relevant management actions; pollution identified as a threat
Curlew sandpiper	Conservation advice <i>Calidris ferruginea</i> curlew sandpiper (Threatened Species Scientific Committee 2015f)	Pollution / contamination	No explicit relevant management actions; pollution identified as a threat
Eastern curlew	Conservation advice <i>Numenius madagascariensis</i> eastern curlew (Threatened Species Scientific Committee 2015g)	Pollution / contamination	No explicit relevant management actions; pollution identified as a threat
Abbott's booby	Approved Conservation Advice for <i>Papasula abbotti</i> (Abbott's booby) (Threatened Species Scientific Committee 2020)	Marine debris Climate Change	None applicable
Great knot	Conservation advice <i>Calidris tenuirostris</i> great knot (Threatened Species Scientific Committee 2016b)	Habitat degradation / modification	No explicit relevant management actions; habitat degradation/ modification identified as a threat
Greater sand plover	Approved Conservation Advice for <i>Charadrius leschenaultii</i> (Greater sand plover) (Threatened Species Scientific Committee 2016c)	Habitat degradation / modification	No explicit relevant management actions; habitat degradation/ modification identified as a threat
Lesser sand plover	Approved Conservation Advice for <i>Charadrius mongolus</i> (Lesser sand plover) (Threatened Species Scientific Committee 2016d)	Habitat degradation / modification	No explicit relevant management actions; habitat degradation/ modification identified as a threat
Soft-plumaged petrel	Conservation advice <i>Pterodroma mollis</i> soft-plumaged petrel (Threatened Species Scientific Committee 2015i)	Habitat degradation / modification	No explicit relevant management actions; habitat degradation/ modification identified as a threat
Bar-tailed godwit (baueri)	Approved Conservation Advice for <i>Limosa lapponica baueri</i> (Bar-tailed godwit (western Alaskan) (Threatened Species Scientific Committee 2016e)	Habitat degradation / modification	No explicit relevant management actions; habitat degradation/ modification identified as a threat
Australian Fairy Tern	Department of Agriculture, Water and the Environment (2020). National Recovery Plan for the Australian Fairy Tern ( <i>Sternula nereis nereis</i> ). Department of Agriculture, Water and the Environment, Canberra. In effect under the	Disturbance of breeding sites / predation by introduced species and native birds.	No explicit relevant management actions; habitat degradation/ modification identified as a threat

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Species / Sensitivity	Recovery plan / conservation advice (date issued)	Key threats identified in the recovery plan/conservation advice	Relevant Conservation Actions
	EPBC Act from 05-May-2022 as <i>Sternula nereis nereis</i>		
Australian painted snipe	Approved Conservation Advice on <i>Rostratula australis</i> (Australian Painted Snipe) (Threatened Species Scientific Committee 2013)	Habitat degradation / modification	No explicit relevant management actions; habitat degradation/modification identified as a threat

### 7.2.8.2 Biologically Important Areas & Habitat Critical for the Survival of a Species

BIAs are defined by DoEE as “spatially defined areas where aggregations of individuals of a regionally significant species are known to display biologically important behaviours such as breeding, foraging, resting or migration” (DoEE 2018e). BIAs provide a tool for defining areas of importance for marine fauna species.

A review of the PMST results (0) determined that the operational area is located within a biologically important area for whale sharks. The whale shark is listed as vulnerable under the EPBC Act and is discussed in detail in Section 7.2.8.6. No other BIAs are intersected or overlapped by the-operational area.

The Planning Area includes a number of BIAs including migration corridors for pygmy blue whales and humpback whales; breeding, calving and foraging areas for the three nearshore dolphin species; nursing/foraging areas for dugongs; foraging and nesting/interesting areas for marine turtles; breeding/foraging/resting areas for a number of seabird species; a migration corridor for whale sharks; and foraging and nursing/pupping areas for three sawfish species. These BIAs are discussed under the relevant species-specific sections below.

### 7.2.8.3 Seasonal Sensitivities of Threatened Species

Periods of the year coinciding with key environmental sensitivities for the Operational Area and the wider regional context (Planning Area), including EPBC Act listed threatened and/or migratory species potentially occurring within the Operational Area are presented in Table 7-5. These relate to breeding, foraging or migration of the indicated fauna.





**Table 7-5: Key environmental sensitivities and indicative timings for migratory fauna within the Operational Area and Planning Area (North-west and North Marine Region)**

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mammals</b>												
Blue whale – northern migration (Exmouth, Montebello, Scott Reef) <sup>1</sup>												
Blue whale – southern migration (Exmouth, Montebello, Scott Reef) <sup>2</sup>												
Humpback whale – northern migration (Jurien Bay to Montebello) <sup>3</sup>												
Humpback whale – southern migration (Jurien Bay to Montebello) <sup>4</sup>												
<b>Fish, Sharks and Rays</b>												
Whale shark* – foraging/ aggregation near Ningaloo <sup>5</sup>												
Manta rays – presence/ aggregation/breeding (Ningaloo) <sup>6</sup>												
<b>Reptiles</b>												
Green turtle <sup>7</sup>	N,H	N,H	H	H	H	N	N	H	H	H	H	N,H
Hawksbill turtle <sup>7</sup>	N,H	H						N,H	H	N,H	N,H	N,H
Olive ridley turtle <sup>7</sup>				N	N	N,H	N,H	H				
Flatback turtle <sup>7</sup>	N,H	H	H	H	H	N,H	N,H	N,H	N,H	N,H	N,H	N,H
Leatherback turtle <sup>7</sup>	N,H	H										N
Loggerhead turtle <sup>7</sup>	N,H	H	H	H	H							
<b>Birds</b>												
Migratory shorebirds <sup>6</sup>												

Notes

	Species likely to be present
	Peak period. Presence of animals reliable and predictable each year
N	Peak Turtle Nesting



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*H Peak Turtle Hatching*

- 1 – DSEWPAC, 2012a; McCauley and Jenner, 2010; Thums et al 2022.
- 2 – DSEWPac, 2012a; McCauley and Jenner, 2010
- 3 – CALM, 2005; Jenner et al, 2001; McCauley and Jenner, 2001, Double et al., 2012
- 4 – McCauley and Jenner, 2001
- 5 – TSSC, 2015a; Wilson et al., 2006
- 6 – CALM, 2005, DSEWPac, 2012a, Environment Australia, 2002, Sleeman et al., 2010
- 7 – Commonwealth of Australia, 2017a
- 8 – Rogers et al., 2011

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#### 7.2.8.4 Marine Mammals

##### Sei Whale

Sei whales (*Balaenoptera borealis*) have a global distribution. Though sightings are uncommon, the species may be seen in coastal and offshore waters throughout Australia, as well as the waters surrounding Christmas and Cocos Keeling Islands (Bannister et al. 1996, DoEE 2019). The species utilises a range of marine habitats, which has been attributed to a combination of dynamic physical and prey processes (DoEE 2019).

Sei whale migratory movements are well defined (distinctly north-south) with the species moving between polar, temperate and tropical waters for foraging and breeding. The species feeds intensively between the Antarctic and sub-Antarctic boundary on planktonic crustaceans (Bannister et al. 1996, DoEE 2019). The species does not dive, rather it sinks, and tends to swim at shallower depths comparative to other species (DoEE 2019).

There are no mating or calving areas in Australian waters, nor are there any recognised BIAs or critical habitat. Sei whales may occur within the Operational Area and Planning Area, but are expected to occur only in low numbers.

##### Bryde's Whale

The Bryde's whale was identified as potentially occurring within the Operational Area and Planning Area. The Bryde's whale occurs in tropical and temperate waters (Bannister et al. 1996). Bryde's whales occur in both oceanic and inshore waters with the only key localities recognised in Western Australia being in the Abrolhos Islands and north of Shark Bay (Bannister et al. 1996). Two forms are recognised: inshore and offshore Bryde's whales. It appears that the offshore form may migrate seasonally, heading towards warmer tropical waters during the winter, however, behaviour of the offshore form in the Indian Ocean is not well documented.

Bryde's whales may occur through a broad area of the continental shelf in the region, including the Operational Area and the Planning Area. The noise monitoring study undertaken for the Barossa project detected Bryde's whales in the Timor Sea almost year-round (January to October) (McPherson et al. 2016). Bryde's whales have also been detected on the North West Shelf (south-west of the Operational Area) from mid-December to mid-June, peaking in late February to mid-April (RPS Environment and Planning 2012).

Bryde's whale may be encountered within the Operational Area and Planning Area year-round in low numbers, particularly in oceanic and continental slope waters.

##### Blue Whale

There are two recognised subspecies of blue whale in Australia. These are the southern (or 'true') blue whale (*Balaenoptera musculus intermedia*) and the 'pygmy' blue whale (*Balaenoptera musculus breviceauda*) (Commonwealth of Australia 2015a). Both are listed as Endangered under the EPBC Act. 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) (Department of the Environment and Heritage 2005). On this basis, nearly all blue whales sighted are likely to be pygmy blue whales. The *Conservation Management Plan for the Blue Whale* (Commonwealth of Australia 2015a) has delineated the distribution area of blue whales in Australian waters and identified a number of BIAs for blue whales for Commonwealth waters (migratory corridor and foraging areas) (Figure 7-6).

Recent tagging studies (Double et al. 2014, Thums et al. 2022) indicate extensive use of slope habitat, beyond 200m, off Western Australia and only minimal use of shelf habitat, compared to southern Australia. Whale densities around the southern north west shelf have been shown to peak between April and June on the northward migration and between November and December on the southward migration. Data has shown whales spend up to 124 days in Indonesian waters where calving occurs.

No pygmy blue whale BIAs overlap the Operational Area; two BIAs were identified within the Planning Area (Figure 7-6). These are:

A broad migration corridor along the coast of Western Australia, approximately 78 km west of the Operational Area; and

A potential foraging area around Scott Reef, approximately 132 km west of the Operational Area.

Based on these studies and the locations of the BIAs relative to the Operational Area, pygmy blue whales are likely to seasonally occur in the Operational Area in low densities due to their preference for slop waters and are expected to be seasonally present within the Planning Area.



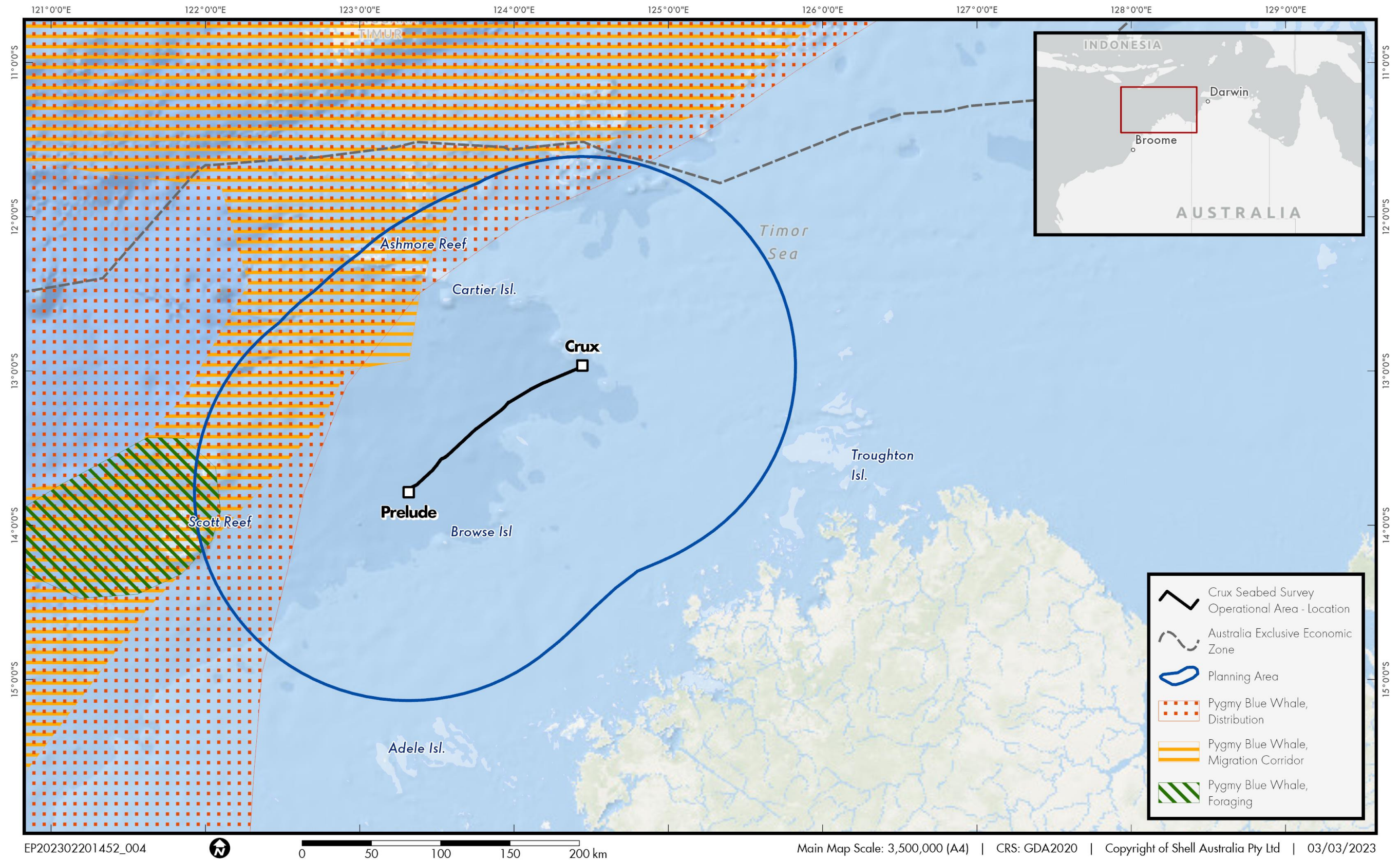


Figure 7-6: BIAs for blue and pygmy blue whales within the Planning Area

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### Fin Whale

Fin whales (*Balaenoptera physalus*) are widely distributed from polar to tropical waters and have been recorded in all Australian states, other than New South Wales and the Northern Territory (Bannister et al. 1996). The species is listed as Vulnerable under the EPBC Act.

Fin whales are rarely observed in inshore waters and displays migratory movements (essentially north-south) between polar, temperate and tropical waters (Bannister et al. 1996). Migration within Australian waters does not appear to follow a clear route and is thought to occur in summer and autumn. Breeding in the Southern hemisphere occurs in tropical and sub-tropical latitudes between May and July.

Fin whales feed on planktonic crustacea, such as Antarctic krill, and primarily forage in high latitudes (Bannister et al. 1996). Within Australian waters, Antarctic waters and the Bonney Upwelling are thought to be important foraging grounds for this species.

There are no recognised BIAs or critical habitats for fin whales within the Operational Area or the Planning Area. The species may occur within the Operational Area or Planning Area, but is not expected to be particularly abundant.

### Humpback Whales

The humpback whale (*Megaptera novaeangliae*) has a wide distribution, with recordings throughout Australian Antarctic waters and offshore from all Australian states (Bannister et al. 1996). Humpback whales are no longer listed as Vulnerable under the EPBC Act.

Humpback whales migrate between summer feeding grounds in Antarctica and winter breeding and calving grounds in the sub-tropical and tropical inshore waters of north-west Australia (Jenner et al. 2001). Humpback whales breed and calve in continental shelf waters off northern Western Australia, with the area between Broome and the northern end of Camden Sound hosting large numbers of humpback whales from June to September each year (Double et al. 2012a, 2010). Camden Sound is considered to be the northern limit of most migrating humpback whales; hence the species is unlikely to occur regularly within the Operational Area but will be seasonally present within the Planning Area.

Within the wider Planning Area, a BIA area has been identified for the humpback whale. The behaviour of the humpback whale within this BIA, located approximately 145 km south of the Operational Area is resting, calving, migrating and nursing (Figure 7-7).



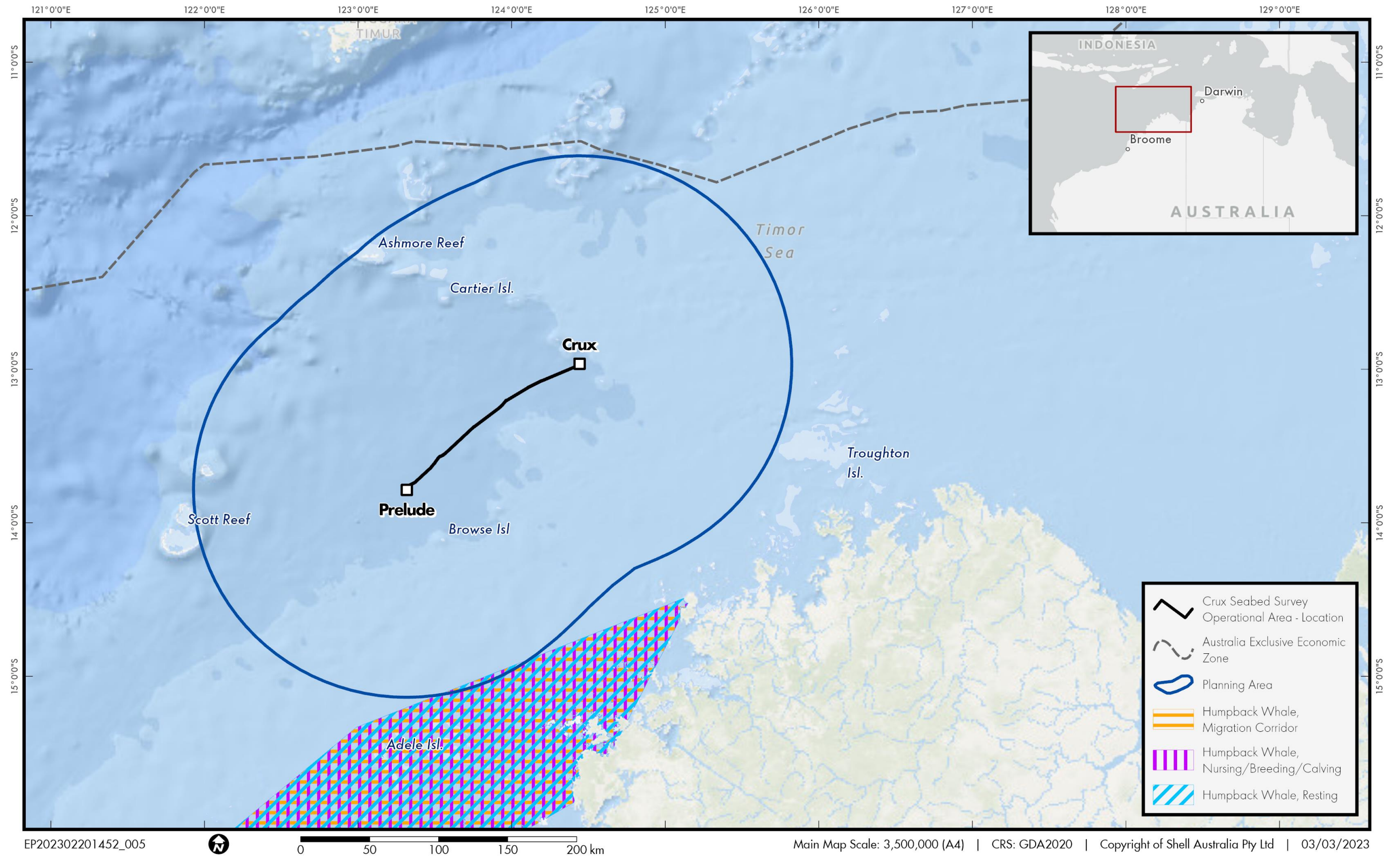


Figure 7-7: BIAs for humpback whales within the Planning Area.



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### **Killer Whale**

Killer whales (*Orcinus orca*) have a global distribution and utilise a wide range of habitats. However, they appear to be primarily concentrated in temperate coastal waters and cooler regions of high productivity (Bannister et al. 1996).

This species is distributed throughout Australian waters, in particular in Tasmanian waters and the waters surrounding Macquarie Island (1,500 km south-south-east of Tasmania) (Bannister et al. 1996). Off Australia, the species is typically observed moving along the continental slope and shelf, and near seal colonies (Bannister et al. 1996). There are no key localities identified within continental Australian waters for this species. Killer whales are carnivores and their diet varies seasonally and regionally (Bannister et al. 1996).

Globally killer whales are known to migrate; however, specific routes and seasonal movement patterns are not known in detail and are thought to relate to prey availability (Bannister et al. 1996). Mating occurs year-round and there are no known calving areas in Australian waters (Bannister et al. 1996).

Based on their known distribution and movements, killer whales may be encountered in within the Operational Area and Planning Area in low numbers.

### **Sperm Whale**

Sperm whales (*Physeter microcephalus*) occur in deep waters in all oceans, typically remaining at depths of 200 m or greater, and are known to occur throughout Australian waters (Bannister et al. 1996). Key areas for sperm whales occur in continental shelf waters approximately 20 nautical miles (nm) to 30 nm offshore between Cape Leeuwin and Esperance (Bannister et al. 1996), several thousand kilometres from the Planning Area.

Sperm whales have a diverse diet, although they primarily feed on oceanic squid (Bannister et al. 1996). Migration patterns vary between sex. Mature females and juveniles are thought to be resident in tropical and subtropical waters throughout the year, whereas mature males are thought to migrate between the tropics and Antarctic (Bannister et al. 1996).

Considering the known distribution of the species, sperm whales may transit through the Operational Area and Planning Area in low numbers.

### **Spotted Bottlenose Dolphin**

The spotted bottlenose dolphin (Arafura/Timor Sea populations) (*Tursiops aduncus*) occurs primarily in continental shelf waters (< 200 m deep), nearshore and in areas with rocky or coral reefs, sandy or soft sediments, or seagrass beds (DSEWPaC 2012d). Small populations also occur in the inshore waters of some oceanic and continental shelf islands, such as the Rowley Shoals and Scott Reef (DSEWPaC 2012d). No BIAs occur within the Operational Area. Several BIAs occur within the Planning Area (primarily within the Lalang-garram / Camden Sound Marine Park), including foraging and calving (190 km south of the Operational Area) and breeding (239 km south of the Operational Area).

Migration patterns for the species in Australia are variable, including of year-round residency in small areas, long-range movements and migration. Due to their tendency to shallow water areas it is unlikely that the species will occur in the Operational Area or the Planning Area.

### **Antarctic Minke Whale**

The Antarctic minke whale is distributed worldwide and has been recorded off all Australian states, feeding in cold waters and migrating to warmer waters to breed. It is not expected to occur in the Operational Area, but may occur within the Planning Area. It is thought that the Antarctic minke whale migrates up the WA coast to approximately 20°S to feed and possibly breed (Bannister et al. 1996); however, detailed information on timing and location of migrations and breeding grounds is not well known. No critical habitats or BIAs for Antarctic minke whales occur within the Operational Area or Planning Area.

Given the wide distribution of Antarctic minke whale, the Planning Area is unlikely to represent an important habitat for this species. Antarctic minke whales are not expected to occur within the Operational Area or Planning Area in large numbers.

### **Dugong**

Dugongs (*Dugong dugon*) occur in tropical and sub-tropical coastal and island waters broadly coincident with the distribution of seagrasses (Marsh et al. 2002), which typically occur in shallow intertidal zone areas to water

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depths of around 25 m. Dugong feeding aggregations tend to occur in large seagrass meadows within wide shallow protected bays, shallow mangrove channels and in the lee of large inshore islands. The movements of most individuals are limited to within tens of kilometres within the vicinity of seagrass beds (Marsh et al. 2002). However, some individuals have been observed to travel large distances of up to 600 km over a few days (Marsh et al. 2002).

Dugongs and areas of potential dugong habitat exist along the majority of northern Australian coastline from Shark Bay in Western Australia to Moreton Bay in Queensland. A small population of approximately 50 individuals exists at Ashmore Reef, which is considered to be genetically distinct from other nearby Australian or Indonesian populations (Commonwealth of Australia 2002).

BIAs for dugong overlap the Planning Area, the nearest of which is the foraging (high density seagrass beds BIA around Cartier Island approximately 80 km north-west of the Operational Area. Other BIAs for foraging, breeding, calving and nursing occur within the Planning Area around Ashmore Reef.

Considering the habitat preference of the species, dugongs are very unlikely to occur within the Operational Area but are expected to occur in coastal waters and around islands in the Planning Area.

### **Southern Right Whale**

The southern right whale occurs primarily in waters between approximately 20° and 60°S and moves from high latitude feeding grounds in summer to warmer, low latitude, coastal locations in winter (Bannister et al. 1999). These latitudes are far to the south of the Operational Area, which is at approximately 13.7°S. Southern right whales aggregate in calving areas along the south coast of Western Australia, such as Doubtful Island Bay, east of Israelite Bay and to a lesser extent Twilight Cove (DSEWPaC 2012b). During the calving season, between May and November, female southern right whales that are either pregnant or with calf can be present in shallow protected waters along the entire southern Western Australian coast and west up to approximately Two Rocks, north of Perth. Sightings in more northern waters are relatively rare; however, they have been recorded as far north as Exmouth (Bannister et al. 1996). There are no southern right whale BIAs within the Operational Area or Planning Area.

Given the species prefers temperate waters and has rarely been recorded north of Exmouth, southern right whales will not occur in the Operational Area and are very unlikely to occur in the Planning Area.

### **Australian Snubfin Dolphin**

The Australian snubfin dolphin (*Orcaella heinsohni*, also known as the Irrawaddy dolphin, *O. brevirostris*) shares similar habitat preferences with the Indo-Pacific humpback dolphin, occurring in shallow coastal and estuarine waters (typically less than 20 m deep) (DSEWPaC 2012d). However, as with the Indo-Pacific humpback dolphin, the species has also been recorded up to 23 km offshore. In Australia, the species distribution covers the coastal waters of Queensland, the Northern Territory and northern Western Australia. The population in Australian waters is thought to be continuous with the Papua New Guinea species but separate from populations in Asia.

No BIAs occur within the Operational Area or Planning Area. This species is not expected to occur within the Operational Area nor in the Planning Area due to its preference for coastal habitats.

### **Indo-Pacific (Australia) Humpback Dolphin**

The Indo-Pacific humpback dolphin has been recognised as two distinct species; the Indo-Pacific humpback dolphin (*Sousa chinensis*) and the Australian humpback dolphin (*S. sahalensis*) (Jefferson and Rosenbaum 2014). Only the Australian humpback dolphin is considered here. Humpback dolphins inhabit shallow coastal, estuarine habitats in tropical and subtropical regions generally in depths of less than 20 m (Corkeron et al. 1997, Jefferson 2000, Jefferson and Rosenbaum 2014).

The Australian humpback dolphin (*Sousa sahalensis*) occurs along the northern Australian coastline from Exmouth in Western Australia to the Queensland/New South Wales border (Bannister et al. 1996). The species' preferred habitat is shallow (generally < 20 m in depth) coastal, estuarine and riverine (occasional) waters. However, individuals have been observed in shallow waters up to 55 km offshore (Bannister et al. 1996).

Given the species' preferred habitat is relatively shallow coastal waters, Australian humpback dolphins are very unlikely to occur in the Operational Area or the Planning Area. Planning Area

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### 7.2.8.5 Reptiles

#### Loggerhead Turtle

The loggerhead turtle (*Caretta caretta*) is distributed throughout tropical and sub-tropical and temperate waters in all ocean basins. In Australia, the species ranges along most of the coastline, but is rare in temperate waters (Commonwealth of Australia 2017). Nesting in Australia is concentrated in southern Queensland and from Shark Bay to the North West Cape in Western Australia. Foraging areas are more widely distributed with the Western Australian stock foraging from Shark Bay through to Arnhem Land, Gove and into the Java Sea of Indonesia (Limpus 2008a). Loggerhead turtles are carnivorous and mainly feed on benthic invertebrates in a wide range of habitats ranging from nearshore to 55 m in depth (Commonwealth of Australia 2017).

Loggerhead turtles may occur within the Operational Area and the Planning Area. A foraging BIA for the loggerhead turtle lies proximate to the Planning Area approximately 344 km east from the Operational Area. The nearest critical habitat for loggerhead turtles defined by the Recovery plan for marine turtles in Australia 2017-2027 (Commonwealth of Australia 2017) is the nesting habitat around North West Cape, approximately 1,285 km south-west from the Operational Area.

#### Green Turtle

The green turtle (*Chelonia mydas*) is distributed in tropical and sub-tropical waters in the Pacific, Atlantic and Indian oceans. Within Australian waters, the species is predominately found off the Western Australia, Northern Territory and Queensland coastlines (Commonwealth of Australia 2017). The population at Ashmore Reef and Cartier Island is thought to nest year-round, with a peak in nesting during December and January; hatchling emergence is thought to be highest during May (Limpus 2008b).

The species is primarily herbivorous and forages on algae, seagrass and mangroves, including where these habitats exist at offshore coral reef habitats (Commonwealth of Australia 2017). Tagging studies have shown that green turtles can move considerable distances between nesting, with movements of 100's to 1,000's of kilometres recorded (Limpus 2008b).

No BIAs or habitats critical for the survival of green turtles overlap the Operational Area. The nearest habitat critical for the survival of green turtles is the nesting habitat around Browse Island; this habitat lies approximately 23 km south-east of the Operational Area at the closest point. There are also a number of BIAs for green turtles within the Planning Area, none of which overlap the Operational Area:

- Foraging and inter-nesting buffer (23 km south-east of the Operational Area at Browse Island)
- Nesting BIAs with 20 km radii inter-nesting buffers are located on Cartier Island and Ashmore Reef (approximately 100 and 160 km north of the Operational Area).

Green turtles may occur throughout the Operational Area, but would only be expected to occur in low numbers due to the absence of foraging or nesting habitat. Green turtles may be present throughout the Planning Area, and are likely to be more abundant around nesting beaches and shallow foraging habitats.

#### Leatherback Turtle

The leatherback turtle (*Dermochelys coriacea*) is distributed in tropical and temperate oceans worldwide. The species is known to forage and migrate throughout the open offshore waters of Australia, with a distribution that extends further south into temperate waters than other marine turtle species (Limpus 2009b). Records of leatherback turtle nesting in Australia are sparse and limited to the Cobourg Peninsula and Queensland coast (Limpus 2009b). There have been no confirmed accounts of nesting on beaches along Western Australia's coastline. Leatherback turtles eat almost exclusively jellyfish and are pelagic throughout their life in oceanic waters around Australia (Limpus 2009b).

There are no BIAs or habitats critical for the survival of leatherback turtles within the Operational Area and Planning Area. Leatherback turtles may occur within the Operational Area and Planning Area in low numbers throughout the year.

#### Hawksbill Turtle

The hawksbill turtle (*Eretmochelys imbricata*) has a worldwide distribution in tropical and sub-tropical waters. In Australia, hawksbill turtles predominately occur along the northern Western Australia, Northern Territory and northern Queensland coastlines (Limpus 2009a).

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This species is typically associated with rocky and coral reef habitats and is expected to be found foraging within these habitats along the Western Australian coastline, from Shark Bay to the northern extent of the North West Marine Region (Commonwealth of Australia 2017a). Hawksbill turtles are omnivorous and feed on algae, sponges, soft corals and soft bodied-invertebrates.

The population in Western Australia is thought to nest primarily between October and January, while there is evidence of year-round breeding and nesting in the Northern Territory and northern Queensland stocks (Limpus 2009a).

There are no habitats critical for the survival of hawksbill turtles within the Operational Area or the Planning Area. There are two BIAs for hawksbill turtles within the Planning Area:

- Foraging (141 km north of the Operational Area)
- Inter-nesting buffer (150 km west of the Operational Area)

Hawksbill turtles may occur throughout the Operational Area, but would only be expected to occur in low numbers due to the absence of foraging or nesting habitat. Hawksbill turtles may be present throughout the Planning Area, and are likely to be more abundant around nesting beaches and shallow foraging habitats.

### **Olive Ridley Turtle**

The olive ridley turtle (*Lepidochelys olivacea*) has worldwide tropical and sub-tropical distribution. In Australia, the species primarily occurs primary in the Northern Territory and Queensland; the component of the Australian population in Western Australian waters is relatively small (Limpus 2008c).

The olive ridley turtle is primarily carnivorous and feed predominantly on soft-bodied invertebrates (Commonwealth of Australia 2017). The species is known to feed in water depths between 15 m and 200 m, and may make movements > 1,000 km between their nesting and foraging grounds (Whiting et al. 2007).

Nesting is known to occur in the Northern Territory and on western Cape York (Queensland) (Commonwealth of Australia 2017, Limpus 2008c); low density nesting has also been described on the Kimberley coast (Limpus 2008c).

No BIAs or habitats critical for the survival of the olive ridley turtle occur within the Operational Area. Nesting habitat critical for the survival of the olive ridley turtle does occur proximate to the Planning Area, centred on several islands along the Kimberley coastline, the nearest of which is approximately 177 km south of the Operational Area. The nearest olive ridley BIA to the Operational Area is a foraging BIA, which lies approximately 344 km to the east.

Olive ridley turtles may occur within the Operational Area and the Planning Area, but are only expected to be present in low numbers.

### **Flatback Turtle**

The flatback turtle (*Natator depressus*) is known to occur along the Western Australia, Northern Territory and Queensland coastlines, and forages widely across the Australian continental shelf and into the continental waters off Indonesia and Papua New Guinea (Commonwealth of Australia 2017). Unlike other species of marine turtle, the flatback turtle does not have a global tropical distribution, with all recorded nesting beaches within Australian waters (Limpus 2007).

Flatback turtles nest throughout tropical Australia, although there are several distinct populations (Limpus 2007). The northerly populations in Queensland and the Northern Territory nest year-round with a peak during winter months. Populations at higher latitudes off central Queensland and Western Australia's Pilbara coast tend to have a nesting peak in summer (Limpus 2007).

Flatback turtles are primarily carnivorous and feed predominantly on soft-bodied invertebrates in relatively shallow waters (Limpus 2007). Their distribution is largely restricted to continental shelf waters (< 200 m).

There are no BIAs or habitats critical for the survival of flatback turtles within the Operational Area or Planning Area. Flatback turtles are unlikely to occur within the Operational Area or Planning Area.

### **Short-nosed Seasnake**

The short-nosed seasnake (*Aipysurus apraefrontalis*) is a slender marine snake with a small head and pointed snout. This species has primarily been recorded at Ashmore Reef and Cartier Island on the Sahul Shelf, which

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lie approximately 80 km north-west of the Operational Area. The species has also been recorded along the Pilbara coast between Exmouth Gulf and Broome (Threatened Species Scientific Committee 2010a).

Like all seasnakes, the short-nosed seasnake must come to the surface to breathe at intervals anywhere between 30 minutes and two hours. The species has been recorded primarily in reef flats or in shallow waters (< 10 m). The short-nosed seasnake has apparently experienced a decline in numbers, with recent surveys of Ashmore Reef failing to observe the species (Threatened Species Scientific Committee 2010a).

The short-nosed seasnake is likely to occur within the Operational Area, and is known to occur within shallow reef habitat within the Planning Area.

### **Leaf-scaled Seasnake**

The leaf-scaled seasnake (*Aipysurus foliosquama*) is a slender marine snake growing up to 60 cm in total length with some specimens found up to 90 cm. Like the short-nosed seasnake, the leaf-scaled seasnake is thought to be largely restricted to the reefs of the Sahul Shelf in Western Australia, especially on Ashmore and Hibernia Reefs (Threatened Species Scientific Committee 2010b).

The short-nosed seasnake may occur within the Operational Area, and is known to occur within shallow reef habitat within the Planning Area.

### **Saltwater Crocodile**

The salt-water crocodile occurs within the nearshore marine and estuarine waters throughout southern Asia and Northern Australia. Large populations within the major river systems of the Kimberley occur in the rivers draining into the Cambridge Gulf, the Prince Regent and Roe River systems of the east and northwest Kimberley. There are no BIAs for the species within the Operational Area or Planning Area. Saltwater crocodiles are very unlikely to occur in the Operational Area or the Planning Area.

## **7.2.8.6 Sharks and Rays**

### **Narrow Sawfish**

The narrow sawfish is widely distributed throughout the Indo-Pacific region, with records spanning from the Arabian Gulf to Japan. In Australia, the species may have a broad tropical distribution from approximately North West Cape in Western Australia to southern Queensland. Like other sawfish species, the narrow sawfish has experienced considerable decline in numbers due to human activities, including fishing and habitat loss / damage (Cavanagh et al. 2003).

Like other sawfish in the family Pristidae, the narrow sawfish prefers shallow coastal, estuarine and riverine habitats, although may occur in waters up to 40 m deep (D'Anastasi et al. 2013). There are no BIAs for this species within the Operational Area or the Planning Area. Given the water depth (>230 m) and distance from preferred habitats, narrow sawfish are not expected to occur within the Operational Area or the Planning Area.

### **White Shark**

The white shark (*Carcharodon carcharias*) has a circumglobal distribution primarily in temperate waters. In Australian waters, the species typically occurs in temperate and sub-tropical waters between the shore and the 100 m depth contour; however, adults and juveniles have been recorded diving to depths of 1,000 m (Bruce 2008, Bruce et al. 2006). Tagging studies indicate white sharks may move as far north as Rockhampton on the Queensland coast, however they are thought to be very uncommon in tropical waters (Bruce et al. 2006), such as the Timor Sea.

There are no BIAs for white sharks within the Operational Area or Planning Area; given the anti-tropical distribution of this species, white sharks are unlikely to occur in the Operational Area or Planning Area.

### **Northern River Shark**

The northern river shark (*Glyphis garricki*) is a medium-sized shark which can tolerate both marine and freshwater. The species has a tropical distribution and is believed to be endemic to northern Australia and southern New Guinea (Stevens et al. 2005). In Western Australia, the majority of records of the species are from King Sound. The species is most commonly encountered in tidal creeks and estuaries (Morgan et al. 2010), hence it is unlikely to occur within the Operational Area but may be present in Kimberley coastal waters in the Planning Area. There are no BIAs for this species within the Operational Area or Planning Area.



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### Shortfin Mako

The shortfin mako shark is a pelagic species with a circumglobal, wide-ranging oceanic distribution in tropical and temperate seas (Mollet et al. 2000). The shortfin mako is commonly found in water with temperatures greater than 16 °C. 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 et al. 2011, Stevens et al. 2010).

The species can grow to almost 4 m in length. Females mature later (19 to 21 years) than males (7 to 9 years) and adults have moderate longevity estimates of 28 to 29 years (Bishop et al. 2006).

The shortfin mako shark is an apex and generalist predator that feeds on a variety of prey, such as teleost fish, other sharks, marine mammals and marine turtles (Campana et al. 2005). Little is known about the population size and distribution of shortfin mako sharks in Western Australia; they may occur in both the Operational Area and Planning Area.

### Longfin Mako

The longfin mako is a widely distributed, but rarely encountered, oceanic shark species. The species can grow to just over 4 m long and is found in northern Australian waters, from Geraldton in Western Australia to at least Port Stephens in New South Wales and is uncommon in Australian waters relative to the shortfin mako (Bruce 2013, Department of the Environment, Water, Heritage and the Arts 2010).

There is very little information about these sharks in Australia, with no available population estimates or distribution trends. A study from southern California documented juvenile longfin mako sharks remaining near surface waters, while larger adults were frequently observed at greater maximum depths of about 200 m (Sepulveda et al. 2004).

Longfin mako may occur in the Operational Area and Planning Area, but given their widespread distribution and apparent low density they are likely to be uncommon.

### Giant Manta Ray

The giant manta ray is broadly distributed in tropical waters of Australia. The species primarily inhabits near-shore environments along productive coastlines with regular upwelling, but they appear to be seasonal visitors to coastal or offshore sites including offshore island groups, offshore pinnacles and seamounts (Marshall et al. 2011). Giant manta rays have been recorded regularly off the Ningaloo Coast (Preen et al. 1997), well beyond the Planning Area.

The Operational Area is not located in, or adjacent to, any known aggregation areas for the species (e.g. feeding or breeding). Occurrence of giant manta rays within the Operational Area is likely to be infrequent, and restricted to individuals transiting the area.

### Green Sawfish

The green sawfish (*Pristis zijsron*) were once widely distributed in coastal waters along the northern Indian Ocean, although it is believed that northern Australia may be the last region where significant populations exist (Stevens et al. 2005). Within Australia, green sawfish are currently distributed from about Cairns in Queensland across northern Australian waters to Broome in Western Australia (Threatened Species Scientific Committee 2008b).

Despite records of the species in deeper offshore waters, green sawfish typically occur in the inshore fringe with a strong association with mangroves and adjacent mudflat habitats (Commonwealth of Australia 2015b, Stevens et al. 2005). Movements within these preferred habitats is correlated with tidal movements (Stevens et al. 2008).

No BIAs for the green sawfish overlap the Operational Area. BIAs in the Planning Area include foraging (203 km south of the Operational Area) and pupping (294 km south of the Operational Area) BIAs along the Kimberley coast to the south of the Operational Area. Given the habitat preferences of the green sawfish, the species is unlikely to occur within the Operational Area or the Planning Area.

### Whale Shark

The whale shark (*Rhincodon typus*; vulnerable) is globally distributed in tropical and warm temperate waters, and it is thought individuals form one single genetic population (DoE 2015l). Key areas of concentration within Australian waters include the Ningaloo coast (March – July), Christmas Island (December – January) and the Coral Sea (November – December), with the timing of the aggregations thought to be linked to seasonal



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fluctuations in prey abundance (DoE 2015l). The species is an epipelagic filter feeder; therefore, their diet typically consists of planktonic and nektonic species, including small crustaceans and smaller schooling fish species (DoEE 2018aa; DoE 2015l).

Whale sharks are known to be highly migratory with migrations of 13,000 km being recorded (Eckert and Stewart 2001). Migration along the northern WA coastline broadly follows the 200 m isobath and typically occurs between July and November (DoE 2015l).

A biologically important area for whale sharks is located in northern WA, offshore of the Pilbara and Kimberley coastline, and broadly follows the 200 m isobath (DoEE 2018aa). The BIA is listed as a foraging habitat, however the Conservation Advice (DoE 2015l) for this species indicates this BIA up the north west coast is a migration corridor than significant foraging habitat. This is consistent with tagging studies; Meekan and Radford (2010) showed that whale sharks migrated up the coast from Ningaloo Reef and dispersed individually over a broad migratory area either north-west into the open Indian Ocean, northward towards Sumatra and Java, or north-east towards the Timor Sea. The operational area intersects a portion of this BIA (Figure 7-8). Therefore, whale sharks are expected to transit through the project area as part of their broad migratory movement.

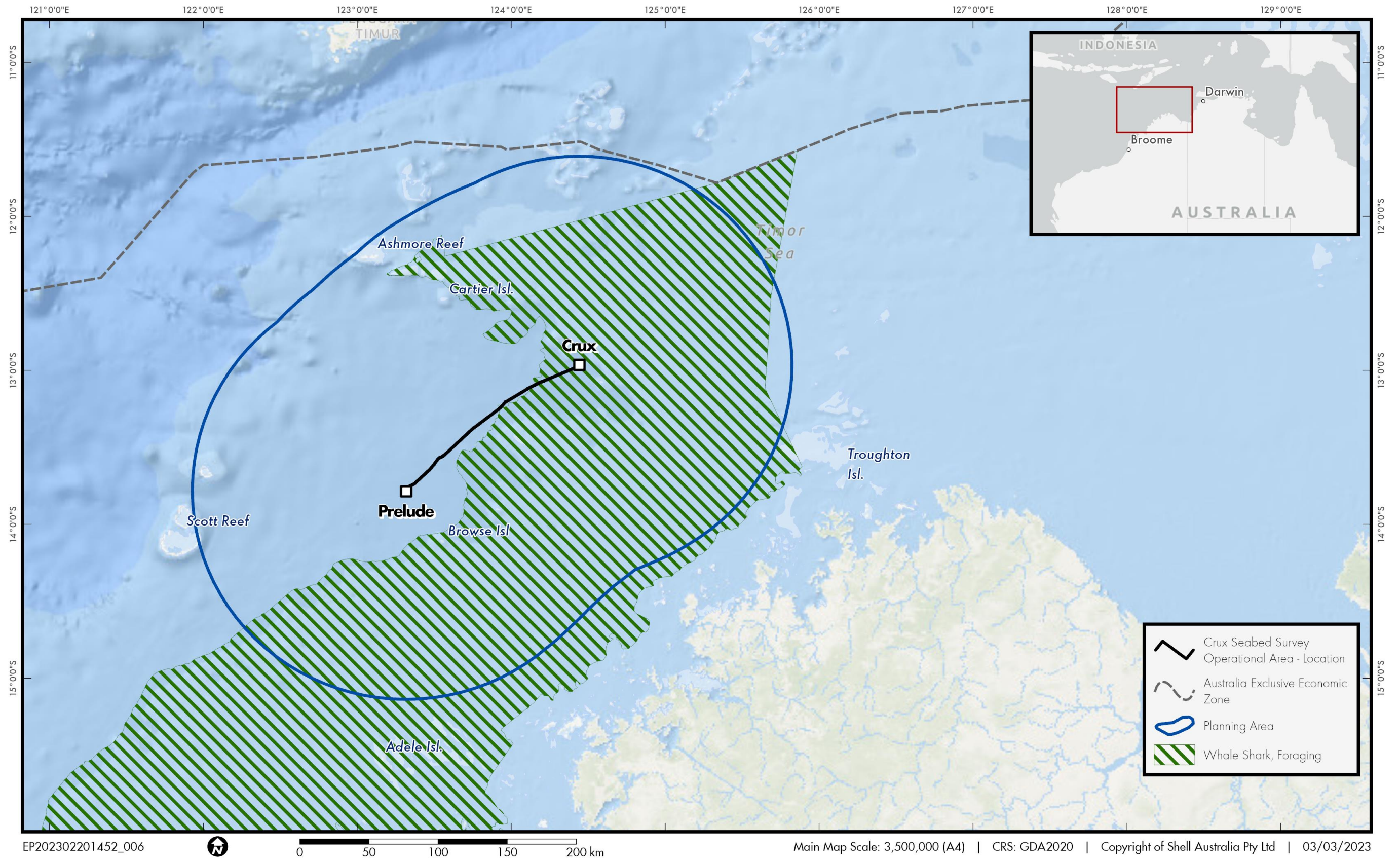


Figure 7-8: Whale shark foraging BIA within the Planning Area



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### Grey Nurse Shark (West Coast Population)

The grey nurse shark (*Carcharus taurus*) has a broad distribution in inner continental shelf waters, primarily in sub-tropical to cool temperate waters. The species occurs primarily in south-west coastal waters between 20 and 140 m depth off Western Australia (Chidlow et al. 2006). Grey nurse sharks have been documented as aggregating in specific areas (typically reefs), however no clear aggregation sites have been identified off Western Australia (Chidlow et al. 2006).

No BIAs for grey nurse sharks occur within the Operational Area or the Planning Area. Given the species' preference for temperate waters, it is unlikely to occur within the Operational Area or Planning Area.

### Porbeagle

The porbeagle is a species of lamnid shark found in temperate, sub-Arctic and sub-Antarctic waters worldwide. The species can thermos-regulate physiologically, allowing it to occupy cooler waters than other shark species. The porbeagle has a wide vertical range within the water column, with tagging studies recording the species between the surface and > 700 m water depth (Saunders et al. 2011). Given its preference for cooler waters (Bruce 2013), the porbeagle is unlikely to be encountered within the Operational Area or Planning Area. There are no critical habitats or BIAs for the porbeagle in the Operational Area or Planning Area.

### Reef Manta Ray

The taxonomy of the reef manta ray (*Manta alfredi*) was revised relatively recently, with this species being recognised as distinct from the giant manta ray (*M. birostris*) (Marshall et al. 2009). The species occurs in inshore waters, but also found around offshore coral reefs, rocky reefs and seamounts (Marshall et al. 2009). In contrast to the giant manta ray, long-term sighting records of the reef manta ray at established aggregation sites suggest that this species is more resident in tropical waters and may exhibit smaller home ranges, philopatric movement patterns and shorter seasonal migrations than the giant manta ray (Deakos et al. 2011, Marshall et al. 2009). A resident population of reef manta rays has been recorded at Ningaloo Reef, and the species has been shown to have both resident and migratory tendencies in eastern Australia (Couturier et al. 2011).

Reef manta rays may occur in the Operational Area, but is only expected to occur in low numbers. The species is likely to be present in the Planning Area where suitable habitat is available (e.g. coastal waters and offshore reefs).

### Dwarf Sawfish

The dwarf sawfish (*Pristis clavata*) is found in Australian coastal waters extending north from Cairns around the Cape York Peninsula in Queensland to the Pilbara coast (Kyne et al. 2013).

Dwarf sawfish typically inhabit shallow (2 to 3 m) silty coastal waters and estuarine habitats, occupying relatively restricted areas and moving only small distances (Stevens et al. 2008). Juvenile dwarf sawfish utilise estuarine habitats in north-western Western Australia as nursery areas and migrate to deeper waters as adults (Thorburn et al. 2008, Threatened Species Scientific Committee 2009). The majority of capture locations for the species in Western Australia waters have occurred within King Sound (beyond the Planning Area) and the lower reaches of the major rivers that enter the sound, including the Fitzroy, Mary and Robinson rivers (Morgan et al. 2010). Individuals have also been recorded from Eighty Mile Beach, and occasional individuals have also been taken from considerably deeper water by trawl fishers (Morgan et al. 2010).

Dwarf sawfish are very unlikely to occur within the Operational Area, but may be present in coastal waters within the Planning Area.

### Freshwater Sawfish

The freshwater sawfish (*Pristis pristis*) inhabits both riverine and marine environments in northern Australia. While primarily associated with rivers, tidal creeks and estuaries, the freshwater sawfish has been recorded up to 100 km offshore (Commonwealth of Australia 2015b).

In Western Australia, the species is known from riverine and coastal environments in the Kimberley region. Riverine habitats are particularly important as pupping habitats.

The freshwater sawfish is very unlikely to occur within the Operational Area or the Planning Area given they are more likely to be observed in coastal waters, estuaries and tidal creeks along the Kimberley coastline Planning Area.

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### 7.2.8.7 Birds

The Operational Area may be visited by migratory and oceanic birds but does not contain any emergent land that could be utilised as roosting or nesting habitat and contains no known critical habitats (including feeding) for any species. Observations onboard the Prelude FLNG facility indicate that seabirds and migratory shorebirds opportunistically roost onboard the facility.

Threatened and migratory bird species that may occur within the Operational Area and Planning Area can broadly be classified into two groups – seabirds and migratory shorebirds. The descriptions below of the species in the Operational Area have been based on these groups.

#### Seabirds

Seabirds are birds that are highly adapted to the marine environment. Characteristics of many seabird species include webbed feet, dense water-resistant plumage that protects birds from becoming soaked, a diet comprising marine biota (typically fish), and nesting on offshore islands or inaccessible coastlines. Many seabird species spend relatively little time on land and forage at sea for extended periods. Some species may undertake long migrations; however, unlike migratory shorebirds, they do not typically follow the East Asian-Australasian flyway.

Seabirds that may occur within the Operational Area and Planning Area include:

- noddies:
  - black noddy
  - common noddy
  - Australian lesser noddy.
- shearwaters:
  - little shearwater
  - streaked shearwater
  - flesh-footed shearwater
  - wedge-tailed shearwater.
- terns:
  - Caspian tern
  - bridled tern
  - roseate tern
  - little tern
  - Australian fairy tern
  - crested tern.
- frigatebirds:
  - lesser frigatebird
  - great frigatebird
  - Christmas island frigatebird.
- tropicbirds:
  - white-tailed tropicbird
  - Christmas Island white-tailed tropicbird
  - red-tailed tropicbird.
- petrels:

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- southern giant-petrel
- northern giant petrel
- soft-plumaged petrel.
- albatrosses:
  - Amsterdam albatross
  - southern royal albatross
  - wandering albatross
  - Indian yellow-nosed albatross
  - white-capped albatross
  - Campbell albatross
  - black-browed albatross
  - white-capped albatross
  - shy albatross.
- boobies:
  - Abbott's booby
  - masked booby
  - brown booby
  - red-footed booby.
- ospreys.

Many of the seabird groups listed, such as noddies, terns, frigatebirds, tropicbirds and boobies above are typically found in tropical areas. These species may transiently occur within the Operational Area, however they are more likely to occur in the vicinity of offshore islands in the Planning Area, such as Browse Island and Ashmore Reef, particularly during breeding seasons.

Many of the seabird groups listed above have temperate or sub-Antarctic distributions, such as shearwaters, petrels and albatrosses. These species are very unlikely to occur within the Operational Area, although may be present in the southern portion of the Planning Area.

### **Migratory Shorebirds**

Migratory shorebirds and wading birds include many species of birds that breed in northern Asia during the northern hemisphere summer (particularly eastern Russia and China) and migrate to Australasia during the southern hemisphere summer to feed. Many of these species follow the East Asian-Australasian flyway and are protected by migratory bird agreements between countries along this route, including Australia.

Migratory shorebirds typically do not nest within Australia, but do make extensive use of wetland and coastal habitats as feeding and resting areas during their migration. Several of these areas are listed under the Ramsar Convention and are protected under the EPBC Act (Section 7.2.5).

Migratory shorebirds that may occur within the Operational Area and Planning Area include:

- sandpipers, curlews, stints, knots and turnstones (genus *Calidris*):
  - common sandpiper
  - sharp-tailed sandpiper
  - curlew sandpiper
  - pectoral sandpiper
  - broad-billed sandpiper

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- wood sandpiper
- marsh sandpiper
- Terek sandpiper
- eastern curlew
- whimbrel
- ruddy turnstone
- sanderling
- ruff (reeve)
- red-necked stint
- red knot
- great knot.
- shanks and tattlers:
  - grey-tailed tattler
  - common greenshank
  - common redshank.
- plovers:
  - double-banded plover
  - greater sand plover
  - lesser sand plover
  - oriental plover
  - pacific golden plover
  - grey plover.
- godwits:
  - bar-tailed godwit
  - bar-tailed godwit (baueri)
  - Northern Siberian bar-tailed godwit
  - Black-tailed godwit.
- Oriental Pratincole
- Asian Dowitcher
- Australian Painted-snipe.

Many of the species listed above are closely related and within the family Scolopacidae, and share very similar life histories. All of these migratory shorebird species may transit through the Operational Area during migration. They are likely to occur seasonally along coastlines, in estuaries and wetlands throughout the Planning Area, particularly Ramsar sites (Section 7.2.5).



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## 7.3 Socio-Economic Environment

### 7.3.1 Indigenous Cultural Features

The Crux Seabed Survey Planning Area (the Planning Area) overlaps with the traditional Country of the Indigenous People of Australia<sup>9</sup>. This section describes the features of the Planning Area relevant to the consideration of the cultural and social values of Indigenous People. The relevant cultural and social values are described in Section 7.3.2.

#### 7.3.1.1 Indigenous People and Communities

Indigenous People have the oldest living cultural history in the world (NARVIS 2021). The presence of Indigenous People in northern Australia dates back more than 60,000 years and is evidenced in the rich Indigenous cultural records that include some of the oldest cultural sites in Australia (NLC 2023a). Indigenous People reside in regional and remote settlements along the coastline of the mainland, on offshore islands (e.g. Bathurst Island and Melville Islands in the Tiwi Islands), as well as inland areas on the mainland.

Country is an important concept to Indigenous People. The term Country is often used by Indigenous People to describe family origins and associations with particular parts of Australia, both land and sea. The expressions Country and sea Country are used by Indigenous People to refer to the land and waters *which constitute Aboriginal traditional areas as ancestrally distinct and linguistically bounded geographic areas* (Kearney et al, 2023 p106). Country is inclusive of many environments that *are ecologically, geographically, ancestrally and socially configured* (Kearney et al 2023). For Indigenous People Country is a combination of the land, sea, rivers and islands and all that they contain and sustain.

Country is described further in Section 7.3.2.2.1.

Although many Indigenous People do not live permanently on traditional Country, families and individuals retain close personal connections with their Country and visit regularly for extended trips, to care for Country, find traditional foods and connect with important sites. Regular connection to Country is of significant importance for Indigenous People.

Numerous different Indigenous groups have connections to different parts of Country within the Planning Area. These family groups are representative of many different Indigenous language groups, the languages of which have been spoken for millennia.

#### 7.3.1.2 Land and Sea Tenure and Ownership

Both traditional and contemporary systems of land and sea ownership are present within the Planning Area. Each tenure is described in the following sections.

##### 7.3.1.2.1 Traditional land and sea ownership

The marine areas located within the Planning Area have been lived in, cared for and managed by many Indigenous People for thousands of years. There are complex systems of rules, rights, customs and traditional knowledge that govern Indigenous People's interactions with each other and their land and sea estates within the Planning Area.

For Indigenous People, Country is not bound by state and territorial borders or maritime boundaries distinguished by international conventions or economic jurisdiction. An example of this is evident in the answer provided by Mary Yarmirr, under cross-examination to the question of the extent of her traditional sea Country in the 1998 Federal Court hearing of the Croker Island Native Title claim<sup>10</sup>:

*'As far as my eyes can carry me'* (Mary Yarmirr 1998, cited in AHRC 2001).

Culture and ancestral features provide the necessary political distinction of traditional Country. Customary law, passed from generation to generation informs traditional land and sea ownership (NLC 2023b).

<sup>9</sup> The term Indigenous People includes all people of Aboriginal and Torres Strait Islander descent.

<sup>10</sup> In 1998 the Federal Court of Australia found that native title existed in relation to the sea and sea-bed around Croker Island (refer Mary Yarmirr & Ors v Northern Territory of Australia & Ors [1998] FCA 1185 (4 September 1998)).

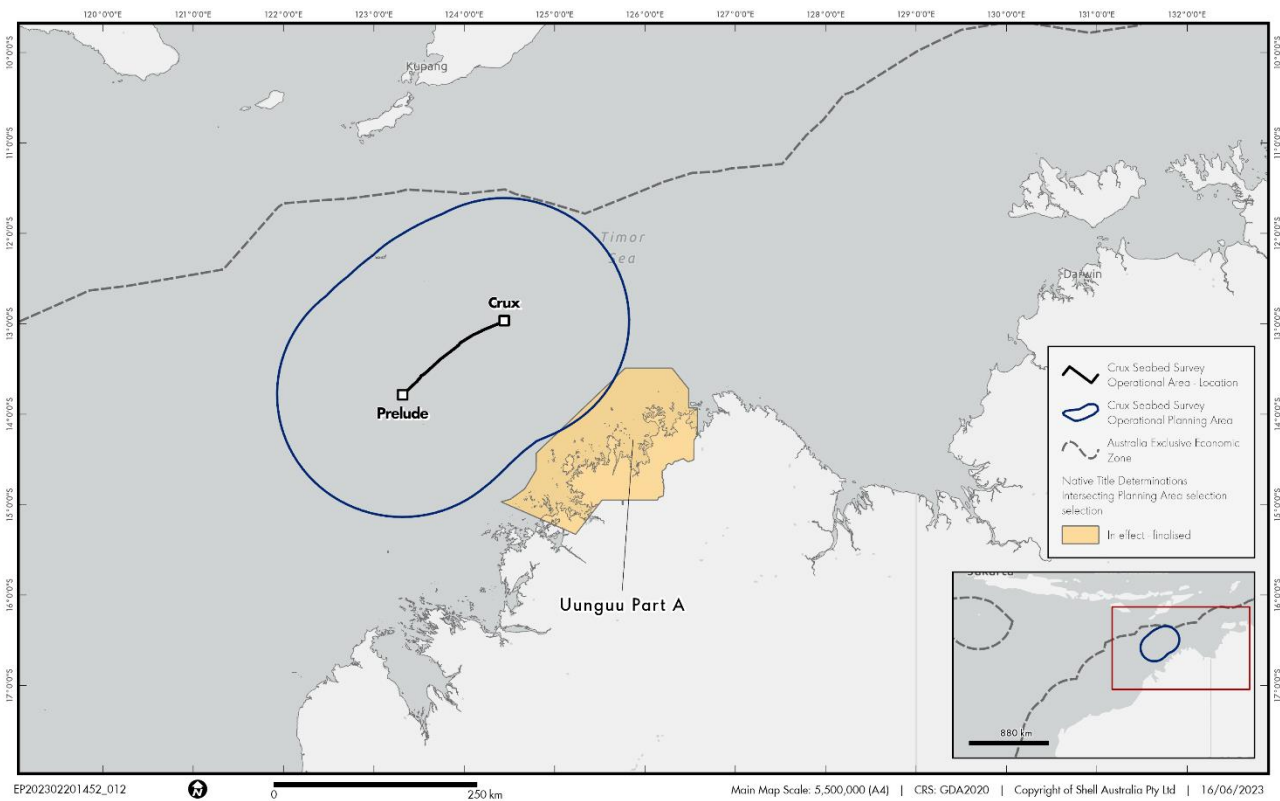
**7.3.1.2.2 Contemporary land and sea ownership**

The Planning Area includes extensive marine areas to which Indigenous People have statutory ownership and rights, protected through the NTA. In addition, cultural and social connections are recognised through Indigenous Land Use Agreements (ILUAs), Indigenous Protected Areas (IPAs) and other mechanisms that exist proximate to the Planning Area.

**Native Title**

Native Title determinations provide formal recognition under Australian law of the complex cultural system of Indigenous People’s ongoing relationships, interests, rights, and responsibilities in relation to land and sea. Native Title can be non-exclusive or exclusive, and can co-exist with other property rights (e.g., pastoral stations). Native Title can exist over both land and sea estates. Traditional Owners<sup>11</sup> and their relationship and custodianship of their Country is protected by the NTA and any determinations made by the National Native Title Tribunal (NNTT).

Table 7-6 and Figure 7-9 presents Native Title determinations that exist within the Planning Area sourced from the NNTT (2023) database *Native Title Determination Outcomes*. The Planning Area intersects with one Native Title determination area that also includes sea Country.



**Figure 7-9: Native titles which overlap the Seabed Survey Planning Area.**

<sup>11</sup> The term Traditional Owner in this report recognises the Indigenous persons who assert traditional ownership and native title rights and interests in relation to land and water within the Planning Area. It acknowledges the connections to Country and culture held by the Indigenous People.

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**Table 7-6: Native Title Determination Outcomes (Native Title Exists) within the Planning Area**

Short Name	NNTT Tribunal Number	Sea Determination <sup>1</sup> (Y/N)	Registered Native Title Body Corporate (RNTBC)	Managing Aboriginal Corporation	State or Territory
Unguu <sup>12</sup> Part A	WCD2011/001	Yes	Wanjina-Wunggurr Aboriginal Corporation RNTBC	Wunambul Gaambera	WA

Notes: <sup>1</sup> The application includes an area of sea that is bounded by the high-water mark and the exclusive economic zone limit.

Source: NNTT 2023 with data extracted 28 February 2023.

Whilst traditional ownership of sea Country in some areas has been enshrined in law through Native Title and Aboriginal freehold land tenure, many other Indigenous People claim use of and connection to sea Country. For example, the Dambimangari Native Title Determination Area (land and sea Country) adjoins the Ungu Determination area to the south and is the traditional country of the Dambimangari People. It is possible that the Dambimangari people and the Wunambal Gaambera people access marine waters located outside of the boundaries of each of their Native Title determinations.

### Indigenous Land Use Agreements

The NNTT (2022 p16) defines an ILUA as a voluntary, legally binding agreement about the use and management of land or waters, made between one or more native title groups and non-native title interest holders in the ILUA area (such as grantee parties, pastoralists or governments). There are no recorded ILUAs within the Planning Area.

#### 7.3.1.3 Ancient Landscapes

Past coastal environments and climate played a central role in the development of early human communities (Erlandson and Fitzpatrick 2006; Rick and Fitzpatrick 2012 in Lebec et al 2022). There is evidence indicating that land areas that were once inhabited by humans are now submerged (O’Leary et al 2020). Post glacial sea level rise resulted in the inundation and submergence of cultural sites covering the period from first arrival to Australia an estimated 65,000 years before present (BP), to the present sea level elevations at around 7500 years BP (O’Leary et al 2020). The Ancient Coastline Key Ecological Feature (KEF) at 125 m depth contour in the North West region (Figure 7-4) represents the lowest sea level during Indigenous occupation (O’Leary et al 2020; Williams et al 2018). In 2020 researchers associated with the Deep History of Sea Country Project (Benjamin et al, 2020) reported the first confirmed ancient underwater archaeological site from the continental shelf, located off the Murujuga coastline in north-western Australia.

Shell has commissioned an independent specialist consultant to provide technical advice on the historical seabed levels, especially those from the Last Glacial Maximum. By doing so Shell are seeking to determine the likelihood of underwater tangible Indigenous Australian Cultural Heritage within the Planning Area. Shell considers the areas between the current coastline and the Ancient Coastline KEF to be the area subject to this study. Section 9.6 includes further details on this scope of work and how the findings will be used to inform the risks and impacts section of this EP.

Additionally, if any Indigenous archaeological sites are identified either through the above research, or during the course of undertaking activities, Shell will seek to engage the relevant Indigenous groups to manage and/or protect the sites as appropriate.

Through consultation with some relevant persons, Shell heard that the Bardi Jawi have an ancient ceremonial site underwater on the Dampier Peninsula coast that’s 40,000 years old. And 1-3km offshore there are huts on the small island reef that’s still part of songlines. These are sacred underwater ceremonial sites. Shell received preliminary results of a First Nations Underwater Cultural Heritage Impact Assessment in August 2023. The results of this say ‘The proposed [Crux Foundation Project] seabed impacts take place below 130

<sup>12</sup> The Native Title Application known as Unguu Part A is known as Wanjina Wunggurr Unguu by the Traditional Owners, as identified in the Healthy Country Plan, *Unguu: Looking after Wunambal Gaambera Country 2010 - 2020*. The Traditional Owners identify their Country as Wunambal Gaambera Country, and refer to themselves as the Wunambal Gaambera people. In this document, we refer to the people as Wunambal Gaambera people, and the Country as Wunambal Gaambera Country. The authors accept responsibility for any incorrect use of names and apologise unreservedly.

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m LAT. This means that there should be no impact to tangible cultural heritage values.” (Cosmos Archaeology, 2023). The Cosmos Archaeology impact assessment work is ongoing through the broader planning area as of September 2023.

#### 7.3.1.4 Indigenous Protected Areas

Indigenous Protected Areas (IPAs) are areas of land and/or sea managed by Indigenous groups as protected areas for biodiversity conservation through voluntary agreements with the Australian Government. IPAs form a component of Australian’s National Reserve System. For Indigenous People, IPAs support the realization of custodianship and stewardship obligations for Country. The boundaries of IPAs can be aligned with Native Title boundaries, or wholly contained within. In 2022 the Australian Government announced a program (the Sea Country IPA Program) to expand the IPA network to include coastal and marine areas.

There are no IPAs within the Planning Area, however the Uunguu IPA is located proximate to the Planning Area and within the Uunguu Native Title determination. The Uunguu IPA, established in 2011 and extended in 2015 to include additional sea Country covers an area of approximately 760,000 hectares of the traditional Country of the Wunambal Gaambera people and within the Uunguu Native Title determination. The IPA coexists with statutory marine parks and reserves (e.g. Kimberley Commonwealth Marine Reserve, the recently dedicated WA Lalang-gaddam Marine Park).

### 7.3.2 Indigenous Cultural and Social Values

#### 7.3.2.1 Overview

This section describes the values and sensitivities associated with the Indigenous cultural and social features of the Planning Area and focusses on the following aspects:

- Caring for Country, including:
  - o Country
  - o Law and spirituality
  - o Traditional knowledge
  - o Conservation and healthy Country
- Land and sea resource use practices
- Indigenous People’s rights and interests.

Information in this section has been sourced from joint-management plans (JMPs) prepared for a number of protected areas (e.g. IPAs and marine reserves), Commonwealth government and Aboriginal Land Council websites, Healthy Country Plans prepared by various Indigenous organisations and books published by Dambimangara and Wunambal Aboriginal Corporations:

- Nyara Pari Kala Niragu (Gaambera): Gadawara Ngyaran-gada (Wunambal): Inganinja Gubadjoongana (Woddordda): We are coming to see you. 2021.
- Karadada, J. et al (2011). Uunguu Plants and Animals: Aboriginal Biological Knowledge from Wunambal Gaambera Country in the North-west Kimberly..

The purpose of this section is to highlight the many and varied cultural and social values of Indigenous People and the associated interests and activities that overlap the Planning Area, and in particular, sea Country. The following sections avoid detailed descriptions of specific areas of cultural significance including cultural heritage sites and sites associated with songlines and Dreaming stories, and also avoids reproduction of Dreaming stories. This information is retained in ownership by the associated Indigenous group.

The discussion focusses on the Wunambal Gaambera people as the holders of Native Title within the Planning Area, and Traditional Owners for Wunambal Gaambera Country including the Uunguu IPA which is located proximate to the Planning Area. However, as previously noted, the neighbouring Native Title holders the

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Dambimangari people may have sea Country interests that extend beyond their Native Title boundaries and into the Planning Area.

### 7.3.2.2 Caring for Country

#### 7.3.2.2.1 Country

The coastal areas, islands and surrounding waters of northern Australia have been used and occupied by Indigenous People for thousands of years. The water and lands are components of Indigenous cultural landscape that are of enormous significance to Traditional Owners.

For Indigenous People, Country is homeland, where culture, history, traditions and social structures are embedded, connected and find full meaning. Custodianship means caring for Country (i.e., land and water, plants and animals) as if land and seas are kin (Janke et al 2021).

*Country is filled with relations speaking language and following Law, no matter whether the shape of that relation is human, rock, crow, wattle..... Country is family, culture, identity. Country is self.*  
(Kwaymullina 2005)

In the context of the Planning Area, many elements within sea Country form significant components of Indigenous People's culture, including their history, dreaming and creation stories (discussed in Section 7.3.2.2.2). Marine life, cultural sites, and places of significance are directly connected to the wellbeing and everyday life of Indigenous People. The health and wellbeing of sea Country is one and the same as the health and wellbeing of Indigenous People. Hence any potential changes in the condition of sea Country (such as that which could result from activities associated with the Crux Project) has implications for the health and wellbeing of Indigenous People who may have connection to the affected sea Country area.

The Wunambal Gaambera people refer to themselves as saltwater and freshwater people - people who have a vibrant and traditional society based on a deep relationship with sea Country.

#### 7.3.2.2.2 Law and spirituality

Indigenous law and spirituality are intertwined with the land, the people and creation. Indigenous law and spirituality reinforce culture and sovereignty. Indigenous People have a complex system of law (also referred to as lore), that preceded European arrival. The term law refers to the stories, customs, beliefs and spirituality of Indigenous People. Law is passed on through generations- through songs, stories, and dance and it guides how Indigenous People live their everyday lives. For Indigenous People customary law provides the rules and responsibilities for looking after culture, plants, animals, people and Country. Customary law and protocols provide rules on how to interact with the land, kinships and community. Different Indigenous groups have different law systems and many are strongly related to creation stories such as the *Lalai* (creation story) of the *Wanjina* and *Wunggurr* (the creators of the world and the Law) of the Wunambal Gaambera people (both native title holders within the Planning Area).

For the Wunambal Gaambera people, everything in Uungu (their living home) is looked after properly under traditional *Wanjina* and *Wunggurr* Law (BHT, 2023). The Wunambal Gaambera people have identified the following 10 most important things to focus on when looking after their Uunguu: right way of fire; pest species management; visitor management, culture (knowledge, education, law), monitoring, evaluation, research and information management; partnerships and communications; sustainable finances; workforce, risk and training, living on Country; land use and graa<sup>13</sup> planning (Wunambal Gaambera Aboriginal Corporation [WGAC], 2020b).

### Songlines and Totemic Systems

Songlines are the Indigenous travel routes that crossed the Country (land and sea), linking important sites, locations and clans. Songlines are maps of the land and sea. Songlines include dreaming pathways or tracks –forged by Creator Spirits during the Dreaming. Many of these Songlines have specific ancestral stories attached to them. Literature reviews indicate that Songlines exist along the coast of northern WA and the Northern Territory. Further engagement with Indigenous groups is required to understand the extent to which these Songlines include marine waters within the Planning Area. There are sacred sites entwined with the Songlines. For saltwater peoples, stories and Songlines locate, interpret and inscribe knowledges of the

<sup>13</sup> 'graa' is the Wunambal Gaambera language word for land.



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Dreaming tracks, bodies and movements of ancestral beings that crisscross sea Country. A number of the natural features within the Planning Area (e.g., islands, reefs and coastline features) form core components of Dreaming stories for different Traditional Owners.

The Wunambal Gaambera people tell of creation through their *Lalai*. The land and sea were created by the ancestral creators, Wanjina and Wunggurr. The creators are described as remaining in the land, sea, and weather that they made, such as rock art, and the tides and waves. Some of the islands in sea Country, for example the islands of Wuuyuru (Bigge Island), Wianggarre (East Montalivet Island), Mandali (West Montalivet Island) and Ungunaun (Lamarack Island), located outside the Planning Area, are noted as important cultural locations on Wunambal Gaambera sea Country with connections to traditional sea voyages made by the Wunambal Gaambera people (WGAC 2020a).

Totems connect Indigenous People on a spiritual level, providing a deeper connectivity and understanding to their family groups, their Country, Dreaming and creation events. Some marine animals and plants found in sea Country hold special cultural significance (including totemic value) to different Indigenous People and may be important for subsistence and medicinal purposes. For example, the *Balgjja* (Dugong) and Flatback Turtle are both of high cultural value to the Wunambal Gaambera people.

Biologically Important Areas (BIAs) for dugong overlap the Planning Area, the nearest of which is the foraging (high density seagrass beds BIA) around Cartier Island. Other BIAs for foraging, breeding, calving and nursing occur within the Planning Area around Ashmore Reef. Considering the habitat preference of the species, dugongs are expected to occur in coastal waters and around islands in the Planning Area.

There are no BIAs or habitats critical for the survival of flatback turtles within the Planning Area. As discussed in Section 7.2.8.5, Flatback turtles are unlikely to occur within the Planning Area.

*Mangguru* (marine turtles) are a key food source for the Wunambal Gaambera people. As described in Section 7.2.8.5, BIAs for the Hawksbill Turtle (internesting buffer) and Green Turtle (nesting) are located within the Planning Area. The whale is an important totem for many Indigenous groups around Australia. BIAs for the Whale Shark (foraging), Pygmy Blue Whale (migratory) and Humpback Whale (migration, valving, and resting) are located within the Planning Area. Pygmy Blue Whales are expected to be seasonally present within the Planning Area as are Humpback Whales (Section 7.2.8.4). Whale sharks are expected to transit through the Planning Area as part of their broader migratory movement.

Consultation with some Indigenous People identified there are some significant songlines up the west Kimberly coastline that go up to Kalumburu. The Walanadi, have strong connection to sea country and they view sea country as all interconnected which is important to them.

### **Traditional Knowledge and language**

Indigenous People have strong and extensive traditional knowledge (both cultural and ecological) of their Country and natural processes. This knowledge has been used for thousands of years to maintain a sustainable balance between the use and care of their natural environment. This knowledge is alive today and evident in law, culture and practices. Traditional knowledge requires the building up of understanding over time and can be defined as a ‘cumulative body of knowledge, practice and belief’ (Berkes 2008 p 7 in Kearney et al 2023). Traditional Owners are increasingly concerned about the difficulties in being able to pass on their traditional knowledge. Active and ongoing participation in land and sea management is a means by which Traditional Owners are seeking to improve the intergenerational transfer of knowledge, critical to future health of land and sea Country.

Wunambal and Gaambera are Australian Indigenous languages traditionally spoken by Wunambal Gaambera people in the North Kimberley (WGAC 2020b).

### **Intergenerational Knowledge Transfer**

Older Indigenous People, in particular those who are senior, cultural leaders or law-people are responsible for passing on traditional cultural and ecological knowledge to young people. Knowledge transfer is traditionally undertaken on-Country through the sharing of stories, song and dance, participation in ceremony and rituals, making tools, engaging in land and resource use activities (e.g. hunting, fishing), learning about bush tucker and traditional medicine. Maintaining easy access to traditional Country and traditional resources (e.g. sea Country resources), and ensuring protection of important cultural heritage sites is imperative for the ongoing transfer of traditional knowledge.



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Indigenous children learn about customary laws and protocols through many avenues including observing and participating in customs and ceremonies such as songs and dances on Country. Such laws, traditions and customs do not exist in the past as historical practices, but are considered living, contemporary and vital.

### **7.3.2.2.3 Conservation and healthy Country**

#### **Biological and ecological values**

For Indigenous People, sea Country within the Planning Area is rich not only in cultural values, but in biological and ecological values. For Traditional Owners of sea Country, fish, marine mammals and sea birds, coral and fringing reef communities are all important components of biodiversity values. Many of these values have already described in Section 7.2. Managing and conserving the ecological values of sea Country is important to Traditional Owners with custodial responsibilities for sea Country, and to the broader Indigenous community.

#### **Contemporary land and sea management**

Indigenous land and sea management across the Planning Area is undertaken in accordance with the objectives of key plans including Healthy Country Plans and IPA Management Plans. Healthy Country Plans are contemporary representations of Indigenous land and sea management and represent the way Indigenous People can manage and implement their traditional knowledge, whilst still looking after Country in ways prescribed by the old people.

The Wunambal Gaambera People have created two such documents: the Wunambal Gaambera Healthy Country Plan (WGAC 2010) (Healthy Country Plan); and the Uunguu Indigenous Protected Area: Wundaagu (Saltwater) Country, Plan of Management 2016-2020 (WGAC 2017) (IPA Management Plan).

There are established Indigenous land and sea ranger networks across WA. Land and sea rangers work on land and sea Country across tenure, including Native Title lands and protected areas. Many of the land and sea ranger programs across WA are supported by the Commonwealth and State funding. Land and sea rangers care for Country, combining traditional knowledge of Country with contemporary training and experience. Rangers are engaged in protecting and monitoring the health of sea Country, particularly marine species such as turtle and dugong. Many of the land and sea ranger programs are delivered as part of broader Aboriginal Land Council or Aboriginal Corporation operations.

The Uunguu Rangers operate within the Uunguu IPA boundaries (which do not intersect with the Planning Area) but are likely to consider areas within the Uunguu Native Title Determination as part of their area of responsibility. The Uunguu Rangers implement the Wunambal Gaambera Healthy Country operations including right way fire, cultural site management and monitoring health of land and saltwater plants, animals and habitats. The Uunguu Rangers are part of the Kimberley Ranger Network and under the governance of the Kimberley Land Council. The WGAC has a research agreement with the WA Institute of Marine Science in relation to research activities in sea Country. This includes collaborative research in relation to Dugong, nesting turtles and benthic habitats. Uunguu Rangers are engaged in a number of different sea Country programs including mapping the migratory behaviour of turtles, with support from the Department of Biodiversity, Conservation and Attractions.

Wunambal Gambera people participate in back to country trips each year on sea Country to support intergenerational knowledge transfer.

#### **Cultural heritage sites and protection**

For Indigenous People, the protection of sacred and significant cultural sites forms a central focus of looking after Country. Cultural sites can tell different narratives about creation, Indigenous lore (law) and history. All Country is considered a cultural place, and there are rules and requirements for how Indigenous People look after it. Healthy Country Plans and IPAs help Indigenous People look after cultural heritage sites. Aboriginal Land Councils and Aboriginal Corporations, together with Land and Sea Rangers work together to control access to cultural heritage sites and sacred areas including sea Country sacred sites.

Cultural sites are specific sites identified and protected through Australian law and which include particular places of importance to Indigenous People, in a broader landscape of cultural significance.

A search of the WA Department of Planning Lands and Heritage (DPLH) Aboriginal heritage places and Aboriginal heritage surveys datasets identified no registered Indigenous heritage places within the Planning Area. However, not all cultural sites are recorded or registered and captured through database searches. This

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can be attributed to a number of reasons including but not limited to distrust of government and desire to keep important sites private.

No sites were identified by Indigenous relevant persons or groups during the consultation period.

In WA all Indigenous heritage sites, registered and unregistered, are protected under the *Aboriginal Cultural Heritage Act 2021*, and formerly under the *Aboriginal Heritage Act (1972)*.

### Protected areas

Section 7.3.3 and 7.3.4 describes the protected areas within the Planning Area including State and Commonwealth marine conservation areas, and places of national heritage. There are tangible and intangible Indigenous cultural and social values associated with these protected areas, particularly IPAs. This section describes the cultural values and sensitivities of these protected areas with reference to Indigenous People's connection to Country, custodianship and care for Country.

### Cultural and Social Values of Indigenous Protected Areas

As discussed in Section 7.3.1.4 there are no IPAs located wholly or partially within the Planning Area. The closest dedicated IPA is the Unguu IPA Part 1 and Part 2 which is on the traditional Country of the Wunambal Gaambera people.

A summary of cultural and social values associated with the Unguu IPA is presented below. These values were identified through a literature review of the Wunambal Gaambera Healthy Country Plan and IPA Management Plan. These values, whilst specific to the Wunambal Gaambera people, are also the shared values of Indigenous Saltwater People.

- **Rock art and cultural places on islands.** There are many cultural places located within Wunambal Gaambera sea Country that are highly valued by the Wunambal Gaambera people. Some cultural sites are associated with Indigenous law and Songlines and are important for the intergenerational transfer of traditional knowledge. Traditional Owners have a cultural obligation to visit important sites of cultural significance to check on their health, and to preserve their health.
- **Saltwater fish and other seafoods.** Resources from the sea, particularly fish resources are particularly important to all Saltwater people including the Wunambal Gaambera people. Fish resources are the most available food on sea Country. Finding fish and seasonal fishing arrangements are passed on as traditional knowledge. Hunting is undertaken seasonally and in accordance with traditional knowledge. Traditional Owners of sea Country hold the view that all animals from the sea are healthy when the seawater they are living in is healthy.
- **Mangguru (marine turtles) and balguja (dugong).** Marine turtles and dugong are important components of the saltwater culture of the Wunambal Gaambera people and important tradition foods. Traditional hunting of marine species such as turtle and dugong is a significant component of culture, ongoing connection to Country and traditional knowledge transfer for the Wunambal Gaambera people.

### Places of World, Commonwealth and National Heritage

There are no World Heritage Areas (WHAs) or National Heritage Places within the Planning Area.

There is one relevant Commonwealth Heritage Place within the Planning Area: Ashmore Reef National Nature Reserve. The key values associated with Ashmore Reef National Nature Reserve have already been described in Section 7.2.

### Australian Marine Parks and State Marine Parks

The Commonwealth Australian Marine Parks (AMPs) within the Planning Area are described in Section 7.3.4. The Indigenous cultural values of the AMPs that overlap with the Planning Area are described in the various AMP Network Management Plans (Director National Parks 2018a,b,c) and summarised in Table 7-7.

There are no state marine parks within the Planning Area.

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**Table 7-7: Cultural Values and Sensitivities of the Commonwealth Australian Marine Parks**

Marine Park Name	Cultural Values
<b>Kimberley</b>	<p>The Wunambal Gaambera people, Dambimangari, Mayala, Bardi Jawi and the Nyul Nyul people's sea Country extends into the Kimberley Marine Park. The Wunambal Gaambera people's country includes daagu (deep waters), with about 3400 km<sup>2</sup> of their sea Country located in the Marine Park.</p> <p>Sea Country is culturally significant and important to the identity of these Indigenous groups. The Wunambal Gaambera, Dambimangari, Mayala, Bardi Jawi and the Nyul Nyul people have an unbroken connection to their sea Country, having deep spiritual connection through Wunggurr (creator snakes) that still live in the sea. Staple foods of living cultural value include saltwater fish, turtles, dugong, crabs and oysters. Access to sea Country by families is important for cultural traditions, livelihoods and future socio-economic development opportunities.</p> <p>The national heritage listing for the West Kimberley recognises the following key cultural heritage values:</p> <ul style="list-style-type: none"> <li>• Wanjina Wunggurr Cultural Tradition which incorporates many sea Country cultural sites;</li> <li>• Log-raft maritime tradition, which involved using tides and currents to access warrurru (reefs) far offshore to fish;</li> <li>• Interactions with Makassan traders around sea foods over hundreds of years; and</li> <li>• Important pearl resources that were used in traditional trade through the Wunan and in contemporary commercial agreements.</li> </ul> <p>The Wunambal Gaambera, Dambimangari and Bardi Jawi people consider that these values extend into the Kimberley Marine Park. The Wanjina Wunggurr is law of the Wunambal Gaambera and Dambimangari people and it is recognised that all of the sea country, land, plants and animals were put there by Wanjina Wunggurr. Under Wanjina Wunggurr law, the Wunambal Gaambera and Dambimangari people have a responsibility to manage country, to maintain the health of the country and all living things. The Wunambal Gaambera, Bardi Jawi, Mayala and the Nyul Nyul people have had native title determined over parts of their sea country included in this Park (DNP 2018a p 119).</p>
<b>Cartier Island</b>	<p>Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous People have been sustainably using and managing their sea Country for tens of thousands of years. Scientific research is an important activity in the Marine Park (Director of National Parks [DNP] 2018a p124).</p>
<b>Ashmore reef</b>	<p>Ashmore Reef is significant for its history of human occupation and use (DCCEEW 2023b). Ashmore Reef National Nature Reserve, a marine protected area in the Timor Sea, is significant for its unique and pristine coral reef ecosystem, which is home to over 240 coral species and more than 500 fish species. The reserve serves as a vital nesting site for green turtles and supports globally significant populations of seabirds, including the threatened roseate tern. Additionally, Ashmore Reef is recognised for its critical role in the migration of humpback whales and for its importance as a feeding ground for numerous marine species, making it a site of great ecological value and scientific interest (Parks Australia, n.d.) Many of the marine species that use the marine waters of Scott Reef are of cultural including totemic significance to many Indigenous People.</p>

### Threats to Country

Through the IPA process and associated management framework, the Wunambal Gaambera people, have identified specific threats to the health of their Traditional Country (land and sea Country). The identified threats in order of risk category as described by the Wunambal Gaambera people include: (i) loss of traditional knowledge, (ii) not being secure on country, (iii) Bauxite mining, (iv) wrong way fire, (v) visitors not being respectful, (vi) lack of land and sea management capacity, (vii) commercial fishing, (viii) business and industry, (ix) weeds, and (x) feral animals (WGAC 2017). Proposed activities in the Planning Area are unlikely to contribute to the threats identified in this list, with the exception of Business and industry. Business and industry activities are identified by Wunambal Gaambera people as presenting a threat to the target areas (values) of law and culture, Wunambal Gaambera people, cultural places, fish and seafood and turtle and dugong.

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### 7.3.2.3 Land and Sea Resource Use Practices

#### 7.3.2.3.1 Customary use of land and sea

Indigenous People engage in the customary use of sea Country proximate to the Planning Area. Access to and customary use of sea Country is an important part of Indigenous culture, integral to maintaining connection to Country and the health and wellbeing of Indigenous People.

Many customary rights to land and sea resource use are protected through Native Title and/or are provided for through management plans. As Native Title Holders, the Wunambal Gaambera people have non-exclusive rights in relation to the use of the intertidal area (between Mean Low Water (MLW) mark and Mean High Water (MHW) mark) and deep water (below the MLW mark a number of rights. These rights are described further in Section 7.3.2.4.

Customary activities undertaken in sea Country and which may extend to marine waters within the Planning Area include hunting for food and ceremonial purposes, visiting and maintaining cultural sites, making medicine, engaging in ceremonial activities, sharing traditional knowledge including passing on important Dreaming stories, and general on-Country recreation shared with family. Indigenous People including the Wunambal Gaambera people and Dambimangari people harvest turtle and Dugong (culturally important foods) in marine waters proximate to the Planning Area. These specific activities may extend to within the Planning Area. The management of customary resources and their take is an important activity for Traditional Owners.

Consultation with some Indigenous Relevant Persons identified that lore, culture and men's ceremonies comes from the ocean and reefs north of the King Sound. The specific area of blue reef was identified. That area is what was traditionally fished and hunted, it also has strong cultural significance.

#### 7.3.2.3.2 Contemporary land and sea resource use

Indigenous People engage in a range of different contemporary resource use activities in sea Country located proximate to the Planning Area. These activities may extend to marine waters within the Planning Area. Contemporary resource use activities located proximate to the Planning Area include land management, commercial fishery and aquacultural activities, and cultural based tourism activities. There are several pearling leases in subtidal waters in Wunambal Gaambera country, including in Vansittart Bay and Admiralty Gulf, but outside the Planning Area. Wunambal Gaambera Aboriginal Corporation also holds an aquaculture lease over intertidal waters of the Eclipse Island group, outside the Planning Area (WGAC 2017).

Given the distance between the Planning Area and the coastline (i.e., more than 100km) many of these activities are considered unlikely to occur within the Planning Area. However, there remains the potential for the Wunambal Gaambera people to access and use the land and sea within their Native Title Determination area.

### 7.3.2.4 Indigenous People's Rights and Interests

This section describes the recognised rights and interests of Indigenous People derived from Native Title determinations.

The Wunambal Gaambera people hold Native Title rights over marine waters within the Planning Area (Table 7-6). The determination area includes both Coastal Waters (Western Australian) and Territorial Sea (Commonwealth). Through Native Title the Wunambal Gaambera people are afforded certain rights within the Planning Area. With respect to Deep Water (i.e., below MLW mark), the Wunambal Gaambera people have non-exclusive rights in relation to waters including:

- The right to enter, travel over and remain on waters.
- The right to hunt, fish, gather and use the resources of the waters for personal, domestic and communal needs (including, but not limited to cultural or spiritual needs) but not for commercial purposes (as in accordance with paragraph 11 (a)(ii))
- The right to take and use water (WGAC 2017).

Importantly Native Title holders have the right to be consulted about decision or activities that could affect the enjoyment of native title rights and interests.

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Cultural authority is also enhanced by statutory Indigenous fishing, hunting and collecting rights under WA legislation such as the *WA Conservation and Land Management Act*, the *WA Fisheries Act*, and Commonwealth legislation, namely the *Environmental Protection and Biodiversity Conservation Act*.

#### 7.3.2.4.1 Self determination

Self-determination refers to the movement, both political and social, of Indigenous People and communities to have full agency in determining how the lives of Indigenous People are governed, to have full autonomy in decisions that affect Indigenous communities and to have control over the economic, social, and cultural development which may impact Indigenous communities (AHRC, n.d.). The theme of self-determination is intrinsically important when considering Indigenous rights and interests that overlap the Planning Area (i.e. Native Title, jointly managed marine parks, IPAs). In terms of economic self-determination, Indigenous-owned tourism operations with interests within the Planning Area have similar significance.

Within the Planning Area, Native Title, Aboriginal freehold land tenure, IPAs and jointly managed marine parks empower collective self-determination through recognising the Indigenous ownership of the land. This 'ownership' of land grants Indigenous People the right to carry out cultural practices, and to use the land for social and economic benefit. These cultural practices include hunting and gathering of animal and food species, the maintaining of significant cultural sites and Country, law and ceremonial practices. The recognition of Indigenous rights and interests is integral to understanding their collective value for overall Indigenous health and well-being.

### 7.3.3 Other Heritage Places

#### 7.3.3.1 World Heritage Properties

There are no World Heritage properties within the Operational Area or Planning Area.

#### 7.3.3.2 Commonwealth Heritage Places

The Commonwealth Heritage List is a list of Indigenous, historic and natural heritage places owned or controlled by the Australian Government. The Operational Area is not located in, or in the immediate surrounds of, any Commonwealth Heritage places. There is one relevant Commonwealth Heritage Place within the Planning Area and one proximate to the Planning Area. These are listed in Table 7-8, with a supporting summary of its key values.

**Table 7-8: Commonwealth Heritage Places within the Planning Area**

Commonwealth Heritage Place	Approx. Distance from Operational Area (km)	Description
Scott Reef and surrounds	155	<p>Scott Reef is considered regionally important for the following features:</p> <ul style="list-style-type: none"> <li>• high diversity of marine fauna, including corals, fish and marine invertebrates;</li> <li>• physical characteristics of the reefs create environmental conditions which are rare for shelf atolls, including clear deep oceanic water and large tidal ranges that provide a high physical energy input to the marine ecosystem;</li> <li>• high representation of species not found in coastal waters off WA and for the unusual nature of their fauna which has affinities with the oceanic reef habitats of the Indo-West Pacific, as well as the reefs of the Indonesian region; and</li> <li>• important for scientific research and benchmark studies into long term geomorphological and reef formation processes due to the age of the reef and the documentation of its geophysical and physical environmental characteristics.</li> </ul>



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Commonwealth Heritage Place	Approx. Distance from Operational Area (km)	Description
Ashmore Reef National Nature Reserve	128	<p>The Ashmore Reef National Nature Reserve protects Ashmore Reef, a large platform reef with coral reefs, sand flats and three vegetated islands. Specific values of this site include:</p> <ul style="list-style-type: none"> <li>• breeding and foraging habitat for marine turtles</li> <li>• considered to have the world's greatest abundance and diversity of sea snakes</li> <li>• habitat for 569 species of fish, 255 species of corals and 433 species of mollusc, as well as species not previously recorded or rarely recorded in Australia</li> <li>• an important seabird rookery and provides an important staging/feeding area for many seabirds and migratory shorebirds (Environment Australia 2002)</li> <li>• breeding and feeding habitat for a small dugong population (&lt; 50 individuals).</li> </ul>

### 7.3.3.3 National Heritage Places

The National Heritage List is Australia's list of natural, historic and Indigenous places of outstanding significance to the nation. There are no National Heritage properties in, or in the immediate surrounds of, the Operational or Planning Area.

### 7.3.3.4 Underwater Cultural Heritage

Information on underwater cultural heritage, including historic shipwrecks, is maintained in the Australasian Underwater Cultural Heritage Database, a searchable database of records provided by the Australian DAWE. A search of the database revealed no known shipwrecks or other underwater cultural heritage sites within the Operational Area. The nearest historic shipwreck is the wreck of the sailing vessel Berteaux, which lies approximately 18 km south-east of the Operational Area.

### 7.3.4 Marine Protected Areas

The Operational Area does not overlap any Marine Protected Areas (MPAs), such as Commonwealth Australian Marine Parks (AMPs) or state marine parks. There are three Commonwealth AMPs within the Planning Area (Figure 7-10). Each of these MPAs is described in Table 7-9 (with the addition of recently approved AMPs and MPAs).

All AMPs and many state MPAs have management plans in place, which outline the objectives for the management of the protected area. These objectives have been considered where applicable in the environmental impact and risk assessment in Section 9.12.



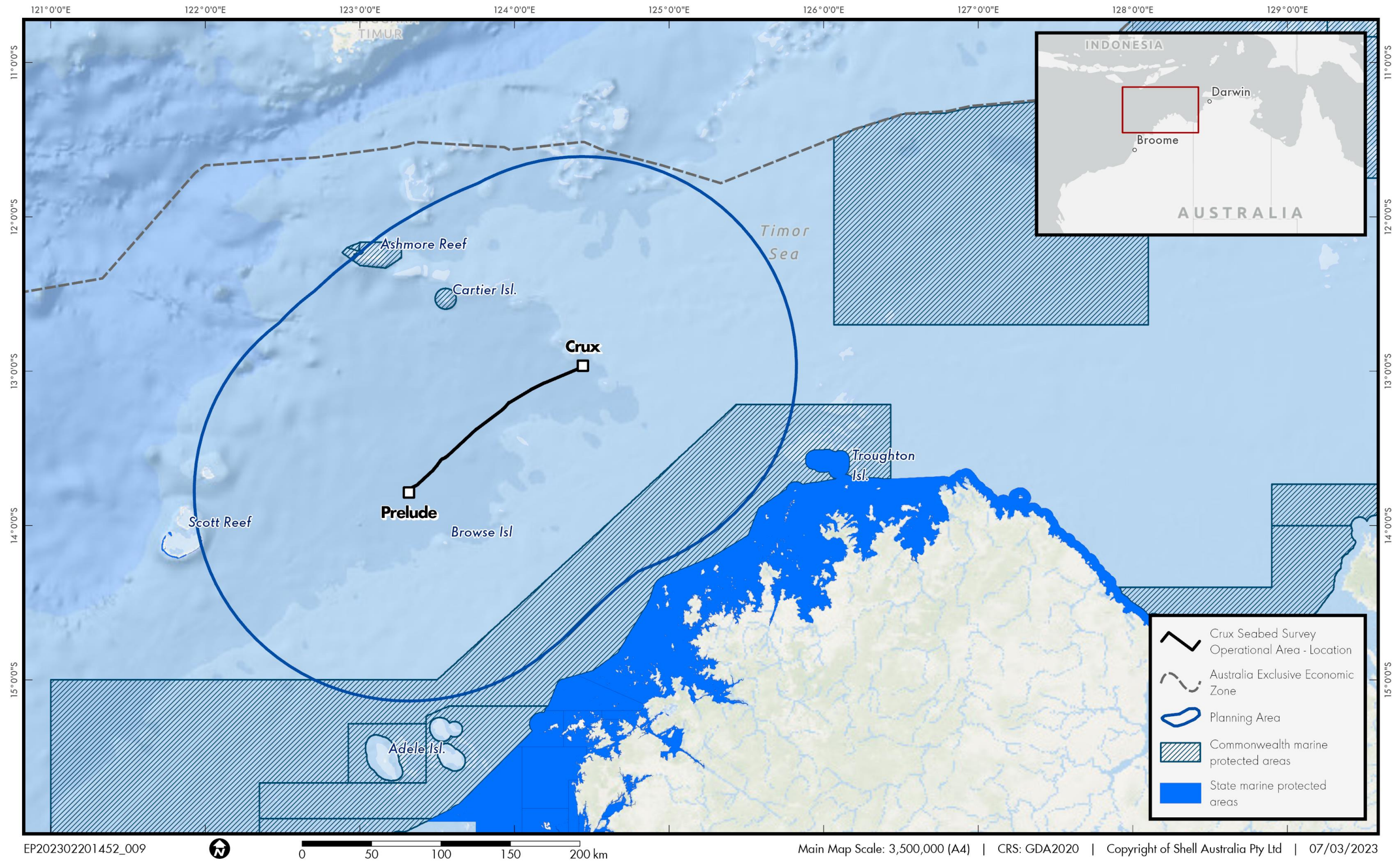


Figure 7-10: Commonwealth and State Marine Protected Areas within the Planning Area



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**Table 7-9: Marine Protected Areas within the Planning Area**

Marine Protected Area	Distance from Operational Area (km)	Description
<b>Commonwealth AMPs</b>		
Kimberley	111	<p>The Kimberley AMP covers approximately 74,469 km<sup>2</sup> and ranges in water depth from less than 15 m to approximately 800 m. The AMP lies from the Lacepede Islands in the north to the Holothuria Banks offshore from Cape Bougainville. The Kimberley AMP contains the following conservation values (Director of National Parks 2018a):</p> <p>Important foraging areas for migratory seabirds, dugongs, dolphins and marine turtles</p> <p>Important migration pathway and nursery areas for the humpback whale</p> <p>Adjacent to important foraging and pupping areas for sawfish and important nesting sites for green turtles</p> <p>Features such as the continental shelf, slope, plateau, pinnacles, terraces, banks and shoals and deep holes/valleys</p> <p>Examples of the communities and seafloor habitats of the Northwest Shelf Transition, North West Shelf province and Timor Province provincial bioregions along with the Kimberley, Canning, Northwest Shelf and Oceanic Shoals meso-scale bioregions.</p> <p>The AMP provides protection for two KEFs; an ancient coastline (a unique seafloor feature that provides areas of enhanced productivity) and continental slope demersal fish communities (the second richest area for demersal fish species in Australia), refer to Section 7.2.3. The Kimberley meso-scale bioregion in particular has been reported to be one of the most diverse coral areas in WA. In addition, the reserve is adjacent to the listed West Kimberley National Heritage place and Western Australian Lalang-garram / Camden Sound Marine Park.</p>
Cartier Island	80	<p>Cartier Island AMP is considered to be a biodiversity hotspot (like nearby Ashmore Reef) and is thought to be a source of larvae of marine biota such as corals which are transported south by the Leeuwin Current. The AMP covers an area of approximately 172 km<sup>2</sup>. Key conservation values include (Director of National Parks 2018a):</p> <p>An unvegetated sand island</p> <p>High diversity and abundance of hard and soft corals, gorgonians, sponges and a range of encrusting organisms</p> <p>Algae and seagrasses</p> <p>Important breeding and foraging habitat for seabirds</p> <p>Foraging habitat for whale sharks</p> <p>Nesting, inter-nesting and foraging habitat for marine turtles</p> <p>High diversity and abundance of seasnakes.</p>
Ashmore Reef	127	<p>The Ashmore Reef AMP covers an area of 583 km<sup>2</sup> and is a designated Ramsar Wetland (Section 7.2.5). Key conservation values of the AMP include (Director of National Parks 2018a):</p> <p>Regionally significant as contains ecosystems, habitat and communities representative of the NWS, Timor Province and emergent oceanic reefs</p> <p>Biologically rich habitat including primary producer habitat (mangroves, seagrass beds and coral reefs) and their associated benthic communities, fishes and other biota</p> <p>Regionally important nesting, inter-nesting, foraging areas for marine turtles (particularly green but also hawksbill and loggerhead turtles). An estimated 11,000 marine turtles feed in the area throughout the year</p>

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Marine Protected Area	Distance from Operational Area (km)	Description
		<p>Isolated, small dugong population of less than 50 individuals that breeds and feeds around the reef. This population is thought to be genetically distinct from other Australian populations</p> <p>Important seabird rookeries and staging points/feeding areas for migratory sea/shorebirds including colonies of bridled terns, common noddies, brown boobies, eastern reef egrets, frigatebirds, tropicbirds, red-footed boobies, roseate terns, crested terns and lesser crested terns</p> <p>International significance for seasnake abundance and diversity</p> <p>Importance cultural and heritage sites: Indonesian artefacts and grave sites.</p>

### 7.3.5 Fishing

#### 7.3.5.1 Traditional Fishing

In 1974, Australia recognised access rights for Indonesian traditional fishers in shared waters to the north of Australia, granting long-term fishing rights in recognition of the long history of Indonesian traditional fishing in the area. A Memorandum of Understanding (MOU) between the Governments of Australia and Indonesia enables Indonesian traditional fishers to continue their customary practices. This area is known as the 'MOU Box' and the Operational Area lies within it.

This MOU Box covers Scott Reef and surrounds, Seringapatam Reef, Browse Island, Ashmore Reef and Cartier Island, representing an area of approximately 50,000 km<sup>2</sup>. Trochus, sea cucumbers (holothurians), abalone, green snail, sponges, giant clams and finfish, including sharks, are targeted by the traditional fishers. Given the shallow water target species, these Indonesian traditional fishers are only likely to be found in deep water areas during transit to and from the reef locations.

Restrictions on access to the MOU Box were introduced around Ashmore Reef and Cartier Island following their designation as Nature Reserves under the *National Parks and Wildlife Conservation Act 1975* (Cth). Those restrictions limit access to parts of Ashmore other than for shelter, freshwater or to visit grave sites. The MOU Box 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 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.

#### 7.3.5.2 Recreational Fishing

Currently, there are no known recreational fishing activities in the Operational Area as the site is too far from shore to be accessed by recreational fishermen in small boats. Even at relatively high speed (30 km/hour), it would take at least fifteen hours for a recreational boat to reach the project area from the nearest port of Broome

Recreational fishing, particularly boat-based angling, occurs throughout the Planning Area. Recreational angling is expected to be centred around access nodes, such as marinas and boat launching facilities, found at towns across the Kimberley region. Recreational anglers typically target demersal and pelagic fish species for consumption and sport.

#### 7.3.5.3 Commonwealth Fisheries

Commonwealth fisheries that overlap the Operational Area and Planning Area are described in Table 7-10.

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**Table 7-10: Commonwealth fisheries within the Planning Area**

Fishery Name	Distance from Operational Area (km)	Description
North-west slope trawl fishery	Operational Area falls within fishery boundary	<p>The North West Slope Trawl Fishery extends from 114°E to 125°E, from the 200 m isobath to the outer limit of the Australian exclusive economic zone (EEZ). The fishery traditionally targets scampi and deep-water prawns. Fishing for scampi occurs over soft, muddy sediments or sandy habitats, typically at depths of 200–400 m using demersal trawl gear on the continental slope.</p> <p>Activity in the fishery commenced in 1985, peaking at 21 active vessels in 1986-87 (Woodhams and Bath 2017). There are currently very few licence holders active in the fishery and fishing activity has steadily declined since establishment of the fishery. Two vessels operated in the fishery in the 2016-17 season, which is the same as the 2015-16 season. The total area of waters fished in 2016-17 did not include the Operational Area.</p>
Southern bluefin tuna fishery	Operational Area falls within fishery boundary	The Southern Bluefin Tuna Fishery is not active within Operational Area or the Planning Area; all activity in this fishery occurs well south of the Planning Area, primarily off South Australia. As such, the Southern Bluefin Tuna Fishery is not discussed further.
Western tuna and billfish fishery	Operational Area falls within fishery boundary	<p>The West Tuna and Billfish Fishery is currently active, running throughout the year. The fishery zoning extends to the Australian EEZ boundary in the Indian Ocean, overlapping the Operational Area. The fishery targets four pelagic species, which are all highly mobile:</p> <ul style="list-style-type: none"> <li>• broadbill swordfish (<i>Xiphias gladius</i>)</li> <li>• bigeye tuna (<i>Thunnus obesus</i>)</li> <li>• yellowfin tuna (<i>T. albacares</i>)</li> <li>• albacore tuna (<i>T. alalunga</i>).</li> </ul> <p>The methods used by the fishery are mainly pelagic longline and some minor-line. The number of vessels operating in the fishery has declined in recent years, with less than five vessels operating in the fishery since 2005 (Williams et al. 2017). Effort data shows fishing effort is concentrated off south-west Western Australia and South Australia (Williams et al. 2017).</p>
Skipjack fishery	Operational Area falls within fishery boundary	<p>The combined western and eastern skipjack tuna (<i>Katsuwonus pelamis</i>) fisheries encompass the entire EEZ, including the Operational Area. The target species has historically been used for canning, and with the closure of canneries at Eden and Port Lincoln effort in the fishery has declined and there have been no active vessels operating since 2009 (Patterson &amp; Bath 2017).</p> <p>Given the fishery has been inactive for a number of years and given the distribution of fishing effort when the fishery was active, fishing for skipjack tuna in the Operational Area is highly unlikely. Should the fishery commence efforts in the area in the future, fishing effort in the Operational Area is unlikely given the historical fishery was concentrated off southern Australia.</p>



### 7.3.5.4 Western Australian Managed Fisheries

State-based Western Australian commercial fisheries that overlap the Planning Area are described in Table 7-11.

**Table 7-11: Western Australia fisheries within the Planning Area**

Fishery Name	Distance from Operational area at Prelude end (km)	Description
Mackerel Fishery	Operational Area falls within fishery boundary	<p>The Mackerel Managed Fishery targets Spanish mackerel (<i>Scomberomorus commerson</i>) using near-surface trawling gear from small vessels in coastal areas around reefs, shoals and headlands. Jig fishing is also used to capture grey mackerel (<i>S. semifasciatus</i>) (Molony et al. 2015).</p> <p>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). The majority of the catch is taken from waters off the Kimberley coasts (Lewis and Jones 2017), reflecting the tropical distribution of mackerel species (Molony et al. 2015). The majority of 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 prior to spawning (Mackie et al. 2003).</p>
West Coast Deep Sea Crustacean	Operational Area falls within fishery boundary	<p>The West Coast Deep Sea Crustacean Managed Fishery extends north from Cape Leeuwin to the WA/NT border in water depths great than 150 m within the Australian Fishing Zone, including the Operational Area. The fishery targets deep water crustaceans, with the vast majority (&gt;99%) of the catch landed in 2015 comprised of crystal crabs (How and Yerman 2017).</p> <p>Two vessels operated in the fishery in 2015, using baited pots operated in a longline formation in the shelf edge waters mostly in depths between 500 and 800 m (How and Yerman 2017). Fishing effort was concentrated between Fremantle and Carnarvon.</p>
South West Coast Salmon	Operational Area falls within fishery boundary	<p>The South West Coast Salmon Managed Fishery operates on various beaches south of the metropolitan area and includes all Western Australian waters north of Cape Beaufort except Geographe Bay. No fishing takes place north of the Perth metropolitan area (well beyond the Planning Area), despite the managed fishery boundary extending to Cape Beaufort (Western Australia / Northern Territory border).</p>
Northern Demersal Scalegfish	Operational Area falls within fishery boundary	<p>The Northern Demersal Scalegfish Managed Fishery operates off the northwest coast of Western Australia in the waters east of 120°E longitude. The permitted means of operation within the fishery include handline, dropline and fish traps; since 2002 it has essentially been a trap-based fishery. Gear restrictions and spatial zones as the primary management measures. The main species landed by this fishery are red emperor and goldband snapper (Newman et al. 2017b). In 2015, there were 7 vessels with fishing rights (Newman et al. 2017b). The Northern Demersal Scalegfish Managed Fishery overlaps the Operational Area.</p>
Marine Aquarium and Specimen Shell	28	<p>The Marine Aquarium and Specimen Shell managed fisheries are largely diver-based, with effort concentrated around the Capes region, Perth, Geraldton, Exmouth and Dampier. Effort in these fisheries is relatively low and spread over a large geographic area. Given the nature of the fisheries, effort is expected to be largely restricted to coastal waters &lt; 30 m water depth.</p>



Fishery Name	Distance from Operational area at Prelude end (km)	Description
Abalone	28	The Western Australian abalone fishery includes all coastal waters from the Western Australian and South Australian border to the Western Australian and Northern Territory border. The fishery is concentrated on the south coast (greenlip and brownlip abalone) and the west coast (Roe's abalone). Abalone are harvested by divers, limiting the fishery to shallow waters (typically < 30 m). No commercial fishing for abalone north of Moore River (zone 8 of the managed fishery) has taken place since 2011/2012 (Strain et al. 2017).
Broome Prawn	28	The Broome Prawn Managed Fishery is one of the four northern managed prawn fisheries (the others are the Kimberley, Nickol Bay and Onslow prawn managed fisheries). It is the least active of these four fisheries, with 0.3 tonnes of western king prawns and 0.8 tonnes of coral prawns landed in 2015 (Sporer et al. 2017). The extent of the Broome Prawn Managed Fishery is approximately 28 km from the Operational Area.
Kimberley Prawn	47	The Kimberley Prawn Managed Fishery operates between Koolan Island and Cape Londonderry. Its target catch is banana prawns ( <i>Penaeus merguensis</i> ) but also catches tiger prawns ( <i>Penaeus esculentus</i> ), endeavour prawns ( <i>Metapenaeus endeavouri</i> ) and western king prawns ( <i>Penaeus latisulcatus</i> ). Landings in 2016 (Sporer et al. 2017) season were 155 tonnes. The catch season is from early April to late November. The extent of the Kimberley Prawn Managed Fishery is located approximately 47 km from the Operational Area.
Pearl Oyster Fishery	Operational Area falls within fishery boundary	<p>The Western Australian Pearl Oyster Fishery is the only remaining significant wild-stock fishery for pearl oysters in the world. Pearl oysters (<i>Pinctada maxima</i>) are collected by divers in shallow coastal waters along the Northwest Shelf and Kimberley, which are mainly for use in the culture of pearls. The fishery is separated into four management zones; the Operational Area lies within management zone 3, however the Operational Area is much deeper than safe diving depths in which pearl oyster fishing occurs. Most pearl fishing occurs in inner continental shelf waters (&lt; 30 m) along the Kimberley and Pilbara coastlines.</p> <p>Given the fishery is diver-based (i.e. restricted to safe diving depths) interaction with fishery participants from the petroleum activity are very unlikely.</p>



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### 7.3.5.5 Northern Territory Managed Fisheries

There are not Northern Territory-based commercial fisheries that overlap the Planning Area

### 7.3.5.6 Aquaculture

There are no aquaculture operations within the Operational Area or Planning Area; aquaculture is typically restricted to shallow coastal waters.

## 7.3.6 Tourism and Recreation

No tourism activities are known to occur within the Operational Area, but tourism activities occur widely in the Planning Area. Most tourism in the Planning Area is nature-based and hence is typically associated with outstanding natural features such as the offshore reefs and islands. The remoteness of the region results in most offshore tourism activities being conducted from organised expeditions based on larger vessels.

Tourism makes a significant contribution to the regional economy, with the town of Broome (beyond the Planning Area) providing a central node for many tourism-related activities in the region.

### 7.3.7 Defence

There are no defence exercise areas within the Operational Area or the Planning Area, but defence activities may occur within the Planning Area.

### 7.3.8 Shipping

Shipping activity in the vicinity of the Operational Area is considered high. However, almost all vessel activities in the Operational Area are associated with the operation of the Prelude FLNG facility and Ichthys facilities (e.g. offtake tankers, support vessels etc.). Planning Area

### 7.3.9 Indonesian Coastline

The Indonesian is located over 300 km north of the Operational Area at the closest point. Indonesia's coastline is outside of the Planning Area.

### 7.3.10 Oil and Gas Industry

Oil exploration activities in the Timor Sea commenced in the late 1960s. Since this time numerous wells have been drilled throughout the region. Petroleum exploration has been active in the Browse Basin since the 1980s, with several commercial discoveries since that time. It is expected that petroleum exploration and development activities will continue in the region into the future.

There are several operating petroleum production facilities in the vicinity of the Operational Area, with the Prelude FLNG facility being adjacent to the activity. The Ichthys facilities are the next closest, situated approximately 20 km south of the Operational Area.

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## 8 Acceptable Levels of Impact and Risk for the Petroleum Activities

The OPGGS (E) Regulations require the titleholder include an evaluation of all the impacts and risks that determined whether these will be of an ‘acceptable’ or ‘unacceptable’ level. To this end, Shell has determined acceptable levels of impact to the environmental receptors that may credibly be impacted by the petroleum activities considered within this EP. The process by which Shell has determined the acceptability of risks and impacts is detailed below.

### 8.1 Considerations in Developing Defined Acceptable Levels of Impact and Risk

Shell has established defined acceptable levels of impacts and risks for the petroleum activities considered in this EP relating to all the environmental receptors that were identified as being credibly impacted, or at risk of being impacted. The outcomes of the evaluation of environmental impacts and risks were assessed against these defined acceptable levels to determine if the impacts or risks were acceptable.

The following were considered when establishing the acceptable levels of impacts and risks:

- The principles of Ecologically Sustainable Development (ESD)
- Other requirements applicable to the Crux project (e.g. laws, policies, standards, conventions etc.)
- Significant impacts<sup>14</sup> to MNES
- Internal context
- External context.

Each of these considerations are elaborated on below.

#### 8.1.1 Principles of Ecologically Sustainable Development

Shell has considered the principles of **Ecologically Sustainable Development** (ESD) in defining acceptable levels of impacts and risks, as defined in Section 3A of the EPBC Act. The principles of ESD are summarised as:

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

If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

The principles of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.

Improved valuation, pricing and incentive mechanisms should be promoted.

#### 8.1.2 Other Relevant Requirements

Shell considered other relevant requirements that apply to the environmental management of the petroleum activities considered in this EP, including legislation, policies, standards and guidelines in establishing acceptable levels of impacts and risks (Refer to Section 3).

#### 8.1.3 Significant Impacts to MNES

Given this EP forms the basis for NOPSEMA’s assessment of matters protected under Part 3 of the EPBC Act in Commonwealth waters, Shell has given specific attention to the acceptability of impacts and risks to MNES.

<sup>14</sup> Significant impacts refer specifically to the levels of impacts defined in the Matters of National Environmental Significance - Significant impact guidelines 1.1. Any subsequent reference in this EP to significant impacts refers to these levels unless stated otherwise.

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Where a potential interaction between the relevant MNES and an aspect of the petroleum activities covered by this EP was identified, the criteria provided are listed in Table 8-1.

Potential impacts and risks to MNES from aspects of the petroleum activities were deemed inherently acceptable if:

- The significant impact criteria in relation to the MNES are not anticipated to be exceeded
- The management of the aspect is aligned with published guidance material from the DAWE, including threat abatement plans, recovery plans and conservation advice.

**Table 8-1: MNES Significant impact criteria applied to the petroleum activities considered in this EP**

Category	Significant Impact Criteria
Listed Critically Endangered and Endangered species	<p>An action is likely to have a significant impact on critically endangered or endangered species if there is likelihood that it will:</p> <ul style="list-style-type: none"> <li>• Lead to a long-term decrease in the size of a population</li> <li>• Reduce the area of occupancy of the species</li> <li>• Fragment an existing population</li> <li>• Adversely affect habitat critical to the survival of a species</li> <li>• Disrupt the breeding cycle of a population</li> <li>• Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</li> <li>• Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat</li> <li>• Introduce disease that may cause the species to decline, or interfere with the recovery of the species.</li> </ul>
Listed Vulnerable Species	<p>An action is likely to have a significant impact on vulnerable species if there is a likelihood that it will:</p> <ul style="list-style-type: none"> <li>• Lead to a long-term decrease in the size of an important population</li> <li>• Reduce the area of occupancy of and important population</li> <li>• Fragment an existing important population into two or more populations</li> <li>• Adversely affect habitat critical to the survival of a species</li> <li>• Disrupt the breeding cycle of a population</li> <li>• Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</li> <li>• Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat</li> <li>• Introduce disease that may cause the species to decline</li> <li>• Interfere substantially with the recovery of the species.</li> </ul>
Listed Migratory Species	<p>An action is likely to have a significant impact on migratory species if there is likelihood that it will:</p> <ul style="list-style-type: none"> <li>• Substantially modify, destroy or isolate an area of important habitat for a migratory species</li> <li>• Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species</li> <li>• Seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species.</li> </ul>
Wetlands of International Importance	<p>An action is likely to have a significant impact on a wetland of international importance if there is likelihood that it will result in:</p> <ul style="list-style-type: none"> <li>• Areas of wetland being destroyed or substantially modified</li> <li>• A substantial and measurable change in the hydrological regime of the wetland</li> </ul>

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Category	Significant Impact Criteria
	<ul style="list-style-type: none"> <li>• The habitat or lifecycle of native species dependent upon the wetland being seriously affected</li> <li>• A substantial and measurable change in the water quality of the wetland which may adversely impact on the biodiversity, ecological integrity, social amenity or human health</li> <li>• An invasive species that is harmful to the ecological character of the wetland being established in the wetland.</li> </ul>
Commonwealth Marine Area	<p>An action is likely to have a significant impact on the environment in a Commonwealth Marine Area if there is likelihood that it will:</p> <ul style="list-style-type: none"> <li>• Result in a known or potential pest species becoming established in the Commonwealth marine area</li> <li>• Modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity on a Commonwealth marine area results</li> <li>• Have a substantial adverse effect on a population of a marine species or cetacean including its life cycle and spatial distribution</li> <li>• Result in a substantial change in air quality or water quality which may adversely impact on biodiversity, ecological integrity<sup>15</sup>, social amenity or human health</li> <li>• Result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity<sup>2</sup>, social amenity or human health may be adversely affected</li> <li>• Have a substantial adverse impact on heritage values of the Commonwealth marine area, including damage or destruction of an historic shipwreck.</li> </ul>

#### 8.1.4 Internal Context

Shell considered its internal requirements when establishing acceptable levels of impacts and risks. This context included Shell’s environment policy, environmental risk management framework, internal standards, procedures, technical guidance material and opinions of internal stakeholders.

The following outlines Shell’s internal impact and risk assessment defined acceptable levels:

Residual planned impacts that are ranked as minor or less (i.e. minor, slight, no effect or positive effect) and residual risks for unplanned events ranked light or dark blue, are inherently 'acceptable', if they meet legislative and Shell requirements and the established acceptable levels of impacts and risks.

Moderate residual impacts, and yellow and red residual risks, are 'acceptable' with appropriate controls in place and if good industry practice can be demonstrated.

Major and massive residual impacts from planned activities, and massive residual risks from unplanned activities, are 'unacceptable'. The activity (or element of) should not be undertaken as the impact or risk is serious and does not meet the principles of ESD, legal requirements, Shell requirements or regulator and stakeholder expectations. The activity requires further assessment to reduce the risk to an acceptable level.

Table 8-2 provides a summary of the acceptability statements, as correlated to the rankings presented in the environmental impact and risk assessments in Section 9.

<sup>15</sup> In the context of the petroleum activity, a change to ecological integrity is considered to take into account broadscale, long term impacts to the ecosystem. With regards to the Commonwealth marine environment, the operational area is located in open offshore waters and the seabed is generally characterised by soft sediments. These characteristics are typical of the offshore Browse Basin.”

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**Table 8-2: Acceptability Categories**

Acceptability Statement	Residual Impact (Planned)	Residual Risk (Unplanned)
Inherently acceptable - Manage for continuous improvement through effective implementation of the HSSE and SP management system	Positive Impact Consequence No Impact Consequence Slight Impact Consequence Minor Impact Consequence	Light Blue Dark Blue
Acceptable with controls - Apply the hierarchy of control to reduce the risks to ALARP	Moderate Impact Consequence	Yellow Red
Unacceptable	Major Impact Consequence Massive Impact Consequence	Red - X

### 8.1.5 External Content

Shell also considered the external context when establishing acceptable levels of impacts and risks. This includes information provided by Relevant Persons during the preparation of the EP and the Crux OPP. Shell routinely implements an ongoing stakeholder engagement program managed by Shell's Corporate Relations team. Reference is made to Section 5 for further information on the stakeholder engagement process and a summary of responses and objections/claims made by Relevant Persons, which have informed the defined acceptable levels of impact.

#### 8.1.5.1 Indigenous Cultural Heritage Features and Values Impact Criteria

A key objective for the Relevant Persons consultation process is to seek information regarding indigenous cultural heritage features and values that could potentially be exposed to impacts or risks from Shell's activities. An overview of indigenous cultural heritage features and values within the Planning Area is also provided in Section 7.3.1 and Section 7.3.2 respectively. Where this process establishes the presence of identified indigenous cultural heritage in the EMBA for a specific aspect, Shell will consider the criteria described in Table 8-3, which reflect the criteria defined by DCCEEW for indigenous cultural heritage values of National Heritage places, to determine acceptable levels of impact/risk.

Potential impacts and risks to indigenous cultural heritage from aspects of the petroleum activities are deemed inherently acceptable if:

- the significant impact criteria in relation to indigenous cultural heritage features or values are not anticipated to be exceeded; and
- the management of the aspect is aligned with published management guidance material, including relevant Healthy Country Plans, dedicated IPA management plans, and joint management plans (JMPs).

**Table 8-3: Acceptability Categories for Indigenous Cultural Heritage Features and Values**

Category	Significant Impact Criteria
Indigenous cultural heritage values	<p>An action is likely to have a significant impact on Indigenous cultural heritage features or values if there is likelihood that it will:</p> <ul style="list-style-type: none"> <li>• Restrict or inhibit the continuing use of a cultural or ceremonial site causing its values to notably diminish over time</li> <li>• Permanently diminish the cultural value of a place for an Indigenous group to which its values relate</li> </ul>



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	<ul style="list-style-type: none"> <li>• Alter the setting of a place in a manner which is inconsistent with relevant values</li> <li>• Remove, destroy, damage or substantially disturb archaeological deposits or cultural artefacts</li> <li>• Destroy, damage or permanently obscure cultural or ceremonial, artefacts, features, or objects</li> <li>• Notably diminish the value of a place in demonstrating creative or technical achievement</li> <li>• Permanently remove, destroy, damage or substantially alter Indigenous built structures</li> </ul>
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### 8.1.6 Defined Acceptable Levels of Impact and Risk

The acceptable levels of impacts and risks to environmental receptors from the petroleum activities considered in this EP are summarised in Table 8-4.

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**Table 8-4: Summary of acceptable levels of impact for environmental receptors that may be affected by the petroleum activities and the broader Crux project, considered in this EP**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Justification
<b>Physical Environment</b>	<b>Water quality</b>	No significant impacts to water quality during the Crux project.	<p>Liquid discharges from vessel activities cannot be avoided. However, the area influenced from routine discharges is expected to be limited to within 1 km of the discharge locations. The potential magnitude of impacts to marine ecosystems is very low. Given the offshore location and absence of particularly sensitive marine ecosystems at the survey location and immediate surrounds, potential impacts within 1 km of the activity are considered acceptable.</p> <p>Bakke et al. (2013) states that typically no impacts are detected beyond 2 km from offshore facilities around the world. The nearest sensitive habitat to the Crux activity is Goeree Shoal, approximately 13 km away.</p> <p>Discharges, such as utility discharges from vessels, are of typically short duration and will not have the potential for significant impacts over an extended period.</p>
	<b>Sediment quality</b>	No significant impacts to sediment quality during the Crux project.	<p>Sediment quality in the vicinity of the Crux in-field development area is characteristic of the sediment quality conditions of the offshore region.</p> <p>Bakke et al. (2013) states that typically no impacts are detected beyond 2 km from offshore facilities around the world.</p> <p>Impacts to sediment quality from the Crux project cannot be avoided. However, the area influenced is expected to be limited to within 1 km of sources of potential sediment contamination. The potential magnitude of impacts to marine ecosystems is very low and localised. These impacts are considered to be acceptable when considering the seabed is smooth and bare of hard substrates, with predominantly sandy sediments observed.</p>
	<b>Air quality</b>	No significant impacts to air quality during the Crux project.	<p>Planned atmospheric emissions from the Crux project consist primarily of combustion engine exhaust emissions (e.g. vessel engines etc.). These emissions will be in accordance with relevant requirements, such as Australian GHG reporting and MARPOL air pollution requirements.</p> <p>The Crux project is located in the open ocean, and is well-removed from nearest residential or sensitive populations of the WA coast, with limited interaction with regional airsheds.</p>
<b>Ecosystems, Communities and Habitats</b>	<b>Benthic communities</b>	<p>No significant impacts to benthic habitats and communities.</p> <p>Impacts to non-sensitive benthic communities limited to a maximum of 5% of the project area.</p>	<p>With the exception of banks and shoals, the benthic habitats and communities within the Crux project area are widely represented in the Timor Sea, with millions of hectares of broad soft benthic habitats occurring in the region and they are not of high environmental value. The outcropping reef feature, identified within the Crux in-field development area, forms part of an extensive seabed ridge and surveys indicate this feature does not support highly diverse benthic communities, such as those characteristic of shoals and banks within the region. With the</p>



Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Justification
			exception of banks and shoals, impacts to benthic habitats within the Crux project area are acceptable if the area impacted is < 5% of the total project area.
	<b>Shoals and banks</b>	No direct impacts to named banks and shoals. No loss of coral communities at named banks or shoals as a result of indirect/offsite impacts associated with the Crux project.	The shoals and banks of the Timor Sea, including the three shoals within the boundary of the Crux in-field development area, are of high environmental value. Shell considers direct impacts to these features unacceptable. Indirect impacts are considered acceptable (e.g. minor pulsed turbidity events) if they do not result in any loss of coral communities, i.e. the loss of a coral colony that occurs on the shoal (noting, there is both temporal and spatial variability of corals as a result of natural environment influences, such as storms/cyclones and coral bleaching). The representativeness of coral communities is considered an indicator contributing to high biological diversity and ecological value. In the context of this assessment, a coral colony is considered integral to maintaining the ecological function and integrity of a coral community in a spatial and temporal context.
	<b>Offshore reefs and islands</b>	No impacts to offshore reefs and islands.	Offshore reefs and islands would only be impacted by a large-scale hydrocarbon spill. Shell considers any large-scale hydrocarbon spill to be unacceptable.
	<b>WA and NT mainland coastline</b>	No impacts to WA and NT mainland coastline.	The WA and NT mainland coastline would only be impacted by a large-scale hydrocarbon spill. Shell considers any large-scale hydrocarbon spill to be unacceptable.
	<b>Key Ecological Features</b>	No significant impacts to environmental values of KEFs.	KEFs in the Timor Sea are largely geomorphic features that provide important ecosystem services primarily as a result of their unique physical features (e.g. provision of hard substrates, facilitation of upwelling etc.). These are geographically diverse features that cover a large extent. Only one KEF is intersected by the Crux project, with the export pipeline intersecting a small portion of the continental slope demersal fish communities (0.04%).  Given the nature and scale of the planned impacts to KEFs from the Crux development, impacts to KEFs will be below the significant impact threshold. Shell considers impacts to KEFs below this threshold to be acceptable.
<b>Threatened Species and Ecological Communities</b>	<b>Marine mammals</b>	No mortality or injury of threatened or migratory MNES fauna from the Crux project.	Shell considers any mortality or injury of threatened species that are MNES to be unacceptable for the Crux project.  Impacts that are below the significant impact threshold are acceptable.
	<b>Marine reptiles</b>	Management of aspects of the Crux project must be aligned to conservation advice, recovery plans and threat abatement plans published by the DoEE.	
	<b>Birds</b>		
	<b>Fish</b>		
	<b>Sharks and rays</b>	No significant impacts to threatened or migratory MNES fauna.	



Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Justification
Socio-economic and Cultural Environment	Cultural Heritage Features	No impacts to cultural heritage features	Consistent with the criteria defined by DCCEEW for indigenous cultural heritage of National Heritage places, Shell does not accept impacts to cultural heritage features. In August 2023, DAC commented that no impacts from a spill to their sea country are acceptable.
	Cultural Heritage Values	No significant impacts to cultural heritage values	Consistent with the criteria defined by DCCEEW for indigenous cultural heritage of National Heritage places, shell does not accept significant impacts to cultural values of a place for an Indigenous group to which its values relate. Consistent with the acceptable criteria for the physical and biological environment (described above), Shell recognises that impacts to the environment may also impact cultural heritage values (as described in Section 7.4.2), Shell considers that no significant impacts to these values are acceptable. Impacts beyond this range are unacceptable.
	Commonwealth Marine Area	No significant impacts to the Commonwealth marine area.	Discharges may result in impacts to water and sediment quality, both of which are components of the Commonwealth marine environment, within 1 km of the Crux operational area. As outlined above in the Water Quality and Sediment Quality sub-categories, routine impacts to water and sediment quality are expected to be limited to within 1 km and are considered acceptable as the potential impacts to the marine ecosystem (functioning and integrity) is very low when considering the discharge location and the nature of the receiving environment (open offshore waters, and with seabed characterised to be smooth and bare of hard substrates, with predominantly sandy sediments observed). Impacts beyond this range are unacceptable.
	World Heritage Properties	No impacts to world heritage values.	World heritage values would only be impacted by a large-scale hydrocarbon spill. In a regional environmental context, the nearest world heritage property is 800 km away. Shell considers any large-scale hydrocarbon spill to be unacceptable.
	National Heritage Places	No impacts to national heritage values.	National heritage values would only be impacted by a large-scale hydrocarbon spill. In a regional environmental context, the nearest national heritage place is 170 km away. Shell considers any large-scale hydrocarbon spill to be unacceptable.
	Commonwealth Heritage Places	No impacts to Commonwealth heritage values	Commonwealth heritage values would only be impacted by a large-scale hydrocarbon spill. In a regional environmental context, the nearest Commonwealth heritage place is 149 km away. Shell considers any large-scale hydrocarbon spill to be unacceptable.
	Declared Ramsar Wetlands	No impacts to ecological values of Ramsar wetlands	Ramsar wetlands would only be impacted by a large-scale hydrocarbon spill. In a regional environmental context, the nearest Ramsar wetland is 149 km away. Shell considers any large-scale hydrocarbon spill to be unacceptable.



Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Justification
	<b>Marine Parks</b>	No impacts to the values of marine parks	The environmental values within Australian marine parks would only be impacted by a large-scale hydrocarbon spill. In a regional environmental context, the nearest Marine Park is 95 km away. Shell considers any large-scale hydrocarbon spill to be unacceptable.
	<b>Commercial fisheries</b>	No interference with fishing to a greater extent than is necessary for the exercise of right conferred by the titles granted to carry out petroleum activities.  No negative impacts to exploited fisheries resource stocks which result in a demonstrated direct loss of income.  Temporary displacement of commercial fishing activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Impacts to commercially exploited fish stocks may measurably reduce the potential revenue for commercial fishers. Shell considers this to be unacceptable.  In a regional context, commercial fishing is typically concentrated mostly in coastal waters and minimum fishing effort is known to occur within the vicinity of the project area, given its remoteness offshore.  Shell considers the displacement of other users (e.g. commercial fishers) from relatively small areas of the open ocean environment in the Crux project area to be acceptable.
	<b>Traditional Indigenous fishing</b>	No negative impacts to exploited fisheries resource stocks.  Temporary displacement of traditional fishing activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Impacts to traditionally exploited fish stocks may deprive traditional fishers of the benefits provided by the environment. Shell considers this to be unacceptable.  In a regional context, the drill template/platform location is 70 km outside of the edge of the MoU Box for traditional indigenous fishing, while the export pipeline will lie within this area.  Shell considers the displacement of other users (e.g. traditional indigenous fishers) from relatively small areas of the open ocean environment in the Crux project area to be acceptable.
	<b>Marine archaeology</b>	No disturbance to historical shipwrecks is acceptable.	Shell considers any disturbance of historical shipwrecks to be unacceptable.  In a regional context, the nearest known historical shipwreck is 78 km from the export pipeline corridor at its nearest point.
	<b>Tourism and recreation</b>	No negative impacts to nature-based tourism resources resulting in demonstrated loss of income.  Temporary displacement of tourism activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Impacts to nature-based tourism resources may deprive the tourism industry of revenue. Shell considers this to be unacceptable.  In a regional context, there are no known tourist attractions or destinations within the project area or surrounding marine waters, however charter vessels may transit the broader regional waters.  Shell considers the displacement of other users (e.g. tourism operators) from the Crux project area, which is a relatively small area of the open ocean environment where existing tourism and recreation use is very low, to be acceptable.
	<b>Military/defence</b>	Temporary displacement of defence activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Shell considers the displacement of other users (e.g. defence vessels and aircraft) from relatively small areas of the open ocean environment in the Crux project area to be acceptable.



Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Justification
			In a regional context, there are no designated military/defence exercise areas in the Crux project area and surrounds, however there are regional defence exercise areas with large geographic extents.
	<b>Ports and commercial shipping</b>	Temporary displacement of commercial shipping within the Crux project area (excluding petroleum safety zones) is acceptable.	Shell considers the displacement of other users (e.g. commercial shipping) from relatively small areas of the open ocean environment in the Crux project area to be acceptable. In a regional context, there are no major shipping routes traversing the in-field development area or export pipeline corridor. The nearest major shipping channel is approximately 560 km to the west of the proposed Crux location.
	<b>Offshore petroleum exploration and operations</b>	Temporary displacement of petroleum exploration activities and operations within the Crux project area (excluding petroleum safety zones) is acceptable.	Shell considers the displacement of other users (e.g. petroleum exploration and operations) from relatively small areas of the open ocean environment in the Crux project area to be acceptable. In a regional context, the nearest operational facility to the Crux end of the pipeline is the Montara production FPSO facility, approximately 36 km away.
	<b>Indonesian and Timor-Leste coastlines</b>	No impacts to Indonesian or Timor-Leste coastlines are acceptable.	The Indonesian and Timor-Leste coastlines could only be impacted by a large-scale hydrocarbon spill, such as a diesel spill. In a regional context, these coastlines are located a minimum 280 km away. Shell considers any large-scale hydrocarbon spill to be unacceptable.



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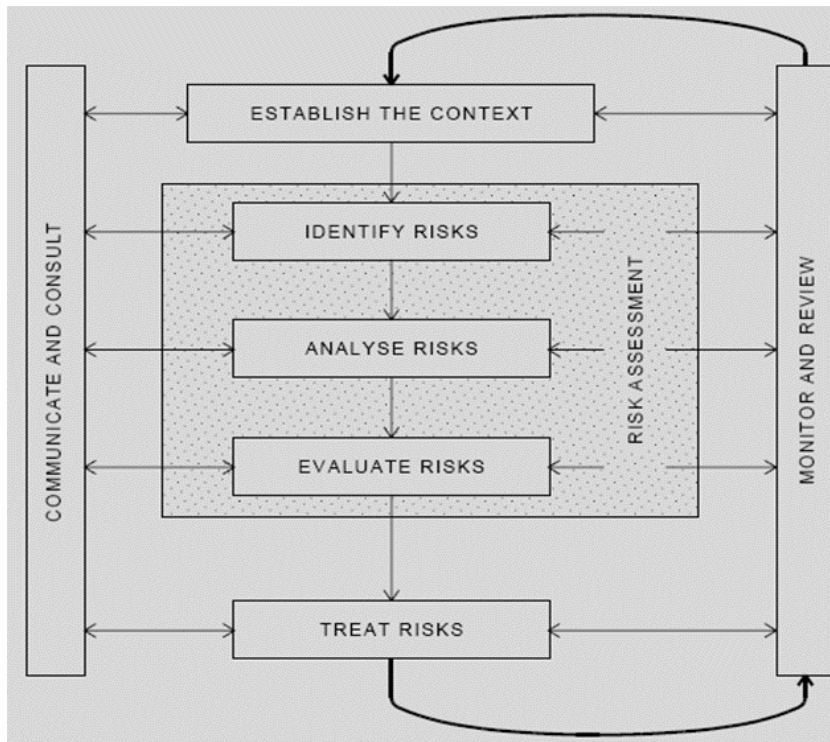
## 9 Evaluation of Environmental Impacts and Risks

### 9.1 Introduction

This section documents the process that identifies and evaluates potential environmental impacts and risks and develops means of mitigating the effects of planned activities and the likelihood of unplanned activities of the petroleum activity on the environment, including socio-economic and cultural impacts. It describes the approach undertaken to evaluate the magnitude and severity of impact to environmental and social receptors from activities associated with the petroleum activities. The resulting proposed management controls form the basis of the Implementation Strategy (refer Section 10) which will be implemented during the petroleum activity.

#### 9.1.1 Shell Company Approach to Risk Management

At a corporate level, Shell has a standardised Hazards and Effects Management Process (HEMP), as the process by which Shell identifies and assesses hazards and implements measures to manage them. This process is consistent with the principles outlined in the Australian Standard AS/NZS ISO 31000:2009 Risk Management and Handbook 203:2006 Environmental Risk Management (Figure 9-1). HEMP is a fundamental element of the Shell Group HSSE and SP Control Framework and is a process that is applied at every phase of projects and operations.



**Figure 9-1: Risk Management Framework (AS/NZS 4360:2004 Risk Management)**

Shell's HSSE and SP Management System is a system that is continually improving due to incorporation of legislative requirements, changing community expectations, improved available technology, ongoing stakeholder engagement, learning from incidents industry wide and within Shell, and regular management review. Assurance that the HSSE and SP Management System is working, continually improving and that each Shell company is correctly applying new Shell standards occurs via local self-assurance and the Shell Global auditing process, which is ongoing and serves to identify gaps and drive gap closure.

Company standards are at least equal to, but in many cases more stringent than local legislation, and aligned with global good industry practice benchmarks such as those published by the IFC and World Bank. Both legislation and company standards are continually being updated and requiring a higher level of performance over time. Concurrently new technologies are becoming available and making improved performance possible

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and more affordable. This continual improvement is reflected in more challenging ALARP and acceptability benchmarks, leading to better environmental outcomes over time.

The OPGGS (E) Regulations 13(5)(b) requires that the Environment Plan includes ‘an evaluation of all the impacts and risks, appropriate to the nature and scale of each impact or risk’. This is further clarified by Reg. 13(6) which states that: ‘To avoid doubt, the evaluation mentioned in paragraph (5)(b) must evaluate all environmental impacts and risks arising directly or indirectly from (a) all operations of the activity; and (b) potential emergency conditions, whether resulting from accident or any other reason.’ Based on this, Shell has chosen to present ALARP demonstrations for all identified impacts and risks, regardless of their ranking.

The succeeding sections detail the environmental impacts and risks of the petroleum activities on the local and wider environment, including socio-economic considerations. Activities are described in terms of magnitude/sensitivity and ranking of planned impacts and unplanned risks. A description of management actions proposed to reduce any effect on the environment to As Low As Reasonably Practicable (ALARP) is also presented.

In preparation of this EP a detailed desktop review of the impact and risks assessments were carried out by various environment professionals.

## 9.2 Impact Assessment Methodology

This section describes the approach adopted for identifying and assessing impacts on the environment as relevant to the petroleum activities. Planned activities give rise to environmental impacts, while unplanned and accidental events pose a risk of environmental impact, if they occur. The risk ranking of environmental impacts resulting from unplanned or accidental events is evaluated by identifying the worst-case credible consequence (without controls) and then assessing the likelihood for the event occurring (with confirmed controls in place).

The approach aligns with Shell’s methodology that enables a balanced assessment of planned impacts and unplanned risks, noting that there are some difficulties in relying solely on the corporate Shell Risk Assessment Matrix (RAM) for assessment of planned environmental impacts. Therefore, an adapted methodology has been developed by Shell (United Kingdom), for use across Shell Group companies, that ties together both potential ‘Magnitude’ of a predicted impact and the ‘Receptor Sensitivity’ as shown in a summary impact ranking matrix (see Section 9.2.2). The matrix is used for the assessment of impacts consequences for both planned and unplanned events. However, for the assessment of unplanned events, the additional likelihood of occurrence of an event is taken into account to determine the risk ranking (See Section 9.2.4).

For the purpose of this assessment, key terminology is defined in Table 9-1.

**Table 9-1: Definition of Key Terminology for Impact Assessment**

Term	Definition
Acceptable	The level of impact and risk to the environment that may be considered broadly acceptable with regard to all relevant considerations.
Activity	Components or elements of work associated with the project. All activities associated with the project have been considered at a broad level (as outlined in Section 6).
ALARP	The point at which the cost (in time, money and effort) of further Risk or Impact reduction is grossly disproportionate to the Risk or Impact reduction achieved
Aspect	Elements of the proponent’s activities or products or services that can interact with the environment. These include planned and unplanned (including those associated with emergency conditions) activities.
Control	A measure which prevents and/or mitigates risk by reducing the overall likelihood of a worst-case credible consequence occurring. Controls include existing controls (i.e. Company management controls or industry standards) or additional controls (i.e. additional measures identified during the risk assessment processes).
Event	An occurrence of a particular set of circumstances. An event can be one or more occurrences and can have several initiating causes.
Factor	Relevant physical, biological, socio-economic and cultural features of the environment. These are also referred to as values, sensitivities and/or receptors.

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Term	Definition
Hazard	A substance, situation, process or activity that has the ability to cause harm to the environment.
Impact	Any change to the environment from a planned activity, whether adverse or beneficial, wholly or partially resulting from a proponent's environmental aspects.
Impact Consequence	The outcome of a planned or unplanned event, which can lead to a range of worst case, credible consequences. A consequence can be certain or uncertain and can have positive or negative effects. Consequences can be expressed qualitatively or quantitatively.
Inherent risk	The potential exposure defined as the plausible worst-case event in the absence of controls
Likelihood	Description of probability or frequency of a consequence occurring with controls in place.
Residual risk	The level of risk remaining after risk treatment, i.e. application of controls (inclusive of unidentified risk).
Residual Impact	The level of impact remaining after impact treatment, i.e. application of controls (inclusive of unidentified impact).

### 9.2.1 Aspects and Impact/Risk Identification

The initial identification of aspects and potentially associated impacts/risks is carried out prior to any detailed assessment of the relative importance of each issue, the sensitivity of the existing environmental and/or socio-economic values, or the magnitude of the potential impact, and does not take into account potential control measures.

The key aspects arising from the petroleum activities have been identified as:

- Physical presence
- Lighting
- Underwater noise
- Seabed disturbance
- Vessel movements (unplanned)
- Liquid discharges
- Atmospheric emissions
- Waste (unplanned)
- Invasive Marine Species (IMS) (unplanned)
- Loss of containment (including unplanned spills).

### 9.2.2 Evaluation of Impacts

#### 9.2.2.1 Impact Consequence Assessment

The ranking of environmental impact consequence is assessed in terms of:

- Magnitude based on the size, extent and duration/frequency of the impact; and
- The sensitivity of the receiving receptors.

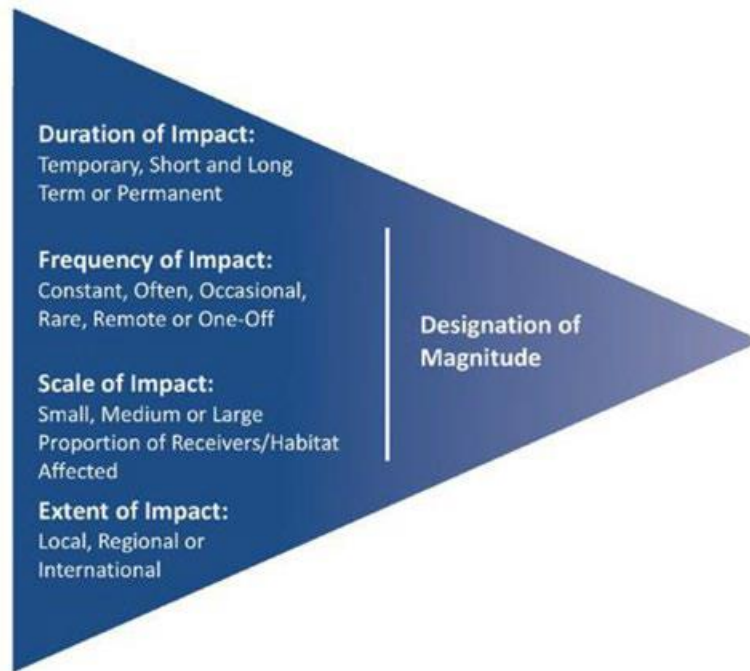
These are described further below.

#### 9.2.2.2 Magnitude

Levels of magnitude of environmental impacts are outlined in Table 9-2. The magnitude of an impact or predicted change takes into account the following (shown descriptively in Figure 9-2):

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- Nature of the impact and its reversibility
- Duration and frequency of an impact
- Extent of the change
- Potential for cumulative impacts.



**Figure 9-2: Definition of Magnitude in the Context of Impact Identification and Classification**

The impact magnitude is defined differently according to the type of impact. For readily quantifiable impacts, such as noise or liquid discharge plume extent, numerical values can be used whereas for other topics (e.g. communities and habitats) a more qualitative definition is applicable. These criteria capture high level definitions, adapted as appropriate to the offshore context of the Crux project.

**Table 9-2: Magnitude Criteria**

<b>+1</b>	Net positive effect arising from a proposed aspect of the petroleum activity
<b>0</b>	No environmental damage or effects
<b>-1</b>	Slight environmental damage contained within the Operational Area Effects unlikely to be discernible or measurable No contribution to trans-boundary or cumulative effects Short-term or localised decrease in the availability or quality of a resource, not effecting usage
<b>-2</b>	Minor environmental damage, no lasting effects or persistent effects are highly localised Minor change in habitats or species Unlikely to contribute to trans-boundary or cumulative effects Short-term or localised decrease in the availability or quality of a resource, likely to be noticed by users
<b>-3</b>	Moderate environmental damage that will persist or require cleaning up Widespread change in habitats or species beyond natural variability Observed off-site effects or damage, e.g. fish kill or damaged habitats Decrease in the short-term (1–2 years) availability or quality of a resource affecting usage

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	Local or regional stakeholders' concerns leading to complaints Minor trans-boundary and cumulative effects
<b>-4</b>	Severe environmental damage that will require extensive measures to restore beneficial uses of the environment Widespread degradation to the quality or availability of habitats and/or wildlife requiring significant long-term restoration effort Major oil spill over a wide area leading to campaigns and major stakeholders' concerns Trans-boundary effects or major contribution to cumulative effects Mid-term (2–5 year) decrease in the availability or quality of a resource affecting usage National stakeholders' concern leading to campaigns affecting Company's reputation
<b>-5</b>	Persistent severe environmental damage that will lead to loss of use or loss of natural resources over a wide area Widespread long-term degradation to the quality or availability of habitats that cannot be readily rectified Major impact on the conservation objectives of internationally/nationally protected sites Major trans-boundary or cumulative effects Long-term (> 5 year) decrease in the availability or quality of a resource affecting usage International public concern

### 9.2.2.3 Receptor Sensitivity

For this EP, receptors are grouped into the following primary categories (as described further in Section 7 and further broken down into sub-categories):

- Physical environment
- Biological environment
- Socio-economic and cultural environment.

Receptor sensitivity criteria are based on the following key factors:

- Importance of the receptor at local, national or international level – for instance, a receptor will be of high importance at international level if it is categorised as a designated protected area (such as a Ramsar site). Areas that may potentially contain high value habitats are of medium importance if their presence/extent have not yet been confirmed.
- Sensitivity/vulnerability of a receptor and its ability to recovery – for instance, certain species could adapt to changes easily or recover from an impact within a short period of time. Thus, as part of the receptor sensitivity criteria (Table 9-3) professional judgement considers recovery time of a receptor from identified impacts. This also considers if the receptor is under stress already.
- Sensitivity of the receptor to certain impacts – for instance, flaring emissions will potentially cause air quality impacts and do not affect other receptors such as seabed.

**Table 9-3: Receptor Sensitivity Criteria**

Sensitivity	Environmental Impact
<b>L</b>	Receptor with low value or importance attached to them, e.g. habitat or species which is abundant and not of conservation significance, or immediate to short-term recovery and easily adaptable to changes.
<b>M</b>	Receptor of Medium importance, e.g. recognised as an area/species of potential conservation significance for example, KEF or listed threatened species, or Recovery likely within 1–2 years following cessation of activities, or localised medium-term degradation with recovery in 2–5 years.

Sensitivity	Environmental Impact
<b>H</b>	Receptor of High importance, e.g. recognised as an area/species of potential conservation significance with development restrictions for example marine parks or conservation reserves, or habitat critical to the survival of a species, or  Recovery not expected for an extended period (> 5 years following cessation of activity) or that cannot be readily rectified.

### Impact Consequence Ranking

The magnitude of the impact and sensitivity of receptor are then combined to determine the impact consequence ranking in accordance with Table 9-4 below. Key management controls are subsequently identified to reduce the magnitude for such an event occurring in order to determine the final residual impact ranking.

**Table 9-4: Impact Consequence Ranking Matrix**

		Sensitivity			Residual Impact Consequence Ranking	Residual Impact Acceptability Categories
		L	M	H		
Magnitude	+1				Positive Impact Consequence	Inherently acceptable - Manage for continuous improvement through effective implementation of the HSSE and SP management system
	0				No Impact Consequence	
	-1				Slight Impact Consequence	
	-2				Minor Impact Consequence	Acceptable with controls - Apply the hierarchy of control to reduce the risks to ALARP
	-3				Moderate Impact Consequence	
	-4				Major Impact Consequence	Unacceptable
	-5				Massive Impact Consequence	

### 9.2.3 Unplanned Risks (Addition of Likelihood Criteria)

For unplanned/emergency events, the likelihood of such an event occurring also requires assessment in association with the impact consequence to determine the risk ranking. For example, based on magnitude and sensitivity alone a hydrocarbon spill associated with a long-term well blowout would be classed as having a major impact consequence; however, the inherent likelihood of such an event occurring would typically be in the range of unlikely to remote. In addition, the mitigation measures for such impacts focusses on reducing the likelihood of the impact occurring as opposed to reducing the magnitude of the impact itself. Thus, unplanned events also require assessment in terms of residual risk.

As with planned activities, the potential impacts of unplanned events are initially identified, and the impact consequence ranking is determined, which inherently takes into account the magnitude of the event and sensitivity of the relevant receptor(s). The impact consequence ranking is then combined with the likelihood of the event occurring (Table 9-5) in order to determine the overall environmental risk ranking via Table 9-6. Controls are then identified to reduce the risk of such an event occurring in order to determine residual risk.

**Table 9-5: Likelihood Criteria**

<b>A</b>	Never heard of in the industry – <b>extremely remote</b> $< 10^{-5}$ per year Has never occurred within the industry or similar industry but theoretically possible
<b>B</b>	Heard of in the industry – <b>remote</b> $10^{-5} - 10^{-3}$ per year



	Similar event has occurred somewhere in the industry or similar industry but not likely to occur with current practices and procedures
<b>C</b>	Has happened in the Company or more than once per year in the industry – <b>unlikely</b> 10 <sup>-3</sup> – 10 <sup>-2</sup> per year Event could occur within lifetime of similar facilities. Has occurred at similar facilities
<b>D</b>	Has happened at the location or more than once per year in the Company – <b>possible</b> 10 <sup>-2</sup> – 10 <sup>-1</sup> per year Could occur within the lifetime of the development
<b>E</b>	Has happened more than once per year at the location – <b>likely</b> 10 <sup>-1</sup> – > 1 per year Event likely to occur more than once at the facility

**Table 9-6: Environmental Risk Matrix (Unplanned Events)**

		Likelihood				
		A	B	C	D	E
Residual Impact Consequence	No Impact Consequence					
	Slight Impact Consequence					
	Minor Impact Consequence					
	Moderate Impact Consequence					
	Major Impact Consequence					
	Massive Impact Consequence					

Residual Risk Acceptability Categories	
Light Blue	Inherently Acceptable - Manage for continuous improvement through effective implementation of the HSSE and SP management system
Dark Blue	
Yellow	Acceptable with Controls - Apply the hierarchy of control to reduce the risks to ALARP
Red	
Red - X	Unacceptable

For the purpose of the petroleum activities risk review, the following key risks were assessed in accordance with the risk-based approach summarised in this section:

- Vessel movements, in the context of unplanned interactions with marine fauna
- IMS
- Atmospheric emissions
- Unplanned release of wastes
- Unplanned (spill) events.

### 9.2.4 Assessment of Residual Impacts and Risks

The risk assessment methodology applied ensured the following key steps were completed throughout scenario development:

1. Hazards identified
2. Initiating causes determined
3. Worst case credible scenarios agreed (without controls in place)
4. Release of hazards understood (i.e. top events)
5. Preventative controls listed
6. Mitigative controls listed
7. Likelihood determined (with confirmed controls in place)
8. Risk ranking attributed.

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In the evaluation of residual impacts and risks, all controls are assumed to be implemented effectively and functioning as intended.

The residual impacts and risks detailed in Sections 9.3 to 9.13 represent a discussion of the various sub-category environmental value/receptor rankings as determined. The residual rankings displayed in the summary tables in the respective sections represents the highest residual impact or risk for each primary receptor category where relevant (i.e. physical environment, biological environment, and socio-economic/cultural environment), and therefore can be considered a conservative assessment for some individual environmental values/sensitivities. These residual impacts and risks are then compared to the acceptability categories outlined in Section 0, Table 9-4 and Table 9-6 to determine a final ALARP and acceptability statement.

Cumulative environmental impacts and risks are also considered and discussed where relevant through the impact and risk assessment process taking into account current and foreseeable pressures on the environment including other petroleum activities, other marine industries and users, and other ecosystem pressures.

**9.2.5 ALARP Assessment**

ALARP for Shell means, the point at which the cost (in time, money and effort) of further risk or impact reduction is grossly disproportionate to the risk or impact reduction achieved.

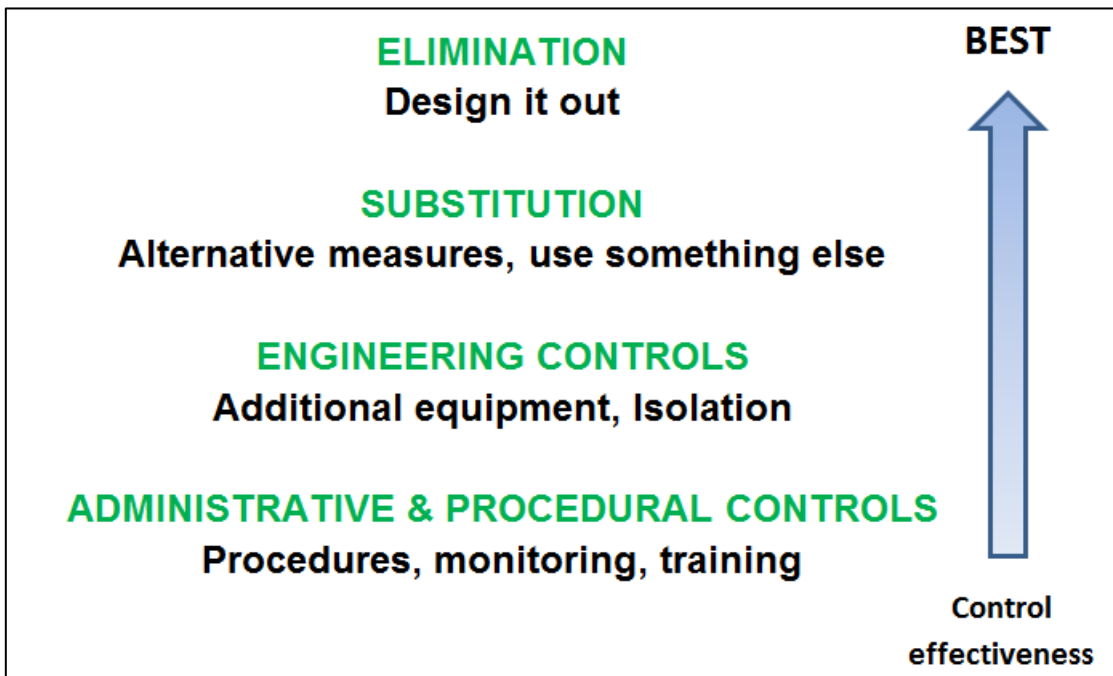
ALARP can be demonstrated through a number of mechanisms via:

a quantitative method, such as via technical assessments (e.g. modelling studies) or where the costs of the various options can be compared with the respective impact/risk reduction

semi-quantitative method where impacts/risks within a certain level require a pre-defined number of barriers of a certain effectiveness in place to prevent this hazard being released, or via

qualitative analysis, whereby ALARP is established using standards, legislative requirements and judgement based on experience.

Shell applies the following hierarchy of control process to demonstrate ALARP as shown in Figure 9-3.



**Figure 9-3: Hierarchy of Controls**

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### 9.3 Physical Presence

#### 9.3.1 Aspect Context

The physical presence of survey vessel could potentially affect activities and access to areas associated with fishing, tourism, defence, commercial shipping and the oil and gas industry in the region. Refer to Section 6 for a description of the activity.

#### 9.3.2 Description and Evaluation of Impacts

##### Socio-Economic and Cultural Environment

The expected impact of the activities on the fishing industry (commercial, recreational and traditional), is expected in the worst case scenario to be slight due to the significant water depth and low fishing effort in the region. Other reasons include the limited duration and extent of the disturbance in relation to the area available for fishing.

There are no known cultural heritage features or values that could be credibly impacted by the physical presence of the vessel within the operational area.

There are no known tourism activities in the area due to the considerable water depths and distance offshore. Therefore, no impacts to tourism are expected.

There are no known defence exercise areas or planned activities within the Operational Area. Therefore, no impacts to defence are expected.

The closest permanent petroleum infrastructure to the activity is the Prelude FLNG, which Shell also operate. Inpex activities are over 20km away from the Operational area at its closest point. Exploration activities undertaken by other operators in the region within other permit areas are also possible and likely however, petroleum activities are not expected to affect these.

Commercial shipping activity in the vicinity of the Operational Area is high and the petroleum activities are not expected to significantly affect these other activities. Overall the worst-case residual impact ranking is assessed as Slight (Magnitude -1, Sensitivity L).

#### 9.3.3 Impact Assessment Summary

**Table 9-7: Physical Presence Evaluation of Residual Impacts**

Environmental Receptor	Magnitude	Sensitivity	Residual Impact Consequence
<i>Evaluation – Planned Impacts</i>			
Socio-economic and Cultural Environment	-1	L	Slight



### 9.3.4 ALARP Assessment and Environmental Performance Standards

Table 9-8: ALARP Assessment and Environmental Performance Standards

Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Elimination	N/A	N/A	Physical Presence cannot be eliminated for activities.	N/A	N/A	N/A
Substitution	N/A	N/A	No additional or alternative control measures have been identified for this risk for the activities.	N/A	N/A	N/A
Engineering	N/A	N/A	No additional or alternative control measures have been identified for this risk for the activities.	N/A	N/A	N/A
Administrative and Procedural Controls	For specific vessel based campaigns, the Australian Hydrographic Service (AHS) is given advance notification before arrival on location to enable a 'Notice to Mariners' to be issued prior to petroleum activities occurring within the Operational Area.	Yes	Allows notifications to be made to other marine users in the area to minimise disruption to their activities. A 'Notice to Mariners' may be issued by the relevant authority before the activity.	1.1	AHS is given notification in advance to enable a 'Notice to Mariners' to be issued prior to petroleum activities occurring within the operational area (four weeks prior to mobilisation).	Records available of advance notification to the AHS which enables issuing of Notice to Mariners' or the relevant Notice to Mariners.
Administrative and Procedural Controls	Ongoing Relevant Persons consultation process.	Yes	Shell will implement the ongoing consultation process in accordance with regulation 14(9) of the OPGGS(E)R and Section 5.8.  This process provides a mechanism for RPs to give feedback, and raise claims or objections relevant to the activities being executed under the EP. This gives Shell the ability to maintain relationships with RPs that fosters a continued improvement in Shells understanding of the features and values of the existing environment, and where new risks or impacts are identified, the establishment of appropriate controls to reduce risks and/or impacts to ALARP.	1.2	Shell will implement an ongoing consultation process with Relevant Persons in accordance with regulation 14(9) of the OPGGS(E)R and Section 5.8.	Relevant Persons consultation records.  MOC records.



Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Administrative and Procedural Controls	Adhere to administrative navigation safety requirements.	Yes	The survey vessel operating within the Operational Area will adhere to the navigation safety requirements contained within the International Regulations for Preventing Collisions at Sea 1972 (COLREGS), Chapter 5 of The International Convention for the Safety of Life at Sea 1974 (SOLAS Convention), International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention), the Navigation Act 2012 and any subsequent Marine Orders, which specify standards for crew training and competency, navigation, communication, and safety measures.	1.3	Compliance with the navigation safety requirements contained within the International Regulations for Preventing Collisions at Sea 1972 (COLREGS), Chapter 5 of The International Convention for the Safety of Life at Sea 1974 (SOLAS Convention), International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention), the Navigation Act 2012 and any subsequent Marine Orders.	Inspection records demonstrate compliance with navigation safety requirements.

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### 9.3.5 Acceptability of Impacts

**Table 9-9: Acceptability of Impacts – Physical Presence**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
<b>Socio-economic and Cultural Environment</b>	Cultural Heritage Features	No impacts to Cultural heritage features	Yes	There are no known cultural heritage features or values that could be credibly impacted by the physical presence of a vessel within the operational area.
	Cultural Heritage Values	No significant impacts to Cultural heritage values	Yes	
	Commercial Fisheries	No interference with fishing to a greater extent than is necessary for the exercise of right conferred by the titles granted to carry out petroleum activities No negative impacts to exploited fisheries resource stocks which result in a demonstrated direct loss of income. Temporary displacement of commercial fishing activities within the Crux Operational Area (excluding petroleum safety zones) is acceptable.	Yes	Temporary exclusions of other marine users from the Operational Area is considered to be acceptable and necessary from a safety, security and oil spill prevention (collision) perspective.  Given the lack of objections or claims by relevant persons and the short duration of the survey activities, the impacts to socio-economic receptors are considered acceptable.
	Traditional Indigenous fishing	No negative impacts to exploited fisheries resource stocks. Temporary displacement of traditional fishing activities within the Crux Operational Area (excluding petroleum safety zones) is acceptable.	Yes	
	Tourism and Recreation	No negative impacts to nature-based tourism resources resulting in demonstrated loss of income. Temporary displacement of tourism activities within the Crux Operational Area (excluding petroleum safety zones) is acceptable.	Yes	
	Military/defence	Temporary displacement of defence activities within the Crux Operational Area (excluding petroleum safety zones) is acceptable.	Yes	
	Ports and commercial shipping	Temporary displacement of commercial shipping within the Crux Operational Area (excluding petroleum safety zones) is acceptable.	Yes	
	Offshore petroleum	Temporary displacement of petroleum exploration activities and operations within the Crux	Yes	



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Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
	exploration and operations	Operational Area (excluding petroleum safety zones) is acceptable.		

The assessment of impacts from physical presence determined the residual impact rating of slight (Table 9-4). As outlined above, the acceptability of the impacts from physical presence associated with the petroleum activities has been considered in the following context.

**Principles of ESD**

The impacts from physical presence are consistent with the principles of ESD based on the following points:

The physical presence aspect does not degrade the biological diversity or ecological integrity of the Commonwealth marine area in the Browse Basin.

Significant impacts to MNES will not occur.

The health, diversity and productivity of the marine environment will be maintained for future generations.

The project does not significantly impinge upon the rights of other parties to access environmental resources (e.g. commercial and traditional fishers).

The precautionary principle has been applied, and studies undertaken where knowledge gaps were identified. This knowledge has been applied during the evaluation of environmental impacts and risks.

**Relevant Requirements**

Management of the impacts from physical presence are consistent with relevant legislative requirements, including:

- Section 616 of the OPGGS Act
- Compliance with international maritime conventions, including:
  - STCW Convention
  - SOLAS Convention
  - COLREGS.
- Compliance with Australian legislation and requirements, including:
  - Navigation Act 2012:
- Marine Order 21 (Safety of Navigation and Emergency Procedures)
- Marine Order 30 (Prevention of Collisions)
- Marine Order 71 (Masters and Deck Officers).

**Matters of National Environmental Significance**

**Threatened and Migratory Species**

The evaluation of impacts from the physical presence of the survey vessel indicates no potential for significant impacts to threatened and migratory species.

**Commonwealth Marine Environment**

The evaluation of impacts from the physical presence of the survey vessel indicates significant impacts to the Commonwealth Marine Environment are not credible.

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**External Context**

There have been no objections or claims raised by Relevant Persons to date regarding physical presence. Shell’s ongoing consultation program will consider feedback, claims or objections made by Relevant Persons throughout the life of this EP. Where new impacts or risks are established these will be subject to the MOC process described in Section 10.1.4.

**Internal Context**

Shell has also considered the internal context, including Shell’s environmental policy and ESHIA requirements. The environmental performance outcomes, and the controls which will be implemented, are consistent with the outcomes from Relevant Person consultation for the Crux Project and Shell’s internal requirements.

**Acceptability Summary**

The assessment of impacts and risks from physical presence determined the residual impact rankings were slight or lower (Table 9-4 Impact Consequence Ranking Matrix). As outlined above, the acceptability of the impacts have been considered in the context of:

- The established acceptability criteria for the physical presence aspect
- ESD
- Relevant requirements
- MNES
- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

Shell considers residual impacts of slight or lower to be acceptable if they meet legislative and Shell requirements. The discussion above demonstrates that these requirements have been met in relation to the physical presence aspect.

Based on the points discussed above, Shell considers the impacts from physical presence associated with the petroleum activities to be ALARP and acceptable.

**9.3.6 Environment Performance Outcome**

Environment Performance Outcome	Measurement Criteria
No adverse interactions between Survey activities and other marine users. Displacement of other marine users is limited to temporary displacement due to the survey.	No supported claims reported which demonstrate direct loss of income or other impacts to marine users as a result of undertaking the petroleum activities.

**9.4 Lighting**

**9.4.1 Aspect Context**

The survey activities require 24-hour external illumination to meet maritime and operational safety standards. Artificial light emissions will be generated from navigational and operational lighting required for safe function of the survey vessel.

**9.4.2 Description and Evaluation of Impacts**

Potential impacts of changes to ambient light are included in a number of recovery plans and conservation advice, including the Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2017a) and the Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c).

The introduction of light emissions from the activity will result in a temporary, transient change to ambient light. The Operational Area is at a significant distance from coastal sources of light emissions, and existing lighting

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in the region is limited to offshore facilities and shipping traffic. The contribution of light emissions from the activity will be comparable with existing vessels in the region and will not result in a notable increase.

The National Light Pollution Guidelines for Wildlife (NLPG) addresses potential impacts to marine turtles, seabirds and migratory shorebirds from artificial light (DCCEEW, 2023). The guidelines recommend a specific artificial light impact assessment process is undertaken where there is important habitat for listed species that are known to be affected by artificial light within 20 km of a project. The 20 km threshold provides a precautionary limit based on observed effects of sky glow on marine turtle hatchlings demonstrated to occur at 15-18 km (Kamrowski, et al., 2014; Hodge et al., 2007) and fledgling seabirds grounded in response to artificial light 15 km away (Rodríguez et al., 2014). The Operational Area is located greater than 20 km from any emergent features and outside known BIAs for turtles and seabirds/migratory shorebirds, therefore a specific assessment of potential impacts of artificial lighting is not required under the NLPG. However, the assessment of impacts presented below is supported by the light modelling conducted for the Crux OPP and other published sources as presented in below.

#### 9.4.2.1 Ecosystems, Communities and Habitats

##### Benthic Communities

There are no light generating activities that will credibly impact benthic communities due to the depth of water within the operational area (between 160m to ~260 m from MSL water depth).

##### Shoals and Banks

Some coral species use moonlight cues to trigger reproductive spawning events; significant light pollution can prevent these corals from detecting moonlight, resulting in their failure to spawn. However, light modelling completed to support the Crux OPP demonstrates that visible lighting from a project vessel reaching the nearest submergent receptors of Goeree Shoal and Eugene McDermott Shoals will be at ambient (Imbricata 2018) equivalent to a moonless clear night to quarter moon). No discernible residual impact consequence is therefore expected (Magnitude – 0, Sensitivity - M).

##### Offshore Reefs and Islands

There are no light generating activities that will credibly impact offshore reefs and islands due to the distance to these features. The closest receptor is browse island – located approximately 40 km from the Prelude end of Operational Area.

##### WA and NT mainland coastline

There are no light generating activities that will credibly impact the WA and NT mainland due to the distance to these features. The closest mainland landfall is approximately 200 km south east from the Operational Area.

##### Key Ecological Features

The only KEF occurring within the Operational Area is the Continental Slope Demersal Fish Communities, covering a vast area of approximately 33,182 km<sup>2</sup>, located along a 7km section of the KEF. These are a high diversity of demersal fish assemblages on the Australian continental slope featuring more than 500 fish species, 76 of which being endemic, which makes it the most diverse slope bioregion in the whole of Australia.

Based on the assessment of impacts to *fish* (see below) the range of attraction for fish and invertebrates to lighting from the vessel is expected to be localised with no discernible residual impact consequence (Magnitude – 0, Sensitivity - L) and is not expected to attract individuals away from any named shoals/banks, offshore reefs/islands or KEFs. Considering a low receptor sensitivity to such impacts, there are no credible residual impacts at a population level.

Refer to assessment of impacts to *fish* below for additional consideration of impacts to the Continental Slope Demersal Fish Communities KEF.

Other KEFs are too distant from the Operational Area to be credibly impacted by lighting from the petroleum activity.

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#### 9.4.2.2 Threatened Species and Ecological Communities

##### Marine mammals

Vessel lighting has the potential to affect marine fauna by altering use of visual cues for orientation, navigation or other purposes, resulting in behavioural responses which can alter foraging and breeding activity, and create competitive advantage to some species and reduce reproductive success and/or survival in others. Cetaceans and other marine mammals are not known to be significantly attracted to light sources at sea, and therefore disturbances to behaviour are unlikely to occur. There is no evidence to suggest that artificial light sources impact on the migratory, feeding or breeding behaviours of cetaceans. Cetaceans predominantly utilise acoustic senses to survey their environment, rather than visual cues (Simmonds et al. 2004). It is therefore concluded that there is no expected residual impact consequence from lighting on marine mammals (Magnitude 0, Sensitivity - M)

##### Marine Reptiles

Of the turtle species identified as protected under the EPBC Act, only green turtles (Scott-Browse Stock) are known to nest on Browse Island (~ 40km to the southeast of the Operational Area), with important internesting habitat located within ~20km of Browse Island (Commonwealth of Australia 2017).

Light pollution on nesting beaches can alter critical nocturnal behaviours in adult and hatchling turtles (DCCEEW 2023). Research suggests that artificial lighting can disrupt or affect the choice of nesting location by female turtles, particularly light visible on the landward side of nesting beaches (Salmon 1992). Turtle hatchlings leaving nesting beaches are particularly sensitive to artificial lighting as they use celestial cues to orientate (Limpus 2008, Salmon et al. 1992; cited in Lorne et al. 1997).

Marine turtle hatchlings may use celestial lights as navigational markers during oceanic migrations and are attracted towards bright lights. Hatchlings can become disorientated and trapped within light spill around platforms and vessels, resulting in increased energy expenditure, increased predation and decreased survival rates (Witherington & Martin 1996; cited in Lorne et al. 1997; Commonwealth of Australia 2019 ). However, as hatchlings swim offshore from their natal beach, they become less influenced by light cue and rely predominantly by wave motion, currents and the earth's magnetic field (Lohmann and Lohmann 1992).

Extensive light attraction studies have been conducted on turtle hatchlings, including at Barrow Island (Pendoley 2005), approximately 1,000 km southwest of the Operational Area. These studies demonstrated that hatchlings crawl away from tall, dark horizons (sand dunes and vegetation) towards lower and lighter horizons (the sea and stars), and that artificial lighting can alter this response.

Turtles in the nearshore or on the beaches of Browse Island are unlikely to be measurably affected by the survey vessel given the distance from this receptor (>20km) and height of the lighting (typically <20 m).

Once in the water, hatchling navigation is influenced predominantly by wave motion, currents and the earth's magnetic field. Hence, there is no expected impact of lighting from petroleum activities on hatchlings once in the water.

There are no important habitat for listed turtle species that are known to be affected by artificial light within 20km of the Operational Area. Important habitats are those areas necessary for an ecologically significant proportion of a listed species to undertake important activities such as foraging, breeding, roosting or dispersal. The applied 20 km threshold is in alignment and provides a precautionary limit based on observed effects of sky glow on marine turtle hatchlings demonstrated to occur at 15-18 km (Commonwealth of Australia 2019). Therefore, any light generated from within the Operational Area will not result in any environmental damage or effects given the separation distance to the nearest sensitive habitats as follows:

- 23 km to the Green Turtle critical internesting habitat
- 40 km to Browse Island – Turtle nesting and hatchlings.

Given the large separation distance of the Operational Area from Browse Island and the closest turtle critical habitat and the unaltered landward horizon at Browse Island, there is no expected residual impact consequence from petroleum activities' light spill on turtle hatchlings and adult turtles (Magnitude 0, Sensitivity – M).

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There is no literature available on the effects of light on sea snakes. However, anecdotal evidence based on absence of observed sea snakes in waters in the Operational Area suggest that sea snakes are not attracted to artificial light sources.

## Birds

Studies conducted between 1992 and 2002 in the North Sea confirmed that artificial light was the reason that birds were attracted to and accumulated around lit offshore infrastructure (Marquenie et al. 2008) and that lights can attract birds from large catchment areas (Wiese et al. 2001). Either birds may be attracted by the light source itself or indirectly as structures in deep water environments tend to attract marine life at all trophic levels, creating food sources and shelter for birds (Surnam 2002). Negative potential impacts to birds attracted by artificial lighting are limited but include collisions with infrastructure and alteration of normal behaviours (Commonwealth of Australia 2019).

When considering line of sight with respect to light assessment for birds, the factors that need to be considered include:

- the distance between the light source and the receptor
- the potential elevation of the receptor (birds).

If migratory birds are reliant on visual cues in addition to their magnetic compass, such as ambient light, moonlight and starlight to navigate, then artificial light could alter their natural migratory patterns, particularly in the absence of terrestrial landmarks. Light emissions from offshore platforms in the North Sea have been shown to attract migrating birds and birds that migrate during the night are especially affected (Verheijen 1985). During other studies conducted in the North Sea (Marquenie et al. 2008), it was noted that birds travelling within a 5km radius of illuminated offshore platforms may deviate from their intended route and either circle or land on the nearby platform. Beyond this distance, it is assumed that light source strengths were not sufficient to attract birds away from their preferred migration route.

Injuries and mortalities to birds occur through direct collisions with infrastructure and the rate of collision is (as inferred from literature) relates to weather conditions, the cross-sectional area of the obstacle, amount of light and number of birds travelling through an area. Where bird collision incidents have been reported, low visibility weather conditions (cloudy, overcast and foggy nights) have usually been implicated as the major contributing factor, in contrast there are seldom collision incidents on clear nights (Avery 1976; Elkins 1988; Weise et al. 2001). It should be noted that conditions in the Operational Area are not conducive to significant fog formation, however most rainfall is seasonal associated with summer monsoon and cyclones in November to April which does overlap with the peak migratory period for birds as indicated in Section 7.2.8.3.

According to Bamford et al. (2008), 33 species of migratory birds that use the East Asian-Australian Flyway (EAAF) are regularly present within Australia. The EPBC listed streaked shearwater was not identified as using the EAAF in Bamford's study. Migratory shorebird species are mostly present in Australia during the non-breeding period, from as early as August to as late as April/May each year (DoEE 2017b) As defined previously, the documented zone of impact for migratory birds that resulted in a recorded change in natural behaviour (Marquenie et al. 2008) is two orders of magnitude smaller than the limit of visibility, at a radius of 5 km from an artificial light source.

There are no important habitats for listed bird species that are known to be affected by artificial light within 20 km of the Operational Area. Important habitats are those areas necessary for an ecologically significant proportion of a listed species to undertake important activities such as foraging, breeding, roosting or dispersal. The applied 20 km threshold provides a precautionary limit based on observed effects of sky glow on fledgling seabirds grounded in response to artificial light 15 km away (Commonwealth of Australia 2019). Therefore, any light generated from within the Operational Area will not result in any environmental damage or effects given the separation distance to the nearest sensitive habitats as follows:

- 59km to the nearest bird breeding BIA.

It is considered possible that small numbers of birds may be attracted to the lighting of the vessel. Impacts from any attraction are predicted to not be significant at a local population level based off fauna observations at the adjacent Prelude FLNG facility. Therefore, it is concluded that under the worst case conditions, there are no expected residual impact consequence (Magnitude – 0, Sensitivity – M).



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## Fish

Fish and zooplankton may be directly or indirectly attracted to lights. Experiments using light traps have found that some fish and zooplankton species are attracted to light sources (Meekan et al. 2001), with traps drawing catches from up to 90 m (Milicich et al. 1992). Lindquist et al. (2005) concluded from a study of larval fish populations around an oil and gas platform in the Gulf of Mexico that an enhanced abundance of clupeids (herring and sardines) and engraulids (anchovies), both of which are highly photopositive, was caused by platform light fields.

The concentration of organisms attracted to light results in an increase in food source for predatory species and marine predators are known to aggregate at the edges of artificial light halos. Shaw et al. (2002), in a similar light trap study, noted that juvenile tunas (Scombridae) and jacks (Carangidae), which are highly predatory, may have been preying upon concentrations of zooplankton attracted to the light field of the platforms. This could potentially lead to increased predation rates compared to unlit areas. The intensity of lights may potentially result in a concentration of some marine fauna.

The potential for increased predator activity is unlikely to result in a significant impact on the plankton or fish populations. Given the relatively small impact area surrounding the petroleum activities in respect to zooplankton and fish habitat, the potential impacts are expected to be highly localised and unlikely to have discernible consequences at the population level. The distances from Operational Area to the closest island (Browse Island) and shoal (Echuca Shoal) are approximately 40 km and 61 km from the Operational Area respectively. Therefore, it is unlikely that artificial lighting will impede or disturb natural lighting cycles that may affect coral spawning.

The range of attraction for fish and invertebrates to lighting from the vessel is expected to be localised with no discernible residual impact consequence (Magnitude – 0, Sensitivity - L) and is not expected to attract individuals away from any named shoals/banks, offshore reefs/islands or KEFs. Considering a low receptor sensitivity to such impacts, there are no credible residual impacts at a population level.

## Sharks and Rays

Whale sharks may traverse the Operational Area and broadly the Planning Area with a BIA for foraging whale sharks located 33 km from the Operational Area at the Prelude end and overlapping the Operational Area in the northern part. However, it is expected that whale shark presence within the close vicinity of the vessel where the activity is occurring would be transitory and of short duration. This is consistent with tagging studies of whale shark movements which show continual movement of whale sharks in deeper, open offshore waters (Meekan & Radford 2010). The Species Profile and Threats Database and Conservation Advice for the whale shark does not identify light emissions as a threat (TSSC 2015d).

No other sensitive species of sharks or rays are expected to be impacted by vessel lighting during the activity due to the high transient nature of these species, low likelihood of vessel encounter (no overlapping BIAs) and general limited sensitive to light.

### 9.4.3 Impact Assessment Summary

Table 9-10 lists the highest impact consequence rating in the relevant environmental receptor groups.

**Table 9-10: Light Emissions Evaluation of Impacts**

Environmental Receptor	Magnitude	Sensitivity	Residual Impact Consequence
<b><i>Evaluation – Planned Impacts</i></b>			
Physical Environment	N/A	N/A	N/A
Ecosystems, Communities and Habitats	0	M	No Impact
Threatened Species and Ecological Communities	0	M	No Impact
Socio-Economic and Cultural Environment	N/A	N/A	N/A





### 9.4.4 ALARP Assessment and Environmental Performance Standards

Table 9-11: ALARP Assessment and Environmental Performance Standards

Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Elimination	No lighting	N/A	No additional or alternative control measures have been identified for this impact for the activities, given the requirement for a well-lit work area and the residual impact consequence of No Impact.	N/A	N/A	N/A
Administrative and Procedural controls	N/A	N/A	No additional or alternative control measures have been identified for this impact for the activities, given the requirement for a well-lit work area and the residual impact consequence of No Impact.	N/A	N/A	N/A

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### 9.4.5 Acceptability of Impacts

**Table 9-12: Acceptability of Impacts - Lighting**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Ecosystems, Communities and Habitats	Shoals and banks	No loss of coral communities at named banks or shoals as a result of indirect/offsite impacts associated with the Crux project.	Yes	Light modelling for vessel activities undertaken to support the Crux OPP demonstrates that light at the closest shoals and banks to the operational area will be at ambient, equivalent to a moonless clear night to quarter moon. No light impacts to coral communities are therefore expected.
Threatened Species and Ecological Communities	Marine Mammals Marine Reptiles Birds Fish Sharks and Rays	No mortality or injury of threatened MNES fauna from the Crux project. Management of aspects of the Crux project must be aligned to conservation advice, recovery plans and threat abatement plans published by DAWE. No significant impacts to threatened or migratory fauna	Yes	<p>Light from the vessel may attract threatened and migratory birds, which may roost on the structures. Given there are no important habitats within 20 km of the facilities (20 km being a conservative threshold distance for impacts), light emissions are not expected to result in significant impacts at a population level.</p> <p>Given the location of the activities, short duration and transient nature of the vessel based campaign it is determined that there is no expected residual lighting consequences on Marine Reptiles and Marine Mammals.</p> <p>Light emissions are not anticipated to have a significant impact on marine turtle species given the separation distance of the facilities from any sensitive habitat, and are therefore not inconsistent with the requirements of the relevant recovery plan.</p> <p>The range of attraction for fish and invertebrates to lighting from the vessel is expected to be localised and no discernible impacts are expected. The facility is also not expected to attract individuals away from any named shoals/banks, offshore reefs/islands or KEFs. Considering a Low receptor sensitivity to such impacts, there is no credible potential for residual impacts at a population level.</p> <p>The assessment of available controls are aligned to conservation advice, recovery plans and threat abatement plans.</p> <p>Given this there are not significant predicted impacts to threatened or migratory MNES.</p>

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The assessment of impacts from light emissions determined no residual worst case impact (Table 9-10). As outlined above, the acceptability of the impacts from light emissions associated with vessel operations has been considered in the following context.

**Principles of ESD**

The impacts from light emissions are consistent with the principles of ESD based on the following points:

- The light emissions aspect does not degrade the biological diversity or ecological integrity of the Commonwealth Marine Area and significant impacts to MNES are not anticipated to occur.
- The precautionary principle has been applied, and studies/reviews undertaken (ERM 2009b; Imbricata 2018) where knowledge gaps were identified. This knowledge has been applied during the evaluation of environmental impacts.

**Relevant Requirements**

Management of impacts from light emissions are consistent with relevant legislative requirements, including:

- National Light Pollution Guidelines for Wildlife (DCCEEW 2023).
- Management of impacts are consistent with policies, strategies, guidelines, conservation advice, and recovery plans for threatened species (Table 9-13).

**Matters of National Environmental Significance**

**Threatened and Migratory Species**

The evaluation of lighting impacts indicates significant impacts to threatened and migratory species will not credibly result from the light emissions aspect of vessel operations.

Alignment of vessel operations with management plans, recovery plans and conservation advice for threatened and migratory fauna is provided in Table 9-13.

**Commonwealth Marine Environment**

The impacts from the light emissions aspect of vessel operations on the Commonwealth marine environment will not exceed any of the significant impact criteria provided in Table 8-1.

**Table 9-13: Summary of Alignment of the Impacts from Light Emissions Aspect of the petroleum activities with Relevant Requirements for EPBC Threatened Fauna**

<b>Matters of National Environmental Significance</b>	<b>MNES Acceptability Considerations (Significant Impact Criteria, EPBC Management Plans/Recovery Plans/Conservation Advices)</b>	<b>Demonstration of Alignment as Relevant to the Project</b>
Threatened and Migratory species - Birds	Significant impact criteria for Critically Endangered, Endangered, Vulnerable and Migratory species (Table 8-1)	The evaluation of environmental impacts indicates that impacts from artificial light emissions on threatened or migratory species are likely to be minor and would not constitute a significant impact to populations. As such, residual impacts from artificial light associated with the petroleum activities does not exceed any of the significant impact criteria for Threatened and Migratory marine species provided in Table 8-1.
	Wildlife Conservation Plan for Migratory Shorebirds (DoE 2015a)	Managing the light aspect of vessel operations has been aligned to 'Objective 4' of the Plan by ensuring that anthropogenic disturbance was considered in development assessment processes. Migratory birds have been considered as an environmental receptor in the evaluation of lighting impacts.
	National Light Pollution Guidelines for Wildlife (DCCEEW 2023)	Seabirds and migratory birds have been identified in the National Light Pollution Guidelines to be affected by artificial light sources. The management of light emissions for vessel operations has considered the light management actions described in the

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<b>Matters of National Environmental Significance</b>	<b>MNES Acceptability Considerations (Significant Impact Criteria, EPBC Management Plans/Recovery Plans/Conservation Advices)</b>	<b>Demonstration of Alignment as Relevant to the Project</b>
		guidelines and the impact assessment/thresholds have been based on the precautionary limits referenced in the guidelines (Section 9.4.2).
Threatened and Migratory species - Marine Reptiles	Significant impact guidelines for Critically Endangered, Endangered, Vulnerable and Migratory species (Table 8-1)	The evaluation of environmental impacts indicates that impacts from artificial light emissions on threatened or migratory marine reptiles are slight and would not constitute a significant impact. As such, residual impacts from artificial light associated with vessel operations do not exceed any of the significant impact criteria for Threatened and Migratory marine reptile species provided in Table 8-1.
	Recovery Plan for Marine Turtles (Commonwealth of Australia 2017)	Light pollution has been identified as a threat in the Recovery Plan for Marine Turtles (Commonwealth of Australia 2017). Nesting females and hatchling turtles are at greatest risk of light impacts; however, the nearest potential nesting habitat is Browse Island (approximately 40 km from the Operational Area). Potential light-related impacts to turtles on nesting beaches is considered to be slight.  Actions in the Recovery Plan for Marine Turtles (Commonwealth of Australia 2017) relating to the threat of artificial light include: <ul style="list-style-type: none"> <li>• Artificial light within or adjacent to habitat critical to the survival of marine turtles will be managed such that marine turtles are not displaced from these habitats</li> <li>• Develop and implement best practice light management guidelines for existing and future developments adjacent to marine turtle nesting beaches</li> <li>• Identify the cumulative impacts on turtles from multiple sources of onshore and offshore light pollution</li> </ul> Given the Operational Area is beyond any BIAs or habitat critical for the survival of marine turtles (e.g. nesting, inter-nesting or foraging areas) and the light modelling and other studies indicate that impacts to marine turtles will be nil, the actions listed above are not applicable to vessel operations.
	National Light Pollution Guidelines for Wildlife (DCCEEW 2023)	Marine turtles have been identified in the National Light Pollution Guidelines to be affected by artificial light sources. The management of light emissions for vessel operations has considered the light management actions described in the guidelines and the impact assessment/thresholds have been based on the precautionary limits referenced in the guidelines (Section 9.4.2).
Commonwealth marine area	Significant Impact Guidelines for the Commonwealth marine environment (Table 8-1)	The evaluation of environmental impacts indicates that the light emissions aspect of vessel operations will not exceed the Commonwealth marine environment significant impact criteria provided in Table 8-1.

### **External Context**

There have been no objections or claims raised by Relevant Persons to date around light emissions. Shell's ongoing consultation program will consider feedback and claims or objections made by Relevant Persons throughout the life of this EP. Where new impacts or risks are established these will be subject to the MOC process described in Section 10.1.4.

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**Internal Context**

Shell has also considered the internal context, including Shell’s environmental policy and ESHIA requirements. The environmental performance outcomes, and the controls which will be implemented, are consistent with the outcomes from Relevant Person consultation for the petroleum activity and Shell’s internal requirements.

**Acceptability Summary**

The assessment of impacts and risks from light emissions determined the residual impact ratings were Nil (Table 9-10) given that any visible light (including sky glow) will not displace or disrupt any MNES listed species from important habitat, nor will it prevent these species from being able to undertake critical behaviours such as foraging, reproduction and dispersal. Shell considers residual impacts of nil to be acceptable if they meet legislative and Shell requirements. To this effect, the acceptability of these impacts have been considered in the context of:

- The established acceptability criteria for the light emissions aspect
- ESD
- Relevant requirements
- MNES
- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

Based on the discussion of these considerations presented above, Shell considers impacts from light emissions associated with vessel operations to be acceptable.

**9.4.6 Environment Performance Outcomes**

Environment Performance Outcome	Measurement Criteria
No injury or mortality of listed Threatened or Migratory MNES species as a result of artificial light emissions. Management of artificial light emissions associated with the project must be aligned to conservation advice, recovery plans and threat abatement plans, including for bird and marine turtle species.	Fauna observations and incident reports demonstrate no mortality of listed Threatened species as a result of artificial light emissions.

**9.5 Noise**

**9.5.1 Aspect Context**

Airborne and marine noise emissions from the seabed survey operations are generated from the following operational sources and activities:

- Geophysical survey activities such as MBES, SSS and SBP.
- Vessel operations, including operating on dynamic position (DP).
- Geotechnical survey activities including PCPT, box core and vibro core.

Underwater acoustic emissions associated with the vessel and geotechnical survey will be continuous while the underwater acoustic emissions associated with the geophysical survey will be impulsive in nature.

The vessel will generate noise from the operation of thrusters, engines, propeller cavitation etc. The sound levels and frequencies generated by vessels varies with the size of the vessel, speed, engine type and the activity being undertaken. The greatest sound levels are likely to be associated with the vessel using DP thrusters to maintain position on station.

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MBES and SSS are very high-frequency and high resolution systems. They produce short micro-pulses of sound at frequencies in the tens or hundreds of kilohertz. Sound from the high frequency pulses produced by MBES are focused within highly directional and narrow beams, which form a fan shape directed at the seabed (Salgado Kent et al., 2016; Jiménez-Arranz et al., 2017). SSS also produces sound in a focussed swath directed at the seabed. Due to the high frequency of pulses produced by these instruments, sound rapidly attenuates outside of the beam (Zykov, 2013). Despite relatively high source levels, the high operating frequencies of most MBES and SSS places the dominant sound frequencies above the principal auditory range of most marine fauna species, although high frequency cetaceans that may occur in the Operational Area (e.g. dolphins) have the capability to hear some of the sound energy at the lower end of the operating frequency ranges. SBPs are typically small, low-frequency, high-resolution and shallow-penetrating systems, producing electrical pulses across a range of low frequencies (Jiménez-Arranz et al., 2017).

The key sound sources during geotechnical surveys include the piezo cone penetration tests and box/vibro coring undertaken at the seabed. Sound levels associated with standard penetration testing and small-core drilling have been measured in waters off WA (Erbe & McPherson, 2017). The broadband (20 Hz – 24 kHz) source levels for penetration testing were 151 – 160 dB re 1 uPa<sup>2</sup>s SEL at 1 m (equivalent to approximately 160 – 170 dB re 1 µPa SPL at 1 m), with received levels reducing to approximately 141 to 146 dB re 1 µPa SPL within 20 m distance from the source (Erbe & McPherson, 2017). The broadband (30 Hz – 2 kHz) drilling source levels were 142 – 145 dB re 1 µPa SPL at 1 m (Erbe & McPherson, 2017). While core drilling will not be conducted as part of the activities covered by this EP, sound levels are expected to be a conservative representation of noise produced during box/vibro coring. The reported levels are tens of decibels less than those produced during production or construction operations and below levels commonly considered in marine noise regulations (Erbe & McPherson, 2017). They are not likely to be audible above the propeller or DP noise from the vessel as it maintains position. These noise sources are therefore not considered further in this assessment.

The magnetometer is not predicted to have any impacts associated with its use within the geophysical survey spread.

A summary of indicative frequencies and source levels for the sound sources associated with project activities are provided in Table 9-14. A definition of terms used to measure and define potential impacts of sound on marine receptors is provided in Table 9-15.

**Table 9-14: Typical sound pressure levels for site survey activities**

Activity	Frequency	Sound Pressure Level	Reference
<b>Impulsive sound</b>			
MBES	Frequency range 200 to 400 kHz Operational Frequency 300 kHz	~218 dB re 1 µPa RMS @ 1 m	(MacGillivray, Racca and Zizheng 2013)
SSS	Operational Frequency 300/600 kHz	~229 dB re 1 µPa RMS @ 1 m	(Geoscience Australia n.d.) (Tritech n.d.) (MacGillivray, Racca and Zizheng 2013)
SBP	Operational Frequency Range 500 Hz -16 kHz	~200 dB re 1 µPa RMS @ 1 m	(Geoscience Australia n.d.) (MacGillivray, Racca and Zizheng 2013)
<b>Continuous sound</b>			
Vessel operations	<1 kHz	165–192 dB re 1 µPa RMS @ 1 m	(Hannay, et al. 2004) (Richardson, et al. 1995)



**Table 9-15: Sound terminology**

Term	Definition
0-to-peak or Peak sound pressure level (PK)	The peak pressure, also called the 0-to-peak pressure, is the range in pressure between zero and the greatest pressure of the signal. It is represented by PK and the unit dB re 1 µPa and summarised as dB PK.
Peak-to-peak sound pressure level (PK-PK)	The peak-to-peak pressure is the range in pressure between the most negative pressure and the most positive pressure of the signal. It is represented by PK-PK and the unit dB re 1µPa or dB re 1 µPa2m2 and summarised as dB PK-PK.
Permanent threshold shift (PTS)	Permanent loss of hearing sensitivity caused by excessive noise exposure.
Received sound levels	The sound level measured at a receiver.
Root mean square sound pressure level (RMS)	The root-mean-square pressure is the square root of the average of the square of the pressure of the sound signal over a given duration. It is represented by sound pressure level (SPL) and the unit dB re 1 µPa and summarised as dB SPL.
Sound exposure level (SEL)	A measure of the sound energy that considers both received level and duration of exposure. SEL is specified in terms of either single pulse (SEL) or a defined accumulation period (SELcum). For this assessment 24hrs has been used for the accumulation period and is shown as SEL24h. Units are dB re 1 µPa2·s or dB re 1 µPa2m2s.
Source sound level	The sound pressure level or sound exposure level measured 1 metre from a theoretical point source that radiates the same total sound power as the actual source.
Temporary threshold shift (TTS)	Temporary loss of hearing sensitivity caused by excessive noise exposure.

### Underwater Noise Impact Levels

Underwater sound produced by the geophysical and geotechnical survey instruments has the potential to affect marine fauna that may pass within close proximity to survey operations. The potential effects to habitats and ecosystems (i.e. benthic invertebrate communities, planktonic communities, KEFs), as well as indirect effects to commercial fisheries associated with the potential disturbance to fishes is also considered.

To assess potential impacts to receptors from underwater acoustic emissions associated with the geophysical, vessel and geotechnical survey activities, published literature was used.

Marine species with the greatest sensitivity to underwater noise are marine mammals (whales and dolphins), turtles and fish (including larvae). Other species that could be affected by underwater noise include sea snakes, sharks and rays and invertebrates.

Impacts to marine fauna can be grouped in the following decreasing order of effect:

mortality or potential mortal injury – physical injury that may result in the death of an animal impairment:

- permanent threshold shift (PTS) – a permanent reduction in the ability of an animal to perceive sound. Recovery is not expected to occur.
- temporary threshold shift (TTS) – a temporary reduction in the ability of an animal to perceive sound. Recovery to pre-exposure levels is expected to occur.
- masking – no change in the ability for an animal to perceive sound, but biologically meaningful sounds may be “drowned out” by anthropogenic noise.

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- behavioural impacts – typically short-term behavioural responses such as avoidance, surfacing etc. Behaviour will return to normal following cessation of the anthropogenic noise.

Table 9-16 to Table 9-19 summarise the thresholds that could result in PTS, TTS and behavioural disturbance as a result of continuous and impulsive noise sources for cetaceans, turtles and fish.

**Table 9-16: Thresholds for PTS, TTS and behavioral response onset for low-frequency (LF) and high-frequency (HF) cetaceans for impulsive and continuous noise**

Receptor	Impulsive			Continuous		
	PTS onset thresholds: SEL <sub>24h</sub> (dB re 1 μPa <sup>2</sup> .s)	TTS onset thresholds: SEL <sub>24h</sub> (dB re 1 μPa <sup>2</sup> .s)	Behavioural response (dB re 1 μPa)	PTS onset thresholds: SEL <sub>24h</sub> (dB re 1 μPa <sup>2</sup> .s)	TTS onset thresholds: SEL <sub>24h</sub> (dB re 1 μPa <sup>2</sup> .s)	Behavioural response (dB re 1 μPa)
LF cetaceans	183	168	160	199	179	120
HF cetaceans	185	170		198	178	

Source: NMFS (2014, 2018; Southall et al., 2019).

**Table 9-17: Thresholds for PTS, TTS and behavioral response onset in marine turtles for impulsive and continuous noise**

Receptor	Impulsive			Continuous		
	PTS onset thresholds: SEL <sub>24h</sub> (dB re 1 μPa <sup>2</sup> .s)	TTS onset thresholds: SEL <sub>24h</sub> (dB re 1 μPa <sup>2</sup> .s)	Behavioural response (dB re 1 μPa)	PTS onset thresholds: SEL <sub>24h</sub> (dB re 1 μPa <sup>2</sup> .s)	TTS onset thresholds: SEL <sub>24h</sub> (dB re 1 μPa <sup>2</sup> .s)	Behavioural response (dB re 1 μPa)
Marine turtles	204	189	166* 175+	220	200	(N) High (I) Moderate (F) Low <sup>#</sup>

Source: PTS and TTS thresholds (Finneran et al., 2017), \* behavioural response threshold (impulsive) (NSF 2011), + behavioural disturbance threshold (impulsive) (McCauley et al. 2000), # behavioural response threshold (continuous) (Popper et al. 2014),

Note: The sound units provided in the table above for continuous noise include: relative risk (high, medium and low) is given for marine turtles at three distances from the source defined in relative terms as near (N – tens of metres), intermediate (I – hundreds of metres) and far (F – thousands of metres) (after Popper et al. 2014).

**Table 9-18: Thresholds for impulsive sounds applicable to fish, sharks and rays**

Type of animal	Mortality and Potential mortal injury	Impairment			Behaviour
		Recoverable injury	TTS	Masking	
Fish: No swim bladder (particle motion detection)	219 dB SEL <sub>24h</sub> or 213 dB PK	216 dB SEL <sub>24h</sub> or 213 dB PK	>186 dB SEL <sub>24h</sub>	(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 <sub>24h</sub> or 207 dB PK	203 dB SEL <sub>24h</sub> or 207 dB PK	>186 dB SEL <sub>24h</sub>	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low

Type of animal	Mortality and Potential mortal injury	Impairment			Behaviour
		Recoverable injury	TTS	Masking	
Fish: Swim bladder involved in hearing (primarily pressure detection)	207 dB SEL <sub>24h</sub> or 207 dB PK	203 dB SEL <sub>24h</sub> or 207 dB PK	>186 dB SEL <sub>24h</sub>	(N) Low (I) Low (F) Moderate	(N) High (I) High (F) Moderate

Note 1: Popper et al. 2014 do not defined an accumulation period. For this assessment 24 hours was used based on the independent, expert peer review by Popper (Santos, 2018) that concluded that a 24-hour period to assess SEL<sub>cum</sub> and any associated effects is likely to be conservative for assessing the potential effects to fish.

**Table 9-19: Thresholds for continuous sounds applicable to fish, sharks and rays**

Receptor	Mortality and potential mortal injury	PTS	TTS	Masking	Behaviour
Fish: no swim bladder	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder not involved in hearing	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder involving hearing	(N) Low (I) Low (F) Low	170 dB rms SPL for 48- hours	158 dB rms SPL for 12- hours	(N) High (I) High (F) High	(N) High (I) Moderate (F) Low

Note: The sound units provided in the table above include relative risk (high, medium and low) is given for fish (all types) at three distances from the source defined in relative terms as near (N – tens of metres), intermediate (I – hundreds of metres) and far (F – thousands of metres) (after Popper et al. 2014).

**Table 9-20: Thresholds for continuous sounds applicable to fish, sharks and rays**

Receptor	Mortality and potential mortal injury	PTS	TTS	Masking	Behaviour
Fish: no swim bladder	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder not involved in hearing	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder involving hearing	(N) Low (I) Low (F) Low	170 dB rms SPL for 48- hours	158 dB rms SPL for 12- hours	(N) High (I) High (F) High	(N) High (I) Moderate (F) Low

Note: The sound units provided in the table above include relative risk (high, medium and low) is given for fish (all types) at three distances from the source defined in relative terms as near (N – tens of metres), intermediate (I – hundreds of metres) and far (F – thousands of metres) (after Popper et al. 2014).

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## 9.5.2 Description and Evaluation of Impacts

The Operational Area is located in waters approximately 160 to 250 m deep. Fauna that may be present within the Operational Area will consist predominantly of pelagic and demersal species of fish, with migratory species including cetaceans (including blue whales), turtles and whale sharks transiting the area seasonally.

The Operational Area overlaps with a BIA for whale sharks, which broadly follows the 200 m isobath (Section 7.2.8), and whale sharks are expected to be seasonally present, transiting through the project area, mainly from July to November, as part of their broad migratory movement.

### 9.5.2.1 Physical Environment

There are no impacts on the physical environment protected under the EPBC Act such as air or water quality. Noise impacts are limited to the biological environment as discussed below.

### 9.5.2.2 Ecosystems, Communities and Habitats

#### Benthic Communities

Given the frequency spectrum and intensity of noise generated during the petroleum activity, no impacts to benthic communities as a consequence of underwater noise are expected to occur. Modelling of sound levels beneath SBP, MBES and SSS instruments (Zykov, 2013; McPherson and Wood 2017) indicates that sound levels on the seabed will not result in any lethal or sub-lethal effects on benthic invertebrates.

Planktonic communities comprise a diverse range of taxa, which will differ in their potential to be impacted by underwater noise. Many species of pelagic and demersal fish have a planktonic larval stage. Modelling studies by the CSIRO indicate that planktonic communities are highly dynamic and have the potential to recover rapidly following disturbance (Richardson et al. 2017). Experiments have shown mixed results of larval stages to underwater noise. For example, experiments on several species of fish larvae and lobster larvae did not detect significant effects as a result of high intensity impulsive noise (Bolte et al. 2012; Day et al. 2016; Payne et al. 2009).

Impacts to planktonic larvae have not been reliably demonstrated under conditions analogous to those that will be encountered during this petroleum activity, being orders of magnitude less than that of experimental designs referenced above, and are expected to be negligible in the context of naturally variability. Therefore, impacts to marine habitats, primary and secondary production (plankton) and ecosystems are not expected. Furthermore, the more intensive noise sources are of limited duration (e.g. vessel using DP and survey duration), which limits the exposure of planktonic organisms. As such, the residual impact consequence to planktonic communities are considered to be Slight (Magnitude -1, Sensitivity – L).

#### Shoals and Banks

There are no noise generating activities that will credibly impact shoals and banks due to the distance to these features. The closest receptor is Goeree Shoal – located approximately 13 km north-west of the Operational Area.

#### Offshore Reefs and Islands

There are no noise generating activities that will credibly impact offshore reefs and islands due to the distance to these features. The closest receptor is Browse Island – located approximately 40 km from the Prelude end of Operational Area.

#### WA and NT mainland coastline

There are no noise generating activities that will credibly impact the WA and NT mainland due to the distance to these features. The closest mainland landfall is approximately 200 km south east from the Operational Area.

#### Key Ecological Features

The only KEF occurring within the Operational Area is the Continental Slope Demersal Fish Communities, covering a vast area of approximately 33,182 km<sup>2</sup>, located along a 7km section of the KEF. These are a high diversity of demersal fish assemblages on the Australian continental slope featuring more than 500 fish species, 76 of which being endemic, which makes it the most diverse slope bioregion in the whole of Australia.

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Based on the assessment above there is no potential for permanent, temporary or behavioural impact to demersal fish with moderate potential for masking fish choruses only over the short duration (less than a day) of seabed survey activities within the Continental Slope Demersal Fish Communities KEF. Potential impacts to the demersal fish communities are therefore considered slight. Other KEFs are too distant from the Operational Area to be credibly impacted by underwater noise from the petroleum activity.

### 9.5.2.3 Threatened Species and Ecological Communities

#### Marine Mammals

Most cetacean species use sound to communicate (e.g. humpback whale calls) or perceive their environment (e.g. echolocation of prey). This reliance on underwater noise, and their high conservation value, makes cetaceans of concern when assessing potential impacts from underwater noise. Low frequency cetaceans are expected to be most vulnerable to underwater noise from vessel operations (cavitation and plant noise) due to the frequency spectra of these noise sources overlapping the functional hearing range of these species (approximately 7 Hz to 30 kHz). Several low frequency cetaceans (blue, humpback, sei, fin and Bryde's whales) were identified as potentially occurring within the Operational Area (Section 7.2.8). Noise monitoring in the Timor Sea for the Barossa development indicated pygmy blue and Bryde's whales are the most likely to occur (McPherson et al. 2016, Thums et al 2022). Detection of low-frequency cetaceans calls were not constant, but occurred sporadically, often in groups or sets of calls.

High frequency cetaceans are also vulnerable to underwater noise, although their hearing range means they are more vulnerable to noise frequencies overlapping their functional hearing range (approximately 150 Hz to 160 kHz).-High frequency cetaceans include most toothed whales, dolphins and porpoises and a number of species of high frequency cetaceans were identified as potentially occurring within the Operational Area and adjacent Planning Area (Section 7.2.8). Noise monitoring in the Timor Sea indicates-high frequency cetaceans are present year-round (McPherson et al. 2016).

The high-frequency micro-pulses produced by MBES and SSS will rapidly attenuate outside of the immediate beam (MacGillivray et al., 2013; Zykov, 2013). The high operating frequencies of these instruments also places the majority of sound frequencies above the auditory range of most marine fauna species. Dolphins and other high-frequency cetaceans have peak hearing sensitivity up to 110 kHz, with potential for some limited hearing ability up to approximately 160 kHz (NMFS 2018). They may therefore be able to detect a small amount of the sound energy from some MBES and SSS instruments in the lower operating frequency ranges (MacGillivray et al., 2013; Zykov, 2013). Modelling of the propagation of high frequency sound from MBES and SSS with similar source frequency characteristics to those proposed for the Crux geophysical survey has been undertaken by Zykov (2013) and MacGillivray et al. (2013). The modelling results indicate that the sound emissions outside of the main beams are below the threshold levels for PTS or TTS. Sound levels that may result in behavioural effects are likely limited to within tens of metres, but potentially up to a few hundreds of metres from the sound source for high-frequency cetaceans (Zykov, 2013; MacGillivray et al., 2013).

Acoustic modelling of sub-bottom profilers by Zykov (2013), MacGillivray et al. (2013) and McPherson and Wood (2017), indicates that limited horizontal sound propagation occurs outside of the main directional beams of sound. The modelling studies also indicate that SEL<sub>24h</sub> thresholds for PTS (as outlined in Table 9-16) are not exceeded. The potential for TTS resulting from SEL<sub>24h</sub> exposures is limited to a few metres from the moving sound source (Zykov, 2013; McPherson and Wood 2017), which is not considered to be a credible exposure for mobile marine fauna. Exceedance of the 160 dB re 1 µPa SPL behavioural response threshold would also be limited to within a few tens of metres, up to a maximum of approximately 150 m (Zykov, 2013; McPherson and Wood 2017).

quencies detectable by marine mammals however the sound levels at the source itself will be of magnitude that could cause at worst a TSS for an animal happening to be in a very close proximity (within tens of meters of the vessel for an extended duration). The most likely impact consequence at these levels is a behavioural response such as avoidance. For a PTS impact to occur, the mammal should be swimming within metres of the vessel for more than 24 hours, which is a non-credible scenario.

Based on the assessment above, potential impacts from underwater noise generated during the Crux seabed survey activities are expected to be limited to behavioural effects to cetaceans within tens or hundreds of metres from the survey activities. The potential for impact is also of short duration (approximately 15 days). Such localised, temporary effects and potential deviations are not expected to be significant given the transient nature of cetaceans or in the context of long distance migrations undertaken by pygmy blue whales or other



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migratory species that might be present. It is therefore concluded that noise emissions from the Crux seabed survey could potentially cause only a slight residual impact on marine mammals (Magnitude -1, Sensitivity - M).

### Marine Reptiles

Marine reptiles such as turtles and sea snakes are not known to be particularly sensitive to underwater noise. Research on marine turtles suggests that functional hearing is concentrated at frequencies between 100 and 600 Hz (which is a subset of the low frequency cetacean range). Several turtle species were identified as likely to occur within the Operational Area (Section 7.2.8), although no critical habitat or BIAs overlap the Operational Area. The closest critical marine turtle habitats include green turtle nesting habitat some 17 km from the Operational Area and foraging habitat some 39 km from the Operational Area.

Sound levels that are likely to be produced by various different SBP instruments are predicted to fall below the 166 dB re 1 µPa SPL threshold (Table 9-17) within a few metres or tens of metres (Zykov, 2013; McPherson and Wood 2017). The high-frequency sounds produced by the MBES and SSS are expected to be above the auditory range of marine turtles and so behavioural impacts are not expected to occur.

Localised and short-term behavioural disturbances may result from the geophysical survey, affecting individual animals (potentially exposed within tens of metres of the passing geophysical survey vessel for a brief period). No impacts to animals in BIAs or habitat critical are expected.

Impacts from marine vessel noise emissions are also expected to be Slight (Magnitude -1, Sensitivity - M) due to the large separation distance between the Operational Area and the closest marine turtle habitats and the continuous nature and sound levels of marine vessel noise at source. Impacts on sea snakes from all sources discussed above are similarly expected to be slight with reference to response levels for fish.

### Fish, Sharks and Rays

The Operational Area is not expected to host highly abundant or diverse assemblages of fish, sharks or rays. Whale sharks may traverse the Operational Area and broadly the Planning Area with a BIA for foraging whale sharks located 33 km from the Operational Area at the Prelude end and overlapping the Operational Area in the northern part. However, it is expected that whale shark presence within the close vicinity of the vessel where the activity is occurring would be transitory and of short duration. This is consistent with tagging studies of whale shark movements which show continual movement of whale sharks in deeper, open offshore waters (Meekan & Radford 2010, Wormersley et al. 2022).

The potential for injury or TTS effects to fish resulting from single impulse or accumulated exposures to SBP, MBES and SSS sound is limited to within 1–2 m beneath or to the side of the sound source (Zykov, 2013; McPherson and Wood 2017). Single impulse exposures at this range are highly unlikely to occur and accumulated exposures over several hours at this range are not credible. Potential impacts to fish are therefore likely to be limited to localised and temporary behavioural changes. The criteria suggested by Popper et al. (2014) in Table 9-18 are based on exploration seismic surveys and are therefore highly conservative for the low energy geophysical equipment proposed for this activity. Therefore, the potential behavioural effects to the demersal and pelagic fish species in the Operational Area (which are primarily sensitive to close-range particle motion changes rather than sound pressure) are likely to be limited to within tens of metres of the geophysical sound sources proposed for this activity.

Impacts to protected species of sharks and rays, such as whale sharks, will also be negligible given that sharks do not possess swim bladders and are not sensitive to sound pressure. The potential for behavioural effects within just tens of metres of the geophysical survey instruments indicates that behavioural effects will not be significant and whale sharks are unlikely to be diverted from migration routes.

Given the highly mobile nature of fish, sharks and rays and their continual sightings in the Operational Area around the hull of the adjacent Prelude FLNG, it is concluded that continuous noise sources from the petroleum activity will have at most a slight residual impact consequence (Magnitude -1, Sensitivity – L) on these resident and transient populations.

#### 9.5.2.4 Socio-Economic and Cultural Environment

No reasonably foreseeable adverse impacts from noise emissions have been identified on the socio-economic environment.



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Survey activities will not overlap with or exclude fishers from fishing areas known to be used by Indonesian traditional fishers within the MOU 74BOX at Scott or Seringapatam Reef.

Ashmore Reef and Carter Island AMP boundaries are located 127 km and 80 km, respectively from the Operational Area. Additionally, single impulse sound levels of the amplitude used during the activities used in this survey will not result in accumulated SEL from the petroleum activity at these locations to approach the acoustic impact threshold for TTS onset in fish (186 dB re 1  $\mu$ Pa<sup>2</sup>.s), therefore, acoustic impacts are not expected to impact target fish species and thus Indonesian traditional fisheries catch.

The estimated received sound levels within the reef are not likely to exceed acoustic impact thresholds for divers [i.e. 145 dB re 1  $\mu$ Pa (SPL) as they are too distant from the noise source to be potentially impacted.

At most, the impact to any social receptor is considered to be slight from the petroleum activities described in Section 6.

#### 9.5.2.5 Cumulative Impacts

The cumulative effect of the survey activities occurring near the adjacent Prelude FLNG, are not expected to significantly add to the predicted noise impacts. Seabed survey activities will be conducted over a very short timeframe (approximately 15 days) and combined sound fields are likely to result in a negligible increase in behavioural disturbance to marine fauna over the period of activities.

### 9.5.3 Impact Assessment Summary

Table 9-21 lists the highest residual impact consequence ranking of the relevant environmental receptor groups.

**Table 9-21: Noise Evaluation of Residual Impacts**

Environmental Receptor	Magnitude	Sensitivity	Residual Impact Consequence
<b><i>Evaluation – Planned Impacts</i></b>			
Physical Environment	N/A	N/A	N/A
Ecosystems, Communities and Habitats	-1	M	Slight
Threatened Species and Ecological Communities	-1	M	Slight
Socio-Economic and Cultural Environment	N/A	N/A	N/A



**9.5.4 ALARP Assessment and Environmental Performance Standards**

**Table 9-22: ALARP Assessment and Environmental Performance Standards**

Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Elimination	Timing the activity to eliminate sound impacts to pygmy blue whales and humpback whales.	No	The activity must be carried out in the 2 <sup>nd</sup> half of 2022, subject to vessel availability and environmental approvals. The activity cannot be carried out later than this as it will impact project schedules which significantly affects the value the project can deliver. Subject to approvals being granted in time, it is possible the timing may be suitable to avoid migration period for the pygmy blue whale. Regardless, the operational area is not within the Blue Whale BIA.	N/A	N/A	N/A
Substitution	N/A	N/A	No additional or alternative control measures have been identified for this risk for the activities.	N/A	N/A	N/A
Engineering	N/A	N/A	No additional or alternative control measures have been identified for this risk for the activities.	N/A	N/A	N/A
Administrative and Procedural Controls	Survey vessel interactions with threatened and migratory species to follow the of EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) and the Australian National Guidelines for Whale and Dolphin Watching 2017 (DoEE 2017).	Yes	The EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) and the Australian National Guidelines for Whale and Dolphin Watching 2017 (DoEE 2017) are recognised as the industry standard for minimising disturbance due to physical presence and noise to whales and dolphins and will be applied to other species as relevant, .i.e. turtles and whale sharks.	3.1	The survey vessel will comply with EPBC Regulations 2000 Part 8, Division 8.1 Interacting with cetaceans and the Australian National Guidelines for Whale and Dolphin Watching.	Incident report form used to record breaches of requirements outlined in the EBPC Regulations 2000 and Australian National Guidelines for Whale and Dolphin Watching.



Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Administrative and Procedural Controls	EPBC Policy Statement 2.1 – Part B (Additional management measures) – use of a Marine Mammal Observer (MMO) for the geophysical investigations	No	<p>Improved ability to spot and identify marine fauna at risk of impact from underwater sound generated by activity equipment.</p> <p>Several thousand dollars to contract an MMO (based on day rate, travel and accommodation and activity duration).</p> <p>The use of MMOs is covered by Part B (Additional Management Procedures) of the policy statement. Adoption of Part B (either all or parts thereof) is recommended in areas and/or seasons that have a moderate to high likelihood of encountering whales. The likelihood of encountering whales in the activity area during the activity window is low (outside of the known pygmy blue whale and humpback whale migration periods with no whale BIAs within the Operational Area), so the use of an MMO is not considered necessary. Part A.2 of the policy statement states that vessel crew on the vessel can implement EPBC Policy Statement 2.1.</p>	N/A	N/A	N/A
Administrative and Procedural Controls	EPBC Policy Statement 2.1 – Part B (Additional management measures) – implemented by trained crew members during geophysical survey activities	Yes	<p>Part A.2 of the policy statement states that vessel crew on the vessel can implement EPBC Policy Statement 2.1.</p> <p>Although it has been demonstrated that the likelihood of encountering sensitive species in the operational area during the activity window is low (outside of the known pygmy blue whale and humpback whale migration periods with no whale or turtle BIAs within the Operational Area), given the short duration of the activity and the availability of existing personnel on board to implement</p>	3.2	<p>A.3.1: Pre Start-Up Visual Observations</p> <ul style="list-style-type: none"> <li>Pre-start visual observations out to 3 km for 30 minutes.</li> <li>If a whale or turtle is observed during the pre-start observations, delay start up for 30 minutes.</li> <li>If no whales or turtles are observed, activate acoustic equipment (soft start is not possible on the MBES, SSS</li> </ul>	Daily operations reports verify procedure was followed as required.



Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
			this control, it was consider best practice to adopt.		or SBP, nor is it possible for the shallow seismic source).	
				3.3	A.3.4: Operations procedure <ul style="list-style-type: none"> <li>If a whale or turtle is observed within the shutdown zone of the source (500 m), the acoustic source will be shut down.</li> <li>Acoustic equipment can be reactivated after the whale or turtle has been observed to move outside the low power zone or if the whale has not been sighted for 30 minutes.</li> </ul>	Daily operations reports verify procedure was followed as required.
				3.4	A.3.6 Night-time and low visibility procedure <ul style="list-style-type: none"> <li>Wherever practicable, commence operations during daylight hours.</li> <li>Night-time and low visibility operations will not commence if there have been 3 or more whale-instigated shutdown in the preceding daylight hours.</li> </ul>	Daily operations reports verify procedure was followed as required.
				3.5	Environmental awareness induction will be provided to vessel crew by Shell prior to start of the activity regarding their EPBC Policy Statement 2.1 obligations. This includes:	Induction presentation and signed attendance sheet. Photos of educational material on the vessel.



Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
					<ul style="list-style-type: none"><li>• Providing the policy statement to the vessel Master for reference.</li><li>• Providing photos/pictures of the different megafauna expected in the area at the time of the geophysical activity, including in the form of posters for display on the vessel.</li><li>• Instructions on the pre-start, shut-down and re-start requirements.</li><li>• Instructions on distance estimation, including the specification that marine binoculars with reticles are used.</li><li>• Instructions on how to detect marine megafauna based on observations on the water surface and surrounds.</li><li>• Instructions on data to be recorded for marine megafauna sightings, including time of observation, type and number of species observed and estimated location coordinated.</li><li>• Provision of shutdown and observation reporting forms</li></ul>	



Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
					and instructions on completing the forms.	
				3.6	EPBC Act Policy 2.1 – Part A.4 Shell will report cetacean sightings online to the DAWE within 2 months of activity completion (through the online Cetacean Sightings Application where possible or via email).	Evidence of submission of completed records to DAWE within 2 months of activity completion.
Administrative and Procedural Controls	Undertake site- specific acoustic modelling as per the Approved Conservation Advice for Megaptera noveangliae (humpback whale)	No	Increase the knowledge of potential impacts. Several thousand dollars to undertake site-specific acoustic modelling. There is no environmental benefit with this control measure as there are no humpback whale BIAs in or near the activity area.	N/A	N/A	N/A
Administrative and Procedural Controls	Infield environmental noise monitoring	No	Marine noise monitoring alone will not prevent impact to marine fauna, but will provide the noise signature of the petroleum activities.	N/A	N/A	N/A



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### 9.5.5 Acceptability of Impacts

**Table 9-23: Acceptability of Impacts - Noise**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Ecosystems, Communities and Habitats	Benthic Communities	No significant impacts to benthic habitats and communities.  Impacts to non-sensitive benthic communities limited to a maximum of 5% of the project area.	Yes	Benthic habitat surveys in the Operational Area did not indicate the presence of particularly diverse or sensitive benthic communities. Benthic habitats associated with high value sensitive benthic communities e.g. named reefs, banks and shoals are too distant to be affected by noise (i.e. Browse Island is approximately 39 km from the Operational Area and Echuca Shoal is approximately 61 km from the Operational Area). Given the frequency spectrum and intensity of noise generated during the Crux seabed survey and the large separation distances to the nearest high value sensitive benthic communities, no impacts to benthic communities as a result of underwater noise are expected to occur.
	KEFs	No significant impacts to environmental values of KEFs.	Yes	The Continental Slope Demersal Fish Communities KEF, located within the Operational Area over approximately 7 km of the survey corridor. The noise levels at this point indicate no potential for permanent, temporary or behavioural impact to fish with moderate potential for masking fish choruses only. Other KEFs are too distant from the Operational Area to be credibly impacted by underwater noise.
Threatened Species and Ecological Communities	Fish Sharks and Rays	No mortality or injury of threatened or migratory MNES fauna from the Crux project.  Management of aspects of the Crux project must be aligned to conservation advice, recovery plans and threat abatement plans published by the DoEE.  No significant impacts to threatened or migratory MNES fauna.	Yes	No exceedance of the permanent injury threshold for any category of fish, sharks and rays (including whale sharks) is predicted to occur in the Operational area and beyond and ambient underwater noise levels would fall below the relevant temporary hearing threshold shift criteria for fish is limited to within 1–2 m beneath or to the side of the sound source and is not considered credible. Masking vocalisation and changes to behaviour could occur only within tens and hundreds of metres from the sound source



Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
				<p>Impacts to widely distributed planktonic communities in the Operational Area have been assessed as 1-Slight.</p> <p>The assessment of available control are aligned to conservation advice, recovery plans and threat abatement plans.</p> <p>Given this there are not significant predicted impacts to threatened or migratory MNES fauna.</p>
	Marine Mammals Marine Reptiles	<p>No mortality or injury of threatened or migratory MNES fauna from the Crux project.</p> <p>Management of aspects of the Crux project must be aligned to conservation advice, recovery plans and threat abatement plans published by the DoEE.</p> <p>No significant impacts to threatened or migratory MNES fauna.</p>	Yes	<p>Noise levels emitted from the seabed survey activities have been assessed as potentially able to cause a slight impact on threatened or migratory marine fauna. Potential impacts will be limited to temporary behavioural disturbance for the short duration of the activity (up to 15 days).</p> <p>Turtle nesting and inter-nesting habitats are at least 20 km from the Operational area and known whale migration routes and congregation areas are hundreds of kilometres away. Noise emissions would therefore have no significant impact on threatened and migratory species.</p> <p>The assessment of available controls are aligned to conservation advice, recovery plans and threat abatement plans.</p> <p>Given this there are not significant predicted impacts to threatened or migratory MNES fauna.</p>
Socio-economic and Cultural Environment	Commonwealth Marine Area	No significant impacts to the Commonwealth marine area.	Yes	No significant impacts will occur to commonwealth marine areas as result of the petroleum activities.
	World Heritage Properties	No impacts to world heritage values.	Yes	No impacts to world heritage values will occur as a result of the petroleum activities.
	National Heritage Places	No impacts to national heritage values.	Yes	No impacts to national heritage values will occur as a result of the petroleum activities.



Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
	Commonwealth Heritage Places	No impacts to Commonwealth heritage values	Yes	No impacts to Commonwealth heritage values will occur as a result of the petroleum activities.
	Declared Ramsar Wetlands	No impacts to ecological values of Ramsar wetlands	Yes	No impacts will occur to Ramsar wetlands
	Marine Parks	No impacts to the values of marine parks	Yes	No impacts will occur to values of marine parks nearest to the petroleum activities.
	Commercial fisheries	No interference with fishing to a greater extent than is necessary for the exercise of right conferred by the titles granted to carry out petroleum activities. No negative impacts to exploited fisheries resource stocks which result in a demonstrated direct loss of income. Temporary displacement of commercial fishing activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	No negative impacts to exploited fisheries resource stocks which result in demonstrated direct loss of income given the short duration of the survey, deep depths of the survey – distant from high activity fishery areas and limited footprint (mostly within ~100m or so of the source) of noise impacts from the geophysical survey activities.
	Traditional Indigenous fishing	Temporary displacement of traditional fishing activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	No displacement of commercial fishing will occur as a result of the petroleum activities.
	Marine archaeology	No disturbance to historical shipwrecks is acceptable.	Yes	No disturbance to historical shipwrecks will occur as a result of the petroleum activities
	Tourism and recreation	No negative impacts to nature-based tourism resources resulting in demonstrated loss of income. Temporary displacement of tourism activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	No impacts to tourism and recreation activities will occur as a result of the activities due to the distant offshore nature, limited duration (<30 days) and limited tourism activities within the broader region which exists.
	Military/defence	Temporary displacement of defence activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	No impacts to defence activities will occur as a result of the activities due to the distant offshore nature, limited duration (up to 15-days) and limited defence activities within the broader region which exists.
	Ports and commercial shipping	Temporary displacement of commercial shipping within the Crux project area	Yes	No impacts to commercial shipping activities will occur as a result of the activities due to the distant offshore nature, limited

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Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
		(excluding petroleum safety zones) is acceptable.		duration (up to 15 days) and low shipping activity within the operational area which exists.
	Offshore petroleum exploration and operations	Temporary displacement of petroleum exploration activities and operations within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	No impacts to other petroleum activities will occur as a result of the petroleum activities in this EP.
	Indonesian and Timor-Leste coastlines	No impacts to Indonesian or Timor-Leste coastlines are acceptable.	Yes	No impacts to Indonesian or Timor-Leste coastlines will occur as a result of the petroleum activities.

The assessment of impacts from noise determined the worst-case residual ranking of Slight or lower (Table 9-23). As outlined above, the acceptability of the impacts from noise associated with the petroleum activities have been considered in the context of:

**Principles of ESD**

Impacts from noise emissions are consistent with the principles of ESD based on the following points:

The noise emissions aspect does not degrade the biological diversity or ecological integrity of the Commonwealth Marine Area and significant impacts to MNES are not anticipated to occur.

The precautionary principle has been applied, and since the last revision of this EP the most recent and comprehensive scientific literature compilation (Kent et al, 2016) and the most recent international guidelines on noise impacts (Popper et al. 2014, NMFS 2018, Southall 2019) have been reviewed and referenced to ensure latest research and knowledge are taken into account in the evaluation of environmental impacts.

**Relevant Requirements**

Management of impacts from noise emissions is consistent with relevant legislative requirements, including:

Assessment of noise impacts is guided by the latest scientific research in defining impact thresholds.

Management of noise impacts is consistent with policies, strategies, guidelines and conservation advice (refer to Table 9-24).

Vessel interactions with threatened and migratory species to follow the EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) and the Australian National Guidelines for Whale and Dolphin Watching 2017 (DoEE 2017), i.e.

- o Vessels will not deliberately approach closer than 50 m to a dolphin, turtle or whale shark; 100 m for an adult whale; 300 m for a whale calf; and 150 m for a dolphin calf.
- o If the whale, dolphin, turtle or whale shark shows signs of being distressed, the survey vessel will immediately withdraw from the caution zone at a constant speed of less than 6 knots.

EPBC Policy Statement 2.1 – Part B (Additional management measures)

**Matters of National Environmental Significance**

**Threatened and Migratory Species**

The evaluation of noise impacts indicates significant impacts to threatened and migratory species will not credibly result from noise emissions from the Crux seabed survey.

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Alignment of petroleum activities with management plans, recovery plans and conservation advice for threatened and migratory fauna is provided in Table 9-24.

### Commonwealth Marine Environment

Impacts from the noise aspect of the petroleum activity on the Commonwealth Marine Environment will not exceed any of the significant impact criteria provided in Table 9-23.

**Table 9-24: Summary of Alignment of the Impacts from the Noise Aspect of the petroleum activities with Relevant Requirements for EPBC Threatened Fauna**

Matters of National Environmental Significance	MNES Acceptability Considerations (EPBC Management Plans/Recovery Plans/Conservation Advice)	Demonstration of Alignment as Relevant to the Project
Threatened and Migratory Species - Marine Mammals	Conservation advice on sei whale ( <i>Balaenoptera borealis</i> ) (DoE 2015c)	<p>Vessel interactions with threatened and migratory species to follow the of EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) and the Australian National Guidelines for Whale and Dolphin Watching 2017 (DoEE 2017).</p> <p>Activities carried out consistent with EPBC Policy Statement 2.1 – Part B (Additional management measures).</p> <p>A noise assessment consistent with the recommendations of the Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing (NOAA 2018) was undertaken.</p>
	Conservation advice on fin whale ( <i>Balaenoptera physalus</i> ) (DoE 2015d)	
	Conservation management plan for the blue whale: A recovery plan under the Environment Protection and Biodiversity Conservation Act 1999 2015–2025 (Commonwealth of Australia 2015a)	
	Conservation advice on humpback whale ( <i>Megaptera novaeangliae</i> ) (DoE 2015b)	
Threatened and Migratory Species - Marine Reptiles	Significant impact guidelines for Critically Endangered, Endangered, Vulnerable and Migratory species (Table 8-1).	The evaluation of environmental impacts indicates that impacts from noise emissions on threatened or migratory marine reptiles are slight and would not constitute a significant impact. As such, the petroleum activities do not exceed any of the significant impact criteria for Threatened and Migratory marine reptile species provided in Table 8-1.
	Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017)	Acute and chronic noise pollution has been identified as a threat in the Recovery Plan for Marine Turtles (DoEE 2017), however there are no specific actions in the Plan in relation to noise pollution, except a recognised need to conduct additional research on impacts of noise on turtles. A noise assessment consistent with the recommendations of the Sound exposure guidelines for fishes and sea turtle was undertaken.
Other Species – Sharks and Rays	Conservation advice on whale shark ( <i>Rhincodon typus</i> ) (DoE 2015e)	A noise assessment consistent with the recommendations of the Sound exposure guidelines for fishes and sea turtle was undertaken. This considered the potential impacts of underwater noise on whale sharks.
Commonwealth Marine Environment	Significant Impact Guidelines for the Commonwealth marine environment (Table 8-1)	The evaluation of environmental impacts indicates that the noise emissions aspect of petroleum activities will not exceed the Commonwealth marine environment significant impact criteria provided in Table 8-1.

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### External Context

There have been no objections or claims raised by Relevant Persons to date around noise emissions. Shell's ongoing consultation program will consider feedback and claims or objections made by Relevant Persons throughout the life of this EP. Where new impacts or risks are established these will be subject to the MOC process described in Section 10.1.4.

### Internal Context

Shell has also considered the internal context, including Shell's environmental policy and ESHIA requirements. The environmental performance outcomes, and the controls which will be implemented, are consistent with the outcomes from Relevant Person consultation for the petroleum activity and Shell's internal requirements.

### Acceptability Summary

The assessment of impacts and risks from noise determined the residual impact rankings were Slight (Table 9-22). As outlined above, the acceptability of impacts from noise have been considered in the context of:

- The established acceptability criteria for the noise aspect
- ESD
- Relevant requirements
- MNES
- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

Shell considers residual impacts of noise of Slight or lower to be acceptable if they meet legislative and Shell requirements. The discussion above demonstrates that these requirements have been met in relation to noise.

Based on the points discussed above, Shell considers the impacts from noise associated with the petroleum activities to be acceptable.

## 9.5.6 Environment Performance Outcome

Environment Performance Outcome	Measurement Criteria
No injury or mortality to listed Threatened or Migratory MNES species as a result of noise emissions.	Fauna observations and incident reports demonstrate no injury or mortality of listed Threatened or Migratory species as a result of noise emissions within the Operational Area.

## 9.6 Disturbance to Seabed

### 9.6.1 Aspect Context

During the seabed survey activities, numerous activities will impact the seabed. This includes activities which involve drilling, coring and related activities.

### 9.6.2 Description and Evaluation of Impacts

#### 9.6.2.1 Physical Environment

Seabed survey activities such as drilling and coring type activities will disturb approximately 195 m<sup>2</sup> of the seabed in total.

#### Water Quality

The potential for activities to increase turbidity is based on the possibility of sediment resuspension.

Any impacts to water quality (turbidity) from seabed disturbance are expected to be restricted to highly localised and short-term sediment plumes. Sediment plumes may result in a slight and temporary decrease in



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water quality due to increase in suspended sediments. These temporary impacts to water quality are expected to have no credible environmental damage or effects.

### Sediment Quality

Impacts to sediment quality from seabed disturbance are considered to have no environmental damage or effects. Significant changes to physical properties, such as particle size distribution and geological origin, are not expected to occur due to the small-scale, localised and infrequent nature of the associated activities.

### 9.6.2.2 Ecosystems, Communities and Habitats

#### Benthic communities

The seabed within the Operational Area has low density of epibenthic communities due to the low variance of sea floor topography and absence of hard substrates limiting habitat for epibenthic organisms (Baker et al. 2008; Heyward & Smith 1997). This has been determined for the operational area from benthic surveys, side scan sonar, 3D seismic survey and geotechnical data collected across the permit area (Shell 2009 and 2018).

The soft seabed comprises of very soft siliceous carbonate silts, which has been shown to support a high diversity but low abundance community of infaunal assemblages. The likely impacts to the benthic communities from seabed disturbance include smothering and temporary disturbance but soft sedimentary communities have been shown to respond rapidly to disturbance and impacts are thus expected to be slight and short-lived (Shell 2009).

The habitats associated with these communities are broadly distributed in the wider region and are not considered to be unique or highly sensitive. The set-down and recovery of the geotechnical equipment may result in the disruption of a relatively small area of soft sediment habitats (approximately 195 m<sup>2</sup>). These impacts are restricted to the contact area associated with the mounting frames of the geotechnical equipment and the geotechnical sampling equipment when operated.

Given the widespread extent of similar habitat, the low sensitivity of the benthic habitat within the Operational Area, and the high likelihood that temporarily affected areas will recover in a short timeframe, the environmental effects are considered to be of minimal ecological significance. Thus, the overall residual impact consequence level is ranked as Slight (Magnitude -1, Sensitivity – L).

No other environmental receptors are consider relevant to the aspect Disturbance to Seabed, due to the limited nature and scale of the activity.

#### Socio-Economic and Cultural Environment

##### *Cultural Heritage Features and Values*

There are currently no underwater cultural heritage artifacts within the operational area for this EP. This is supported by recent study of the Crux Project area by Cosmos Archaeology, which found that there are not predicted to be any impacts on underwater cultural heritage artifacts from First Nations from the Crux Project (Cosmos Archaeology, 2023). Therefore, there are currently no predicted impacts to any known or unknown underwater cultural heritage artifacts. During the Relevant Persons consultation, no specific cultural heritage values were identified within the operational area related to seabed disturbance, therefore there are no predicted impacts to cultural heritage values.

No other environmental receptors are considered relevant to the aspect Disturbance to Seabed, due to the limited nature and scale of the activity.

### 9.6.3 Impact Assessment Summary

**Table 9-25: Benthic Disturbance Evaluation of Residual Impacts**

Environmental Receptor	Magnitude	Sensitivity	Residual Impact Consequence
<b><i>Evaluation – Planned Impacts</i></b>			
Physical Environment	0	L	No Impact

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Ecosystems, Communities and Habitats	-1	L	Slight
Threatened Species and Ecological Communities	N/A	N/A	N/A
Socio-Economic and Cultural Environment	0	L	No Impact



9.6.4 ALARP Assessment and Environmental Performance Standards

Table 9-26: ALARP Assessment and Environmental Performance Standards

Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Elimination	N/A	N/A		N/A	N/A	N/A
Substitution	N/A	N/A		N/A	N/A	N/A
Engineering	N/A	N/A		N/A	N/A	N/A
Administrative and Procedural Controls	<p>Shell is carrying out an underwater archaeology survey using historic data sources such as geophysical and geotechnical reports. The assessments has several objectives which will be delivered iteratively throughout the second half of 2023. Key work packages to be delivered includes;</p> <p>Assessment of historical seabed levels.</p> <p>High level data on historical context to identify areas of medium to high likelihood of human occupation and therefore higher likelihood of encountering sub-surface tangible cultural heritage.</p>	Yes	<p>Current understanding of the occupation (in terms of site variety and density) of now submerged lands of north-western Australia is extremely limited and can only be predicted using comparable terrestrial analogues.</p> <p>As of September 2023, Shell has received preliminary results for the underwater cultural heritage assessment scope of work. Specifically, the 'First Nations Underwater Cultural Heritage Impact Assessment', which has shown "<i>The proposed [Crux Foundation Project] seabed impacts take place below 130 m LAT. This means that there should be no impact to tangible cultural heritage values.</i>"(Cosmos Archaeology, 2023).</p>	4.1	Shell will carry out an underwater cultural heritage assessment for tangible artifacts in 2023. If this study outcomes require updates to the EP post acceptance by NOPSEMA, this will be done in accordance with regulation 17(6).	Evidence of assessment of the need to revise the EP under regulation 17(6) and the associated assessment under regulation 17(6), if required.
Administrative and Procedural Controls	Underwater heritage chance find process	Yes	A chance find process will be implemented where any seabed direct disturbance takes place on the Crux project. This will be implemented where ad hoc evidence such as ROV footage is viewed which the operator suspect may be a potential cultural heritage artifact. This will trigger seabed disturbance works to stop works until a cultural heritage expert can review the footage and confirm if the identified object is a cultural heritage artifact. In	4.2	Shell will implement a chance find process for unknown tangible underwater cultural heritage artifacts.	Records verify relevant project personnel (e.g. ROV operators) are trained in the chance find process prior to the activity commencing within the



Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
			<p>the event the object is confirmed to be a cultural heritage artifact, works will be stopped within an appropriate exclusion area until such point that relevant approvals are obtained from DCCEEW under the Underwater Cultural Heritage Act. If the object is confirmed not to be, or likely not to be, a cultural heritage artifact, works may resume.</p> <p>Given the preliminary results of the Crux Project First Nations Underwater Cultural Heritage Impact Assessment have shown that there are no potential impacts to tangible cultural heritage features within the Crux Project area, implementing a chance find process for First Nations Underwater Cultural Heritage tangible features is considered best practice for this activity.</p> <p>An ROV survey is planned before installation of the drill template and immediately afterwards. This will enable appropriate timing of implementation of the chance find process for this activity.</p>			<p>operational area.</p> <p>Training evidence for chance find process will include a guide developed by an underwater cultural-heritage SME within Australia which trained personnel can use as a reference during relevant activities..</p> <p>Records demonstrate that chance find process is implemented</p>
Administrative and Procedural Controls	Ongoing Relevant Persons consultation process.	Yes	<p>Shell will implement the ongoing consultation process in accordance with regulation 14(9) of the OPGGS(E)R and Section 5.8.</p> <p>This process provides a mechanism for RPs to give feedback, and raise claims or objections relevant to the activities being executed under the EP. This gives Shell the ability to maintain relationships with RPs that fosters a continued improvement in Shells understanding of the features and values of the existing environment,</p>	4.3	Shell will implement an ongoing consultation process with Relevant Persons in accordance with regulation 14(9) of the OPGGS(E)R and Section 5.8.	<p>Relevant Persons consultation records.</p> <p>MOC records.</p>



Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
			and where new risks or impacts are identified, the establishment of appropriate controls to reduce risks and/or impacts to ALARP and acceptable levels.			
Administrative and Procedural Controls	Anchoring in the Operational Area is prohibited except in emergency situations or under issuance of a specific permit by Shell	Yes	No alternative control measures have been identified.	4.4	No vessel anchoring in the Operational Area except in emergency situations or under issuance of a specific permit by Shell	Records verify no breaches of anchoring procedures in the Operational Area.

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### 9.6.5 Acceptability of Impact

**Table 9-27: Acceptability of Impact – Disturbance to Seabed**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Socio-economic and Cultural Environment	Cultural Heritage Features	No impacts to Cultural heritage features	Yes	There are no known cultural heritage features or values that occur within the operational area related to the aspect of Seabed Disturbance.
	Cultural Heritage Values	No significant impacts to cultural heritage values	Yes	
Ecosystems, Communities and Habitats	Benthic Communities	No significant impacts to benthic habitats and communities. Impacts to non-sensitive benthic communities limited to a maximum of 5% of the project area.	Yes	No significant impacts are expected, given the Operational Area represents a small portion of a large regional bare sediment benthic environment. Habitats associated with these communities are broadly distributed in the wider region and are not considered to be unique or highly sensitive. Any seabed disturbance within the Operational Area will be small in scale, infrequent and represent a small fraction of the overall Operational Area and therefore any impacts are not expected to affect ecosystem function or connectivity of communities.
	Commonwealth Marine Environment	No significant impacts to the Commonwealth Marine Environment	Yes	
Physical Environment	Water Quality Sediment Quality	No significant impacts to water quality during the Crux project No significant impacts to sediment quality during the Crux project.	Yes	Minimal seabed disturbance associated with the geotechnical scope with the high likelihood that temporarily affected areas will recover in a short timeframe, results in the residual impact on water quality and sediment quality being "No impact".

The assessment of impacts from seabed disturbance determined the residual ranking of Slight or lower. As outlined above, the acceptability of the impacts associated with the petroleum activity have been considered in the following context.

#### **Principles of ESD**

The impacts from seabed disturbance are consistent with the principles of ESD based on the following points:

Seabed disturbance on such a small scale will not degrade the biological diversity or ecological integrity of the Commonwealth Marine Environment and therefore significant impacts to MNES will not occur.

The health, diversity and productivity of the marine environment will be maintained for future generations.

The precautionary principle has been applied, and studies undertaken where knowledge gaps were identified (Refer to Section 7.2.1). This knowledge has been applied during the evaluation of environmental impacts.

#### **Relevant Requirements**

Management of the impacts from seabed disturbance are consistent with relevant legislative requirements, including:



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Management of impacts are consistent with guidelines for the protection of MNES (Table 8-1).

**Matters of National Environmental Significance**

**Commonwealth Marine Environment**

The impacts from the seabed disturbance aspect of the petroleum activities on the Commonwealth Marine Environment will not exceed any of the significant impact criteria provided in Table 9-28.

**Table 9-28: Summary of Alignment of the Impacts from the Seabed Disturbance Aspect of the Petroleum Activities with Relevant Requirements for MNES**

<b>Matters of National Environmental Significance</b>	<b>MNES Acceptability Considerations (EPBC Management Plans/Recovery Plans/Conservation Advice)</b>	<b>Demonstration of Alignment as Relevant to the Project</b>
Commonwealth Marine Environment	Significant Impact Guidelines for the Commonwealth Marine Environment (Table 8-1)	The impact assessment indicates that the seabed disturbance aspect will not exceed the Commonwealth Marine Environment significant impact criteria provided in Table 8-1.

**External Context**

There have been no objections or claims raised by Relevant Persons to date regarding the disturbance to seabed aspect. Shell’s ongoing consultation program will consider feedback and claims or objections made by Relevant Persons throughout the life of this EP. Where new impacts or risks are established these will be subject to the MOC process described in Section 10.1.4.

**Internal Context**

Shell has also considered the internal context, including Shell’s environmental policy and ESHIA requirements. The environmental performance outcomes, and the controls which will be implemented, are consistent with the outcomes from Relevant Person consultation for the petroleum activity and Shell’s internal requirements.

**Acceptability Summary**

The assessment of impacts and risks from seabed disturbance determined the residual impact rankings were Slight or lower (Table 9-25). As outlined above, the acceptability of the impacts have been considered in the context of:

- The established acceptability criteria for the seabed disturbance aspect
- ESD
- Relevant requirements
- MNES
- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

Shell considers residual impacts of Slight or lower to be acceptable if they meet legislative and Shell requirements. The discussion above demonstrates that these requirements have been met in relation to the seabed disturbance aspect.

Based on the points discussed above, Shell considers the impacts from seabed disturbance associated with the petroleum activities to be ALARP and acceptable.

**9.6.6 Environment Performance Outcome**

<b>Environment Performance Outcome</b>	<b>Measurement Criteria</b>
No planned impacts to cultural heritage features within the Operational Area as a result of the petroleum activities.	Chance find process implementation records.

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Environment Performance Outcome	Measurement Criteria
No significant impacts to cultural heritage values within the Operational Area as a result of the petroleum activities.	Consultation records and/or MOC records show that any cultural heritage values identified within the Operational Area are not significantly impacted as a result of the petroleum activities.
No direct disturbance to benthic habitats outside of the Operational Area as a result of the petroleum activities.	Records demonstrate there has been no significant direct disturbance to bare sediment benthic habitats outside of the Operational Area as a result of the petroleum activities, that is activities associated with inspection, maintenance and repair.

## 9.7 Vessel Movements

### 9.7.1 Aspect Context

The survey vessel moving in the Operational Area may present a hazard to threatened and migratory fauna, such as whales, turtles and whale sharks (though the abundance of such fauna in and around the Operational Area has been observed to be low). Vessel movements can result in collisions between the vessel and marine fauna, potentially resulting in injury or death. Factors affecting the likelihood and severity of impacts from collisions include vessel type, vessel speed, water depth and the behaviours of animals present (Commonwealth of Australia 2017).

### 9.7.2 Description and Evaluation of Risks

The risks of vessel collisions with marine fauna, particularly threatened and migratory species (i.e. MNES) (receptor category Threatened Species and Ecological Communities), described below are consistent with the acceptable levels of impacts defined in Section 8. Shell's environmental management of the vessel movements aspect of the petroleum activities is aligned with conservation advice, recovery plans and threat abatement plans published by the DAWE; refer to discussion of MNES in the discussion of acceptability below.

There are no credible impacts associated with Vessel Movements on other environmental receptor categories (Table 8-4), therefore these are not considered in the assessment of impacts below.

Potential risks associated with vessel movements within the operational area are discussed below. As outlined in Section 9.2.4, the assessment considers only the residual risks following the application of controls.

#### 9.7.2.1 Threatened Species and Ecological Communities

The Operational Area intersects one BIA (Whale Sharks), however, given the small area where this intersection occurs and the slow speeds at which the survey vessel will operate at (less than approximately 10 knots in transit and less than approximately 6 knots when undertaking the geophysical survey) it is unlikely that vessel movement will have a credible impact on Whale Sharks (see below for additional species specific details). The remainder of the operational area is not directly adjacent to or in close proximity to any known important habitats for threatened or migratory species or the humpback whale migration routes. The closest remaining BIAs or critical habitats to the Operational Area are located 23 km away for turtles, 33 km away for whale sharks and 78 km for marine mammals. Therefore, the abundance of other threatened or migratory species in the Operational Area is expected to be low and their presence transient.

#### Marine Reptiles

The Operational Area does not represent important habitat for marine turtles given the absence of potential nesting. Much of the project area is in water depths exceeding 90 m, which is deeper than typical foraging dives by marine turtles (e.g. Hays et al. 2001; Polovina et al. 2003). As such, the presence of marine turtles within the Operational Area is likely to be restricted to individual turtles transiting the area. As with cetaceans, the risk of collisions between turtles and vessel increases with vessel speed (Hazel et al. 2007). The typical response from turtles on the surface to the presence of vessels is to dive (a potential "startle" response), which decreases the risk of collisions (Hazel et al. 2007). Given the low speeds of vessels in the operational area, along with the expected low numbers of turtles in the area, the likelihood of collisions between vessels and turtles is assessed as remote.

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## Sharks and Rays

There is a growing body of evidence suggesting whale sharks may be particularly vulnerable to vessel strikes by large vessels (Womersley et al. 2022). Whale sharks have been observed traversing the Operational Area however, it is expected that whale shark presence would not comprise of significant numbers given there is no main aggregation area within the vicinity, and their presence within the foraging BIA that overlaps with the Operational Area would be transitory. This is consistent with tagging studies of whale shark movements (Meekan & Radford 2010, Womersley et al. 2022).

Similarly, due to the lack of benthic habitat to support aggregation, interaction with other species of threatened sharks and rays (as described in section 7.2.8) is not expected.

If there was an encounter with a whale shark, due to the slow vessel speeds (approximately 10 knots during transit), the worst case outcome expected would be mortality of a single individual.

This activity is identical to vessel movements for other offshore activities along the Western Australian coastline where the incidence of vessel strike is remote. Any collisions are only likely to affect fauna at an individual scale rather than at a population or species scale. Therefore, an injury or death of an individual from a threatened or migratory species from a collision is considered to be of minor impact consequence (Magnitude -2, Sensitivity – M) and remote (B) likelihood with a residual risk assessed as Dark Blue.

## Marine Mammals and Marine Reptiles

Whales are particularly vulnerable to collisions with vessels due to their large size and the relatively high proportion of time spent at or near the sea surface. The likelihood and consequence of vessel collisions with whales are influenced by vessel speed; the greater the speed at impact, the greater the risk of mortality (Jensen and Silber 2004; Laist et al. 2001). Vanderlaan and Taggart (2007) found that the chance of lethal injury to a large whale as a result of a vessel strike increases from about 20% at 8.6 knots to 80% at 15 knots. According to the data of Vanderlaan and Taggart (2007), it is estimated that the risk is less than 10% at a speed of 4 knots. Although dolphins are at much lower risk from collision due their small size, manoeuvrability and echolocation abilities compared to whales, they are still included in this assessment given they surface to breathe and are known to feed near the surface at times.

The vessel within the Operational Area is likely to be travelling at speed less than 8 knots or holding station under Dynamic Positioning (DP) due to operational requirements. Therefore, combined with the short duration of the activities, the likelihood of a vessel collision with threatened or migratory species is remote (B).

Marine mammals, turtles and sharks are expected to alter course away from the vessel in the Operational Area. The cruising speed of the vessel is relatively low and a watch is maintained at all times and any interactions will be managed in line with the requirements of the Australian National Guidelines for Whale and Dolphin Watching 2017 (DoEE 2017).

This activity is identical to vessel movements for other offshore activities along the Western Australian coastline where the incidence of vessel strike is remote. Any collisions are only likely to affect fauna at an individual scale rather than at a population or species scale. Therefore, an injury or death of an individual from a threatened or migratory species from a collision is considered to be of minor impact consequence (Magnitude -2, Sensitivity – M) and remote (B) likelihood with a residual risk assessed as Dark Blue.

### 9.7.3 Risk Assessment Summary

**Table 9-29: Vessel Collision with Marine Life Evaluation of Residual Risks**

Environmental Receptor	Consequence	Likelihood	Residual Risk
<b>Evaluation – Unplanned Risks</b>			
Threatened Species and Ecological Communities	Minor	B - Remote	Dark Blue



9.7.4 ALARP Assessment and Environmental Performance Standards

Table 9-30: ALARP Assessment and Environmental Performance Standards

Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Elimination	Elimination	N/A	No appropriate control measures have been identified to eliminate this risk from petroleum activities.  The timing of the activities cannot be avoided, as the execution of the survey is time critical to the detailed design of the Crux pipeline and due to availability of vessel under contract and environmental approvals constraints. Therefore, important animal timings may not be able to be avoided.	N/A	N/A	N/A
Substitution	Substitution	No	The number of vessels used is already considered minimal (one vessel). Any fewer vessels will not meet operational needs.	N/A	N/A	N/A
Engineering	Engineering	No	No appropriate control measures have been identified to reduce vessel movements through engineering means.	N/A	N/A	N/A
Administrative and Procedural Controls	Vessel interactions with threatened and migratory species to follow the of EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) and the Australian National Guidelines for Whale and Dolphin Watching 2017 (DoEE 2017).	Yes	The EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) and the Australian National Guidelines for Whale and Dolphin Watching 2017 (DoEE 2017) are recognised as the industry standard for minimising disturbance due to physical presence and noise to whales and dolphins and will be	3.1	Vessel will comply with EPBC Regulations 2000 Part 8, Division 8.1 Interacting with cetaceans and the Australian National Guidelines for Whale and Dolphin Watching.	Incident report form used to record breaches of requirements outlined in the EBPC Regulations 2000 and Australian National Guidelines for Whale and Dolphin Watching.



Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
			applied to other species as relevant, .i.e. turtles and whale sharks.			
Engineering	Vessel speed will not exceed 8 knots within the operational area.	Yes	Reducing vessel speeds within the operational area will directly reduce the risk of vessel strike to EPBC MNES such as the whale shark. For example, studies have shown that the risk of mortality in large whale populations decreases to <50% when vessel speeds do not exceed 10 knots (Womersley et al, 2022).	3.2	Vessel speed within the operational area will not exceed 10 knots.	Ships log
Administrative and Procedural Controls	Dedicated Marine Fauna Observers (MFOs) on vessel	No	The cost to have dedicated trained MFOs on the vessel represents a disproportionate cost given the low likelihood of the event occurring due to the absence of critical habitats or BIA's for cetaceans within the Operational Area.	N/A	N/A	N/A

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### 9.7.5 Acceptability of Risks

**Table 9-31: Acceptability of Risks – Vessel Movements**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Threatened Species and Ecological Communities	Marine mammals Marine reptiles Sharks and rays	No mortality or injury of threatened or migratory MNES fauna from the Crux project.  Management of aspects of the Crux project must be aligned to conservation advice, recovery plans and threat abatement plans published by the DoEE.  No significant impacts to threatened or migratory MNES fauna.	Yes	Vessel movement risks are of an acceptable level, given the Operational Area is not located in any cetacean BIAs or habitat critical to the survival of cetaceans.  Conservation advice, recovery plans and treat abatement plans have been considered (below) and the nature and scale of the activities do not require additional controls beyond those that are adopted and aligned.  Given the low speeds of vessels, along with the expected low abundance of threatened and migratory species within the Operational Area, significant impacts to Threatened and Migratory Species are not anticipated.

The assessment of risks from vessel movements determined the residual ranking of Dark Blue (Table 9-6), deemed as Inherently Acceptable. As outlined above, the acceptability of risks from vessel movements associated with the petroleum activities has been considered in the following context.

#### **Principles of ESD**

Risks from vessel movement are consistent with the principles of ESD based on the following points:

- The vessel movements aspect does not degrade the biological diversity or ecological integrity of the Commonwealth marine area in the Browse Basin. Significant impacts to MNES will not occur.
- The health, diversity and productivity of the marine environment will be maintained for future generations.
- The precautionary principle has been applied, and studies undertaken where knowledge gaps were identified. This knowledge has been applied during the evaluation of environmental risks.

#### **Relevant Requirements**

Management of risks from vessel movements are consistent with relevant legislative requirements, including:

- Vessel interactions with threatened and migratory species to follow the EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) and the Australian National Guidelines for Whale and Dolphin Watching 2017 (DoEE 2017), i.e.
  - o The survey vessel will not deliberately approach closer than 50 m to a dolphin, turtle or whale shark; 100 m for an adult whale; 300m for a whale calf; and 150m for a dolphin calf.
  - o If the whale, dolphin, turtle or whale shark shows signs of being distressed, the vessel will immediately withdraw from the caution zone at a constant speed of less than 6 knots.

Management of risks are consistent with policies, strategies, guidelines, conservation advice, and recovery plans for threatened species (refer to Table 9-32 below).



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**Matters of National Environmental Significance**

**Threatened and Migratory Species**

The evaluation of risks indicates significant impacts to threatened and migratory species will not credibly result from the vessel movements aspects of the petroleum activities.

An unplanned collision between the project vessel and threatened or migratory fauna is unlikely to occur and may result in injury to or death of individual animals. This unplanned event is not considered to have the potential for significant impacts to threatened or migratory species at the population level.

Alignment with management plans, recovery plans and conservation advice for threatened and migratory fauna is provided in Table 9-32.

**Commonwealth Marine Environment**

The impacts and risks from the vessel movements aspect of petroleum activities on the Commonwealth marine environment will not credibly exceed any of the significant impact criteria provided in Table 8-1.

**Table 9-32: Summary of Alignment of the Risks from the Vessel Movements Aspect of the Petroleum Activities with Relevant Requirements for EPBC Threatened Fauna**

Matters of National Environmental Significance	MNES Acceptability Considerations (EPBC Management Plans/Recovery Plans/Conservation Advice)	Demonstration of Alignment as Relevant to the Project
Threatened and Migratory Species – Marine Mammals	Significant impact guidelines for Critically Endangered, Endangered, Vulnerable and Migratory species (Table 8-1)	The risk assessment indicates that the likelihood of vessel collisions with threatened or migratory marine mammals is remote, and the consequence of any such collision would be restricted to an individual animal. As such, the petroleum activities do not exceed any of the significant impact criteria for Threatened and Migratory marine species provided in Table 8-1.
	National Strategy for Reducing Vessel Strikes on Cetaceans and other Marine Megafauna (Commonwealth of Australia 2017a)	Vessel movements will be aligned to ‘Objective 3: Mitigation’ of the Strategy by: <ul style="list-style-type: none"> <li>• Maintaining separation of vessels and whales;</li> <li>• Maintaining slow vessel speeds; and</li> <li>• Avoidance manoeuvres.</li> </ul> This will be met by the survey vessel adhering to Part 8 (Interacting with cetaceans and whale watching) of the EPBC Regulations. Note the other objectives of the Strategy relate to actions for Government agencies.
	Conservation advice on sei whale ( <i>Balaenoptera borealis</i> ) (DoE 2015c)	The risk of vessel strikes will be managed by the survey vessel adhering to the EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) and the Australian National Guidelines for Whale and Dolphin Watching 2017.
	Conservation advice on fin whale ( <i>Balaenoptera physalus</i> ) (DoE 2015d)	
	Conservation management plan for the blue whale: A recovery plan under the Environment Protection and Biodiversity Conservation Act 1999 2015-2025 (Commonwealth of Australia 2015)	
Conservation advice on humpback whale		

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Matters of National Environmental Significance	MNES Acceptability Considerations (EPBC Management Plans/Recovery Plans/Conservation Advice)	Demonstration of Alignment as Relevant to the Project
	(Megaptera novaeangliae) (DoE 2015b)	
Threatened and Migratory species - marine reptiles	Significant impact guidelines for Critically Endangered, Endangered, Vulnerable and Migratory species (Table 8-1)	The risk assessment indicates that the likelihood of vessel collisions with threatened or migratory marine reptiles is remote, and the consequence of any such collision would be restricted to an individual animal. As such, the petroleum activities do not exceed any of the significant impact criteria for Threatened and Migratory marine species provided in Table 8-1.
	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia 2017b)	The survey vessel colliding with turtles is inherently unlikely due to the offshore location (and resultant low densities of turtles), slow speeds of the vessel and diving startle response of turtles. Furthermore, the risk of a vessel collision with a turtle will be further reduced via the implementation of the EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06) and the Australian National Guidelines for Whale and Dolphin Watching 2017.
	Conservation advice on leatherback turtle ( <i>Dermochelys coriacea</i> ) (DEWHA 2009a)	
Threatened and Migratory species - sharks and rays	Significant impact guidelines for Critically Endangered, Endangered, Vulnerable and Migratory species (Table 8-1)	The risk assessment indicates that the likelihood of vessel collisions with threatened or migratory sharks and rays is remote, and the consequence of any such collision would be restricted to an individual animal. As such, the petroleum activities do not exceed any of the significant impact criteria for Threatened and Migratory marine species provided in Table 8-1.
	Conservation advice on whale shark ( <i>Rhincodon typus</i> ) (DoE 2015e)	The Operational Area intersects the recognised BIA of whale sharks. The conservation advice recommends minimising offshore developments close to marine features that may aggregate whale sharks and cites Ningaloo Reef and Christmas Island as examples. Studies of whale sharks tagged while aggregating at Ningaloo Reef have shown individuals transiting through the Timor Sea (Meekan & Radford 2010) but showed no evidence of aggregation around particular marine features in the open offshore waters within or in the vicinity of the Operational Area.
Wetlands of International Importance	N/A	N/A
Commonwealth Marine Environment	Significant Impact Guidelines for the Commonwealth marine environment	The impact assessment indicates that vessel movements will not exceed the Commonwealth Marine Environment significant impact criteria provided in Table 8-1 as the aspect does not pose a credible risk.

**External Context**

There have been no objections or claims raised by Relevant Persons to date around vessel movements. Shell’s ongoing consultation program will consider feedback and claims or objections made by Relevant Persons throughout the life of this EP. Where new impacts or risks are established these will be subject to the MOC process described in Section 10.1.4.

**Internal Context**

Shell has also considered the internal context, including Shell’s environmental policy and ESHIA requirements. The environmental performance outcomes, and the controls which will be implemented, are consistent with the outcomes from Relevant Person consultation for the petroleum activities and Shell’s internal requirements.

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### Acceptability Summary

As outlined above, the acceptability of the associated risks have been considered in the context of:

- The established acceptability criteria for the vessel movements aspect
- ESD
- Relevant requirements
- MNES
- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

The residual risks have been assessed as Dark Blue (minor). Shell considers residual risks of minor or lower to be acceptable if they meet legislative and Shell requirements. The discussion above demonstrates that these requirements have been met in relation to the vessel movements.

Based on the points discussed above, Shell considers the risks from vessel movements associated with the petroleum activities to be ALARP and acceptable.

### 9.7.6 Environment Performance Outcome

Environment Performance Outcome	Measurement Criteria
No injury or mortality of listed Threatened or Migratory MNES species associated with vessel collisions within the Operational Area.	Fauna observations and incident reports demonstrate no injury or mortality of listed Threatened or Migratory MNES marine species as a result of vessel movements within the Operational Area.

## 9.8 Introduction of Invasive Marine Species

### 9.8.1 Aspect Context

IMS are non-indigenous marine fauna or flora that have been introduced into an area beyond their natural geographical range, and may have the ability to survive, reproduce and establish a population such that they threaten native species through increased competition for resources and/or increased predation.

Vessels and equipment sourced from outside Australian waters have the potential to introduce or transfer IMS to the Operational Area, which may potentially spread to new areas or increase the impact of IMS already established in the wider region through oceanic currents and transport via activities such as support vessel movements. There are two primary mechanisms which may cause the inadvertent introduction and spread of IMS; hull fouling (biofouling) and ballast water discharges.

Establishment of IMS in the Operational Area requires a sequence of events to occur:

- the potential IMS must be present on (e.g. biofouling) or in (e.g. ballast water) the vector; and
- the potential IMS must be released into the environment (e.g. ballast water discharge, release of propagules from biofouling); and
- the potential IMS must survive, reproduce (either sexual or vegetative reproduction) and subsequently persist in the environment.

The introduction of IMS is recognised globally as a threat to marine biodiversity, and the International Maritime Organisation (IMO) has developed guidelines for the management of biofouling and ballast water. Commonwealth, State and Territory authorities also regulate the risk of IMS from biofouling and ballast water. Vessels operating in Australia are required to meet these requirements, and vessels meeting these requirements pose an inherently lower risk of harbouring IMS or releasing IMS into the environment.

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The likelihood of this sequence of events is considered extremely remote given the controls that are routinely applied to vessels (e.g. anti-fouling coating, inspections, hull cleaning etc.), the remote offshore location and nature of typical vessel activities.

Most native fouling species likely to be encountered within or transiting through the Operational Area will be widely distributed as similar habitats are broadly represented in the Timor Sea and Browse Basin. An IMS may compete with these native species if it were to become established in the Operational Area or wider region. This may decrease the species diversity of benthic communities.

IMS are typically extremely difficult to eradicate once established and reproducing in an area. In the highly unlikely event an IMS becomes established and reproductively viable, it would be almost impossible to eradicate.

Ballast water exchange needs for the survey vessel are expected to be limited. When operating in the Operational Area the survey vessel is obliged to conduct ballast tank operations in line with IMO guidelines and, where applicable, comply with the Biosecurity Act 2015.

All known and potential introduced marine pests listed by Australian agencies are nuisance foulers, predators, invasive seaweeds or noxious dinoflagellates that inhabit harbours, embayment's, estuaries, shorelines and/or shallow coastal waters less than 200m deep (Hayes et al. 2004, Barry et al. 2006). The water depth in the Operational Area is in excess of 240 m.

The offshore environment of the Operational Area is relatively deep, oligotrophic (nutrient-poor) and hard substrate habitats do not naturally occur. Many potential IMS are sessile invertebrates that require hard substrate for attachment. In the unlikely event potential IMS are released into the Operational Area, the IMS are highly unlikely to encounter suitable substrate for settlement and establishment. Most potential IMS are adapted to coastal waters, such as ports and harbours. If a potential IMS were to become established in the field, it is unlikely to survive in the relatively deep water offshore environment. The deep water, low nutrient and open ocean environment in Operational Area provides minimal larval retention times or suitable habitat for coastally adapted IMS.

## 9.8.2 Description and Evaluation of Impacts and Risks

A range of environmental sensitivities within the following groups may be at risk from the introduction of potential IMS, including:

- Biological Environment
- Socio-economic environment.

Potential risks associated with IMS establishment as a result of the petroleum activities are discussed below.

### 9.8.2.1 Ecosystems, Communities and Habitats

The introduction and subsequent establishment of IMS could result in changes to the structure of benthic communities leading to a change in ecological function due to predation of native marine organisms and/or competition for resources. Once IMS establish, spread and become abundant in coastal waters some species could have Major ecological, economic, human health and social/cultural consequences (Hewitt et al. 2011; Pimental et al. 2000).

Shallow water, coastal marine environments are susceptible to the establishment of invasive populations, with most IMS associated with artificial substrates in disturbed shallow water environments such as ports and harbours (e.g. Glasby et al. 2007; Dafforn et al. 2009a, 2009b).

Benthic communities within the operational area are characterised by low density epibenthic communities of deposit and filter feeders on bare sediments. The seabed within the entire Operational Area does not receive sufficient sunlight to support benthic primary producer habitat, such as macroalgae and zooxanthellate corals. Very few potential IMS identified can credibly survive in the water depths of the Operational Area. For example, the non-oceanic species identified in the Australian Marine Pest Monitoring Manual (Department of Agriculture, Fisheries and Forestry 2010) indicated very few IMS (aside from planktonic oceanic species such as dinoflagellates) could credibly survive in the Operational Area; only three (European clam, soft-shell clam and Northern Pacific sea star) were identified as potentially surviving in > 90 m water depth; none were identified as credibly surviving at > 200 m water depth. These three species are typically found in shallower, coastal

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waters. The Operational Area is all between 160-250 m water depth. In the highly unlikely event these species were introduced into the Operational Area, they are unlikely to survive or become established on natural substrate due to the water depth alone.

With the stated controls in place, the likelihood of introduction of IMS associated with the survey vessel is considered extremely remote as the potential vectors (e.g. the vessel) will typically be near the FLNG for relatively short periods (up to a week). Further, the survey vessel will typically be sourced from Australian waters and will undertake the required assessments described in the Prelude FLNG Biosecurity Management Plan.

The waters associated with benthic communities (shoals, banks reefs and island surrounds), some KEFs (e.g. ancient coastline), WA mainland coastline and some of the Commonwealth Marine Environment in the wider region are typically shallower than those of the Operational Area. As outlined above, most potential IMS require shallower habitats than those found in the Operational Area. Hence, these shallower habitat waters in the region may be more vulnerable to introduction of IMS, however it is completely dependent on the extremely rare event of translocation of IMS by the survey vessel.

With consideration of the habitat preferences of IMS (shallow water environments), the closest shallow water habitat to the Operational Area is Browse Island, located some 40 km south-southeast of the Operational Area, and it is neither disturbed nor contains artificial structures that IMS are reported to prefer. Although not part of the petroleum activity, the vessel may spend some time during cyclone season or inclement weather to seek shelter near Browse Island (or other banks, shoal or islands in the area) for safety reasons. With the stated controls in place to minimise potential IMS risk, direct introduction of IMS to a shoal, bank or island during these short-duration and infrequent sheltering events is considered extremely remote.

### 9.8.2.2 Socio-economic and Cultural Environment

The socio-economic receptors from IMS introduction / establishment risk are industries outside of the Operational Area such as fishing, tourism/recreation, marine protected areas or other oil and gas operators (e.g. Inpex Ichthys). The likelihood for IMS introduction, establishment and survival at or within these receptors is extremely remote with the stated controls in place.

### 9.8.3 Risk Assessment Summary

**Table 9-33: IMS Evaluation of Residual Risks**

Environmental Receptor	Consequence	Likelihood	Residual Risk
<b><i>Evaluation – Unplanned Risks</i></b>			
Ecosystems, Communities and Habitats	Major effect	A - Extremely remote	Dark Blue
Socio-Economic Environment	Major effect	A - Extremely remote	Dark Blue



### 9.8.4 ALARP Assessment and Environmental Performance Standards

Table 9-34: ALARP Assessment and Environmental Performance Standards

Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Elimination	No vessel	No	The Vessel is essential for the survey campaign.	N/A	N/A	N/A
Substitution	Only use a local vessel	No	Although the use of a local vessel is preferred, there are cases when this is impracticable due to availability of specialised vessels for the activities.	N/A	N/A	N/A
Engineering	Anti-foul coating/anti-foul system	Yes	Anti-foul coating/system on the vessel will help prevent biofouling accumulation on the hull. It is noted that anti-foul systems must be maintained in good condition in order to be an effective control for the management of marine pests. Therefore, the implementation of the Browse Basin Biosecurity Management Procedure will confirm that the vessel is Low Risk with respect to IMS, in conjunction with the presence of valid anti-foul coating/system documentation.	6.1	The Vessel (of appropriate class) will have an anti-foul coating applied in accordance with the prescriptions of the International Convention on the Control of Harmful Antifouling Systems on Ships (2001) and the Protection of the Sea (Harmful Antifouling systems) Act 2006 direction <sup>16</sup> .	Valid International anti-fouling systems certificate or a Declaration on anti-fouling systems. Records of implementation of the Browse Basin Biosecurity Management Procedure.
Administrative and Procedural controls	Ballast Water Management Plan and Certificate	Yes	Vessels that are intending to discharge internationally sourced ballast water within Australian waters must submit a Ballast Water Report through Maritime Arrivals Reporting System (MARS) at least 12 hours prior to arrival to gain DAWE clearance. The acceptable area for a ballast water exchange between an offshore oil and gas installation and an Australian port is in areas that are no closer than 500 m from the offshore installation and no closer than 12 NM from the nearest land and in water at least 50 m deep.	6.2	Vessels coming from overseas will have required DAWE clearance including the Ballast Water Certificate and Ballast Water Management Plan if the vessel is required to discharge ballast in Australian waters.  All vessels (incl. domestic) shall have a Ballast Water Management Plan in place	Records of the Maritime Arrivals Reporting System (MARS) or equivalent demonstrate the vessel has sufficient DAWE clearance to operate within the Operational Area and Australian Territorial Waters.

<sup>16</sup> Advice from the Registered Organisation will be followed where there is any variation to the this EPS





Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
			<p>Ballast tank sediment must be disposed of in an area outside 200 nautical miles from the nearest land, and in at least a depth of 200 metres, or at an approved land-based reception facility.</p> <p>The Biosecurity Act 2015 requires that vessels have a Ballast Water Management Certificate and Ballast Water Management Plan (BWMP), and undertake reporting and management of ballast in accordance with the Act.</p> <p>The BWMP must:</p> <ul style="list-style-type: none"> <li>• be vessel specific (vessel name and International Maritime Organization (IMO) number)</li> <li>• be approved by a survey authority, recognised organisation, or the vessel’s flag administration</li> <li>• nominate the rank(s) of the responsible officer and crew</li> <li>• contain the ballast water management method and pumping rates.</li> </ul> <p>BWMPs should be consistent with the IMO Ballast Water Convention’s Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4 Guidelines).</p> <p>A valid Ballast Water Certificate must be issued by either a survey authority, classification society, or the administration of the vessel, and be in accordance with Regulation E-1 of the Ballast Water Convention.</p>		consistent with the IMO Ballast Water Convention’s Guideline.	<p>Vessel Ballast Water Management Plan</p> <p>Vessel Ballast Water Certificate</p>
	Ballast water management within the Operational Area	Yes	<p>Only low risk ballast water will be discharged within the Operational Area. Although the Operational Area is classified as a suitable location for ballast exchange per the Australian Ballast Water Management Requirements i.e. will occur &gt; 12 Nm from land and in water depths &gt; 50m deep, no ballast water (originating from outside Australian waters) exchange will occur within the Operational Area.</p>	6.3	Only low risk ballast water will be discharged within the Operational Area.	<p>Sample ballast exchange logs for internationally sourced vessels demonstrate only low risk ballast water has been discharged within the Operational Area.</p>



Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Administrative and Procedural controls	Vessel Specific Biofouling Management Plans	Yes	<p>IMO biofouling guidelines - Guidelines for the control and management of ships' biofouling to minimise the transfer of invasive aquatic species is considered 'best practice' for mitigation of transfer of invasive aquatic species to ALARP.</p> <p>Vessel specific (as per IMO guidance) Biofouling Management Plan (BMP) and Biofouling Record Book (BRB) recording implementation of BMP.</p>	6.4	Vessels will have a Biofouling Management Plan as per IMO guidance.	Vessel-specific Biofouling Record Book (BRB) recording implementation of BMP.
Administrative and Procedural controls	Browse Basin Biosecurity Management Plan	Yes	<p>The Browse Basin Biosecurity Management Plan applies to the Crux Project petroleum activities. The plan details preventative controls measures to cover aspects of biofouling management, ballast water management and non-marine biosecurity risk. These controls include;</p> <ul style="list-style-type: none"> <li>biofouling management record book</li> <li>biofouling risk assessments for vessels</li> <li>valid anti-foul coating certifications</li> <li>ballast exchange logs</li> <li>treatment of internal seawater systems</li> </ul> <p>Consistent with the published Biosecurity Reference Case by Maritime Industry Australia (Oct 2020), biofouling risk assessments shall include considerations of:</p> <ul style="list-style-type: none"> <li>periods of layup/inactivity since last dry dock</li> <li>details of antifouling system applied</li> <li>presence or absence of MGPS</li> <li>information about previous vessel locations.</li> </ul> <p>Risk results:</p> <ul style="list-style-type: none"> <li>Low risk: vessel can be hired</li> <li>Uncertain/high risk: not to be used</li> </ul>	6.5	<p>Adhere to class requirements for marine vessel hull integrity inspection frequency (In-water every 2.5 years, Dry-dock every 5 years).</p> <p>Carry out the required Marine Vessel Biofouling Risk Assessments aligned with National Biofouling Guidelines for the Petroleum Production and Exploration Industry – for vessels originating from overseas or vessels being shared between operators.</p>	<p>Records of hull inspections</p> <p>Vessel Low Risk Biosecurity Status</p> <p>Biofouling Risk Assessment for vessel</p>



Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Administrative and Procedural controls	Develop specific IMS response plans and carry out training and drills to prepare for the need to respond to an IMS incident	No	The resources and time that would be needed for a mitigative control such as this is significant and considered grossly disproportionate to the benefit gained since the time it would take to prepare a response plan in the event of an incident is not considered to be significant in the context of breeding and reproductive cycles of most potential IMS species. Furthermore, IMS response plans are planned to be developed by government as outlined in the National Strategic Plan for Marine Pest Biosecurity 2018-2023.	N/A	N/A	N/A

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### 9.8.5 Acceptability of Impacts and Risks

**Table 9-35: Acceptable Levels of Risks - IMS**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Ecosystems, Communities and Habitats	Benthic communities	No significant impacts to benthic habitats and communities. Impacts to non-sensitive benthic communities limited to a maximum of 5% of the project area.	Yes	The introduction of an IMS as a result of the petroleum activities is unlikely to survive given the water depth in the Operational Area. However, surrounding shallower habitats in the wider region such as Browse Island (the closest receptor to the Operational Area, approx. 40 km away) are likely to be more susceptible to an IMS becoming established due to their relatively shallow depth. Based on ongoing controls such as using a risk-based approach to manage the pathways and vectors that are responsible for the establishment of an IMS, the likelihood of an IMS becoming established and impacting Benthic Communities, KEFs and the WA and BT Mainland Coastline is extremely remote. Shell will take industry-standard measures to reduce the likelihood of an IMS being introduced at the Operational Area or to new areas as a result of petroleum activity. If an IMS were to be become established, it would be very difficult to eliminate, however there is an extremely remote likelihood of significant impacts to the identified potential receptors.
	KEFs	No significant impacts to environmental values of KEFs	Yes	
	WA and NT Mainland Coastline	No impacts to WA and NT mainland coastline.	Yes	
Socio-economic and Cultural Environment	Commonwealth Marine Area	No significant impacts to the Commonwealth Marine.	Yes	
	Marine Parks	No impacts to the values of marine parks	Yes	
	Commercial Fishers	No negative impacts to exploited fisheries resource stocks. Temporary displacement of traditional fishing activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	
	Tourism and Recreation	No negative impacts to nature-based tourism resources resulting in demonstrated loss of income.	Yes	

The assessment of risks from IMS determined a residual risk ranking of Dark Blue (Table 9-33). As outlined above, the acceptability of the risks from the introduction of IMS associated with the petroleum activities has been considered in the context of:

#### **Principles of ESD**

The inherent risks from the introduction of IMS resulting from the petroleum activities are inconsistent with some of the principles of ESD based on the following:

- The introduction of an IMS poses a risk to the diversity and ecological integrity of the biological and socio-economic environments in the vicinity of the Operational Area and the wider region.

However, Shell will apply a range of controls to ensure that the risk of IMS introduction is reduced to a level that is acceptable and ALARP. Following successful application of these controls, Shell considers the residual risk to be consistent with the principles of ESD.

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### Relevant Requirements

Management of the risks from an introduction of IMS resulting from the Crux project are consistent with relevant legislative requirements, including:

- compliance with international maritime conventions, including
  - The International Convention for the Control and Management of Ships' Ballast Water and Sediments
  - The International Convention on the Control of Harmful Anti-Fouling Substances
  - IMO 2011 Guidelines for the control and management of ships' biofouling to minimise the transfer of invasive aquatic species.
- compliance with Australian legislation and requirements, including:
  - Protection of the Sea (Harmful Anti-fouling Systems) Act 2006:
  - Marine Order 98 – Marine Pollution prevention – anti-fouling systems.
- Biosecurity Act 2015:
  - National Biofouling Management Guidelines
  - Australian Ballast Water Management Requirements.
- NT Fisheries Act
- WA Fish Resources Management Act 1994, subsequent Fish Resources Management Regulations 1995 and the Aquatic Resources Management Act 2016
- the WA DPIRD Biofouling Biosecurity Policy\*.

\* The WA DPIRD Biofouling Biosecurity Policy (WA Department of Fisheries Jan 2017) specifies the objective to minimise the adverse impacts of aquatic pests and diseases in WA through “1. Preventing the establishment of aquatic pests and diseases in new locations” and “2. Minimising the impact of established aquatic pests and diseases”. As such, the acceptable level of risk for IMS (stated in the EPO) is consistent with this policy.

### Matters of National Environmental Significance

#### Threatened and Migratory Species

The policies, strategies, guidelines, conservation advice and recovery plans for MNES that may occur within the potential area affected by an IMS do not identify IMS as a threat.

#### Commonwealth Marine Environment

The impacts and risks from the introduction of IMS will not result in significant impacts to the Commonwealth Marine Environment.

**Table 9-36: Summary of Alignment of the Risks from the IMS Aspect of the Petroleum Activities with Relevant Requirements for EPBC Threatened Fauna**

Matters of National Environmental Significance	MNES Acceptability Considerations (Significant Impact Criteria, EPBC Management Plans/Recovery Plans/Conservation Advice)	Threats Relevant to the Project	Demonstration of Alignment as Relevant to the Project
Threatened and Migratory Species	N/A	N/A	N/A
Commonwealth Marine Area	Significant Impact Guidelines for the Commonwealth marine environment (Table 8-1)	Introduction of IMS	The residual risk assessment indicates that the petroleum activities will not exceed the Commonwealth marine environment significant impact criteria provided in Table 8-1.

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<b>Matters of National Environmental Significance</b>	<b>MNES Acceptability Considerations (Significant Impact Criteria, EPBC Management Plans/Recovery Plans/Conservation Advice)</b>	<b>Threats Relevant to the Project</b>	<b>Demonstration of Alignment as Relevant to the Project</b>
Wetlands of International Importance	N/A	N/A	N/A

### **External Context**

There have been no objections or claims raised by Relevant Persons to date around invasive marine species. Shell's ongoing consultation program will consider feedback and claims or objections made by Relevant Persons throughout the life of this EP. Where new impacts or risks are established these will be subject to the MOC process described in Section 10.1.4.

### **Internal Context**

Shell has also considered the internal context, including Shell's environmental policy and ESHIA requirements. The environmental performance outcomes, and the controls which will be implemented, are consistent with the outcomes from Relevant Person consultation for the petroleum activity and Shell's internal requirements.

### **Acceptability Summary**

The assessment of risks from IMS determined the residual risk rankings were Dark Blue (Table 9-33). As outlined above, the acceptability of the impacts and risks from IMS associated with the petroleum activity has been considered in the context of:

- The established acceptability criteria for the IMS aspect of the Operational Area
- ESD
- Relevant requirements
- MNES
- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

Given the considerable water depth (160-250 m), potential IMS species which may be present on survey vessel would not be able to settle and establish on the available natural substrate within the Operational Area and the nearest shallow water sensitive receptor, Browse Island, is located approximately 40km away. Considering all of the controls which are in place, the residual risk of potential species of IMS persisting on the survey vessel, spreading and establishing in new areas such as high value areas and/or inshore coastal waters of Australia such as at ports following a long distance vessel transit is Moderate given the potential consequences following the very remote likelihood of establishment.

Shell considers residual risks of moderate to be acceptable with controls if they meet legislative and Shell requirements. The discussion above demonstrates that these requirements have been met in relation to the IMS aspect of the petroleum activities.

Based on the points discussed above, Shell considers the risks from IMS associated with the petroleum activities to be acceptable.

## **9.8.6 Environment Performance Outcomes**



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Environment Performance Outcomes	Measurement Criteria
No IMS of concern <sup>17</sup> established in the natural environment as a result of the petroleum activities. No introduction of IMS to the marine environment from ballast water exchange operations undertaken or biofouling by project vessels.	No confirmed and externally reported instances of IMS establishment in the natural environment as a result of the petroleum activities.

## 9.9 Discharge of Liquid Effluent

Liquid discharges from the petroleum activity are limited to typical vessel discharges. These aspects include:

- Drainage and bilge effluent
- Food waste, greywater and sewage

### 9.9.1 Aspect Context

#### 9.9.1.1 Drainage (Slops) and Bilge Wastes

##### Marine Vessels

Deck drainage and bilge from the survey vessel consists mainly of wash down water, seawater spray and rainwater and may contain small quantities of oil, grease, metals, detergents (surfactants) and other residual chemicals present on the deck, which has the potential to create surface sheens and short term, localised reduction in water quality if it enters the marine environment.

#### 9.9.1.2 Food Waste, Sewage and Greywater

Vessel activities within the Operational Area will require planned discharges that will likely include sewage, greywater and food waste.

### 9.9.2 Description and Evaluation of Impacts

Planned liquid discharges to marine waters creates a potential for the localised decline in water and sediment quality and for biota in those environments to be exposed to physical characteristics and contaminants at concentrations that may cause acute or chronic effects.

The identified effect pathway associated with the planned liquid discharges can be summarised by the following:

Changes to physical and/or chemical water quality resulting in:

- Impacts to sensitive biological receptors.

Any effects on water quality are expected to be within the surface layers only and have no effect on or damage to seabed/benthic receptors (refer to Section 9.9.2.2).

The magnitude and sensitivity of any impacts on the identified sensitive receptors varies according to multiple factors, including discharge composition, plume dilution/dispersion, bioavailability, duration of exposure and marine species physiology and behaviour. A detailed description and evaluation of these impacts is provided in the subsections below. A summary presenting credible interactions associated with the various liquid discharges is provided in Table 9-37 assessed per environmental receptor category. Where credible interactions have been identified these have been discussed in further detail in the subsequent impact assessment sections and are broken down further into receptor sub-category where relevant. The subsequent impact assessment also provides justification on why certain receptors, e.g. sediments and benthic habitats,

<sup>17</sup> IMS of concern are species that are listed on the Western Australian Prevention List for Introduced Marine Pests or Commonwealth National Introduced Marine Pest Information System, and could survive in the natural environment beyond the Prelude FLNG and installed infrastructure.

have been assessed as having no credible interaction and/or where no environmental damage or effects have been identified for the duration of this EP.

**Table 9-37: A matrix summarising credibility of interactions with the identified environmental receptors from the various planned liquid discharge streams**

	Drainage (Slops) and Bilge	Sewage, Greywater and Food Waste,	Cooling Water
Water Quality			
Sediment Quality			
Air Quality			
Benthic Communities			
Shoals and Banks			
Offshore reefs and islands			
WA and NT mainland coastline			
KEFs			
Marine mammals			
Marine reptiles			
Birds			
Fish			
Sharks and rays			
Commonwealth Marine Area			
World Heritage Properties			
National Heritage Places			
Commonwealth Heritage Places			
Declared Ramsar Wetlands			
Marine Parks			
Commercial fisheries			
Traditional Indigenous fishing			
Marine archaeology			
Tourism and recreation			
Military/defence			
Ports and commercial shipping			
Offshore petroleum exploration and operations			
Indonesian and Timor-Leste coastlines			

**Key**

	<i>Interaction Assessed as Non-Credible and/or No Environmental Damage or Effects</i>
	<i>Interaction Considered Credible - Discussed Through Relevant Impact Assessment Sections Below</i>

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### 9.9.2.1 Physical Environment

#### ***Water and Sediment quality***

#### **Drainage (Slops) and Bilge Effluent**

Open Drainage (slops) and bilge waste discharges are intermittent discharges which can result in water quality changes immediately surrounding the discharge point, with the spatial extent of changes to water quality remaining very localised. It is recognised that there may be various minor quantities of metal and chemical constituents that may not be captured as a part of the oil treatment systems associated with the bilge system. This may result in the discharge of minor quantities of diluted toxicants into the ocean which may cause localised and temporary reductions in water quality. Overall, the residual impact of the discharge of open drainage and bilge effluent to water and sediment quality is considered of slight impact consequence (Magnitude – 1, Sensitivity – L).

#### **Food Waste, Sewage and Greywater**

Discharge of sewage, greywater and food waste into the marine environment may impact on water quality, including eutrophication, increased turbidity, increased pathogens (bacteria, viral agents and/or parasites), and increased biological oxygen demand (BOD), with the associated impacts on marine biota as discussed further in Section 9.9.2.2. These discharges can contain a variety of substances typically at very low concentrations, including oil/grease, some organic compounds, detergents, metals, suspended solids, chemicals, personal hygiene products and pathogens.

Discharges of food waste, sewage and grey water can cause some temporary localised nutrient enrichment of the surface waters around the discharge point and have the potential to attract marine fauna that feed on the particulate material. Such low volume outputs of nutrients relative to the receiving environment presents no environmental damage or effects to water quality associated with eutrophication, increased BOD and/or decreased dissolved oxygen concentrations. The BOD of the sewage, greywater and food waste effluent is unlikely to lead to oxygen depletion of the receiving waters as highly oxygenated receiving waters will rapidly assist with oxygenation of the discharge in such a dynamic offshore environment.

At a discharge release depth of >11 m, the positively buoyant sewage and greywater effluent plumes are typically heavily diluted by the time they reach the surface of the water column. Therefore no detectable impacts to marine sediment quality are forecast for sewage or grey water due to the significant water depth, buoyant nature of the plumes and highly dispersive and dilutive environment. For food discharges, based on biodegradability and water depth in the open-ocean currents, the discharges are expected to be rapidly diluted and dispersed by the open-ocean ambient currents, with no detectable impacts to marine sediment quality predicted.

In 2008, Woodside conducted monitoring of 10 m<sup>3</sup> of sewage discharged at distances of 50 m, 100 m and 200 m downstream of a platform and at five different water depths over a period of 24 hrs (Woodside 2008). This monitoring confirmed that discharges of macerated sewage were rapidly diluted or nutrients rapidly metabolised. No elevations in water quality monitoring parameters (e.g. total nitrogen, total phosphorous and selected metals) were recorded above background levels at any station.

The Woodside (2008) study demonstrated that a 10 m<sup>3</sup> sewage discharge over 24 hrs from a stationary source in shallow water, reduced to approximately 1% of its original concentration within 50 m of the discharge location. In addition to this, monitoring at distances 50, 100 and 200 m downstream of the platform and at five different water depths confirmed that discharges were rapidly diluted or nutrients rapidly metabolised and no elevations in water quality monitoring parameters (e.g. total nitrogen, total phosphorous and selected metals) were recorded above background levels at any station. As sewage discharge from the vessel is <10 m<sup>3</sup>/day as well, this study provides confidence to the residual impact ranking given the deep water and highly dispersive offshore environment where the Operational Area is located.

Given the volume and properties of the discharged effluent which are highly biodegradable, low toxicity and low persistence, the rapid dilution in the open ocean environment, localised impact area, and distance from the nearest value (Continental Slope Demersal Fish Communities ~ 14 km and Browse Island ~40 km away), the residual impact consequence to water quality is assessed as slight (Magnitude -1, Sensitivity – L).

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### 9.9.2.2 Ecosystems, Communities and Habitats; and Threatened Species and Ecological Communities

#### Drainage (Slops) and Bilge Effluent

Discharges of oily water will be treated to <15 ppm (v) in accordance with MARPOL requirements. The discharge of these effluents have the potential to adversely affect water quality which may impact some biological receptors in the immediate area through acute or chronic toxicity. This is given the similarities in the cause and effect pathways and that impacts are not anticipated to be greater than those presented in the facility produce water assessment from these smaller volume and infrequent discharge streams.

Most threatened fauna species potentially exposed to drainage (slops) and bilge effluent discharges are air breathing vertebrates, which are unlikely to be directly affected as their skin is relatively impermeable. Given the low concentrations of oil (<15 ppm) no surface expressions is expected and therefore damage to eyes and lungs from exposure to oil on the sea surface is not anticipated. Overall, the residual impact of the discharge of treated drainage (slops) and bilge effluent to marine fauna with the stated controls in place is considered to be of slight impact consequence (Magnitude – 1, Sensitivity – L).

#### Food Waste, Sewage and Greywater

Nutrients in sewage greywater and food waste, such as phosphorus and nitrogen can contribute to eutrophication of receiving waters. However, this is only likely in still, calm, inland waters, where it can cause algal blooms, which in turn degrades aquatic habitats by reducing light levels and producing certain toxins, some of which are harmful to marine life and humans. Nutrient levels from these discharges are not expected to result in levels or conditions that could result in excessive algal, phytoplankton or cyanobacterial growth or associated depletion reduction in oxygen levels. Sewage and greywater can also contain hazardous pathogens (including faecal coliform bacteria), intestinal parasites and viral agents that, if released, may cause contamination to the food chain and/or other marine users. This is further addressed below under the socio-economic and cultural environment impact assessment and will not result in environmental damage or effects.

The overboard discharge of sewage and food wastes creates a localised and temporary increase in particulates on or near the surface waters. This may in turn act as a food source for scavenging marine fauna and seabirds, whose numbers may temporarily increase as a result. The ingestion of small (macerated or reduced to <25 mm) particle sizes within the effluent is not anticipated to have an adverse physical or toxic impact on resident and transient marine fauna, including listed threatened and migratory species, e.g. cetaceans or whale sharks.

Open marine waters are typically influenced by regional wind and large scale current patterns resulting in the rapid mixing of surface and near surface waters where sewage, greywater and food waste discharges will occur. Therefore, nutrients from these discharges will not accumulate or lead to eutrophication due to the highly dispersive environment. As such, the receptors with the greatest potential to be impacted are those in the immediate vicinity of the discharge. Effects on environmental receptors along the food chain, namely, fish, reptiles, birds and cetaceans are therefore not expected beyond the immediate vicinity of the discharges.

Although the Timor Sea is characterised as a low nutrient environment (Brewer et al, 2007), natural seasonal upwelling can result in localised and sporadic high phytoplankton productivity along the Sahul Shelf including immediately offshore of the shelf. The estimated daily loading from sewage, grey water and food waste (Approximately 37 kg/day of TN and 7 kg/day of TP) is considered inconsequential in comparison to the daily turnover of nutrients in the area.

The rapid consumption of macerated food and sewage waste by scavenging fauna, combined with physical and microbial breakdown, ensures that any impacts of sewage, greywater and food waste discharges are short-lived, localised and negligible. There are no nearby sensitive or high environmental value habitats or biological communities that are at risk from temporary increases in nutrient levels, particulates and/or increased numbers of scavenging fauna. The volume of these discharges is small relative to daily nutrient turnover in the given area of ocean and the associated assimilative capacity of the receiving offshore environment. Therefore, the environmental impact associated with the discharge of sewage, greywater and food waste is considered to be slight (Magnitude -1, Sensitivity – L).

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### 9.9.2.3 Socio-Economic and Cultural Environment

Impacts on social receptors such as recreational users and commercial operators of fishing, aquaculture, diving and boating operations, are not predicted due to the localised nature of the discharges and the rapid dispersion and dilution in open offshore waters.

There are no known sensitive receptors to human pathogens in the vicinity of the liquid discharges location. It is expected that any discharged pathogens will be susceptible to rapid mortality following exposure to natural levels of UV radiation, oxygen, increased salinity and natural predation resulting in their reduction and ultimate destruction (ANZECC & ARMCANZ 1997). Regardless, transference of human pathogens into marine fauna resulting in adverse impacts to the organism itself, fishermen or consumers is not anticipated to occur and/or is not considered a feasible cause and effect pathway due to the inherent biological and physiological differences in the host species' and is therefore considered to present a non-credible impact. There are no identified recreational uses within the vicinity and therefore any impacts associated with human primary/secondary contact and the presence of 'nuisance' organisms is considered as non-credible.

### 9.9.3 Impact Assessment Summary

Table 9-38 lists the highest residual impact consequence rankings of the relevant environmental receptor groups.

**Table 9-38: Liquid Discharges Evaluation of Residual Impacts**

Environmental Receptor	Magnitude	Sensitivity	Residual Impact Consequence
<b><i>Evaluation – Planned Impacts</i></b>			
Physical Environment	-1	L	Slight
Ecosystems, Communities and Habitats	-1	L	Slight
Threatened Species and Ecological Communities	-1	L	Slight
Socio-economic and Cultural Environment	0	L	No Impact



### 9.9.4 ALARP Assessment and Environmental Performance Standards

Table 9-39: Drainage (Slops) and Bilge Waste Discharges ALARP Assessment and Environmental Performance Standards

Hierarchy of Controls	Control Measure	Adopted?	Related ALARP Discussion and Alternate, Additional or Improved Control Measures Considered	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Elimination	Eliminate discharges by storing all open drainage and bilge effluent to be transported and treated /disposed onshore.	No	There are significant costs and HSE risks associated with storing and transporting onshore all open drainage and bilge effluent on the survey vessel. It is grossly disproportionate to the environmental impacts of onboard treatment prior to discharging overboard.	N/A	N/A	N/A
Substitution	Alternative technology to oil-water separator system.	No	The oil-water separator system on the survey vessel-are standard MARPOL-compliant systems for management of accidentally-oil contaminated drainage and bilge in offshore vessels.	N/A	N/A	N/A
Engineering	Bilge and slops effluent treated via oil-water separator prior to discharge.	Yes	As per MARPOL requirements.	7.1	Bilge and slops effluent will be discharged via an oil-water separator complaint with MARPOL requirements.	Records demonstrate bilge and slops discharged via oil-water separator.
Engineering	Vessels Compliance with Marine Order 91 (International Oil Pollution Prevention [IOPP] certificates).	Yes	The marine assurance system is administered by Shell's Marine team and, amongst other requirements, ensures compliance of contract vessels with MARPOL and Marine Order 91. This control measure is in accordance with Protection of the Sea (Prevention of Pollution from Ships) Act 1983 and the relevant AMSA Marine Orders.	7.3	Assurance will be undertaken for vessels, including a check for valid and in date International Oil Pollution Prevention (IOPP) certificates as required by vessel class requirements <sup>18</sup> .	Assurance records
Administrative and Procedural Controls	Spill kits onboard vessel.	Yes	Storage and use of spill adsorbent and clean-up kits are inexpensive and low-maintenance. Accumulations of oil, grease and other	7.4	Spill kits are available on vessels to clean up small	Records indicating spill kits are in place.

<sup>18</sup> Advice from the Registered Organisation will be followed where there is any variation to the this EPS for the Prelude FLNG.





Hierarchy of Controls	Control Measure	Adopted?	Related ALARP Discussion and Alternate, Additional or Improved Control Measures Considered	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
			contaminants will be collected and removed from the decks.		accumulations of contaminants.	
Administrative and Procedural Controls	Shell Chemical Management Process.	Yes	Shell has adopted a chemical selection and approval process in accordance with Shell's chemical selection and approval guidelines as indicated in Shell Chemical Management Process (HSE_GEN_007879) and Shell Global Product Stewardship guidelines to assess chemicals that may pose environmental impact via planned discharges.	7.5	Chemicals selected for use in accordance with the Shell Chemical Management Process to minimise potential environmental risks.	Records demonstrating the chemical selection process outlined in the Chemical Management Process have been followed.
Administrative and Procedural Controls	Shell Chemical Management Process.	Yes	Following the chemical management process as detailed within Section 10.1.5 will minimise the impact of those chemicals which are used and discharged to ALARP levels.	7.6	Chemicals that are planned for discharge to sea are substitution warning free and Gold, Silver, D, or E rated through the OCNS, or are PLONOR (listed by the OSPAR Commission), or have a complete ALARP assessment.	Records demonstrating the chemical selection process outlined in the Chemical Management Process have been followed.



Table 9-40: Sewage, Grey Water and Food Waste Discharges ALARP Assessment and Environmental Performance Standards

Hierarchy of Controls	Control Measure	Adopted?	Related ALARP Discussion and Alternate, Additional or Improved Control Measures Considered	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Elimination	On board storage of sewage, greywater and food wastes for transport to and disposal at an onshore facility.	No	Offers limited environmental benefit, as any changes to water quality beyond a localised mixing zone are likely to have no environmental effect.  Is likely to increase operational costs associated with additional transits to and from port and introduce additional safety and environmental risks related to increased transit time and operation of additional vessels, plant and equipment.	N/A	N/A	N/A
Substitution	Use of sewage treatment system to treat all sewage prior to disposal	No	Offers limited environmental benefit, as the addition of chemicals (such as flocculants and defoaming agents) would be required to treat the effluent. Though some reduction in area impacted may occur this benefit is offset against the detrimental addition and increased cost of refined chemicals. Therefore the available environmental impact reduction is negligible to non-existent.	N/A	N/A	N/A
Engineering	Further treatment e.g. disinfection of the waste-stream prior to discharge	No	There are no known sensitive receptors to human pathogens in the vicinity of the discharge location that may be impacted therefore disinfection of the waste stream is not considered to provide a reduction in the impact. Additionally, not dosing the waste stream with a disinfectant such as chlorine will avoid potential cumulative impacts with other chlorine dosed streams such as cooling water.  Furthermore, the consumption of disinfection chemicals, the resources consumed to transport the chemicals, and	N/A	N/A	N/A



Hierarchy of Controls	Control Measure	Adopted?	Related ALARP Discussion and Alternate, Additional or Improved Control Measures Considered	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
			the risk of excess chlorine being released into the sea outweighs the negligible environmental benefits of disinfecting treated sewage effluent prior to discharge.			
Engineering	Marine vessel compliance with Marine Order 96 (International Sewage Pollution Prevention [ISPP] certificates) as relevant to vessel class, size and type.	Yes	This control measure is in accordance with Protection of the Sea (Prevention of Pollution from Ships) Act 1983 and the relevant AMSA Marine Orders.	7.9	Assurance will be undertaken on the survey vessel to check for valid and in date International Sewage Pollution Prevention (ISPP) Certificates (or equivalent voluntary statement of compliance audits where relevant) , as required by vessel class requirements.	Assurance records
Administrative and Procedural Controls	The survey vessel will maintain a Garbage Management Plan (or equivalent) as required by vessel class, size and type.	Yes	The Survey Vessel will have its own Garbage Management Plan/Procedure (or equivalent) to manage wastes generated and stored onboard. All wastes that are not permitted for discharge are sent ashore for reuse, treatment, recycling and/or disposal as appropriate. This control measure is in accordance with Protection of the Sea (Prevention of Pollution from Ships) Act 1983 and AMSA Marine Order 95.	7.10	Survey vessel (to which MARPOL Annex V / Marine Order 95 applies) has a current Garbage Management Plan (or equivalent) and discharges are compliant with Marine Order 95.	Garbage Management Plan (or equivalent) is sighted onboard the survey vessel and is maintained up to date.

### 9.9.5 Acceptability of Impacts

**Table 9-41: Acceptability of Impacts – Discharge of Liquid Effluent**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Physical Environment	Water Quality	No significant impacts to water quality during the Crux project.	Yes	Liquid discharges have the potential to result in reduced water quality in the immediate vicinity of the discharge location, however discharges will rapidly dilute and disperse in the open ocean environment. Modelling studies indicate impacts to water quality are likely to be highly localised around the discharge locations, which is consistent with industry monitoring studies and demonstrates high confidence in the assessment that ecological integrity, social amenity and human health values will not be significantly impacted.  The potential magnitude of impacts to marine ecosystems is slight. Given the offshore location and absence of particularly sensitive marine ecosystems at the operational area and immediate surrounds, potential impacts are considered acceptable.
	Sediment Quality	No significant impacts to sediment quality during the Crux project.	Yes	Liquid discharges may result in a slight decrease in sediment quality at locations around the petroleum activity. However, there is high confidence in the assessment that biodiversity, ecological integrity, social amenity and human health values will be protected at all times.
Ecosystems, Communities and Habitats	Benthic communities	No significant impacts to benthic habitats and communities.  Impacts to non-sensitive benthic communities limited to a maximum of 5% of the project area.	Yes	Liquid discharges from the vessel cannot be avoided. However, the area influenced from routine operational discharges is expected to be limited to within immediate surrounds of the liquid discharge locations. The potential magnitude of impacts to marine ecosystems is slight. Given the offshore location and absence of particularly sensitive marine ecosystems and benthic communities within the operational area and immediate surrounds, potential impacts are considered acceptable.
Threatened Species and Ecological Communities	Marine Mammals Marine Reptiles Birds Fish Sharks and Rays	No mortality or injury of threatened or migratory MNES fauna from the Crux project.  Management of aspects of the Crux project must be aligned to conservation advice, recovery plans and threat abatement plans	Yes	Most threatened and/or migratory fauna species within the area predicted to be influenced by the planned liquid discharges are air breathing vertebrates, which are unlikely to be directly affected as their skin is relatively impermeable and they breathe air. Hence, direct impacts are not considered credible. Non-air breathing species are not anticipated to be present in significant numbers nor be exposed to levels that may adversely impact on individuals and therefore there will be no significant impacts.  Given the transient nature and absence of important habitat and ecological assemblages of pelagic species, there is high confidence that potential impacts to pelagic communities within a

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Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
		published by the DoEE. No significant impacts to threatened or migratory MNES fauna.		<p>localised mixing zone are considered acceptable given there will not be any significant adverse effect on pelagic communities, populations, habitats or spatial distribution of a species.</p> <p>Liquid discharges may result in a slight decrease in water quality in the immediate surrounds of the discharge points. Therefore, there is high confidence in the assessment that the following relevant significant impact criteria will not be breached:</p> <ul style="list-style-type: none"> <li>• Substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health; or</li> <li>• Persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, social amenity or human health may be adversely affected.</li> </ul> <p>Hence, the highly localised impacts predicted from liquid discharges will not credibly exceed the MNES significant impact criteria as listed in Table 8-1.</p>
Socio-economic and Cultural Environment	N/A	N/A	N/A	N/A

The assessment of impacts from liquid discharges determined the residual impact consequence of slight for physical environment and biological environment (per Table 9-38). As outlined above, the acceptability of the impacts from liquid discharges associated with the petroleum activity have been considered in the context of:

**Principles of ESD**

The impacts from liquid discharges are consistent with the principles of ESD based on the following points:

The environmental receptors within the Operational Area and defined mixing zones are not expected to be significantly impacted; and

The precautionary principle has been applied.

**Relevant Requirements**

Management of the impacts from liquid discharges are consistent with relevant legislative requirements, including:

- Compliance with international maritime conventions, including:
  - MARPOL:
    - Annex I: regulations for the prevention of pollution by oil
    - Annex II: regulations for the control of pollution by noxious liquid substances in bulk
    - Annex III: regulations for the prevention of pollution by harmful substances carried by sea in packaged form, and
    - Annex IV: regulations for the prevention of pollution by sewage from ships
    - Annex V: (regulation for the prevention of pollution by garbage from ships).

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- Compliance with Australian legislation and requirements, including:
  - Navigation Act 2012 and Protection of the Sea (Prevention of Pollution from Ships) Act 1983:
    - Marine Order 91 (Marine pollution prevention – oil)
    - Marine Order 93 (Marine pollution prevention – noxious liquid substances)
    - Marine Order 94 (Marine pollution prevention – packages harmful substances)
    - Marine Order 95 (Marine pollution prevention – garbage)
    - Marine Order 96 (Marine pollution prevention – sewage).

Management of impacts and risks are consistent with policies, strategies, guidelines, conservation advice, and recovery plans for threatened species (Table 9-42)

### **Matters of National Environmental Significance**

#### **Threatened and Migratory Species**

The evaluation of liquid discharges impacts indicates significant impacts to threatened and migratory species will not credibly result from the liquid discharges aspect of the petroleum activities.

Alignment of the petroleum activities with management plans, recovery plans and conservation advice for threatened and migratory fauna is provided in Table 9-42.

#### **Commonwealth Marine Area**

The impacts and risks from the liquid discharges aspect of the petroleum activities on the Commonwealth marine environment will not exceed any of the significant impact criteria provided in Table 9-42.

**Table 9-42: Summary of Alignment of the impacts from the Liquid Discharges Aspect of the Petroleum Activities with Relevant Requirements for MNES**

<b>Matters of National Environmental Significance</b>	<b>MNES Acceptability Considerations (EPBC Management Plans/Recovery Plans/Conservation Advice)</b>	<b>Demonstration of Alignment as Relevant to the Project</b>
Threatened and Migratory Species	Significant impact guidelines for Critically Endangered, Endangered, Vulnerable and Migratory species Table 8-1)	<p>The application of the Shell Chemical Management Process and proposed management controls for liquid discharges reduces the impact of toxic pollutants being introduced into and/or persisting in the marine environment.</p> <p>An environmental monitoring adaptive management program has been developed for liquid discharges as described in Section 10.4.1. This program will seek to demonstrate that the actual levels of recorded impacts for key discharges do not exceed those which were predicted within the impact assessment presented in this EP. If recorded impact levels do exceed those described, this would trigger the adaptive management process and assessment under the Shell MOC Manual (Refer to Section 10.1.4)</p>
	Conservation advice on Balaenoptera borealis (sei whale) (DoE 2015c)	
	Conservation advice fin whale (Balaenoptera physalus) (DoE 2015d)	
	Recovery plan for marine turtles in Australia (Commonwealth of Australia 2017a)	
	Conservation advice on Rhincodon typus (whale shark) (DoE 2015e)	
Wetlands of International Importance	N/A	N/A



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<b>Matters of National Environmental Significance</b>	<b>MNES Acceptability Considerations (EPBC Management Plans/Recovery Plans/Conservation Advice)</b>	<b>Demonstration of Alignment as Relevant to the Project</b>
Commonwealth Marine Area	Significant impact guidelines for Commonwealth marine environment	<p>Water quality impacts by planned liquid discharges are expected to be limited to the immediate surrounds of the vessel for all discharge streams. Impacts confined within this area are not considered to be significant in the context of the significant impact criteria for the Commonwealth Marine Area given the nature and scale of the impacts and the characteristics of the local receiving environment (open offshore waters with regionally well represented soft and bare sandy sediments). The impact assessment indicates the impacts associated with the discharge of liquid discharges will not result in a significant adverse impact on marine ecosystem functioning/integrity, social amenity or human health.</p> <p>Shell has sought to reduce potential impacts through the selection and implementation of the controls and EPSs listed in Section 9.9.4.</p>

**External Context**

There have been no objections or claims raised by Relevant Persons to date around liquid effluent discharges. Shell’s ongoing consultation program will consider feedback and claims or objections made by Relevant Persons throughout the life of this EP. Where new impacts or risks are established these will be subject to the MOC process described in Section 10.1.4.

**Internal Context**

Shell has also considered the internal context, including Shell’s environmental policy and ESHIA requirements. The environmental performance outcomes, and the controls which will be implemented, are consistent with the outcomes from Relevant Person consultation for the petroleum activity and Shell’s internal requirements.

**Acceptability Summary**

The assessment of impacts and risks from liquid discharges determined the residual impacts rankings were slight or lower (Table 9-38). As outlined above, the acceptability of the impacts have been considered in the context of:

- The established acceptability criteria for the liquid discharges aspect
- ESD
- Relevant requirements
- MNES
- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

Shell considers residual impacts of slight or lower to be acceptable if they meet legislative and Shell requirements. The discussion above demonstrates that these requirements have been met in relation to the liquid discharges aspect.

Based on the points discussed above, Shell considers the impacts from liquid discharges associated with the petroleum activity to be acceptable.

**9.9.6 Environment Performance Outcomes**

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Environment Performance Outcomes	Measurement Criteria
No significant impacts to water quality from liquid discharges.	Demonstrated implementation of EPSs for discharge of liquid effluents
No impacts to sediment quality from liquid discharges.	
No impact to water quality beyond 1 km from liquid discharges.	
No impacts to any KEFs surrounding the activity.	
No injury or mortality of listed Threatened or Migratory MNES species as a result of discharge of liquid effluent.	
No impacts to coral reefs occurring at Browse Island or nearby Shoals (Echuca/Heywood).	

## 9.10 Atmospheric Emissions

### 9.10.1 Aspect Context

Emissions of atmospheric pollutants (e.g. nitrogen oxides, sulphur oxides, carbon monoxide and particulate matter (PM, PM<sub>10</sub> and PM<sub>2.5</sub>), air toxics which includes mainly volatile organic compounds (VOCs) (e.g. benzene, toluene, xylenes, formaldehyde, etc), greenhouse gases and other harmful to human health gases (e.g. hydrogen sulphide) have the potential to impact local and regional air quality and climate change. The list of sources of such emissions for vessel activities include:

- Combustion of fuel for power generation
- Combustion of fuel for transportation purposes

Sources of internal combustion emissions in the Operational Area include:

- Propulsion and electricity generation engines on the survey vessel

Given the offshore remote context, and the low volumes of atmospheric emission which will be generated, environmental sensitivities that may be impacted by emissions of atmospheric pollutant include only the physical environment (air quality), assessed below. No impacts on the ecosystems, communities and habitats; threatened species and ecological communities; and socio-economic and cultural environment are reasonably foreseeable.

### 9.10.2 Description and Evaluation of Impacts

#### 9.10.2.1 Physical Environment

##### Air Quality

Minor emissions are predicted from the vessel due to the use of diesel combustion engines. The operational area does not contain any species BIA's which could be affected by atmospheric pollutants.

The extent of the area of impact is predicted to be localised to the emission point as offshore winds will rapidly disperse atmospheric emission to background levels close to the source for a duration of the activity. The residual impact is assessed as slight based on emissions will rapidly disperse to background levels close to the emission source.

Given the offshore remote context, and the low volumes of atmospheric emission which will be generated, environmental sensitivities that may be impacted by emissions of atmospheric pollutant include only the physical environment (air quality). No impacts on the biological, socio-economic and cultural environment are reasonably foreseeable.

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### 9.10.3 Impact Assessment Summary

**Table 9-43: Atmospheric Pollutant and Air Toxics Emissions Evaluation of Residual Impacts**

Environmental Receptor	Magnitude	Sensitivity	Residual Impact Consequence
<i>Evaluation – Planned Impacts</i>			
Physical Environment	-1	L	Slight
Ecosystems, Communities and Habitats	N/A	N/A	N/A
Threatened Species and Ecological Communities	N/A	N/A	N/A
Socio-Economic and Cultural Environment	N/A	N/A	N/A



#### 9.10.4 ALARP Assessment and Environmental Performance Standards

Table 9-44: ALARP Assessment and Environmental Performance Standards

Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Administrative and Procedural Controls	Use low sulphur fuel oil/ diesel (< 0.5% m/m S) for survey vessel fuel.	Yes	This MARPOL Annex VI requirement, enforced by AMSA Marine Order 97, came into force from 1 January 2020 and applies to the survey operating in the Operational Area.	8.6	Use only low sulphur fuel oil/ diesel (<0.5% m/m S) for the survey vessel.	Sulphur content of diesel, % w/w as verified in bunker receipts.
Administrative and Procedural Controls	Specified vessels comply with AMSA Marine Order 97 (Marine Pollution Prevention – Air Pollution) and the requirements of the Shell Marine Assurance Process and procedures regarding management of air pollution as required by vessel class, size and type.	Yes	AMSA Marine Order 97 requires specified marine vessels to possess the applicable pollution prevention and energy efficiency certificates. These certificates include Engine International Air Pollution Prevention Certificate (EIAPP), International Air Pollution Prevention Certificate (IAPP) and an International Energy Efficiency (IEE) Certificate. In addition all vessels with a gross tonnage of 400 or more are required to carry a Ship Energy Efficiency Management Plan (SEEMP). These requirements are also recognised and enforced in the Shell Marine Assurance Process and procedures.	8.7	The survey-vessel is required to have the following valid documentation as required by vessel class, size and type: <ul style="list-style-type: none"> <li>• EIAPP certificate;</li> <li>• IAPP certificate;</li> <li>• IEE certificate;</li> <li>• SEEMP.</li> </ul> where applicable	Assurance records confirming SEEMP and IAPP, EIAPP, IEE certificates are in place.

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### 9.10.5 Acceptability of Impacts

**Table 9-45: Acceptability of Impacts – Atmospheric Emissions**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Physical Environment	Air Quality	No significant impacts to air quality during the Crux project	Yes	Given the short duration of the activity (<15 days) and the controls that have been adopted, there are no predicted significant impacts to air quality.

The assessment of atmospheric pollutant emissions determined the impact magnitude to be minor. Given that air quality in the area is generally expected to be very high and the lack of sensitive human receptor populations in the petroleum activity airshed as defined in the Air Quality NEPM (NEPC, 1998), the residual impact consequence ranking is assessed as Slight (Magnitude -1, Sensitivity – M) and therefore acceptable (Table 9-43). Impacts on air quality have also been considered in the following context.

#### ***Principles of ESD***

The impacts from atmospheric pollutant and air toxics emissions are acceptable and consistent with the principles of ESD based on the following points:

- The environmental values/sensitivities within the Operational Area and the regional airshed are not expected to be significantly impacted.
- The precautionary principle has been applied to the impact modelling study and in the impact assessment.

#### ***Relevant Requirements***

Management of impacts from atmospheric emissions is consistent with relevant legislative requirements, including:

- Marine fuel oil used by marine vessels supporting operations complies with 1 January 2020 MARPOL Annex VI requirement for 0.5% m/m S content in marine fuel oil and diesel.

#### ***Matters of National Environmental Significance***

##### **Threatened and Migratory Species**

The evaluation of atmospheric pollutant emissions from the vessel operations indicates significant impacts and risks to threatened and migratory species will not credibly result from combustion of fuels aspects of the petroleum activities.

Alignment of the petroleum activities with management plans, recovery plans and conservation advice for threatened and migratory fauna is provided in Table 9-46.

##### **Commonwealth Marine Environment**

The impacts and risks from atmospheric pollutant emissions from the petroleum activities on the Commonwealth marine environment will not exceed any of the significant impact criteria provided in Table 9-46.

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**Table 9-46: Summary of Alignment of the Impacts from the Atmospheric Pollutant Emissions Aspect of the petroleum activities with Relevant Requirements for EPBC Threatened Fauna**

<b>Matters of National Environmental Significance</b>	<b>MNES Acceptability Considerations (Significant Impact Criteria, EPBC Management Plans/Recovery Plans/Conservation Advice)</b>	<b>Demonstration of Alignment as Relevant to the Project</b>
Threatened and Migratory Species	None applicable to atmospheric pollutant emissions	N/A
Wetlands of International Importance	None applicable to atmospheric pollutant emissions	N/A
Commonwealth marine area	No significant impacts on Air Quality	Criteria for significant impacts and risks to air quality over the Commonwealth Marine area where the petroleum activity will occur have not been triggered by atmospheric pollutant emissions.

**Internal and External Context**

There have been no objections or claims raised by Relevant Persons in preparation of this EP related to atmospheric emissions.

Shell has also considered the internal context, including Shell’s environmental policy and ESHIA requirements. The environmental performance outcomes, and the controls which will be implemented, are consistent with Shell’s internal requirements.

**Acceptability Summary**

The assessment of impacts from atmospheric pollutant and air toxics emissions determined the residual impact rankings to be Slight (Table 9-4). As outlined above, the acceptability of the impacts and risks from this aspect have been considered in the context of:

- The established acceptability criteria for impacts and risks for this aspect
- ESD
- Relevant legislative requirements
- MNES
- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

The residual impacts are slight which Shell considers to be inherently acceptable if they meet legislative and Shell requirements. The discussion above demonstrates that these requirements have been met in relation to the atmospheric pollutant emissions aspect.

Based on the points discussed above, Shell considers the impacts from atmospheric pollutant emissions associated with the petroleum activity to be acceptable and ALARP.

**9.10.6 Environment Performance Outcome**

<b>Environment Performance Outcome</b>	<b>Measurement Criteria</b>
Avoid significant impacts to the airshed surrounding the Operational Area of the petroleum activity.	Low sulphur diesel or fuel oil used in vessel combustion a per MARPOL requirements.



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## 9.11 Waste Management

### 9.11.1 Aspect Context

Many activities on the vessel results in the generation of a variety of hazardous and non-hazardous waste streams. Non-hazardous wastes include domestic and industrial wastes, such as aluminium cans, bottles, paper and cardboard and scrap steel. Hazardous wastes include oil contaminated materials (e.g. sorbents, filters and rags), spent chemical containers, paint solvents and containers, light tubes and batteries. All wastes generated (other than permitted waste discharge streams addressed elsewhere within this EP) are transported to shore for reuse, recycling, treatment or disposal by a licensed waste contractor. Note that any waste management and disposal within international jurisdictions is out of scope of this EP.

The management of wastes will not result in any planned impacts to the offshore marine environment given there is no planned release; however, improper storage and handling of wastes may result in accidental losses to the marine environment. These unplanned events may result in impacts to the marine environment. Shell's extensive operational experience indicates most accidental releases of wastes to the marine environment are typically relatively small scale and infrequent events.

Waste segregation is established and maintained through the provision of labelled bins, skips or other appropriate receptacles used to comingle similar waste streams in accordance with their classification to realise efficiencies in storage, transport, treatment, recycling and/or disposal.

### 9.11.2 Description and Evaluation of Impacts and Risks

#### 9.11.2.1 Physical Environment

Improper management of hazardous or non-hazardous wastes and/or accidental release may result in pollution of and contamination in the marine environment via reduction in water and sediment quality. This may result in toxic effects, however given the dynamic nature of the offshore receiving environment and the small nature and scale of most potential waste spills/releases, any such effects will be of short duration and highly localised. The implications to potentially sensitive receptors due to a reduction in water and sediment quality are discussed further in the Biological Environment assessment below and are not assessed further in the context of the physical environment.

#### 9.11.2.2 Ecosystems, Communities and Habitats

Habitats and benthos within the Operational Area are not considered to be particularly sensitive or of high conservation value and are well represented in the region. Given the typically small volumes of wastes that may be released during any given event, potential impacts to the sensitive species are expected to be restricted to individual animals (as described below) and would not impact habitats or significant portions of the benthic environment.

#### 9.11.2.3 Threatened Species and Ecological Communities

##### Marine Mammals, Marine Reptiles, Birds, Fish, Sharks and Rays

There is the potential for impacts on threatened species and ecological communities that may interact with wastes, such as packaging and binding, should these enter the ocean. Marine-mammals, reptiles, birds, fish and sharks and rays can become entangled and waste plastics can be ingested when mistaken as prey (Ryan et al. 1988). Marine debris has been identified as a threat for a range of vertebrate fauna species, including marine turtles, birds, marine mammals and sharks and rays. Marine debris is listed as a key threatening process under the EPBC Act. Persistent wastes such as plastics are of particular concern, as the threat to fauna may remain long after the waste is released. Potential impacts of marine debris on key fauna species include (DEWHA 2009c):

- Entanglement, potentially resulting in restricted mobility, drowning, starvation, smothering and wounding
- Ingestion (particularly of plastics) leading to physical blockage of digestive systems, leading to starvation
- Acute or chronic toxic effects.

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Plastic debris can also act as a concentrator of Persistent Organic Pollutants (POPs) that occur universally in seawater at very low concentrations as they get picked up by meso/microplastics via partitioning. The hydrophobicity of POPs can facilitate concentration in the meso/microplastic litter at a level that is several orders of magnitude higher than that in seawater. When ingested by marine species, contaminated plastics present a credible route by which the POPs can enter the marine food web.

Given the small portion of the whale shark foraging BIA that overlaps with the operational area, and the transient nature of this species, any potential interaction with the accidental release of waste would likely occur on an individual species level and would not result any significant impacts at a population level.

Many of the other vertebrate species considered vulnerable to waste impacts occur seasonally or are expected to occur in low densities (e.g. transiting the area).

Apart from waste streams that are permitted for discharge in accordance other sections of this EP, there are no other planned waste discharges from the vessel. Given that any direct impacts from unplanned events to receptors in the offshore environment are likely to be localised and short-term, the residual risk of waste release is assessed to be Dark Blue as per Table 9-47.

### 9.11.3 Risk Assessment Summary

**Table 9-47: Waste Evaluation of Residual Risks**

Environmental Receptor	Consequence	Likelihood	Residual Risk
<i>Evaluation – Unplanned Risks</i>			
Physical Environment	Slight	C	Dark Blue
Ecosystems, Communities and Habitats	Slight	C	Dark Blue
Threatened Species and Ecological Communities	Slight	C	Dark Blue
Socio-Economic and Cultural Environment	N/A	N/A	N/A



9.11.4 ALARP Assessment and Environmental Performance Standards

Table 9-48: ALARP Assessment and Environmental Performance Standards

Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Elimination	N/A	N/A	Waste generation cannot be eliminated from the offshore facilities.	N/A	N/A	N/A
Substitution	N/A	N/A	The use of alternative materials which will produce less wastes is part of the Product Stewardship Standards of Shell.  If materials that generate less wastes are identified in the future, these will undergo appropriate assessment.	N/A	N/A	N/A
Administrative and Procedural Controls	The survey vessel will maintain a Garbage Management Plan (or equivalent) as relevant to vessel class, type and size.	Yes	Vessel required to have its own Garbage Management Plan/Procedure (or equivalent) to manage wastes generated and stored onboard. All wastes that are not permitted for discharge are sent ashore for reuse, treatment, recycling and/or disposal as appropriate. This control measure is in accordance with Protection of the Sea (Prevention of Pollution from Ships) Act 1983 and AMSA Marine Order 95.	10.2	Vessel (to which MARPOL Annex V / Marine Order 95 applies) has a current Garbage Management Plan (or equivalent).	Garbage Management Plan (or equivalent) is sighted onboard vessel and is maintained up to date.
				10.3	Vessel to comply with AMSA marine order 94 & 95 (marine pollution prevention – packaged harmful substances/garbage), specifically:  No planned disposal of domestic waste, solid wastes or maintenance wastes overboard from (other than planned discharges permitted by this EP).	Garbage record book maintained for vessel as per Marine Order 95 demonstrates that there were no unpermitted discharges of solid waste as part of the petroleum activities.

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### 9.11.5 Acceptability of Impacts

**Table 9-49: Acceptability of Impacts – Waste Management**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Physical Environment	Water Quality	No significant impacts to water quality during the Crux project.	Yes	Unplanned discharge of hazardous wastes have the potential to result in reduced water quality at the discharge location. Controls in place ensure that that likelihood of hazardous waste being released into the environment are limited. Additionally, if small volume discharges were to occur, they would rapidly dilute/disperse in the open ocean environment with no significant impacts.
Ecosystems, Communities and Habitats	Benthic communities	No significant impacts to benthic habitats and communities.  Impacts to non-sensitive benthic communities limited to a maximum of 5% of the project area.	Yes	Shell implements MARPOL standards and internal controls in relation to managing wastes, which reduces the likelihood of wastes being accidentally released to the marine environment. Given the remote location and the lack of significantly diverse benthic communities or habitats that support the congregation of threatened species within the Operational Area, any accidental release of wastes to the environment would not be expected to interact with or cause impact to a significant number of threatened or migratory MNES species.
Threatened Species and Ecological Communities	Marine Mammals Marine Reptiles Birds Fish Sharks and Rays	No mortality or injury of threatened or migratory MNES fauna from the Crux project.  Management of aspects of the Crux project must be aligned to conservation advice, recovery plans and threat abatement plans published by the DoEE.  No significant impacts to threatened or migratory MNES fauna.	Yes	Given the small portion of the whale shark foraging BIA that overlaps with the operational area, and the transient nature of this species, any potential interaction with the accidental release of waste would likely occur on an individual species level and would not result any significant impacts at a population level. Consistent with Table 8-1, the unlikely event of individual impact to this species is not considered to cause a significant impact to MNES.
Socio-economic and Cultural Environment	N/A	N/A	N/A	N/A

The assessment of risks from waste determined the residual risk rating of Dark Blue (Table 9-47). As outlined above, the acceptability of the risks from waste associated with the petroleum activities has been considered in the following context.

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### **Principles of ESD**

The risks from waste are consistent with the principles of ESD based on the following points:

The environmental values/sensitivities within the Operational Area are not expected to be significantly impacted, and

The precautionary principle has been applied to the risk assessment.

### **Relevant Requirements**

Management of the risks from waste are consistent with relevant legislative requirements, including:

- MARPOL Annex V as ratified by the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*
- *Navigation Act 2012 (Cth)* and *Protection of the Sea (Prevention of Pollution) Act 1983 (Cth)*:
  - Marine Order 94 – Marine pollution prevention – packaged harmful substances
  - AMSA Marine Order 95 (marine pollution prevention – garbage).
- Management of impacts and risks are consistent with policies, strategies, guidelines, conservation advice, and recovery plans for threatened species (Table 9-50).

### **Matters of National Environmental Significance**

#### **Threatened and Migratory Species**

The evaluation of waste risks indicates significant risks to threatened and migratory species will not credibly result from the waste aspect of the petroleum activities given the limited number of animals that could potentially be impacted in the unlikely event of an unplanned release.

Alignment of the petroleum activities with management plans, recovery plans and conservation advice for threatened and migratory fauna is provided in Table 9-50.

#### **Commonwealth Marine Environment**

The impacts and risks from the waste aspect of the petroleum activity on the Commonwealth marine environment will not exceed any of the significant impact criteria provided in Table 8-1.

**Table 9-50: Summary of Alignment of the Risks from the Waste Aspect of the Petroleum Activities with Relevant Requirements for EPBC Threatened Fauna**

<b>Matters of National Environmental Significance</b>	<b>MNES Acceptability Considerations (Significant Impact Criteria, EPBC Management Plans/Recovery Plans/Conservation Advice)</b>	<b>Threats Relevant to the Project</b>	<b>Demonstration of Alignment as Relevant to the Project</b>
Threatened and Migratory Species	Conservation advice on sei whale ( <i>Balaenoptera borealis</i> ) (DoE 2015c)	Pollution (persistent toxic pollutants)	Waste generated during the petroleum activities described in this EP will be managed in accordance with standard maritime requirements, international conventions (MARPOL), relevant Marine Orders and Shell's internal management system requirements. This management reduces the likelihood of the accidental release of hazardous and non-hazardous wastes into the marine environment.  The frequency, quantities and nature of wastes that may be accidentally released into the environment are unlikely (C) to result in significant impacts to threatened/migratory species or the
	Conservation advice on fin whale ( <i>Balaenoptera physalus</i> ) (DoE 2015d)	Pollution (persistent toxic pollutants)	
	Conservation management plan for the blue whale: A recovery plan under the Environment Protection and Biodiversity Conservation Act 1999 2015–2025 (Commonwealth of Australia 2015a)	Habitat modification including presence of oil and gas platforms/rigs, marine debris infrastructure and acute/chronic	



Matters of National Environmental Significance	MNES Acceptability Considerations (Significant Impact Criteria, EPBC Management Plans/Recovery Plans/Conservation Advice)	Threats Relevant to the Project	Demonstration of Alignment as Relevant to the Project
		chemical discharge	Commonwealth Marine Environment (Table 8-1).
	Conservation advice on humpback whale ( <i>Megaptera novaeangliae</i> ) (DoE 2015b)	Entanglement – marine debris	
	Significant impact guidelines for Critically Endangered, Endangered, Vulnerable and Migratory species (Table 8-1)	Marine debris	
	Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017)	Marine debris	
	Conservation advice on leatherback turtle ( <i>Dermochelys coriacea</i> ) (DEWHA 2008)	Marine debris	
	Significant impact guidelines for Critically Endangered, Endangered, Vulnerable and Migratory species (Table 8-1)	Marine debris	
	Conservation advice on whale shark ( <i>Rhincodon typus</i> ) (DoE 2015e)	Marine debris	
	Significant impact guidelines for Critically Endangered, Endangered, Vulnerable and Migratory species (Table 8-1)	Marine debris	
Commonwealth Marine Area	Significant Impact Guidelines for the Commonwealth marine environment (Table 8-1)	Marine debris	
	Threat abatement plan for the impacts of marine debris on vertebrate marine life (DEWHA 2009c)	Marine debris	
Wetlands of International Importance	N/A	N/A	N/A

**External Context**

There have been no objections or claims raised by Relevant Persons to date related to waste management. Shell’s ongoing consultation program will consider feedback and claims or objections made by Relevant Persons throughout the life of this EP. Where new impacts or risks are established these will be subject to the MOC process described in Section 10.1.4.



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**Internal Context**

Shell has also considered the internal context, including Shell’s Waste Strategy and Guidelines, environmental policy and ESHIA requirements. The environmental performance outcomes, and the controls which will be implemented, are consistent with the outcomes from Relevant Person consultation for the petroleum activity and Shell’s internal requirements.

**Acceptability Summary**

The assessment of and risks from waste determined the residual risk rating to be Dark Blue (Table 9-6). As outlined above, the acceptability of the impacts and risks from waste have been considered in the context of:

- The established acceptability criteria for the waste aspect
- ESD
- Relevant requirements
- MNES
- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

Shell considers residual risks of Dark Blue or lower to be inherently acceptable if they meet legislative and Shell requirements. The discussion above demonstrates that these requirements have been met in relation to the waste aspect.

Based on the points discussed above, Shell considered the risks from waste associated with the petroleum activities described in this EP to be acceptable.

**9.11.6 Environment Performance Outcome**

Environment Performance Outcome	Measurement Criteria
No injury or mortality of listed Threatened or Migratory MNES species as a result of unplanned waste discharge to sea.	Fauna observations and incident reports demonstrate no mortality of listed Threatened or Migratory species as a result of unplanned waste discharged from the petroleum activities within the Operational Area.

**9.12 Emergency Events**

**9.12.1 Scenario Context**

One unplanned event (i.e. incidents or emergencies) resulting in the potential for large-scale releases of hydrocarbons was identified for the petroleum activities, which is:

LOC of diesel following a collision between any marine vessels operating in the field

A worst-case scenario resulting from this event has been considered in this environmental risk assessment. The smaller spills have not been discussed specifically as their consequences will be lesser in both magnitude and impact.

**LOC of Diesel**

A diesel spill to the Operational Area could occur as outcome from a collision between any marine vessels operating in the Operational Area.

The risk of a spill from vessel to vessel collision depends on the severity of impact, i.e. the speed and orientation of the vessels during the event. The worst-case scenario is where one of the vessels is ‘hit’ from the broadside by another vessel moving at near full speed resulting in a puncture of the diesel tanks below the waterline.

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A typical vessel which may be used in this petroleum activity is expected to have diesel single storage tank capacities of around 120 m<sup>3</sup>. The likelihood of collision between the survey vessel and any other vessels in the field is considered remote given the low frequency of vessel collisions in ports resulting in fuel loss of containment (Det Norske Veritas, 2011) further reduced by the fact that the Operational Area is far less busy than any other Australian or international port.

The [Prelude Oil Pollution Emergency Plan \(Rev 5, 2020\)](#) is being adopted for this petroleum activity given the relatively small nature and scale of the spill risk (around 120 m<sup>3</sup>). Specifically Prelude OPEP sections table A, 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 15, 16, 17 and 18 are considered directly applicable for this petroleum activity and spill risk.

The Prelude OPEP was designed on the basis of a 750 m<sup>3</sup> diesel spill scenario at the Prelude FLNG location. The NERA Reference Case (NERA 2018) limit of 700 m<sup>3</sup> was used to ascertain the risk Planning Area for this EP (as described in Section 7, and has been conservatively used for the purpose of setting the Planning Area given that the Prelude FLNG diesel spill scenario release location was not modelled at the Crux location. The actual worst credible spill scenario is about 120 m<sup>3</sup>, this approach is therefore considered conservative and appropriate to apply to this petroleum activity for spill impact assessment and planning purposes. The likelihood of this event happening is estimated as remote given no such events have occurred in Shell or are known of in the industry.

### 9.12.2 Overview of Unplanned Spill Modelling (Prelude FLNG location)

The NERA reference case was applied to determine the risk Planning Area. Details of the modelling studies that underpin the geographic extent of the risk Planning Area can be found in the reference case. The rest of this section focuses on the numerical modelling studies that were commissioned for the worst-case credible spill scenarios outlined above associated the Prelude OPEP.

**Table 9-51: Summary of Modelled Hydrocarbon and Hazardous Liquids Scenarios**

Scenario	Location Name	Latitude	Longitude	Depth (m)	Hazardous Liquid	Duration	Total Volume (m <sup>3</sup> )
Loss of containment of diesel	Prelude FLNG	13°47.2'S	123°19.0'E	surface	Diesel	1 hour	750

The following models were used to predict impacts from these scenarios:

The diesel spill scenario was modelled using the OILMAP-Deep model for nearfield modelling and the SIMAP model for the far field effects. 200 replicates over four seasons were run.

SIMAP and CHEMMAP represent 3D stochastic models, with physical fates component for oils and chemicals, biological effects and exposure component, GIS component, and environmental features, oil/ chemical and biological databases. OILMAP-Deep is a 2D/3D deterministic model, simulating the fate of oil in the environment (surface, water column and air distribution), interactions with the ecological component of the environment and has a stochastic component which determines the probability and time contours of oiling of the various environmental components and the most likely spill paths on a monthly, seasonal, or annual basis. The metocean conditions used as input to each model were derived from a 39-year data set of current speed and direction at half-hourly intervals.

A stochastic modelling scheme was followed for each modelled scenario, whereby the respective model was applied to repeatedly simulate the defined spill scenario using different samples of current and wind data. Starting dates for each simulation were distributed between the seasons (e.g. summer and winter) to capture the influence of the temporal and spatial variations in the current patterns that would affect the trajectory of any hydrocarbon or chemical spills that commenced in these periods. The results of the replicate simulations were then statistically analysed and mapped to define contours of risk around the release point.

For hydrocarbons, the timeseries contour compilations include floating, entrained, dissolved and accumulated hydrocarbons.

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## Hydrocarbon Impact Thresholds

Spilled hydrocarbons can exist as floating, entrained, dissolved and accumulated (i.e. stranded onshore) hydrocarbons. Each of these fractions/ phases can interact with the environment in diverse ways due to different pathways to receptors and cause/effect mechanisms. Guideline impact thresholds (NOPSEMA 2019b) for floating, entrained, dissolved and accumulated hydrocarbons were applied to the hydrocarbon spill modelling studies and used to inform the assessment of potential impacts and risks. Three thresholds were applied to each phase i.e. low exposure, moderate exposure and high exposure. These are described in Table 9-52 and are used to delineate the extent (outer edge) of the low, moderate or high exposure zones for each hydrocarbon type. The low, moderate and high exposure zones represent bands/ ranges of hydrocarbon concentrations, grouped on the basis of scientific knowledge of potential impacts of the various hydrocarbon phases on environmental receptors.

**Table 9-52: Hydrocarbon Exposure Zones and Thresholds**

Exposure Zone	Threshold	Justification
<b>Floating Oil</b>		
Exposure Zone Low (1–10 g/m <sup>2</sup> )	1 g/m <sup>2</sup>	The 1 g/m <sup>2</sup> threshold represents the practical limit of observing hydrocarbon sheens in the marine environment and therefore has been used to define the outer boundary of the low exposure zone. This threshold is considered below levels which would cause environmental harm and is more indicative of the areas perceived to be affected due to its visibility on the sea-surface. This exposure zone represents the area contacted by the spill and defines the conservative outer boundary of the Planning Area from a hydrocarbon spill.
Adverse exposure zone Moderate (10–25 g/m <sup>2</sup> )	10 g/m <sup>2</sup>	Ecological impact has been estimated to occur at 10 g/m <sup>2</sup> as this level of oiling has been observed to mortally impact birds and other wildlife associated with the water surface (French et al. 1996; French 2000). Contact within this exposure zone may result in impacts to the marine environment.
Adverse exposure zone High (>25 g/m <sup>2</sup> )	25 g/m <sup>2</sup>	The 25 g/m <sup>2</sup> threshold is above the minimum threshold observed to cause ecological impact. Studies have indicated that a concentration of surface oil 25 g/m <sup>2</sup> or greater would be harmful for the majority of birds that contact the hydrocarbon at this concentration (Koops et al. 2004; Scholten et al. 1996). Exposure above this threshold is used to define the high exposure zone.
<b>Accumulated (Shoreline) Oil</b>		
Exposure zone Low (10–100 g/m <sup>2</sup> )	10 g/m <sup>2</sup>	A threshold of 10 g/m <sup>2</sup> has been defined as the zone of potential 'low' exposure. This exposure zone represents the area visibly contacted by the spill and defines the outer boundary of the Planning Area from a hydrocarbon spill.
Adverse exposure zone Moderate (100–1,000 g/m <sup>2</sup> )	100 g/m <sup>2</sup>	French et al. (1996) and French-McCay (2009) have defined an oil exposure threshold of 100 g/m <sup>2</sup> for shorebirds and wildlife (furbearing aquatic mammals and marine reptiles) on or along the shore, which is based on studies for sub-lethal and lethal impacts. The 100 g/m <sup>2</sup> threshold has been used in previous environmental risk assessment studies (French et al. 2011; French-McCay 2004; French-McCay 2003; French McCay et al. 2012; National Oceanic and Atmospheric Administration 2013). This threshold is also recommended in AMSA's foreshore assessment guide as the acceptable minimum thickness that does not inhibit the potential for recovery and below which is best remediated by natural coastal processes alone (AMSA 2015). Thresholds of 100 g/m <sup>2</sup> and 1,000 g/m <sup>2</sup> will define the zones of potential 'moderate' and 'high' exposure on shorelines, respectively. Contact within these exposure zones may result in impacts to the marine environment and coastal areas.
Adverse exposure zone High (>1,000 g/m <sup>2</sup> )	1,000 g/m <sup>2</sup>	



Exposure Zone	Threshold	Justification
<b>Entrained Hydrocarbons</b>		
Exposure zone Low exposure (10 parts per billion (ppb)–100 ppb)	10 ppb	The 10 ppb threshold represents the lowest concentration and corresponds generally with the lowest trigger levels for chronic exposure for entrained hydrocarbons in the ANZECC & ARMCANZ (2000) water quality guidelines. Due to the requirement for relatively long exposure times (> 24 hours) for these concentrations to have an observable impact, they are likely to be more meaningful for juvenile fish, larvae and planktonic organisms that might be entrained (or otherwise moving) within the entrained oil plumes, or when entrained hydrocarbons adhere to organisms or entrained oil is trapped against a shoreline for periods of several days or more. This exposure zone is not considered to be of significant biological impact. This exposure zone represents the area contacted by the spill and conservatively defines the outer boundary of the Planning Area from a hydrocarbon spill.
Adverse exposure zone Moderate (100–500 ppb)	100 ppb	The 100 ppb threshold is considered conservative in terms of potential for toxic effects leading to mortality for sensitive mature individuals and early life stages of species. This threshold has been defined to indicate a potential zone of acute exposure, which is more meaningful over shorter exposure durations.  The 100 ppb threshold has been selected to define the moderate exposure zone. Contact within this exposure zone may result in impacts to the marine environment.
Adverse exposure zone High (>500 ppb)	500 ppb	The 500 ppb threshold is considered a conservative high exposure level in terms of potential for toxic effects leading to mortality for more tolerant species or habitats. This threshold has been defined to indicate a potential zone of acute exposure, which is more meaningful over shorter exposure durations. The 500 ppb threshold has been selected to define the high exposure zone.
<b>Dissolved Aromatic Hydrocarbons</b>		
Exposure zone Low (6–50 ppb)	6 ppb	The threshold value for species toxicity in the water column is based on global data from French et al. (1999) and French-McCay (2003, 2002), which show that species sensitivity (fish and invertebrates) to dissolved aromatics exposure > 4 days (96-hour LC50) under different environmental conditions varied from 6 ppb–400 ppb, with an average of 50 ppb. This range covered 95% of aquatic organisms tested, which included species during sensitive life stages (eggs and larvae). Based on scientific literature, a minimum threshold of 6 ppb is used to define the low exposure zones (Clark 1984; Engelhardt 1983; Geraci and St Aubin 1988; Jenssen 1994; Tsvetnenko 1998). This exposure zone is not considered to be of significant biological impact and conservatively defines the outer boundary of the Planning Area from a hydrocarbon spill.
Adverse exposure zone Moderate (50–400 ppb)	50 ppb	A conservative threshold of 50 ppb was chosen as it is more likely to be indicative of potentially harmful exposure to fixed habitats over short exposure durations (French-McCay 2002). French-McCay (2002) indicates that an average 96-hour LC50 of 50 ppb could serve as an acute lethal threshold to 5% of biota. The 50 ppb threshold has been selected to define the moderate exposure zone. Contact within this exposure zone may result in impacts to the marine environment.
Adverse exposure zone High (>400 ppb)	400 ppb	A conservative threshold of 400 ppb was chosen as it is more likely to be indicative of potentially harmful exposure to fixed habitats over short exposure durations (French-McCay 2002). French-McCay (2002) indicates that an average 96-hour LC50 of 400 ppb could serve as an acute lethal threshold to 50% of biota. The 400 ppb threshold has been selected to define the high exposure zone.

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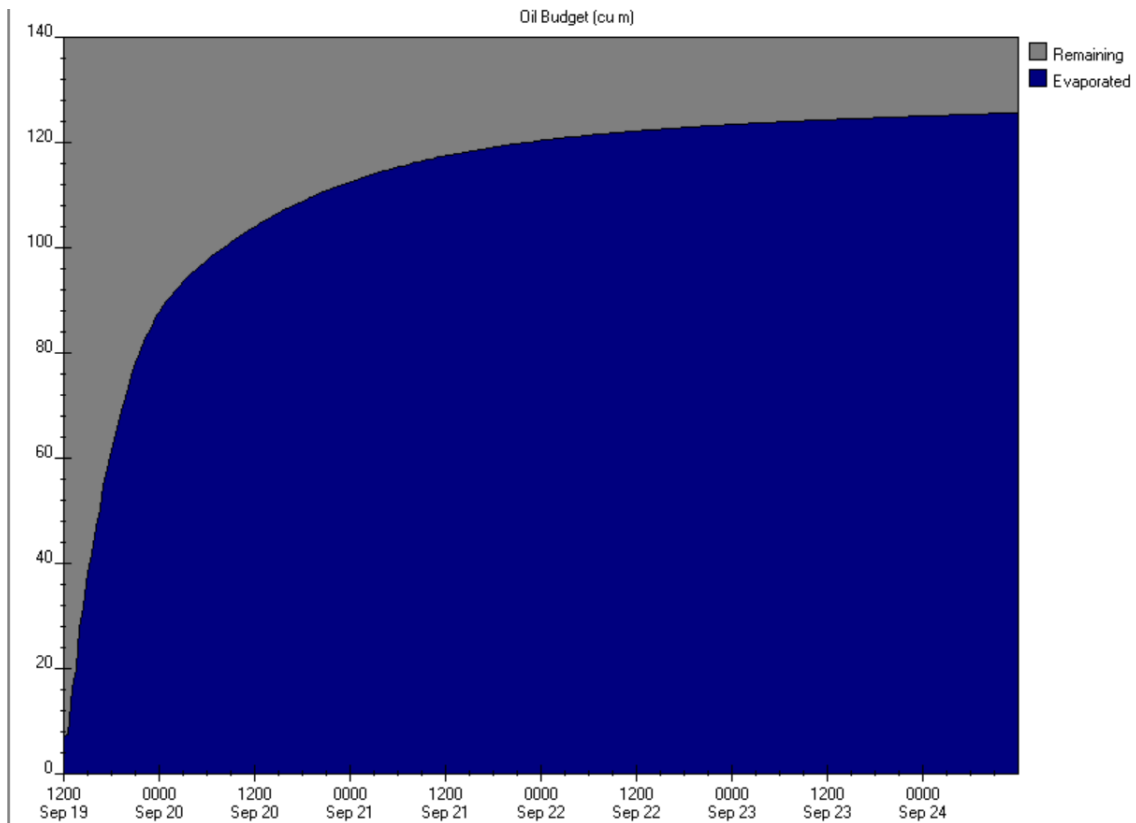
### 9.12.3 Summary of Loss of Containment Modelling Results

#### Diesel Spill

The worst-case diesel spill modelling scenario included 1 hr surface 750m<sup>3</sup> release of Marine Diesel Oil (MDO), nearfield modelling with OILMAP-Deep and SIMAP model which included 200 replicates per four seasons (APASA, 2014c). The key modelling results include:

- The potential **floating oil** exposure zones were shown up to 500 km in the south-southwest direction and 60 km and 10 km from the release location at the low, moderate and high thresholds respectively. The probability of floating oil film contact with Browse Island is 2%, Echuca Shoals 2.5%, Heywood Shoal 1% and less than 0.5% at all other sensitive receptor locations.
- The **maximum accumulated volume** in the worst case replicate simulation is 61.1 m<sup>3</sup>, 6.7 m<sup>3</sup>, 9.1 m<sup>3</sup> and 0.07 m<sup>3</sup> at Browse Island, Ashmore Reef, Cartier Island and Buccaneer Archipelago respectively. The maximum local accumulation averaged among replicate spills is 25 g/m<sup>2</sup> at Browse Island, 7.2g/m<sup>2</sup> at Cartier Island and 5.5 g/m<sup>2</sup> at Scott Reef, with less than 1 g/m<sup>2</sup> at all other emergent features.
- The 100 ppb **entrained oil** annualised probability at the closest sensitive receptors is 3% for Browse Island, 4% for Heywood Shoal and 2% for Echuca Shoals with 1% or less for all other receptors. The probability of contact with entrained oil at the high exposure level of 500 ppb is less than 0.5% at all sensitivities.
- The annualised probability of exposure to **dissolved aromatic hydrocarbons** at the low exposure threshold of 6 ppb is 2% at Browse Island and 1% at Heywood and Echuca shoals. For all other sensitive locations, this exposure probability is less than 0.5%. Annualised probabilities for the moderate and high exposure thresholds of 50 ppb and 400 ppb are less than 0.5% at all sensitivities.

To further demonstrate the conservatism assumed by adopting the 750 m<sup>3</sup> diesel spill scenario an ADIOS2 oil spill budget was run for a 120 m<sup>3</sup> instantaneous loss of containment of diesel (the diesel tank size of the proposed survey vessel) which is represented below in Figure 9-4. It shows that after 3 days, about 15 m<sup>3</sup> of diesel remains following evaporation of the spill. With wind at 10 knots the spill is predicted to have entirely evaporated and dispersed within 24 hours.



**Figure 9-4: ADIOS2 oil spill budget for 120 m<sup>3</sup> instantaneous loss of containment of diesel with wind at 5 knots.**

### 9.12.4 Description and Evaluation of Impacts and Risks

#### 9.12.4.1 Physical Environment

##### Water Quality

For short duration release scenarios (i.e. diesel), dispersion, dilution, physical and biological degradation, and evaporation processes will begin to reduce the total amount of hydrocarbons in the water column shortly after the release (refer to Figure 9-4).

Loss of diesel to the marine environment results in increased concentrations of dissolved aromatic hydrocarbons (DAHs), which include BTEX and Polycyclic Aromatic Hydrocarbons (PAHs). These low molecular weight compounds are known to be toxic to marine biota. The toxicity of DAHs to an organism is dependent on both the concentration and the amount of time an organism is exposed to a given concentration. BTEX compounds do not persist in the environment due to their volatility and will diminish once released into the environment. The concentration of BTEX is expected to be highest near the release location and will decline as the spilled hydrocarbon weathers. PAHs are less volatile than BTEX and are expected to persist for longer in the environment.

The decrease in water quality from the worst-case hydrocarbon spill presented above is expected to result in short-term acute or chronic toxicity immediately follow the spill. The impacts of the toxic effects of a diesel spill are further described in the sections below (refer to Ecosystems, Communities and Habitats and Threatened Species and Ecological Communities).

##### Sediment Quality (Subsurface)

Sediment quality is not expected to be significantly affected by the worst-case scenario. Hydrocarbon contaminants (e.g. PAHs) from diesel surface releases are unlikely to reach the seabed due to the water depth and low natural sedimentation rates in the region. The diesel release from a loss of fuel from a vessel scenario



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have relatively low portions of volatiles, which are expected to evaporate quickly following the release. The remaining diesel fractions may sink to the seabed if exposed to considerable sedimentary particles, however this is considered very unlikely to occur in the open sea due to the low density of the residual hydrocarbons relative to seawater and the naturally low suspended solids and associated sedimentation rates. Residual diesel near shorelines may be exposed to higher sediment loads and be more likely to sink.

The table below presents the risk assessment for the worst case in terms of impacts emergency event for the physical environment, based on the worst case outcome for any environmental receptor (i.e. water quality).

Environmental Receptor	Consequence	Likelihood	Residual Risk
Physical Environment (Water and Sediment Quality)	Massive	B-Remote	Yellow

#### 9.12.4.2 Ecosystems, Communities and Habitats

##### Benthic Communities

###### *Bare Sediments*

The seabed in the Operational Area and surrounds is characterised by bare sediments which host low density infaunal and epibenthic communities of filter feeding and deposit feeding organisms. These fauna species may be subject to acute and chronic toxic effects from exposure to hydrocarbons, however the extent of the affected habitat is expected to be localised to the vicinity of the release location. This bare sediment habitat is widely represented in the Timor Sea, and the associated fauna assemblages are not considered to be particularly sensitive or of high conservation value. Filter feeding benthic communities may be vulnerable to entrained and dissolved hydrocarbons. Entrained hydrocarbons can be ingested by filter feeders, leading to increased exposure due to accumulation of ingested oil droplets (Payne & Driskell 2003). While typically less toxic than dissolved hydrocarbons, entrained oil may still cause toxic effects and may also result in physical impacts such as clogging of filter feeding organs, potentially resulting in reduced feeding efficiency. Filter feeder, and sessile organisms in general, may be exposed to concentrations of dissolved hydrocarbons that result in acute and chronic toxic effects.

The more diverse benthic communities in the Planning Area are found in shallower waters (< 50 m depth) or in association with islands, shoals, reefs, banks and the shoreline of the Australian, Indonesian and Timor-Leste mainlands. This diversity is due to ambient conditions supporting a healthy presence of primary producers, such as zooxanthellate corals, macroalgae and seagrasses and mangroves.

Modelling results from the diesel scenario indicate that several offshore reefs and islands, banks and shoals, may be contacted by hydrocarbons above adverse impact thresholds. Impacts on the primary producer communities in these locations are discussed below.

##### **Shoals and Banks; Offshore Reefs and Islands; and WA and NT Mainland Coastlines**

###### *Corals*

Experimental studies and field observations in the aftermath of hydrocarbon spills for corals indicate contact with hydrocarbons may result in impacts from no observable injury through to complete or partial tissue death of the colony, with tissue death occurring on the coral colony's surface where oil has adhered (Johannes et al., 1972, Jackson et al., 1989). Branching corals appear to be more sensitive to contact with hydrocarbons than other species and growth forms (Johannes et al., 1972), however, these are uncommon on intertidal reef flats and generally occur only in significant abundance subtidally.

Subtidal corals avoid direct contact with surface oil slicks but can be exposed to the entrained and dissolved hydrocarbon plumes when at the same depths. These hydrocarbon fractions are most likely to cause sublethal effects, such as polyp retraction, changes in feeding, bleaching (loss of zooxanthellae), increased mucous production resulting in reduction in growth rates and impaired reproduction (Negri and Heyward, 2000). The planktonic stages (spawned gametes and larvae) of coral are more susceptible to adverse effects from exposure to hydrocarbons because of their tendency to float or remain near the water surface thus bringing them into direct contact with surface slicks (Villanueva et al., 2008). In addition, the concentrations of water-soluble fractions that inhibit fertilisation or are lethal to coral gametes are lower than those for lethal or sublethal effects in adult colonies (Heyward et al., 1994; Negri and Heyward, 2000). Coral planktonic stages of mass

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spawning species are largely confined to a 1 to 3-week period after spawning which generally occurs in March/April but may occur twice a year for the coral colonies in the Timor sea. A spill outside of these periods is of less concern for coral planktonic stages.

Compared to subtidal coral habitats, reef flat communities generally have the lowest coral cover and lowest diversity of corals due to the harsh conditions for coral growth i.e. regular tidal exposure and extensive wave action (particularly along the west coast of Australia). As hydrocarbon ultimately floats to the sea surface, the most vulnerable coral colonies to direct contact with hydrocarbon spills are intertidal corals found on a reef flat, which are periodically exposed during low tides. As such, whilst the reef flat habitat is the most vulnerable coral habitat to direct contact to spills, it is also regarded as the least sensitive of the shallow coral habitats.

The intertidal and shallow water coral reef species at Browse Island, Heywood and Echuca Shoals and other nearby reefs and shoals could potentially suffer sub-lethal stress and, depending on the exposure time and concentration, potentially high rates of mortality. The exposure time and concentration are a function of the location, including the distribution of entrained and dissolved hydrocarbons throughout the water column, the extent of the spill, the met-ocean conditions at the outset of the spill and in the days and weeks following it. The extent of sub-lethal stress and mortality on coral species is likely to be species and depth dependent with intertidal and shallow subtidal species most likely to be impacted by hydrocarbon exposure, compared to their deeper counterparts. These shallow water communities have shown that they can recover quickly from natural mass mortality events. However, depending on the severity of the spill, recovery may still take years.

#### *Macroalgae and Seagrass*

Although seagrass and macroalgae may be subject to lethal or sublethal toxic effects including mortality, reduced growth rates and impacts to seagrass flowering, several studies have indicated rapid recovery rates may occur even in cases of heavy oiling (Burns et al. 1993; Dean et al., cited in WEL, 2011).

Most seagrasses within the area that may be affected by the worst-case hydrocarbon spill scenario are subtidal, although there may be relatively small areas of intertidal seagrasses along the WA coastline. Seagrass in the subtidal and intertidal zones will have different degrees of exposure to hydrocarbon spills. Subtidal seagrass is unlikely to be exposed to surface spilled hydrocarbons, as most hydrocarbons in subtidal environments will be concentrated at the surface. Intertidal seagrasses are vulnerable to smothering by floating oil slicks, which can lead to mortality if it coats their flowers, leaves and stems (Dean et al. 1998; Taylor and Rasheed 2011). Long-term impacts to seagrass are unlikely unless hydrocarbon is retained within the seagrass meadow for a sustained duration (Wilson and Ralph 2011). Toxicity effects can also occur due to absorption of soluble fractions of hydrocarbons into tissues (Runcie et al. 2010). The potential for toxic effects of entrained hydrocarbons may be reduced by weathering processes that should serve to lower the content of soluble aromatic components before contact occurs.

Like seagrasses, the potential impacts to macroalgae depend on the exposure pathway; most macroalgae in the region are subtidal, although intertidal macroalgae may be present. Effects of exposure to oil on intertidal macroalgae are more variable; some studies reported little evidence of impacts (Díez et al. 2009), while others show significant impacts (De Vogelaere and Foster 1994). Recovery of intertidal macroalgae has been shown to occur faster in areas where oil has been left to degrade naturally compared to areas subject to intensive clean-up operations (De Vogelaere and Foster 1994).

#### *Mangroves*

Intertidal mangrove habitats occur throughout much of Kimberley, offshore islands, Indonesia and Timor Leste and are highly susceptible to oil pollution (NOAA 2014). Given the distance between potential release locations and the nearest mangroves, any spilled hydrocarbons reaching mangroves will be highly weathered. Mangroves are vulnerable to contact with floating hydrocarbons, which may coat prop roots and pneumatophores (aerial roots that support oxygen uptake) (Duke and Archibald 2016). Exposure can result in direct effects such as yellowed leaves, defoliation and mortality, and indirect effects such as reduced recruitment and increased sensitivity to other stressors (NOAA 2014). Like seagrasses, mangroves can also be impacted by entrained and dissolved aromatic hydrocarbons either in the water or sediment.

The table below presents the risk assessment for the worst-case in terms of impacts emergency events (i.e. diesel) for benthic communities, based on the worst-case outcome for any of the environmental receptors in this group.

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### Key Ecological Features (KEFs)

KEFs may be exposed to adverse impact thresholds for hydrocarbons, with several KEFs being potentially exposed to hydrocarbons above moderate thresholds. KEFs with the closest proximity to the credible spill sources that may experience contact above moderate impact thresholds include:

- continental slope demersal fish communities
- ancient coastline at 125 m depth contour
- Seringapatam Reef and Commonwealth Waters in the Scott Reef Complex
- Ashmore Reef and Cartier Islands and surrounding Commonwealth waters.

The continental slope demersal fish communities and the ancient coastline at 125 m depth contour are entirely sub-tidal. The relatively diverse benthic communities associated with these habitats, such as filter feeding communities and demersal fish assemblages may be impacted by dissolved and entrained hydrocarbon above moderate exposure thresholds, which may result in acute or chronic toxic effects. Modelling results indicated that no single deterministic run affected the entirety of a sub-tidal KEF; most runs typically affected a minor portion of any given KEF. Given the nature of the KEFs and the scale of potential impacts, recovery of impacted parts of a KEF are expected to be facilitated by movement and recruitment of biota from the unaffected areas.

The table below presents the risk assessment for the worst-case in terms of impacts emergency events for the environmental sub receptors described above, based on the worst-case outcome for any of the environmental receptors in this group.

Environmental Receptor	Consequence	Likelihood	Residual Risk
Ecosystems, Communities and Habitats	Major	B-Remote	<b>Yellow</b>

### 9.12.4.3 Threatened Species and Ecological Communities

#### Fish

##### *Plankton*

Potential impacts to phytoplankton and zooplankton from the worst-case hydrocarbon or chemical spills are expected to consist of short-term acute toxic effects. Planktonic communities are characterised by relatively rapid turnover rates of short-lived biota. The high turnover rate will lead to rapid recovery as the spilled hydrocarbons decay in the environment. Within plankton communities, there is evidence from laboratory studies that some taxonomic groups, particularly zooplankton (e.g. copepods) may be more sensitive to hydrocarbon pollution (Almeda et al. 2013; Jiang et al. 2010). Few reliable studies have shown any impacts of hydrocarbon spills on planktonic communities, with most studies concluding that impacts from hydrocarbon pollution cannot be distinguished from natural variability (Abbriano et al. 2011; Davenport et al. 1982; Varela et al. 2006). Many marine species have planktonic larval phases (e.g. corals, many species of fish). Organisms with planktonic larval phases typically produce very high numbers of larvae. A worst-case credible spill may result in increased mortality of planktonic larvae (which are subject to high natural mortality); however, this is not expected to result in population, habitat or species scale impacts.

##### *Pelagic Fish*

Fish respire through gills, which may make them more vulnerable to dissolved hydrocarbons than fauna with less permeable skins, such as cetaceans, marine reptiles and birds. Despite this apparent vulnerability, fish mortalities are rarely observed to occur due to hydrocarbon spills (Fodrie and Heck 2011; International Tanker Owners Pollution Federation 2011), although recorded instances of fish mortality from spills in confined areas (e.g. bays) exist. These observations are consistent with fish moving away from hydrocarbons in the water (Hjermann et al. 2007). Stochastic modelling results for all surface spills indicated that hydrocarbons are likely to be concentrated in surface layers. As a result, demersal fish are unlikely to be directly affected as they are typically concentrated around seabed features e.g. shoals, banks and subsea KEFs. Pelagic fish are more likely to encounter dissolved and entrained hydrocarbons above adverse exposure thresholds but may move away from affected areas following detection.

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Exposure of fish to hydrocarbons may result in acute and chronic effects and may vary depending on a range of factors such as exposure duration and concentration, life history stage, inter-species differences and other environmental stressors (Westera and Babcock 2016). Early life history stages of fish (planktonic eggs and larvae) may be more vulnerable to hydrocarbon pollution than juvenile and adults, as these early life history phases cannot actively avoid water with high concentrations of hydrocarbons. Fish embryos and larvae may exhibit genetic and developmental abnormalities from long-term exposure to low concentrations of hydrocarbons (Fodrie and Heck 2011), although such long exposures may not be representative of real-world conditions. Exposures to PAHs have also been linked to increased mortality and stunted growth rates of early life history (pre-settlement) of reef fishes, as well as behavioural impacts that may increase predation of post-settlement larvae (Johansen et al. 2017). Given the spatial scale of the worst-case credible spill scenario (as shown by a single deterministic run), and the typically high supply of eggs and larvae, it is unlikely that any of the worst-case credible spill scenarios will result in significantly reduced recruitment of fish due to impacts during early life history phases.

The table below presents the risk assessment for the worst-case in terms of impacts emergency events for pelagic communities, based on the worst-case outcome for any of the environmental receptors in this group.

Environmental Receptor	Consequence	Likelihood	Residual Risk
Fish	Moderate	B - Remote	Dark Blue

### Marine Mammals

Marine mammals potentially present, their conservation status and any associated BIAs within the Planning Area are detailed in Section 7.2.8.

Cetaceans exposed to surface, entrained or dissolved aromatic hydrocarbons above adverse exposure thresholds may suffer external oiling, ingestion of oil and inhalation of toxic vapours (Deepwater Horizon Natural Resource Damage Assessment Trustees 2016). Cetaceans in coastal waters (e.g. coastal dolphin species and humpback whales at the northern limit of their migration) are at lower risk of impacts than cetaceans in offshore water due to the oil weathering before reaching coastal waters.

Skin contact with floating hydrocarbons could result in irritation and absorption and potential for impact to eyes and airways. Inhalation of vapours or the ingestion of hydrocarbons can potentially have lethal effects due to damage to the whale's respiratory and nervous systems. Baleen whales, such as blue whales and humpback whales, are the most likely to be susceptible to hydrocarbon ingestion due to their feeding through baleen plates including from near water surface. Toothed whales and dolphins are less susceptible due to their 'gulp' feeding approach, often targeting individual specific prey away from the sea surface (Woodside Energy Limited 2011).

However, cetaceans and dugongs are highly mobile, capable of long migrations, and typically in low numbers/densities in the moderate exposure zone. Experimental and field observations indicate that whales and dolphins may be able to detect and actively avoid hydrocarbon slicks, but this may not always be possible and exposure to floating oil may still occur (Smith et al. 1983, Geraci and St. Aubin 1990).

Vessel-based surveys of the Browse Basin area by the Centre for Whale Research (Western Australia) Inc. between June and November 2008 recorded low numbers of cetaceans in a broad survey area, with average densities of 0.00013 large cetaceans (whales) per square kilometre (1 whale per 7,700 km<sup>2</sup>) and 0.026 small cetaceans (dolphins) per square kilometre, or 1 cetacean in 39 km<sup>2</sup> (Jenner, Jenner & Pirzl 2009, cited in INPEX 2010). Given such sparse distributions, it is not anticipated that impacts to a significant portion of the cetacean and other mammal populations would result if a spill was to occur.

Dugongs are known to occur in coastal waters and around offshore islands within the moderate exposure zones identified by the stochastic spill modelling. There is a paucity of studies examining the effects of hydrocarbon spills on dugongs, although the direct impacts of exposure to hydrocarbons may be similar to cetaceans. Like cetaceans, dugongs are expected to be resilient to direct impacts due to their thick skin and blubber. Suitable dugong habitat is associated with seagrass meadows, which are typically restricted to shallow waters around the mainland coast and islands. The distance of dugong habitat from the worst-case credible spill release locations means that oil reaching dugong habitat will be highly weathered.

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The table below presents the risk assessment for the worst-case in terms of impacts emergency events for cetaceans and dugongs.

Environmental Receptor – Sub-category	Consequence	Likelihood	Residual Risk
Marine Mammals	Moderate	B-Remote	Dark Blue

## Marine Reptiles

Stochastic modelling results indicated moderate exposure zones overlap the known distribution of several species of marine turtles and sea snakes. Saltwater crocodiles were also identified as potentially occurring within the adverse exposure zone; given the preferred habitat for saltwater crocodiles are freshwater rivers and estuaries, impacts to this species from the worst-case hydrocarbon spills are not considered credible. Marine turtles may be exposed to floating hydrocarbons when at the sea surface (e.g. breathing, basking etc.), and are not expected to actively avoid floating hydrocarbon slicks (NOAA 2010). Exposure to floating or entrained hydrocarbons may result in external oiling, which could result in impacts such as inflammation or infection (Gagnon and Rawson 2010, Lutcavage et al. 1995; NOAA 2010). Given the large portion of non-persistent hydrocarbons in the loss of diesel scenario are considered to pose the greatest risk of external oiling. Dissolved hydrocarbons may result in toxic effects on marine turtles, however their relatively impermeable skin reduces the potential for these impacts.

Stochastic modelling identified island and mainland shoreline habitats (sandy beaches and inter-nesting habitat) that may be exposed to hydrocarbons above moderate exposure thresholds. Some of these are classified as habitat critical for the survival of marine turtles in the Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia 2017a) and BIAs. Of these, the critical nesting and inter-nesting habitats for green turtles at Browse island have the highest probability to be affected above moderate impact thresholds.

Several shoals and banks occur in the Planning Area, which may be used as foraging areas by marine turtles. Impacts to benthic habitats and biota at these shoals and banks may result in a reduction of prey for marine turtles. A spill reaching critical nesting habitats during peak periods to turtle nesting could result in impacts. With respect to floating oil, given the distance of these locations from the Operational Area, worst-case credible diesel spill reaching these areas will be highly weathered and unlikely to result in impacts from an acute toxicity perspective, except for Browse Island.

Sea snakes have similar exposure pathways to spilled hydrocarbons as marine turtles (although sea snakes will not be exposed to shoreline hydrocarbon accumulation). Potential impacts are expected to be comparable and may include irritation of eyes and mucous membranes. Sea snake mortality has been linked to exposure to hydrocarbon spills, with dead sea snakes recovered from the region of the Montara oil spill showing high levels of petroleum hydrocarbons (including PAHs) in the trachea, lungs and stomach (Gagnon 2009). These results are consistent with exposure through ingestion and respiration of hydrocarbons. Ashmore Reef and Hibernia Reef are noted as being one of the few sites where the critically endangered leaf-scaled sea snake and short-nosed sea snake have been recorded, along with other species of sea snake. Both the leaf-scaled and short-nosed sea snakes have not been detected at Ashmore Reef since 2001, despite increased biological survey effort. Both locations were identified by the stochastic modelling as potentially being exposed to hydrocarbon above moderate adverse exposure limits.

The table below presents the risk assessment for the worst-case in terms of impacts emergency events for reptiles.

Environmental Receptor – Sub-category	Consequence	Likelihood	Residual Risk
Marine Reptiles	Major	B-Remote	Yellow

## Birds

Seabirds and shorebirds are present in the Planning Area (see Section 7 for details). Seabirds are particularly vulnerable to hydrocarbon spills owing to high potential for contact with the sea surface where they feed, rest or moult. Feeding by seabirds recorded in the region involves snatching prey items from or below the water surface by paddling or aerial diving, and these birds also rest on the ocean surface. Migrating and residential



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shorebirds by contrast are less susceptible to severe oiling and associated physical effects as they confine feeding to shorelines (Sholz et al. 1992; cited in Woodside Energy Limited 2011) and they do not land on the water surface. In cases where the hydrocarbon spill comes ashore large number of shorebirds may be impacted.

In the event of a spill, seabirds and shorebirds are likely to make contact with spilled hydrocarbons due to the amount of time they spend on or near the surface of the sea and on affected foreshores. Contact with hydrocarbon may impact a bird's ability to fly due to external and/ or internal exposure potentially leading to death by drowning, starvation or predation. Hydrocarbon contamination affects the feathers insulation, buoyancy and waterproofing properties and ultimately the bird's survival. The overriding behaviour of a bird with oiled feathers is preening to the exclusion of all other normal activities. As an affected bird preens, it ingests and inhales hydrocarbons, which can cause damage to internal organs such as the lungs, intestines and liver. Suppression of the immune system can also occur and other effects include impacts to reproductive success through decreased fertility of eggs and reduction in egg shell thickness.

Specifically, estimates for the minimal thickness of floating oil that might result in harm to seabirds through ingestion from preening of contaminated feathers, has been estimated by different researchers at approximately 10g/m<sup>2</sup> (French 2000) to 25g/m<sup>2</sup> (Koops et al. 2004).

The main area of sensitivity for migratory birds are the Ashmore Reef and Cartier Islands, which are recognised as particularly important for feeding migratory shore birds during non-breeding periods. These islands are an important staging point during the migration between the Northern Hemisphere and Australia. During October to November and March to April large flocks of birds protected under the JAMBA, CAMBA and ROKAMBA are more likely to be present in the area and sensitive to shoreline oil contact. Browse Island, and Seringapatam and Scott Reefs are recognised as important habitat for seabirds. These locations, as indicated by modelling, will not be affected to any adverse impact levels i.e. > 10g/m<sup>2</sup> (French 2000).

The table below presents the risk assessment for the worst-case in terms of impacts emergency events for seabirds and shorebirds.

Environmental Receptor – Sub-category	Consequence	Likelihood	Residual Risk
Birds	Massive	B-Remote	Yellow

### Shark and Rays

Transitory and resident sharks may occur within the adverse exposure zones identified by the stochastic spill modelling. Whale sharks may occur within the Operational Area (e.g. traversing the Operational Area during migration to and from aggregation off Ningaloo Reef) and a BIA for foraging whale sharks overlaps with the Operational Area. Tagging studies by Meekan and Radford (2010) have shown whale sharks traversing the Timor Sea following the seasonal aggregation off the Ningaloo Coast. Whale sharks may be exposed to entrained and dissolved hydrocarbons by contact with their gills and ingestion during feeding. The large volume filter feeding behaviour of whale sharks may result in a relatively high potential for exposure to entrained hydrocarbons compared to many other marine species (Campagna et al. 2011).

Tagging studies off Ningaloo Reef have shown that whale sharks disperse broadly (Meekan and Radford 2010; Wilson et al. 2006). Genetic studies of whale sharks have shown low genetic diversity, which suggests flow of genetic material through the movement of individual sharks over large spatial scales (Schmidt et al. 2009). On this basis, only a portion of the whale shark population in the Timor Sea would be within the area above the adverse exposure threshold at any one time and impacts such as toxic effects leading to mortality would be expected to affect a small number of individual animals.

Other oceanic (e.g. mako) and resident (e.g. reef) sharks will occur throughout the adverse exposure zone, although Heyward et al. (2017) noted that shark numbers were lower than expected, potentially due to fishing pressure. Potential impacts to other oceanic shark species are likely to be similar to fish (see *Fish* above). Any reduction of shark numbers may take longer to recover due to the relatively long lifespans and low reproductive output compared to finfish species.

Environmental Receptor – Sub-category	Consequence	Likelihood	Residual Risk
Sharks and Rays	Massive	B-Remote	Yellow



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#### 9.12.4.4 Socio-Economic and Cultural Environment

##### Cultural Heritage Features and Values

No known Indigenous cultural heritage features or values exist within the Planning Area and shell has received advice that it is highly unlikely that tangible cultural heritage values will exist below 130 m water depth (Cosmos Archaeology, 2023). As a precaution, further work is being carried out to confirm this and, in the unlikely event that artifacts are found, this EP will be updated in accordance with Shell’s management of change process (refer to Table 9-26). Even if artefacts were found, as they will be on the seabed, there is no obvious impact pathway for a surface diesel spill.

Consultation has confirmed that Indigenous people have strong connection to sea country. Shell has also been made aware of the existence of songlines along the west Kimberly coastline. In the unlikely event of a Level 2 oil spill, Shell will enact its OPEP and OSMP. This would involve notifying Traditional Owners to inform and obtain advice on spiritual values.

For a diesel spill to encroach on the Kimberly nearshore areas, it would require a sustained northwesterly wind. The strength of this wind (at least 18knots) would break up and disperse any slick so there is negligible chance that oil could extend that far. Residual oil components which tend to persist longer would be removed from the marine system through biodegradation with impacts predicted to be immaterial or negligible, however, to remain conservative in our assessment have left the predicted consequence to be moderate at worst.

The most likely oil spill response will be *Monitor and Evaluate* so there will be little in the way of clean-up activity at sea or on land. Physical activity at sea would be limited to scientific monitoring, such as water and sediment sampling with negligible impact.

The table below presents the risk assessment outcome for these receptor subcategories.

Environmental Receptor – Sub-category	Consequence	Likelihood	Residual Risk
Cultural Heritage Features and Values	Moderate	B-Remote	<b>Dark Blue</b>

##### Commonwealth Heritage Places and Marine Parks

Commonwealth Marine Area, Commonwealth Heritage Places and Marine Parks overlap with the sensitive receptors discussed in Section 7.

Two offshore islands and reefs listed as Commonwealth Heritage Places were identified by the spill modelling results as potentially being contacted by hydrocarbons above moderate exposure thresholds. These include:

- Ashmore Reef National Nature Reserve Commonwealth Heritage Place
- Scott Reef and Surrounds Commonwealth Heritage Place

The environmental values of these reefs are primarily their outstanding natural values. These have been discussed in the preceding sub-sections.

Modelling results of the worst-case credible spill scenario–indicated a range of Commonwealth, state and territory marine parks, including areas of the Commonwealth Marine Area, may be contacted above moderate exposure thresholds. These locations contain a range of environmental values such as marine biota, representative marine habitats and unique sea scapes (e.g. KEFs). Environmental values for these locations are described in Section 7 and discussed above in Physical Ecosystems; Communities and Habitats; and Threatened Species and Ecological Communities. Refer to these sections for discussion of potential impacts to these environmental values within marine parks.

The table below presents the risk assessment outcome for these receptor sub category’s.

Environmental Receptor – Sub-category	Consequence	Likelihood	Residual Risk
Commonwealth Heritage Places; Commonwealth Marine Area and Marine Parks	Massive	B-Remote	<b>Yellow</b>

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### Commercial Fishers

A number of commercial fisheries operate within the moderate exposure zone determined from spill modelling results. The worst-case credible hydrocarbon spill scenarios may result in a range of impacts to commercial fishing activities, such as (International Tanker Owners Pollution Federation 2011):

- displacement of fishing effort from areas affected by a spill or spill response activities
- damage to fish stocks due to mortality
- closure of fisheries by management agencies
- inability to sell catch due to perceived or actual fish tainting or contamination
- oiling of fishing gear, particularly by floating oil.

A significant hydrocarbon spill would likely result in the temporary closure of areas of fisheries within the area of moderate exposure. The spatial extent and duration of the closure would depend on the nature and scale of the pollution resulting from the hydrocarbon spill. Given the large spatial extent of managed fisheries relative to the area potentially contacted above moderate exposure thresholds for any single event, a spill is unlikely to result in the complete closure of a fishery. Rather, the closure of areas to fishing is more likely to result in the displacement of fishing effort during the response and recovery phases. Displacement from productive fishing areas may result in impacts to fishers such as increased costs and reduced catch per unit effort and reduced income. Exposure of fish to hydrocarbons may result in tainting, which may render landings unsuitable for human consumption. Tainting may occur even at low levels of hydrocarbon exposure. Monitoring of fish for taint immediately following capping of the Montara well detected differences between fish likely to have been exposed to hydrocarbons, however these differences were not conclusively linked to oil contamination and fell within the range of “normal” fish odours (Rawson et al. 2011). Samples collected at the same monitoring locations two and four months after were not distinguishable (Rawson et al. 2011). These results are consistent with other studies of fisheries resources exposed to hydrocarbon pollution, which acknowledge the potential for impacts to fisheries resources and have shown little potential risk for consumers if suitable fisheries management actions are undertaken (Law and Hellou 1999; Law and Kelly 2004). Fish caught in areas affected by a significant hydrocarbon spill may be perceived as being of poorer quality, even if no decrease in quality is evident. This may result in lower prices at the time of sale and subsequently lead to reduced income for commercial fishers.

The table below presents the risk assessment outcome for this receptor.

Environmental Receptor	Consequence	Likelihood	Residual Risk
Commercial Fishers	Moderate	B-Remote	Dark Blue

### Tourism and Recreation

There are currently no known tourism activities in the Operational Area, or immediate surrounding areas, due to the remoteness and water depth of the area. Some tourism activities may occur at the remote offshore islands and reefs within the Planning Area. These activities are expected to be exclusively nature-based tourism and impacts to the environmental values associated with these islands and reefs may impact upon tourism activities. Mainland coastline and islands will typically host more nature-based tourist activities than offshore islands. This activity is expected to be seasonal, with increased visitation during the winter dry season months. Impacts to tourism activities are expected to be minor based on the likelihood and nature of contact to environmental values that support tourism activities. Impacts to these values may result in displacement of tourism activity, introduction of temporary exclusion zones or avoidance of areas with visible oil sheens, and a corresponding loss of revenue for tourist operators (e.g. charter fishing cancellations due to fishery closures).

The table below presents the risk assessment outcome for this receptor.

Environmental Receptor	Consequence	Likelihood	Residual Risk
Tourism and Recreation	Minor	B-Remote	Dark Blue

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### Military/Defence

Defence activities within the offshore North Australian Exercise Area (NAXA) are unlikely to be affected by the worst-case credible hydrocarbon spill. Activities may be temporary displaced from areas where spill response operations are underway. This would be highly localised and temporary in nature.

### Ports and Commercial Shipping

Potential impacts to commercial shipping from the worst-case credible spill scenario are expected to be slight and consist of temporary displacement of other users from areas where spill response activities are underway. These are expected to be concentrated around the release location.

The table below presents the risk assessment outcome for defence and shipping.

Environmental Receptor	Consequence	Likelihood	Residual Risk
Military/Defence; and Ports and Commercial Shipping	Minor	B-Remote	Dark Blue

### Offshore petroleum exploration and operations

Petroleum activities in the region include drilling and pre-installation activities for the future Shell-operated Crux facility, the INPEX-operated Ichthys facility and the Montara development. Reduction in water quality as a result of a worst-case credible spill may affect the operation of these facilities if seawater at the facility is no longer suitable for intake (e.g. for use as cooling water or feed water for RO water generation). This may result in impacts to routine operations such as decreased production. A worst-case hydrocarbon spill response may result in competition for vessels.

The table below presents the risk assessment outcome for the oil and gas industry.

Environmental Receptor	Consequence	Likelihood	Residual Risk
Offshore petroleum exploration and operations	Minor	B-Remote	Dark Blue

### Marine Archaeology

No impacts to marine archaeological features will occur because of the worst-case credible hydrocarbon spill. The nearest historic shipwreck, the Anne Millicent, lies approximately 108 km from the Operational Area and given its depth, will not credibly be impacted by a diesel spill.

### 9.12.5 Risk Assessment Summary

The risk assessment summary in Table 9-53 is based on the worst case in terms of consequences spill event, i.e. the loss of well control LOC.

**Table 9-53: Emergency Events Evaluation of Residual Risks**

Environmental Receptor	Consequence	Likelihood	Residual Risk
<b>Evaluation – Unplanned Risks</b>			
Physical Environment	Massive	B-Remote	Yellow
Ecosystems, Communities and Habitats	Major	B-Remote	Yellow
Threatened Species and Ecological Communities	Major	B-Remote	Yellow
Socio-economic Environment	Massive	B-Remote	Yellow



**9.12.6 ALARP Assessment and Environmental Performance Standards**

**Table 9-54: ALARP Assessment and Environmental Performance Standards**

Hierarchy of Controls	Control Measure	Adopted?	Justification	EPS #	Environmental Performance Standard (EPS)	Measurement Criteria
Elimination	None identified	N/A	N/A	N/A	N/A	N/A
Substitution	None identified	N/A	N/A	N/A	N/A	N/A
Engineering	Use of radars/ Automatic Identification System (AIS) and associated alarms on vessel	Yes	Use of radars/ Automatic Identification System (AIS) and associated alarms on vessel. Standard vessel management activities includes specific collision prevention procedures and measures including: <ul style="list-style-type: none"> <li>Contractual requirement for vessels to be manned by competent crew, and</li> <li>All contracted vessel employed are subjected to a stringent assurance process</li> </ul>	11.4	The vessel is equipped with suitable and operational navigation and collision avoidance equipment, specifically: <ul style="list-style-type: none"> <li>AIS</li> <li>Radar, and/or</li> <li>Equivalent system.</li> </ul>	Marine Assurance records
Administrative and Procedural Controls	SOPEP for vessel	Yes	SOPEP shall be in place for the survey vessel as required by class in accordance with as per AMSA Marine Order 91.	11.8	Vessel shall have a current SOPEP onboard to respond to small spills	A valid SOPEP for vessel is in place
Administrative and Procedural Controls	Vessel anchoring and mooring plan	Yes	No vessel anchoring in the Operational Area except in emergency situations or under issuance of a specific permit by Shell.	11.9	No vessel anchoring in the Operational Area except in emergency situations or under issuance of a specific permit by Shell.	Records verify no breaches of anchoring procedures in the Operational Area.
Administrative and Procedural Controls	Ongoing consultation	Yes	Ongoing consultation in the event of a major spill with areas that may affect significant cultural sites or songlines will occur.	11.10	Shell will implement ongoing consultation as outlined in Table 5-11.	Records demonstrate ongoing consultation carried out in accordance with Table 5-11.

### 9.12.7 Acceptability of Risks

**Table 9-55: Acceptability of Risks – Emergency Events**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Physical Environment	Water quality	No significant impacts to water quality during the Crux project.	Yes	Yes. Shell considers large-scale releases of hydrocarbons during the Crux project to be unacceptable. This has been reinforced through consultation with groups such as DAC and WGAC. Such spills have potential to result in significant environmental impacts. Consequently, Shell will apply its considerable experience and knowledge in the offshore petroleum industry to ensure such a release during the Crux project never occurs. Shell has applied a conservative approach to the identification and modelling of the credible worst case hydrocarbon spill. This information was used to inform the evaluation of the environmental impacts and risks, and is consistent with the precautionary principle. Shell will implement industry standard controls to manage the risk of unplanned hydrocarbon spills. The risks have been demonstrated to be reduced to ALARP, therefore the residual risk is considered acceptable.
	Sediment quality	No significant impacts to sediment quality during the Crux project.	Yes	
Ecosystems, Communities and Habitats	Benthic communities	No significant impacts to benthic habitats and communities. Impacts to non-sensitive benthic communities limited to a maximum of 5% of the project area.	Yes	
	Shoals and Banks	No direct impacts to named banks and shoals. No loss of coral communities at named banks or shoals as a result of indirect/offsite impacts associated with the Crux project.	Yes	
	Offshore Reefs and Island	No impacts to offshore reefs and islands.	Yes	
	WA and NT Mainland Coastlines	No impacts to WA and NT mainland coastline.	Yes	
	KEFs	No significant impacts to environmental values of KEFs.	Yes	
Threatened Species and Ecological Communities	Marine Mammals Marine Reptiles Birds Fish Sharks and Rays	No mortality or injury of threatened or migratory MNES fauna from the Crux project. Management of aspects of the Crux project must be aligned to conservation advice, recovery plans and threat abatement plans published by the DoEE. No significant impacts to threatened or migratory MNES fauna.	Yes	



Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Socio-economic Environment	Cultural Heritage Features	No impacts to Cultural heritage features	Yes	
	Cultural Heritage Values	No significant impacts to cultural heritage values	Yes	
	Commonwealth Marine Area	No significant impacts to the Commonwealth Marine Area	Yes	
	World Heritage Properties	No impacts to world heritage values.	Yes	
	National Heritage Properties	No impacts to national heritage values.	Yes	
	Commonwealth Heritage Properties	No impacts to Commonwealth heritage values	Yes	
	Declared Ramsar Wetlands	No impacts to ecological values of Ramsar wetlands	Yes	
	Marine Parks	No impacts to the values of marine parks	Yes	
	Commercial Fisheries	No interference with fishing to a greater extent than is necessary for the exercise of right conferred by the titles granted to carry out petroleum activities. No negative impacts to exploited fisheries resource stocks which result in a demonstrated direct loss of income. Temporary displacement of commercial fishing activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	
	Traditional Indigenous fishing	No negative impacts to exploited fisheries resource stocks. Temporary displacement of traditional fishing activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	
Marine archaeology	No disturbance to historical shipwrecks is acceptable.	Yes		
Tourism & recreation	No negative impacts to nature-based tourism resources resulting in	Yes		





Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
		demonstrated loss of income. Temporary displacement of tourism activities within the Crux project area (excluding petroleum safety zones) is acceptable.		
	Military/defence	Temporary displacement of defence activities within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	
	Ports and commercial shipping	Temporary displacement of commercial shipping within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	
	Offshore petroleum exploration and operations	Temporary displacement of petroleum exploration activities and operations within the Crux project area (excluding petroleum safety zones) is acceptable.	Yes	
	Indonesian & Timor Leste Coastlines	No impacts to Indonesian or Timor-Leste coastline are acceptable.	Yes	

A comprehensive assessment of the risks from the worst-case credible spill scenarios arising from the petroleum activities has been undertaken. Globally, Shell is experienced in the design, installation and decommissioning of similar developments and understands the impacts and risks that may arise from these worst case credible spill scenarios. Shell has undertaken environmental studies, numerical modelling and consultation to identify the environmental receptors that may be affected and understands the nature and implications of potential hydrocarbon pollution. These studies, along with Shell's organisational experience, allows a high degree of confidence to be placed in the outcomes of the assessment of the risks.

### Principles of ESD

The risks and impacts from the worst-case credible spill scenario are inherently inconsistent with some of the principles of ESD based on the following:

- environmental resources and sensitivities may be significantly impacted in the event a worst-case credible spill, and
- a worst-case credible spill may prevent others exercising their right to access environmental resources.

Shell will apply a range of controls to ensure that a worst-case credible spill from the petroleum activity never occurs. These include a range of industry best practices that have been developed through extensive industry experience, including the lessons learned from significant unplanned releases. Following successful application of these controls, Shell considers the residual risk to be consistent with the principles of ESD. This consistency is achieved by:

developing natural resources in an environmental responsible manner, resulting in income for government, generation of Australian jobs, and developing an increased understanding of the Timor Sea environment.

application of the precautionary principle in the assessment of hydrocarbon spill scenarios by:

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- using worst-case credible spill scenario. Industry statistics indicate the vast majority of unplanned spills are significantly smaller than the worst-case credible spills.
- using a stochastic modelling approach for numerical modelling of the worst-case credible spill scenarios that includes a large number (hundreds) of deterministic runs covering a range of metocean conditions.
- using environmentally conservative adverse exposure zone thresholds.

**Relevant Requirements**

Management of the impacts and risks from unplanned hydrocarbon spills are consistent with legislative requirements, including:

- compliance with international maritime conventions, including:
  - o STCW Convention
  - o SOLAS Convention
  - o COLREGS
  - o MARPOL: Annex I: prevention of pollution by oil and oily water.
- compliance with Australian legislation and requirements, including:
  - o Navigation Act 2012 and Protection of the Sea (Prevention of Pollution from Ships) Act 1983:
    - Marine Order 21 (Safety of Navigation and Emergency Procedures)
    - Marine Order 27 (Radio Equipment)
    - Marine Order 30 (Prevention of Collisions)
    - Marine Order 71 (Masters and Deck Officers)
    - Marine Order 91 (Marine pollution prevention – oil).
  - o OPGGS Act 2006 and OPGGS (E) Regulations:
    - accepted EP and OPEP for all petroleum activities associated with the Crux project.
  - o Implementation of recognised industry best practices, such as:
    - design, construction and operation of Crux activities in accordance with recognised industry standards
    - agreements in place with oil spill response service providers
    - development of SIMOPS plans for activities that may interact with the Prelude FLNG facility.

**Matters of National Environmental Significance**

**Commonwealth Marine Environment**

Table 9-56 provides a summary of the alignment between managing of the emergency events aspect from the petroleum activities associated with the relevant MNES acceptability considerations listed in EPBC Management Plans/Recovery Plans/Conservation Advices.

**Table 9-56: Summary of Alignment of the Impacts from the Emergency Events associated with the Petroleum Activities to Relevant Requirements for MNES**

Matters of National Environmental Significance	MNES Acceptability Considerations (EPBC Management Plans/Recovery Plans/Conservation Advice)	Demonstration of Alignment as Relevant to the Project
Threatened and Migratory Species – Marine Mammals	Emergency events due to loss of containment are not considered to be	Shell has identified the potential for hydrocarbon pollution, and potential

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<b>Matters of National Environmental Significance</b>	<b>MNES Acceptability Considerations (EPBC Management Plans/Recovery Plans/Conservation Advice)</b>	<b>Demonstration of Alignment as Relevant to the Project</b>
Threatened and Migratory species - marine reptiles	acceptable to Shell. In the event of such an incident, the relevant EPBC Management Plans, Recovery Plans and Conservation Advice documentation will be consulted based on the nature/scale of the spill and the determination of the potentially impacted environmental sensitivities to ensure mitigation and recovery efforts are in alignment. Refer to Table 7-4 for full list of potential plans at the time of writing this EP. The relevant databases will be checked at the time to ensure currency and any relevant inclusions will be made.	consequential habitats degradation, from large-scale hydrocarbon releases as a significant environmental risk. Shell has applied a range of controls that are intended to reduce the likelihood of such a release occurring, and mitigative controls to understand and reduce the severity of impacts should such a release occur.
Threatened and Migratory species - sharks and rays		
Threatened and Migratory species - birds		
Commonwealth Marine Environment		

**External Context**

There have been no objections or claims raised by Relevant Persons to date around emergency events. Shell’s ongoing consultation program will consider feedback and claims or objections made by Relevant Persons throughout the life of this EP. Where new impacts or risks are established these will be subject to the MOC process described in Section 10.1.4.

**Internal Context**

Shell has also considered the internal context, including Shell’s environmental policy and ESHIA requirements. The EPOs, controls and EPSs which will be implemented, are consistent with the outcomes from Relevant Person consultation for the petroleum activity and Shell’s internal requirements. Shell has, and will continue to maintain, an appropriate spill response framework, which includes regular testing of the response arrangements as per Section 10.7.

**Acceptability Summary**

The assessment of impacts and risks from the worst-case credible unplanned hydrocarbon spills determined the residual impact and risk rating is Yellow (Table 9-53). Given the significant consequence of the risks associated with these worst-case hydrocarbon spills, Shell has undertaken an extensive, conservative risk assessment and will apply a range of controls consistent with relevant requirements and industry best practice.

As outlined above, the acceptability of the impacts and risks from unplanned spills associated with the petroleum activity has been considered in the context of:

- The established acceptability criteria for the emergency events aspect
- ESD
- Relevant requirements
- MNES
- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

Based on the points discussed above, Shell considered the impacts and risks from worst case emergency events to be acceptable following the application of the controls outlined in the ALARP Demonstration above.

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### 9.12.8 Environment Performance Outcome

Environment Performance Outcome	Measurement Criteria
No unplanned release of hydrocarbons or chemicals to the marine environment as a result of loss of containment from: <ul style="list-style-type: none"> <li>• vessel collision or</li> <li>• lifting.</li> </ul>	Incident reports associated with spills which initiated the ERT and/or IMT.

## 9.13 Oil Spill Response Strategies

### 9.13.1 Spill Impact Mitigation Assessment

As described in the SIMA presented in the OPEP, not all response strategies are applicable for every spill scenario. It is considered that a combination of response strategies may be required to implement an effective response.

The [Prelude Oil Pollution Emergency Plan \(Rev 5, 2020\)](#) is being adopted for this petroleum activity given the relatively small nature and scale of the spill risk (around 120 m3). Specifically Prelude OPEP sections table A, 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 15, 16, 17 and 18 are considered directly applicable for this petroleum activity and spill risk.

Monitor and evaluation spill response strategies will be implemented. For diesel releases the success of various response strategies is considered to be limited based on the expected spreading, dispersion and evaporation rates in the marine environment making certain strategies such as contain and recover and surface dispersant application ineffective.

The applicability of all spill response strategies are assessed in the strategic SIMA presented in the OPEP. An ALARP assessment of the oil spill response strategies described in the OPEP are presented in Table 9-57.

Capability, readiness and implementation requirements for the specific spill response strategies are addressed in the OPEP (HSE\_PRE\_013075), which includes control measures and EPSs around the required level of performance of each response strategy, and hence are not repeated in this EP.



Table 9-57: ALARP assessment of oil spill response capability

Oil Spill Response Strategy	Resources	Environmental gain from increasing or improving resources	Alternatives considered	ALARP assessment
<b>Monitor and Evaluate</b>				
Modelling (oil spill trajectory, fate & weathering, met ocean data, satellite imagery)	<p><u>Processes:</u> AMOSC call-off procedure</p> <p><u>Equipment:</u> ADIOS2 on IMT PCs</p> <p>In-house deterministic modelling</p> <p><u>Personnel:</u> Shell Geomatics team</p>	Oil spill trajectory modelling can be commenced using AMOSC call off contract with RPS group within 2 hours of IMT being notified of the spill. The data would be used to inform IAPs and confirm the selection of other response strategies in the following days. Therefore, there is no environmental gain in improving the activation timeframe.	N/A	No alternative or additional controls have been identified that could improve this response.
Surveillance - vessel	<p><u>Processes:</u> N/A</p> <p><u>Equipment:</u> FLNG support vessels</p> <p><u>Personnel:</u> Trained ISV crew</p>	Several support vessels will be present in WA-44-L. Shell has a contract with marine vessel contractors to provide additional vessels for oil spill response activities if required. There is no environmental gain from providing additional vessels.	N/A	Increasing vessel surveillance capability is not considered to be warranted based on the limitations associated with visual observations made from a vessel platform. Aerial surveillance in conjunction with deployment of tracking buoys is a more effective method of obtaining situational awareness. Vessel surveillance can be undertaken through the use of existing FLNG support vessels.
Surveillance - aerial	<p><u>Processes:</u> Third party call-off contract</p> <p>Aerial surveillance observation log</p> <p><u>Equipment:</u> N/A</p> <p><u>Personnel:</u> Trained aerial observers (AMOSC/AMSA/OSRL)</p>	Shell has third-party call off contracts for helicopters and fixed wing aircraft. These aircraft can be ready for mobilisation in 4-8 hours. Trained aerial observers are available within 24 hours.	Personnel trained in aerial observation could be on standby in order to provide higher quality data to the IMT. However, in the 1 <sup>st</sup> 24 hours the spill it is likely to cover a relatively small geographical location close to the release point.	Untrained aerial observation opportunities exist via Shell crew change helicopters. This in conjunction with tracking buoys and other monitor and evaluate data is expected to provide sufficient information for the IMT in the 1 <sup>st</sup> 24 hours, until such time as trained aerial observers are available.



Oil Spill Response Strategy	Resources	Environmental gain from increasing or improving resources	Alternatives considered	ALARP assessment
			Therefore, initial untrained observations are considered to be adequate given the other data available to the IMT such as spill modelling, tracker buoy data etc.	
Tracking buoys	<p><u>Processes:</u> N/A</p> <p><u>Equipment:</u> Tracking buoys</p> <p><u>Personnel:</u> Trained ISV/FLNG crew for tracking buoy deployment</p>	Tracker buoys are available for immediate deployment from a variety of locations including the Prelude FLNG. No environmental benefits can be gained by increasing the number of buoys available or time to deploy.	Access to additional buoys is available from the shared stockpile located in Broome.	No alternative or additional controls have been identified that could improve this response.
<b>Shoreline Protection and Deflection</b>				
Shoreline and nearshore booming equipment	<p><u>Processes:</u> Browse Island Incident Management Guide</p> <p><u>Equipment:</u> AMOSC/OSRL specialised equipment</p> <p><u>Personnel:</u> AMOSC/OSRL trained and experienced personnel.</p>	<p>Undertaking an improved shoreline protection and deflection response may reduce shoreline accumulation of oil resulting in less environmental impacts to shoreline receptors and less waste generation.</p> <p>However, shorelines in the Browse Basin are difficult to access due to their remoteness and safety risks and may not result in an overall environmental gain.</p>	Access to additional booming equipment would cost in the order of thousands of dollars per day and is not considered warranted given the availability of such equipment is not a limiting factor in the effectiveness of this strategy.	Given the logistical and safety limitations with shoreline response in the Browse Basin, implementation of the response will take approximately 1 week to occur from decision being made to commence (noting that this decision may be made by WA DoT as the Control Agency). Pre-positioning of booms may result in potential damage to sensitive locations and is not considered ALARP. Improving on this response is not considered to provide an environmental gain.





Oil Spill Response Strategy	Resources	Environmental gain from increasing or improving resources	Alternatives considered	ALARP assessment
<b>Shoreline Clean-up</b>				
Shoreline Clean-up Assessment	<p><u>Processes:</u> Shoreline Clean-Up Assessment OMP, <a href="#">Browse Island Incident Management Guide</a></p> <p>Helicopter call-off contract</p> <p><u>Equipment:</u> Staging and accommodation facility</p> <p><u>Personnel:</u> AMOSC/OSRL trained and experienced personnel.</p>	Shoreline assessment specialised personnel can be deployed to remote shorelines from staging/accommodation facilities within 5-6 days. Undertaking quicker shoreline assessment would be beneficial to obtain pre-impact results, however, shorelines in the Browse Basin are difficult to access due to their remoteness and safety risks. Earlier deployment may not result in an overall environmental gain.	N/A	Shoreline surveys must be conducted systematically to be a crucial component of effective decision-making. Repeated surveys are needed to monitor the effectiveness and effects of ongoing treatment methods (i.e. changes in shoreline oiling conditions, as well as natural recovery). Improving the time for specialised personnel to access remote shorelines to make assessments is not warranted and will not result in an environmental gain. Noting that the decision to commence this strategy may be made by WA DoT as the Control Agency.
Manual and mechanical removal (washing, flooding & flushing, sediment reworking & surf washing)	<p><u>Processes:</u> Shoreline Clean-Up Assessment OMP, <a href="#">Browse Island Incident Management Guide</a></p> <p><u>Equipment:</u> AMOSC/OSRL specialised equipment</p> <p><u>Personnel:</u> AMOSC/OSRL trained and experienced personnel.</p>	Predictive oil spill modelling indicates the largest volumes accumulating on shorelines is 1,393 m <sup>3</sup> of condensate at the Indonesian Boundary and 475 m <sup>3</sup> of HFO at the Buccaneer Archipelago. Depending on the sensitivity of the shoreline removal of accumulated oil using heavy machinery and/or large numbers of personnel may result in additional environmental damage. Access by heavy machinery would also be restricted at offshore islands.	<p>Costs for additional clean-up equipment are considered to be negligible and are not considered a limiting factor in the effectiveness of this strategy.</p> <p>Constraints primarily lie in mobilising equipment and personnel safely rather than sourcing additional equipment.</p>	<p>Shell has access to shoreline response kits. Given the logistical and safety limitations with shoreline response in the Browse Basin, implementation of the response will take approximately 1 week to occur from decision being made to commence (noting that this decision may be made by WA DoT as the Control Agency).</p> <p>Large scale operations involving large numbers of personnel and/or heavy equipment may cause adverse environmental impacts at many of these sensitive shoreline locations and would not result in an environmental gain. Manual clean-up equipment, using smaller teams for longer periods would be more effective in most of the shoreline locations predicted to be contacted.</p>
<b>Oiled Wildlife Response</b>				
Oiled wildlife response implementation	<p><u>Processes:</u> WA Oiled Wildlife Response Plan (WAOWRP)</p>	Given access to local OWR equipment and personnel (AMOSC) through existing arrangements the	Any OWR will be undertaken in consultation with the	Shell is a participating member of AMOSC with access to Mutual aid arrangements. AMSA MoU and OSRL contracts, enabling access to national and international oiled wildlife expertise. The closest OWR



Oil Spill Response Strategy	Resources	Environmental gain from increasing or improving resources	Alternatives considered	ALARP assessment
	<p><u>Equipment:</u> AMOSC OWR containers (2) and box kits. NatPlan OWR containers (4), OSRL OWR equipment.</p> <p><u>Personnel:</u> AMOSC/OSRL trained and experienced national and international OWR personnel.</p>	<p>response capability cannot be improved to result in an environmental gain unless an OWR kit is maintained offshore.</p>	<p>relevant agencies e.g. WA DBCA and WA DoT. Such consultation is more likely to be a time limiting factor than accessing additional OWR resources.</p>	<p>container is located in Fremantle and can be mobilised to Broome within 30 hours by vessel. Additional containers and box kits are available from other locations within Australia (including Broome for the closest box kit). Maintaining a dedicated OWR kit offshore is not considered to be reasonable given the low likelihood of needing to implement an OWR and the requirement for trained OWR personnel.</p>
<b>Waste Management</b>				
Waste management	<p><u>Processes:</u> Oil Spill Waste Management Plan Template.</p> <p><u>Equipment:</u> Assorted waste receptacles and trucks from waste contractor with additional stocks from sub-contractors located in Darwin, Broome and/or Dampier.</p> <p>635 m<sup>3</sup> capacity of offshore storage in Darwin.</p> <p><u>Personnel:</u> Waste contractor personnel (Rusca Brothers).</p>	<p>There are no limitations to obtaining the required waste storage capacity for this EP and no environmental benefit obtained by accessing additional waste storage capacity.</p>	<p>Costs for additional waste management resources are considered to be negligible.</p>	<p>Predictive oil spill modelling indicates the largest volumes accumulating on Australian shorelines is 475 m<sup>3</sup> of HFO at the Buccaneer Archipelago. Using a bulking factor of 10, potentially 4,750 m<sup>3</sup> of waste could be generated during a shoreline clean-up response.</p> <p>Decanting from contain and recover operations will also generate waste for disposal. Typically, this oily liquid waste would be held in the inboard storage tanks of the support vessels and disposed of at an onshore facility.</p> <p>Based on Shell's waste contractor capability the available resources are considered to be suitable for the worst-case spill scenario.</p>

### 9.13.2 Aspect Context

This section describes any new or unique environmental impacts or risks presented by implementation of the emergency events response strategies included in the OPEP (HSE\_PRE\_013075) which may be enacted to respond to hydrocarbon and chemical spills as described in Section 9.12. Where impacts and risks are already adequately addressed in the preceding sections of this EP, as indicated in Table 9-58, they are not discussed further in this section.

Typically environmental aspects, impacts and risks that arise from conducting the emergency response activities are similar to those already described in Sections 9.3 to 9.11. for the planned and unplanned activities, particularly for vessel-based operations. Where additional impacts or risks exist for the identified aspects, these are described in the following subsection. Table 9-58 summarises the aspects generated by implementing the spill response activities and identifies any that are new or unique aspects for further assessment.

**Table 9-58: Spill response strategies and associated environmental aspects identified for each including those that are considered new or unique**

		Aspects Generated											
		Physical Presence	Lighting <sup>2</sup>	Noise Generated	Disturbance to Seabed	Disturbance to Ground <sup>1</sup>	Introduced Marine Pests	Discharge of Liquid Wastes	Planned Chemical	Atmospheric Emissions	Greenhouse Gas Emissions	Waste Management	Emergency Events
<b>Response Strategies</b>	Monitor and Evaluate	✓		✓			✓	✓		✓	✓	✓	✓
	Natural Recovery												
	Protect and Deflect	✓		✓		✓	✓		✓	✓	✓	✓	✓
	Shoreline Clean-up		✓			✓		✓		✓	✓	✓	
	Oiled Wildlife Response	✓		✓			✓	✓		✓	✓	✓	✓
	Scientific/ Oil Spill Monitoring	✓		✓			✓	✓		✓	✓	✓	✓

Notes:

- ✓ The aspects and associated impacts and risks are already adequately addressed in the EP Sections 9.3–9.11.
- ✓ There is an aspect of the response activity that may produce a new or unique impact/risk not already addressed in the EP.
- 1 New or different aspect not previously described in the EP
- 2 Due to daylight operations only for typical vessel-based activities, lighting impacts for stationary, non-operating vessels at sea during night will not present a credible impact to sensitive receptors.

#### 9.13.2.1 Shoreline Clean-up and Protect and Deflect – Disturbance to Ground

Conducting shoreline protection and clean-up involves moving personnel and equipment, which includes the environmental aspect of ground disturbance. The objective of shoreline clean-up is to apply clean-up techniques that are appropriate to the shoreline type to remove as much oil as possible where there is a net environmental benefit in doing so. Various techniques may be used alone or in combination to clean up oiled shorelines, including Shoreline Clean-up Assessment Technique (SCAT), natural recovery, absorbents, sediment reworking, manual and mechanical removal and washing, flooding, and flushing. Considerations for selecting and implementing shoreline clean-up techniques are included in the OPEP.

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The deployment of booms to protect sensitive shoreline receptors, typically pre-emptively, introduces the potential for ground disturbance or damage to nearshore habitats such as intertidal reefs, mangroves, seagrasses and macroalgal communities that are present at Browse Island and other offshore islands/shorelines.

### 9.13.3 Description and Evaluation of Impacts

#### 9.13.3.1 Shoreline Clean-up and Protect and Deflect– Disturbance to Ground

##### **Ecosystems, Communities and Habitats; and Threatened Species and Ecological Communities**

###### *Benthic Communities and Marine Fauna*

Conducting shoreline clean-up activities, including moving personnel and equipment, has the potential to cause damage to terrestrial and intertidal habitats, with subsequent impacts to dune/beach structure, flora such as mangroves and fauna such as turtles and birds (including nests). Invasive or frequent clean-up can also involve physical removal of substrates that could adversely impact habitats, fauna and alter coastal geomorphology and hydrodynamics. The impacts associated with undertaking shoreline clean-up may be more than if the product was left in place and remediated through natural processes (Natural Recovery). Leaving the product in place is a very common response option if continual human and vessel/vehicle traffic has the potential to generate greater impacts than the product itself. The optimal suite of response strategies will be determined through the SIMA process described in the OPEP.

The deployment of booms to protect shorelines and intertidal environments could potentially cause physical damage to coral reefs/intertidal ecosystems through the movement of the booms and/or anchors. A review of shoreline and shallow water habitats, and bathymetry, and the establishment of demarcated areas for access and anchoring will reduce impacts to nearshore environments.

Shoreline clean-up and protect/deflect activities will be managed to minimise impacts on turtles (including hatchlings) and birds through minimising disturbance to nesting, and feeding sites. Responder transfer to shore would be on small boats or helicopters. Responders would be accommodated on nearby medium sized vessels or facilities such as Prelude (if available). An assessment of appropriate equipment and personnel numbers required to reduce habitat damage, along with the establishment of access routes/demarcation zones, and operational restrictions on equipment and personnel movements will limit sensitive habitat damage and damage to important fauna areas. The establishment of temporary camp areas will be done in consultation with DoT, DBCA and a Heritage Advisor if access is sought to culturally significant areas.

Given the controls in place and the short-term and localised incidental environmental effects from shoreline clean-up activities, there would only be minor residual impact consequences presented by personnel and equipment undertaking shoreline clean-up activities (Magnitude -2, Sensitivity – M).

#### 9.13.3.2 Shoreline Clean-up and Protect and Deflect – Lighting

##### **Threatened Species and Ecological Communities**

###### *Marine Reptiles, Birds*

Shoreline response activities may require use of lighting which can cause disorientation, disruption to nesting and breeding behaviours in seabirds, shorebirds and turtles.

Shoreline clean-up and protect/deflect activities will be managed to minimise impacts on turtles (including hatchlings) and birds through minimising disturbance to nesting, and feeding sites. An assessment of the need to conduct night-time operations in sensitive areas will be made and operational restrictions established. Due to the remote location of potentially impacted shorelines, conduct of response operations with smaller teams to reduce ecological impacts (Refer to Section 12.3 of OPEP) and the safety implications associated with dangerous marine fauna (e.g. saltwater crocodiles), it is unlikely that operations will be conducted at night.

Given the controls in place and the short-term and localised incidental environmental effects from shoreline clean-up activities, there would only be minor residual impact consequences presented by personnel and equipment undertaking shoreline clean-up activities (Magnitude -2, Sensitivity – M).

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### 9.13.4 Impact Assessment Summary

Table 9-59 lists the highest residual impact consequence rankings of the relevant environmental receptor groups.

**Table 9-59: Spill Response Strategies Evaluation of Residual Impacts**

Environmental Receptor	Magnitude	Sensitivity	Residual Impact Consequence
Physical Environment – water quality	N/A	N/A	N/A
Ecosystems, Communities and Habitats	-2	M	Minor
Threatened Species and Ecological Communities	-2	M	Minor
Socio-economic and Cultural Environment <sup>1</sup>	N/A	N/A	N/A

<sup>1</sup> Potential impacts to socio-economic and cultural environment receptors are not predicted to exceed those presented in Section 9.12 and are therefore not repeated in this section.

### 9.13.5 ALARP Assessment and Environmental Performance Standards

An ALARP assessment of oil spill response capability is presented in Table 9-57. A description of controls, environmental performance standards and measurement criteria for each oil spill response strategy are presented in the OPEP.

### 9.13.6 Acceptability of Impacts

**Table 9-60 Acceptability of Impacts – Oil Spill Response Strategies**

Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
Physical Environment	Water quality	No significant impacts to water quality during the Crux project	Yes	No significant impacts are predicted from implementing spill responses strategies associated with a diesel spill response as outlined in Section 9.13.3.
Ecosystems, Communities and Habitats	Benthic communities	No significant impacts to benthic habitats and communities.	Yes	Damage from protect and deflection equipment such as booms and anchors has a potential to damage intertidal habitats.  The optimal suite of response strategies will be determined through the operational SIMA.  No significant impacts are predicted from implementing spill responses strategies associated with a diesel spill response as outlined in section 9.13.3.
Threatened Species and Ecological Communities	Marine Reptiles Birds	No mortality or injury of threatened or migratory MNES fauna from the Crux project.  Management of aspects of the Crux project must be aligned to	Yes	Moving personnel and equipment associated with shoreline clean-up activities has the potential to cause ground disturbance or lighting impacts which may affect listed Threatened or Migratory MNES fauna populations fauna such



Receptor Category	Receptor Sub-category	Acceptable Level of Impact	Are Impacts an Acceptable Level?	Acceptability Assessment
		conservation advice, recovery plans and threat abatement plans published by the DoEE. No significant impacts to threatened or migratory MNES fauna.		as nesting turtles and birds (including nests). The impacts associated with undertaking shoreline clean-up may be more than if the product was left in place and remediated through natural processes (Natural Recovery). Leaving the product in place is a very common response option if continual human and vessel/vehicle traffic has the potential to generate greater impacts than the product itself. The optimal suite of response strategies will be determined through the operational SIMA and in consultation with relevant agencies such as WA DBCA and WA DoT. No significant impacts are predicted from implementing spill responses strategies associated with a diesel spill response as outlined in section 9.13.3.
	WA and NT mainland coastline	No impacts to WA and NT mainland coastline.	Yes	Damage from protect and deflection equipment such as booms and anchors has a potential to damage nearshore habitats along the WA and NT coastline. The optimal suite of response strategies will be determined through the operational SIMA and in consultation with the relevant agencies such as WA DoT. As per section 9.12.6 the risks of an emergency event have been reduced to ALARP and therefore considered acceptable.
Socio-economic Environment	Fisheries	No interference with fishing to a greater extent than is necessary for the exercise of right conferred by the titles granted to carry out petroleum activities.	Yes	Shell will implement industry standard controls to manage impacts from the implementation of oil spill response strategies required due to unplanned hydrocarbon spills. An operational SIMA will be developed by the IMT using real-time monitoring and evaluation data to select the optimal suite of response strategies. No significant impacts are predicted from implementing spill responses strategies associated with a diesel spill response as outlined in section 9.13.3.
	Tourism & recreation	No negative impacts to nature-based tourism resources resulting in demonstrated loss of income.	Yes	



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New and/or unique environmental impacts associated with implementation of the possible spill response strategies are considered to be acceptable where they present a net environmental benefit compared to the 'do nothing' option as determined and documented through the SIMA process as described in the OPEP.

Assessment of these impacts from the spill response strategies discussed above determined the residual ranking of minor or lower (Table 9-59). The acceptability of these impacts has been considered in the context of:

### ***Principles of ESD***

The response option impacts described above are consistent with the principles of ESD based on the following points:

The health, diversity and productivity of the marine environment will be optimised for future generations through minimising the impact of any large scale spills through implementation of the accepted OPEP and associated response strategies;

The precautionary principle has been applied, and studies undertaken where knowledge gaps were identified. This knowledge has been applied during the evaluation of environmental impacts

With the prevention and mitigation controls in place, the conservation of biological diversity and ecological integrity shall be optimised following a large scale spill.

### ***Relevant Requirements***

Management of the impacts associated with spill response strategy implementation are consistent with relevant legislative requirements, including:

The NOPSEMA accepted OPEP (HSE\_PRE\_013075).

### ***Matters of National Environmental Significance***

#### **Threatened and Migratory Species**

Alignment with the relevant management plans, recovery plans and conservation advice for threatened and migratory fauna will be addressed on a case-by-case basis through the SIMA process when selecting appropriate spill response strategies (Reference is made to Table 7-4 for the list of potentially applicable plans and advisory documents). These plans and advisory documents will assist with determining protection priorities once the nature, scale and trajectory of the spill is understood post event.

#### **Commonwealth Marine Environment**

The new and/or unique environmental impacts presented by dispersant application, decanting and/or shoreline clean-up on the Commonwealth marine environment when assessed in isolation from the spill event itself will not credibly exceed any of the significant impact criteria provided in Table 8-1.

### ***External Context***

There have been no objections or claims raised by Relevant Persons to date around the dispersant application, decanting or shoreline clean-up aspect. Shell's ongoing consultation program will consider statements and claims made by Relevant Persons when undertaking further assessment of the risks.

### ***Internal Context***

Shell has also considered the internal context, including Shell's environmental policy and ESHIA requirements. The environmental performance outcomes, and the controls which will be implemented, are consistent with the outcomes from Relevant Person consultation for the petroleum activity and Shell's internal requirements.

### ***Acceptability Summary***

As outlined above, the acceptability of the associated impacts have been considered in the context of:

- The established acceptability criteria
- ESD
- Relevant requirements
- MNES

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- External context (i.e. Relevant Person claims)
- Internal context (i.e. Shell requirements).

The residual impacts have been assessed as minor which Shell considers to be acceptable if they meet legislative and Shell requirements. The discussion above demonstrates that these requirements have been met in relation to the new and/or unique impacts associated with implementation of the identified spill response strategies. Based on the points discussed above, Shell considers the residual impacts to be ALARP and acceptable.

### 9.13.7 Environment Performance Outcome

Environment Performance Outcome	Measurement Criteria
Spill response strategies shall be selected and implemented to minimise the overall environmental impacts from a spill and the associated implementation of the response strategies themselves.	OPEP implementation records and SIMA records

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## 10 Environmental Plan Implementation Strategy

The OPGGS (E) Regulations require an Implementation Strategy to be incorporated into the EP that includes:

- Measures, systems and practices to ensure that environmental risks continue to be identified and reduced to a level that is ALARP, mitigating measures are effective, and environmental performance outcomes and standards are met
- Chain of Command
- Measures to ensure workers are aware of their responsibilities
- Monitoring and management
- Records and reporting
- Oil Pollution Emergency Plan (OPEP) provided as a separate document together with this EP submission
- Consultation.

### 10.1 Management Systems

The Shell HSSE & SP-MS provides a structured and documented framework for the effective management of HSSE & SP risks and demonstrates how the requirements of the Shell Group HSSE & SP Control Framework are implemented throughout Shell. The Shell HSSE & SP-MS Manual consists of the following sections:

- Leadership & Commitment
- Policy & Objectives
- Organisation, Responsibility & Resources, Standard & Documents
- Risk Management
- Planning & Procedures
- Implementation, Monitoring & Reporting
- Assurance
- Management Review.

The HSSE & SP-MS is subject to a continuous improvement 'plan, do, check, review' loop, with eight components as outlined in Table 10-1. There are numerous, specific ongoing (typically annual) assurance activities against each of the eight components in this HSSE & SP-MS Manual as detailed below. The audit and review function of the HSSE-MS seeks to ensure that the system is being implemented, is effective and to identify areas for improvement. Examples of elements that demonstrate continuous improvement are highlighted under each section.

**Table 10-1: HSSE & SP-MS Elements Implementation and Improvement**

Management System Element	Implementation and Improvement
Leadership and Commitment <i>Creating and sustaining a culture that drives Shell's commitment of no harm to people or the environment</i>	Seek ongoing feedback on how others perceive HSSE & SP leadership (performance reviews, HSE Culture Survey (Shell People Survey), 360 feedback)
Policy and Objectives <i>Supporting the implementation of Shell HSSE &amp; SP Commitment and policy</i>	Set annual HSSE & SP targets to drive continuous performance Annually Review and approve HSSE & SP objectives
Organization, Responsibilities and Resources	When there are changes in the Business or organization, identify the positions that require Competence assurance.

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Management System Element	Implementation and Improvement
<i>Establishing and maintaining an organization that enables the compliance with the HSSE &amp; SP Control Framework</i>	HSSE & SP Critical Position Register, Shell People Competency Profiles
Risk Management <i>Identifying the HSSE &amp; SP hazards and establishing the controls to reduce the risks to As Low as Reasonably Practicable (ALARP)</i>	Ongoing review of Hazards and Risks. Regular review of Risk Registers
Planning and Procedures <i>To integrate the requirements of the HSSE &amp; SP Control Framework into business plan and procedures: Emergency &amp; Crisis Response, Spill Preparedness and Response, MOC, PTW</i>	Establish and maintain a programme of testing of Emergency Response plans and procedures at least once a year or more frequently based on the level of risk. Shell Australia ERP, Records of ER drills, exercises and AARs.
Implementation, Monitoring and Reporting <i>Implement the HSSE &amp; SP requirements embedded in plans and procedures and take corrective action when necessary</i>	Report all Incidents, including Near Misses, to the Supervisor of the work activity. Learn from Significant Incidents and High Potential Incidents through communication and implementation of required actions.
Assurance <i>Providing assurance that the HSSE &amp; SP Control Framework requirements are implemented and effective</i>	Establish, maintain and execute HSSE & SP Self-Assessments in support of the Business HSSE & SP Assurance Plan, self-assessment, CF Gap Analysis, HSSE & SP Management Review.  Management Review (documents demonstrating how Shell Australia reviews the effectiveness, adequacy and fitness for purpose of the HSSE & SP Management System and take action to improve)  Review the HSSE & SP Management System and its individual elements at least once a year and document the results.
Management Review <i>Reviewing the effectiveness, adequacy and fitness for purpose of the HSSE &amp; SP MS and taking actions for improvement</i>	Assess the Effectiveness and Adequacy of the management system in delivering the policy and Objectives and in driving continual improvement.

Shell's HSSE & SP-MS covers all operations within its business, including that of the Crux Project.

Shell implements specific pre- and post-contract award processes and activities aimed at ensuring that contracts consistently and effectively cover the management of HSSE & SP risks and deliver effective management of HSSE & SP risks for contracted activities.

Contractor HSSE & SP Management is governed by the Shell HSSE & SP Control Framework. As a minimum, all relevant field active contractors' HSSE & SP-MS will be assessed to ensure they meet materially equivalent outcomes to Shell's HSSE & SP-MS.

For the activities that occur offshore but not under Shell's management system, Vessel Contractor predominantly use their own vessel/facility HSSE-MSs to manage work scope onboard their vessel.

### 10.1.1 Contractor Management

Contractors and their sub-contractors carry out a number of activities on behalf of Shell. Effective management of environment, integrity, health and safety risks in contracts involves setting clear expectations and managing these risks throughout the contract lifecycle.

Shell implements specific processes and activities aimed at ensuring that contracts consistently and effectively cover the management of HSSE & SP risks for the contracted activities. These processes are detailed in the HSSE & SP Contractor Management Strategy Manual. The contractor management processes implemented for Crux Project are consistent with the requirements of the Shell HSSE & SP Control Framework Contractor HSSE Management Manual.

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Key aspects of the Contractor HSSE Management are:

- Pre-contract Award Activities
  - o Appointing a competent contract owner and contract holder for each contract.
  - o Determine the Contract HSSE & SP risk, by assessing the risk associated with the contracted activities.
  - o Determine the contract mode.
  - o For a high contract HSSE Risk, the contractor is to develop and provide a Contract HSSE Plan.
  - o Assess whether the Contractor has the capability and resources to manage the risks associated with the contracted activities.
  - o Before contract award, confirming that the Contractor meets requirements. Focus on closing gaps in draft contract HSSE & SP Plan submitted by Contractor.
  - o Define the level of Company monitoring based on the capability of the Contractor, the contract HSSE & SP risk and the contract mode.
- Post-contract Award Activities
  - o Require the Contractor to demonstrate that Contractor personnel responsible for managing the HSSE Risks of the contracted activity have knowledge of the HSSE requirements of the contract and any associated Contract HSSE Plan related to their role.
  - o Require the Contractor to demonstrate that all Contractor personnel will be given an induction on the HSSE risks of the contracted activities including the controls to manage those Risks specified in the contract and any associated Contract HSSE Plan.
  - o Verify that the HSSE requirements of the contract and any associated Contract HSSE Plan are being implemented and are effective at managing the HSSE Risk of the contract. Where necessary implement actions for improvement.
  - o Regularly assess the HSSE performance of the Contractor, including its management of Subcontractors.

### 10.1.2 Contractor Competency Requirements and Assurance

The contractor is responsible for ensuring that all their personnel have the appropriate level of competence required to carry out the work safely and effectively. The contractor is also responsible for the development and implementation of a competence assurance plan. The contract holder is responsible for ensuring that the contractor's competence assurance system is reviewed, robust and meets the Shell requirements.

In addition to trade competencies and qualification requirements, the minimum competence requirements for key contractors working on Crux are based on the required contractor work scope and are developed in consultation between Shell and the contractor. The minimum requirements for a contractor going offshore on the Crux Project include the following:

- Facility Induction (such as Life Saving Rules, Emergency Response and Muster procedures, Incident Reporting, Waste Management, Oil Spill Awareness)
- Role-specific training such as Permit to Work, operating procedures of specific process units

### 10.1.3 Permit to Work (PTW)

The Permit to Work (PTW) process is used to control and approve work on the Prelude FLNG facility and within the Prelude Safety Zones. It ensures that adequate controls and measures are in place to safeguard people, asset and environment from work activity hazards. Details of the PTW process is described in the Permit to Work Manual (HSE\_PRE\_004404) and an electronic PTW system is used. There is a high level redundancy built into the electronic PTW tool.

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A permit is required for activities that have the potential to adversely affect personnel's safety/health, cause damage to asset, the environment and reputation. Most activities within the Prelude FLNG safety zone require a permit. However, there are standard operational and marine operations activities that do not require permits and are managed through approved procedures; execution of these activities is allowed only after safety and environmental precautions have been put in place.

All permitted marine activities within the Prelude FLNG safety zone are categorised based on their risk level: into low-low, low, medium or high risk. The level of risk assessment, review and approval are proportionate to the risk of the activity.

#### 10.1.4 Management of Change (MOC)

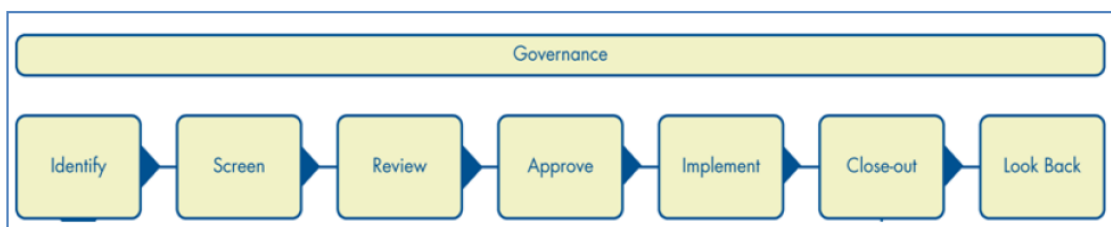
The Management of Change process for Crux is described in the Crux Management of Change Procedure. The MoC process is designed to "provide assurance that, when changes are introduced, new risks are not knowingly incurred, or the prevailing risk profile is not adversely changed without appropriate mitigation".

The scope covered by this procedure includes:

- Engineering changes
- Process Changes (Hardware, Process Control, Process Conditions)
- Procedural Changes that affect HSSE Critical Content
- Organisational Changes (Shell and Contractor) impacting HSSE Critical Roles.
- The application of this scope includes:
  - Permanent Change
  - Temporary Change
  - Emergency Change.

The MoC Manual is supported by specific procedures, templates and checklists. The progress of change requests is monitored through an electronic MoC system.

The MoC process is built around 7 simple steps forming an overarching governance framework (Figure 10-1).



**Figure 10-1: Management of Change Process Steps**

The screening process for all new changes (hardware or software) require assessment of HSSE&SP aspects as per Crux Management of Change Procedure. this may result in a change being flagged as possibly needing a change to the EP which require compliance with Regulation 17 of the Environment Regulations. If a change is considered significant as per Regulation 17 (5) or (6) and as determined by the MOC process, then a revised or new EP will be submitted to NOPSEMA for acceptance.

The following will also trigger the review of the management of a particular environmental impact or risk to ensure that ongoing management of impacts and risks are at ALARP and Acceptable levels:

- Changes in regulatory requirements/standards
- Information which may suggest an increase in environmental risks or impacts to those outlined in the EP
- Prominent new scientific studies which may 'negatively' change the understanding of environmental risks and impacts



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- Objections or claims raised which require changes in EP content following the process outlined in Section 5.

### 10.1.5 Chemical Selection Process

Shell has adopted a chemical selection and approval process in accordance with Shell's chemical selection and approval guidelines as indicated in Shell Chemical Management Process (HSE\_GEN\_007879) and Shell Global Product Stewardship guidelines to assess chemicals than may pose environmental impact via planned discharges.

All chemical applications are required to be screened in accordance with Shell Global Product Stewardship guidelines (Figure 10-2).

Where chemicals may be discharged to the marine environment preference shall be given to chemicals that are deemed environmentally acceptable (PLONOR, Gold, Silver, D and E) with no substitution warning under the Offshore Chemical Notification Scheme (OCNS) adopted in the United Kingdom and the Netherlands. Chemicals that fall within this banding require no further assessment and are deemed ALARP and accepted.

Chemicals that do not have an OCNS ranking or fall outside of the preferential banding (PLONOR, Gold, Silver, D and E with no substitution warning) are required to be assessed further incorporating seeking a suitable alternative chemical of lower environmental impact. If no alternative is technically suitable, the chemical is required to be assessed via Shell Global Product Stewardship guidelines and ALARP demonstration with risk reduction control measures (Figure 10-3). Approval will be provided by the Shell Production Chemist / Product Steward Focal Point. Chemicals that are not deemed ALARP will be not approved and an alternative product shall be requested.

To ensure that chemicals which may pose impact to the marine environment are managed appropriately on an ongoing basis, annual compliance checks will be made by Shell and chemical vendors of Shell's Chemical Programme Treatment Guide (TEC\_PRE\_006805) and Chemical Risk Assessment Register operational chemical registers. To accompany routine compliance checks, the impact of chemicals in key discharge streams will be assessed on an ongoing basis as indicated in Adaptive Management Framework outlined in Section 10.4.1.

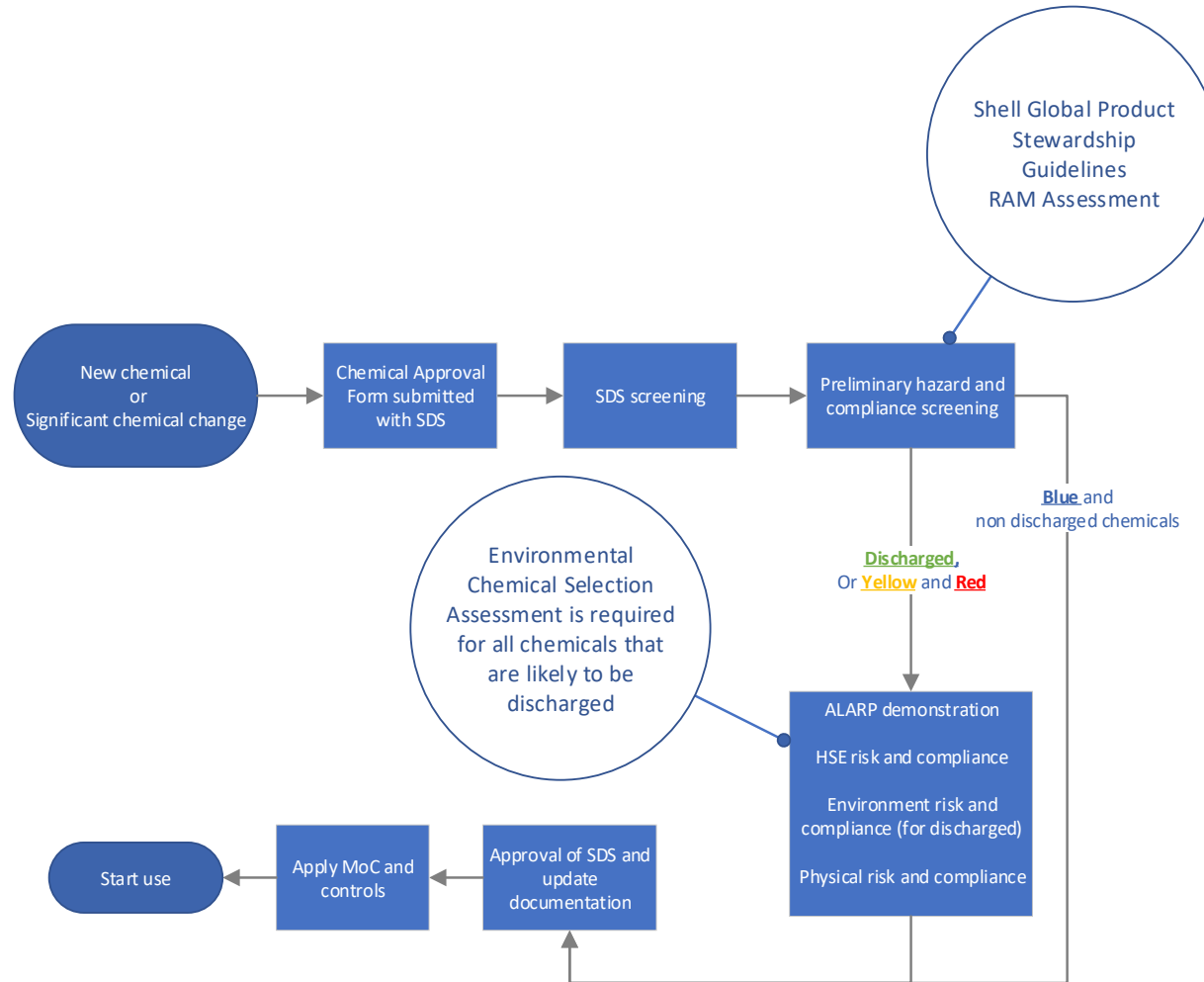


Figure 10-2: Chemical Approval Process

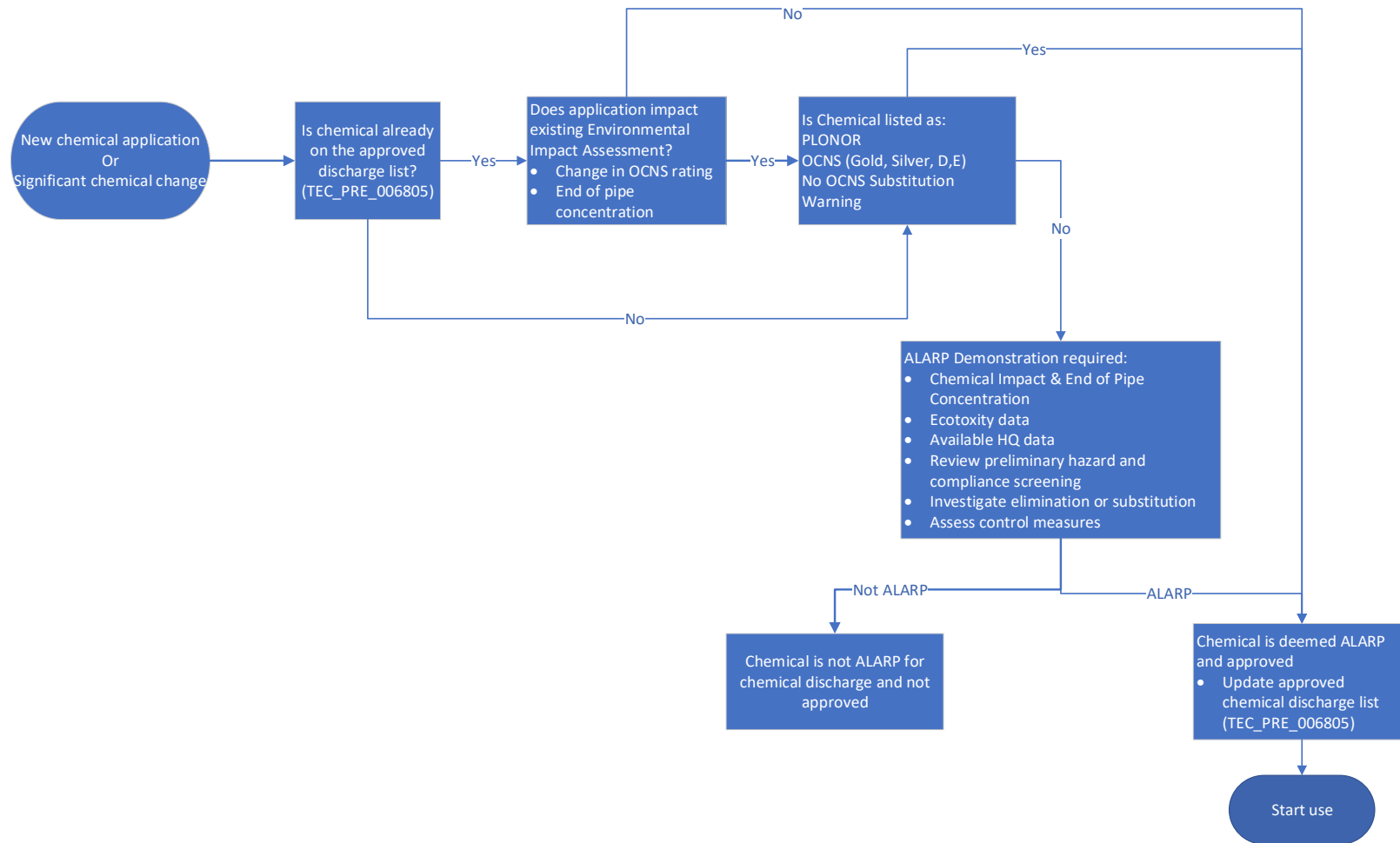


Figure 10-3: Environmental Chemical Impact Assessment

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## 10.2 Organisation, Roles and Responsibilities

The core organisation of Crux Project consists of the Crux Project Manager. The Project Manager is accountable for the safe and environmentally responsible execution of the Crux Project.

As required by Regulation 14(4) this section of the Implementation Strategy establishes a clear chain of command that sets out the roles and responsibilities of personnel in relation to the implementation, management and review of the EP, ranging from senior management to operational personnel that support Crux activities. Roles and responsibilities associated with emergency management arrangements are detailed in Table 10-6.

The roles, responsibilities and accountabilities for processes undertaken are detailed in the Business Management System and individual's job descriptions. General responsibilities associated with this EP for key personnel are summarised in Table 10-2.

**Table 10-2: Key Responsibilities**

Position	Responsibilities
Crux Project Manager (EP Owner)	<p><b>Systems, Practices and Procedures</b></p> <ul style="list-style-type: none"> <li>• Accountable for the overall execution of the Crux Project.</li> <li>• Accountable for ensuring all necessary regulatory approvals are in place to operate.</li> <li>• Accountable for the implementation and compliance of the EP.</li> <li>• Accountable for safe, efficient and environmentally sound execution of activities in accordance with the EP, legislative requirements and Shell's policies and standards.</li> <li>• Custodian of communication with all regulatory agencies required to execute the Crux project.</li> <li>• Accountable and responsible for agreeing and meeting KPIs and environment initiatives from annual Plans and reviewing environmental performance to drive continuous improvement.</li> <li>• Accountable for the implementation of Relevant Person consultation as per the description in this EP and in compliance with regulations.</li> </ul>
Shell Site Representative	<p><b>Systems, Practices and Procedures</b></p> <ul style="list-style-type: none"> <li>• In charge of the vessel activities in field.</li> <li>• Accountable for the implementation of the EP onsite.</li> <li>• Accountable for ensuring all teams operate in a safe and reliable manner to meet targets.</li> <li>• Accountable for the Permit to Work governance, process and permit requirements.</li> <li>• Implements environment initiatives from the Integrated Activity Plan including review of environmental performance to drive continuous improvement.</li> <li>• Ensures effective communication with workforce on environmental performance.</li> <li>• Accountable for effective and appropriate handovers between shifts.</li> </ul> <p><b>Resourcing, Training and Competencies</b></p> <ul style="list-style-type: none"> <li>• Provides appropriate offshore resource allocation to meet the EP requirements including performance outcomes, standards and measurement criteria.</li> <li>• Accountable for the performance and development of production, services and maintenance teams and ensuring capability and competency across all shifts.</li> </ul> <p><b>Monitoring, Auditing, Non-conformance and Emergency Response</b></p> <ul style="list-style-type: none"> <li>• Accountable for monitoring performance against the EP.</li> <li>• Implements environmental assurance activities and audits and implementing and monitoring close out of recommended actions.</li> <li>• Ensures incidents are reported and investigated in line with Shell Australia standards and EP requirements, with appropriate actions initiated and closed out.</li> <li>• Responsible for acting as the Incident Controller during emergencies.</li> </ul>



Position	Responsibilities
	<ul style="list-style-type: none"> <li>Responsible for ensuring exercises and drills are carried out such that the facility's ability to respond effectively to an emergency is assured.</li> </ul>
Shell Australia Environment Manager	<p><b>Systems, Practices and Procedures</b></p> <ul style="list-style-type: none"> <li>Overall coordination of environmental management across Shell Australia to ensure the performance outcomes, standards and measurement criteria of the EP are met.</li> <li>Ensuring the organisation understands and adheres to regulatory requirements and environmental management system.</li> <li>Guiding and driving the direction of environmental management across the organisation, maintaining alignment with Shell Group's environment direction.</li> <li>Providing support on environmental standards and EP compliance through the Shell Australia assurance programs.</li> <li>Monitoring and communicating to the organisation any relevant changes to legislation, policies and regulator organisation that may impact the EP or the business.</li> <li>Functional support on developing and maintaining appropriate environmental processes for Crux.</li> </ul> <p><b>Resourcing, Training and Competencies</b></p> <ul style="list-style-type: none"> <li>Supporting the Divisional environmental performance through implementation of effective environmental training programs.</li> </ul> <p><b>Monitoring, Auditing, Non-conformance and Emergency Response</b></p> <ul style="list-style-type: none"> <li>Monitor and review progress against environmental improvement plans, targets and KPIs with divisional management to drive continuous improvement.</li> </ul>
Crux HSSE manager	<p><b>Systems, Practices and Procedures</b></p> <ul style="list-style-type: none"> <li>Monitor and review progress against EP, targets and KPIs with to ensure compliance with the EP and drive continuous improvement.</li> <li>Escalate to Crux Project Leadership Team any potential environmental issues and non-compliances to ensure ownership by the line.</li> </ul>
Crux Environment Lead	<p><b>Systems, Practices and Procedures</b></p> <ul style="list-style-type: none"> <li>Ensuring appropriate personnel have access to the EP and understand the outcomes, standards and measurement criteria and their environmental responsibilities for the activity.</li> <li>Liaising with applicable regulatory authorities and Relevant Persons as required.</li> <li>Develops risk reduction strategies and defines Performance Standards.</li> <li>Facilitates ALARP &amp; Acceptability reviews.</li> <li>Update of the EP as required.</li> <li>Facilitate and provide coaching for environmental improvement plans.</li> </ul> <p><b>Resourcing, Training and Competencies</b></p> <ul style="list-style-type: none"> <li>Developing and maintaining environmental training, and coaching materials for deployment to Crux organisation.</li> </ul> <p><b>Monitoring, Auditing, Non-conformance and Emergency Response</b></p> <ul style="list-style-type: none"> <li>Responsible for environmental monitoring and reporting requirements from the EP including environmental performance and compliance reporting.</li> <li>Monitoring progress against environmental improvement plans.</li> <li>Participating in environmental audits/inspections to ensure regular checking of compliance to this EP. Communicating findings to management and assisting with close out of actions.</li> <li>Assisting with review, investigation and reporting of environmental incidents.</li> </ul>
Corporate Relations Advisor	<ul style="list-style-type: none"> <li>Responsible for preparing and implementing Relevant Person Engagement Plan.</li> </ul>
Vessel Master	<ul style="list-style-type: none"> <li>Responsible for taking action immediately to rectify any environmental incident on the vessel.</li> <li>Implementation of the EP on board the vessel.</li> </ul>

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Position	Responsibilities
	<ul style="list-style-type: none"> <li>• Ensure effective operation of the vessel, taking into account relevant environmental aspects.</li> <li>• Communication of vessel environmental management activities on board.</li> <li>• Maintain administration of vessel's environmental management system requirements</li> <li>• Ensure all crew members comply with the EP.</li> <li>• Manage any spills per SOPEP.</li> <li>• Responsible for ensuring cetacean sighting recording is undertaken.</li> <li>• Maintain good housekeeping and cleanliness around the vessel;</li> <li>• Compliance with DAFF and other marine regulations</li> </ul>
Contract Holders	<ul style="list-style-type: none"> <li>• Ensuring implementation of this EP for the contractor's scope of work.</li> <li>• Ensuring contractors have adequate environmental capability in order to execute their scope of work.</li> <li>• Reviewing and provide assurance over contractor environmental performance.</li> </ul>
All personnel	<ul style="list-style-type: none"> <li>• Complying with standards and procedures that apply to their area of work.</li> <li>• Immediate reporting of any environmental hazards or incident to the supervisor.</li> <li>• Understanding the environmental risks and controls applicable to work.</li> <li>• Following instructions from the supervisor with respect to environmental protection and measurement criteria outlined in this EP.</li> <li>• Undergo environmental training as required by role and activity.</li> <li>• Carry out assigned activities in accordance with approved procedures and the EP.</li> <li>• Stop any operation or activity that is deemed to present an unacceptable risk to the environment.</li> </ul>

## 10.3 Competence and Inductions

### 10.3.1 EP Training

OPGGS(E) Regulation 14(5) requires that the implementation strategy must include measures to ensure that each employee and contractor working on, or in connection with, the activity is aware of their roles and responsibilities in relation to the EP.

All employees and contractors working on or in connection with Crux project with defined responsibilities to fulfil as part of the EP are required to attend EP Training.

On arrival at the facility or vessel, personnel (including short-term visitors) attend an onsite orientation designed to familiarise them with the general operations and location of key areas. The orientation explains the site-specific safety, environmental and emergency response aspects.

## 10.4 Monitoring, Assurance and Incident Investigation

This section of the EP outlines the measures undertaken by Shell to regularly monitor the management of environmental risks and impacts of the petroleum activities against the performance outcomes, standards and measurement criteria, with a view to continuous improvement of environmental performance. The effectiveness of the Management System is also reviewed periodically as part of the monitoring and assurance process.

### 10.4.1 Environmental Performance Monitoring

Monitoring and review of environmental performance of the petroleum activities are done in a number of ways including monitoring of emissions and discharges, and through the use of various tools and systems. These monitoring systems meet the requirements of the following:



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- Shell Australia Environmental Reporting Procedure (HSE\_GEN\_003179)
- Shell Australia Offshore Environmental Regulatory Approvals & Compliance Procedure (HSE\_GEN\_003180).

In accordance with OPGGS(E) Regulation 14 (7), the implementation strategy must provide for sufficient monitoring of, and maintain quantitative records of, emissions and discharges (whether occurring during normal operations or otherwise), such that the record can be used to assess whether the environmental performance outcomes and standards in the environment plan are being met.

Parameters that are monitored and recorded during the petroleum activity are detailed in the performance outcomes, standards and measurement criteria outlined in Section 9, and are summarised in Table 10-3.



Table 10-3: Emissions and Discharges Monitoring for Petroleum Activity

Source	Parameter to be Monitored	Monitoring Frequency	Monitoring Equipment/ Methodology*	Records	EP Reference
Diesel fuel used on vessels	Sulphur content	As required (every delivery)	Delivery certificates	Delivery certificates	Section 9.10
	Volume used	Monthly	Delivery certificates and storage tank volumes	Delivery certificates	
Waste generation	Hazardous Waste Non-Hazardous Waste	Monthly	Waste records/manifests	Monthly waste reports	Section 9.11
Accidental releases of hydrocarbons or chemicals	Volume of accidental release Characteristic of release	As required	If unmetred, volumes will be estimated based on technical data and evaluations (e.g. known well flow rates, production flowrates, pressure, duration of release and known inventory volumes)	Incident reports in Sphera	Section 9.12.

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#### 10.4.2 Marine Vessel Assurance

The vessel which is planned to be used within the Operational Area is required to achieve “Positive Vetting” in accordance with the requirements specified in the HSSE & SP Control Framework – Transport Manual - Maritime Safety. Numerous assurers are required in order to assure a positive vetting, including Marine SME, Aviation SME and country security manager, Global Maritime Marine Warranty Surveyor and the project workstreams responsible for the particular activity to be conducted. The Marine Vessel Assurance process ensures that the physical controls are robust, including:

- Navigation Equipment and Aids
- Communication Equipment
- Dynamic Positioning System
- Lifting Equipment
- Emergency shut-down, alarm and lighting systems.

OCIMF OVID is the basis for all vessel vetting. Additionally, the survey vessel will be screened for class and port state control infractions.

The following compliance requirements are required for “Positive Vetting” for the vessel selected to undertake the survey in the Operational Area.

##### 10.4.2.1 Marine Warranty Survey

All vessel and activities are assessed by the Marine Warranty Surveyor (MWS) on behalf of Shell’s underwriter. Where required by the Marine Warranty Surveyor (MWS) and in accordance with Construction All Risk (CAR) insurance rules, a marine vessel inspection/suitability survey is performed and a Vessel Suitability Report issued by the MWS with all significant actions and findings closed.

##### 10.4.2.2 Pre-Mobilisation Inspection Report

The Pre-Mobilisation Inspection is conducted to ensure compliance with HSSE, marine and technical requirements and readiness prior to commencing work. The vessel (inclusive of equipment, processes and procedures) is thoroughly inspected and the inspection report items are closed prior to completion of mobilisation.

##### 10.4.2.3 Group Maritime Assurance System (GMAS) Clearance

A GMAS clearance from the Shell Marine SME must be obtained prior to the commencement of marine operations on the Project and prior to the contracted marine vessel entering the Operational Area. This ensures that the above marine vessel assurance has been completed satisfactorily.

##### 10.4.2.4 Biofouling Risk Assessment for Domestic Movements

In accordance with the Browse Basin Biosecurity Management Procedure (2000-010-G000-GE00-G00000-HX-5798-00003) the assessment of biofouling risk will be done for the vessel which will operate within the Operational Area using the Marine Vessel Biofouling Risk Assessment template.

The risk assessment will be done by the Vessel Owner/Operator with advice from the Crux Environment Lead.

#### 10.4.3 Environmental Assurance

Shell and its contractor’s HSSE Plans make provisions for monitoring, audits and review. Annual HSSE Plans identify environmental audits and reviews that are to be conducted for the year. These audits and reviews include internal and external environmental audits, contractor HSSE audit, waste management audit/review and gap analyses against HSSE Control Framework Manuals.

Shell Group audits are undertaken across all Shell businesses on an intermittent basis. This auditing process assures the HSSE & SP management system as a whole.

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The outputs of the audits and reviews are the corrective actions that feed the improvement process. Close-out of these corrective actions is monitored and reviewed.

Regular onsite HSSE assurance is conducted which includes checking that environmental controls are implemented. Any specific environmental issues, like any HSSE issues, identified during these assurance checks are raised in the HSSE Leadership and Assurance meeting and resolved as part of continually reducing the risks to ALARP and Acceptable levels.

Given the short duration and nature of the activities being carried out, no specific environmental audit is planned for this petroleum activity.

#### 10.4.4 Management of Incidents and Non-Conformances

All Health, Safety, Security and Environmental incidents and non-conformances are managed in accordance with the Shell Australia HSSE Incident Reporting, Investigation and Follow up Procedure (HSE\_GEN\_000027) that describes the process of reporting, classification, investigation, follow-up and close out. Non-conformances are treated in the same way as incidents and for the purposes of this document are referred to as incidents.

All incidents records are managed in an online electronic system called Sphera. Below is the overview of the incident management process:

- The system allows incidents to be raised by any employee of the company including offshore personnel.
- The incident is then assigned to a Responsible Supervisor (Incident Owner) who then retains the ownership of the incident until closeout.
- The Responsible Supervisor initiates the Incident Investigation the depth of which depends on the actual and potential risk ranking of the incident.
- The recommendations of the investigation team are reviewed by the Incident Owner who then assigns the corrective and preventative actions to the appropriate action party. Actions are tracked to closeout where the Incident Owner accepts that the remedial action is successfully completed based on the evidence recorded and logged in Sphera.
- Sphera provides functionality for automatic reminders for Incident Owner and Action Parties about the actions due. However, in addition reviews of outstanding actions are carried out both at asset/department level, and at the Shell Business Assurance Committee level at regular intervals to ensure timely closeout of actions.

All employees or contracted staff are encouraged to submit incident reports to alert the organisation about the occurrence of an incident or non-conformance.

In addition to the Incident Management Process outlined above, Shell also reports the number of non-compliances (incidents/ non-conformance) to the Shell Group on a quarterly basis, along with other HSE data in accordance with Shell Group Performance Monitoring and Reporting (PMR) standard. This information is reviewed in a dedicated HSE Business Performance Review where Shell Australia performance is reviewed by the Shell Group.

The incident investigation process works to understand the cause of an incident and the reason why a control/mitigation measure has failed and to rectify the fault to prevent recurrence and the reporting process works to track performance and allows sharing of learnings. This process contributes to reducing the risks to ALARP and Acceptable Levels.

## 10.5 Reporting

### 10.5.1 External Incident Reporting

#### 10.5.1.1 Reportable Incidents

NOPSEMA will be notified of all reportable incidents under Regulation 26 of the OPGGS (E) Regulation within two hours of the incident and in writing within three days. Under the OPGGS (E) Regulations, Reportable

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Incidents are defined as ‘an incident relating to the activity that has caused, or has the potential to cause, moderate to significant environmental damage’. The Shell Risk Assessment Matrix (refer to Section 9.2) uses severity levels 0 to 5 to define environmental consequences (no effect, slight effect, minor effect, moderate effect, major effect and massive effect). All environmental effects with a severity 3 or greater (i.e. moderate to massive) are considered Reportable Incidents. Based on the risk assessment (Table 9-33 and Table 9-53), two events are considered to be of moderate or higher consequence:

- Any confirmed introduced marine pest species in Australian waters attributable to the petroleum activities
- Diesel spill resulting from a collision with another vessel

With specific regard to the accidental death or injury of threatened, migratory or cetacean species as a result of project activities (as listed under the EPBC act), Shell elects to report these events as Reportable incidents to NOPSMEA. These incidents may not result in moderate to significant Environmental damage, however, they could result in the potential for moderate stakeholder/RP impacts (i.e. impact to totem species), therefore Shell elects to report these events as Reportable Incidents.

The reportable incident report contains all material facts and circumstances concerning the reportable incident, actions taken to avoid or mitigate any adverse impacts and corrective action taken. This report will be made to NOPSEMA.

#### 10.5.1.2 Recordable Incidents

For the purpose of this activity, in accordance with the OPGGS (E) Regulations, a recordable incident, for an activity, means ‘a breach of an environmental performance outcome or environmental performance standard, in the environment plan that applies to the activity, that is not a reportable incident’.

NOPSEMA will be notified of all Recordable Incidents, according to the requirements of Regulation 26B of the OPGGS (E) Regulations. A report of Recordable Incidents must be given to NOPSEMA ‘as soon as practicable after the end of each calendar month, and in any case not later than 15 days after the end of the calendar month’.

As per the OPGGS (E) Regulations, the report will comprise:

- ‘A record of all Recordable Incidents that occurred during the calendar month
- All material facts and circumstances concerning the Recordable Incidents that the operator knows or is able, by reasonable search or enquiry, to find out
- Any action taken to avoid or mitigate any adverse environment impacts of the Recordable Incidents
- The corrective action that has been taken, or proposed to be taken, to prevent similar Recordable Incidents’.

#### 10.5.1.3 Other Externally Notifiable Incidents

Key externally notifiable incidents are captured in Table 10-4. Additional notification requirements relevant to oil spill incidents are included in the OPEP.

**Table 10-4: Other Externally Notifiable Incidents**

Incident	Legislation	Timing of Notification with respect to the occurrence of the incident.	Contact Details
Hydrocarbon spill within a marine park or	EPBC Act	As soon as possible	Director of National Parks. Notification should be provided to the 24-hour Marine Compliance Duty



Incident	Legislation	Timing of Notification with respect to the occurrence of the incident.	Contact Details
likely to impact on a marine park.			<p>Officer on 0419 293 465. The notification should include:</p> <ul style="list-style-type: none"> <li>• titleholder details</li> <li>• time and location of the incident (including name of marine park likely to be affected)</li> <li>• proposed response arrangements as per the Oil Pollution Emergency Plan (e.g., dispersant, containment, etc.)</li> </ul> <p>confirmation of providing access to relevant monitoring and evaluation reports when available; and contact details for the response coordinator.</p>
Hydrocarbon spill predicted to enter WA waters	Emergency Management Regulations 2006 (WA State)	Verbal, immediately (<2hrs) POLREP, within 24 hrs SITREP, as required.	<p>WA DoT (Maritime Environmental Emergency Response) CEO of the DoT (HMA) (08) 9480 9924 (24 hours) <a href="mailto:marine.pollution@transport.wa.gov.au">marine.pollution@transport.wa.gov.au</a></p>
Hydrocarbon spill predicted to enter WA waters	RP consultation	As soon as practicable.	<p>DBCA's Kimberley regional office as soon as practicable on (08) 9195 5500</p>
Vessel spill to marine environment (oil, oily mixtures or noxious liquid)	Marine Order 91	Verbally, within two hours. POLREP, within 24 hours. SITREP as required	<p>AMSA RCC duty officer 1800 641 792 Email: <a href="mailto:rccaus@amsa.gov.au">rccaus@amsa.gov.au</a></p>
Any breach in the quarantine regulations, including exchange of ballast water within the twelve nautical mile limit.	Biosecurity Act 2018, Australian Ballast Water Management Requirements 2017	As soon as practicable	<p>Department of Agriculture, Water and the Environment (Maritime National Coordination Centre) Phone: 1300 004 605</p>
Any confirmed introduced marine pest species in Western Australian state waters.	Fish Resources Management Regulations 1995 r176(1)	Within 24 hours.	<p>DPIRD FishWatch 1800 815 507 Email: <a href="mailto:aquatic.biosecurity@dpird.wa.gov.au">aquatic.biosecurity@dpird.wa.gov.au</a> Aquatic Pest Biosecurity Section: 08 9203 0111</p>
Death or injury of threatened, migratory or cetacean species from collision with a vessel.	EPBC Act 1999, Chapter 5, Part 13, Division 3, subdivision C, 232 (2)	Within 7 days, including the time, place, circumstances, species affected and the consequences of the action.	The Secretary, DAWE



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#### 10.5.1.4 Performance Reporting

NOPSEMA will be provided with an environmental performance report as per regulation 26C and 14 (2). The report will be submitted to NOPSEMA no more the 4 months following the completion of the activity as defined by section 10.5.3.

#### 10.5.2 Internal Reporting

Shell also has internal reporting requirements against environment parameters identified in the Shell Group Performance Monitoring and Reporting (PMR) standard. This data is used as the basis for an annual Shell Group Sustainability Report.

#### 10.5.3 Notifications

In accordance with Regulation 19 of the OPGGS (E) Regulations, this EP remains valid from NOPSEMA acceptance for the period of the activity as outlined in section 6.2, or until NOPSEMA has accepted an end-of- activity notification under Regulation 25A or Shell Australia revise and resubmit this EP.

Routine notifications set out within performance standards and those required by legal and other requirements are summarised in the Table 10-5.

**Table 10-5: Routine External Reporting and Notification Requirements**

Reporting Requirement	Description	Recipient	Submission/ Notification Timing
Pre-activity			
29 and 29(2) OPGGS(E) Regulations: NOPSEMA must be notified that the activity is started.	Complete NOPSEMA's Start or end of activity form (N-04750-FM1405) <sup>19</sup>	NOPSEMA <sup>20</sup>	At least 10 days before the activity commences.
Department of Agriculture, Fisheries and Forestry (DAFF) biosecurity requirements	Submit PAR and ballast water report using MARS online forms for vessels arriving from international waters.	DAFF	Within 96 to 12 hours prior to vessels arrival into Australian territory.
AMSA including Joint Joint Rescue Coordination Centre (JRCC) Notification	Activity commencement and duration notification.	AMSA	With 24-48 hours before vessel activities commence
AHO Notification	Activity commencement and duration notification to enable publication of Notice to Mariners.	AHO	At least four weeks Prior to the commencement of activities.
During activity			
26B OPPGS(E) Regulations: Recordable Incident Report	Complete NOPSEMA's Recordable Environmental Incident Monthly Report form (N-03000-FM0928) <sup>19</sup>	NOPSEMA <sup>20</sup>	Monthly, no later than 15 days after the end of the calendar month.
AMSA including Joint Joint Rescue Coordination Centre (JRCC) Notification	Activity updates, particularly changes to previously communicated operations.	AMSA (JRCC)	As soon as possible.

<sup>19</sup> <https://www.nopsema.gov.au/document-hub/forms-and-templates>

<sup>20</sup> <https://securefile.nopsema.gov.au/filedrop/submissions>

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AHO Notification	Activity updates, particularly changes to previously communicated operations.	AHO	As soon as possible.
Notification submitted to the NLC detailing any Tier 2 or 3 hydrocarbon spill which has the potential to impact communities and environment.	The Notification will contain all material facts and circumstances concerning the incident, actions taken to avoid or mitigate any adverse impacts and corrective action taken.	NLC (RPs contact details as held in Shells RP Consultation Database).	Immediately following establishment of potential impacts.
Notification submitted to Relevant Persons (RPs), Tier 1 and 2 Indigenous persons detailing any Tier 2 or 3 hydrocarbon spill which has the potential to impact each RPs functions, interests or activities.	The Notification will contain all material facts and circumstances concerning the incident, actions taken to avoid or mitigate any adverse impacts and corrective action taken.	RPs contact details as held in Shells RP Consultation Database.	Immediately following establishment of potential impacts to RPs functions, interests or activities.
End of Activity			
29 and 29(2) OPGGS(E) Regulations: NOPSEMA must be notified that the activity is completed	Complete NOPSEMA's Start or end of activity form (N-04750-FM1405) <sup>19</sup> .	NOPSEMA <sup>20</sup>	
AMSA including Joint Joint Rescue Coordination Centre (JRCC) Notification	Activity has been completed notification.	AMSA (JRCC)	Within 10 days of completion.
AHO Notification	Activity has been completed notification.	AHO	Within 10 days of completion.
25A(a) OPGGS(E) Regulations: End of operations of an EP notification	Complete NOPSEMA's Regulation 25A – End of operation of environment plan form (N-04750-FM1408) <sup>19</sup> .	NOPSEMA <sup>20</sup>	Following the end of the activity when all obligations under the EP have been completed.
26C and 14(2) OPPGS(E) Regulations: Environmental Performance Report	Report to include: <ul style="list-style-type: none"> <li>• summary of activities undertaken throughout the reporting period</li> <li>• sufficient information to determine compliance with EPOs and standards.</li> </ul>	NOPSEMA <sup>20</sup>	Within 4 months following the completion of the activity

#### 10.5.4 Details of Titleholder and Liaison Person

In accordance with Regulation 15 of the OPGGS (E) Regulations, details of the titleholder, liaison person and arrangements for notifying of changes are described below.

##### Titleholder:

Shell Australia Pty. Ltd. (ACN/ABN: 009663576/14009663876)  
562 Wellington Street, Perth 6000 WA

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**Activity Contact:**

Rama Gunturi  
 Crux Project Director  
 Email address: [SDA-Crux-Project@shell.com](mailto:SDA-Crux-Project@shell.com)  
 Contact numbers: 1800 059 152

Should the titleholder, titleholder’s nominated liaison person or the contact details for either change, NOPSEMA is to be notified in writing of the change within two weeks or as soon as practicable.

**10.6 Record Keeping**

Compliance records will be maintained. Record keeping will be in accordance with OPGGS (E) Regulation 14(7) that addresses maintaining quantitative records of emissions and discharges which is accurate and can be monitored and audited against the environmental performance standards and measurement criteria.

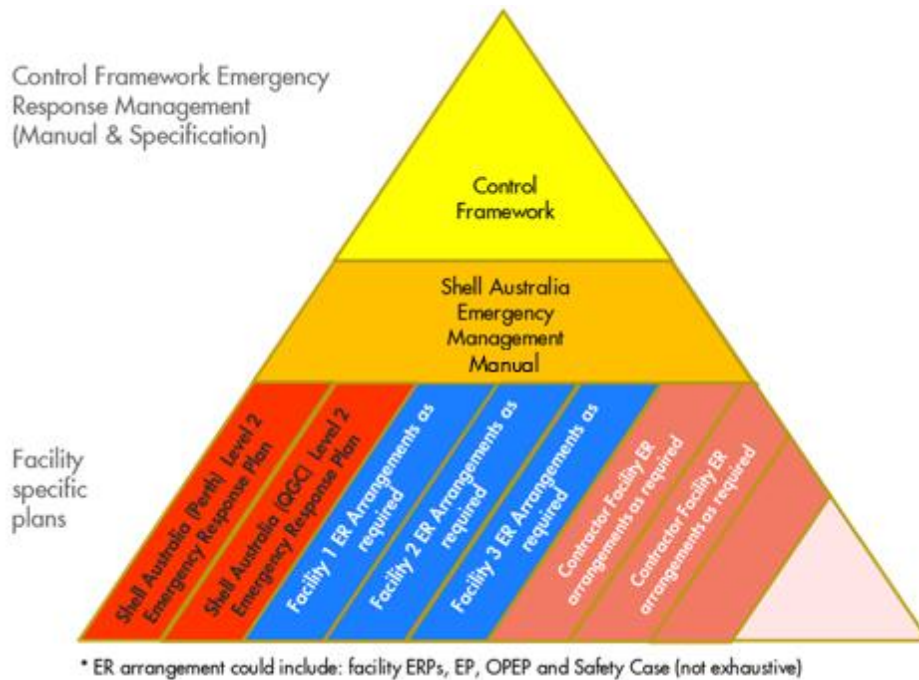
**10.7 Emergency Preparedness and Response**

Under Regulations 14(8) the Implementation Strategy must contain an OPEP and provide for the updating of the OPEP. Regulation 14(8AA) outlines the requirements for the OPEP which must include adequate arrangements for responding to and monitoring of oil pollution.

A summary of Shell Australia’s emergency and incident management framework and arrangements are presented in Figure 10-4 and described in the following sections.

**10.7.1 Shell HSSE & CP Control Framework**

The Shell HSSE & SP Control Framework is a comprehensive corporate management framework that applies to every Shell company, contractor and joint venture under Shell’s operational control. The framework contains a simplified set of mandatory requirements that define high level HSSE & SP principles and expectations. Emergency Response Management and Spill Preparedness and Response are two areas covered in the Shell HSSE & SP Control Framework.



**Figure 10-4: Shell Australia Emergency and Incident Management System Overview**

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### 10.7.2 Shell Australia Emergency Management Manual

The Shell Australia Emergency Management Manual (HSE\_GEN\_010996) provides a tiered response framework which classifies incidents based on the level of resourcing and support required. It also outlines communication arrangements associated with each level of emergency, emergency response roster arrangements, emergency response training and competencies, and requirements for emergency management drills and exercises.

### 10.7.3 Incident Management Team (West) (IMT(W)) Emergency Response Plan

The Incident Management Team (West) (IMT(W)) Emergency Response Plan (HSE\_GEN\_011209) is a supporting document to the Shell HSSE & SP Control Framework, Shell Australia Emergency Management Manual (HSE\_GEN\_010996) and is consistent with Australian Commonwealth and State Emergency Management Arrangements. The purpose of the IMT (W) Emergency Response Plan (HSE\_GEN\_011209) is to provide specific assistance and guidance to Shell Australia IMT (W) in support of Shell owned, operated or contracted facilities. The following topics are detailed in the document:

- Shell Australia emergency management arrangements;
- Shell Australia IMT(W) role checklists and duty cards;
- Incident management, action planning, ICS forms and briefing templates;
- IMT (W) communications;
- Guidance for responding to emergencies;
- Supporting subject matter expert units; and
- De-escalation and recovery.

### 10.7.4 Oil Pollution Emergency Plan

Shell refers to information previously given under Regulation 31(1), the Prelude Oil Pollution Emergency Plan (OPEP HSE\_PRE\_013075). The Prelude OPEP (HSE\_PRE\_013075) outlines emergency management arrangements to respond to credible spill scenarios associated with the Prelude activity. The OPEP provides the information required for an effective response in the unlikely event of an unplanned release of petroleum products. The OPEP details the actions to be taken in response to the incident and provides contact details of emergency specialist response groups, statutory authorities and other external bodies requiring notification.

### 10.7.5 Operational and Scientific Monitoring Framework

Shell is required to have in place arrangements for monitoring oil pollution as part of its OPEP. Shell is adopting use of the Joint Industry Operational and Scientific Monitoring Plan (OSMP) Framework (APPEA, 2020) and its associated Operational Monitoring Plans (OMP's) and Scientific Monitoring Plans (SMP's) to guide environmental monitoring that may be implemented in the event of a Level/Tier 2-3 spill of hydrocarbons. Further information on how the Joint Industry OSMP Framework interfaces with Shell's activities, spill risks and internal management systems is presented in Shell's Operational and Scientific Monitoring Bridging Implementation Plan (HSE\_PRE\_16370). Shell refers to information previously given under Regulation 31(1), the [Operational and Scientific Monitoring Bridging Implementation Plan \(HSE\\_PRE\\_16370\)](#) – Parts A and B (excluding Appendix D).

### 10.7.6 WAFIC Loss Adjustment

In response to consultation with WAFIC, the adjustment protocols developed and included in the NERA Collaboration EP (taken to mean the NERA Collaborative Seismic Environment Plan) will be applied in the event of an unplanned spill or introduction of IMS. Shell refers to Appendix 3 of the NERA Collaborative Seismic Environment Plan (Revision 1) as information previously given under Regulation 31(1) of the OPGGS (E) Regulations. The full text NERA Collaborative Seismic Environment Plan is available on the NOPSEMA Environment Plans website (Industry environment plans (nopsema.gov.au)).

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### 10.7.7 Shell Australia’s Emergency Management Structure

Shell Australia applies the Incident Command System (ICS) methodology for emergency management. The ICS is a management system designed to enable incident management through integrating facilities, equipment, personnel, procedures and communications operating under one structure. An ICS is commonly structured into functional areas that facilitate incident management activities, including operations, planning, logistics, finance and incident command.

Shell Australia also applies a graduated response framework that increases resource involvement based on the significance and escalation potential of the incident. This graduated framework involves three key emergency management teams, as described below:

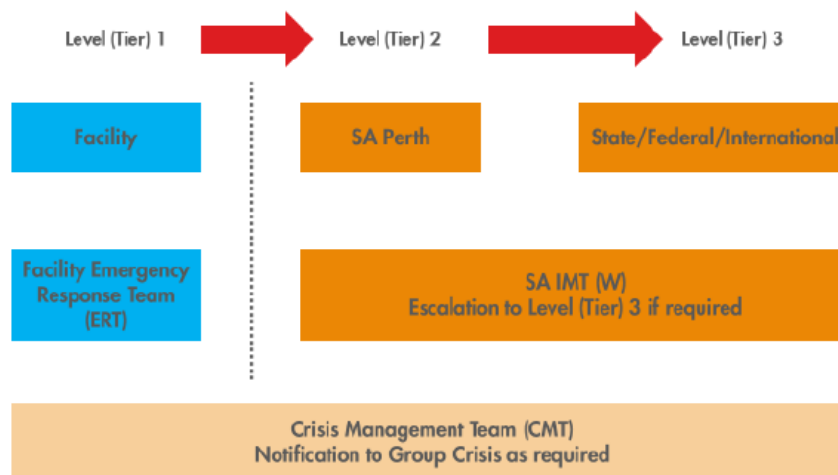
Emergency Response Team (ERT) which is based on the facility and is responsible for the initial response to the incident. The Facility Incident Commander (Offshore Installation Manager (OIM)) will liaise closely with the IMT West Leader (onshore) and will identify when additional support is required to respond to an incident

Incident Management Team (West) (IMT(W)) is based onshore and supports the ERT, by providing advice, logistical support and managing the operational and technical aspects of the response; and

Crisis Management Team (CMT) is based onshore and is responsible for the overall management of the incident from a strategic, commercial, legal, reputational and high level liaison perspective.

The ERT and IMT (W) are scalable to the nature and scale of the response i.e. one person can take on multiple roles where circumstances permit. The mobilisation of the ERT is at the directive of the Facility Incident Commander or delegate. The mobilisation of the IMT (W) will occur by the Facility Incident Commander contacting the on-duty IMT (W) Leader who will then mobilise the IMT (W) as the situation warrants. Duty positions within IMT (W) area are staffed by a roster system where each position has required personnel identified for the role. On-call positions within IMT (W) provide specific functional expertise that helps the business respond to relevant incident scenarios. On-call positions are activated as part of the IMT(W) at the discretion of the IMT Leader based upon known or potential requirements. A number of people are identified and trained for each on-call position, with a rotating on-call list used to contact these personnel.

Figure 10-5 outlines the emergency management escalation process adopted by the IMT (W) and the IMT (W) structure is shown in Figure 10-6.



**Figure 10-5: Emergency Management Escalation Process Adopted by IMT (W)**

Interface between the IMT and Crisis Management Team (CMT) is outlined in the Shell Australia Weekly Contact List (HSE\_GEN\_011648). The affected facility business executive will have been notified by the IMT (W) Leader and will in turn notify the Shell Australia CMT leader.

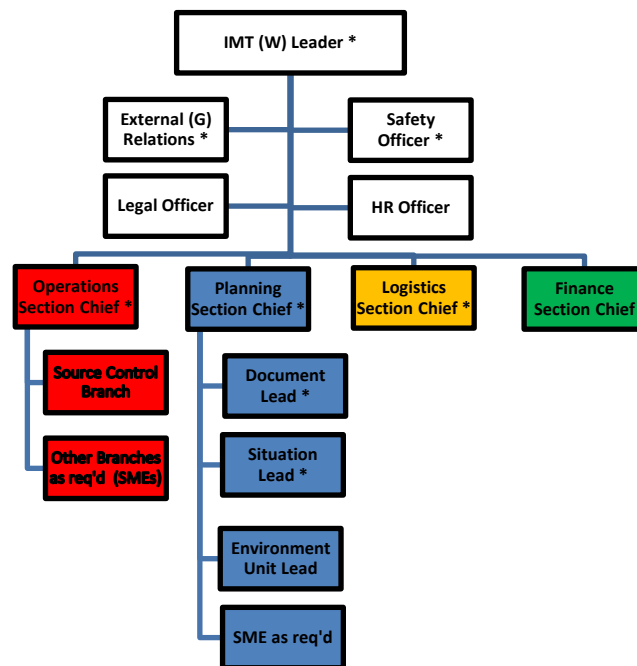
In addition to these resources, Shell Australia can activate additional support through the Shell Global Response Support Network (GRSN). The GRSN is a network of emergency response trained Shell Staff employed in a wide range of positions within Shell’s global and local businesses who have received specific

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training related to oil spill response and who may be called upon to support any business or country globally which is responding to a large scale incident.

Shell Australia also has access to the Well Control Virtual Emergency Response Team (WCVERT), which provides virtual or physical mobilisation of a wide range of technical expertise. The major advantage of the GRSN and WCVERT is the ability for a local operations team to leverage the resources and support from the Shell group in the event of an incident.

Shell Australia could also activate external additional resources for Level/Tier 2-3 spills to fill various ERT and IMT roles for the duration of the response if they were required. This includes Oil Spill Response Organisation (OSRO) personnel and trained mutual aid personnel (as per AMOSPlan), as outlined in Section 3.2 of the Prelude OPEP (HSE\_PRE\_013075).



*\*indicates duty roles, all other positions are on-call*

**Figure 10-6: Incident Management Team (West) (IMT (W)) Structure**

The Source Control Branch (if required), falls under the Operations Section of the IMT and develops and implements strategies and tactics to regain control of the well, and stop or contain the discharge of hydrocarbons. This strategy includes:

- Development of solutions;
- Coordination of engineering safety and operational activities;
- Development of task-specific plans and procedures;
- Identification of required tools and equipment; and
- Monitoring progress in achieving well control.

The activities of the Source Control Branch in Australia will be organised into additional groups, according to the specific requirements of the incident. These additional groups may include a Capping and Subsea Intervention Group, Well Control Group and Offset Installation Taskforce. All source control personnel complete ICS 100 and 200 training.



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### 10.7.8 Emergency Management Roles and Responsibilities

Shell Australia's Incident Management Team (West) (IMT(W)) Emergency Response Plan (HSE\_GEN\_011209) and Prelude Facility Emergency Response Plan (HSE\_PRE\_005612) provide detailed guidance on roles and responsibilities for all emergency management personnel.

A summary of key roles and responsibilities for Shell Australia personnel for incident response are outlined in Table 10-6. Also provided are the roles and responsibilities of Shell Australia personnel required to work within the WA Department of Transport (DoT) organisational structure (Table 10-7), where DoT has responsibilities for spill response as a Control Agency, as per [DoT's Offshore Petroleum Industry Guidance Note – Marine Oil pollution: Response and Consultation Arrangements](#). DoT will provide two roles to Shell's IMT/CMT in a coordinated response. These roles and responsibilities are provided in Table 10-8.

**Table 10-6: Summary of Roles and Responsibilities of Key Emergency Management Personnel**

Key Roles	Responsibilities
Facility Incident Commander (OIM) (or vessel master) (Offshore)	<ul style="list-style-type: none"> <li>Maintain the safety of all Prelude personnel and initiates actions to protect the environment and the Prelude asset</li> <li>Ensure all first strike actions carried out as per OPEP</li> <li>Control source of spill (if practicable)</li> <li>Classify the Level/Tier of spill</li> <li>Notify and maintain regular communications with Incident Management Team Leader (West) of incident</li> <li>Verbally notify NOPSEMA (within 2 hours of spill) if spill is within Commonwealth waters</li> <li>Initiate monitor and evaluate activities, as per OPEP</li> </ul>
On-scene Commander (Offshore)	<ul style="list-style-type: none"> <li>Responsible for emergency scene coordination and safety of all personnel at the emergency scene</li> <li>Move ERT forward when authorised by Incident Commander (OIM)</li> <li>Provide regular situation updates to the Operations Section Chief on incident progress against response plan priorities</li> </ul>
IMT (W) Leader (Onshore)	<ul style="list-style-type: none"> <li>Ensure all first strike actions carried out per OPEP</li> <li>Activate IMT, if required</li> <li>Conduct overall management of incident response operations</li> <li>Assess the situation and confirm or adjust the spill classification Level/Tier in consultation with the OIM and Operations Section Chief</li> <li>Notify CMT Leader of event and initial response level</li> <li>Determine incident priorities and objectives for IMT</li> <li>Confirm Incident Action Plan (IAP) is being developed, approve and authorise implementation of IAPs</li> <li>Confirm all external notifications and reporting have been made, as outlined in OPEP</li> <li>Mobilise external support, if required, as per OPEP</li> </ul>
Operations Section Chief (OSC) (Onshore)	<ul style="list-style-type: none"> <li>Oversees all operational resources and activities supporting an emergency</li> <li>Establish communications with ERT</li> <li>Provide overview of response operations at initial IMT brief</li> <li>Communicate incident updates provided by the ERT to IMT through meetings and team briefs</li> <li>Provide incident details to the Planning Section Chief and Situation Unit Lead for development of Initial IAP and help develop incident objectives and strategies</li> <li>Determine operational areas e.g. staging areas, forward command, incident area, oiled wildlife receiving and demobilisation areas</li> </ul>



Key Roles	Responsibilities
	<ul style="list-style-type: none"> <li>Executes IAPs for each operational period</li> <li>Responsible for safety of all personnel involved in response</li> </ul>
Planning Section Chief (PSC) (Onshore)	<ul style="list-style-type: none"> <li>Facilitate all IMT meetings</li> <li>Assist the IMT (W) Leader in development of incident objectives</li> <li>Facilitate development of IAP for next operational period</li> <li>Mobilise Environment Unit</li> <li>Monitor situation reports and update status displays with additional information and adjust IAP as necessary</li> </ul>
Logistic Section Chief (LSC) (Onshore)	<ul style="list-style-type: none"> <li>Source all logistical requirements to complete response operations, including personnel, equipment and supplies for ongoing incidents</li> <li>Liaise with Planning Section Chief on specialist resource requirements being considered in response strategies. Verify availability as this may affect strategy selection</li> <li>Where required incident resources are not immediately available through existing contracts, liaise with Contracts &amp; Procurement to develop contractual arrangements as required</li> </ul>
Environment Unit Lead (EUL) (Onshore)	<ul style="list-style-type: none"> <li>Conduct relevant external notifications, as outlined in OPEP</li> <li>Review OMP initiation criteria and activate OSMP contractor where required</li> <li>Confirm protection priorities</li> <li>Validate strategic SIMA and generate the initial operational SIMA</li> <li>Provide guidance to the OSC on environmental management measures to be followed during response operations.</li> </ul>
Situation Unit Lead (Onshore)	<ul style="list-style-type: none"> <li>Responsible for collecting, processing and organising incident information relating to the growth, mitigation or intelligence activities taking place on the incident</li> <li>Manages all situational awareness and intelligence information relating to the incident, including geospatial/meteorological information</li> <li>Ensure status boards updated, retain clear records of out of date vs current information</li> <li>Prepare and disseminate resource and situation status information as required, including special requests.</li> </ul>
Documentation Unit Lead (Onshore)	<ul style="list-style-type: none"> <li>Responsible for the maintenance of accurate, up-to-date incident files i.e. IAP, incident reports, communications logs</li> <li>Compiles and collates all unit logs, communications and other records so that a consolidated set of incident documentation is maintained.</li> <li>Liaise with the Situation Unit Lead to collate and store all relevant documentation produced for Situation Updates</li> </ul>
External (Government) Relations/ Public Information Officer (PIO) (Onshore)	<ul style="list-style-type: none"> <li>Conduct relevant external notifications, as outlined in OPEP</li> <li>Manages all external communications until CMT assumes responsibility</li> <li>Evaluate the need for a joint information communication centre</li> <li>Ensure active and ongoing engagement with all relevant Relevant Persons and external response agencies. Prepare Relevant Person management plan for approval by IMT</li> <li>Develop material for use in media releases</li> </ul>
Safety Officer (Onshore)	<ul style="list-style-type: none"> <li>Conduct hazard assessment and advise OIM of recommended safety actions and safe approach routes</li> <li>Assist the OSC and LSC by facilitating risk assessments during event response and recovery plan development as required</li> <li>Review IAPs for safety implications</li> </ul>

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Key Roles	Responsibilities
Finance Section Chief (Onshore)	<ul style="list-style-type: none"> <li>The Finance (&amp; Admin) Section Chief is responsible for all financial, administrative and cost analysis aspects of an emergency</li> <li>Provide financial and cost analysis information as requested</li> </ul>

**Table 10-7: Shell Personnel Roles Positioned within the State Maritime Environmental Emergency Coordination Centre (MEECC)/ DOT IMT**

Key Roles	Responsibilities
CST Liaison Officer	<ul style="list-style-type: none"> <li>Provide a direct liaison between the Shell and the State MEECC</li> <li>Facilitate effective communications and coordination between the Shell CMT Leader and the State Maritime Environmental Emergency Coordinator (SMEECC)</li> <li>Offer advice to SMEECC on matters pertaining to Shell crisis management policies and procedures</li> </ul>
Deputy Incident Officer	<ul style="list-style-type: none"> <li>Provide a direct liaison between the DoT IMT and the Shell IMT</li> <li>Facilitate effective communications and coordination between the Shell IMT (W) Leader and the DoT Incident Controller</li> <li>Offer advice to the DoT Incident Controller on matters pertaining to the Shell incident response policies and procedures</li> <li>Offer advice to the Safety Coordinator on matters pertaining to Shell safety policies and procedures particularly as they relate to Shell employees or contractors operating under the control of the DoT IMT</li> </ul>
Intelligence Support Officer	<ul style="list-style-type: none"> <li>As part of the Intelligence Team, assist the Intelligence Officer in the performance of their duties in relation to situation and awareness</li> <li>Facilitate the provision of relevant modelling and predications from the Shell IMT</li> <li>Assist in the interpretation of modelling and predictions originating from the Shell IMT</li> <li>Facilitate the provision of relevant situation and awareness information originating from the DoT IMT to the Shell IMT</li> <li>Facilitate the provision of relevant mapping from the Shell IMT</li> <li>Assist in the interpretation of mapping originating from the Shell IMT</li> <li>Facilitate the provision of relevant mapping originating from the Shell IMT</li> </ul>
Deputy Planning Officer	<ul style="list-style-type: none"> <li>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</li> <li>Facilitate the provision of relevant IAP and sub plans from the Shell IMT</li> <li>Assist in the interpretation of the Shell OPEP from Shell</li> <li>Assist in the interpretation of the Shell IAP and sub plans from the Shell IMT</li> <li>Facilitate the provision of relevant IAP and sub plans originating from the DoT IMT to the Shell IMT</li> <li>Assist in the interpretation of Shell's existing resource plans</li> <li>Facilitate the provision of relevant components of the resource sub plan originating from the DoT IMT to the Shell IMT</li> <li>(Note this individual must have intimate knowledge of the relevant Shell OPEP and planning processes)</li> </ul>
Environmental Support Officer	<ul style="list-style-type: none"> <li>As part of the Planning Team, assist the Environmental Officer in the performance of their duties in relation to the provision of environmental support into the planning process</li> <li>Assist in the interpretation of the Shell OPEP and relevant TRP plans</li> </ul>



Key Roles	Responsibilities
	<ul style="list-style-type: none"> <li>Facilitate in requesting, obtaining and interpreting environmental monitoring data originating from the Shell IMT</li> <li>Facilitate the provision of relevant environmental information and advice originating from the DoT IMT to the Shell IMT</li> </ul>
Public Information Support & Media Liaison Officer	<ul style="list-style-type: none"> <li>As part of the Public Information Team, provide a direct liaison between the Shell Media team and DoT IMT Media team</li> <li>Facilitate effective communications and coordination between Shell and DoT media teams</li> <li>Assist in the release of joint media statements and conduct of joint media briefings</li> <li>Assist in the release of joint information and warnings through the DoT Information &amp; Warnings team</li> <li>Offer advice to the DoT Media Coordinator on matters pertaining to Shell media policies and procedures</li> <li>Facilitate effective communications and coordination between Shell and DoT Community Liaison teams</li> <li>Assist in the conduct of joint community briefings and events</li> <li>Offer advice to the DoT Community Liaison Coordinator on matters pertaining to Shell community liaison policies and procedures</li> <li>Facilitate the effective transfer of relevant information obtained from through the Contact Centre to the Shell IMT</li> </ul>
Deputy Logistics Officer	<ul style="list-style-type: none"> <li>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</li> <li>Facilitate the acquisition of appropriate supplies through Shell's existing OSRL, AMOSC and private contract arrangements</li> <li>Collects Request Forms from DoT to action via the Shell IMT</li> <li>(Note this individual must have intimate knowledge of the relevant Shell logistics processes and contracts)</li> </ul>
Deputy Operations Officer	<ul style="list-style-type: none"> <li>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</li> <li>Facilitate effective communications and coordination between the Shell Operations Section and the DoT Operations Section</li> <li>Offer advice to the DoT Operations Officer on matters pertaining to Shell incident response procedures and requirements</li> <li>Identify efficiencies and assist to resolve potential conflicts around resource allocation and simultaneous operations of Shell and DoT response efforts</li> </ul>
Deputy Waste Management Coordinator	<ul style="list-style-type: none"> <li>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</li> <li>Facilitate the disposal of waste through Shell's existing private contract arrangements related to waste management and in line with legislative and regulatory requirements</li> <li>Collects Waste Collection Request Forms from DoT to action via the Shell IMT</li> </ul>
Deputy Finance Officer	<ul style="list-style-type: none"> <li>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 Shell's existing OSRL, AMOSC and private contract arrangements</li> <li>Facilitate the communication of financial monitoring information to the Shell to allow them to track the overall cost of the response</li> <li>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 Shell</li> </ul>

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Key Roles	Responsibilities
Deputy On Scene Commander (FOB)	<ul style="list-style-type: none"> <li>As part of the Field Operations Team, assist the On Scene 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</li> <li>Provide a direct liaison between Shell's Forward Operations Base/s (FOB/s) and the DoT FOB</li> <li>Facilitate effective communications and coordination between Shell On Scene Commander and the DoT On Scene Commander</li> <li>Offer advice to the DoT On Scene Commander on matters pertaining to Shell incident response policies and procedures</li> <li>Assist the Safety Coordinator deployed in the FOB in the performance of their duties, particularly as they relate to Shell employees or contractors</li> <li>Offer advice to the Safety Coordinator deployed in the FOB on matters pertaining to Shell safety policies and procedures</li> </ul>

**Table 10-8: Roles and Responsibilities of DoT Personnel to be Positioned in Shell's IMT/CMT**

Key Roles	Responsibilities
DoT Liaison Officer	<ul style="list-style-type: none"> <li>Facilitate effective communications between DoT's SMEEC and Incident Controller and Shell's appointed CMT Leader and Incident Controller</li> <li>Provide enhanced situational awareness to DoT of the incident and the potential impact on State waters</li> <li>Assist in the provision of support from DoT to Shell</li> <li>Facilitate the provision technical advice from DoT to Shell's Incident Controller as required</li> </ul>
Media Liaison Officer	<ul style="list-style-type: none"> <li>Provide a direct liaison between Shell's Media team and DoT IMT Media team</li> <li>Facilitate effective communications and coordination between Shell and DoT media teams</li> <li>Assist in the release of joint media statements and conduct of joint media briefings</li> <li>Assist in the release of joint information and warnings through the DoT Information and Warnings team</li> <li>Offer advice to the Shell Media Coordinator on matters pertaining to DoT and wider Government media policies and procedures</li> </ul>

### 10.7.9 Emergency Management Exercises, Training and Competencies

Shell Australia follows the approved ICS and IMO emergency management training requirement for ICS command and general staff. Specific competencies for IMT members are defined in the Shell Operational HSSE Competence Framework and are tracked in the Shell Open University. A summary of training requirements and core competencies for Shell key ERT, IMT and CMT personnel are outlined in Table 10-9.

Only persons that have completed all mandatory training requirements can be placed on the IMT roster. Training status of IMT personnel is reviewed monthly (or following significant personnel or policy change by the SA Emergency Response Coordinator) and notifications issued in advance to personnel requiring re-validation by training and/or emergency response exercise participation.

Oil spill responder training requirements are outlined in Table 10-10.

**Table 10-9: Exercise and Training Requirements for Key ERT, IMT and CMT Personnel**

Key Roles	Exercises	Training
ERT Personnel OIM	Level/Tier 2/3 exercise 6 monthly in accordance with 3 year exercise plan.	Some offshore roles may have AMOSC - IMO training.

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Key Roles	Exercises	Training
IMT Personnel IMT (W) Leader	It is required that 80% of personnel will participate in an IMT exercise annually.	All IMT personnel complete ICS 100, 200 and IMT induction. IMT (W) leader undertakes - IMO3 Oil Spill Command & Control
Operations Section Chief (OSC) Planning Section Chief (PSC) Logistic Section Chief (LSC) Environment Unit Lead (EUL)	It is a target that 80% of personnel will participate in an IMT exercise annually. Participation in exercises is tracked in the Shell Australia Exercises & Training Schedule and is reviewed monthly or following significant personnel or policy change by the Shell Australia Emergency Response Coordinator.	AMOSOC – IMO2 Oil Spill Management
CMT Personnel	Level/Tier 2/3 exercise on a biennial basis	Shell specific – Group Crisis training

**Table 10-10: Oil Spill Responder Training and Resources**

Key Roles	Exercises/Training	Available Resources
Shell AMOSOC Core Group members	AMOSOC Core Group Workshop (refresher training undertaken every 2 years) Operations stream and management stream	As defined in AMOSOC contractual core group requirements
AMOSOC Core Group Responders	AMOSOC Core Group Workshop (refresher training undertaken every 2 years)	As defined in AMOSOC contractual core group requirements
OSRL Oil Spill Response Personnel	As per OSRL training and competency matrix	As defined in OSRL Service Level Agreement
AMOSOC Oil Spill Response Specialists	As per AMOSOC training and competency matrix	As defined in AMOSOC Master Services Agreement
Operational and Scientific Monitoring Service Providers	As defined in the Shell Australia Operational and Scientific Monitoring (OSM) Bridging Implementation Plan (HSE_PRE_16370).	As per Standby Capability and Competency Report
Oiled Wildlife Responders (Level 2-4) Shoreline clean-up personnel	As per DBCA OWR requirements (WA OWRRP) As per WA DoT requirements	As per OWR stateboard (AMOSOC & DBCA) As defined in AMOSOC Master Services and OSRL Service Level Agreements. Team members available through labour hire contracts (training provided prior to deployment)

Shell Australia maintains an Exercise and Training Schedule as detailed in the Shell Australia Emergency Management Manual (HSE\_GEN\_010996) to ensure its competency in responding to and managing major incidents, including oil spills. The Exercise and Training Schedule is reviewed and revised (if required) annually.

As part of this schedule, Shell conducts a number of different exercise types, which are further described in Table 10-11.

**Table 10-11: Exercise Types, Objectives and Frequency**

Exercise Type	Objective	Frequency
Notification exercise	To test all communication and notification processes to service providers and	At least annually When OPEP is accepted or introduced



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Exercise Type	Objective	Frequency
	regulatory agencies defined within the OPEP	When response arrangements have been significantly amended If a new location for the activity is added after the response arrangements have been tested
Equipment deployment exercises	To focus on Shell's deployment capability To inspect and maintain the condition of Shell's oil spill response equipment To maintain training of field response personnel	Level /Tier 1 – Annually Level/Tier 2 – Every 2 years
Tabletop exercise	To encourage interactive discussions of a simulated scenario amongst IMT members and refresh roles and responsibilities	As per Shell Australia's Exercise and Training Schedule
Incident Management Exercise	To activate IMT and establish command, control, and coordination of a simulated Level/Tier 2 or 3 incident and test response arrangements in OPEP	Minimum of one oil spill exercise per year for Shell Australia's activities. Where response arrangements are the same for a number of activity-specific OPEPs, one exercise may be used to test these response arrangements for these OPEPs at the same time
National Plan Exercises or WA DoT exercises	Participate as required to ensure alignment between National/State Response Framework and Shell Australia's Response Framework	As determined by AMSA and/or WA DoT, Shell may not be requested to participate every year
Shell Global Response Support Network (GRSN)	Test the functionality of Shell's Regional Core Group Level/Tier 3 oil spill response capabilities Target of 100% for participation of Shell Australia's Core Group personnel in GRSN regional exercises as required.	Annually  Every 2 years
AMOSC Audit	To test deployment readiness and capability of AMOSC as per its Master Services Agreement with Shell	Annually
OSRL Audit	To test deployment readiness and capability of OSRL in Singapore as per OSRLs Service Level Agreement with Shell	Every 2 years

As part of the exercise process, a number of documents are prepared to ensure exercises are well planned, conducted and evaluated. To support this, the following documents are used:

Exercise scope document – provides background context to the exercise, outlines the exercise need, aim, objectives, details of the scenario, participating groups and agencies, exercise deliverables and management structure. This document can be used to engage a third-party contractor to assist in conducting the exercise

Exercise plan and instructions – provide instructions and 'play' (including any injects) for conducting the exercise

Post exercise report – includes an after-action review of the exercise, evaluating how the exercise performed against meeting its aim and objectives.

#### **10.7.10 Mechanism to examine the effectiveness of the response arrangements against the objectives of testing**

Shell Australia routinely undertakes post-exercise debriefings following Level/Tier 2-3 OPEP exercises to evaluate effectiveness of response arrangements against the exercise objective/s, identify opportunities for

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improvement and communicate lessons learned. Shell sets Specific, Measurable, Achievable, Realistic and Timely (SMART) objectives for oil spill exercises so that they can be clearly evaluated as being met or not.

An independent assessor (either internal or external) will examine the effectiveness of the response arrangements during a spill exercise. The assessor will make written findings and recommendations from the test for consideration by Shell to assist in identifying deficiencies with response arrangements and continually improve the overall response readiness of Shell.

Recommendations from the tests will have SMART actions put against them where appropriate and they will be tracked to closure in Shell's Action Tracking System, Sphera. The Sphera system assigns a responsible person and due date against each action to ensure they are tracked to closure..

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## 12 List of Acronyms

Acronym	Definition
AAPA	Aboriginal Areas Protection Authority
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AHO	Australian Hydrographic Office
AHTS	Anchor Handling Tug Supply Vessel
AIS	Automatic Identification System
ALARP	As low as reasonably practicable
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
ANZECC	Australian and New Zealand Environment Conservation Council
APPEA	Australian Petroleum Production & Exploration Association Limited
AusSAR	Australian Search and Rescue
BAT	Best Available Technology
Bbl	Barrels
BIAs	Biologically Important Areas
BOD	Biological oxygen demand
BOP	Blowout Preventer
BP	Before Present
BTEX	Benzene, toluene, ethylbenzene, xylenes
BTU	British Thermal Unit
CAMBA	China-Australia Bilateral Agreement on the Protection of Migratory Birds
CHARM	Chemical Hazard Management Risk Management
CMT	Crisis Management Team
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
COLREGS	International Regulations for Preventing Collisions at Sea 1972
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CTA	Cable Termination Assembly
Cth	Commonwealth
CW	Cooling Water
DAFF	Department of Agriculture, Fisheries and Forestry (now known as the Department of Agriculture, Water and the Environment)
DAWE	Department of Agriculture, Water and the Environment (represents the former Department of Agriculture and Department of Environment and Energy)
dB	Decibels
DBCA	Department of Biodiversity, Conservation and Attractions (WA)
DC	Drill centre



Acronym	Definition
DCCEEW	Department of Climate Change, Energy the Environment and Water
DEWHA	Department of Environment Water Heritage and Arts (formally DEH, Department of Environment and Heritage)
DMIRS	Department of Mines, Industry Regulation and Safety (WA)
DMR	Double mixed refrigerant
DoEE	Department of Environment and Energy (now known as the Department of Agriculture, Water and the Environment)
DP	Dynamic positioning
DPIRD	Department of Primary Industries and Regional Development (WA)
DPLH	Western Australian Department of Planning Lands and Heritage
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
DVA	Direct vertical access
EAAF	East Asian-Australasian Flyway
ECE	Environmentally Critical Elements
ECU	Electrochlorination Unit
EDG	Emergency Diesel Generators
EEZ	Exclusive economic zone
EGR	External and Government Relations
EIS	Environmental Impact Statement
Planning Area	Zone of potential impact/ Environment that May be Affected
ENVID	Environmental Risk Identification
EP	Environment Plan
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
EPO	Environmental Performance Outcome
EPS	Environmental Performance Standard
ERP	Emergency Response Plan
ERT	Emergency Response Team
ESD	Ecological Sustainable Development
EUL	Environment Unit Lead
FCA	Federal Court of Australia
FID	Final Investment Decision
FLNG	Floating Liquefied Natural Gas
FO	Fibre optic
FRC	Fast rescue craft
FWAD	Fixed Wing Aerial Dispersant
GHG	Greenhouse gas
HEMP	Hazards and Effects Management Process
HFO	Heavy Fuel Oil
HLIV	Heavy Lift Installation Vessel



Acronym	Definition
HOCNF	Harmonized Offshore Chemical Notification Format
HSE	Health, Safety and Environment
HSSE and SP	Health, Security, Safety, Environment and Social Performance
ICS	Incident Command System
IFC	International Finance Corporation
IFO	Intermediate Fuel Oil
ILUA	Indigenous Land Use Agreement
IMO	International Maritime Organisation
IMR	Inspection, Maintenance and Repair
IMS	Invasive Marine Species
IMT (W)	Incident Management Team West
IOPP	International Oil Pollution Prevention
IPA	Indigenous Protected Area
IPEICA	The International Petroleum Industry Environmental Conservation Association
ISPP	International Sewage Pollution Prevention
ITF	Indonesian Throughflow
IUCN	International Union for the Conservation of Nature
JAMBA	Japan-Australia Bilateral Agreement on the Protection of Migratory Birds
JMP	Joint-Management Plan
KEFs	Key Ecological Features
KLC	Kimberley Land Council
LNG	Liquefied Natural Gas
LOC	Loss of containment
LOWC	Loss of well containment
LPG	Liquefied Petroleum Gas
LQ	Living quarters
LWI	Light well intervention
MAE	Major Accident Events
MARPOL	The International Convention for the Prevention of Pollution from Ships, adopted by the International Conference on Marine Pollution, convened by IMO, 1973/78.
MBP	Mixed bed polisher
MC	Measurement criteria
MEG	Mono-ethylene Glycol
MFO	Marine fauna observer
MGC	Marine growth covers
MHW	Mean High Water
MHWS	Mean High Water Spring
MLW	Mean Low Water
MLWS	Mean Low Water Spring



Acronym	Definition
MNES	Matters of National Environmental Significance
MoC	Management of Change
MOPO	Manual Of Permitted Operations
MOU	Memorandum of Understanding
MPPE	Macro Porous Polymer Extraction
MPV	Multi-Purpose Vessel
MS	Management System
MSL	Mean Sea Level
MW	Mega watt
NEPM	National Environment Protection Measures
NGO	Non-Government Organisations
NLA	Northern Land Council
Nm	Nautical mile
NMR	North Marine Region
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NORM	Naturally Occuring Radioactive Materials
NO <sub>x</sub>	Nitrogen oxides, typically expressed as NO <sub>2</sub>
NPI	National Pollutant Inventory
NT	Northern Territory
NT DENR	Northern Territory Department of Environment and Natural Resources
NT DIPL	Northern Territory Department of Infrastructure, Planning and Logistics
NTA	Native Title Act 1993 (Commonwealth)
NTTA	National Native Title Tribunal
NWMR	North West Marine Region
NWS	North West Shelf
OCNS	Offshore Chemicals Notification Scheme
ODS	Ozone depleting substances
OGP	Oil and Gas Producers
OIE	Offset Installation Equipment
OIM	Offshore Installation Manager
OPEP	Oil Pollution Emergency Plan
OPGGS (E) Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009
OPGGS Act	Offshore Petroleum and Greenhouse Gas Storage Act 2006
OPRC 90	International Convention on Oil Pollution Preparedness, Response and Cooperation 1990
OSMP	Operational and Scientific Monitoring Plan
OSPAR	Oslo and Paris Conventions for the protection of the marine environment of the North-East Atlantic
OWR	Oiled Wildlife Response
PAH	Polycyclic Aromatic Hydrocarbon



Acronym	Definition
PFW	Produced Formation Water
PLET	Pipeline End Termination
PLONOR	Poses Little or No Risk
PM	Particulate matter
PMR	Pre-cool mixed refrigerant
PMST	Protected Matters Search Tool ( EPBC Act)
PNEC	Predicted no effect concentration
POB	Persons on Board
POP	Persistent Organic Pollutant
PPM	Parts per million
PPT	Parts per trillion
PSV	Platform Supply Vessel
PSZ	Petroleum Safety Zone
PTS	Permanent threshold shift
PTW	Permit to work
PW	Produced Water
RAM	Risk Assessment Matrix
RBM	Riser Base Manifold
RFSU	Ready for Start-Up
RIH	Run in hole
RNTBC	Registered Native Title Body Corporate
ROKAMBA	The Republic of Korea Migratory Birds Agreement
ROV	Remotely Operated Vehicle
SCAT	Shoreline clean up assessment technique
SCE	Safety Critical Elements
SCM	Subsea control module
SCSSV	Surface Controlled Sub-Surface Safety Valve
SEWPAC	Department of Sustainability, Environment, Water, Population and Communities
SFRT	Subsea First Response Toolkit
SG	Specific gravity
SGG	Synthetic greenhouse gases
Shell	Shell Australia Pty Ltd
SID	Subsea Intervention Device
SIMA	Spill impact mitigation assessment
SIMOPs	Simultaneous Operations
SIRT	Subsea Incident Response Toolkit
SO <sub>2</sub>	Sulphur dioxide
SOLAS	International Convention for the Safety of Life at Sea 1974





Acronym	Definition
SOPEP	Shipboard Oil Pollution Emergency Plan
SSD	Species Sensitivity Distribution
SSDI	Subsea dispersant injection
SURU	Start-up Ramp-up
TACL	Threshold Activity Concentration Limits
TEC	Threatened Ecological Communities
TMS	Turret Mooring System
TOC	Total Organic Carbon
tpa	Tonnes per annum
tpd	Tonnes per day
TPH	Total Petroleum Hydrocarbons
TTS	Temporary Threshold Shift
UTA	Umbilical termination assemblies
VOC	Volatile Organic Compounds
WA	Western Australia
WA DoT	Western Australia Department of Transport
WB	World Bank
WCVERT	Well Control Virtual Emergency Response Team
WET	Whole Effluent Toxicity
WGAC	Wunambal Gaambera Aboriginal Corporation
WHA	World Heritage Area
	WHA World Heritage Area
WOMP	Well Operations Management Plan
WRFM	Well, Reservoir and Facility Management (WRFM)
XT	Xmas tree for wellheads

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## Appendix A      Consultation Material

## 1. Consultation Material – Table of Content

Content	
<b>1. Factsheets</b>	1.00 Seabed Survey Factsheet <b>Supporting Factsheets</b> 1.01 General Environment Plan Factsheet 1.02 Cultural and Social Values Factsheet 1.03 Hydrocarbon Release Factsheet
<b>2. Information Booklet</b>	2.00 Crux Information Booklet – <i>distributed in hard copy only.</i>
<b>3. Maps</b>	3.00 Seabed Survey EP Planning Area Map 3.01 Community Map
<b>4. Public Notices</b>	4.00 Crux Campaign Overview 4.01 Print advert <ul style="list-style-type: none"> <li>• ACM</li> <li>• Koori Mail</li> <li>• National Indigenous Times</li> <li>• Newscorp</li> <li>• SWM</li> <li>• The West</li> </ul> 4.02 Social media post <ul style="list-style-type: none"> <li>• Facebook</li> <li>• LinkedIn</li> </ul> 4.03 Radio ads 4.04 Drop-in session advert <ul style="list-style-type: none"> <li>• Broome</li> <li>• Darwin</li> <li>• Exmouth</li> <li>• Port Hedland</li> <li>• Derby</li> </ul> 4.05 Community briefing advert: <ul style="list-style-type: none"> <li>• Broome</li> <li>• Darwin</li> </ul> 4.06 Community drop-in session social media post
<b>5. Community / Industry Presentations</b>	5.01 Community Briefing - Broome 5.02 Industry Briefing - Perth
<b>6. Videos</b>	6.00 Crux Animation Video 6.01 Crux Animation Transcript
<b>7. Indigenous relevant persons consultation material</b>	7.01 Initial email invitation – March/April 7.02 Survey issued for Indigenous Forums (attached to email) 7.03 Presentation – Indigenous Forum 1 in Perth 7.04 Presentation – Indigenous Forum 2 in Broome 7.05 Presentation – Indigenous Forum 3 in Darwin 7.06 Presentation - Bardi Jawi, Mayala and Walalakoo Meeting – 15 August 2023 7.07 Presentation – Wunambal Gaambera Aboriginal Corporation – 15 September 2023 7.08 Presentation - Dambimangari Meeting – 19 September 2023 7.09 Email invitation to Broome forum – end of April 7.10 Email follow up – end of May

<b>Content</b>	
<b>8. NOPSEMA</b>	8.01 NOPSEMA Consultation on Offshore Petroleum Environment Plan Brochure
<b>9. Crux EP Web Page Snapshots</b>	9.01 Crux EP Web page – Development Drilling 9.02 Crux EP Web page – Drilling Template

## **Appendix A – 1.00 Seabed Survey Factsheet**



**SGH** | Energy

# CRUX SEABED SURVEY ENVIRONMENT PLAN FACTSHEET

## ABOUT CRUX

The Crux project forms an important part of Shell Australia's gas portfolio and remains an important backfill opportunity for the existing Prelude FLNG facility. The project consists of a not normally manned platform with five production wells, in ocean waters approximately 165m deep. The facility will be connected to Prelude via a 160km export pipeline and will be operated remotely from the Prelude FLNG facility.

The project is being progressed by operator Shell Australia in joint venture with Seven Group Holdings Energy.

### Location:

Browse Basin, 190km offshore north-west Australia and 620km north-east of Broome. The survey route runs from the proposed Crux Platform, approximately 160 km southwest to the existing Prelude Floating Liquified Natural Gas (FLNG) facility, located 475km north-north-east of Broome.

### Offshore Petroleum Titles:

Pipeline Licences AC/PL1 and WA-33-PL

### Proposed Activity:

To carry out a vessel based geophysical and geotechnical survey of the seabed along the Crux pipeline route to provide data to ensure the future pipeline activities can be carried out safely and to effectively manage environmental impacts.

### Proposed survey techniques:

Geophysical survey and geotechnical survey to accurately map the seabed.

### Water depth at survey location:

165m

### Timing\*:

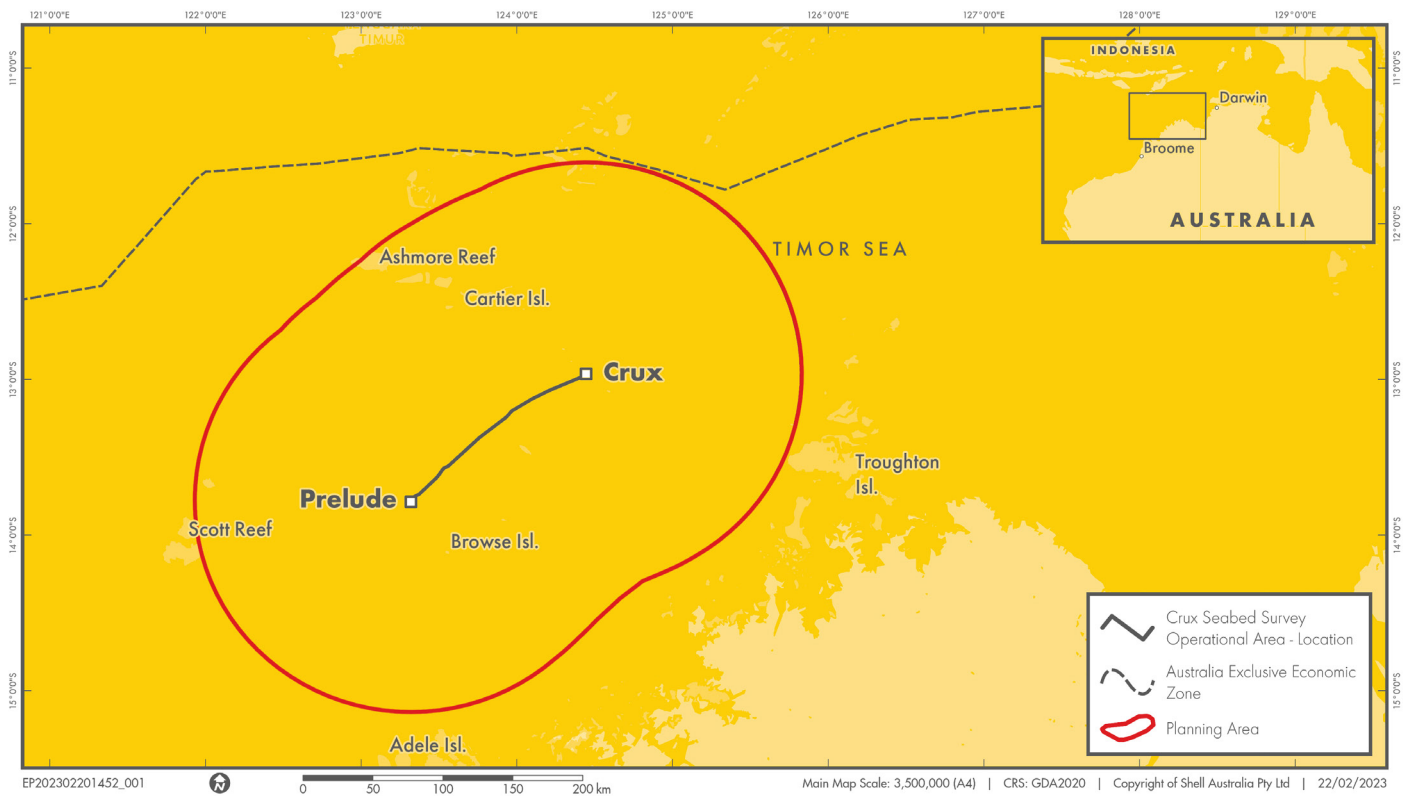
The activity is expected to be carried out between May and Dec 2023, pending acceptance of regulatory approvals.

### Duration:

~5 days

\*Dates for the commencement of activities and duration are subject to schedule change.





## THE PLANNING AREA

This is the largest area where the Crux Seabed Survey could potentially have a direct or indirect environmental impact, as a result of a vessel collision.

The planning area represents a combined area of many possible pathways that a marine diesel release could travel, depending on sea surface conditions, currents and weather at the time of an incident. These combined diesel release pathways are developed using a sophisticated hydrocarbon release computer model, and the planning area boundary captures the greatest extent of the hundreds of potential release pathways produced by the modelling software.

This means that in the highly unlikely event of a vessel collision resulting in a diesel release, the diesel will only contact a small part of the planning area. Understanding the greatest extent of a release of marine diesel allows Shell to ensure that it has adequate response plans to effectively respond.

## ENVIRONMENTAL APPROVALS

Before Shell commences substantial work on major projects or existing facilities, regulatory, environmental and social impacts are assessed, alongside commercial and technical considerations.

The Crux Offshore Project Proposal was accepted in August 2020 by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) and is publicly available on the NOPSEMA website.

The Crux seabed survey is among the first infield activity planned to occur to support the execution of the Crux project.

Other activities that will be completed as part of the Crux project include:

- The installation of a drilling template.
- Drilling of the Crux production wells.
- The installation and cold commissioning of the remaining Crux substructure, platform and other project infrastructure.
- The start-up, commissioning and operations of the Crux facility, including the completion of Crux production wells.

## ACTIVITY DESCRIPTION

The objectives of the seabed survey are to:

- investigate sub-seabed geological conditions for the purposes of understanding conditions at the proposed pipeline pipelay initiation and the Pipeline End Manifold (PEM) locations for the Crux pipeline
- check geological conditions for proposed pipeline end terminations (PLET) foundations at both the Crux and Prelude ends of the proposed Crux pipeline
- identify potential seabed debris and obstructions
- identify and map the nature and distribution of seabed surface types along potential pipeline routes; and
- accurately measure water depth and map seabed topography.

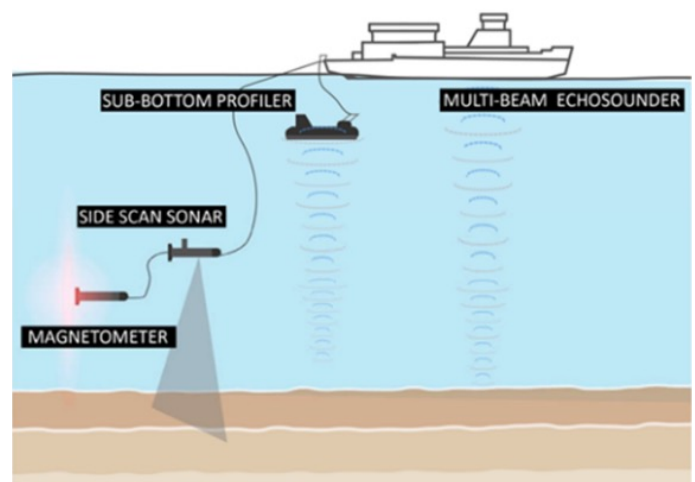
### Geophysical Survey

The survey will be completed using a vessel equipped with both geophysical and geotechnical equipment commonly used to accurately map the seabed.

The geophysical survey equipment adopts technology such as:

- multibeam echosounder
- Side Scan Sonar
- Sub-bottom profiler and;
- Magnetometer

These are operated while the survey vessel travels at slow speeds.



\*Representative Seabed Survey Vessel

The geophysical survey uses various frequencies of acoustic sound to map the seafloor and shallow sub-surface features. The acoustic signals are emitted and received from both towed instruments and those fixed on the vessel.

**The geotechnical survey** will deploy coring technologies such as:

- Piezo Cone Penetration Test
- Vibro Core and;
- Box Core sampling to characterise the seabed substrate.

A drop camera/tow camera may also be deployed to investigate both physical and ecological seabed features.

Geotechnical aspects of the survey will be carried out by the same vessel whilst maintaining a fixed position. The selected equipment will be lowered over the side of vessel to the seabed, where core samples will be taken and/or instruments used to penetrate the seabed. These coring activities are used to determine the properties of the surface and shallow subsurface seabed material, such as relative density, strength, and sediment characteristics.

# ENVIRONMENTAL MANAGEMENT

Term	Definition
<b>Planned</b>	
<b>Physical Presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>Australian Hydrographic Office Notice to Mariners</li> </ul>
<b>Lighting</b>	<ul style="list-style-type: none"> <li>External lighting on vessels minimised to that required for navigation, safety of deck operations and security considerations</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>Apply EPBC policy statement 2.1 – Part B (seismic survey guidelines) to geophysical survey activities as applicable to the scope. This is planned to be applied using trained crew members.</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>EPBC Regulations Part 8.1 – Interacting with cetaceans</li> <li>Marine fauna observations</li> </ul>
<b>Discharge of Liquid Effluent</b>	<ul style="list-style-type: none"> <li>Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations</li> <li>Chemical Management Process for chemical assessment and selection</li> </ul>
<b>Atmospheric Emissions</b>	<ul style="list-style-type: none"> <li>Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations.</li> <li>Relevant vessels to have a valid International Air Pollution Prevention Certificate</li> <li>Use of low sulphur fuel when possible</li> </ul>
<b>Greenhouse Gas Emissions</b>	<ul style="list-style-type: none"> <li>Comply with International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>Comply with the National Greenhouse and Energy Reporting Act (2007) and National Greenhouse and Energy Reporting Regulations (2008)</li> </ul>
<b>Waste Management</b>	<ul style="list-style-type: none"> <li>Discharge of waste from vessels will comply with relevant International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>Waste management procedures</li> <li>Waste tracking process</li> <li>The management and disposal of any quarantine risk material will be in accordance with state and commonwealth regulations</li> </ul>
<b>Unplanned</b>	
<b>Emergency Events – Hydrocarbon Spill</b>	<ul style="list-style-type: none"> <li>Align with relevant International Convention for the Prevention of Pollution from Ships requirements and subsequent regulations</li> <li>Valid Shipboard Oil Pollution Emergency Plan or Shipboard Marine Pollution Emergency Plan (as appropriate for vessel classification)</li> <li>Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>Offshore Vessel Inspection Database (OVID) process</li> <li>Australian Hydrographic Office Notice to Mariners</li> <li>NOPSEMA accepted Environment Plan and Oil Pollution Emergency Plan (OPEP) in place</li> <li>Relevant Persons consultation process</li> <li>Vessel Maintenance management system</li> </ul>
<b>Introduction of Invasive Marine Species from Vessels</b>	<ul style="list-style-type: none"> <li>Ballast water exchange operations will comply with the international conventions and associated national regulations.</li> <li>Biofouling management for vessels in accordance with state, national and international biofouling management guidelines</li> <li>Biofouling management in compliance with state and commonwealth regulations</li> <li>Vessels (of appropriate class) will have a valid International Anti-Fouling System Certificate</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> </ul>

## NOTIFICATION TO MARINERS

A notice to mariners will be issued via the Australian Hydrographic Office in advance of the seabed survey activity, detailing the survey route and dates at which the vessel will be operating within the field.

## **Appendix A - 1.01 General Environment Plan Factsheet**



# ENVIRONMENT PLAN GENERAL FACT SHEET

## SHELL AUSTRALIA

Shell has operated in Australia for over 120 years. From operating Australia's first oil refinery, which was central to meeting Australia's fuel needs, to fuelling the first Qantas commercial flight in the 1920s, to playing a foundation role in building some of Australia's largest and most innovative natural resource developments - as the energy needs of Australia have changed, so have we.

Today, we are a leading natural gas producer and are playing our part in the transition to a low-carbon future by investing in the power sector, renewable energy solutions and carbon abatement activities.

## WHAT IS AN ENVIRONMENT PLAN (EP)?

An Environment Plan, or EP, outlines all the environmental impacts and risks of an activity and how these are managed to minimise impacts and risks to the environment. It is required by the Australian Government regulator the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance, prior to starting an offshore oil and gas activity.

## CONSULTATION IS KEY TO THE EFFECTIVE DEVELOPMENT OF AN EP

Guidelines for consultation are outlined in the Offshore Petroleum and Greenhouse Gas Storage Environment Regulation 11A.

The purpose is to ensure that authorities, persons or organisations that are potentially affected by oil and gas activities are consulted, and their input considered in the development of an EP.

Consultation is designed to ensure that relevant persons are identified and given sufficient information and a reasonable period to allow them to make an informed assessment of the possible consequences of the proposed petroleum or greenhouse gas activity on them. It is also intended to help inform a better understanding of the environment.

Shell Australia must consider and adopt appropriate measures in response to the matters raised by relevant persons. These actions will in turn inform the management of environmental impacts and risks to which the activity and EP relate.



### Federal Court decision in Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193

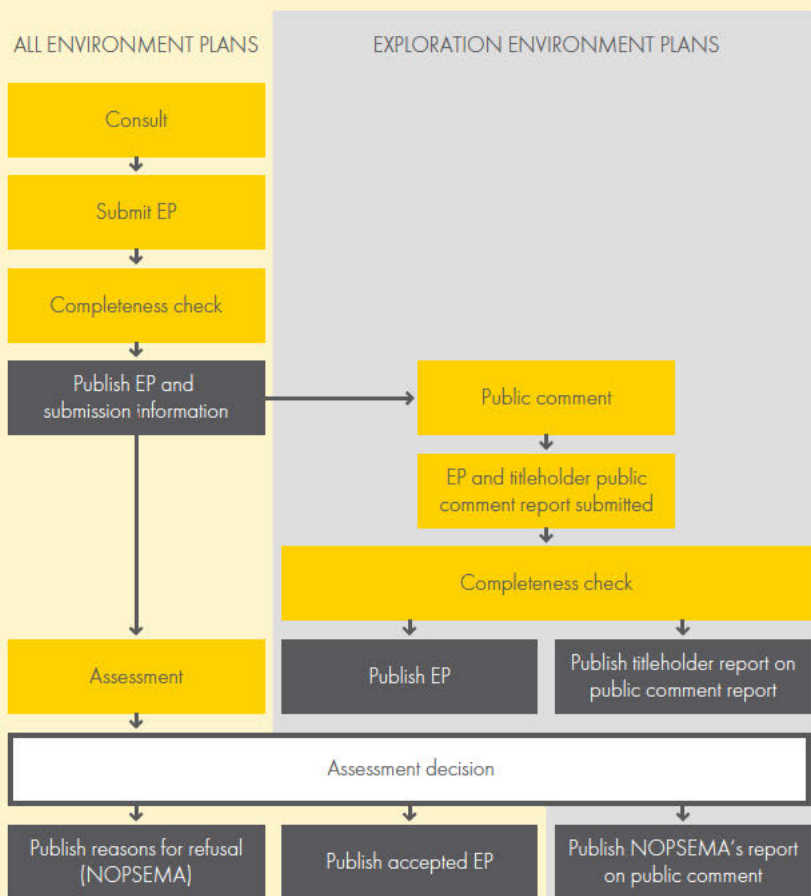
On 2 December 2022, the Full Federal Court of Australia released its appeal decision in the Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193. This decision represents the law regarding requirements for consultation in accordance with the Environment Regulations and NOPSEMA have released a revised consultation guidance.

## National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA)

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) is Australia's independent expert regulator for health and safety, structural (well) integrity and environmental management for all offshore energy operations and greenhouse gas storage activities in Commonwealth waters, and in coastal waters where regulatory powers and functions have been conferred.



## NOPSEMA'S ASSESSMENT PROCESS FOR EPS



## FEEDBACK

At Shell, we recognise the environmental, heritage, social, cultural, and economic values of the region. Shell has undertaken extensive surveys, studies, and a comprehensive review of available information in order to understand and detail the sensitivities and values within the region.

We welcome and seek feedback from relevant persons on our understanding of these values. We are committed to working with relevant persons as part of our ongoing efforts to engage and improve our understanding of the sensitivities and values of the region. Additionally, values and sensitivities are assessed during the risk and impact assessments for any project. Shell will demonstrate how those impacts and risks will be reduced to a level that is as low as reasonably practicable through additional control measures and/or project modifications.

Shell welcomes any feedback, including requests to receive further information. If you have functions, interests or activities that may be affected by any of our projects, Shell Australia invites you to get in touch.

## GLOSSARY

Term	Definition
<b>Functions</b>	Refers to "a power or duty to do something"
<b>Activities</b>	To be read broadly and is broader than the definition of 'activity' in regulation 4 of the Environment Regulations and is likely directed to what the relevant person is already doing
<b>Interests</b>	To be construed as conforming with the accepted concept of "interest" in other areas of public administrative law includes "any interest possessed by an individual whether or not the interest amounts to a legal right or is a proprietary or financial interest or relates to reputation"
<b>Reasonable Period</b>	The titleholder must allow a relevant person a reasonable period for the consultation.
<b>Sufficient Information</b>	For the purpose of the consultation, the titleholder must give each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on the functions, interests or activities of the relevant person.
<b>Relevant Persons</b>	In the course of preparing an environment plan, or a revision of an environment plan, a titleholder must consult each of the following (a relevant person): <ol style="list-style-type: none"> <li>each Department or agency of the Commonwealth to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant;</li> <li>each Department or agency of a State or the Northern Territory to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant;</li> <li>the Department of the responsible State Minister, or the responsible Northern Territory Minister;</li> <li>a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the environment plan, or the revision of the environment plan;</li> <li>any other person or organisation that the titleholder considers relevant.</li> </ol>



## **Appendix A - 1.02 Cultural and Social Values Factsheet**



SGH | Energy

# EXISTING ENVIRONMENT CULTURAL AND SOCIAL VALUES SUMMARY

## ABOUT CRUX

**The Crux project forms an important part of Shell Australia's gas portfolio and will be backfill for the existing Prelude FLNG facility. The project consists of a not normally manned platform with five production wells, in ocean waters approximately 165m deep. The facility will be connected to Prelude via a 160km export pipeline and will be operated remotely from the Prelude FLNG facility.**

The project is being progressed by operator Shell Australia in joint venture with SGH Energy.

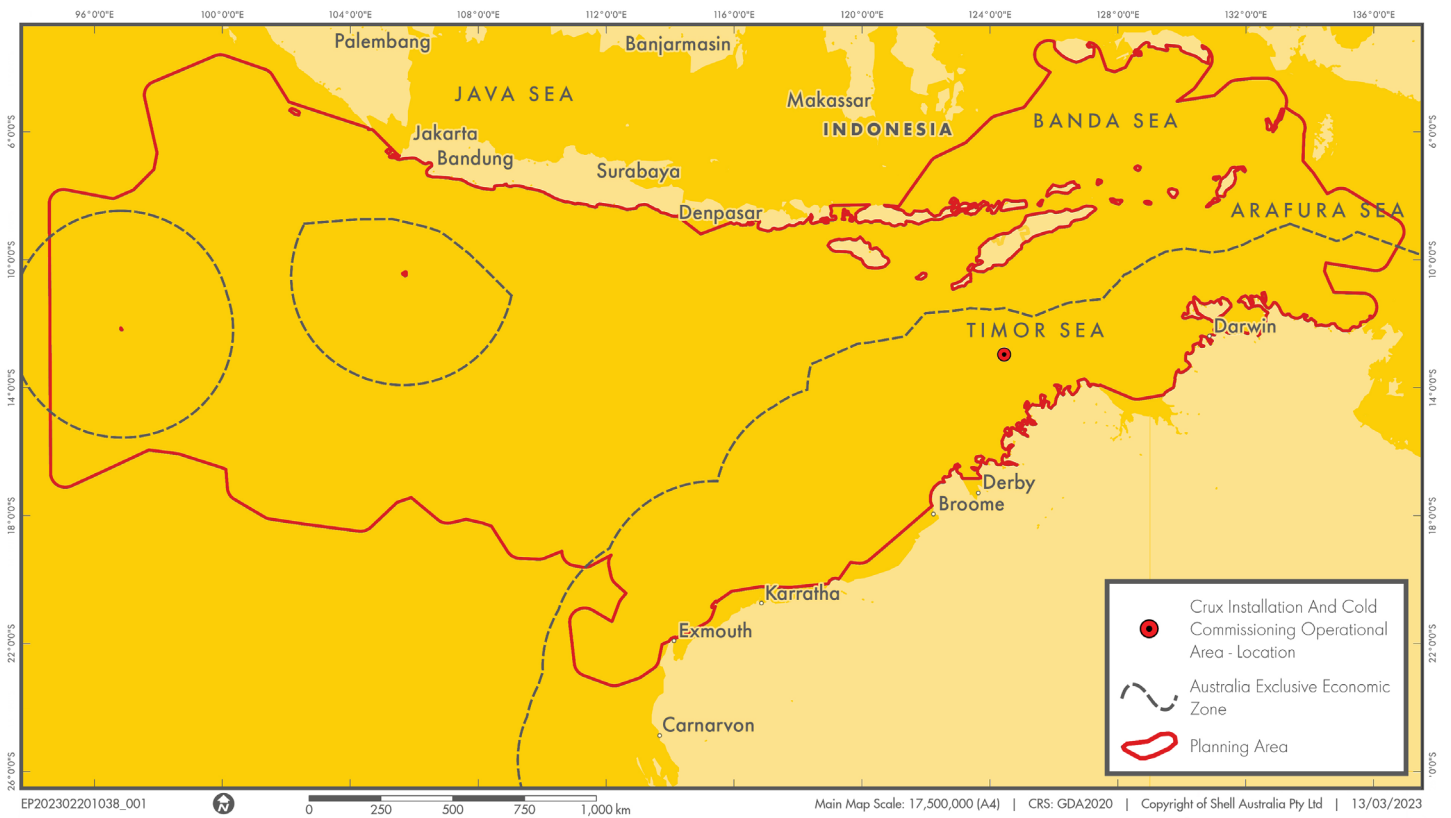
As part of the project's approvals process, Shell is required to identify the cultural and environmental values of the Prelude-Crux Planning Area which may be affected by Shell's activities.

At Shell, we recognise the importance of environmental, heritage, social, cultural, and economic values.

Shell has undertaken comprehensive surveys, studies and a review of available information to understand and detail the sensitivities and values within the region.

We will demonstrate how these impacts and risks will be reduced to a level that is as low as reasonably practicable through additional control measures, seeking first to avoid and then minimise impacts.

We are committed to working with relevant persons as part of our ongoing efforts to engage and improve our understanding of the sensitivities and values of the region and welcome and seek feedback on these.



## THE PLANNING AREA

This is the largest area where the Crux Project could potentially have direct or indirect environmental impacts, as a result of an unplanned hydrocarbon spill. The planning area includes both inshore (State and Territory) and Commonwealth waters, as well as the claimable continental shelf beyond the Exclusive Economic Zone (Figure 1). The planning area extends to the highwater mark.

The planning area represents the total area of many possible pathways that a spill could travel, depending on sea surface conditions, currents and weather at the time of an incident. These combined pathways are developed using hydrocarbon release modelling, and the planning area boundary captures the greatest extent of hundreds of potential release pathways produced by the modelling software.

This means that in the highly unlikely event of one of these scenarios occurring, only a small part of the planning area would be impacted. Understanding the greatest extent of a release allows Shell to ensure that it has adequate response plans to effectively respond.

## IDENTIFICATION OF CULTURAL AND SOCIAL VALUES

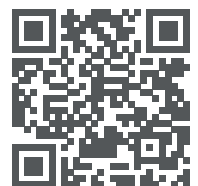
To understand the cultural and social values of the planning area, information on ecosystems and human activities in the planning area were gathered across the following themes:

- Biological and physical characteristics – identifying the biologically important areas and key ecological features
- Protected areas - including world, commonwealth, state and territory protected areas, Indigenous protected areas and their associated values
- Human activities - including recreational, commercial and research activities
- Community values and aspirations - cultural and social
- Indigenous values and aspirations and connection to land and sea Country
- Indigenous functions and activities with reference to land ownership (i.e., Native Title), Indigenous land, sea and resource management and use.

# CULTURAL AND SOCIAL VALUES

The table below provides a summary of the key cultural and social values that exist within the planning area.

Cultural and Social Values	Description
<b>Indigenous Culture</b>	<p>Indigenous peoples have connection to different and overlapping geographic locations within the planning area. Common cultural values link groups to land and sea. These values include an understanding that all natural features, flora and fauna, and marine processes (tides) are the result of journeys and actions taken by ancient creation ancestors.</p> <p>The planning area includes an extensive sea area. Sea country is equally important to Indigenous people as land country. Many of the Indigenous peoples along the Western Australia (WA) and Northern Territory (NT) coastline are saltwater people who have an intimate connection to the sea and associated marine and coastal habitats. For saltwater people all aspects of social, cultural, and economic life are intimately connected to the health of their lands and seas.</p> <p>Features such as reefs and shoals, and marine animals such as sawfish, turtle, whale and dolphin are elements of sea country that are deeply ingrained in Indigenous people's culture, including creation stories. Many of the marine and freshwater fauna species are totemic featuring in art, craft and stories.</p> <p>Connection to sea country is accompanied by cultural rights and responsibilities some of which have been recognized through Native Title determinations, the creation of Indigenous Protected Areas, and Land Trusts in WA and NT.</p> <p>Database searches identified more than 2000 coastal Aboriginal heritage places in WA that overlap with the planning area. These Aboriginal heritage sites include shell middens, fish traps, stone artefacts, stone arrangements and rock paintings and carvings (incl. petroglyphs).</p>
<b>Indigenous Land and Sea Resource Use</b>	<p>Contemporary Indigenous land and sea resource use within the planning area includes:</p> <ul style="list-style-type: none"> <li>■ Hunting and fishing for consumption, cultural and ceremonial purposes</li> <li>■ Collection of resources for medicinal and cultural purposes</li> <li>■ Commercial resource harvesting</li> <li>■ Land and sea management activities conducted by land and sea ranger groups across WA and NT.</li> </ul>
<b>Native Title</b>	<p>Native Title determinations within WA and the NT overlap with the planning area. These determinations include both land and sea areas. There are also a number of registered Native Title claims and Indigenous Land Use Agreements overlapping with the planning area.</p>
<b>Conservation Values and Sensitivities</b>	<p>The planning area includes the Ningaloo Coast and the Shark Bay World Heritage Areas, and the tentatively listed Murujuga Cultural Landscape World Heritage Area.</p> <p>Commonwealth, State and Territory protected areas overlap the Planning Area and include several Australian marine parks, biologically important areas, Indigenous Protected Areas, Ramsar wetlands, parks and reserves. These protected areas contain environmental and cultural values of significant interest, importance and value to individuals and communities including Indigenous peoples.</p> <p>Maritime archaeological heritage sites (e.g., shipwrecks), protected under national heritage, and state and local heritage legislation, are also located within the planning area.</p>
<b>Communities</b>	<p>There are many regional centres and remote communities, including Indigenous communities and outstations located along the coastline of the mainland and on islands located within or close to the planning area. Key regional communities include Exmouth, Port Headland, Broome, and Darwin.</p>
<b>Commercial Fisheries</b>	<p>Commercial fisheries overlap the Planning Area and include Commonwealth, WA and NT fishers.</p> <p>Fisheries activities in the planning area include net and line fishing as well as pearling and aquaculture.</p> <p>Indigenous commercial fishing activities are also undertaken in the planning area.</p>
<b>Commercial tourism activities</b>	<p>Protected areas in the planning area support a diverse range of nature-based recreational and tourism activities.</p> <p>Commercial tourism activities undertaken within the planning area include diving, snorkelling, sailing and kayaking, fishing, whale watching and sunset cruising. Nearby land-based activities include birdwatching and chartered tours of coastline areas.</p> <p>Indigenous based commercial tourism activities also occur within the planning area and include on-country experiences, camping with custodians, guided tours of land and sea, marine based fishing experiences.</p> <p>Tourism accommodation operations are located along the mainland coastline and on some islands within or close to the planning area. Many accommodation providers offer marine based tourism activities (for example charter fishing activities) to guests.</p>
<b>Recreational activities</b>	<p>Camping, fishing, beach combing, swimming, snorkelling, diving and kayaking, sailing and bird watching activities are undertaken within or close to the planning area. Many recreation-based interest groups (e.g. fishing, sailing and surf lifesaving clubs) conduct activities that overlap with the planning area</p>



## **Appendix A - 1.03 Hydrocarbon Release Factsheet**

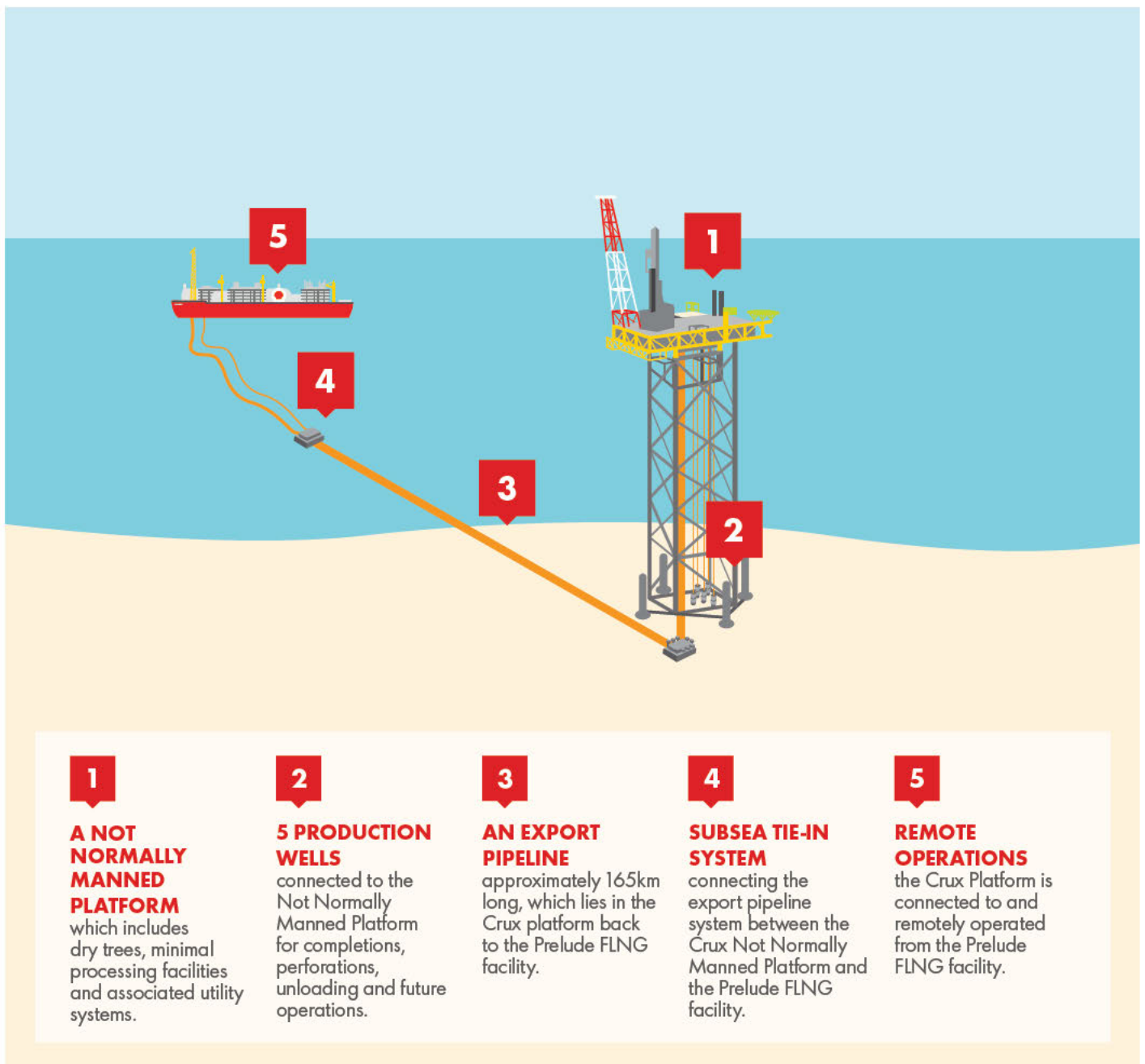


# CRUX HYDROCARBON RELEASE FACTSHEET

## ABOUT CRUX

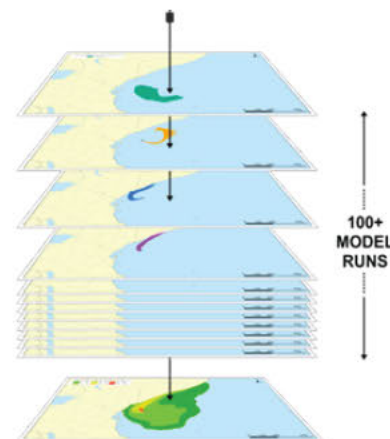
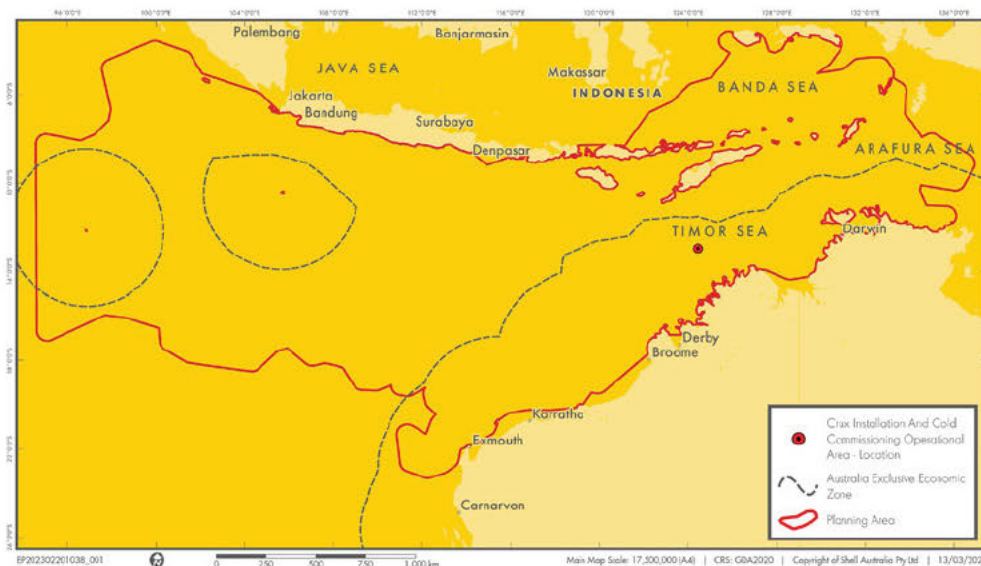
The Crux project forms an important part of Shell Australia's gas portfolio and remains an important backfill opportunity for the existing Prelude FLNG facility. The project consists of a not normally manned platform with five production wells, in ocean waters approximately 165m deep. The facility will be connected to Prelude via a 160km export pipeline and will be operated remotely from the Prelude FLNG facility.

The project is being progressed by operator Shell Australia in joint venture with SGH Energy.



Concept Schematic of the Crux Project





## THE PLANNING AREA

This is the largest area where the Crux Project could potentially have a direct or indirect environmental impact, as a result of:

- loss of well control during drilling and operations
- loss of process storage tank containment on the Crux platform
- loss of subsea containment from the export pipeline, or
- loss of fuel from a vessel.

The planning area represents a combined area of many possible pathways that a spill could travel, depending on sea surface conditions, currents and weather at the time of an incident. These combined pathways are developed using a computer model, and the planning area boundary represents the greatest extent of the hundreds of potential release pathways produced by the modeling software.

This means that in the highly unlikely event of one of these scenarios occurring, only a small part of the planning area would be impacted. Understanding the greatest extent of a release allows Shell to ensure that it has adequate response plans to effectively respond.

## SUMMARY OF THE MODELED HYDROCARBON SPILL SCENARIOS

SCENARIO	LOCATION NAME	LATITUDE	LONGITUDE	DEPTH (M)	HYDROCARBON TYPE	DURATION	TOTAL VOLUME (M <sup>3</sup> )
<b>LOSS OF WELL CONTROL</b>	Platform	12° 57' 12.46"	124° 26' 33.21"	169	Crux condensate	80 days	206,225
<b>LOSS OF PROCESS TANK CONTAINMENT ON CRUX PLATFORM</b>	Platform	12° 57' 12.46"	124° 26' 33.21"	Surface	Crux condensate	Instant	88
<b>LOSS OF CONTAINMENT FROM EXPORT PIPELINE</b>	Near Haywood Shoal - export pipeline	13° 15' 29.00"	123° 54' 39.00"	199	Crux condensate	< 6 hours	2,037
<b>LOSS OF FUEL FROM VESSEL</b>	Platform	12° 57' 12.46"	124° 26' 33.21"	Surface	IFO - 180	1 hour	1,000

## RISK MANAGEMENT

Shell has extensive experience with safe and environmentally responsible drilling and reservoir engineering worldwide and safe design and operation of subsea pipelines. Shell has developed a detailed understanding of the Crux field through historical seismic surveys and drilling.

The oil and gas industry routinely implements a range of design standards and operational inspections to ensure pipeline and infrastructure integrity. This is reflected in the very low likelihoods of significant hydrocarbon releases from pipelines in jurisdictions similar to Australia.

Australian regulations require that all environmental risks be managed to a level that is “as low as practically possible” and acceptable. This is done through NOPSEMA’s Environment Plan (EP) framework. All petroleum activities will be undertaken under an accepted EP.

All wells will be drilled and operated in accordance with an accepted Well Operations Management Plan (WOMP) in accordance with the Offshore Petroleum and Greenhouse Gas Storage Act (OPGGGS).

### LOSS OF PROCESS STORAGE TANK CONTAINMENT

The Crux platform will process well fluids, before exporting the hydrocarbon to the Prelude FLNG facility for processing. The process equipment on the Crux platform will store considerable volumes of condensate, that could be released to the environment in the event of loss of containment from process infrastructure.

A significant loss of containment from process equipment is highly unlikely. The offshore oil and gas industry routinely implements safety by design to reduce the likelihood of a process loss of containment and reduce personnel exposure to significant risks (a key safety benefit of a Not Normally Manned design of the Crux platform). This is reflected in industry statistics, which indicate a significant release of liquid hydrocarbons from offshore process equipment is very low, particularly for unmanned platforms.

### LOSS OF CONTAINMENT FROM CRUX EXPORT PIPELINE

The export pipeline will contain a significant volume of gas and condensate during production operations. A loss of containment from the pipeline may lead to the release of condensate to the marine environment. Pipeline loss of containment events can range from small ‘pinhole’ leaks (localised corrosion) through to complete rupture of the pipeline (significant mechanical impacts such as a drilling rig anchor being dragged over the export pipeline).

### LOSS OF FUEL FROM A VESSEL

The Crux project will require considerable use of a range of project vessels, from small platform support vessels to heavy lift and pipeline installation vessels. The frequency and duration of vessel activities will vary considerably depending on the project phase.

Installation and decommissioning will be peak periods of vessel activity, and vessels will include heavy lift and construction vessels. The commissioning and operations phases (the longest phases of the Crux project) will involve relatively low vessel activity, comprised primarily of platform support vessels.

The nature and scale of the environmental risks and impacts from a loss of fuel from a vessel varies significantly based on the vessel type and activities. Vessels such as heavy lift and pipeline vessels typically store relatively large quantities of fuel. Often these types of vessels are fueled using relatively heavy fuel oils.

Smaller vessels, such as platform support vessels, typically store smaller quantities of fuel. Smaller vessels are typically fueled using lighter fuel oils such as marine diesel, which are less persistent in the environment than heavier fuel oils.

### LOSS OF WELL CONTROL

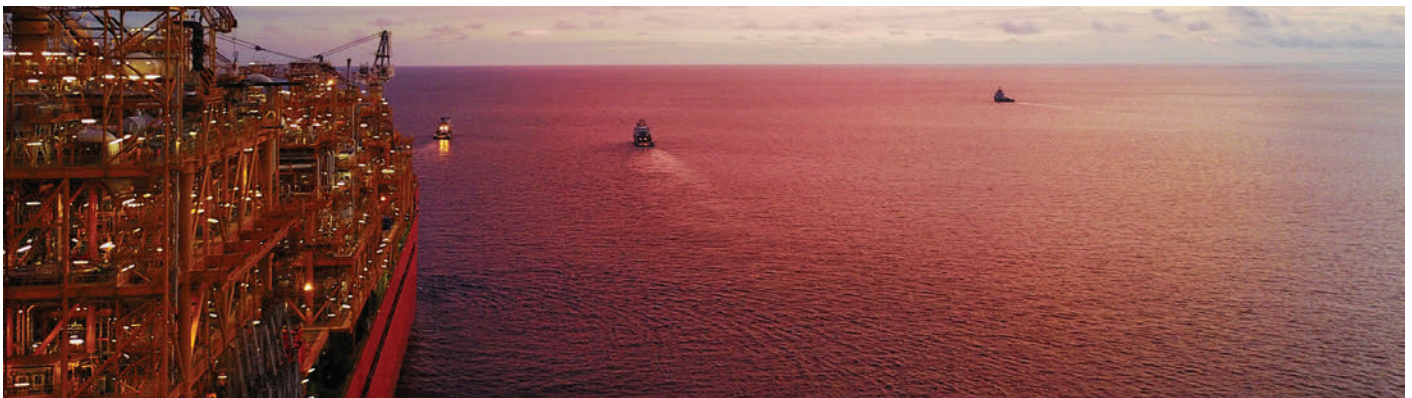
The Crux project involves drilling and completion of, and production from, a series of subsea wells.

Shell’s engineering standards require a range of features that manage the risk of a loss of well control to very low levels. However, there is a possibility that a loss of well control may occur during drilling and operation of the Crux platform.

While the likelihood is very small, a complete loss of well control (a well blowout) has the potential to release significant volumes of condensate into the environment. Such a release could result in significant environmental damage.

The likelihood and volume of condensate that could be released during such an event will change during different phases of the Crux project. Most loss of well control incidents do not result in a worst-case well blowout scenario, and typically release relatively small masses of hydrocarbons.

The likelihood of a well blowout from development drilling and production are considerably lower than a loss of containment from an exploration well, as are the likely release volumes. Exploration wells will not be drilled during the Crux project.

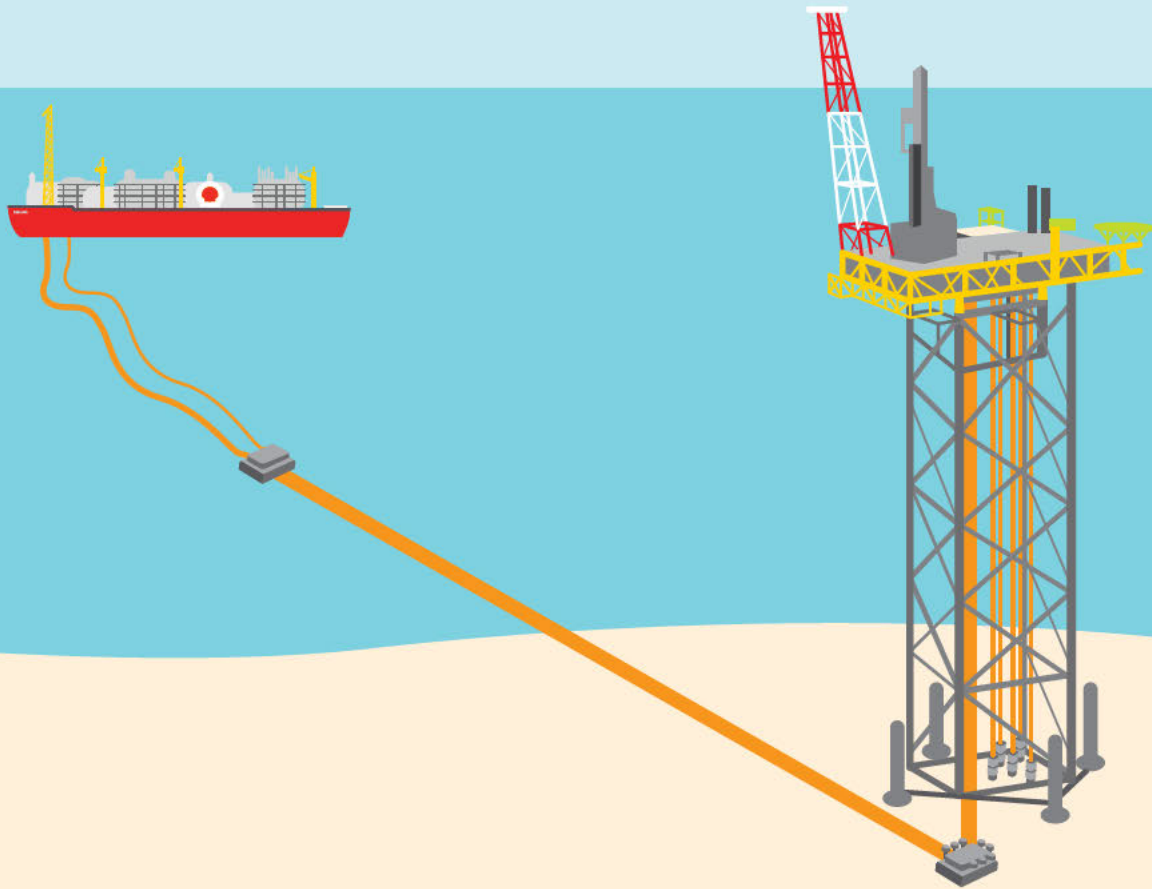


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We are committed to working with relevant persons as part of our ongoing efforts to engage and improve our understanding of the sensitivities and values of the region and welcome and seek feedback on these.



**CONTACT US**

Community Hotline: 1800 059 152

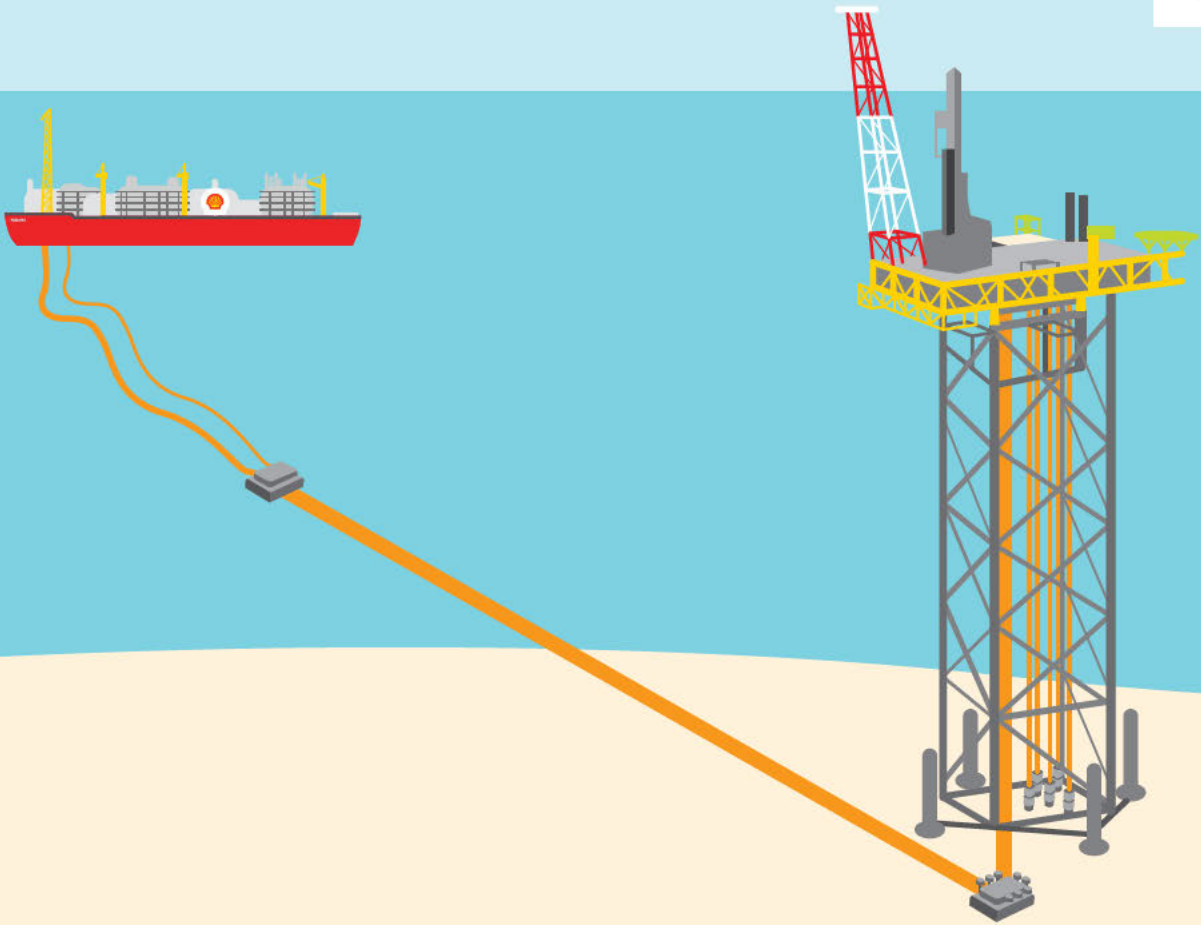
Email: [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com)

[www.shell.com.au/crux](http://www.shell.com.au/crux)

Shell welcomes any feedback on Environment Plan submissions, including requests for further information. If you have functions, interests or activities that may be affected by any of our projects, Shell Australia invites you to get in touch.

**Appendix A - 2.00 Crux Information Booklet – distributed in  
hard copy only.**





**SGH** | Energy

# SHELL'S CRUX PROJECT

## 2023

# INTRODUCTION

Shell has operated in Australia for over 120 years. From operating Australia's first oil refinery, which was central to meeting Australia's fuel needs, to fuelling the first Qantas commercial flight in the 1920s, to playing a foundation role in building some of Australia's largest and most innovative natural resource developments - as the energy needs of Australia have changed, so have we.

Today, we are a leading natural gas producer and are playing our part in the transition to a low-carbon future by investing in the power sector, renewable energy solutions and carbon abatement activities.

## ABOUT CRUX

The Crux project forms an important part of Shell Australia's gas portfolio and remains an important backfill opportunity for the existing Prelude FLNG facility. The project consists of a not normally manned platform with five production wells, in ocean waters approximately 165m deep. The facility will be connected to Prelude via a 160km export pipeline and will be operated remotely from the Prelude FLNG facility.

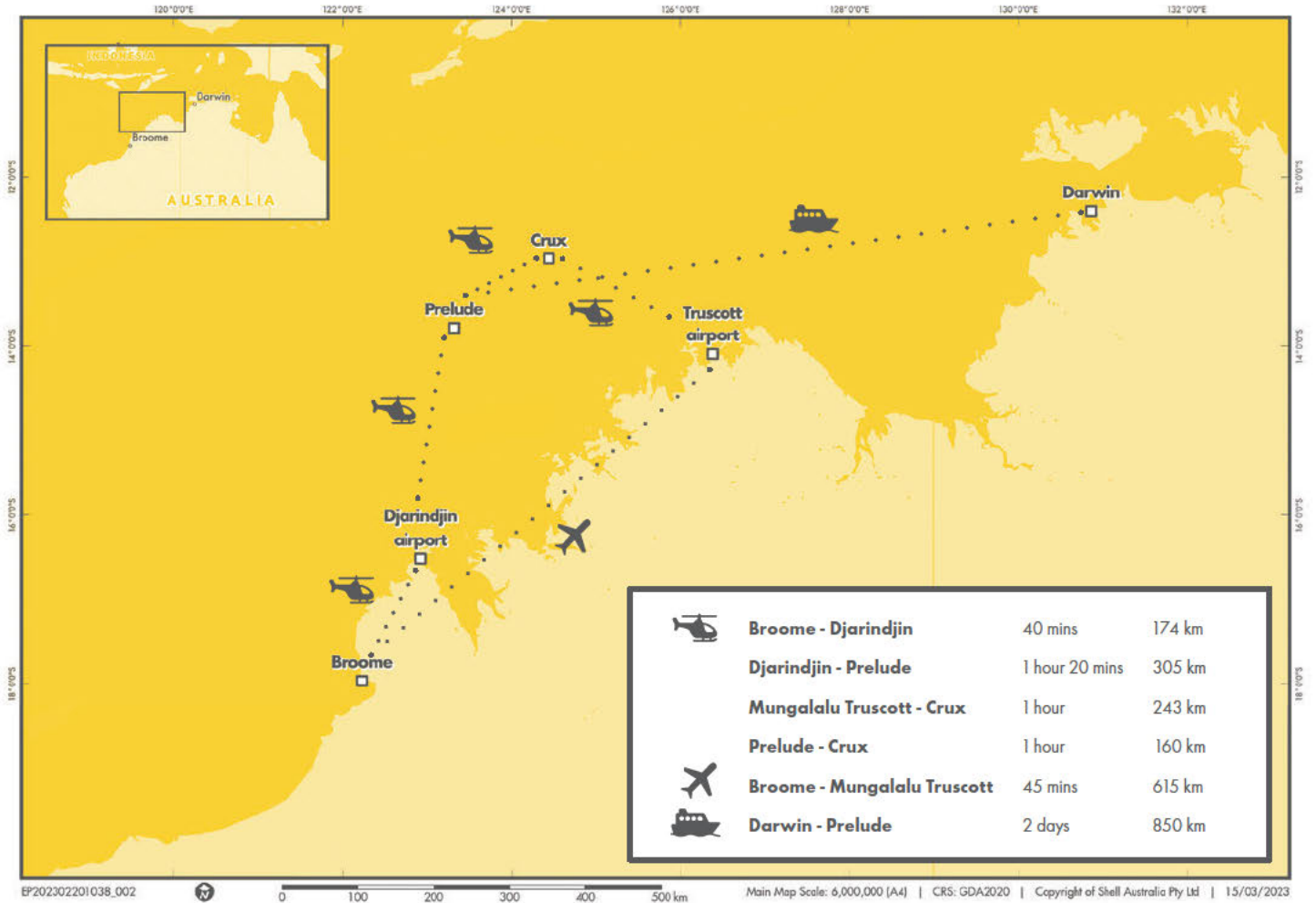
The project is being progressed by operator Shell Australia in joint venture with SGH Energy.



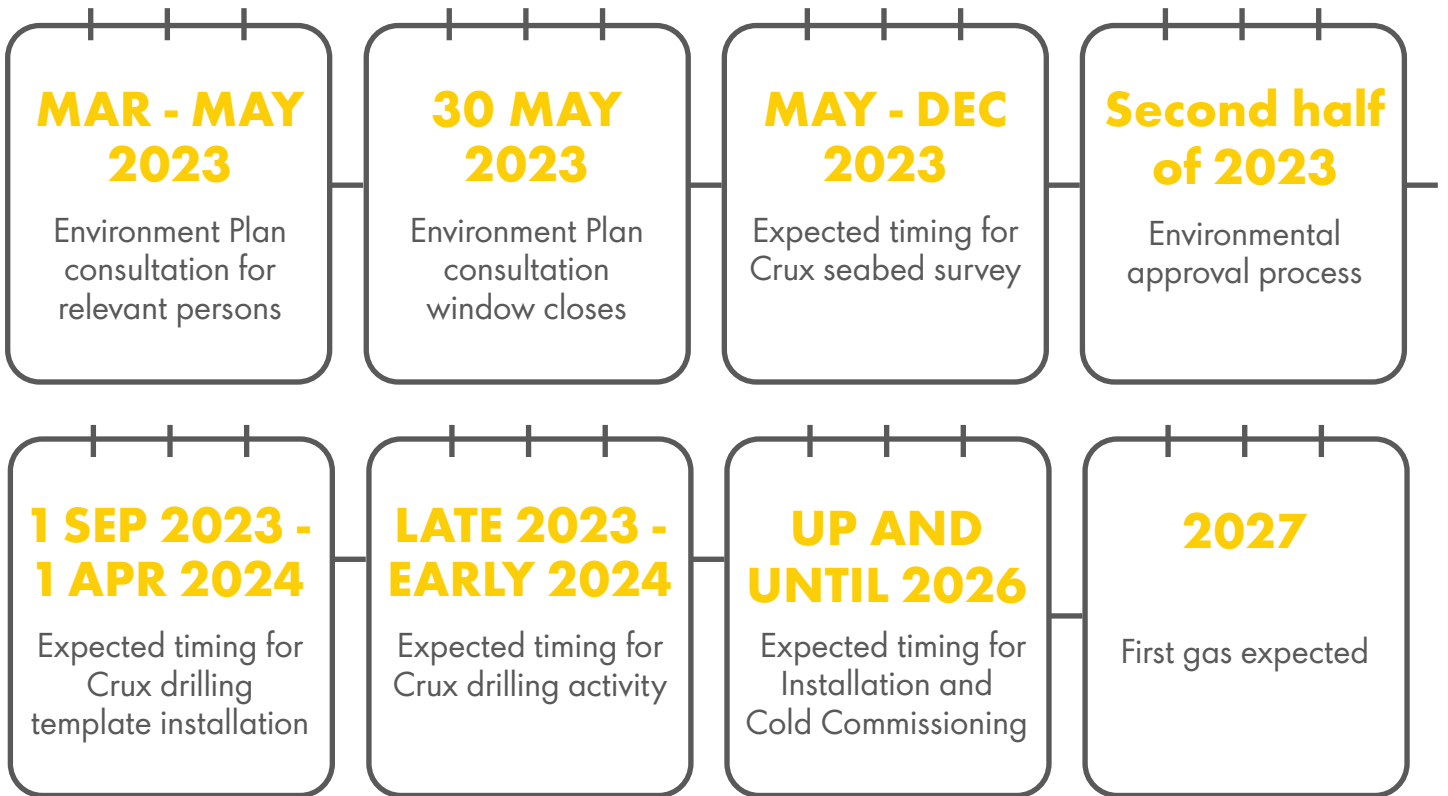
# THE LOCATION OF OUR OPERATIONS

Prelude is located approximately 475km north-east of Broome, Western Australia, in the Browse Basin.

Once installed, the Crux platform will be connected to Prelude via a 160km, located approximately 190 km off the Kimberley coast of Western Australia and 620 km north-east of Broome.



# TIMING



*\*Dates for the commencement of activities and durations are subject to change and are pending regulatory approvals.*

Shell is planning to commence engagement with relevant persons end of March 2023.

Construction activities are planned to start in late 2023, with drilling planned to commence in early 2024.

## RELEVANT PERSONS

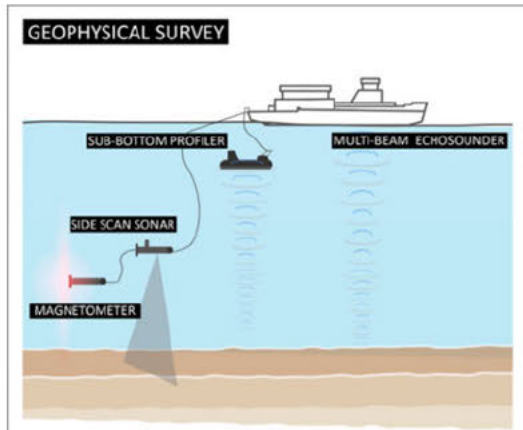
At Shell, we recognise the environmental, heritage, social, cultural, and economic values of the region. Shell has undertaken extensive surveys, studies, and a comprehensive review of available information in order to understand and detail the sensitivities and values within the region.

We welcome and seek feedback from relevant persons on our understanding of these values. We are committed to working with relevant persons as part of our ongoing efforts to engage and improve our understanding of the sensitivities and values of the region. Additionally, values and sensitivities are assessed during the risk and impact assessments for any project. Shell will demonstrate how those impacts and risks will be reduced to a level that is as low as reasonably practicable through additional control measures, seeking first to avoid and then minimise impacts.

# PROJECT ACTIVITIES



## SEABED SURVEY



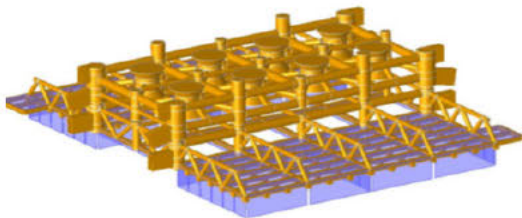
A survey of the seabed along the Crux pipeline route will be carried out using technology like sonar mounted on the hull of a survey vessel. The pipeline will connect the Crux field with the Prelude Floating Liquefied Natural Gas (FLNG) facility.

The survey will make sure we have accurate information about the seabed along the pipeline, so construction of the pipeline can be carried out safely and all environment impacts are effectively managed.

The survey is expected to be completed within a five-day period during a single vessel-based campaign operating 24 hrs/day.



## DRILLING TEMPLATE INSTALLATION



*Drilling Template Structure including mudmats*

The steel prefabricated drilling template will be installed on the seabed to act as a guide to the drill bit during drilling operations. Once installed the drilling template will remain in place for the life of Crux.

The drilling template includes eight drill slots to support an initial five well development drilling campaign.

Once installed the drilling template will remain in place for the life of the Crux activity.

The drilling template installation campaign is expected to occur over a one-month period subject to weather and subsurface conditions. The drilling template will be installed within approximately 24 hrs. The activity window is 1 month to account for variability in weather and subsurface conditions

Once installed the template will remain in place for the life of the Crux Project.



# PROJECT ACTIVITIES



## DEVELOPMENT DRILLING



*Representative Mobile Offshore Drilling Unit*

Drilling the wells includes the installation of guideposts and five deviated production wells via the preinstalled drilling template.

### **Installation of guideposts**

This ensures that the Crux substructure and topsides are accurately positioned over the drilling template when installed during the subsequent installation campaigns.

The guideposts will remain on location at the seabed for the life of the Crux Project.

The guideposts have an approximate structural footprint of Length 28 m X Width 9 m X Height 10 m.

### **Drilling and suspending the wells**

The wells will be drilled from a Mobile Offshore Drilling Unit. They will be drilled from a single drill centre, via the pre-installed drilling template. The wells will be suspended and left in-situ with well completions planned to occur following installation of the Crux platform. The Mobile Offshore Drilling Unit will be a semi-submersible Mobile Offshore Drilling Unit – which will be held in position by anchor spread.

The drilling campaign is expected to be carried out for approximately 2 years with scope completed no later than the end of 2025. It will be supported by a range of services including helicopter transfers from mainland Australia, a dedicated installation vessel, four anchor handling, tug and support vessels and remotely operated vehicles undertaking inspection, maintenance and repair activities.



# PROJECT ACTIVITIES



## INSTALLATION AND COLD COMMISSIONING



This covers a number of activities including:

- Installation of the subsea integration system, including the Crux pipeline to export gas from Crux field to Prelude FLNG facility for processing into LNG. The pipeline will be approximately 26 inches in diameter and approximately 165 km long.
- Installation of the Crux not-normally manned platform, jacket and topsides. The platform will be held in position by piled foundations on the seabed. It includes processing facilities and associated utility systems.
- Cold commissioning activities such as hydrotesting and dewatering of the pipeline.

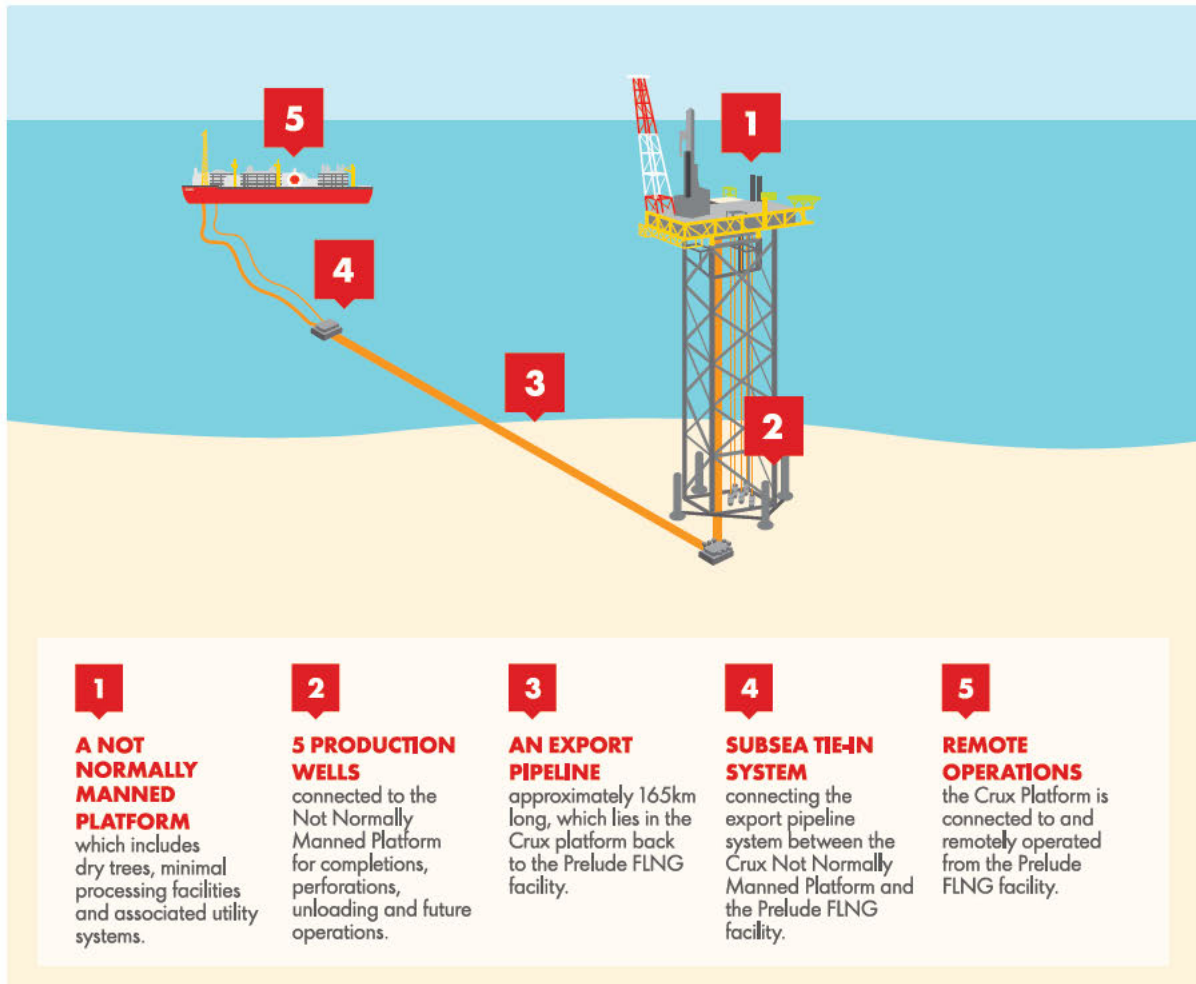
The installation phase will be supported by crews being transported via helicopter from Broome, while supply vessels will be serviced from Darwin.



# PROJECT ACTIVITIES



## START UP AND OPERATIONS



Concept Schematic of the Crux Project

This is where operations to commence production will be completed including

- commissioning testing and monitoring topside equipment on the platform and the export pipeline
- well, flowline and riser operations
- remote production and processing operations



## DECOMMISSIONING

This will include well abandonment, decommissioning of the platform and decommissioning of subsea facilities and export pipeline.



# ENVIRONMENTAL IMPACT MANAGEMENT

Construction activities have been designed to operate and manage environmental risks to as low as reasonably practicable and acceptable levels.



## LIGHT



External lighting on offshore facilities have been minimised to the lowest levels possible to that required for navigation and safe operations on deck.



## NOISE



There will be some noise during the day and night while the project is being constructed. Any marine life in the area will be monitored and there will be no activity within 1 km of any shoals.



## NOTIFICATION TO MARINE USERS

The 500 m Petroleum Safety Zone will be in place and marked on all relevant marine navigation charts. The Safety Zone will remain in place for the life of the Crux project. A notice to mariners will be issued via the Australian Hydrographic Office in advance of any activities commencing.





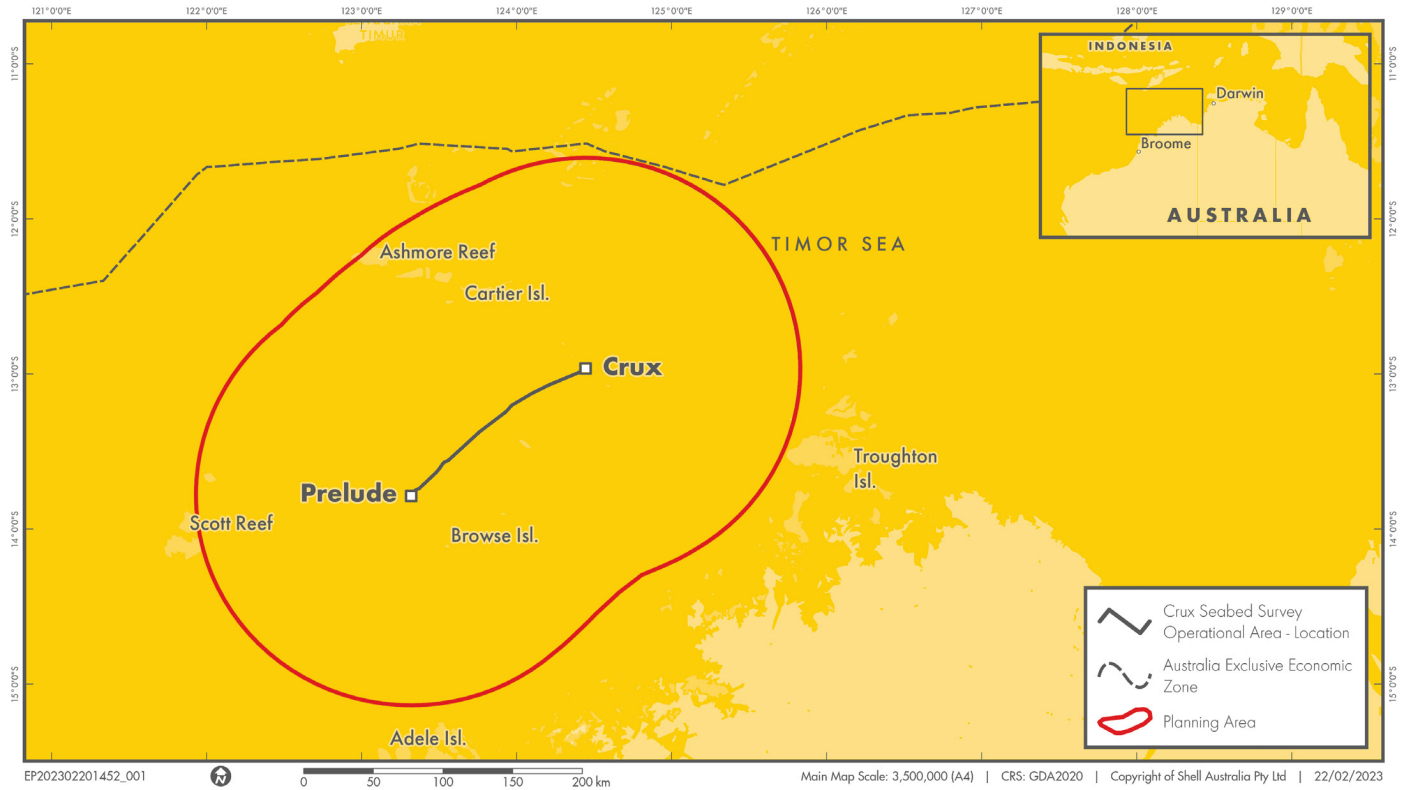
## FEEDBACK

Shell welcomes any feedback on the proposed Crux project, including requests to receive further information. If you have functions, interests or activities that may be affected by this project, Shell Australia invites you to get in touch.

## CONTACT US

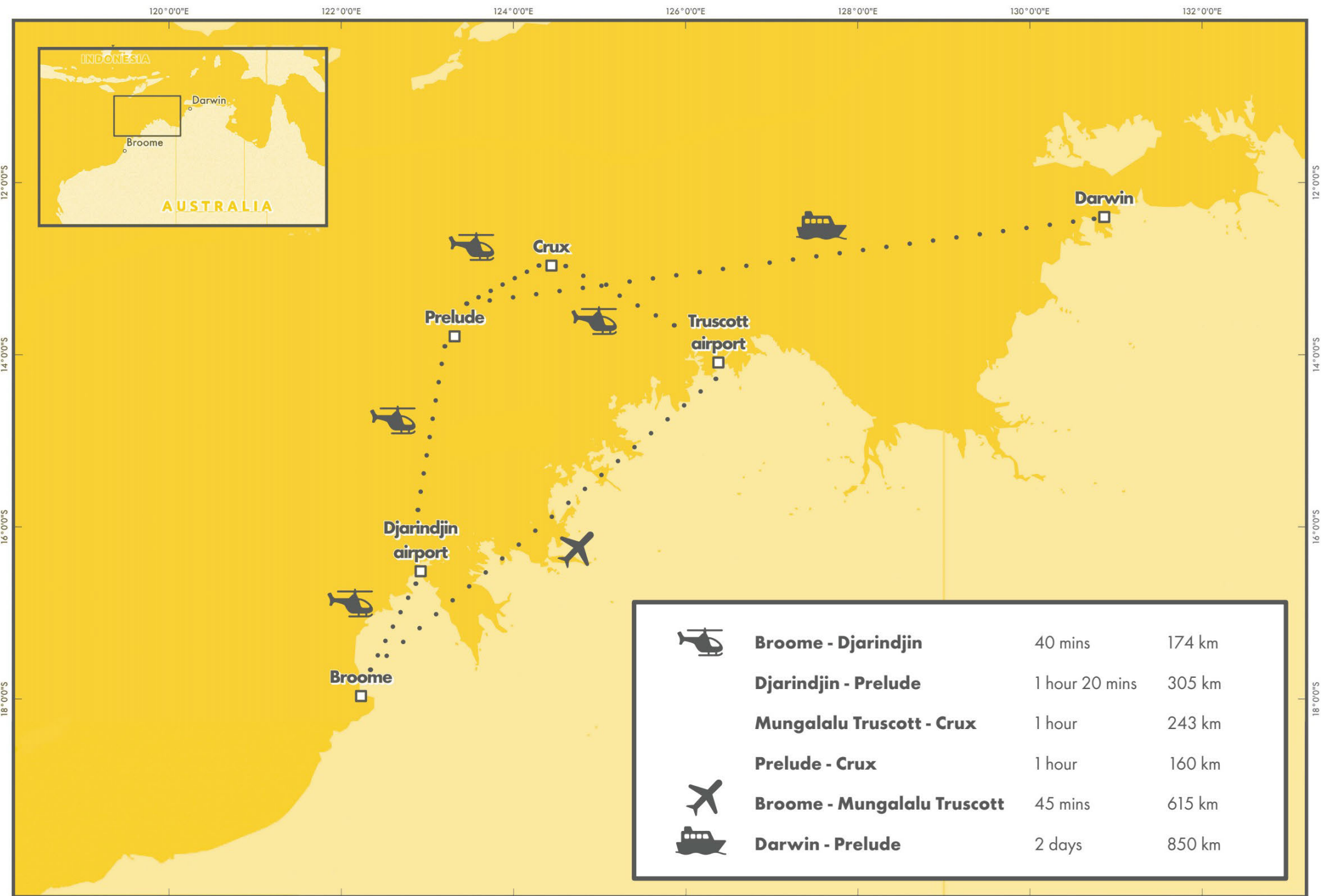
Community Hotline: 1800 059 152  
Email: [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com)




## **Appendix A - 3.00 Seabed Survey EP Planning Area Map**



## **Appendix A - 3.01 Community Map**





	<b>Broome - Djarindjin</b>	40 mins	174 km
	<b>Djarindjin - Prelude</b>	1 hour 20 mins	305 km
	<b>Mungalalu Truscott - Crux</b>	1 hour	243 km
	<b>Prelude - Crux</b>	1 hour	160 km
	<b>Broome - Mungalalu Truscott</b>	45 mins	615 km
	<b>Darwin - Prelude</b>	2 days	850 km





## **Appendix A - 4.00 Crux Campaign Overview**



# Shell Crux Campaign 2023

# Crux Media Plan - print and radio

OFFLINE						2/15/2023	2/12/2023	2/19/2023	2/26/2023	3/5/2023	3/12/2023	3/19/2023	3/26/2023	4/2/2023	4/9/2023	4/16/2023	4/23/2023
SUPPLIER	MARKET	FORMAT / PLACEMENT	ROLE	METRIC	DEMO	Est 1+ Reach (PX+)											
Newscorp / NT News	NT	Half Page Horizontal -EGN- Saturday	Reach	Impressions	Total People						1	1					
Newscorp / NT News	NT	Half Page Horizontal -EGN- M to F	Reach	Impressions	Total People						1	1					
Newscorp / Sunday Territorian	NT	Half Page Horizontal -EGN- Sunday	Reach	Impressions	Total People						1	1					
ACM - Katherine Times	NT	Half Page Horizontal - Wednesday	Reach	Impressions	Total People						1	1					
ACM - Farm Weekly		Half Page Horizontal - Thursday	Reach	Impressions	Total People						1	1					
Leba - National Indigenous Times	National	Half Page Horizontal - Monthly, Last Tues	Reach	Impressions	Total People						1						
Leba - Koori Mail	National	Half Page Horizontal - Fortnightly, Wed	Reach	Impressions	Total People							1					
ACM - The Senior	WA	Half Page Horizontal - Monthly	Reach	Impressions	Total People								1				
SWM - West Australian	WA	Half Page Horizontal - M-F	Reach	Impressions	Total People						1	1					
SWM - Sunday Times	WA	Half Page Horizontal - Sunday	Reach	Impressions	Total People						1	1					
SCA - HIT 106.5 Karratha		30's Audio - BMAD	Reach	Impressions	Total People								21	21	21		
SCA - Triple M Karratha 102.5		30's Audio - BMAD	Reach	Impressions	Total People								21	21	21		
SCA - Hit 91.7 Port Hedland		30's Audio - BMAD	Reach	Impressions	Total People								21	21	21		
SCA - Triple M Port Hedland 94.1		30's Audio - BMAD	Reach	Impressions	Total People								21	21	21		
SCA - Hit Northwest		30's Audio - BMAD	Reach	Impressions	Total People								21	21	21		
SCA - Triple M Northwest		30's Audio - BMAD	Reach	Impressions	Total People								21	21	21		
SCA - Hit 99.7 Carnarvon		30's Audio - BMAD	Reach	Impressions	Total People								21	21	21		
SCA - Triple M Carnarvon 666		30's Audio - BMAD	Reach	Impressions	Total People								21	21	21		
SCA - Hit 96.5 Geraldton		30's Audio - BMAD	Reach	Impressions	Total People								21	21	21		
SCA - Triple M Geraldton 98.1		30's Audio - BMAD	Reach	Impressions	Total People								21	21	21		
Leba - One Mob Radio	National	30's Audio - BMAD	Reach	Impressions	Total People								7	7	7		
Leba - BEAR GOVE FM	Nhulunbuy	30's Audio - BMAD	Reach	Impressions	Total People								7	7	7		
Leba - 8TEA TEABBA RADIO	NT	30's Audio - BMAD	Reach	Impressions	Total People								7	7	7		
Leba - 8YOL Yolngu Radio	Nhulunbuy	30's Audio - BMAD	Reach	Impressions	Total People								7	7	7		
Leba - 6CAN	Carnarvon	30's Audio - BMAD	Reach	Impressions	Total People								7	7	7		
Leba - 6GME - Radio Goolari	Broome	30's Audio - BMAD	Reach	Impressions	Total People								7	7	7		
Leba - 6HCR Hedland Radio	Port Hedland	30's Audio - BMAD	Reach	Impressions	Total People								7	7	7		
Leba - 6RM Radio Mama	Geraldton	30's Audio - BMAD	Reach	Impressions	Total People								7	7	7		
Leba - 6WR	Kununurra	30's Audio - BMAD	Reach	Impressions	Total People								7	7	7		
ARN - HOT 100 FM Darwin	NT - Darwin	30's Audio - BMAD	Reach	Impressions	Total People								20	20	20		
ARN - MIX 104.9 Darwin	NT - Darwin	30's Audio - BMAD	Reach	Impressions	Total People								20	20	20		
ARN - Territory FM Darwin	NT - Darwin	30's Audio - BMAD	Reach	Impressions	Total People								20	20	20		
SBS - NITV	WA + QLD + NT	30's Audio - AM/FM & Digital TV	Reach	Impressions	Total People									3	3	3	
Meta	Postcode Targeting	Static Ads	Reach	Reach	P18+								1				
LinkedIn	NT + WA (Ex Perth)	Static Ads	Reach	Impressions	P18+								1				

# Meta – targeted maps

Area 1



Area 2



Area 3



# Creative

Identical creative and copy was used across LinkedIn and Meta.

## LinkedIn



Shell Global  
Promoted

Shell is preparing to develop the Crux natural gas field and is looking to hear from people who have functions, interests or activities that may be affected. The Crux Project will ensure for a continued supply of gas to Shell's Prelude Floating Liquefied Natural Gas facility, located around 475km off the coast of Broome.



Shell Australia wants to hear from you  
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## Meta



Shell (AU)  
Sponsored

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shell.com.au  
Shell Australia wants to hear from you [Contact us](#)

Like Comment Share



MOST CONFIDENTIAL



**Appendix A - 4.01 Print adverts**

**ACM**

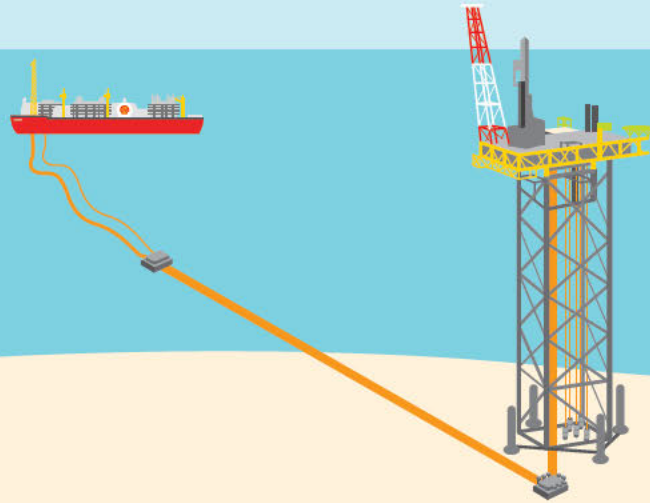
**Koori Mail**

**National Indigenous Times**

**Newscorp**

**SWM**

**The West**



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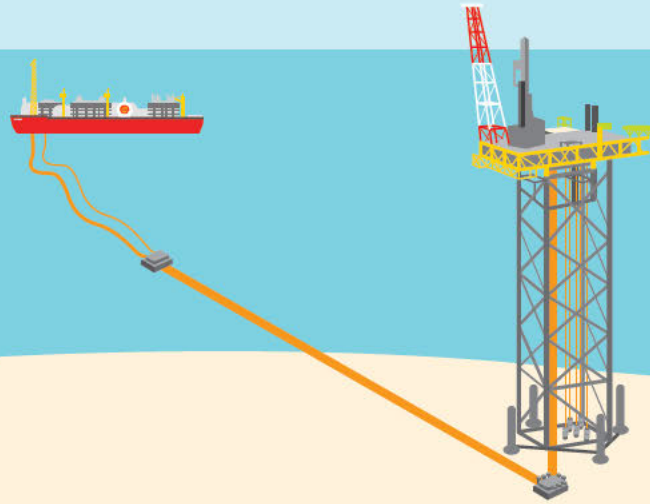
**Please respond by 30 April 2023.**

**For more information please visit:**  
[www.shell.com.au/crux](http://www.shell.com.au/crux)



CRUX PROJECT JOINT VENTURE PARTNER

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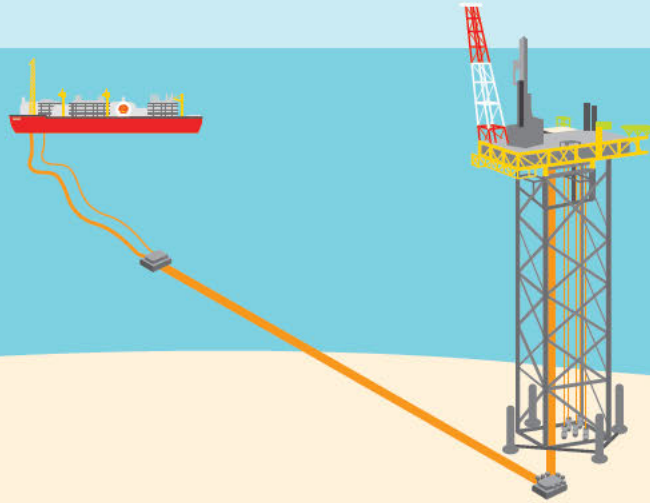
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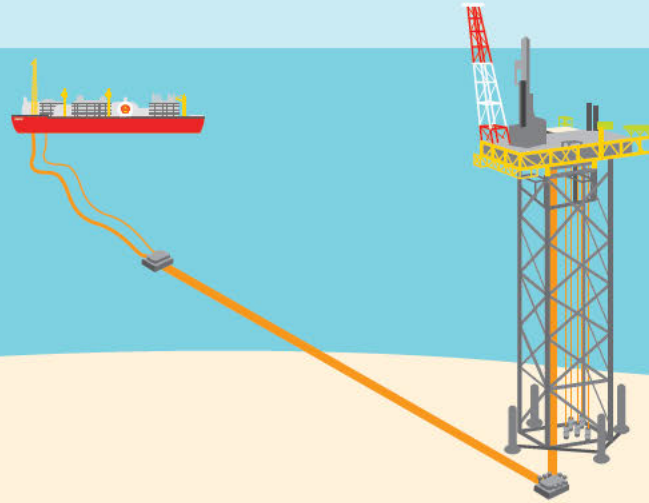
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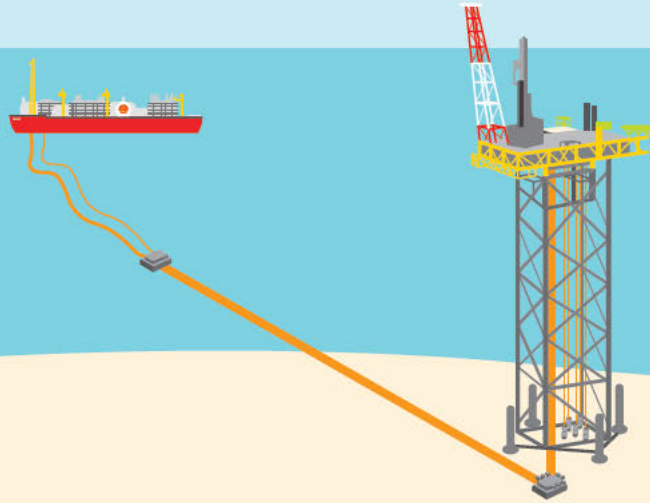
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# Some Col comfort amid quit rumours

SHANNON HAMPTON

Police Minister Paul Papalia has rubbished rumours Police Commissioner Col Blanch is standing down as “ridiculous” amid law enforcement rivalries linked to massive drug bust off Perth.

Rumours have swirled for several weeks about the police chief’s future, but Mr Papalia, pictured below, shot them down on Thursday.

It is understood the rumours may have stemmed from tensions between WA Police and Australian Federal Police after the operation that culminated in an Australian record 2.4-tonne cocaine sting.

The operation was carried out in co-operation with the US Drug Enforcement Administration — but without the AFP.

Mr Papalia said on radio that rumours Mr Blanch’s career was “on the line” and that there were “issues that could cause him to stand aside” were “ridiculous”.

“The Commissioner is doing an excellent job, as is the Western Australian Police Force under his leadership,” he said. “Most



recently, we saw Operation Beech, the biggest cocaine bust in history, where they were working closely with the DEA and the NSW Police, resulting in excellent outcomes and stopping massive amounts of illicit drugs coming into the nation.

“That’s a result of the relationships and knowledge the Commissioner has of his days in the ACIC (Australian Criminal Intelligence Commission).

“I look forward to working with him in coming years to do an excellent job and continue to deliver on great reforms and great changes and better capacity in the Western Australian Police Force.”

As revealed by The West Australian this month, WA Police launched a sophisticated undercover operation to catch members of a Mexican drug syndicate operating in Perth after the DEA seized 2.4 tonnes of cocaine off the South American coast.

Before details of the record-breaking seizure were revealed, it was reported the AFP had complained about the two Syd-



ney-based DEA agents involved in the operation and they were sent home to the US. The complaint was made by AFP Commissioner Reece Kershaw to US Ambassador Caroline Kennedy.

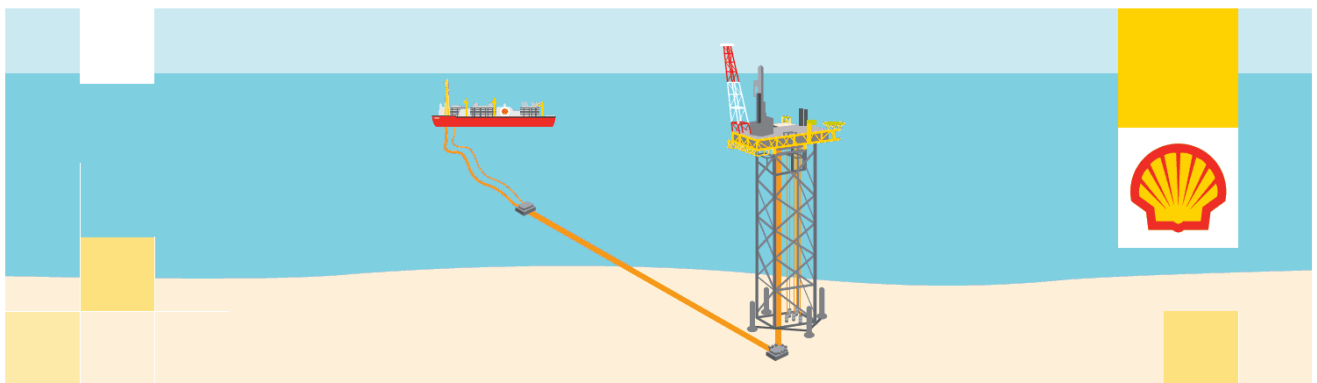
The AFP had said “it is imperative international agencies that operate in Australia adhere to Australian laws and respect Australia’s sovereignty”.

Mr Blanch told The West he had “nothing but praise” for the two agents.

“We do this job lawfully . . . we make sure we do these jobs properly. I’ve got nothing but praise for those officers on this particular case and they did a good job with us.”

Mr Papalia acknowledged the AFP had “expressed some concerns with our relationships with the DEA” but said he also had no concerns about how the operation ran.

“I applaud our relationships with the DEA,” he said. “I applaud the Commissioner’s efforts with the DEA. I applaud the Commissioner’s efforts to build those relationships.”



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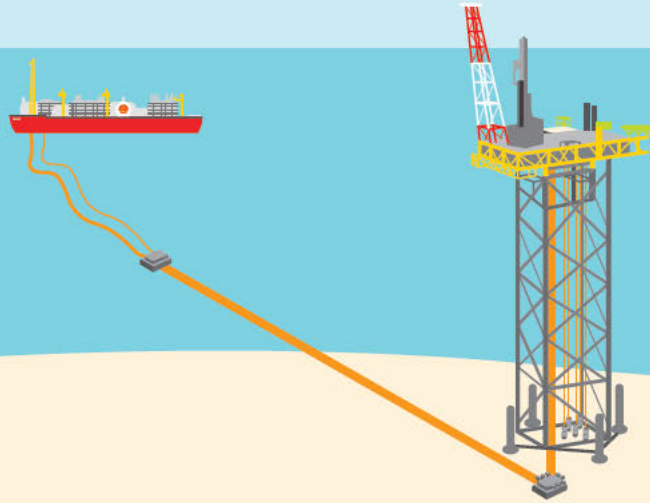
**For more information please visit: [www.shell.com.au/crux](http://www.shell.com.au/crux)**



CRUX PROJECT JOINT VENTURE PARTNER

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**Appendix A - 4.02 Social media post**  
**Facebook**  
**Linkedin**



**Shell (AU)** ✓

Written by Sprinklr Ads [?] · 42m · 🌐

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SHELL.COM.AU

**Shell Australia wants to hear from you**

Get in touch on the Crux Project



Contact us





**Shell Global**  
Promoted



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## **Appendix A - 4.03 Radio ads**



Radio ad

<https://creativehub.shell.com/m/244f29d784234f2a/original/SHEL0323CTA01.mp3>

**Transcript of radio ad.**

'Shell have been providing energy to Australians for 120 years. In 2023, Shell is preparing to develop the Crux natural gas field, to ensure the supply of gas to their natural gas facility, Prelude, 475km NNE off Broome. Environmental approvals are being prepared. If you have functions, interest or activities that may be affected by this Project Shell invites you to get in touch. Responses are required by April 30. For more information visit [shell.com.au/crux](http://shell.com.au/crux)'

Radio ad

<https://creativehub.shell.com/m/244f29d784234f2a/original/SHEL0323CTA01.mp3>

**Appendix A - 4.04 Drop-in session advert**

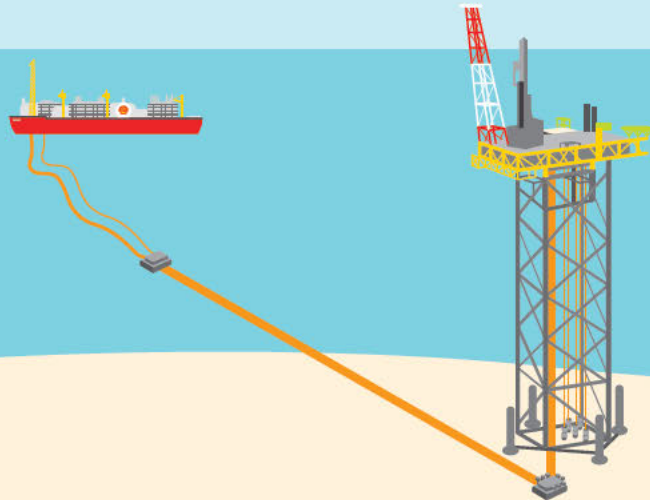
**Broome**

**Darwin**

**Exmouth**

**Port Hedland**

**Derby**



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**If you are interested in learning more, Shell Australia invites you to join us at a drop-in session as follows:**

**Date:** Thursday 27 April 2023

**Time:** 15.00 – 17.00

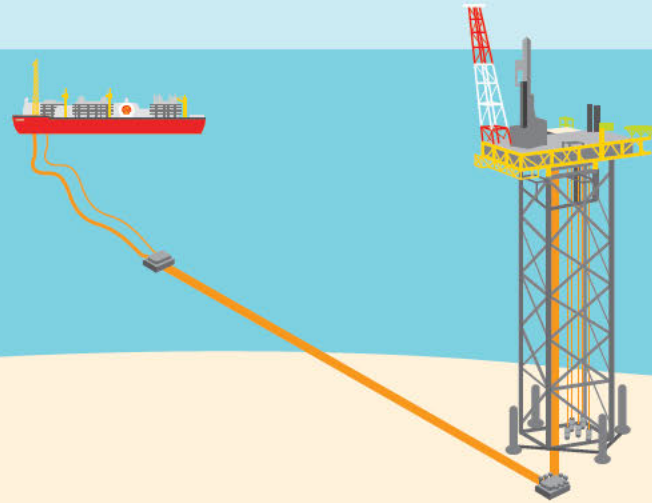
**Location:** Mangrove Hotel, 47 Carnarvon Street Broome.

**For more information please visit:**  
[www.shell.com.au/crux](http://www.shell.com.au/crux)



CRUX PROJECT JOINT VENTURE PARTNER

**SGH** | Energy



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**If you are interested in learning more, Shell Australia invites you to join us at a drop-in session as follows:**

**Date:** Wednesday 17 May 2023

**Time:** 15.00 – 17.00

**Location:** GTNT Group- Harrison Room, 38 Woods St, Darwin City NT 0800

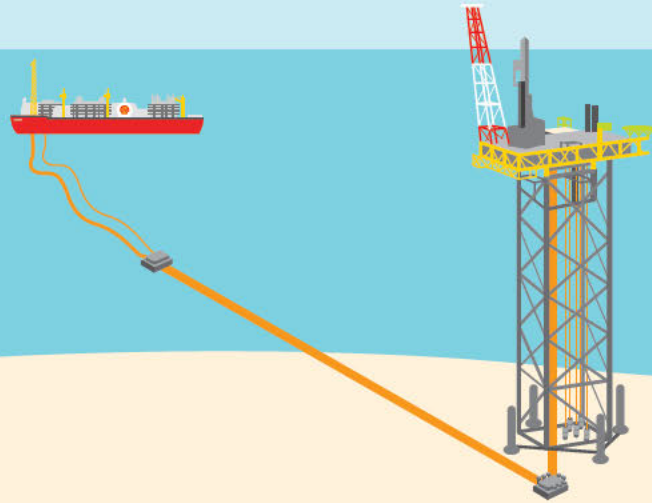
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**If you are interested in learning more, Shell Australia invites you to join us at a drop-in session as follows:**

**Date:** Tuesday 4 April 2023

**Time:** Join us anytime between 7.30am to 6.00pm

**Location:** Derby Professional Centre – Conference Room, 2 Clarendon Street, Derby

**For more information please visit:**

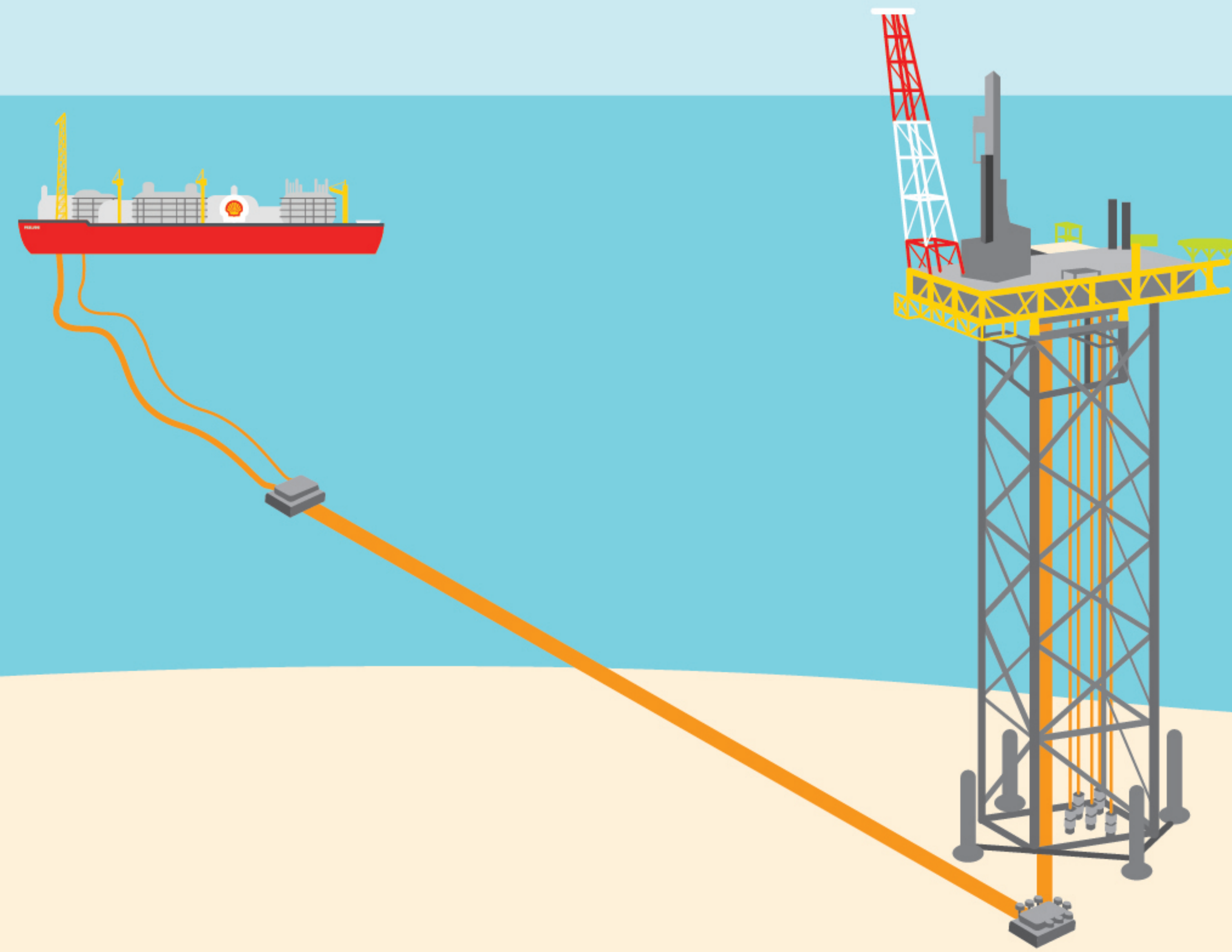
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**If you are interested in learning more, Shell Australia invites you to join us at a drop-in session as follows:**

**Date:** Wednesday 10 May 2023

**Time:** 07.30 - 14.30

**Location:** Ningaloo Aquarium and Discovery Centre-Mandu  
Mandu Room, 2 Truscott Cres, Exmouth WA 6707

Lunch provided.

**For more information please visit:**

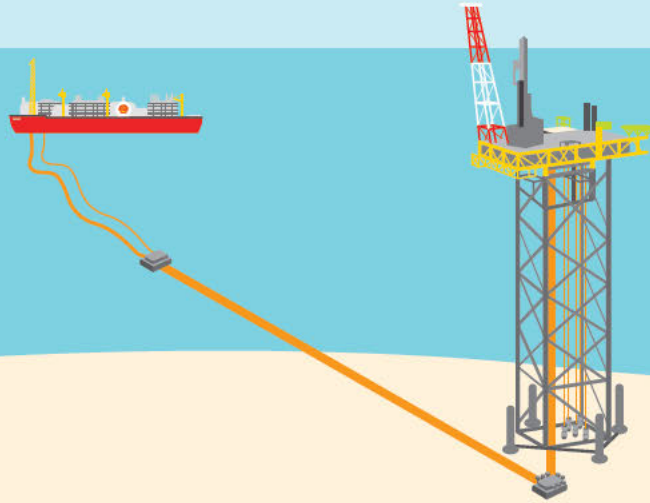
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**If you are interested in learning more, Shell Australia invites you to join us at a drop-in session as follows:**

**Date:** Wednesday 3 May 2023      **Time:** 07.30 - 14.30

**Location:** Colin Matheson Pavilion, 17 Tinder St, Port Hedland WA 6721.

Lunch provided.

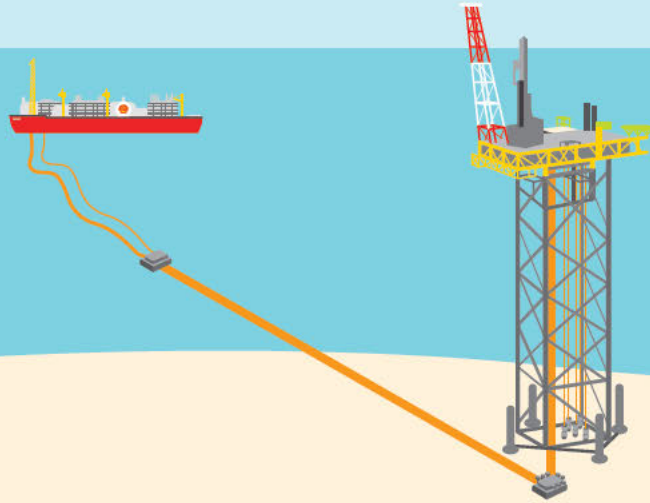
**For more information please visit:**  
[www.shell.com.au/crux](http://www.shell.com.au/crux)



CRUX PROJECT JOINT VENTURE PARTNER

**SGH** | Energy

**Appendix A - 4.05 Community briefing advert:  
Broome  
Darwin**



# SHELL AUSTRALIA INVITES YOU TO COME AND TALK TO US ABOUT THE CRUX PROJECT

In Australia, Shell has an integrated energy solutions portfolio which includes gas production and liquefaction, as well as renewable power and energy solutions businesses.

With our joint venture partner, SGH Energy, we are preparing to develop the Crux natural gas field. This is to ensure a continued supply of gas to Shell's Prelude Floating Liquefied Natural Gas (FLNG) facility, which extracts, liquefies and stores natural gas at sea, before it is transferred and shipped to customers. Prelude FLNG is located around 475km north-north east of Broome in Western Australia.

As part of the Crux development, we will be preparing environmental approvals for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). Consultation with relevant persons is an important part of these approvals.

**If you are interested in learning more, Shell Australia invites you to join us at an Information Session, led by our Senior Management and Environment team, as follows;**

**Date:** Wednesday 17 May 2023      **Time:** 13.00 – 14.00

**Location:** GTNT Group- Harrison Room,  
38 Woods St, Darwin City NT 0800

Lunch provided.

**For more information please visit:**  
[www.shell.com.au/crux](http://www.shell.com.au/crux)



CRUX PROJECT JOINT VENTURE PARTNER

**SGH** | Energy

**Appendix A - 4.06 Community drop-in session social media  
post**



Shell

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Shell is preparing to develop the Crux natural gas field and is looking to hear from people in Derby who have functions, interests or activities that may be affected. If you are interested in learning more, we invite you to join us at a community drop-in session on Tuesday 4 April 2023, between 7.30am to 6.00pm, at Derby Professional Centre – Conference Room, 2 Clarendon Street.



shell.com.au

**Come and talk to us  
about the Crux Project**

[Learn more](#)

👍 🗨️ 9

1 comment 4 shares



Like



Comment



Share



## **Appendix A - 5.01 Community Briefing - Broome**



# Shell in Australia Community Briefing

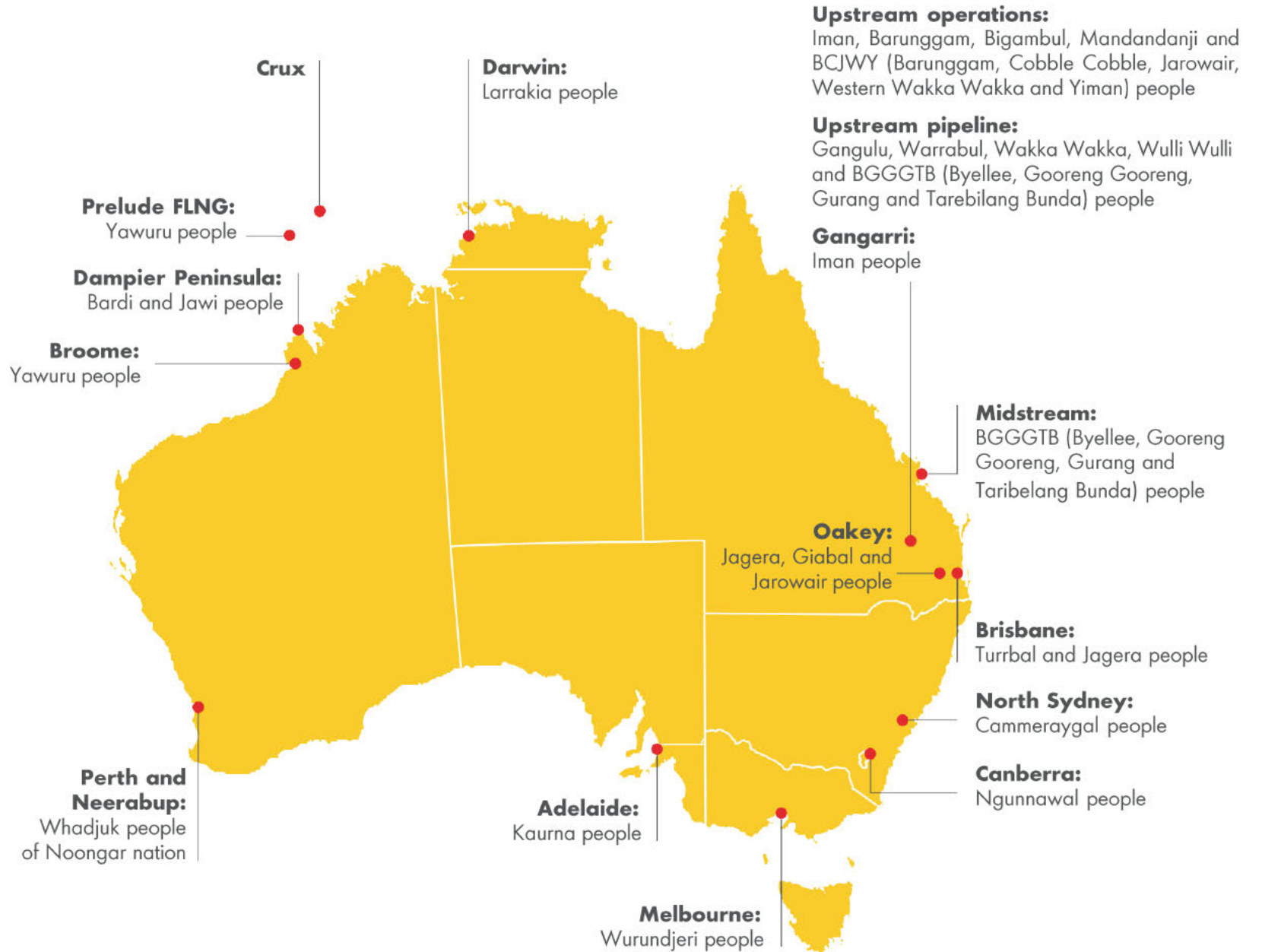
## Broome

# Agenda

Time	Agenda Item	Presenter
1.00pm	Introduction	Dani Tassone
1.05pm	Welcome to Country	Dianne Appleby
1.15pm	Welcome- why we are hear today, context setting	Bruce Lockyer
1.25pm	Asset and project overview	Bruce Lockyer
1.35-1.50	Environmental Plan Presentation Crux Development Drilling EP Crux Installation and Cold Commissioning EP  Additional Environmental Plans: Crux Seabed Survey Crux Template Installation EP	Bruce Lockyer/Nathan Waugh
1.50-2.00pm	Q&A	Bruce Lockyer/Nathan Waugh
2.00pm	Light lunch	All

## Shell Australia

respectfully acknowledges the many Traditional Owner groups of the lands and waters on which we operate and pay our respect to the Elders past, present and emerging.



# Definitions & cautionary note

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## Shell’s net carbon footprint

Also, in this presentation we may refer to Shell’s “Net Carbon Footprint” or “Net Carbon Intensity”, which include Shell’s carbon emissions from the production of our energy products, our suppliers’ carbon emissions in supplying energy for that production and our customers’ carbon emissions associated with their use of the energy products we sell. Shell only controls its own emissions. The use of the term Shell’s “Net Carbon Footprint” or “Net Carbon Intensity” are for convenience only and not intended to suggest these emissions are those of Shell plc or its subsidiaries.

## Shell’s net-zero Emissions Target

Shell’s operating plan, outlook and budgets are forecasted for a ten-year period and are updated every year. They reflect the current economic environment and what we can reasonably expect to see over the next ten years. Accordingly, they reflect our Scope 1, Scope 2 and Net Carbon Footprint (NCF) targets over the next ten years. However, Shell’s operating plans cannot reflect our 2050 net-zero emissions target and 2035 NCF target, as these targets are currently outside our planning period. In the future, as society moves towards net-zero emissions, we expect Shell’s operating plans to reflect this movement. However, if society is not net zero in 2050, as of today, there would be significant risk that Shell may not meet this target.

## Forward Looking Non-GAAP measures

This presentation may contain certain forward-looking non-GAAP measures such as **[cash capital expenditure]** and **[divestments]**. We are unable to provide a reconciliation of these forward-looking Non-GAAP measures to the most comparable GAAP financial measures because certain information needed to reconcile those Non-GAAP measures to the most comparable GAAP financial measures is dependent on future events some of which are outside the control of Shell, such as oil and gas prices, interest rates and exchange rates. Moreover, estimating such GAAP measures with the required precision necessary to provide a meaningful reconciliation is extremely difficult and could not be accomplished without unreasonable effort. Non-GAAP measures in respect of future periods which cannot be reconciled to the most comparable GAAP financial measure are calculated in a manner which is consistent with the accounting policies applied in Shell plc’s consolidated financial statements.

The contents of websites referred to in this presentation do not form part of this presentation.

We may have used certain terms, such as resources, in this presentation that the United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website [www.sec.gov](http://www.sec.gov).



# Why are we here today?

As part of the Environment Plan approvals process, Shell is undertaking consultation with relevant persons whose functions, interests or activities may be affected by the activities we are proposing in relation to the development of the Crux project.

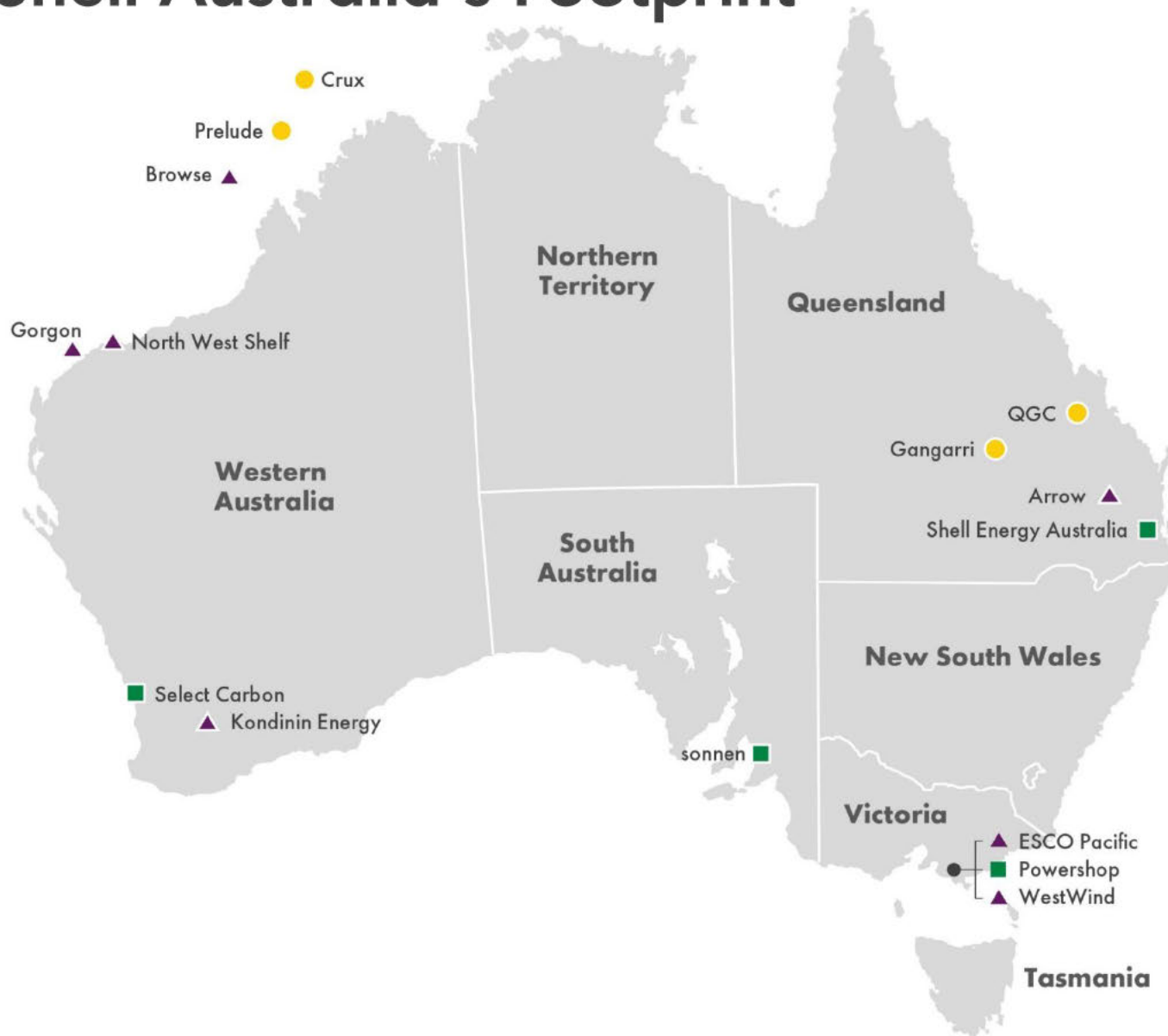
Shell is here to consult on the **Development Drilling Environmental Plan and Crux Installation and Cold Commissioning Environment Plan**

For your awareness we are currently consulting on 2 other Environmental Plans. Broome is not within the planning area of these activities

1. Seabed Survey Environment Plan
2. Drilling Template Environment Plan



# Shell Australia's Footprint



## SHELL OPERATED

● Crux	82%
● Gangarri	100%
● Prelude	67.5%
● QGC	75%

## WHOLLY OWNED SUBSIDIARIES

■ Powershop	100%
■ Select Carbon	100%
■ Shell Energy Australia	100%
■ sonnen	100%

## NON-OPERATED

▲ Arrow	50%
▲ Browse	27%
▲ ESCO Pacific	49%
▲ Gorgon	25%
▲ Kondinin Energy	50%
▲ North West Shelf	16.67%
▲ WestWind	49%

# Prelude – Overview

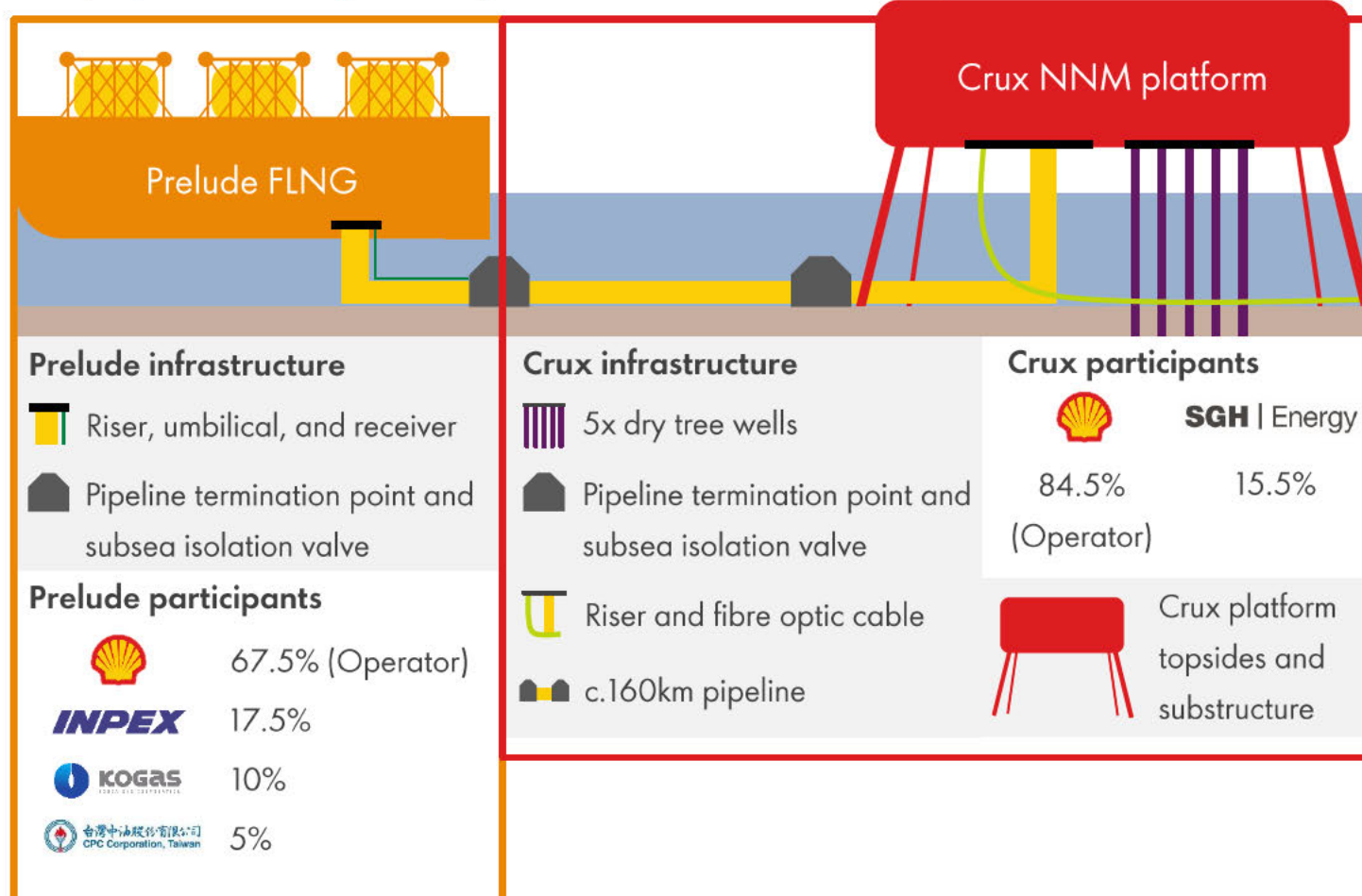
- Prelude is a Floating Liquefied Natural Gas (FLNG) project located 475km north-northeast of Broome, Western Australia, in the Browse Basin.
- The Prelude FLNG facility is moored over the Prelude gas field in 250m water depth and more than 200km from the coastline.
- Prelude produces LNG, LPG and condensate.
- Prelude has an onshore supply base in Darwin.
- Crux has a supply base in Broome (utilized for drilling activities)
- The Prelude FLNG facility is operated by Shell Australia in joint venture with Inpex, OPIC and Kogas.
- The Prelude Joint Venture has executed agreements to allow for processing of Crux hydrocarbons, which are expected to commence in 2027.



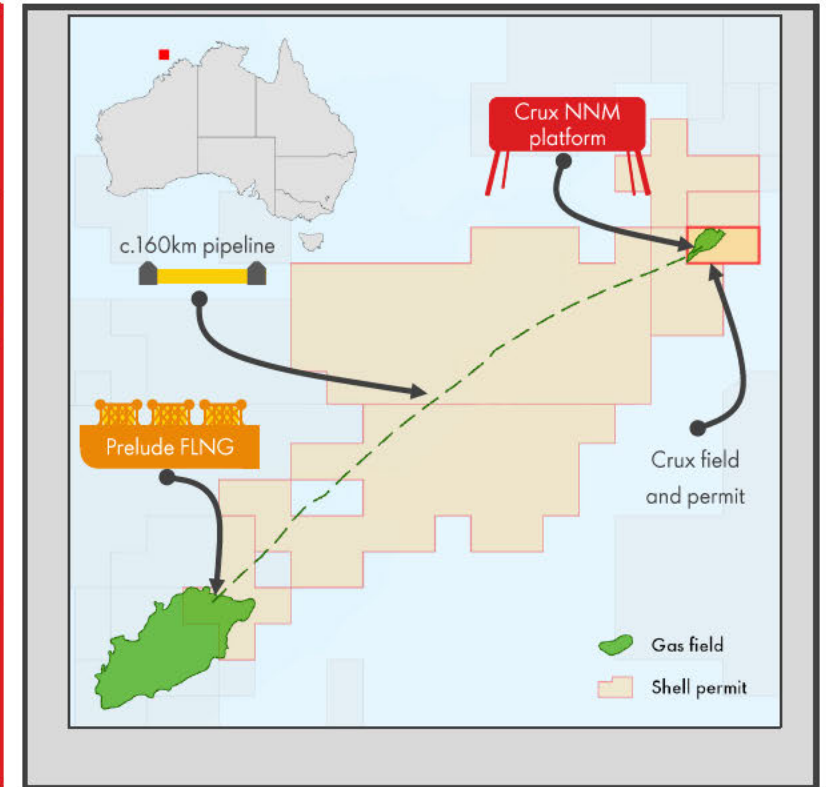
# Prelude and Crux

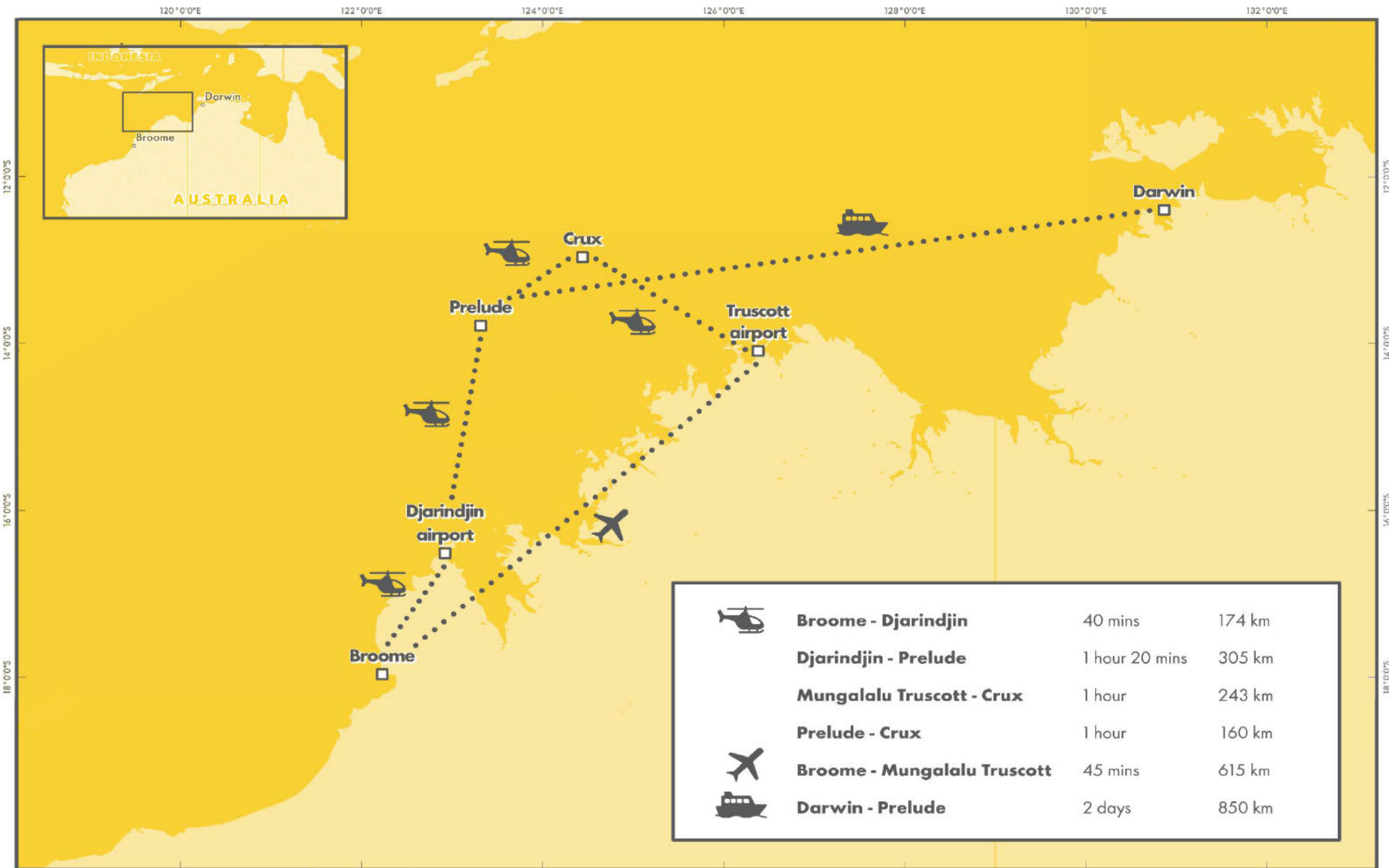
Crux will leverage Prelude FLNG's existing infrastructure to its fullest extent to maximise capital efficiency and deliverability

## Crux project boundary and key infrastructure under development



## Crux field overview

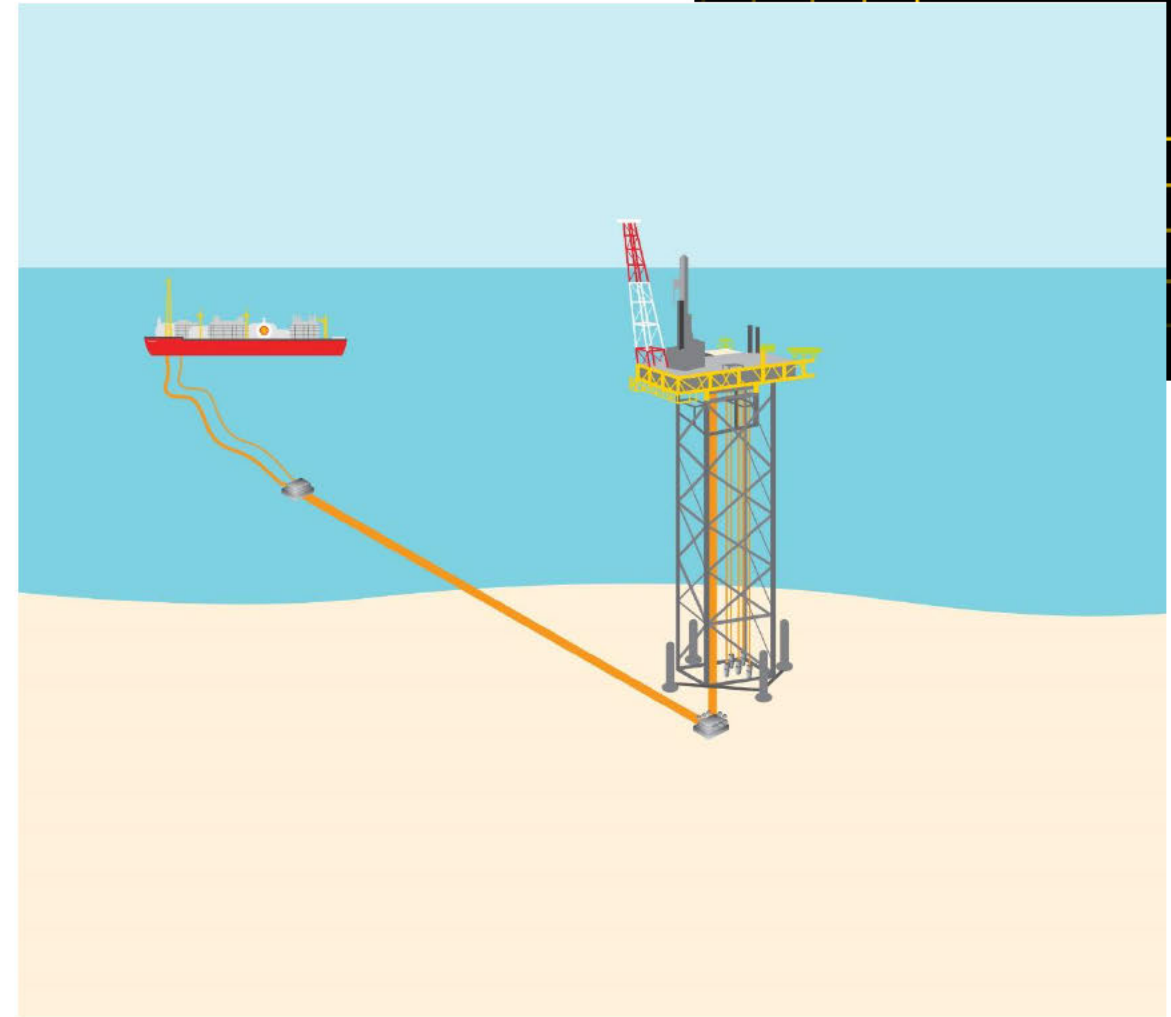






# Crux update

- In May 2022, Shell Australia and SGH Energy took final investment decision to approve the development of Crux.
- The project is an important longer term backfill opportunity for the existing Prelude FLNG facilities. The proposed concept is an unmanned platform with minimal facilities, remotely operated from the Prelude FLNG.
- The project aligns with Shell's strategy and forms an important part of Shell's gas portfolio and will help meet the needs of gas users as the energy market transitions to a lower carbon future, noting the expected increasing demand for natural gas, renewables, low and zero carbon technologies, and the criticality of security in energy supply.
- The natural gas from Crux and Prelude will be a key part of how we help move Asian customers from coal to gas as a cleaner burning fuel.

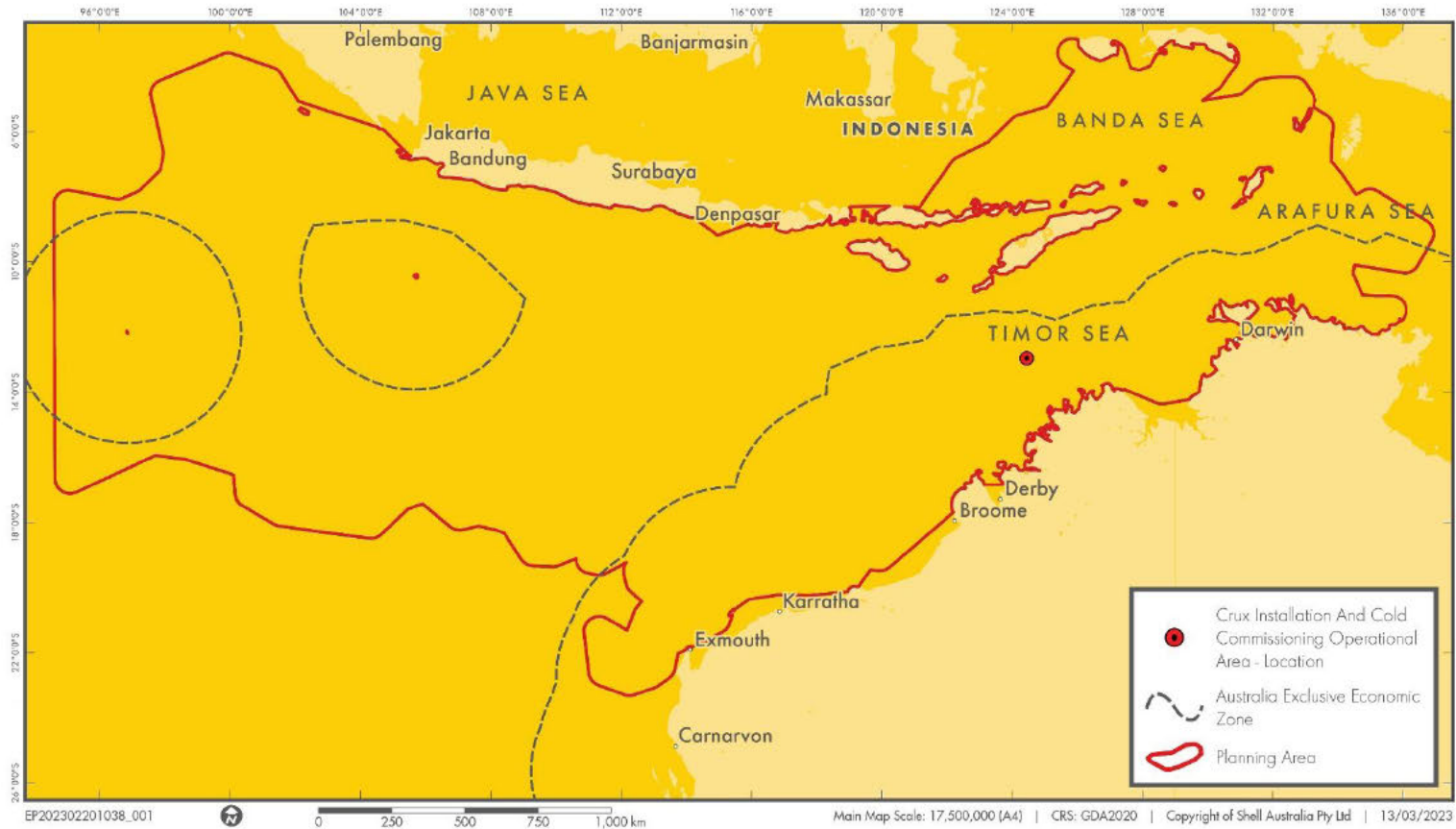


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Crux Video to be played



### 3. Crux Development Drilling Environment Plan



Shell is planning to drill five production wells through a drilling template and suspend them. The suspended wells will be commissioned once the Crux facility has been installed.

#### Timing:

- Expected Mobile Offshore Drilling Unit Operations – End 2023 - early 2024.
- Expected temporary well suspension period, approximately 2-3 years. Scope completed no later than the end of 2025

## 4. Activities Related to Crux Development Drilling Environment Plan

### ACTIVITY DESCRIPTION

The Crux Drilling Environment Plan includes provision for the installation of guideposts and five deviated production wells via the preinstalled drilling template. The location of the drill center has been selected to optimise well length and reservoir penetration, and for avoidance of any potential subsurface hazards.

- **The guideposts:** ensure that the Crux substructure and topsides are accurately positioned over the drilling template when installed during the subsequent installation campaigns. The guideposts will remain on location at the seabed for the life of the asset. The drilling template and guideposts have an approximate structural footprint of Length 28 m X Width 9 m X Height 10 m
- **The wells:** will be drilled and suspended from a Mobile Offshore Drilling Unit, prior to installation of the Crux Substructure and Topsides. They will be drilled from a single drill center, via the pre-installed drilling template. The wells will be suspended and left in-situ with well completions planned to occur following installation of the Crux platform.
- **Mobile Offshore Drilling Unit:** This will be a semi-submersible Mobile Offshore Drilling Unit – which will be held in position by anchor spread.

The development drilling program will be supported by a range of services including helicopter transfers from mainland Australia, a dedicated installation vessel, four anchor handling, tug and support vessels and remotely operated vehicles undertaking inspection, maintenance and repair activities.



# Crux Development Drilling Environment Plan

Aspect	Proposed Controls
<b>Planned</b>	
<b>Physical Presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>Australian Hydrographic Office Notice to Mariners</li> </ul>
<b>Lighting</b>	<ul style="list-style-type: none"> <li>External lighting on vessels minimised to that required for navigation, safety of deck operations and security considerations</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>Apply EPBC policy statement 2.1 – Part B (seismic survey guidelines) to geophysical survey activities as applicable to the scope. This is planned to be applied using trained crew members.</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>EPBC Regulations Part 8.1 – Interacting with cetaceans</li> <li>Marine fauna observations</li> </ul>
<b>Discharge of liquid effluent</b>	<ul style="list-style-type: none"> <li>Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations</li> <li>Chemical Management Process for chemical assessment and selection</li> </ul>
<b>Atmospheric emissions</b>	<ul style="list-style-type: none"> <li>Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations.</li> <li>Relevant vessels to have a valid International Air Pollution Prevention Certificate</li> <li>Use of low sulphur fuel when possible</li> </ul>
<b>Greenhouse gas emissions</b>	<ul style="list-style-type: none"> <li>Comply with International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>Comply with the National Greenhouse and Energy Reporting Act (2007) and National Greenhouse and Energy Reporting Regulations (2008)</li> </ul>
<b>Waste management</b>	<ul style="list-style-type: none"> <li>Discharge of waste from vessels will comply with relevant International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>Waste management procedures</li> <li>Waste tracking process</li> <li>The management and disposal of any quarantine risk material will be in accordance with state and commonwealth regulations</li> </ul>

Key aspect and control

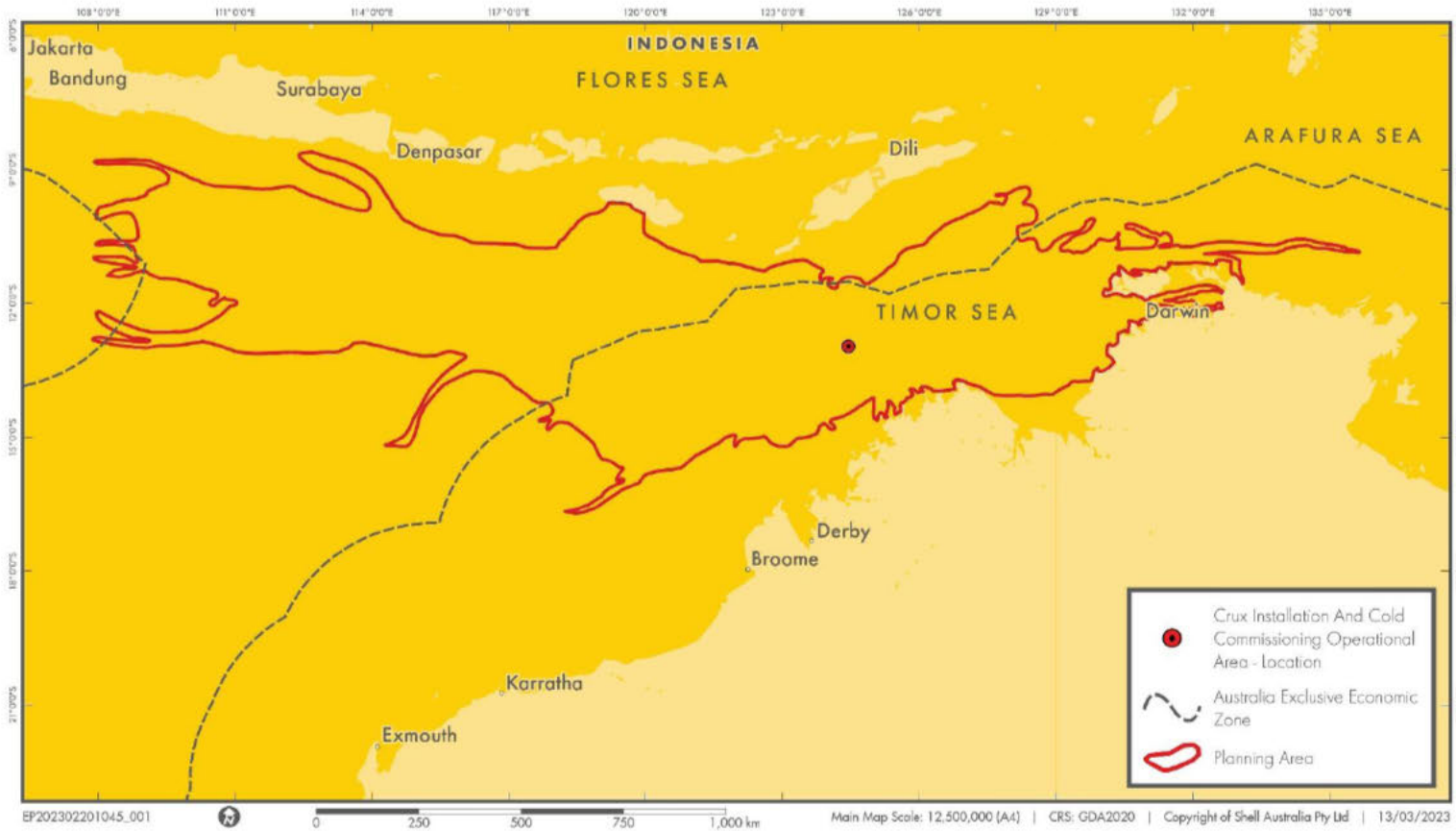
## Discharge of liquid effluent (including drilling discharges)

The drilling activity includes discharges of liquids and materials to the marine environment

Key Controls:

- Shell Chemical Management Process:
- Chemicals selected for use in accordance with the Shell Chemical Management Process to minimise potential environmental risks.
- Chemicals that are planned for discharge to sea are substitution warning free and Gold, Silver, D, or E rated through the Offshore Chemical Notification Scheme (OCNS), or are considered to Pose Little or No Risk to the Environment (PLONOR) (listed by the Oil Spill Prevention, Administration and Response (OSPAR) Commission), or have a complete ALARP assessment.

# 4. Crux Installation and Cold Commissioning Environment Plan



Shell is planning to install the Crux Jacket and Topsides which will be fixed to the seabed.

The facility will commence cold commissioning once installation is complete.

**Duration:** 360 days

**Timing:** 1 August 2024 – 31 Dec 2028\*

# Crux Installation and Cold Commissioning Environment Plan

Aspect	Proposed Controls
<b>Planned</b>	
<b>Physical Presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>Australian Hydrographic Office Notice to Mariners</li> </ul>
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## Noise

Scope include piling campaign which results in under water noise.

### Key controls:

Start-up and shutdown procedures which consider approach by sensitive species and actions taken when species come too close.



# Environmental Management Unplanned – All Environment Plan

## Unplanned

### Emergency Events – Hydrocarbon Spill

- Align with relevant International Convention for the Prevention of Pollution from Ships requirements and subsequent regulations
- Valid Shipboard Oil Pollution Emergency Plan or Shipboard Marine Pollution Emergency Plan (as appropriate for vessel classification)
- Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea
- Offshore Vessel Inspection Database (OVID) process
- Australian Hydrographic Office Notice to Mariners
- NOPSEMA accepted Environment Plan and Oil Pollution Emergency Plan (OPEP) in place
- Relevant Persons consultation process
- Vessel Maintenance management system

### Introduction of Invasive Marine Species from Vessels

- Ballast water exchange operations will comply with the international conventions and associated national regulations.
- Biofouling management for vessels in accordance with state, national and international biofouling management guidelines
- Biofouling management in compliance with state and commonwealth regulations
- Vessels (of appropriate class) will have a valid International Anti-Fouling System Certificate
- Maintenance of a minimum 1 km buffer from shoals and the Operational Area



# Q&A

**CONTACT US** Community Hotline: 1800 059 152

Email: [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com)

[www.shell.com.au/crux](http://www.shell.com.au/crux)

Shell welcomes any feedback on Environment Plan submissions, including requests for further information. If you have functions, interests or activities that may be affected by any of our projects, Shell Australia invites you to get in touch.

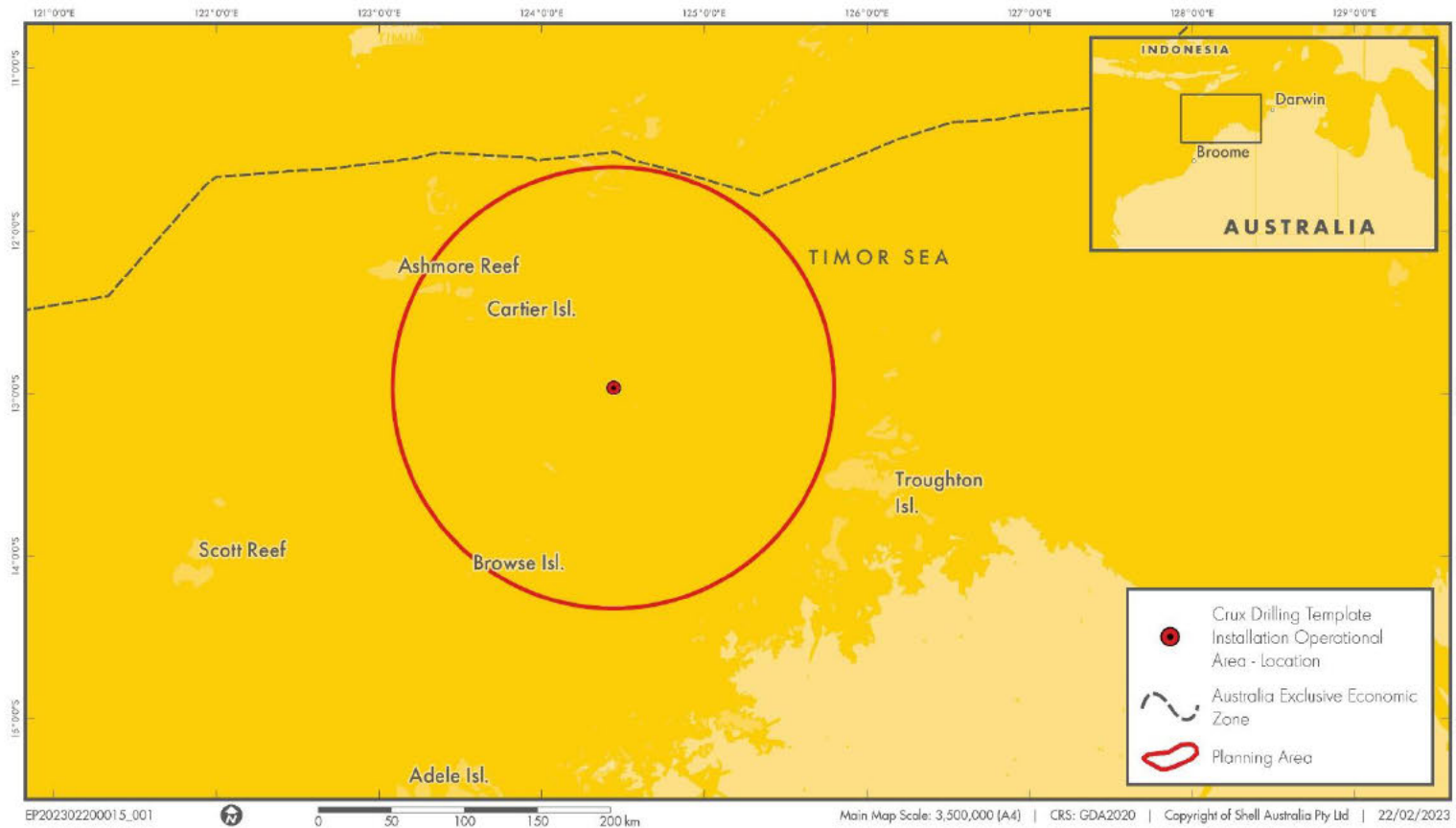




# Additional Slides

## 2. Crux Template Installation Environment Plan

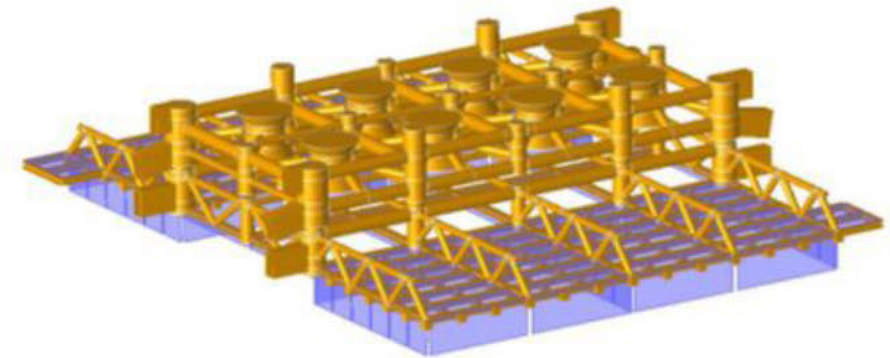
A template which will act as a guide for the drill bit during drilling operations



Shell is planning to lower a fabricated steel structure onto the seabed, which will assist with orienting and locating the drilling activities and the installation of the Crux jacket.

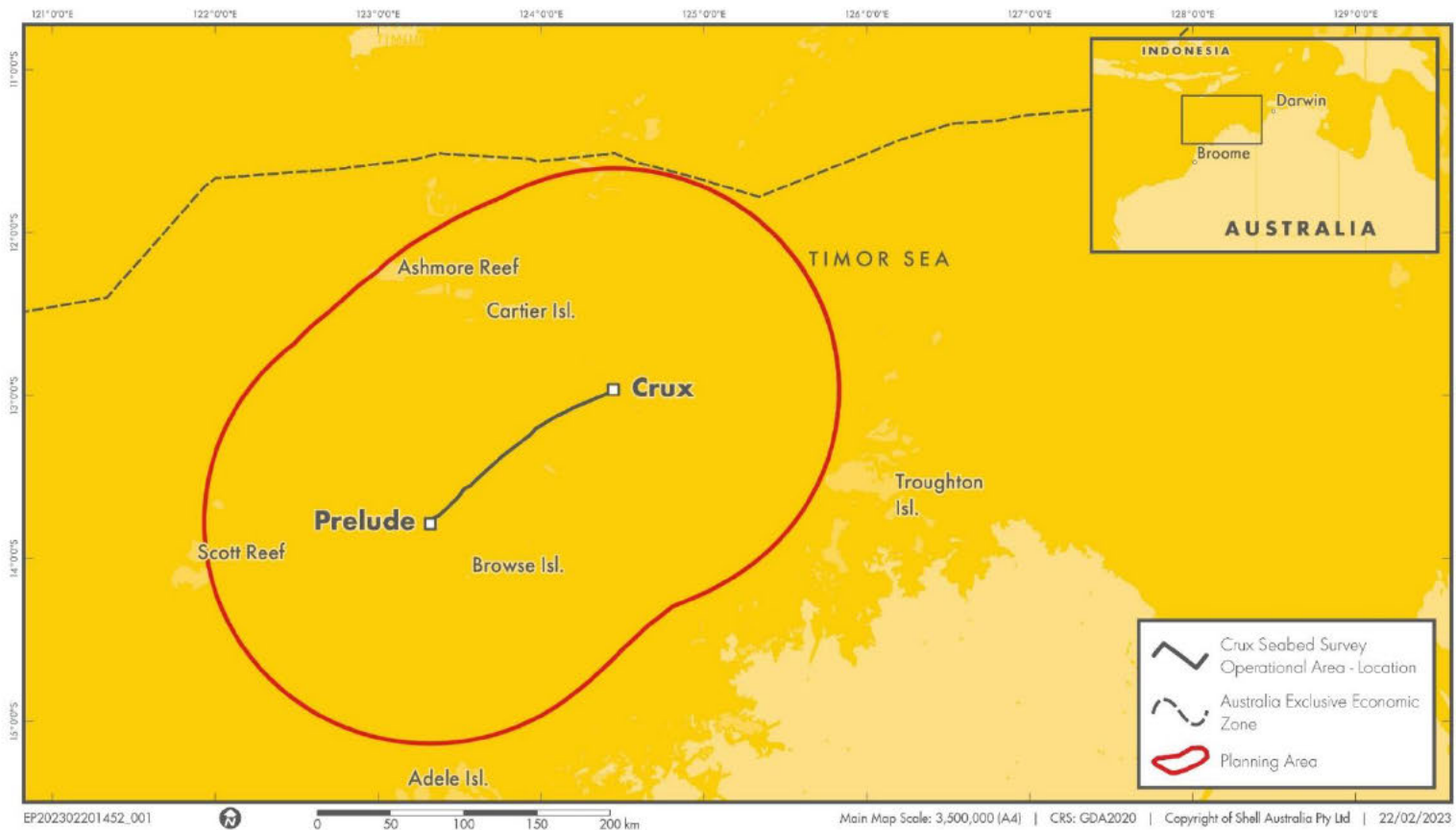
**Duration:** <7 days

**Timing:** 1 September 2023 – 1 April 2024\*



# 1. Crux Seabed Survey Environment Plan

Investigating the sub-seabed conditions



Shell is planning to carry out a survey of the pipeline route and terminals connecting the Crux and Prelude facilities.

A vessel will traverse the pipeline route, towing survey and monitoring equipment.

**Duration:** <5 days

**Timing:** 1 May – 31 December 2023\*

## **Appendix A - 5.02 Industry Briefing - Perth**





# Shell in Australia Industry Briefing

# Agenda

Agenda Item	Presenter
Introductions	Nandini Pereira
Acknowledgement of Country & welcome	Brendan Herbst
Purpose of forum	Nandini Pereira
Asset and project overview	Rama Gunturi
Crux Seabed Survey Environment Plan overview	Andy Gowing
Crux Template Installation Environment Plan overview	Andy Gowing
Crux Development Drilling Environment Plan overview	Andy Gowing
Crux Installation and Cold Commissioning Environment Plan overview	Andy Gowing
Q&A	Nandini Pereira

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This presentation contains forward-looking statements (within the meaning of the U.S. Private Securities Litigation Reform Act of 1995) concerning the financial condition, results of operations and businesses of Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management’s current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Shell to market risks and statements expressing management’s expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as “aim”, “ambition”, “anticipate”, “believe”, “could”, “estimate”, “expect”, “goals”, “intend”, “may”, “milestones”, “objectives”, “outlook”, “plan”, “probably”, “project”, “risks”, “schedule”, “seek”, “should”, “target”, “will” and similar terms and phrases. There are a number of factors that could affect the future operations of Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this **[report]**, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell’s products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, judicial, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; (m) risks associated with the impact of pandemics, such as the COVID-19 (coronavirus) outbreak; and (n) changes in trading conditions. No assurance is provided that future dividend payments will match or exceed previous dividend payments. All forward-looking statements contained in this presentation are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Shell plc’s Form 20-F for the year ended December 31, 2021 (available at [www.shell.com/investor](http://www.shell.com/investor) and [www.sec.gov](http://www.sec.gov)). These risk factors also expressly qualify all forward-looking statements contained in this **[report]** and should be considered by the reader. Each forward-looking statement speaks only as of the date of this presentation, 27 April 2023. Neither Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this presentation.

## Shell’s net carbon footprint

Also, in this presentation we may refer to Shell’s “Net Carbon Footprint” or “Net Carbon Intensity”, which include Shell’s carbon emissions from the production of our energy products, our suppliers’ carbon emissions in supplying energy for that production and our customers’ carbon emissions associated with their use of the energy products we sell. Shell only controls its own emissions. The use of the term Shell’s “Net Carbon Footprint” or “Net Carbon Intensity” are for convenience only and not intended to suggest these emissions are those of Shell plc or its subsidiaries.

## Shell’s net-zero Emissions Target

Shell’s operating plan, outlook and budgets are forecasted for a ten-year period and are updated every year. They reflect the current economic environment and what we can reasonably expect to see over the next ten years. Accordingly, they reflect our Scope 1, Scope 2 and Net Carbon Footprint (NCF) targets over the next ten years. However, Shell’s operating plans cannot reflect our 2050 net-zero emissions target and 2035 NCF target, as these targets are currently outside our planning period. In the future, as society moves towards net-zero emissions, we expect Shell’s operating plans to reflect this movement. However, if society is not net zero in 2050, as of today, there would be significant risk that Shell may not meet this target.

## Forward Looking Non-GAAP measures

This presentation may contain certain forward-looking non-GAAP measures such as **[cash capital expenditure]** and **[divestments]**. We are unable to provide a reconciliation of these forward-looking Non-GAAP measures to the most comparable GAAP financial measures because certain information needed to reconcile those Non-GAAP measures to the most comparable GAAP financial measures is dependent on future events some of which are outside the control of Shell, such as oil and gas prices, interest rates and exchange rates. Moreover, estimating such GAAP measures with the required precision necessary to provide a meaningful reconciliation is extremely difficult and could not be accomplished without unreasonable effort. Non-GAAP measures in respect of future periods which cannot be reconciled to the most comparable GAAP financial measure are calculated in a manner which is consistent with the accounting policies applied in Shell plc’s consolidated financial statements.

The contents of websites referred to in this presentation do not form part of this presentation.

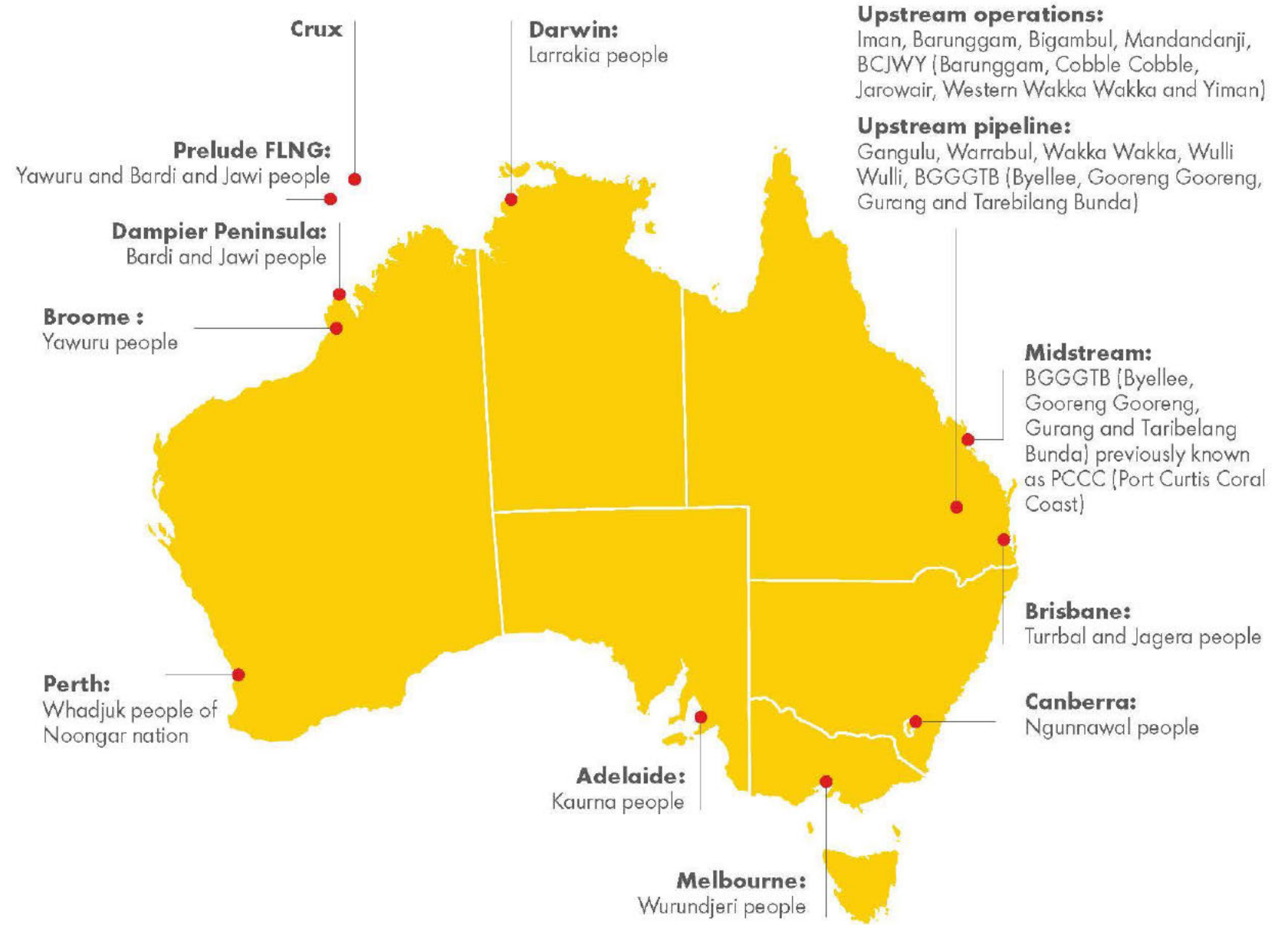
We may have used certain terms, such as resources, in this presentation that the United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575,



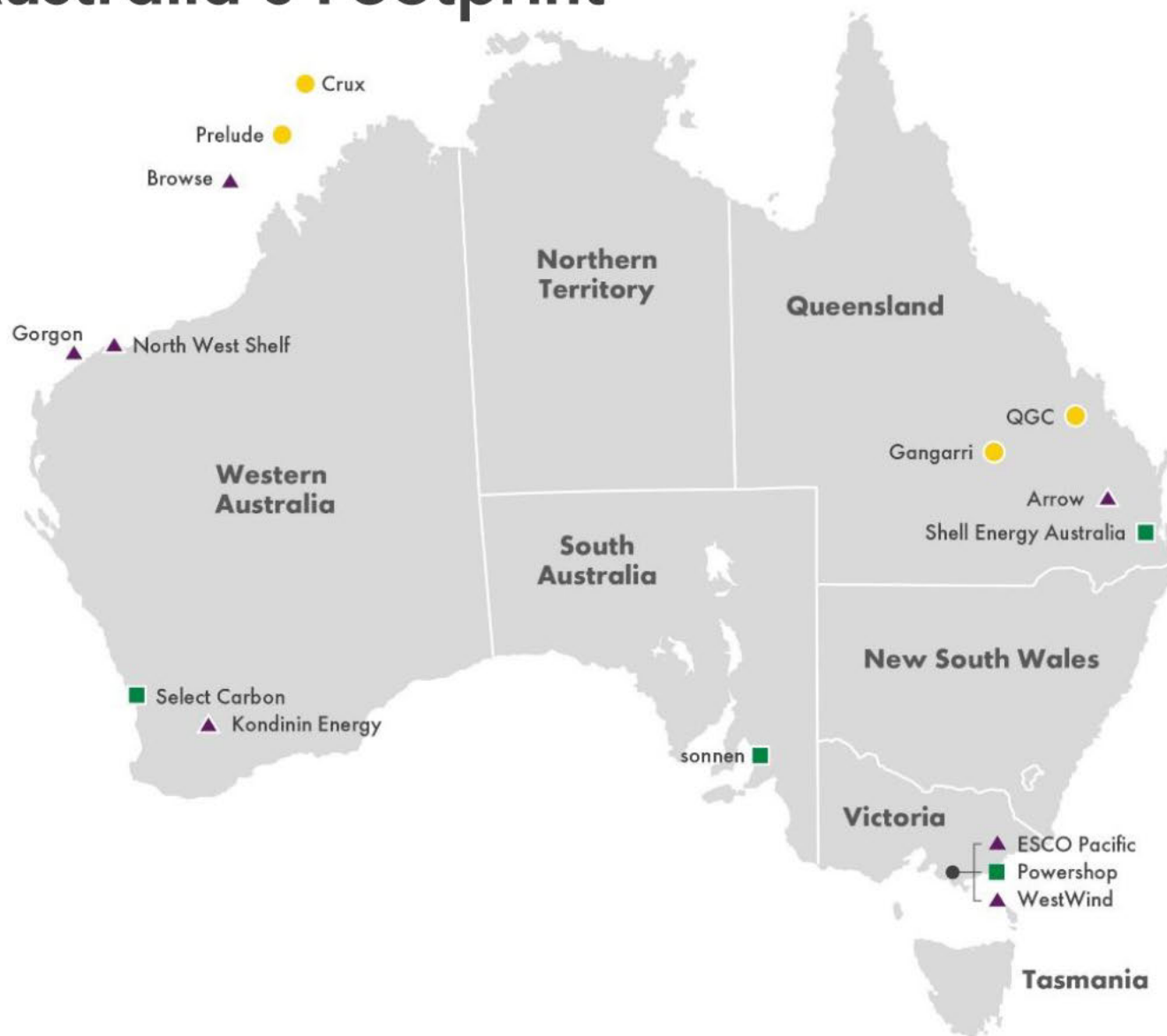


## Shell Australia

respectfully acknowledges the many Traditional Owner groups of the lands and waters on which we operate and pay our respect to the Elders past, present and emerging.



# Shell Australia's Footprint



## SHELL OPERATED

● Crux	82%
● Gangarri	100%
● Prelude	67.5%
● QGC	75%

## WHOLLY OWNED SUBSIDIARIES

■ Powershop	100%
■ Select Carbon	100%
■ Shell Energy Australia	100%
■ sonnen	100%

## NON-OPERATED

▲ Arrow	50%
▲ Browse	27%
▲ ESCO Pacific	49%
▲ Gorgon	25%
▲ Kondinin Energy	50%
▲ North West Shelf	16.67%
▲ WestWind	49%

# Why are we here today?

As part of the Environment Plan approvals process, Shell is undertaking consultation with relevant persons who may be impacted by the activities we are proposing in relation to the development of the Crux project.

We are consulting on four Environment Plans:

1. Seabed Survey Environment Plan
2. Drilling Template Environment Plan
3. Development Drilling Environment Plan
4. Crux Installation and Cold Commissioning Environment Plan



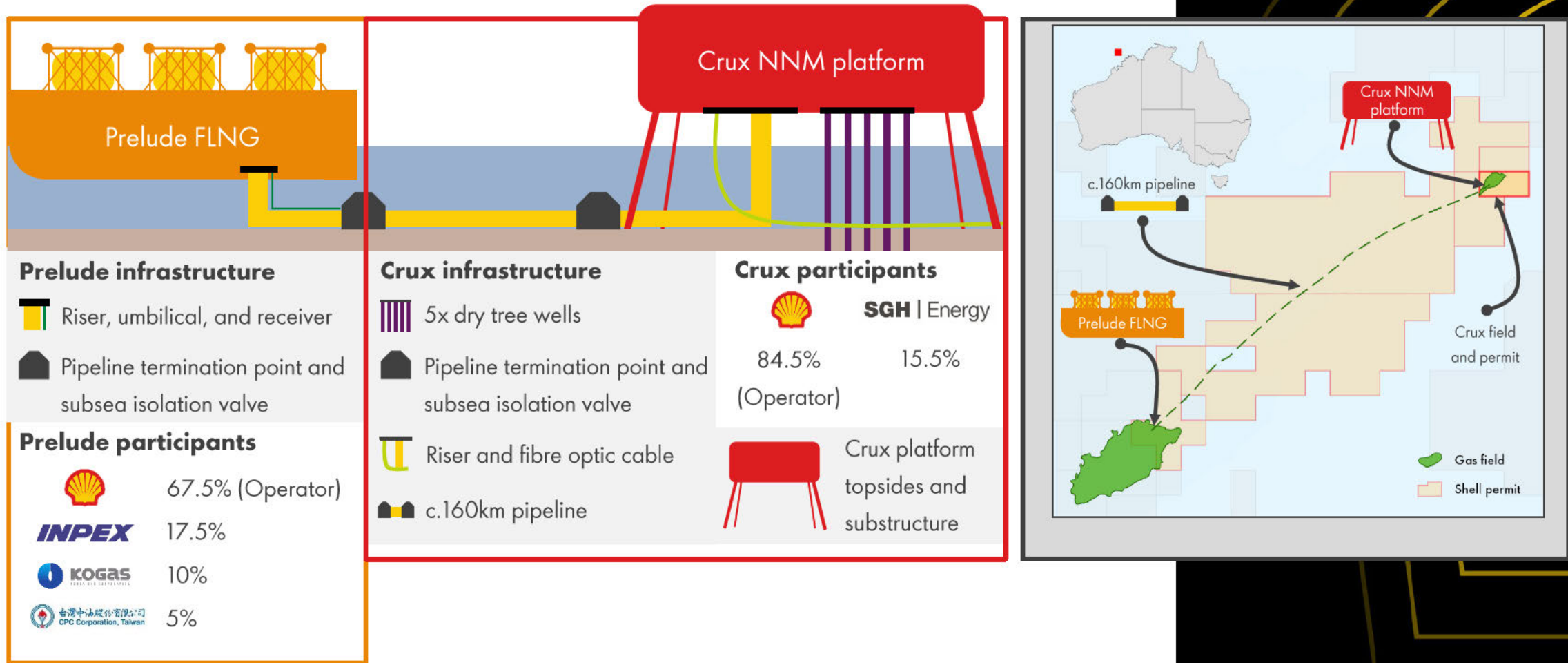
# Prelude – Overview

- Prelude is a Floating Liquefied Natural Gas (FLNG) project located 475km north-northeast of Broome, Western Australia, in the Browse Basin.
- The Prelude FLNG facility is moored over the Prelude gas field in 250m water depth and more than 200km from the coastline.
- Prelude produces LNG, LPG and condensate.
- Prelude has an onshore supply base in Darwin.
- The Prelude FLNG facility is operated by Shell Australia in joint venture with INPEX, OPIC and Kogas.
- The Prelude Joint Venture has executed agreements to allow for processing of Crux hydrocarbons, which are expected to commence in 2027.



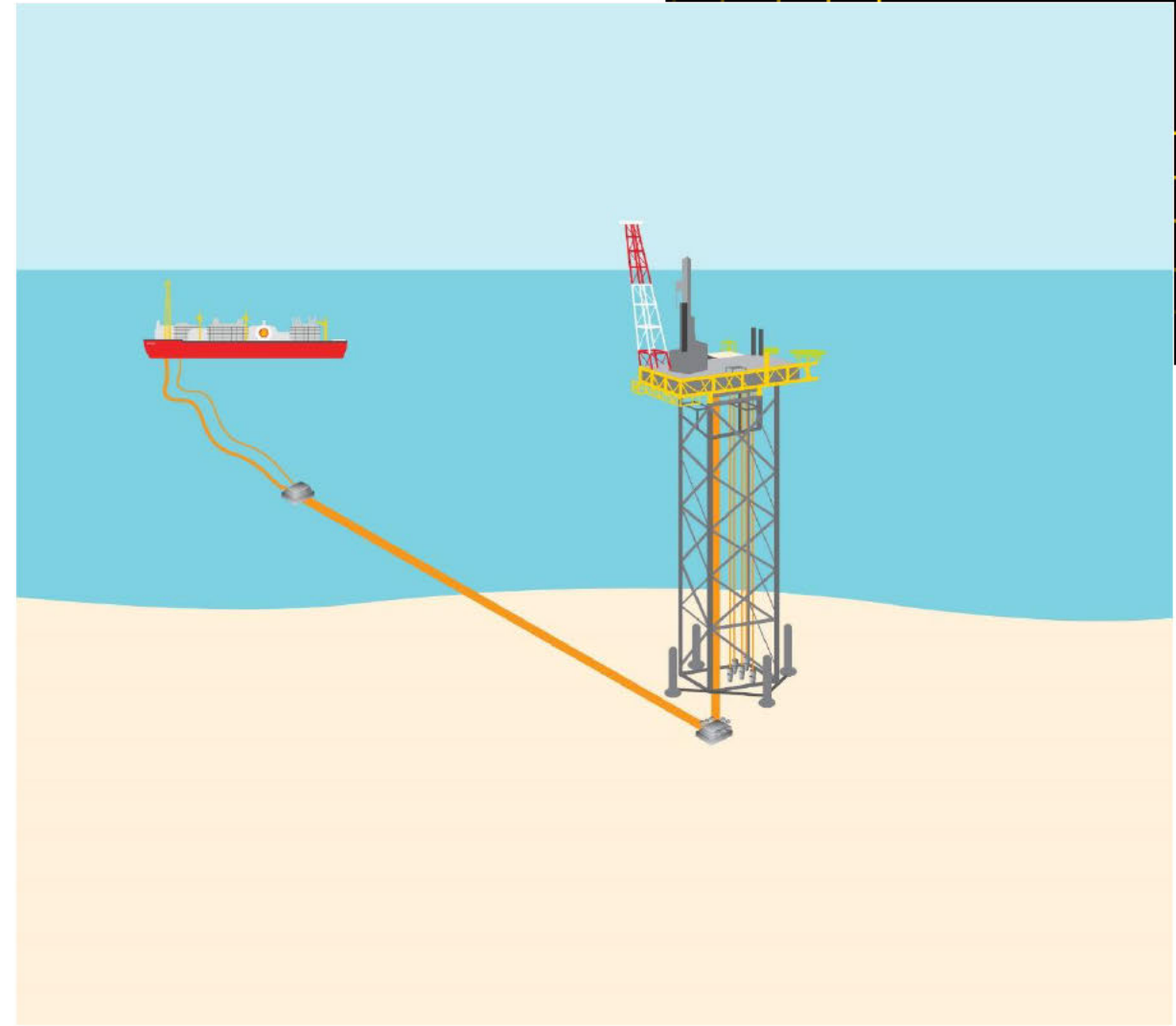
# Prelude and Crux

Crux will leverage Prelude FLNG's existing infrastructure to its fullest extent to maximise capital efficiency & deliverability



# Crux update

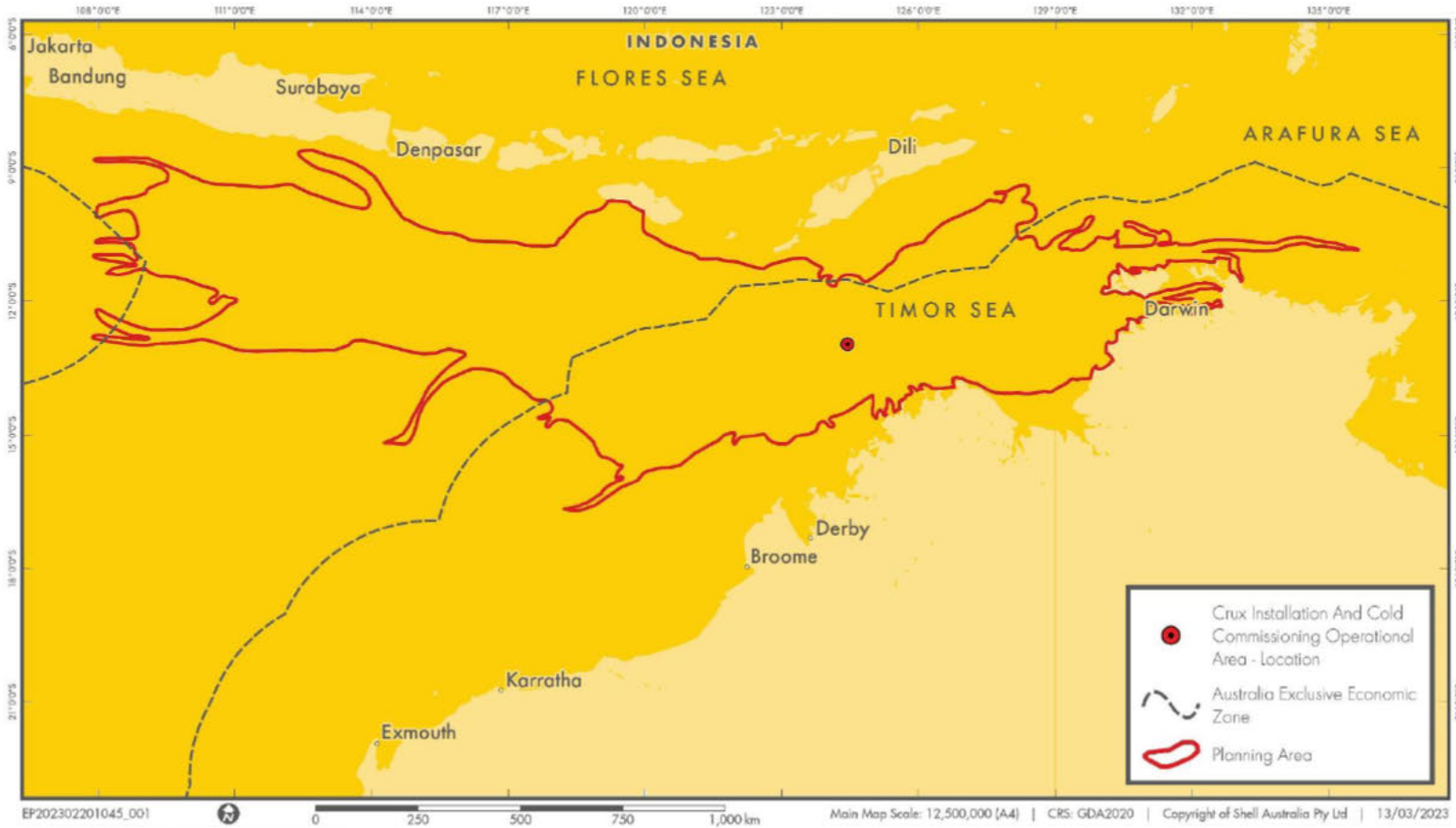
- In May 2022, Shell Australia and SGH Energy took final investment decision to approve the development of Crux.
- The project is an important longer term backfill opportunity for the existing Prelude FLNG facilities. The proposed concept is an unmanned platform with minimal facilities, remotely operated from the Prelude FLNG.
- The project aligns with Shell's strategy and forms an important part of Shell's gas portfolio and will help meet the needs of gas users as the energy market transitions to a lower carbon future, noting the expected increasing demand for natural gas, renewables, low and zero carbon technologies, and the criticality of security in energy supply.
- The natural gas from Crux and Prelude will be a key part of how we help move Asian customers from coal to gas as a cleaner burning fuel.





# Crux Environment Plans

Each EP describes controls to mitigate both the planned impacts and unplanned risks to as low and reasonably practicable



## Planned impacts

Includes activities that result in physical impact to the environment:

- Disturbances to the seabed
- Drilling Fluid Discharges
- Noise generated from construction activities.

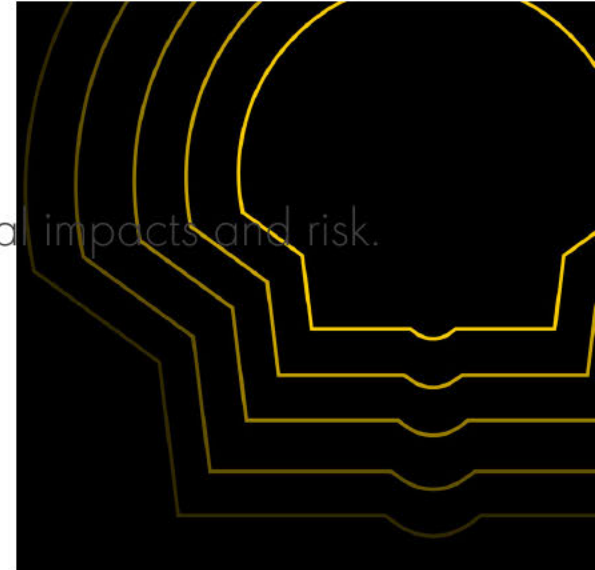
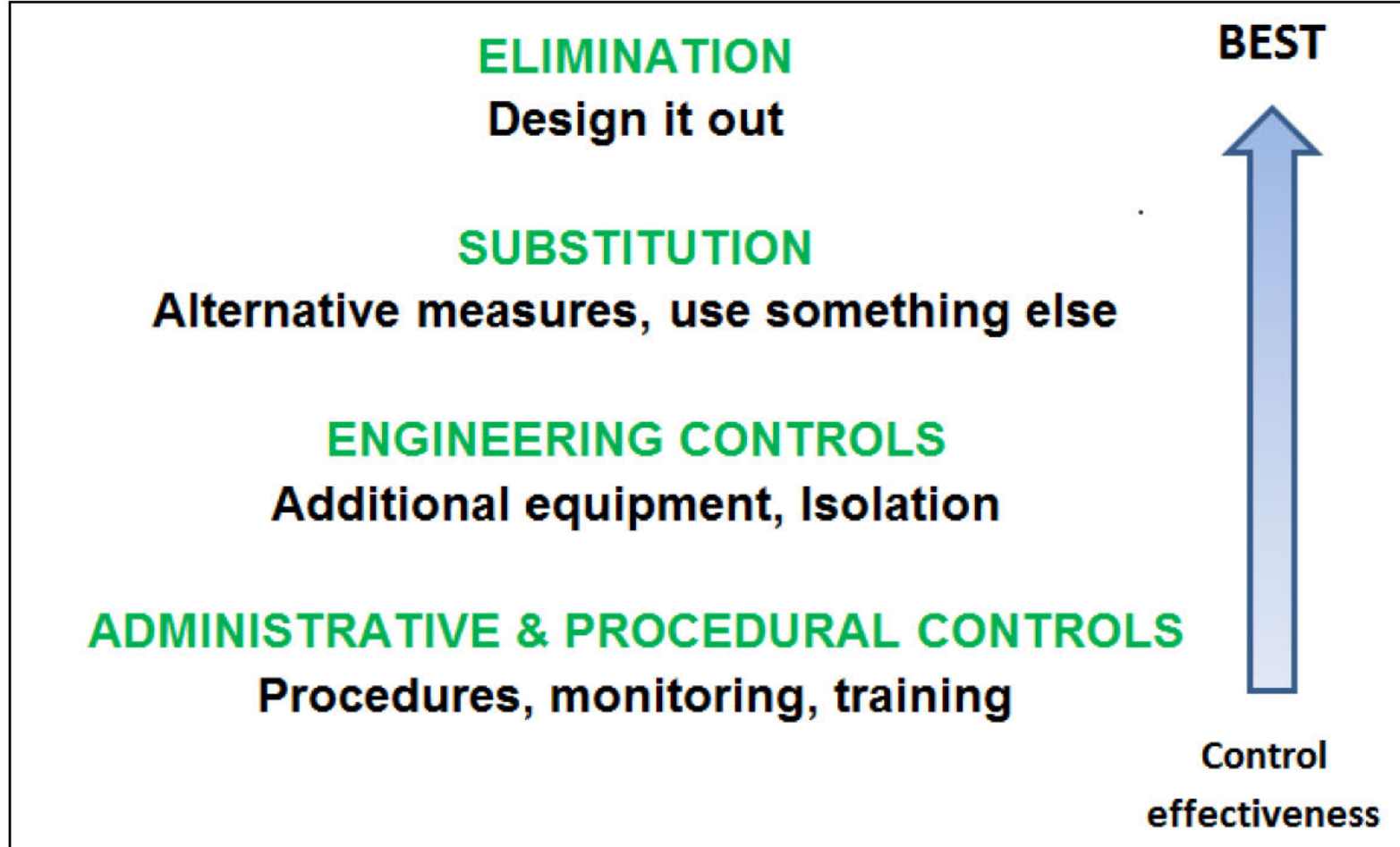
## Unplanned risks

Includes events that may occur as a result of an incident:

- Release of diesel as a result of a vessel collision.
- Release of hydrocarbons as a result of loss of well control.

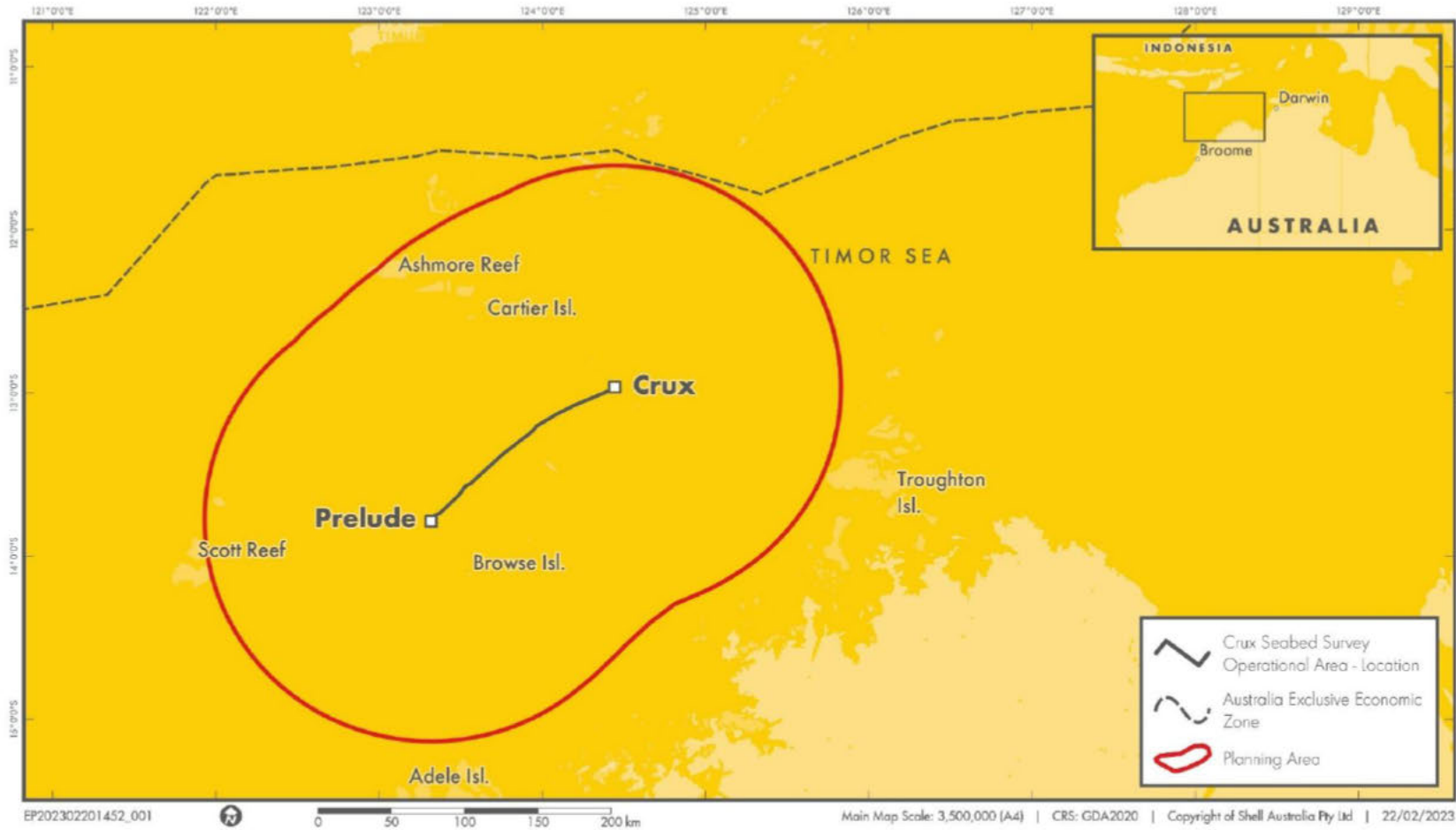
# Crux Environment Plans

Shell applies a hierarchy of control process to establish controls which mitigate environmental impacts and risk.



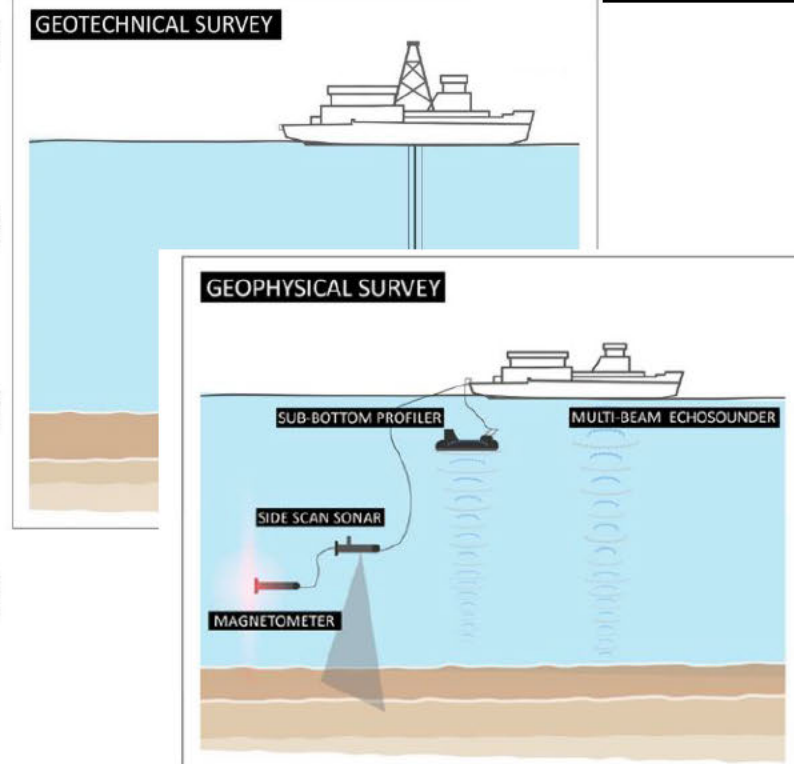
# 1. Crux seabed survey environment plan

To carry out a survey of the pipeline route and terminals connecting the Crux and Prelude facilities.



Duration: <5 days

Timing: 1 May – 31 December 2023\*





# 1. Crux seabed survey environment plan

## Key aspects and controls

### Key aspect: Noise

The geophysical survey equipment emits impulsive noise which can affect marine fauna if in proximity.

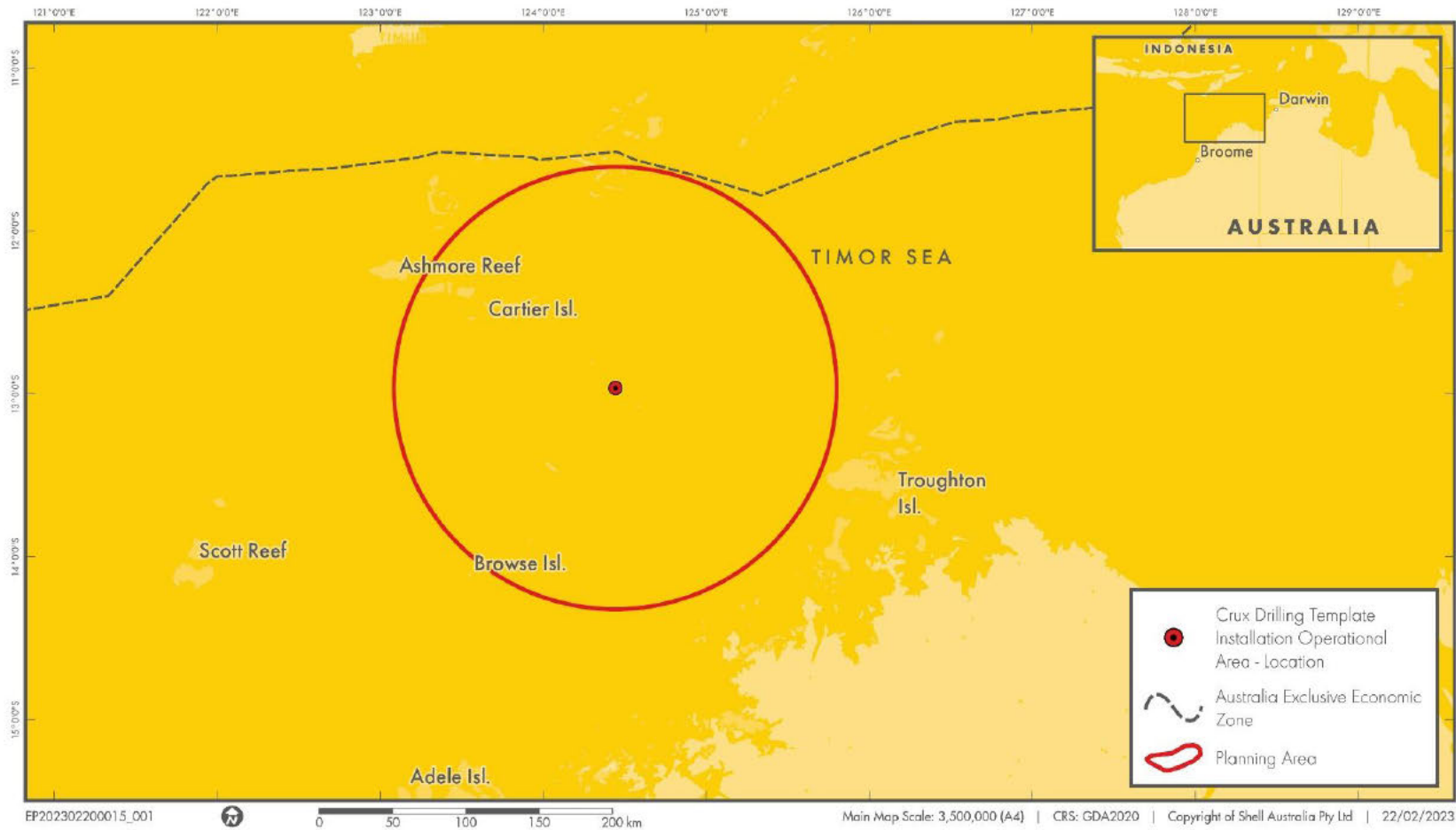
### Proposed controls: Observations

- Pre-start visual observations out to 3 km for 30 minutes.
- If a whale or turtle is observed during the pre-start observations, delay start up for 30 minutes.
- If no whales or turtles are observed, activate acoustic equipment.

Aspect	Proposed control
<b>Planned</b>	
<b>Physical Presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>■ Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>■ Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>■ Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>■ Australian Hydrographic Office Notice to Mariners</li> </ul>
<b>Lighting</b>	<ul style="list-style-type: none"> <li>■ External lighting on vessels minimised to that required for navigation, safety of deck operations and security considerations</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>■ Apply EPBC policy statement 2.1 – Part B (seismic survey guidelines) to geophysical survey activities as applicable to the scope. This is planned to be applied using trained crew members.</li> <li>■ Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>■ EPBC Regulations Part 8.1 – Interacting with cetaceans</li> <li>■ Marine fauna observations</li> </ul>
<b>Discharge of Liquid Effluent</b>	<ul style="list-style-type: none"> <li>■ Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations</li> <li>■ Chemical Management Process for chemical assessment and selection</li> </ul>
<b>Atmospheric Emissions</b>	<ul style="list-style-type: none"> <li>■ Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations.</li> <li>■ Relevant vessels to have a valid International Air Pollution Prevention Certificate</li> <li>■ Use of low sulphur fuel when possible</li> </ul>
<b>Greenhouse Gas Emissions</b>	<ul style="list-style-type: none"> <li>■ Comply with International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>■ Comply with the National Greenhouse and Energy Reporting Act (2007) and National Greenhouse and Energy Reporting Regulations (2008)</li> </ul>
<b>Waste Management</b>	<ul style="list-style-type: none"> <li>■ Discharge of waste from vessels will comply with relevant International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>■ Waste management procedures</li> <li>■ Waste tracking process</li> <li>■ The management and disposal of any quarantine risk material will be in accordance with state and commonwealth regulations</li> </ul>

## 2. Crux template installation environment plan

to lower a fabricated steel structure onto the seabed, which will assist with orienting and locating the drilling activities and the installation of the Crux jacket.

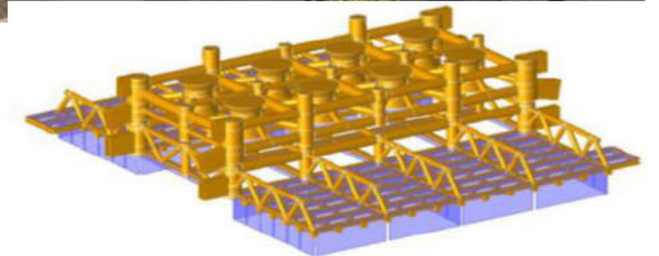


Duration: <7 days

Timing: 1 September 2023 – 1 April 2024\*

Dimensions: 19m length, 14m width, 4m high and covers a seabed footprint of 266m<sup>2</sup>.

It weights 200 tonnes





## 2. Crux template installation environment plan

### Key aspects and controls

#### Key aspect: Physical Presence

The drilling template will be left on the seabed for the life of Crux.

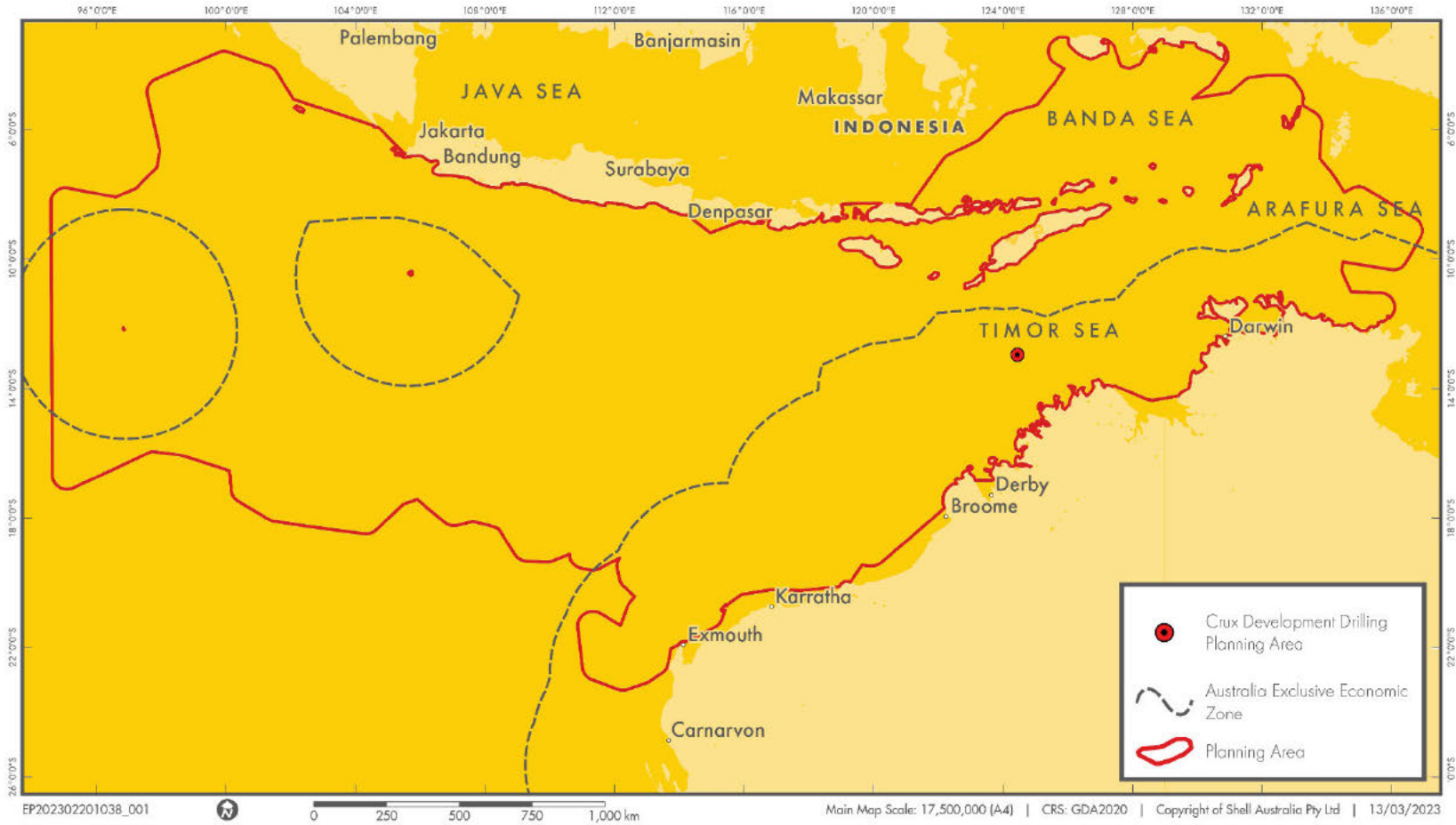
#### Proposed controls:

- AHS is given notification in advance to enable a 'Notice to Mariners' to be issued prior to petroleum activities occurring within the operational area
- Relevant persons consultation – other marine users will be made aware of the location of the drilling template via Shells consultation process.

Aspect	Proposed Controls
<b>Planned</b>	
<b>Physical presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>■ Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>■ Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>■ Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>■ Australian Hydrographic Office Notice to Mariners</li> </ul>
<b>Lighting</b>	<ul style="list-style-type: none"> <li>■ External lighting on vessels minimised to that required for navigation, safety of deck operations and security considerations</li> </ul>
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<b>Discharge of liquid effluent</b>	<ul style="list-style-type: none"> <li>■ Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations</li> <li>■ Chemical Management Process for chemical assessment and selection</li> </ul>
<b>Atmospheric emissions</b>	<ul style="list-style-type: none"> <li>■ Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations.</li> <li>■ Relevant vessels to have a valid International Air Pollution Prevention Certificate</li> <li>■ Use of low sulphur fuel when possible</li> </ul>
<b>Greenhouse gas emissions</b>	<ul style="list-style-type: none"> <li>■ Comply with International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>■ Comply with the National Greenhouse and Energy Reporting Act (2007) and National Greenhouse and Energy Reporting Regulations (2008)</li> </ul>
<b>Waste management</b>	<ul style="list-style-type: none"> <li>■ Discharge of waste from vessels will comply with relevant International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>■ Waste management procedures</li> <li>■ Waste tracking process</li> <li>■ The management and disposal of any quarantine risk material will be in accordance with state and commonwealth regulations</li> </ul>

### 3. Crux development drilling environment plan

Shell is planning to drill five production wells through a drilling template and suspend them. The suspended wells will be commissioned once the Crux facility has been installed.



#### Timing:

- Expected Mobile Offshore Drilling Unit Operations – End 2023 - early 2024.
- Expected temporary well suspension period, approximately 2-3 years. Scope completed no later than the end of 2025\*





# 3. Crux development drilling environment plan

## Key aspects and controls

**Key aspect:** Discharge of liquid effluent (including drilling discharges)

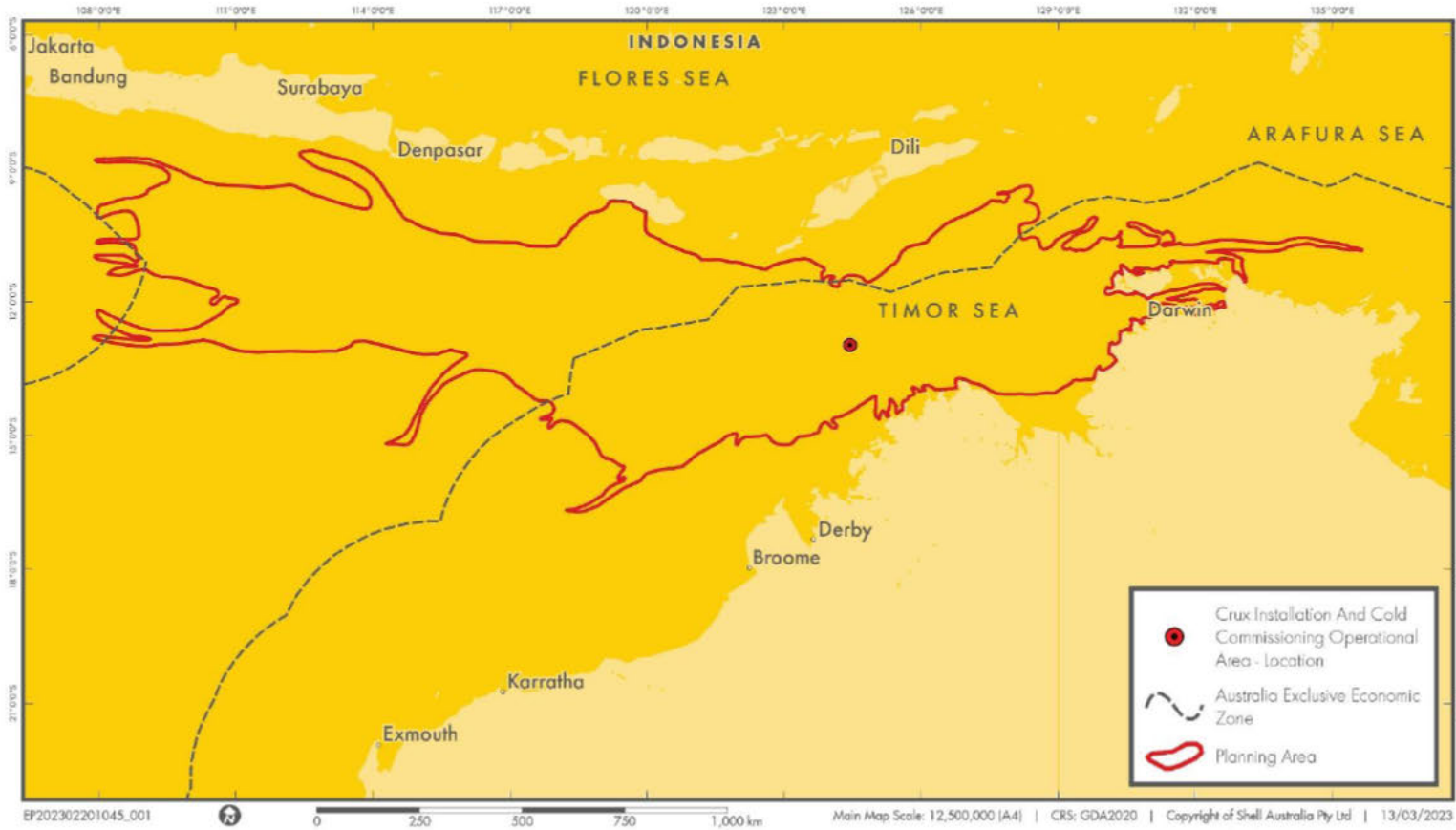
The drilling activity includes discharges of liquids and materials to the marine environment.

### Proposed Controls:

- **Shell Chemical Management Process:**
  - Chemicals selected for use in accordance with the Shell Chemical Management Process to minimise potential environmental risks.
  - Chemicals that are planned for discharge to sea are substitution warning free and Gold, Silver, D, or E rated through the Offshore Chemical Notification Scheme (OCNS), or are considered to Pose Little or No Risk to the Environment (PLONOR) (listed by the Oil Spill Prevention, Administration and Response (OSPAR) Commission), or have a complete ALARP assessment.

Aspect	Proposed Controls
<b>Planned</b>	
<b>Physical Presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>▪ Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>▪ Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>▪ Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>▪ Australian Hydrographic Office Notice to Mariners</li> </ul>
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<b>Discharge of liquid effluent</b>	<ul style="list-style-type: none"> <li>▪ Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations</li> <li>▪ Chemical Management Process for chemical assessment and selection</li> </ul>
<b>Atmospheric emissions</b>	<ul style="list-style-type: none"> <li>▪ Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations.</li> <li>▪ Relevant vessels to have a valid International Air Pollution Prevention Certificate</li> <li>▪ Use of low sulphur fuel when possible</li> </ul>
<b>Greenhouse gas emissions</b>	<ul style="list-style-type: none"> <li>▪ Comply with International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>▪ Comply with the National Greenhouse and Energy Reporting Act (2007) and National Greenhouse and Energy Reporting Regulations (2008)</li> </ul>
<b>Waste management</b>	<ul style="list-style-type: none"> <li>▪ Discharge of waste from vessels will comply with relevant International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>▪ Waste management procedures</li> <li>▪ Waste tracking process</li> <li>▪ The management and disposal of any quarantine risk material will be in accordance with state and commonwealth regulations</li> </ul>

## 4. Crux installation and cold commissioning environment plan



Shell is planning to install the Crux Jacket and Topsides which will be fixed to the seabed.

The facility will commence cold commissioning once installation is complete.

**Duration:** 360 days

**Timing:** 1 August 2024 – 31 Dec 2026\*



## 4. Crux installation and cold commissioning environment plan

### Key activities

Installation of 26-inch export pipeline  
(~165 km long) from Prelude to Crux

### Vessel operations

- Pre- and post-lay geophysical surveys
- Pipeline hydrotest, preservation and associated discharges



## 4. Crux installation and cold commissioning environment plan

### Key activities



**Substructure Installation**

**Construction Vessel**

DLV2000

**Support Vessels**

Pile Transport barge, Tugs, Supply Vessel



**Jacket Transport & Launch**

Transported on Launch Barge + approximately  
3 Tugs

Activity includes pile driving and pile drilling

# 4. Crux installation and cold commissioning environment plan

## Key activities

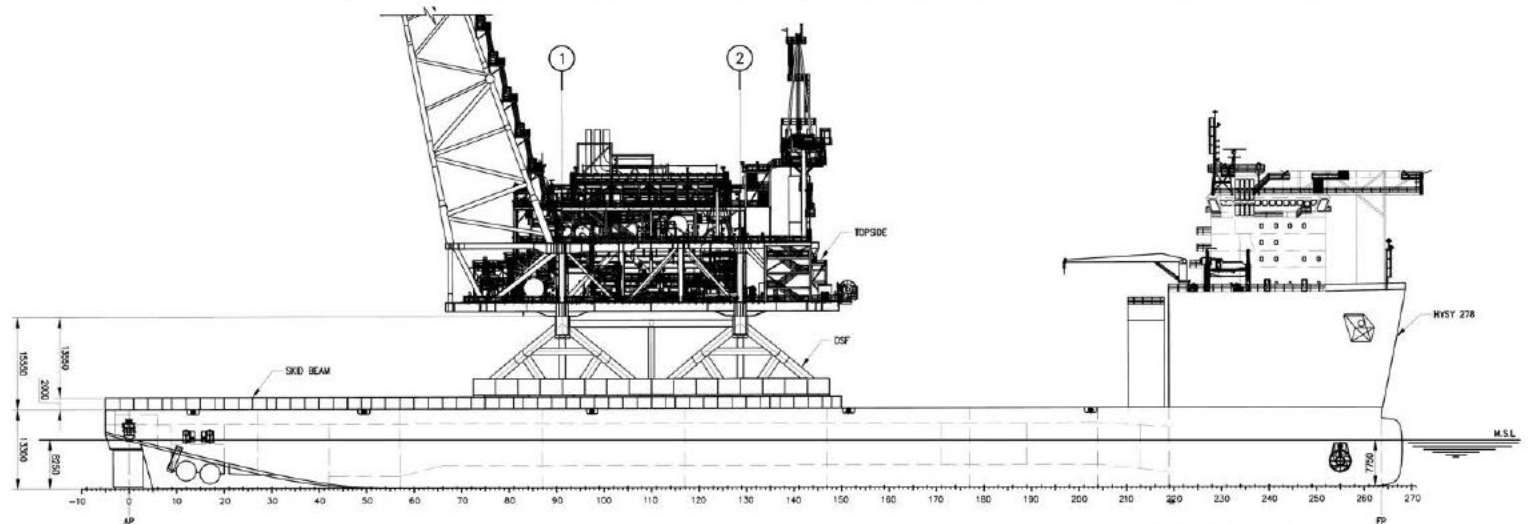
**Topsides Installation**

**Float Over Installation Vessel**

HYSY 278 (or similar)

**Support Vessels**

Tugs/Supply Vessel





# 4. Crux installation and cold commissioning environment plan

## Key aspects and controls

### Key aspect: Noise

Scope include multiple vessel operations and a piling campaign which results in underwater noise.

### Proposed controls:

- During piling operations, start-up and shutdown procedures will be adopted which consider approach by sensitive species and actions taken when species approach.
- Vessel interactions with threatened and migratory species to follow the of EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06). In particular:
- Support vessels will not deliberately approach closer than 50 m to a dolphin, turtle or whale shark; 100 m for an adult whale; 300 m for a whale calf; and 150 m for a dolphin calf.
- If the whale, dolphin, turtle or whale shark shows signs of being distressed, support vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.

Aspect	Proposed Controls
<b>Planned</b>	
<b>Physical Presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>■ Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>■ Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>■ Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>■ Australian Hydrographic Office Notice to Mariners</li> </ul>
<b>Lighting</b>	<ul style="list-style-type: none"> <li>■ External lighting on vessels minimised to that required for navigation, safety of deck operations and security considerations</li> </ul>
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<b>Discharge of liquid effluent</b>	<ul style="list-style-type: none"> <li>■ Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations</li> <li>■ Chemical Management Process for chemical assessment and selection</li> </ul>
<b>Atmospheric emissions</b>	<ul style="list-style-type: none"> <li>■ Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations.</li> <li>■ Relevant vessels to have a valid International Air Pollution Prevention Certificate</li> <li>■ Use of low sulphur fuel when possible</li> </ul>
<b>Greenhouse gas emissions</b>	<ul style="list-style-type: none"> <li>■ Comply with International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>■ Comply with the National Greenhouse and Energy Reporting Act (2007) and National Greenhouse and Energy Reporting Regulations (2008)</li> </ul>
<b>Waste management</b>	<ul style="list-style-type: none"> <li>■ Discharge of waste from vessels will comply with relevant International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>■ Waste management procedures</li> <li>■ Waste tracking process</li> <li>■ The management and disposal of any quarantine risk material will be in accordance with state and commonwealth regulations</li> </ul>

# Crux environment plan – unplanned events

## Unplanned

### Emergency Events – Hydrocarbon Spill

- Align with relevant requirements from the International Convention for the Prevention of Pollution from Ships and subsequent regulations
- Valid Shipboard Oil Pollution Emergency Plan or Shipboard Marine Pollution Emergency Plan (as appropriate for vessel classification)
- Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea
- Offshore Vessel Inspection Database (OVID) process
- Australian Hydrographic Office Notice to Mariners
- NOPSEMA accepted Environment Plan and Oil Pollution Emergency Plan (OPEP) in place
- Relevant Persons consultation process
- Vessel Maintenance management system

### Introduction of Invasive Marine Species from Vessels

- Ballast water exchange operations will comply with the international conventions and associated national regulations.
- Biofouling management for vessels in accordance with state, national and international biofouling management guidelines
- Biofouling management in compliance with state and commonwealth regulations
- Vessels (of appropriate class) will have a valid International Anti-Fouling System Certificate
- Maintenance of a minimum 1 km buffer from shoals and the Operational Area



# Q&A

**CONTACT US** Community Hotline: 1800 059 152

Email: [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com)

[www.shell.com.au/crux](http://www.shell.com.au/crux)

Shell welcomes any feedback on Environment Plan submissions, including requests for further information. If you have functions, interests or activities that may be affected by any of our projects, Shell Australia invites you to get in touch.



## **Appendix A - 6.00 Crux Animation Video**

## Crux Animation

<https://creativehub.shell.com/m/61f586aae5cb405e/original/Crux-Stakeholder-Engagement-2023-05-10.mp4>

## **Appendix A - 6.01 Crux Animation Transcript**



The Crux Project is located 190km off the north-west coast of Western Australia, in waters of around 165m deep. It will provide continued supply of gas to the existing Prelude Floating Liquefied Natural Gas (FLNG) facility, approximately 160km southwest of the Crux field. The Crux Project forms an important part of Shell Australia's natural gas portfolio, and is being progressed with our joint venture partner, SGH Energy.

The project features a Not Normally Manned platform with five production wells, minimal processing facilities and utility systems. The platform will be operated remotely from the existing Prelude FLNG facility, requiring only periodic maintenance visits, significantly reducing the operational safety exposure to staff. A 26" export pipeline will connect the Crux Project to Prelude along the seabed approximately 160km long away. The pipeline route is relatively straight, and there are no seabed obstructions. The Prelude Floating LNG facility is 488m long and 74m wide and is designed to remain moored in the field for at least 25 years. The facility extracts, liquefies, and stores natural gas at sea, before it is transferred and shipped to customers.

Development of Crux begins with drilling of the five wells. A subsea template structure provides a guide for the drill bit, with eight slots to allow for contingency. The wells will be drilled by a Mobile Offshore Drilling Unit, then suspended ready for completion after the platform and substructure have been installed.

The 26" rigid, concrete-clad export pipeline will be laid by a specialised pipelay vessel along a seabed corridor in water depths from 170m - 280m. A pipeline termination structure will be installed at each end, allowing for tie-in operations to be completed afterwards. The substructure will be brought to site, then landed over the guideposts on the drilling template. 12 anchor piles will be driven through the foundation to hold it in place. The topside facility will then be brought in and lowered onto the substructure. Subsea tie-in activities will then connect the platform to the export pipeline and to Prelude FLNG.

All systems will then be commissioned and safety-tested before production begins. At peak capacity the Crux Project is expected to provide approximately 2.9 million tonnes per annum of natural gas.

Before Shell commences substantial work on major projects or existing facilities, the regulatory, environmental, and social impacts are assessed, alongside commercial and technical considerations. As part of the Crux development, Shell will be preparing environmental approvals for submission to NOPSEMA. These Environmental plans outline the potential impacts and risks of an activity and how they will be managed.

Shell is consulting with relevant community members who have functions, interests or activities that may be affected, which is an important part of these approvals.

For more information on these plans please visit [shell.com.au/crux](http://shell.com.au/crux)

Shell has been operating in Australia since 1901. In this time, the needs of our customers and the nation have changed. Today, Shell Australia has an integrated energy solutions portfolio which includes gas production and liquefaction businesses, and Shell has been investing in renewable power and energy solutions to create a low- and zero-carbon energy business in Australia.

The Crux Project is a key part of Shell's current and future energy goals, helping to meet the growing demand for LNG. It aligns with Shell's "Powering Progress" strategy by helping customers switch to liquefied natural gas (LNG) as an alternative to more carbon intensive forms of fuel such as coal. Natural gas emits around half the greenhouse gas than coal does when used to generate electricity and less than one-tenth of the air pollutants.

To Whom It May Concern,

Shell Australia would like to invite you to attend our upcoming forums in April and May 2023, to talk about Shell Australia's Crux project. **Due to the easter public holidays, registrations to our upcoming forums have been extended.** The location of the Shell forums will be subject to a majority vote by the conference participants invited to the Shell forums.

If you are interested in attending our Shell forums, please ensure you complete the attached registration form **by Friday 14th April, at 5pm (AWST)** and email your form to [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com). Shell will provide travel and accommodation support for your representative to attend.

The options we have provided in the attached registration form will also ensure all forum participants have an opportunity to tell us how, where and when they want to be consulted.

This event will be restricted to a maximum of 120 Indigenous people and organisations, due to venue capacity.

The forums will be held on the following dates:

#### **Forum 1**

**Date:** Wednesday 19 April 2023

**Time:** 8:15am Arrival (For an 8:30am start)

**Location:** Subject to majority vote

**About this Forum:** Forum 1 is an introduction to our Shell leaders who will provide an update on Shell's National Indigenous Affairs, Prelude and Crux projects and environmental approvals related to the Crux project which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

#### **Forum 2**

**Date:** Wednesday 10 May 2023

**Time:** 8:15am Arrival (For an 8:30am start)

**Location:** Subject to majority vote

**About this Forum:** Forum 2 will provide all attendees with the opportunity to provide feedback and raise any concerns that your community has raised in response to Shell's forum 1 on the Crux project. The sessions in forum 2 will be in smaller groups, that will include a Shell leader, and an environmental or cultural heritage expert, to listen to your concerns and answer questions.

If you have any other enquiries not identified in the attached registration form, please email [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com).

Yours faithfully,  
[info redacted]

**Appendix A – 7.00 Indigenous relevant persons consultation material**

## **Appendix A - 7.01 Initial email invitation – March/April**



## SHELL AUSTRALIA INVITES YOU TO COME AND TALK TO US ABOUT THE CRUX PROJECT

In Australia, Shell has an integrated energy solutions portfolio which includes gas production and liquefaction, as well as renewable power and energy solutions businesses.

With our joint venture partner, SGH Energy, we are preparing to develop the Crux natural gas field. This is to ensure a continued supply of gas to Shell's Prelude Floating Liquefied Natural Gas (FLNG) facility, which extracts, liquefies and stores natural gas at sea, before it is transferred and shipped to customers. Prelude FLNG is located around 475km north-north east of Broome in Western Australia.

As part of the Crux development, we will be preparing environmental approvals for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). Consultation with relevant persons is an important part of these approvals.

**If you are interested in learning more, Shell Australia invites you to join us at two forums as follows;**

**Date:**

**Forum 1:** Wednesday 19 April 2023

**Forum 2:** Wednesday 10 May 2023

**Location:** Please complete survey to vote on location options.

**For more information please visit:**

**[www.shell.com.au/crux](http://www.shell.com.au/crux)**



CRUX PROJECT JOINT VENTURE PARTNER

**SGH | Energy**

### REGISTRATION INSTRUCTIONS

Shell Australia is extending invitations to relevant persons and organisations, to attend our upcoming forums on 19 April and 10 May 2023 to talk to us about our Crux Project.

You have an opportunity to nominate one person to represent your Organization, Native Title Determination Group, Native Title Holders, Native Title Claimants, or Individual/s Family Groups, at the Shell forums.

- All Shell forum participants will be provided with travel and accommodation support.
- All Shell forum participants will have an opportunity to vote on the location of the forum.
- Due to the venue capacity, the forums will be restricted to a maximum of 120 participants.
- To register for the Shell forums, please complete this form by Friday 7th April 2023, 5pm (AWST) and return your form to [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com).



**Appendix A - 7.02 Survey issued for Indigenous Forums  
(attached to email)**

## NOMINATE YOUR REPRESENTATIVE

Please provide contact details for your nominated representative.

### 1. PERSONAL DETAILS

**p** Click here to enter text

**PHONE OR MOBILE:** Click here to enter your number

**EMAIL:** Click here to enter your email address

**ADDRESS:** Click here to your address

**STATE:** Click here to enter a State

**POSTCODE:** Click here to enter your postcode

### 2. ORGANISATION (only complete this section if it applies to you)

**ORGANISATION NAME:** Click here to enter your organisation name

**POSITION:** Click here to enter position details

### 3. NATIVE TITLE GROUP/NATIVE TITLE HOLDERS/NATIVE TITLE CLAIMANTS

If relevant, please tell us which native title group, native title holders, or native title claimant, which you will be representing at the Shell forums? Click here to enter your response

### 4. PLEASE TELL US HOW AND WHERE YOU WOULD LIKE FORUM 1 AND FORUM 2 DELIVERED, BY TICKING AN OPTION BELOW.

#### FORUM 1 (19 APRIL) OPTIONS

**Option 1** PERTH WA (Shell will provide your nominated representative with travel and accommodation support to attend a forum in Perth)

**Option 2** BROOME WA (Shell will only provide travel/accommodation support to participants not living in Broome WA)

**Option 3** Drop-in Session in Broome ➔ Broome Civic Centre, Monday 27 April

**Option 4** Not available for several months due to cultural commitments

**Option 5** Not available but interested in providing feedback at forum 2 in May.

#### FORUM 2 (10 MAY) OPTIONS

**Option 1** BROOME WA (Shell will only provide travel/accommodation support to participants not living in Broome WA)

**Option 2** Not available for several months due to cultural commitments

**Option 3** Not available in May but interested in providing feedback at a later date. (Please email [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com) when you're ready to provide feedback)

#### 5. CATERING – DIETARY REQUIREMENTS

For catering purposes, please tell us if you have any special dietary requirements or food allergies? [Click here to enter your dietary requirements](#)

#### 6. CONTACT US

Shell Australia welcomes any other suggestions, or feedback on how and where you would like to be consulted.

[Click here to enter your response.](#)

#### 7. OTHER OPTIONS

If you didn't select an option from one of the forum locations that we provided to you in Section 4, then as an alternative, you can also select from one of the options below:

- Option 1** On-Country Consultation (Please note this will include Shell leadership and Indigenous Affairs, Environmental and Cultural Heritage experts)
- Option 2** Not interested

#### 8. FILMING CONSENT

We are intending to film the presentations delivered by our Shell leaders at forum 1. The film will be emailed to all nominated representatives who attended the forum to share with your organization, community, or extended family groups.

You may appear in this film, so we are requesting your consent, noting:

The breakout sessions planned for forum 1, will not be filmed.

The filming of forum 1 will not be used for any online media, YouTube, LinkedIn, Facebook, Twitter or Instagram promotions.

- I provide consent to be filmed.
- I prefer not to be filmed and would like to be seated out of view of the Camera Operator.

## **Appendix A - 7.03 Presentation – Indigenous Forum 1 in Perth**



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# Shell Australia – Indigenous Forum

Wednesday 19 April 2023



# Definitions & cautionary note

## Cautionary Note

The companies in which Shell plc directly and indirectly owns investments are separate legal entities. In this presentation “Shell”, “Shell Group” and “Group” are sometimes used for convenience where references are made to Shell plc and its subsidiaries in general. Likewise, the words “we”, “us” and “our” are also used to refer to Shell plc and its subsidiaries in general or to those who work for them. These terms are also used where no useful purpose is served by identifying the particular entity or entities. “Subsidiaries”, “Shell subsidiaries” and “Shell companies” as used in this presentation refer to entities over which Shell plc either directly or indirectly has control. Entities and unincorporated arrangements over which Shell has joint control are generally referred to as “joint ventures” and “joint operations”, respectively. “Joint ventures” and “joint operations” are collectively referred to as “joint arrangements”. Entities over which Shell has significant influence but neither control nor joint control are referred to as “associates”. The term “Shell interest” is used for convenience to indicate the direct and/or indirect ownership interest held by Shell in an entity or unincorporated joint arrangement, after exclusion of all third-party interest.

## Forward-Looking Statements

This presentation contains forward-looking statements (within the meaning of the U.S. Private Securities Litigation Reform Act of 1995) concerning the financial condition, results of operations and businesses of Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management’s current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Shell to market risks and statements expressing management’s expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as “aim”, “ambition”, “anticipate”, “believe”, “could”, “estimate”, “expect”, “goals”, “intend”, “may”, “milestones”, “objectives”, “outlook”, “plan”, “probably”, “project”, “risks”, “schedule”, “seek”, “should”, “target”, “will” and similar terms and phrases. There are a number of factors that could affect the future operations of Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this **[report]**, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell’s products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, judicial, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; (m) risks associated with the impact of pandemics, such as the COVID-19 (coronavirus) outbreak; and (n) changes in trading conditions. No assurance is provided that future dividend payments will match or exceed previous dividend payments. All forward-looking statements contained in this presentation are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Shell plc’s Form 20-F for the year ended December 31, 2021 (available at [www.shell.com/investor](http://www.shell.com/investor) and [www.sec.gov](http://www.sec.gov)). These risk factors also expressly qualify all forward-looking statements contained in this **[report]** and should be considered by the reader. Each forward-looking statement speaks only as of the date of this presentation, 27 April 2023. Neither Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this presentation.

## Shell’s net carbon footprint

Also, in this presentation we may refer to Shell’s “Net Carbon Footprint” or “Net Carbon Intensity”, which include Shell’s carbon emissions from the production of our energy products, our suppliers’ carbon emissions in supplying energy for that production and our customers’ carbon emissions associated with their use of the energy products we sell. Shell only controls its own emissions. The use of the term Shell’s “Net Carbon Footprint” or “Net Carbon Intensity” are for convenience only and not intended to suggest these emissions are those of Shell plc or its subsidiaries.

## Shell’s net-zero Emissions Target

Shell’s operating plan, outlook and budgets are forecasted for a ten-year period and are updated every year. They reflect the current economic environment and what we can reasonably expect to see over the next ten years. Accordingly, they reflect our Scope 1, Scope 2 and Net Carbon Footprint (NCF) targets over the next ten years. However, Shell’s operating plans cannot reflect our 2050 net-zero emissions target and 2035 NCF target, as these targets are currently outside our planning period. In the future, as society moves towards net-zero emissions, we expect Shell’s operating plans to reflect this movement. However, if society is not net zero in 2050, as of today, there would be significant risk that Shell may not meet this target.

## Forward Looking Non-GAAP measures

This presentation may contain certain forward-looking non-GAAP measures such as **[cash capital expenditure]** and **[divestments]**. We are unable to provide a reconciliation of these forward-looking Non-GAAP measures to the most comparable GAAP financial measures because certain information needed to reconcile those Non-GAAP measures to the most comparable GAAP financial measures is dependent on future events some of which are outside the control of Shell, such as oil and gas prices, interest rates and exchange rates. Moreover, estimating such GAAP measures with the required precision necessary to provide a meaningful reconciliation is extremely difficult and could not be accomplished without unreasonable effort. Non-GAAP measures in respect of future periods which cannot be reconciled to the most comparable GAAP financial measure are calculated in a manner which is consistent with the accounting policies applied in Shell plc’s consolidated financial statements.

The contents of websites referred to in this presentation do not form part of this presentation.

We may have used certain terms, such as resources, in this presentation that the United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575,

# Shell Australia's Footprint



## SHELL OPERATED

● Crux	82%
● Gangarri	100%
● Prelude	67.5%
● QGC	75%

## WHOLLY OWNED SUBSIDIARIES

■ Powershop	100%
■ Select Carbon	100%
■ Shell Energy Australia	100%
■ sonnen	100%

## NON-OPERATED

▲ Arrow	50%
▲ Browse	27%
▲ ESCO Pacific	49%
▲ Gorgon	25%
▲ Kondinin Energy	50%
▲ North West Shelf	16.67%
▲ WestWind	49%



# Why are we here today?

As part of the Environment Plan approvals process, Shell is undertaking consultation with relevant persons who may be impacted by the activities we are proposing in relation to the development of the Crux project.

We are consulting on four Environment Plans:

1. Seabed Survey Environment Plan
2. Drilling Template Environment Plan
3. Development Drilling Environment Plan
4. Crux Installation and Cold Commissioning Environment Plan

# Prelude – Overview

- Prelude is a Floating Liquefied Natural Gas (FLNG) project located 475km north-northeast of Broome, Western Australia, in the Browse Basin.
- The Prelude FLNG facility is moored over the Prelude gas field in 250m water depth and more than 200km from the coastline.
- Prelude produces LNG, LPG and condensate.
- Prelude has an onshore supply base in Darwin.
- The Prelude FLNG facility is operated by Shell Australia in joint venture with Inpex, OPIC and Kogas.
- The Prelude Joint Venture has executed agreements to allow for processing of Crux hydrocarbons, which are expected to commence in 2027.

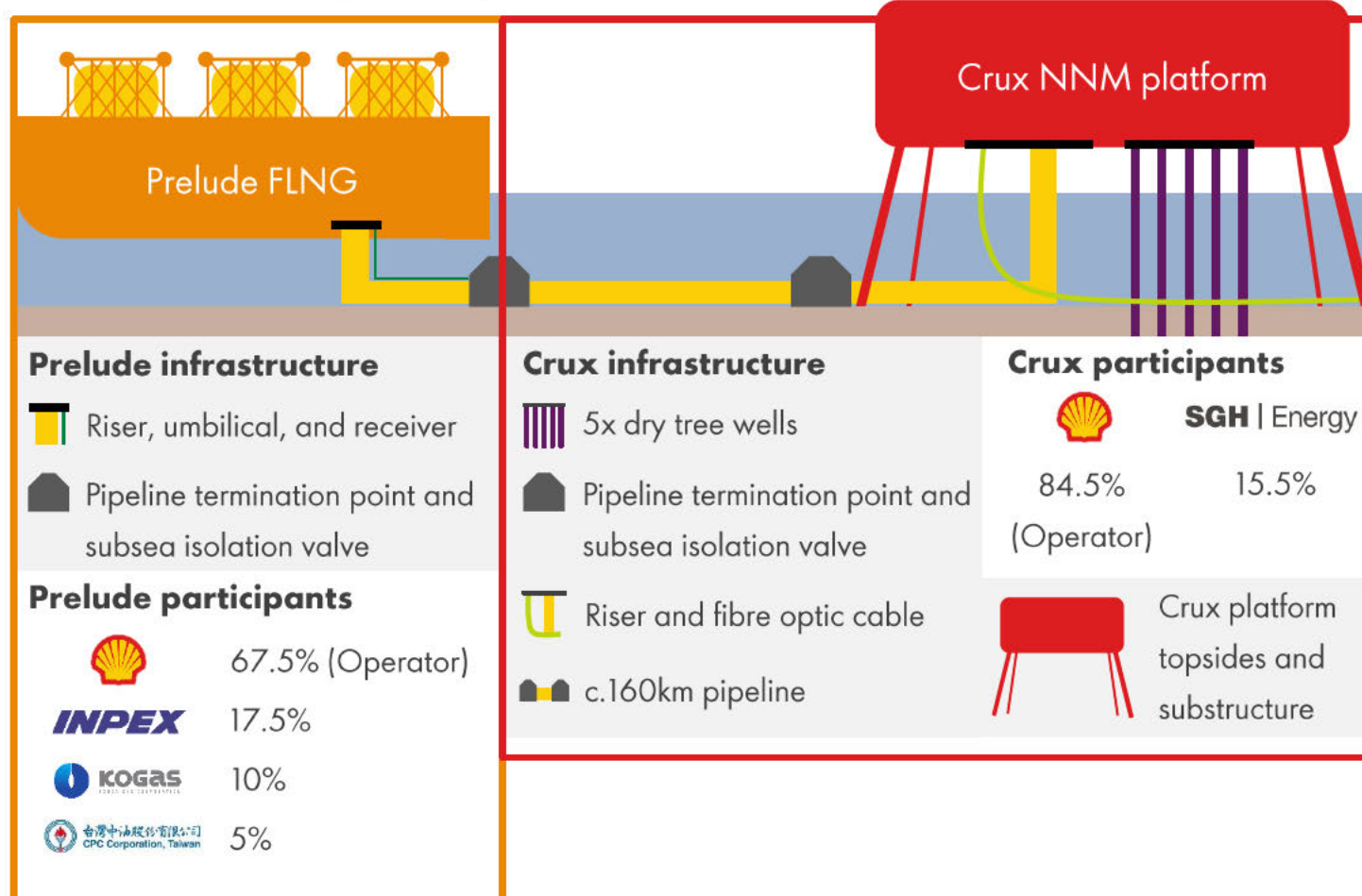




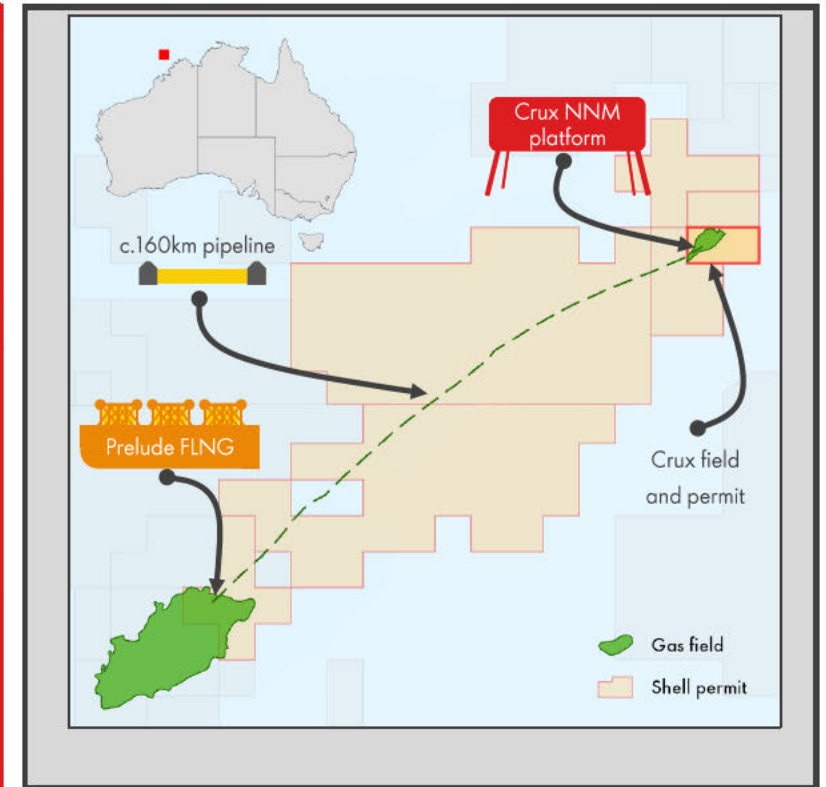
# Prelude and Crux

Crux will leverage Prelude FLNG's existing infrastructure to its fullest extent to maximise capital efficiency and deliverability

## Crux project boundary and key infrastructure under development



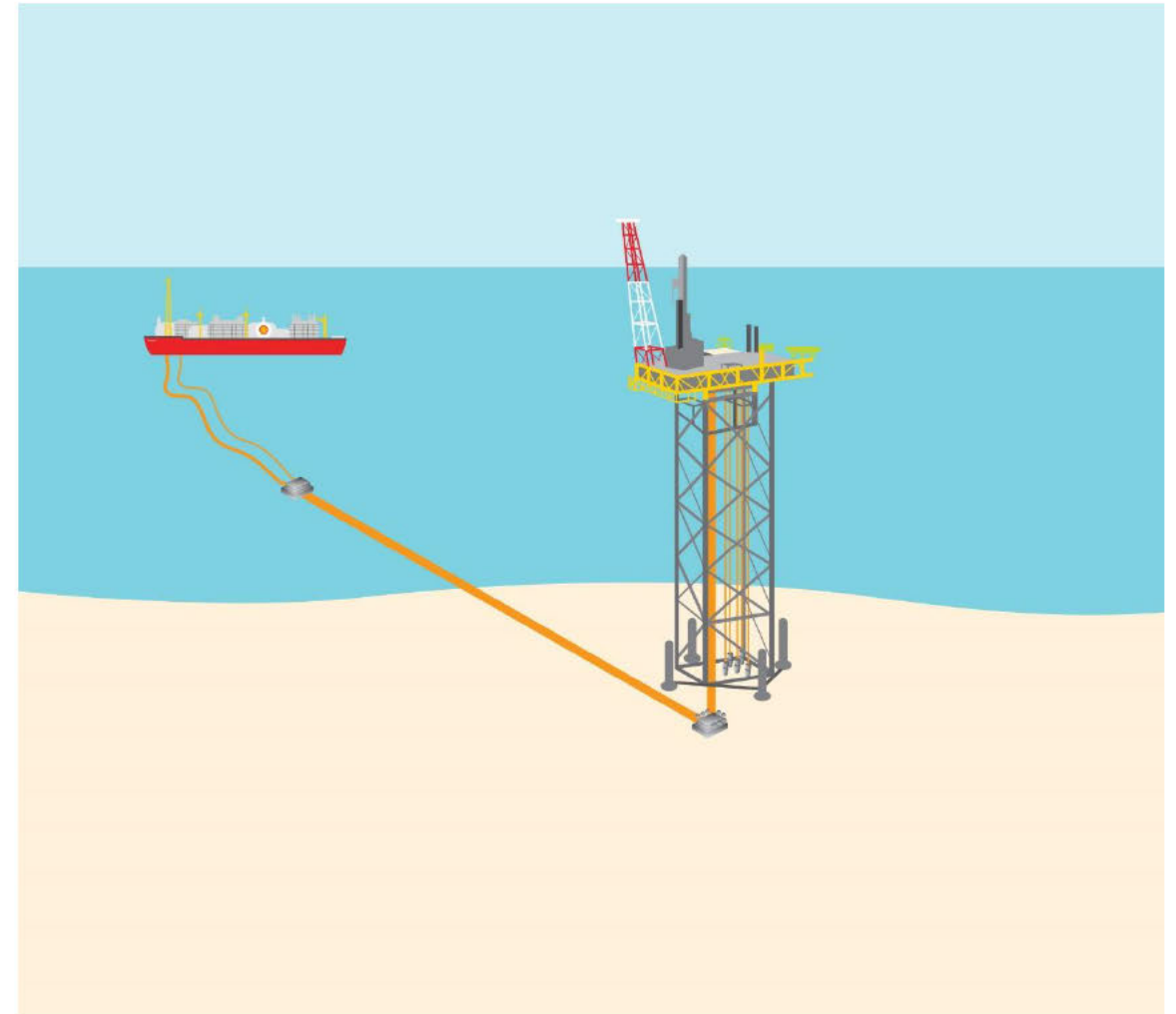
## Crux field overview





# Crux update

- In May 2022, Shell Australia and SGH Energy took final investment decision to approve the development of Crux.
- The project is an important longer term backfill opportunity for the existing Prelude FLNG facilities. The proposed concept is an unmanned platform with minimal facilities, remotely operated from the Prelude FLNG.
- The project aligns with Shell's strategy and forms an important part of Shell's gas portfolio and will help meet the needs of gas users as the energy market transitions to a lower carbon future, noting the expected increasing demand for natural gas, renewables, low and zero carbon technologies, and the criticality of security in energy supply.
- The natural gas from Crux and Prelude will be a key part of how we help move Asian customers from coal to gas as a cleaner burning fuel.





# Why are we here today?

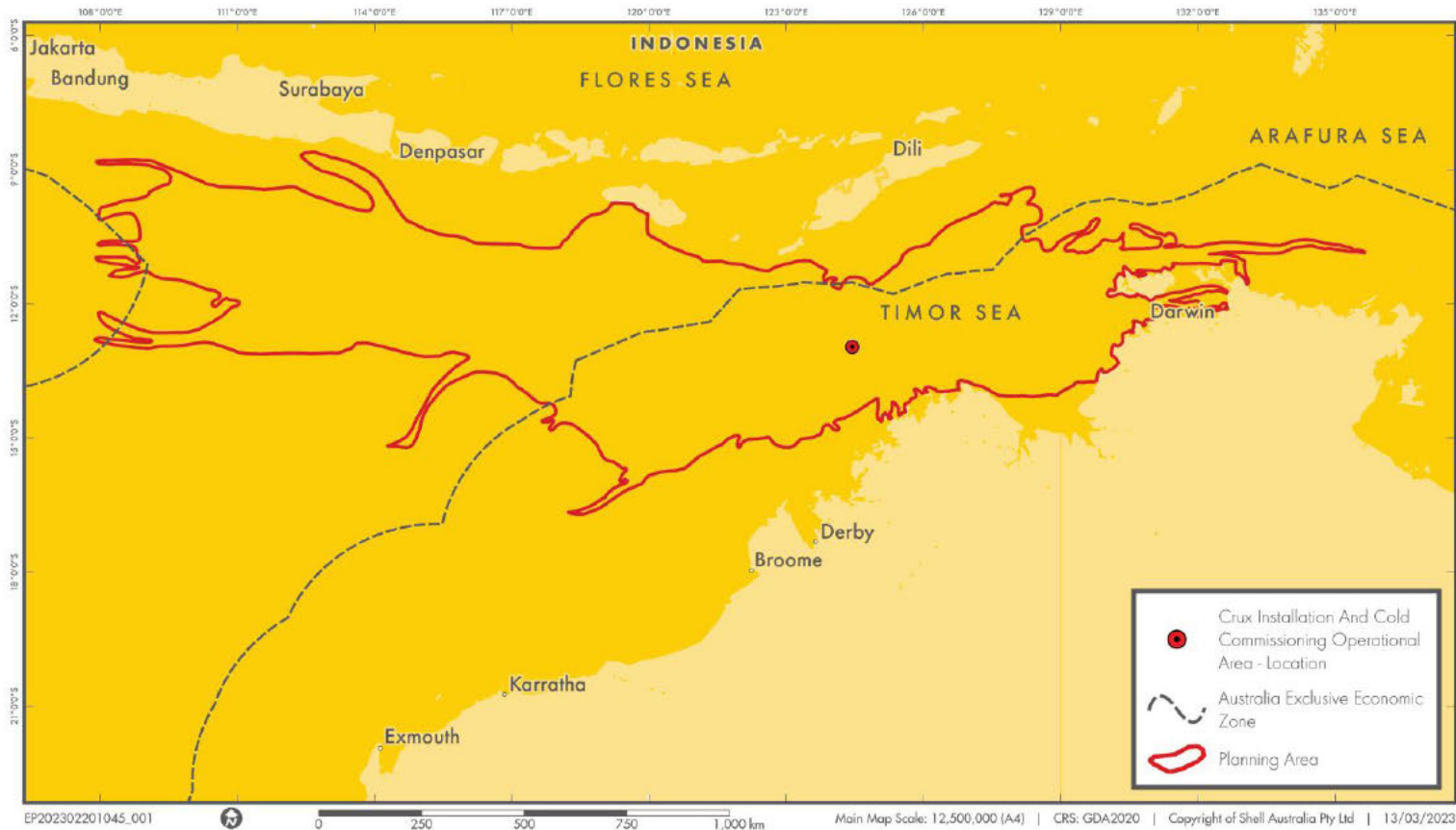
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We are consulting on four Environment Plans:

1. Seabed Survey Environment Plan
2. Drilling Template Environment Plan
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4. Crux Installation and Cold Commissioning Environment Plan

# Crux Environment Plans

To help frame how Shell describes impacts and risk EPs can be broken into planned impacts and unplanned risks/potential impacts.



**Planned impacts** include activities that result in physical impact to the environment, i.e:

- Disturbances to the seabed.
- Drilling Fluid Discharges.
- Noise generated from construction activities.

These planned impacts will occur within close proximity to the operational area.

**Unplanned risks** include events that may occur as a result of an incident i.e:

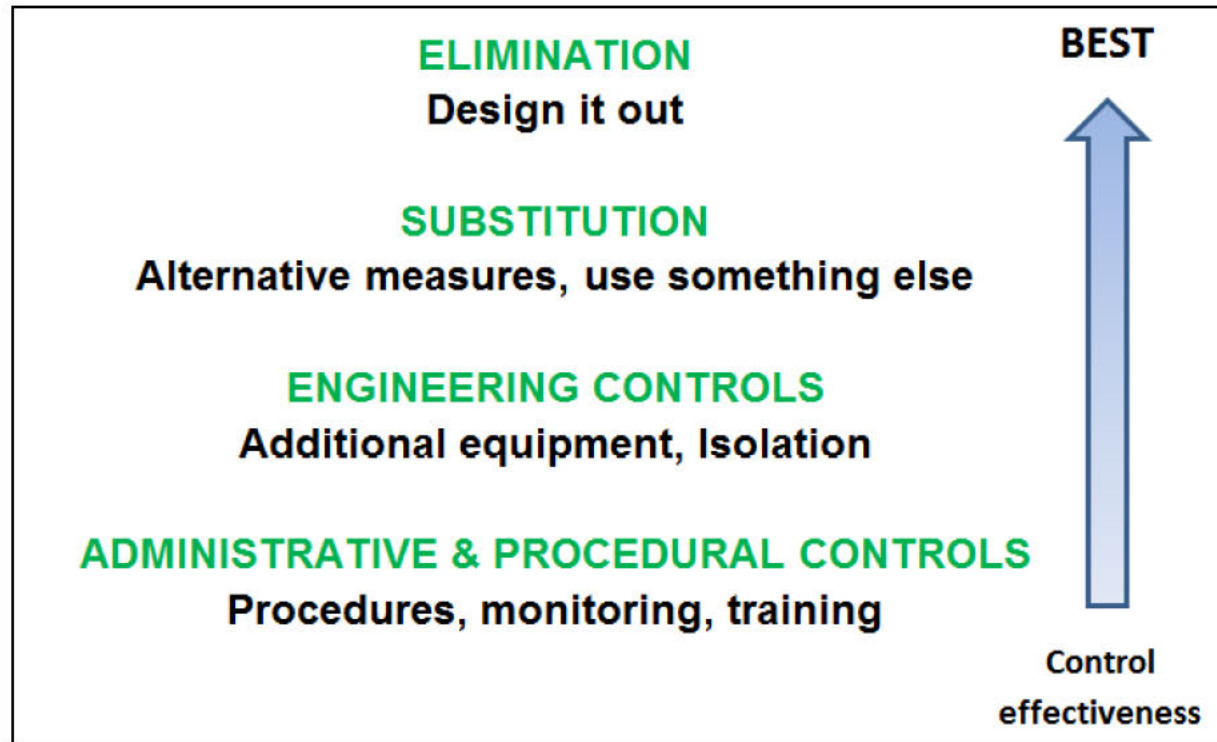
- Release of Diesel as a result of a vessel collision.
- Release of hydrocarbons as a result of loss of well control.

These unplanned events are very rare however are necessary to be described to ensure adequate controls are adopted – these unplanned events define the **Planning Area**.

Each EP describes the controls that are adopted to mitigate both the planned impacts and unplanned risks to as low and reasonably practicable.

# Crux Environment Plans

Hierarchy of controls – Impact/Risk reduction.

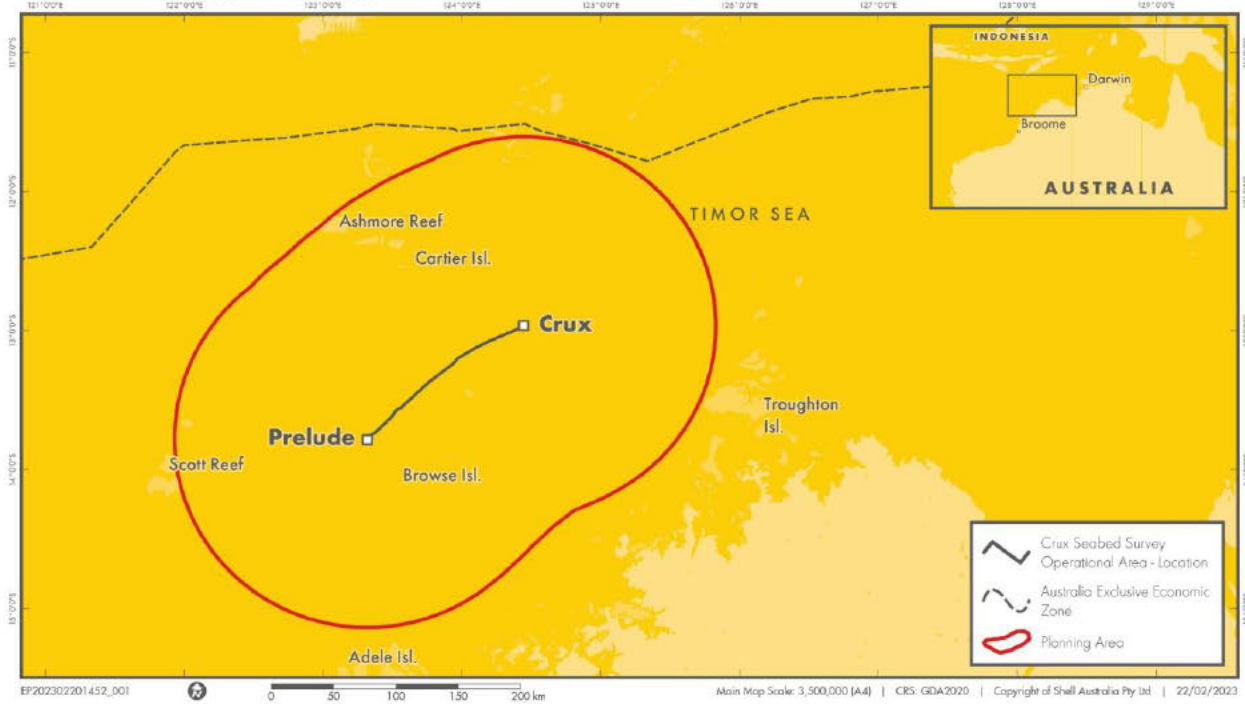


Shell applies a hierarchy of control process to establish controls which mitigate environmental impacts and risk.



# 1. Crux Seabed Survey Environment Plan

Investigating the seabed and sub-seabed conditions

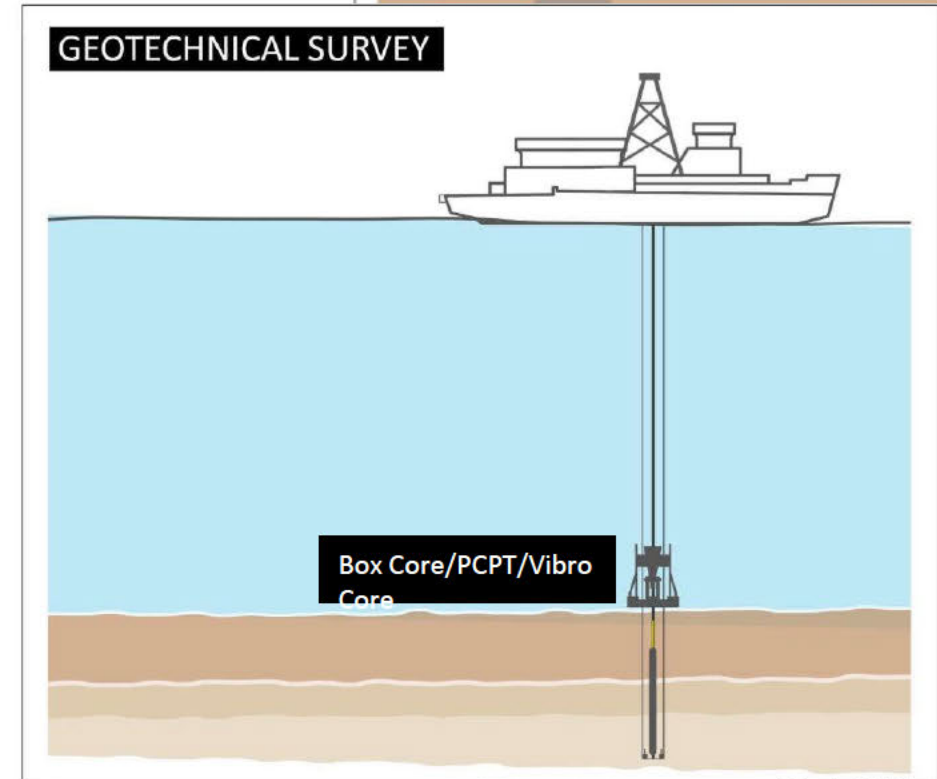
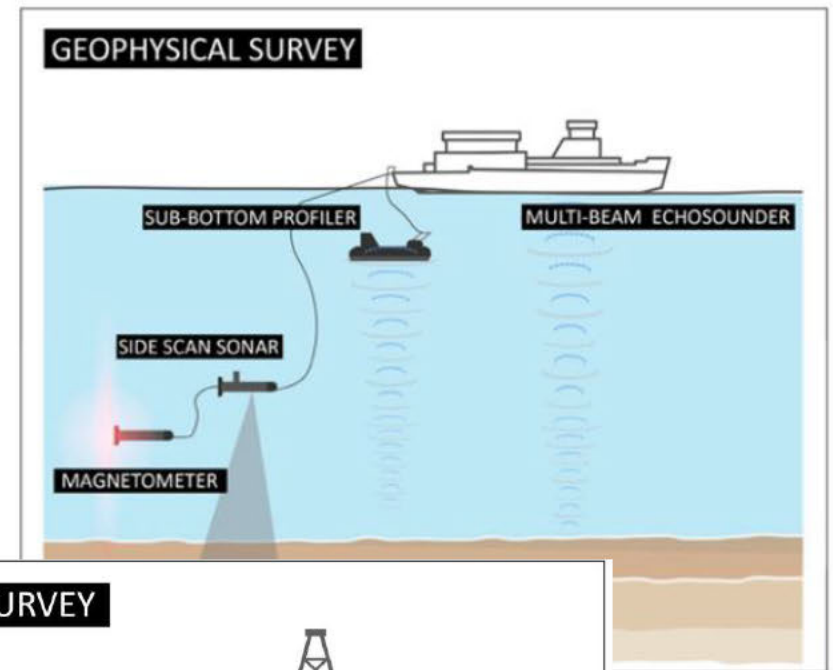


**Activity:** Shell is planning to carry out a survey of the pipeline route and terminals connecting the Crux and Prelude facilities.

A vessel will traverse the pipeline route, towing survey equipment and deploying coring equipment.

**Duration:** <5 days

**Timing:** 1 May – 31 December 2023\*



CONFIDENTIAL

March 2023



# 1.(cont.) Crux Seabed Survey Environment Plan

Investigating the seabed and sub-seabed conditions

Aspect	Proposed control
<b>Planned</b>	
<b>Physical Presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>Australian Hydrographic Office Notice to Mariners</li> </ul>
<b>Lighting</b>	<ul style="list-style-type: none"> <li>External lighting on vessels minimised to that required for navigation, safety of deck operations and security considerations</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>Apply EPBC policy statement 2.1 – Part B (seismic survey guidelines) to geophysical survey activities as applicable to the scope. This is planned to be applied using trained crew members.</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>EPBC Regulations Part 8.1 – Interacting with cetaceans</li> <li>Marine fauna observations</li> </ul>
<b>Discharge of Liquid Effluent</b>	<ul style="list-style-type: none"> <li>Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations</li> <li>Chemical Management Process for chemical assessment and selection</li> </ul>
<b>Atmospheric Emissions</b>	<ul style="list-style-type: none"> <li>Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations.</li> <li>Relevant vessels to have a valid International Air Pollution Prevention Certificate</li> <li>Use of low sulphur fuel when possible</li> </ul>
<b>Greenhouse Gas Emissions</b>	<ul style="list-style-type: none"> <li>Comply with International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>Comply with the National Greenhouse and Energy Reporting Act (2007) and National Greenhouse and Energy Reporting Regulations (2008)</li> </ul>
<b>Waste Management</b>	<ul style="list-style-type: none"> <li>Discharge of waste from vessels will comply with relevant International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>Waste management procedures</li> <li>Waste tracking process</li> <li>The management and disposal of any quarantine risk material will be in accordance with state and commonwealth regulations</li> </ul>

Key aspect and control:

## Noise

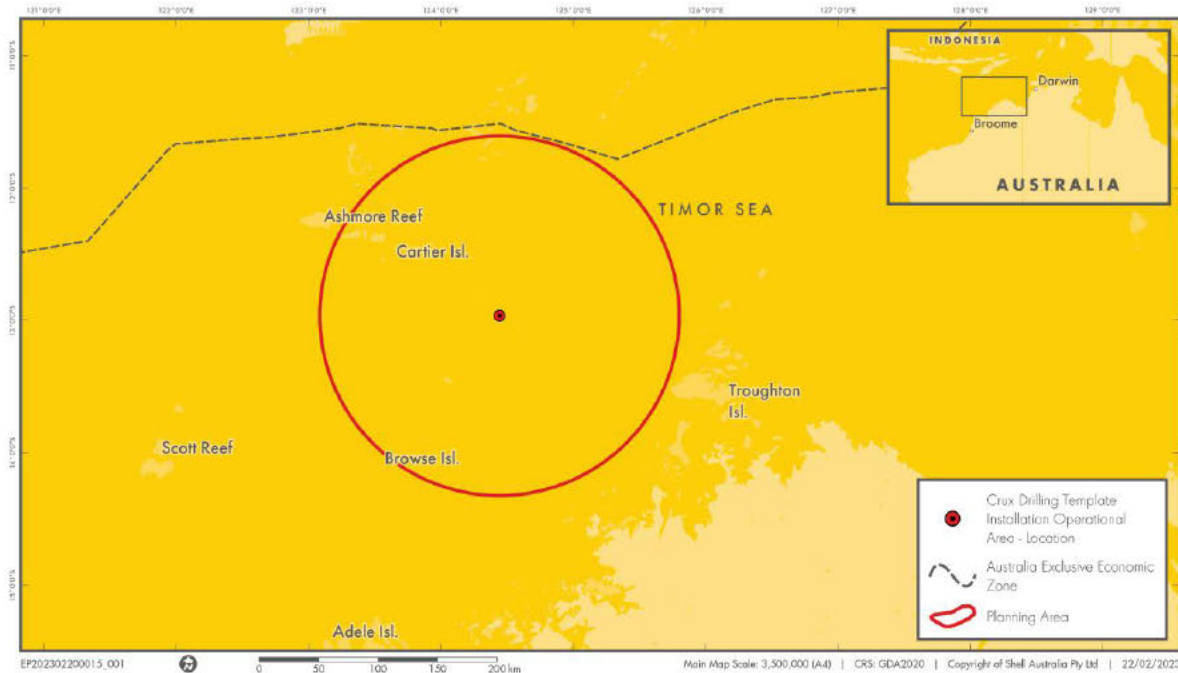
The geophysical survey equipment emits impulsive noise which can affect marine fauna if in proximity.

Key control: Pre Start-Up Visual Observations

- Pre-start visual observations out to 3 km for 30 minutes.
- If a whale or turtle is observed during the pre- start observations, delay start up for 30 minutes.
- If no whales or turtles are observed, activate acoustic equipment (soft start is not possible on the MBES, SSS or SBP, nor is it possible for the shallow seismic source

## 2. Crux Drilling Template Installation Environment Plan

A template which will act as a guide for the drill bit during drilling operations

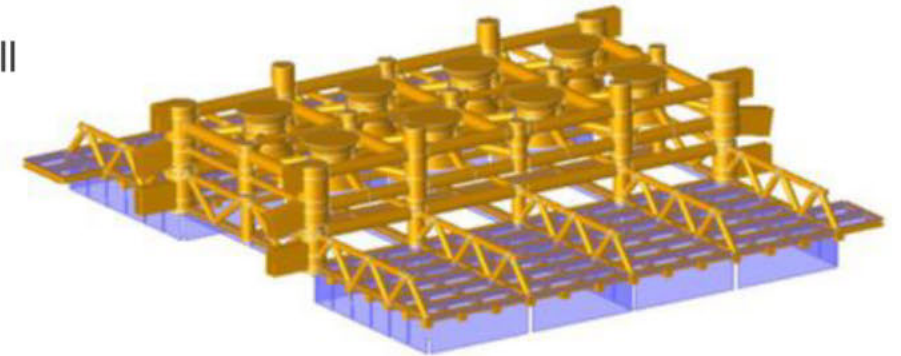


**Activity:** Shell is planning to lower a fabricated steel structure onto the seabed, which will assist with orienting and locating the drilling activities and the installation of the Crux jacket.

**Dimensions:** 19m length, 14m width, 4m high and covers a seabed footprint of 266m<sup>2</sup>. It weights 200 tonnes

**Duration:** <7 days  
Copyright of Shell International B.V.

**Timing:** 1 September 2023 – 1 April 2024\*





## 2.(cont.) Crux Drilling Template Installation Environment Plan

A template which will act as a guide for the drill bit during drilling operations

Aspect	Proposed Controls
<b>Planned</b>	
<b>Physical presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>Australian Hydrographic Office Notice to Mariners</li> </ul>
<b>Lighting</b>	<ul style="list-style-type: none"> <li>External lighting on vessels minimised to that required for navigation, safety of deck operations and security considerations</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>Apply EPBC policy statement 2.1 – Part B (seismic survey guidelines) to geophysical survey activities as applicable to the scope. This is planned to be applied using trained crew members.</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>EPBC Regulations Part 8.1 – Interacting with cetaceans</li> <li>Marine fauna observations</li> </ul>
<b>Discharge of liquid effluent</b>	<ul style="list-style-type: none"> <li>Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations</li> <li>Chemical Management Process for chemical assessment and selection</li> </ul>
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Key aspect and control

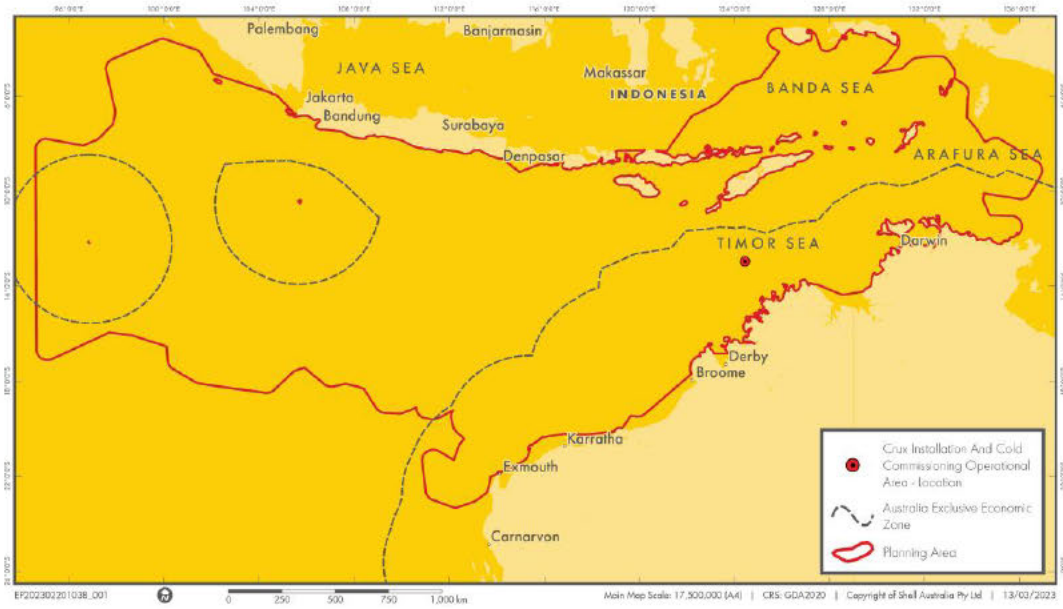
### Physical Presence

The drilling template will be left on the seabed for the life of Crux.

Key Controls:

- AHS is given notification in advance to enable a 'Notice to Mariners' to be issued prior to petroleum activities occurring within the operational area
- Relevant Persons consultation – Other marine users will be made aware of the location of the drilling template via Shells consultation process.

### 3. Crux Development Drilling Environment Plan



**Activity:** Shell is planning to drill five production wells through a drilling template and suspend them. The suspended wells will be commissioned once the Crux facility has been installed.

**Timing:**

- Expected Mobile Offshore Drilling Unit Operations start date – end 2023 - early 2024.
- Duration: approximately 10 months, with 10 months contingency.
- **Expected temporary well suspension period, approximately 2-3 years.**



### 3. (cont.) Crux Development Drilling Environment Plan

Aspect	Proposed Controls
<b>Planned</b>	
<b>Physical Presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>Australian Hydrographic Office Notice to Mariners</li> </ul>
<b>Lighting</b>	<ul style="list-style-type: none"> <li>External lighting on vessels minimised to that required for navigation, safety of deck operations and security considerations</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>Apply EPBC policy statement 2.1 – Part B (seismic survey guidelines) to geophysical survey activities as applicable to the scope. This is planned to be applied using trained crew members.</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>EPBC Regulations Part 8.1 – Interacting with cetaceans</li> <li>Marine fauna observations</li> </ul>
<b>Discharge of liquid effluent</b>	<ul style="list-style-type: none"> <li>Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations</li> <li>Chemical Management Process for chemical assessment and selection</li> </ul>
<b>Atmospheric emissions</b>	<ul style="list-style-type: none"> <li>Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations.</li> <li>Relevant vessels to have a valid International Air Pollution Prevention Certificate</li> <li>Use of low sulphur fuel when possible</li> </ul>
<b>Greenhouse gas emissions</b>	<ul style="list-style-type: none"> <li>Comply with International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>Comply with the National Greenhouse and Energy Reporting Act (2007) and National Greenhouse and Energy Reporting Regulations (2008)</li> </ul>
<b>Waste management</b>	<ul style="list-style-type: none"> <li>Discharge of waste from vessels will comply with relevant International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations</li> <li>Waste management procedures</li> <li>Waste tracking process</li> <li>The management and disposal of any quarantine risk material will be in accordance with state and commonwealth regulations</li> </ul>

Key aspect and control

#### Discharge of liquid effluent (including drilling discharges)

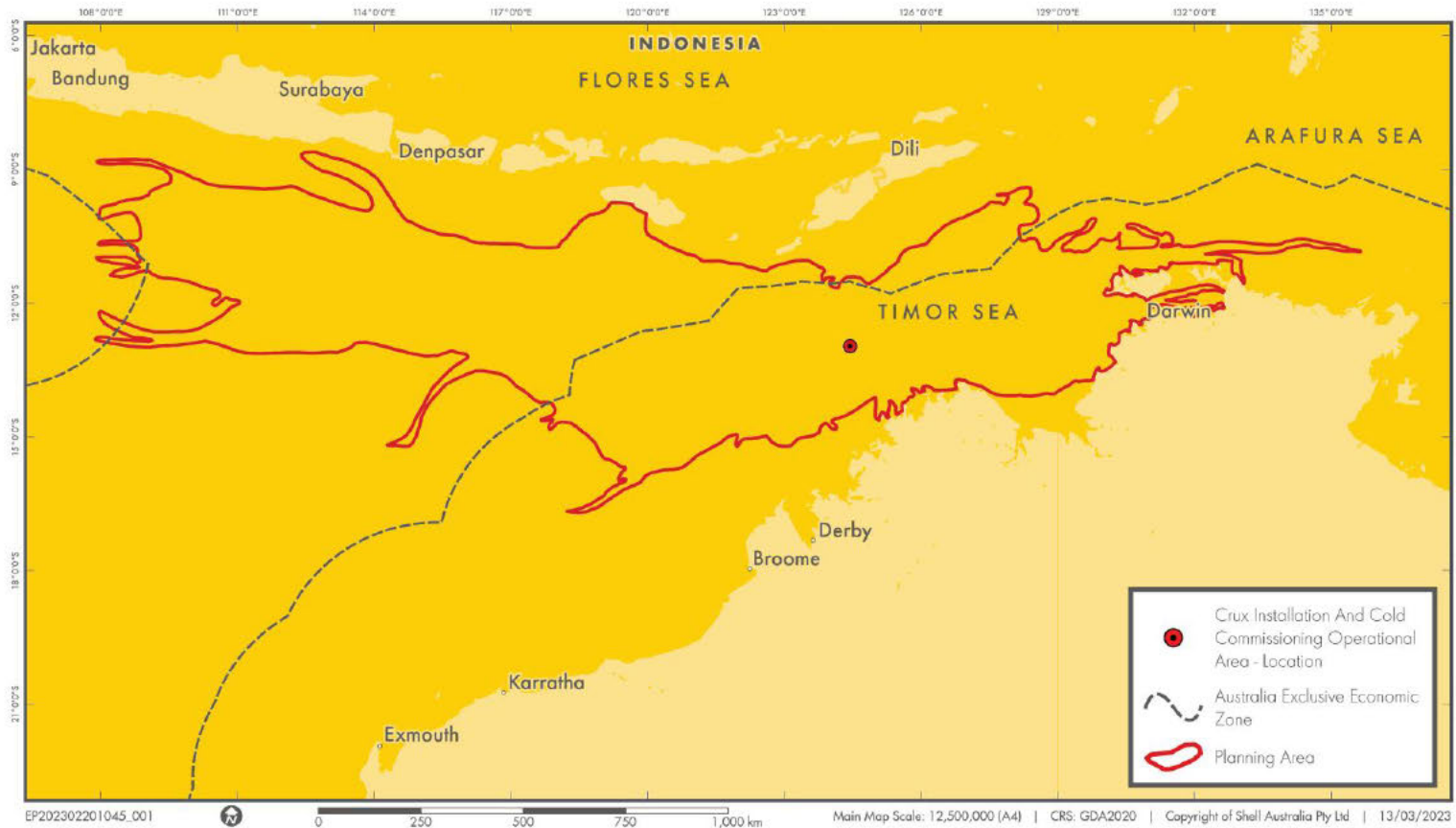
The drilling activity includes discharges of liquids and materials to the marine environment

Key Controls:

- Shell Chemical Management Process:
- Chemicals selected for use in accordance with the Shell Chemical Management Process to minimise potential environmental risks.
- Chemicals that are planned for discharge to sea are substitution warning free and Gold, Silver, D, or E rated through the Offshore Chemical Notification Scheme (OCNS), or are considered to Pose Little or No Risk to the Environment (PLONOR) (listed by the Oil Spill Prevention, Administration and Response (OSPAR) Commission), or have a complete ALARP assessment.



## 4. Crux Installation and Cold Commissioning Environment Plan



Shell is planning to install the Crux pipeline, substructure and Topsides.

The facility will commence cold commissioning once installation is complete.

**Duration:** Mid 2024 – Dec 2026

**Timing:** start mid 2024, pending regulatory approvals.

*Dates for the commencement of activities and duration are subject to schedule change*

## 4. (cont.) Crux Installation and Cold Commissioning Environment Plan

### Key activities

#### Crux pipelay

Installation of 26-inch export pipeline (~165 km long) from Prelude to Crux

Vessel operations

Pre- and post-lay geophysical surveys

Pipeline hydrotest, preservation and associated discharges



## 4. (cont.) Crux Installation and Cold Commissioning Environment Plan

### Key activities



**Substructure Installation**

**Construction Vessel**

DLV2000

**Support Vessels**

Pile Transport barge, Tugs, Supply Vessel



**Jacket Transport & Launch**

Transported on Launch Barge + approximately  
3 Tugs

Activity includes pile driving and pile drilling



# 4. (cont.) Crux Installation and Cold Commissioning Environment Plan

## Key activities

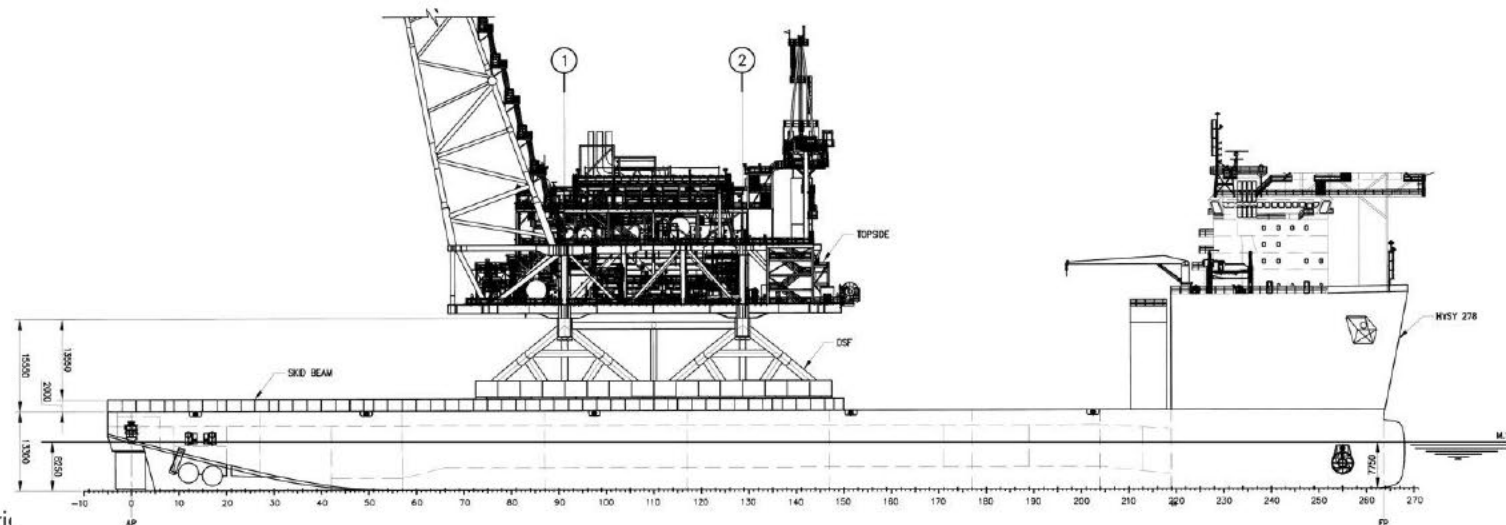
Topsides Installation

Float Over Installation Vessel

HYSY 278 (or similar)

Support Vessels

Tugs/Supply Vessel



## 4. (cont.) Crux Installation and Cold Commissioning Environment Plan

Aspect	Proposed Controls
<b>Planned</b>	
<b>Physical Presence, vessel movements and seabed disturbance</b>	<ul style="list-style-type: none"> <li>Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea</li> <li>Maintenance of a minimum 1 km buffer from shoals and the Operational Area</li> <li>Environmental Protection and Biodiversity Conservation Regulations (2000) (EPBC Regulations), Part 8.1 – Interacting with cetaceans</li> <li>Australian Hydrographic Office Notice to Mariners</li> </ul>
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<b>Discharge of liquid effluent</b>	<ul style="list-style-type: none"> <li>Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations</li> <li>Chemical Management Process for chemical assessment and selection</li> </ul>
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### Noise

Scope include multiple vessel operations and a piling campaign which results in underwater noise.

### Key controls:

During piling operations, start-up and shutdown procedures will be adopted which consider approach by sensitive species and actions taken when species approach.

Vessel interactions with threatened and migratory species to follow the of EPBC Regulations 2000 – Part 8 Division 8.1 (Regulations 8.05 and 8.06). In particular: Support vessels will not deliberately approach closer than 50 m to a dolphin, turtle or whale shark; 100 m for an adult whale; 300 m for a whale calf; and 150 m for a dolphin calf.

If the whale, dolphin, turtle or whale shark shows signs of being distressed, support vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.



# Crux Environment Plan – Unplanned Events

## Unplanned

### Emergency Events – Hydrocarbon Spill

- Align with relevant requirements from the International Convention for the Prevention of Pollution from Ships and subsequent regulations
- Valid Shipboard Oil Pollution Emergency Plan or Shipboard Marine Pollution Emergency Plan (as appropriate for vessel classification)
- Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea
- Offshore Vessel Inspection Database (OVID) process
- Australian Hydrographic Office Notice to Mariners
- NOPSEMA accepted Environment Plan and Oil Pollution Emergency Plan (OPEP) in place
- Relevant Persons consultation process
- Vessel Maintenance management system

### Introduction of Invasive Marine Species from Vessels

- Ballast water exchange operations will comply with the international conventions and associated national regulations.
- Biofouling management for vessels in accordance with state, national and international biofouling management guidelines
- Biofouling management in compliance with state and commonwealth regulations
- Vessels (of appropriate class) will have a valid International Anti-Fouling System Certificate
- Maintenance of a minimum 1 km buffer from shoals and the Operational Area

# Crux Environment Plans – Additional Information

Additional information is available on the [Shell Crux Website](#):

Factsheets on each individual Environment Plan.

Drafts of the Environment Plans, as they become available.

[www.shell.com.au/crux](http://www.shell.com.au/crux)

Independent technical environmental assistance:

Shell has engaged several local Environmental Consultancies to provide support to Traditional

Owners in the interpretation, guidance and fundamentals of the Crux Environment Plans.

Groups or individuals are encouraged to use these resources directly.

Introductions – Consultants





# Q&A

**CONTACT US** Community Hotline: 1800 059 152 Email: [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com) [www.shell.com.au/crux](http://www.shell.com.au/crux)

Shell welcomes any feedback on Environment Plan submissions, including requests for further information. If you have functions, interests or activities that may be affected by any of our projects, Shell Australia invites you to get in touch.

## **Appendix A - 7.04 Presentation – Indigenous Forum 2 in Broome**



# SHELL CRUX PROJECT

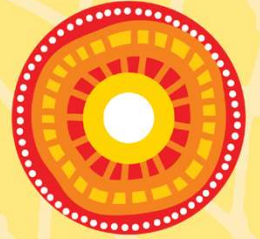
## Broome meeting





# Welcome & Housekeeping

**Exits**  
**Toilets**  
**Facilitators**





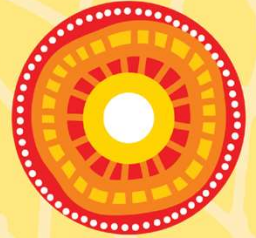
## **Acknowledgement of Country**

Shell acknowledges Yawuru people as the Traditional Custodians of the land and sea country in and around Broome, since the time before time, and the importance of their connection to land, sea and community.

We pay our respect to Elders past, present and emerging and extend that respect to all Aboriginal and Torres Strait Islander people today.

**This is Yawuru Country**

# WHY ARE WE HERE TODAY?



## Overview of why we are here / the day agenda

There will be a bit of info today – no pressure to comment today (but can if you have any questions or comments).

- Desired outcome is that you all walk away understanding who Shell is and our Crux Project.
- How Shell is going to deliver the Crux Project
- How the Crux Project might affect you and your people
- To let Shell know of any concerns you may have about the project that you would like us to take into consideration (today) or at the very least take away what you might need to know to discuss with your community.





# Things to cover today

- Who is Shell?
- What is Crux?
- What are the main components of Crux?
  - Seabed survey
  - Drilling template
  - Drilling development
  - Commissioning
- Crux Environmental Plans
- Cultural heritage, marine systems, coastlines, TO access to country – what is Shell doing?
- Options for meeting with Shell – forums, on-Country, use of the Panel, direct and one-on-one.
- Independent Panel – Andrew, Sam, Richard.





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# Shell Australia – Crux Project Forum

## Bruce Lockyer

Wednesday 10 May 2023



# Definitions & cautionary note

## Cautionary Note

The companies in which Shell plc directly and indirectly owns investments are separate legal entities. In this presentation “Shell”, “Shell Group” and “Group” are sometimes used for convenience where references are made to Shell plc and its subsidiaries in general. Likewise, the words “we”, “us” and “our” are also used to refer to Shell plc and its subsidiaries in general or to those who work for them. These terms are also used where no useful purpose is served by identifying the particular entity or entities. “Subsidiaries”, “Shell subsidiaries” and “Shell companies” as used in this presentation refer to entities over which Shell plc either directly or indirectly has control. Entities and unincorporated arrangements over which Shell has joint control are generally referred to as “joint ventures” and “joint operations”, respectively. “Joint ventures” and “joint operations” are collectively referred to as “joint arrangements”. Entities over which Shell has significant influence but neither control nor joint control are referred to as “associates”. The term “Shell interest” is used for convenience to indicate the direct and/or indirect ownership interest held by Shell in an entity or unincorporated joint arrangement, after exclusion of all third-party interest.

## Forward-Looking Statements

This presentation contains forward-looking statements (within the meaning of the U.S. Private Securities Litigation Reform Act of 1995) concerning the financial condition, results of operations and businesses of Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management’s current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Shell to market risks and statements expressing management’s expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as “aim”, “ambition”, “anticipate”, “believe”, “could”, “estimate”, “expect”, “goals”, “intend”, “may”, “milestones”, “objectives”, “outlook”, “plan”, “probably”, “project”, “risks”, “schedule”, “seek”, “should”, “target”, “will” and similar terms and phrases. There are a number of factors that could affect the future operations of Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this **[report]**, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell’s products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, judicial, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; (m) risks associated with the impact of pandemics, such as the COVID-19 (coronavirus) outbreak; and (n) changes in trading conditions. No assurance is provided that future dividend payments will match or exceed previous dividend payments. All forward-looking statements contained in this presentation are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Shell plc’s Form 20-F for the year ended December 31, 2021 (available at [www.shell.com/investor](http://www.shell.com/investor) and [www.sec.gov](http://www.sec.gov)). These risk factors also expressly qualify all forward-looking statements contained in this **[report]** and should be considered by the reader. Each forward-looking statement speaks only as of the date of this presentation, 27 April 2023. Neither Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this presentation.

## Shell’s net carbon footprint

Also, in this presentation we may refer to Shell’s “Net Carbon Footprint” or “Net Carbon Intensity”, which include Shell’s carbon emissions from the production of our energy products, our suppliers’ carbon emissions in supplying energy for that production and our customers’ carbon emissions associated with their use of the energy products we sell. Shell only controls its own emissions. The use of the term Shell’s “Net Carbon Footprint” or “Net Carbon Intensity” are for convenience only and not intended to suggest these emissions are those of Shell plc or its subsidiaries.

## Shell’s net-zero Emissions Target

Shell’s operating plan, outlook and budgets are forecasted for a ten-year period and are updated every year. They reflect the current economic environment and what we can reasonably expect to see over the next ten years. Accordingly, they reflect our Scope 1, Scope 2 and Net Carbon Footprint (NCF) targets over the next ten years. However, Shell’s operating plans cannot reflect our 2050 net-zero emissions target and 2035 NCF target, as these targets are currently outside our planning period. In the future, as society moves towards net-zero emissions, we expect Shell’s operating plans to reflect this movement. However, if society is not net zero in 2050, as of today, there would be significant risk that Shell may not meet this target.

## Forward Looking Non-GAAP measures

This presentation may contain certain forward-looking non-GAAP measures such as **[cash capital expenditure]** and **[divestments]**. We are unable to provide a reconciliation of these forward-looking Non-GAAP measures to the most comparable GAAP financial measures because certain information needed to reconcile those Non-GAAP measures to the most comparable GAAP financial measures is dependent on future events some of which are outside the control of Shell, such as oil and gas prices, interest rates and exchange rates. Moreover, estimating such GAAP measures with the required precision necessary to provide a meaningful reconciliation is extremely difficult and could not be accomplished without unreasonable effort. Non-GAAP measures in respect of future periods which cannot be reconciled to the most comparable GAAP financial measure are calculated in a manner which is consistent with the accounting policies applied in Shell plc’s consolidated financial statements.

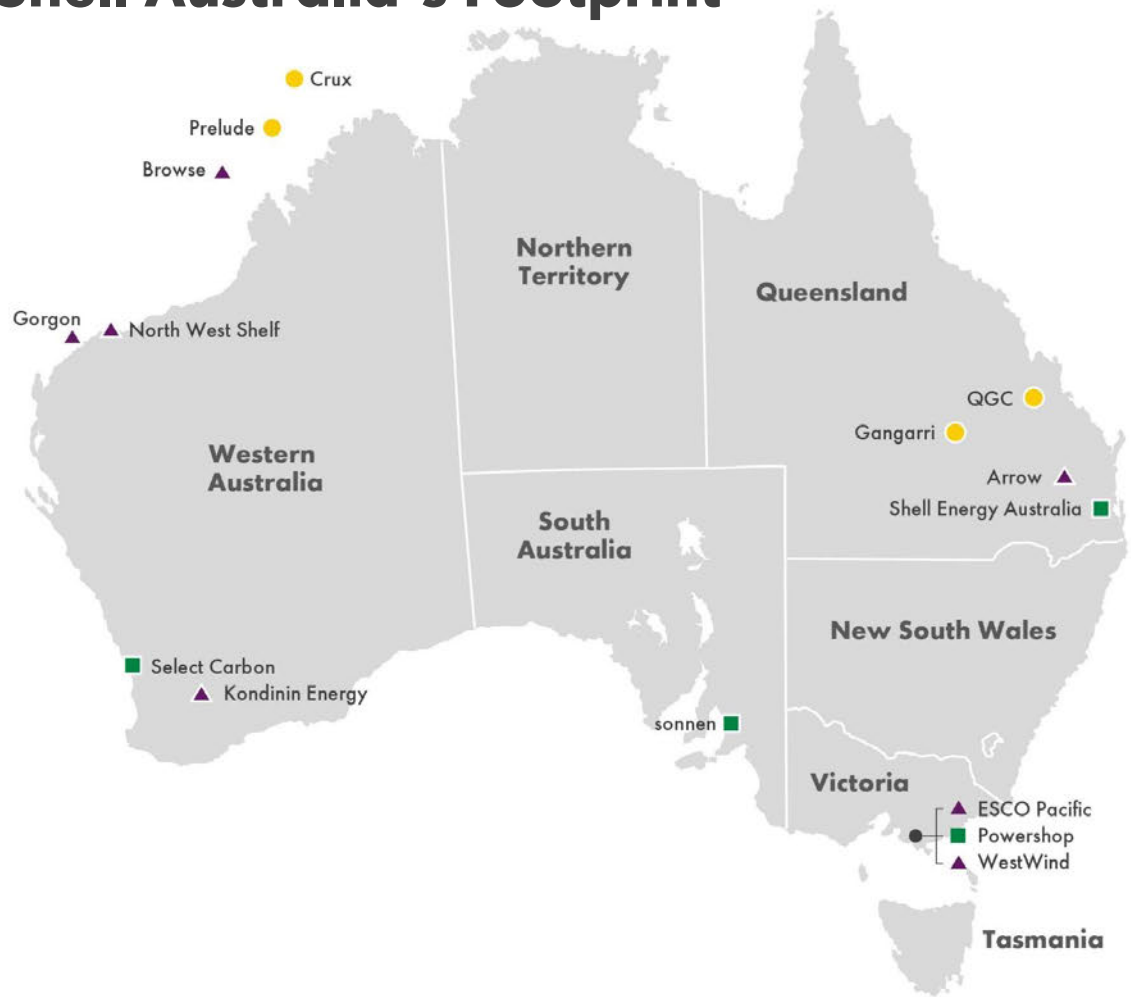
The contents of websites referred to in this presentation do not form part of this presentation.

We may have used certain terms, such as resources, in this presentation that the United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, **Copyright of Shell International B.V.**

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# Shell Australia's Footprint



## SHELL OPERATED

● CruX	82%
● Gangarri	100%
● Prelude	67.5%
● QGC	75%

## WHOLLY OWNED SUBSIDIARIES

■ Powershop	100%
■ Select Carbon	100%
■ Shell Energy Australia	100%
■ sonnen	100%

## NON-OPERATED

▲ Arrow	50%
▲ Browse	27%
▲ ESCO Pacific	49%
▲ Gorgon	25%
▲ Kondinin Energy	50%
▲ North West Shelf	16.67%
▲ WestWind	49%



## Why are we here today?

As part of the Environment Plan approvals process, Shell is undertaking consultation with relevant persons who may be impacted by the activities we are proposing in relation to the development of the Crux project.

We are consulting on four Environment Plans:

1. Seabed Survey Environment Plan
2. Drilling Template Environment Plan
3. Development Drilling Environment Plan
4. Crux Installation and Cold Commissioning Environment Plan

## Prelude – Overview

- Prelude is a Floating Liquefied Natural Gas (FLNG) project located 475km north-northeast of Broome, Western Australia, in the Browse Basin.
- The Prelude FLNG facility is moored over the Prelude gas field in 250m water depth and more than 200km from the coastline.
- Prelude produces LNG, LPG and condensate.
- Prelude has an onshore supply base in Darwin.
- The Prelude FLNG facility is operated by Shell Australia in joint venture with Inpex, OPIC and Kogas.
- The Prelude Joint Venture has executed agreements to allow for processing of Crux hydrocarbons, which are expected to commence in 2027.



### Location:

WA-44-L, in Commonwealth marine waters, 475 km north-north east of Broome in Western Australia

### Facility Type:

Floating liquefied natural gas (FLNG) facility

### Number of wells:

Seven

### Production capacity:

3.6 million tonnes per annum (mtpa) LNG, 1.3 mtpa LPG, 1.3mtpa condensate

### Water depths:

250m

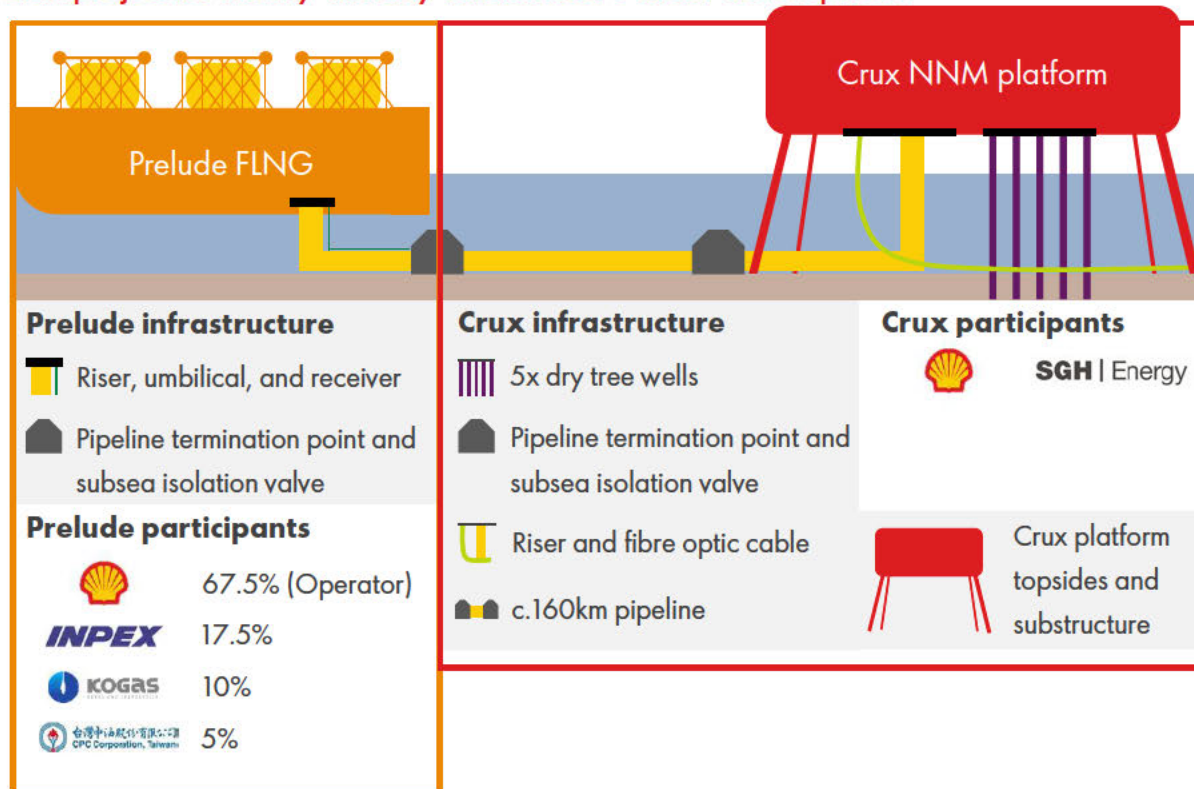
### Status:

In operation

# Prelude and Crux

Crux will use Prelude FLNG's existing infrastructure to enable maximum efficiency and production

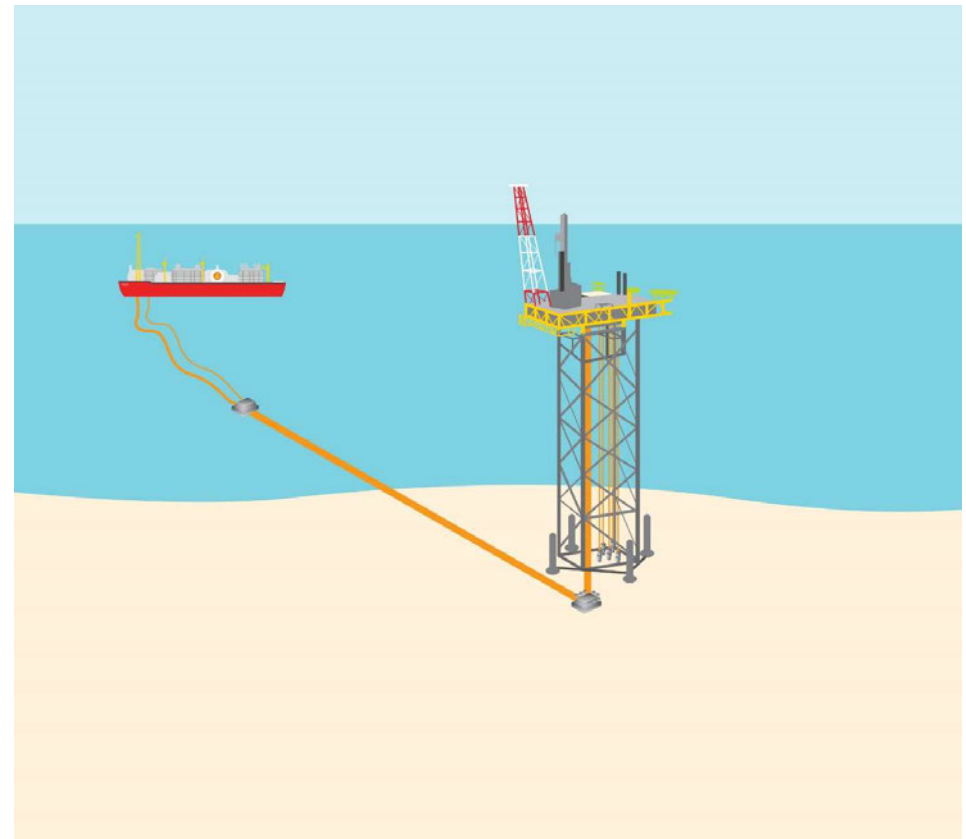
Crux project boundary and key infrastructure under development





## Crux update

- In May 2022, Shell Australia and SGH Energy took final investment decision to approve the development of Crux.
- The project is an important long term extension to the existing Prelude FLNG facilities. The proposed concept is an unmanned platform with minimal facilities, remotely operated from the Prelude FLNG.
- The project aligns with Shell's strategy and forms an important part of Shell's gas portfolio and will help meet the needs of gas users as the energy market transitions to a lower carbon future.
- The natural gas from Crux and Prelude will be a key part of how we help move Asian customers from coal to gas as a cleaner burning fuel.



## Why are we here today?

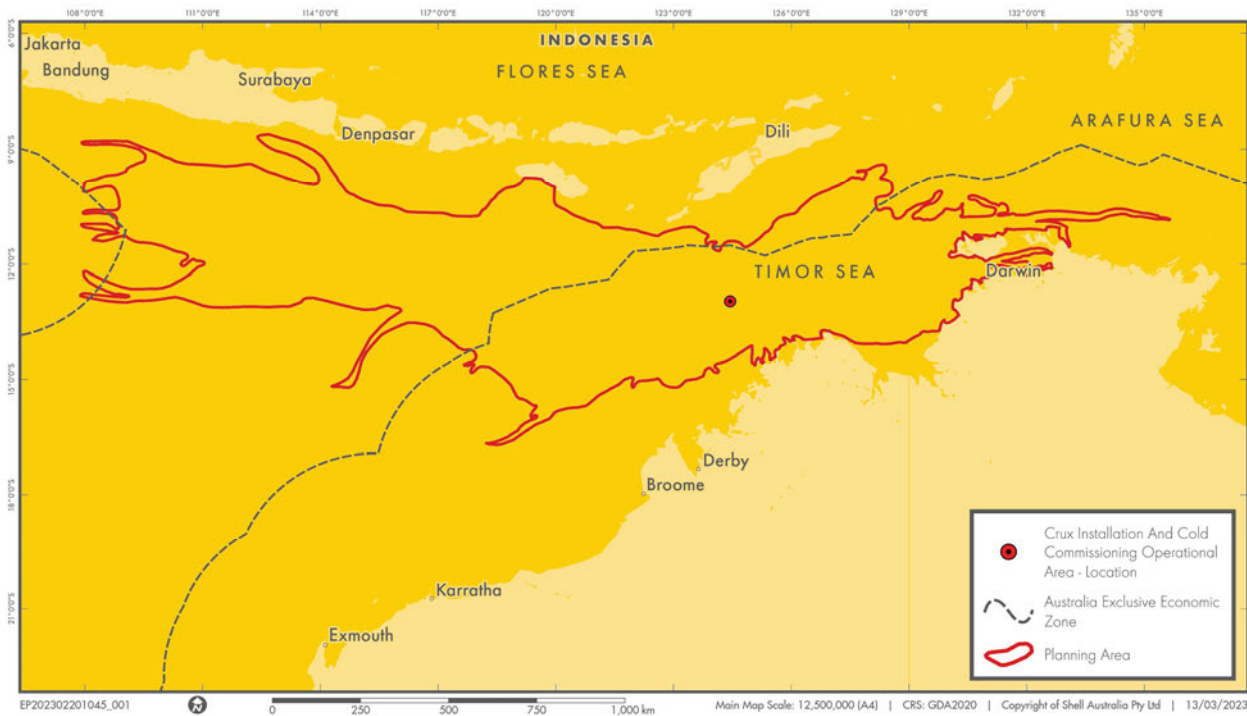
As part of the Environment Plan approvals process, Shell is undertaking consultation with people who may be impacted by the proposed activities in relation to the development of the Crux project. ca0

There are four Environment Plans:

1. Seabed Survey Environment Plan
2. Drilling Template Environment Plan
3. Development Drilling Environment Plan
4. Crux Installation and Cold Commissioning Environment Plan

# Crux Environment Plans

These describe the impacts and risks, both planned and unplanned that may occur



**Planned impacts** are known activities that result in physical impact to the environment, i.e.:

- Disturbances to the seabed.
- Drilling Fluid Discharges.
- Noise generated from construction activities.

These planned impacts will occur within close proximity to the operational area.

**Unplanned risks** include events that may occur as a result of an incident i.e:

- Diesel spill as a result of a vessel collision.
- Hydrocarbon spill as a result of loss of well control.

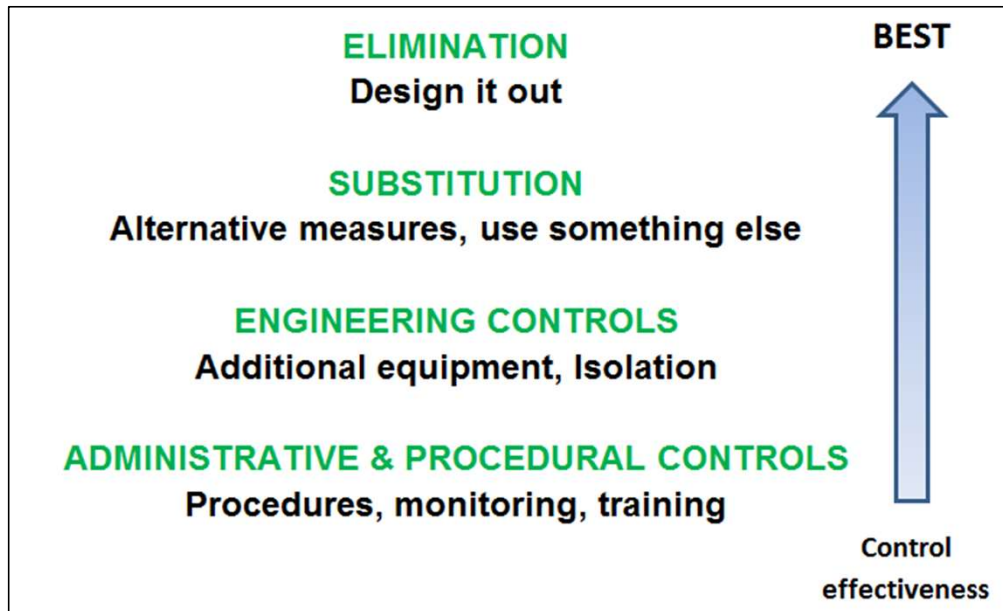
These unplanned events are very rare however are necessary to be described to ensure adequate controls are adopted – these unplanned events define the **Planning Area**.

Each EP describes the controls that are adopted to mitigate both the planned impacts and unplanned risks to as low and reasonably practicable.

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# Crux Environment Plans

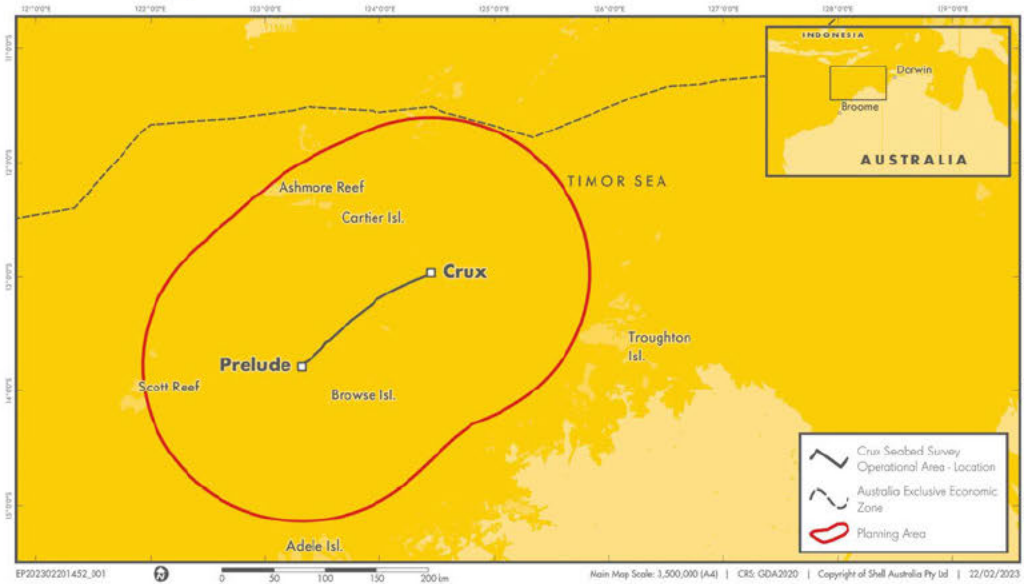
how we reduce risks



Shell applies a hierarchy of control process to establish controls which mitigate environmental impacts and risk.

# 1. Crux Seabed Survey Environment Plan

## Investigating the seabed and sub-seabed conditions

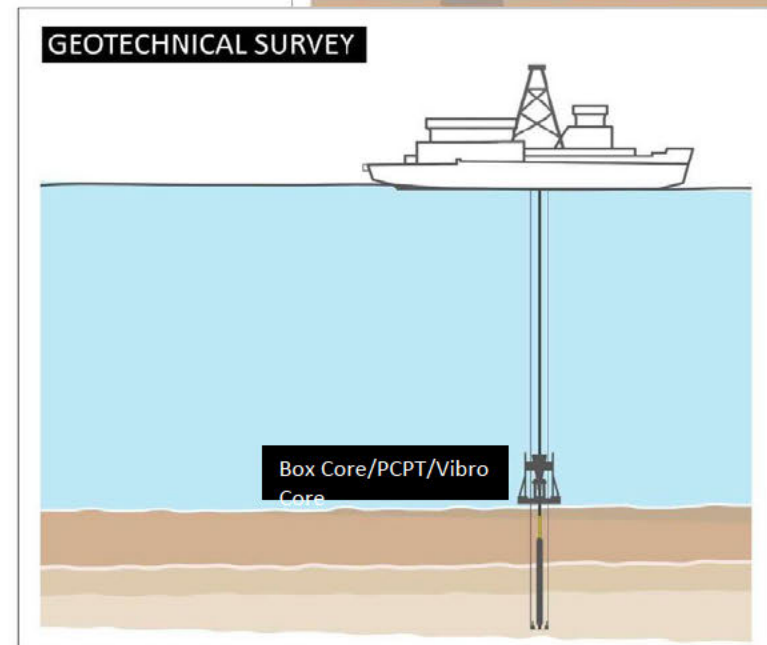
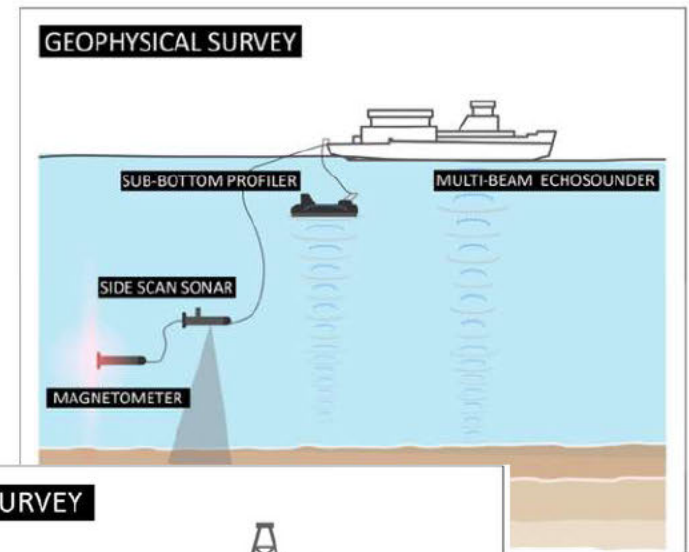


**Activity:** Shell is planning to carry out a survey of the pipeline route and terminals connecting the Crux and Prelude facilities.

A vessel will traverse the pipeline route, towing survey equipment and deploying coring equipment.

**Duration:** <5 days

**Timing:** 1 May – 31 December 2023\*



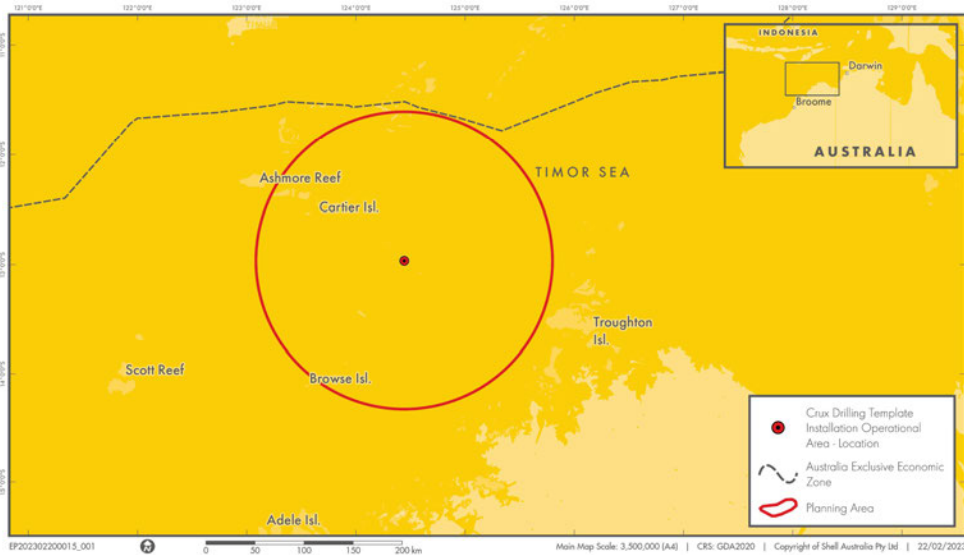
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## 2. Crux Drilling Template Installation Environment Plan

A template which will act as a guide for the drill bit during drilling operations

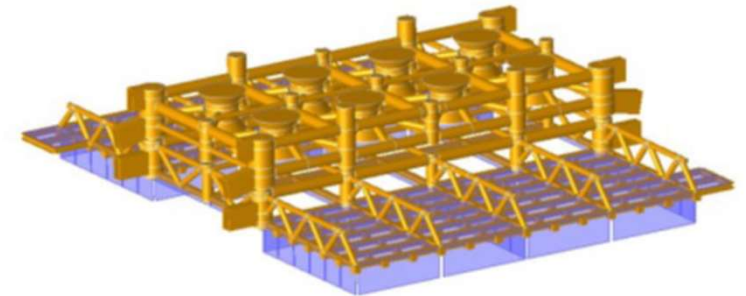


**Activity:** Shell is planning to lower a fabricated steel structure onto the seabed, which will assist with orienting and locating the drilling activities and the installation of the Crux jacket.

**Dimensions:** 19m length, 14m width, 4m high and covers a seabed footprint of 266m<sup>2</sup>.  
It weighs 200 tonnes

**Duration:** <7 days

**Timing:** 1 September 2023 – 1 April 2024\*

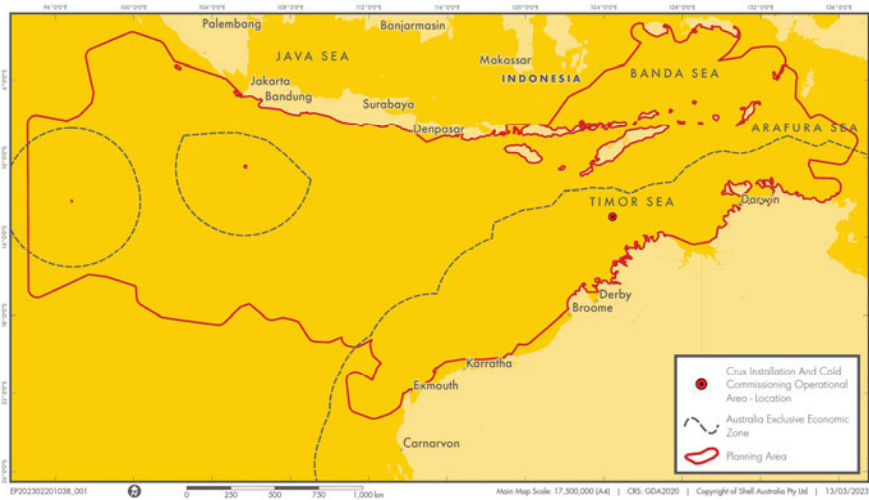


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### 3. Crux Development Drilling Environment Plan



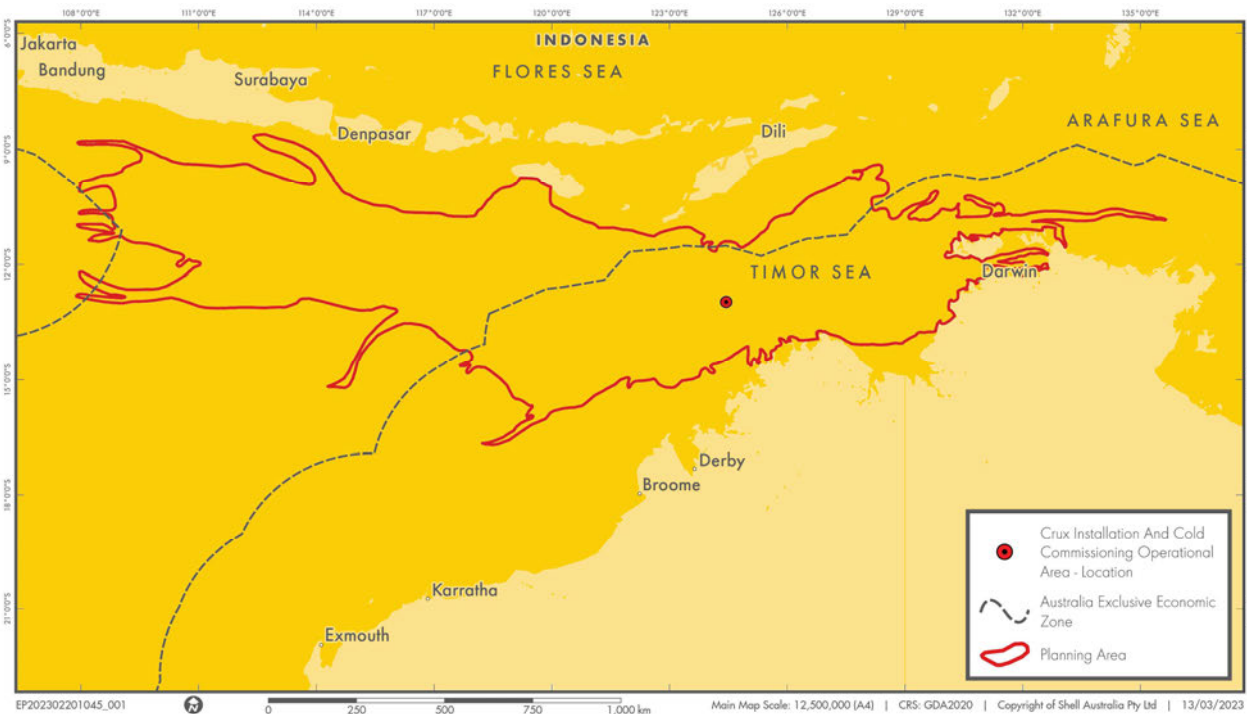
**Activity:** Shell is planning to drill five production wells through a drilling template and suspend them. The suspended wells will be commissioned once the Crux facility has been installed.

#### Timing:

- Expected Mobile Offshore Drilling Unit Operations start date – end 2023 - early 2024.
- Duration: approximately 10 months, with 10 months contingency.
- Expected temporary well suspension period, approximately 2-3 years.



## 4. Crux Installation and Cold Commissioning Environment Plan



Shell is planning to install the Crux pipeline, substructure and Topsides.

The facility will commence cold commissioning once installation is complete.

**Duration:** Mid 2024 – Dec 2026

**Timing:** start mid 2024, pending regulatory approvals.

*Dates for the commencement of activities and duration are subject to schedule change*

## 4. (cont.) Crux Installation and Cold Commissioning Environment Plan

### Key activities

#### Crux pipelay

- Installation of 26-inch export pipeline (~165 km long) from Prelude to Crux
- Vessel operations
- Pre- and post-lay geophysical surveys
- Pipeline hydrotest, preservation and associated discharges





# Crux Environment Plan – Unplanned Events

## Unplanned

### Emergency Events – Hydrocarbon Spill

- Align with relevant requirements from the International Convention for the Prevention of Pollution from Ships and subsequent regulations
- Valid Shipboard Oil Pollution Emergency Plan or Shipboard Marine Pollution Emergency Plan (as appropriate for vessel classification)
- Implementation of national and international regulations and conventions for collision prevention, safety and navigation at sea
- Offshore Vessel Inspection Database (OVID) process
- Australian Hydrographic Office Notice to Mariners
- NOPSEMA accepted Environment Plan and Oil Pollution Emergency Plan (OPEP) in place
- Relevant Persons consultation process
- Vessel Maintenance management system

### Introduction of Invasive Marine Species from Vessels

- Ballast water exchange operations will comply with the international conventions and associated national regulations.
- Biofouling management for vessels in accordance with state, national and international biofouling management guidelines
- Biofouling management in compliance with state and commonwealth regulations
- Vessels (of appropriate class) will have a valid International Anti-Fouling System Certificate
- Maintenance of a minimum 1 km buffer from shoals and the Operational Area



## Crux Environment Plans – Additional Information

Additional information is available on the Shell Crux Website:

[www.shell.com.au/crux](http://www.shell.com.au/crux)

Independent technical environmental assistance:

- There is an independent panel, who you can go to with questions, concerns and complaints. Its anonymous, unless you want it not to be. These consultants don't work for Shell and will comment freely on their project, give their opinion and help answer your questions.



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# Q&A

**CONTACT US** Community Hotline: 1800 059 152 Email: [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com) [www.shell.com.au/crux](http://www.shell.com.au/crux)

Shell welcomes any feedback on Environment Plan submissions, including requests for further information. If you have functions, interests or activities that may be affected by any of our projects, Shell Australia invites you to get in touch.



# Indigenous Consultation

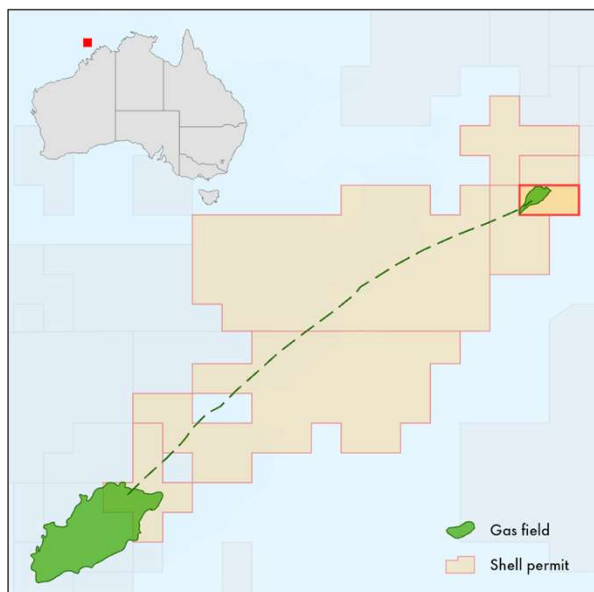
Additional information

Jaimie Henderson  
Corporate Relations Lead

## Crux Operations

Investigating the likelihood of tangible underwater archaeology

### Crux field overview



#### What we know

- Database searches have been undertaken through the WA and NT government systems for registered sites. While many intersect with the larger planning areas, there are no sites currently registered within the operational area.
- Crux operational footprint is below the historical seabed levels (below 130m sea level) meaning that there is a very high unlikelihood that there is any tangible cultural heritage – the area was never above sea levels when human occupation existed.
- Further work is in the process of being commissioned from a mapping perspective on what tangible underwater cultural heritage could remain intact.

#### What we don't know

- Any concerns for particular areas and sites that may exist for each relevant person
- Perceived effectiveness of our current management methods

# Options for Engagement

- Understand a lot of proponents have been reaching out desiring consultation
- Shell want to make it as easy as possible for our Indigenous relevant persons to engage
- There are a variety of options available for which to hear about the project and be consulted – this forum is but one option.
- Once you've had time to consider information there are many options for next steps:
  - Community drop-in centres,
  - Traditional methods (phone, emails, video calls)
  - On-Country visits

We are happy to work with each group's individual preference so please let us know.



# Environmental Panel

A panel of subject matter experts has been established and Indigenous relevant persons will be provided access to the panel, with the costs incurred by Shell.

Information is sometimes specialized and Shell wants to ensure that each person or group is comfortable and confident in their understanding of the more technical components.

The panel:

- is comprised predominantly of businesses and specialists who are independent of Shell although there is some who have previously worked for Shell
- Costs to be covered by Shell
- Selection of what panel member to be used is at the discretion of the client (you)
- You will be the panel's clients – Shell will not see any of the information shared, or advice sought between the panel and the client, only the amount of hours worked and to which party the advice was provided for acquittal purposes.

Our aim is that the information provided by the panels will ensure that our Indigenous relevant persons have access to all the relevant information to provide feedback on our Crux EP.

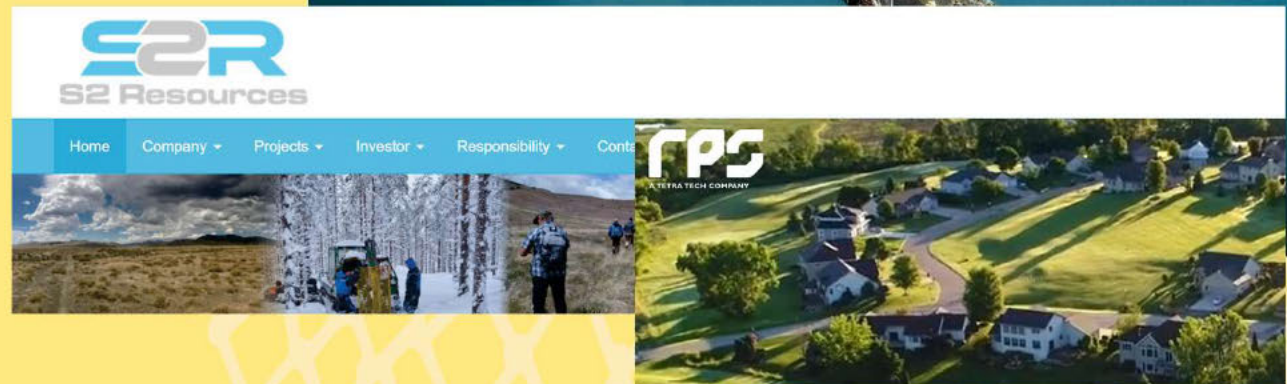
# Shell Crux Project Forum 1

## Meeting the Independent Environmental Panel Experts

### About Us

- Xodous
- MCC Environmental
- S2Services
- RPS

How can we help  
Q&A's





# Q&A





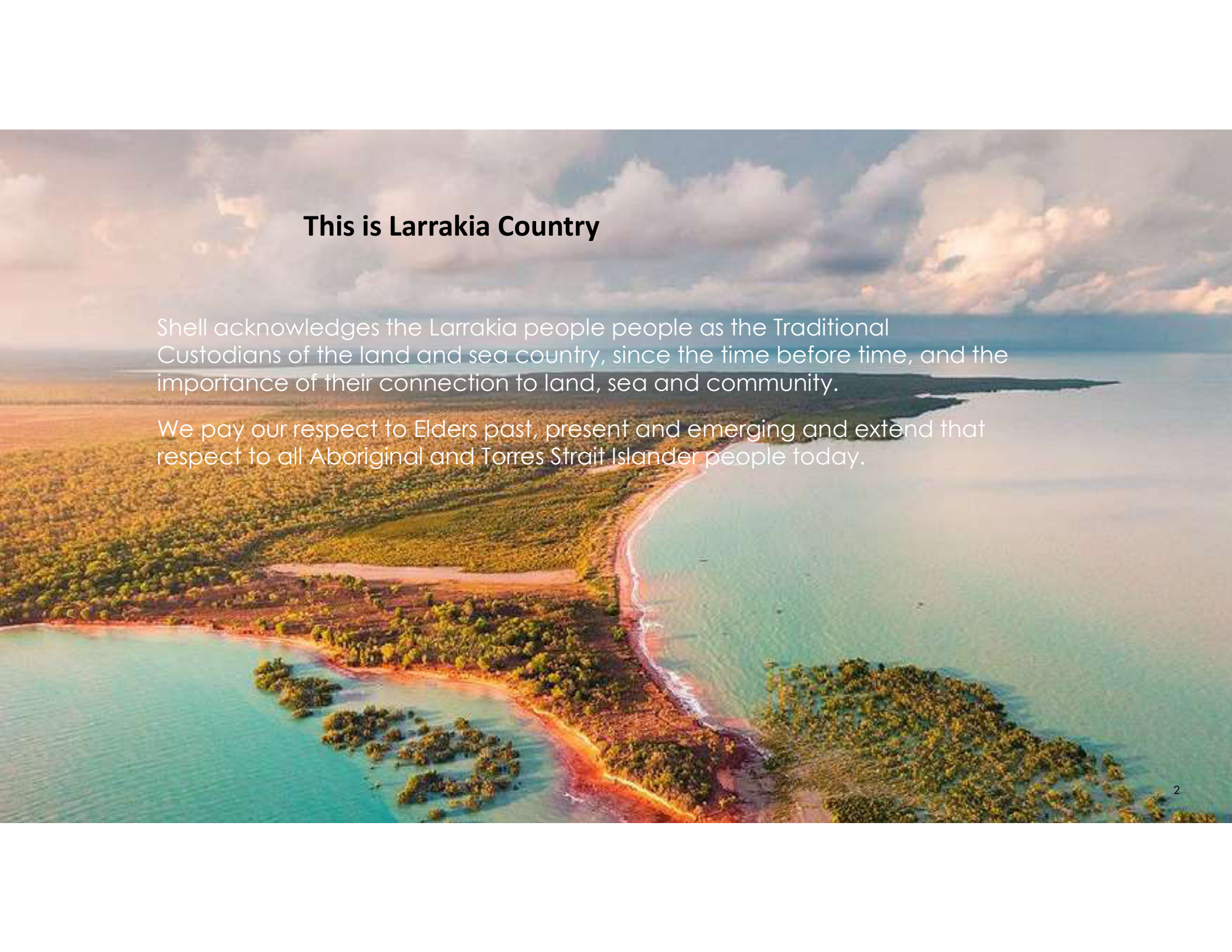
## **Appendix A - 7.05 Presentation – Indigenous Forum 3 in Darwin**





**SHELL CRUX PROJECT**  
Darwin  
31 May 2023





## **This is Larrakia Country**

Shell acknowledges the Larrakia people as the Traditional Custodians of the land and sea country, since the time before time, and the importance of their connection to land, sea and community.

We pay our respect to Elders past, present and emerging and extend that respect to all Aboriginal and Torres Strait Islander people today.



# Brief summary

- Who is Shell?
- What is the Crux Project, and how might it affect the environment?
  - Seabed survey
  - Drilling template
  - Drilling development
  - Installation and Commissioning

## The Shell Crux Environmental Plans

- What Shell is doing to protect cultural heritage, marine systems, coastlines, TO access to country
- Options after today
- Ongoing consultation and the Independent Panel



# Who is Shell?



## SHELL OPERATED

● Crux	82%
● Gangarri	100%
● Prelude	67.5%
● QGC	75%

## WHOLLY OWNED SUBSIDIARIES

■ Powershop	100%
■ Select Carbon	100%
■ Shell Energy Australia	100%
■ sonnen	100%

## NON-OPERATED

▲ Arrow	50%
▲ Browse	27%
▲ ESCO Pacific	49%
▲ Gorgon	25%
▲ Kondinin Energy	50%
▲ North West Shelf	16.67%
▲ WestWind	49%

March 2023

## What is Prelude?

- Prelude is a Floating Liquefied Natural Gas (FLNG) project located 475km north-northeast of Broome, Western Australia, in the Browse Basin.
- The Prelude FLNG facility is moored over the Prelude gas field in 250m water depth and more than 200km from the coastline.
- Prelude produces LNG, LPG and condensate.
- Prelude has an onshore supply base in Darwin.



**Location:**  
WA-44-L, in Commonwealth marine waters, 475 km north-north east of Broome in Western Australia

**Facility Type:**  
Floating liquefied natural gas (FLNG) facility

**Number of wells:**  
Seven

**Production capacity:**  
3.6 million tonnes per annum (mtpa) LNG, 0.4mtpa 1.3mtpa condensate

**Water depths:**  
250m

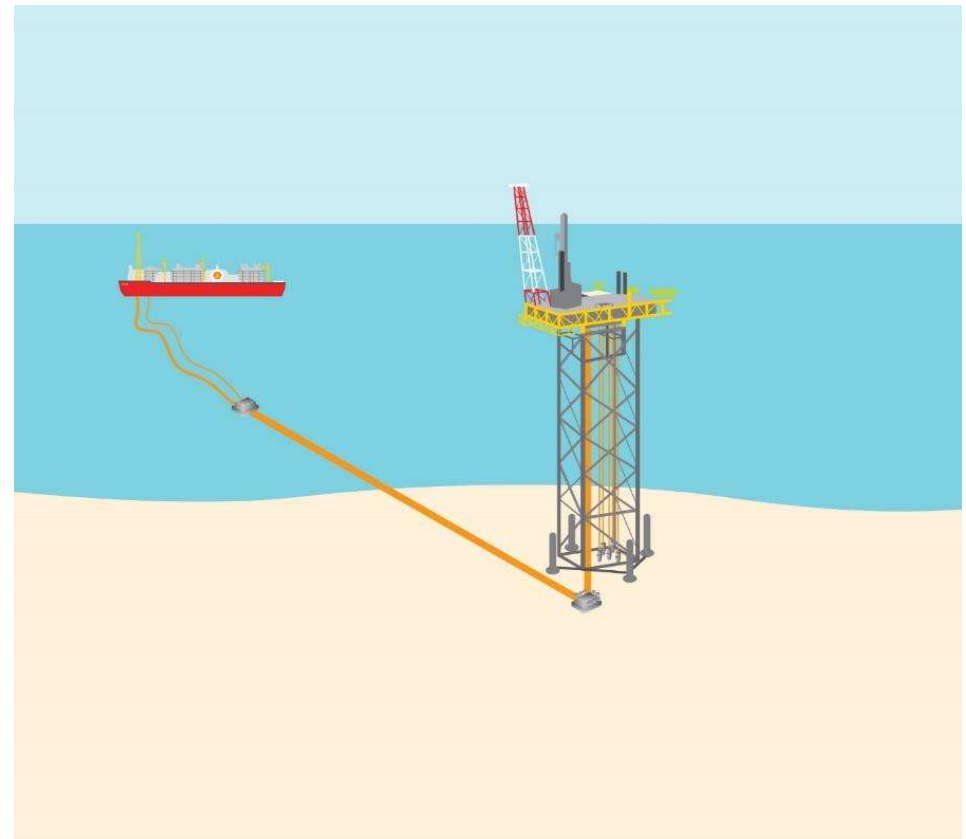
**Status:**  
In operation





## What is Crux?

- In May 2022, Shell Australia and SGH decided to go ahead with Crux.
- The project is a long term extension to the existing Prelude FLNG facilities.
- Crux consists of a platform (which is not normally manned), above 5 gas wells. The gas is delivered via a pipeline to Shell's Prelude project, which is moored some 165 Km away, and processed onboard.
- The project is part of Shell's strategy to help meet the needs of gas users as the energy market moves to a lower carbon future.



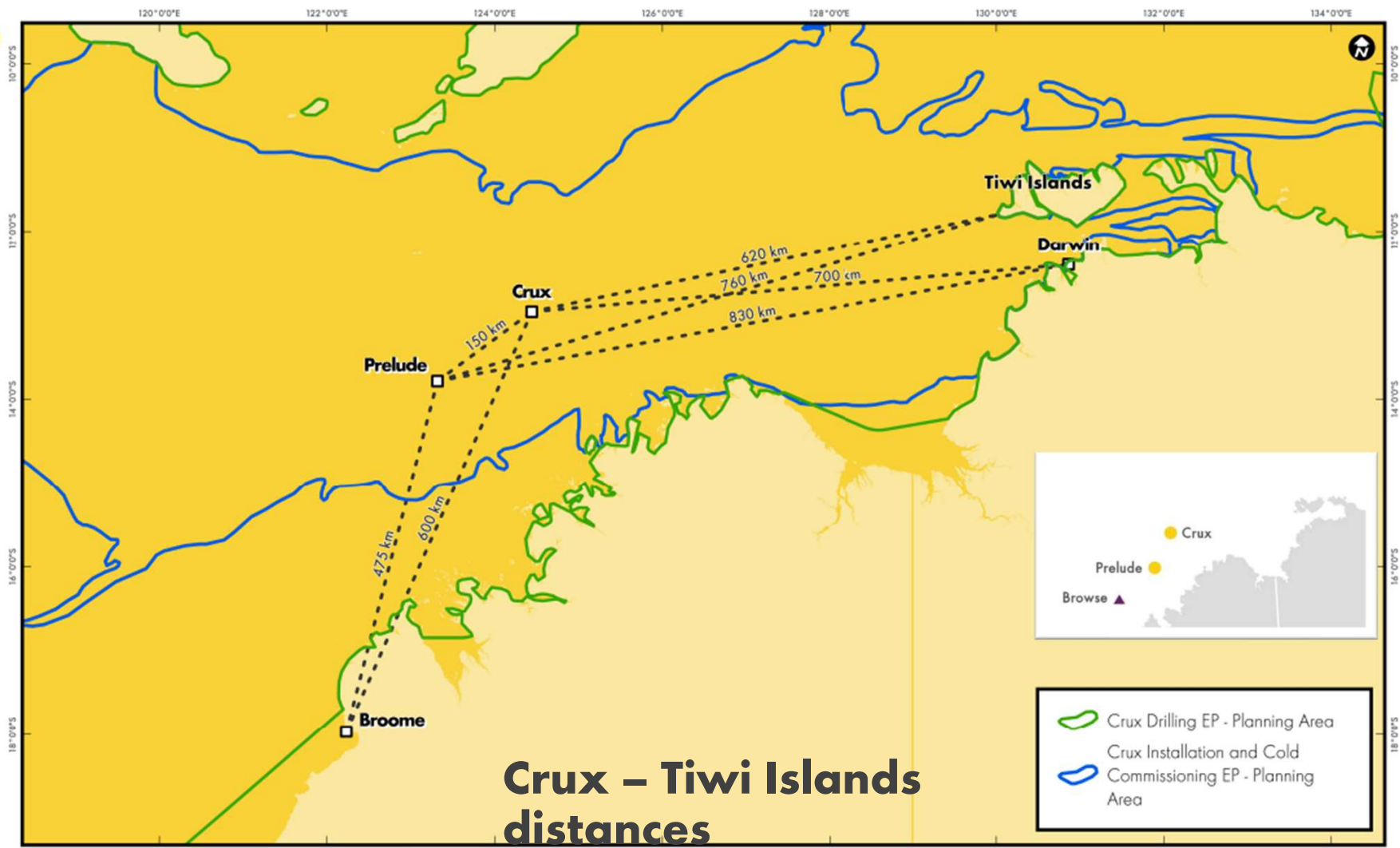


## The environmental plans

There are four Environment Plans for Crux that describe what Shell will do to protect the environment.

These must be submitted to, and approved by NOPSEMA. This consultation is a key part of that process. NOPSEMA has a key role in the approvals process and has the power to approve and reject environmental plans. They also have the power to ensure Shell implements all the requirements of the Environmental Plans, and can enforce these by law.

1. Seabed Survey Environment Plan
2. Drilling Template Environment Plan
3. Development Drilling Environment Plan
4. Crux Installation and Cold Commissioning Environment Plan



## **Crux Environment Plans**

These describe the impacts and risks, both planned and unplanned that may occur

**Planned impacts** are known activities that result in physical impact to the environment, i.e.:

- Disturbances to the seabed.
- Drilling Fluid Discharges.
- Noise generated from construction activities.
- These planned impacts will occur within close proximity to the operational area.

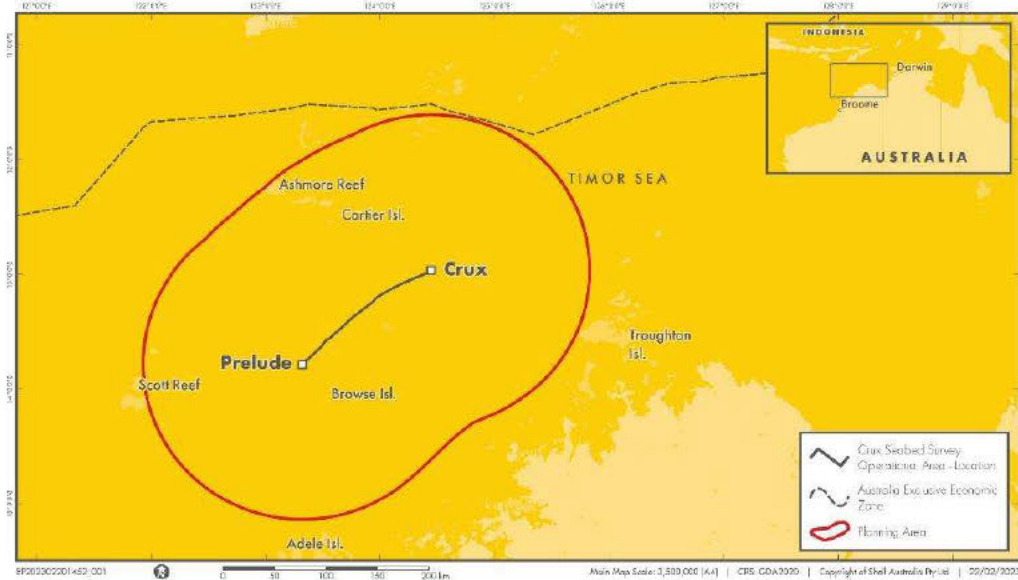
**Unplanned risks** are accidents. These could include:

- Diesel spill as a result of a vessel collision.
- Hydrocarbon spill as a result of loss of well control.
- Introduction of invasive species from the vessels that will be entering Australian waters.

Such accidents are very rare however, Shell has to be prepared for them, to ensure they have adequate controls. Potential accidents are what define the whole of the **Planning Area**.

Each Environmental Plan describes how Shell plans to minimize planned impacts and keep unplanned risks to as low and reasonably practicable.

# 1. Crux Seabed Survey Environment Plan - Looking at the seabed and sub-seabed conditions



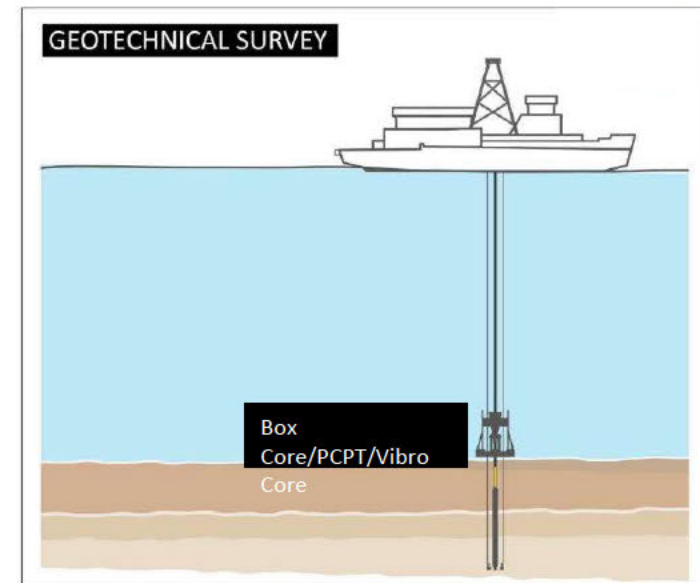
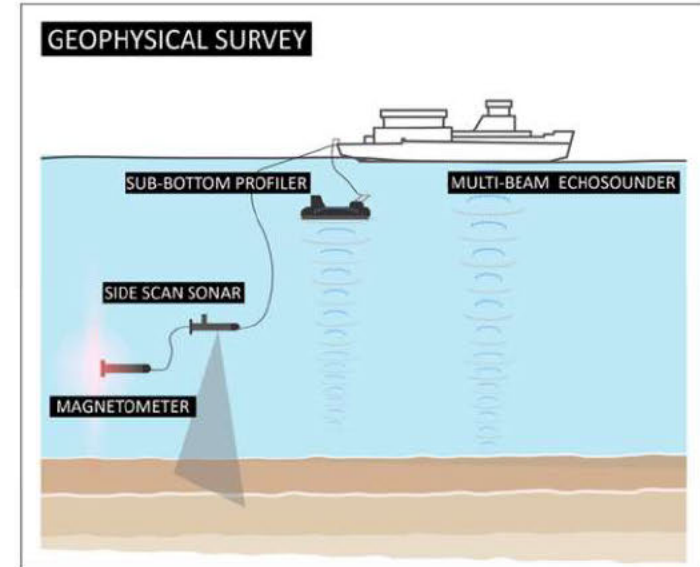
**Activity:** Shell is planning to carry out a survey of the pipeline route and terminals connecting the Crux and Prelude facilities.

A vessel will traverse the pipeline route, towing survey equipment and deploying coring equipment.

**Duration:** <5 days

**Timing:** 1 July - 31 December 2023\*

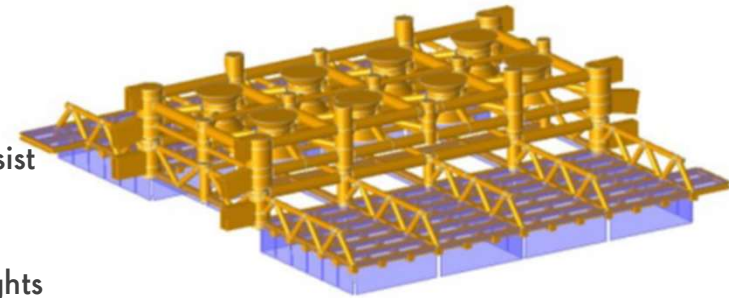
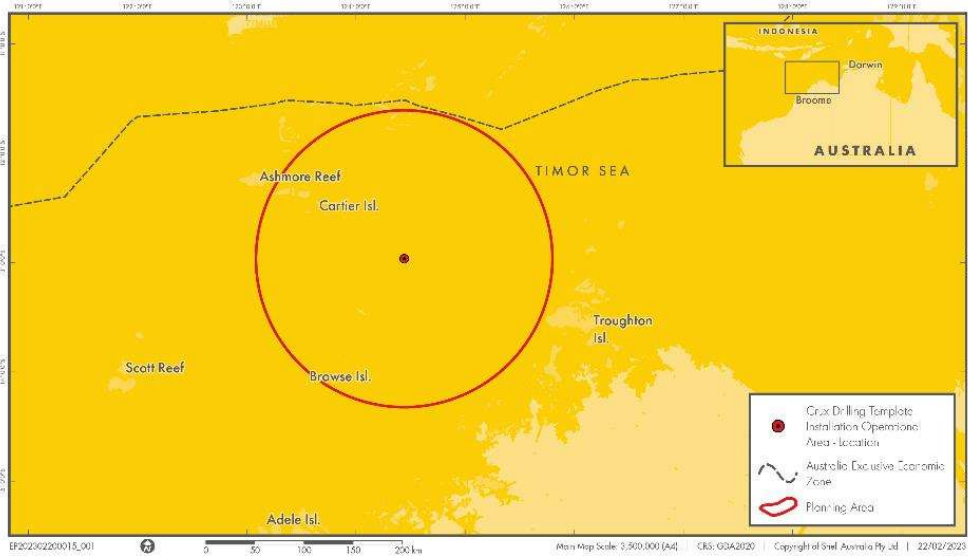
**Key points**





## 2. Crux Drilling Template Installation Environment Plan -

The template will act as a guide for the drill bits during drilling operations



**Activity:** Shell is planning to lower a fabricated steel structure onto the seabed, which will assist with orienting and locating the drilling activities and the installation of the Crux platform.

**Dimensions:** 19m length, 14m width, 4m high and covers a seabed footprint of 266m<sup>2</sup>. It weights 200 tonnes

**Duration:** <7 days

**Timing:** 1 September 2023 – 1 April 2024\*

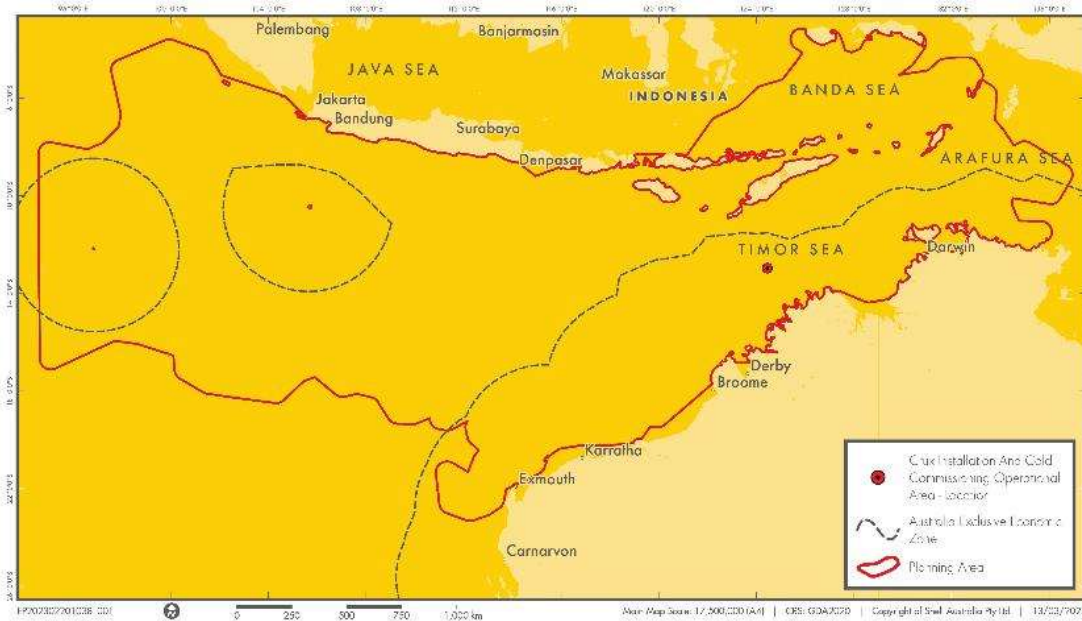
**Key points**

CONFIDENTIAL

March 2023

11

### 3. Crux Development Drilling Environment Plan – drilling the wells



Graphic showing individual spill –  
show NOPSEMA video here:

<https://www.nopsema.gov.au/offshore-industry/environmental-management/oil-pollution-risk-management>

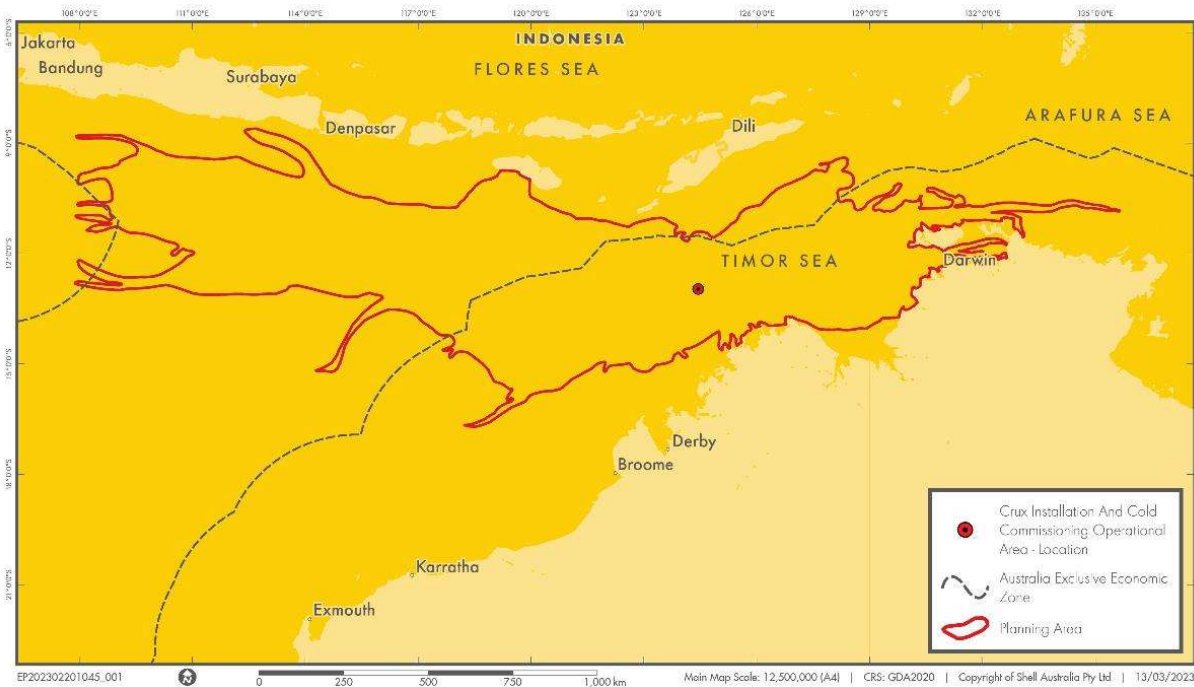
**Activity:** Shell is planning to drill five production wells through a drilling template and suspend them. The suspended wells will be commissioned once the Crux facility has been installed.

**Duration:** approximately 10 months, with 10 months contingency. Expected temporary well suspension period, approximately 2-3 years.

**Timing:** Expected Mobile Offshore Drilling Unit Operations start date – end 2023 - early 2024.

**Key point**

## 4. Crux Installation and Commissioning Environment Plan – putting in the pipeline and substructure and checking everything works



### Crux pipelay

- Putting in the 26-inch export pipeline (~165 km long) from Prelude to Crux
- Vessel operations
- Pre- and post-lay surveys
- Testing it all



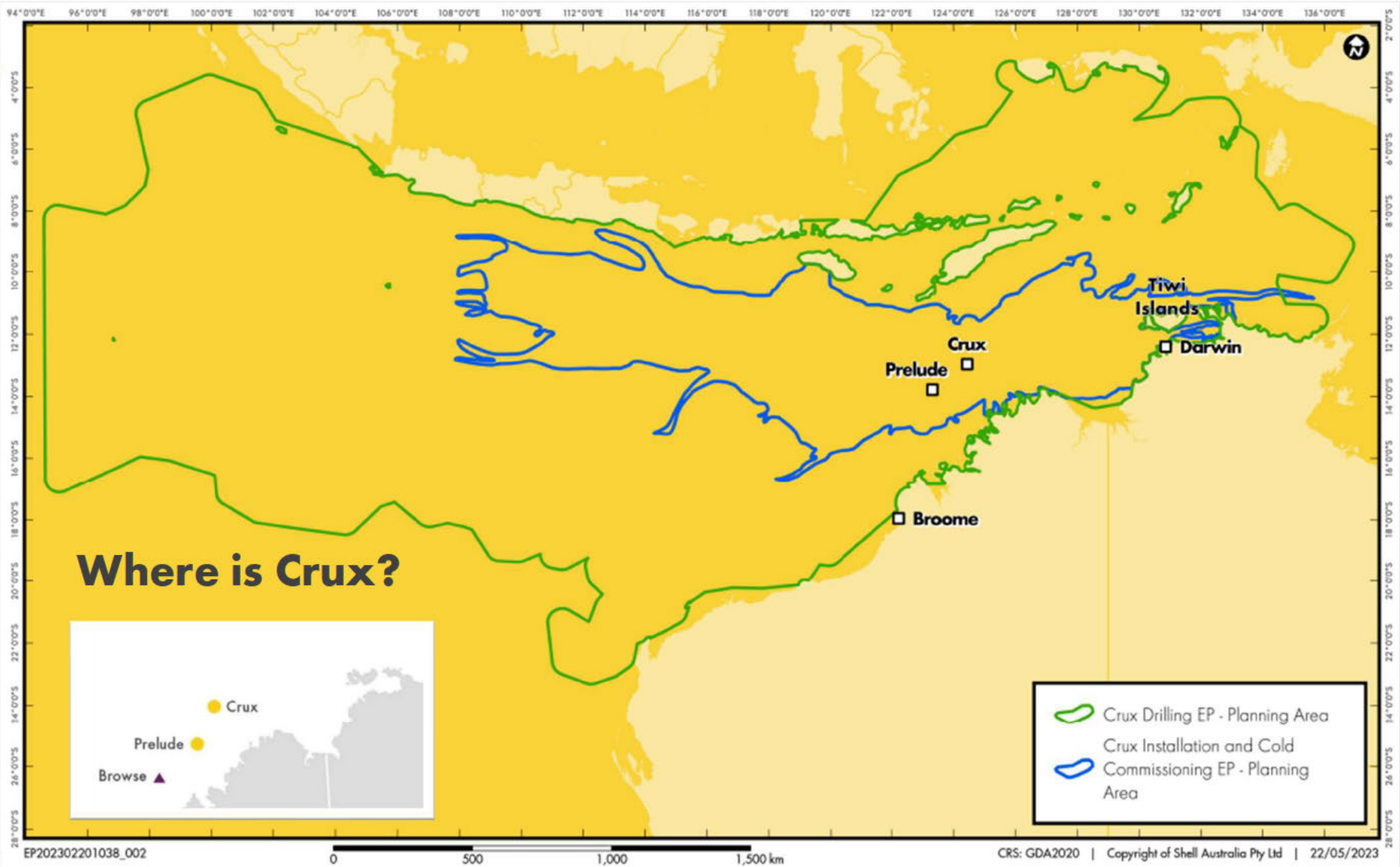
The facility will commence cold commissioning (testing) once installation is complete.

**Duration:** Mid 2024 – Dec 2026

**Timing:** start mid 2024, pending regulatory approvals.

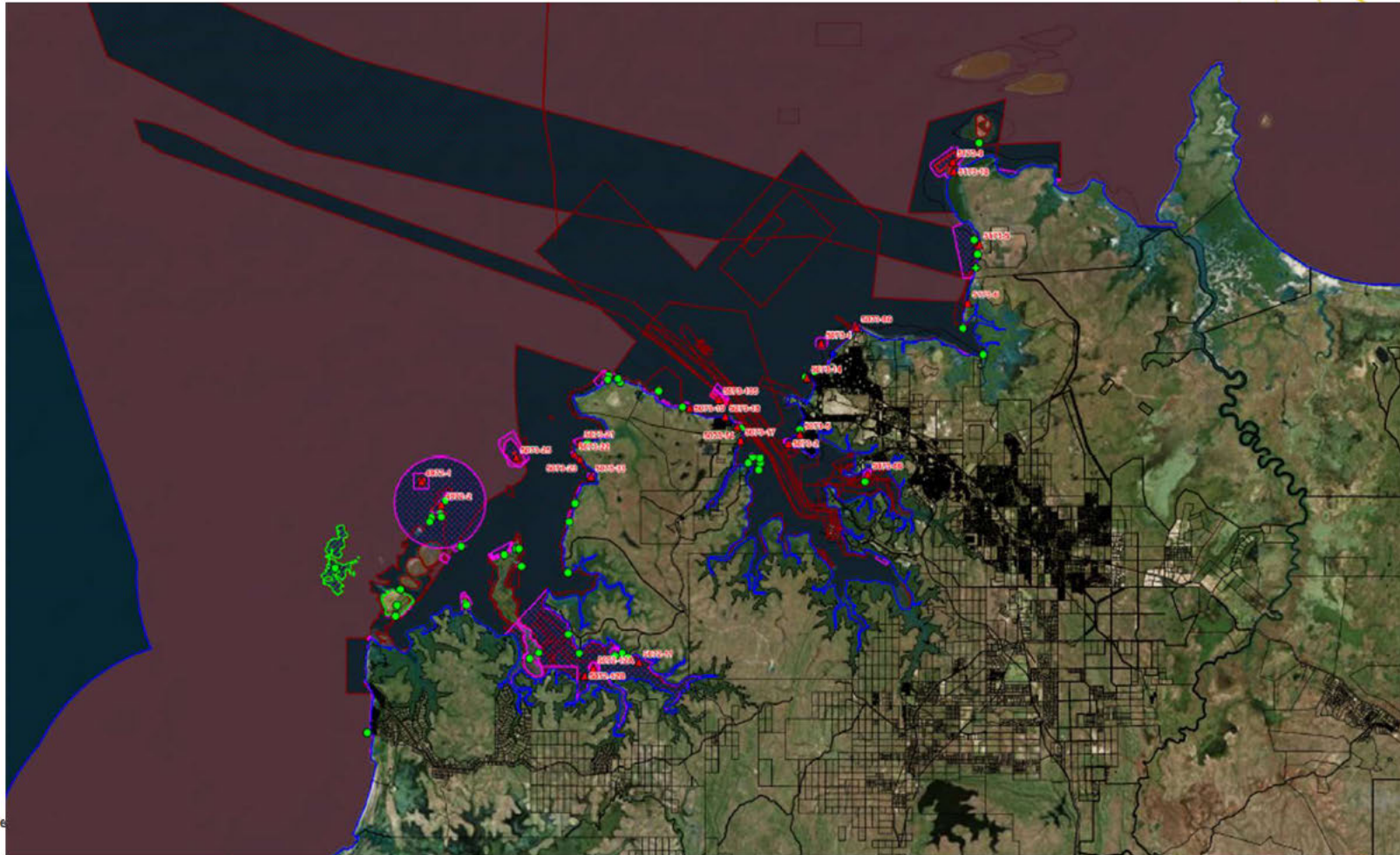
### Key points

*Dates for the commencement of activities and duration are subject to schedule change*





# Crux Operations - Protecting land and sea Country.





# Crux Operations - Protecting land and sea Country.

There are places, histories, stories and sites that are important to Aboriginal people in the Crux Planning area. Shell is seeking to understand this, using

- Healthy Country plans,
- Native Title Determinations,
- ILUAs and IPAs
- Cultural Heritage Surveys and Assessments

Shell is also listening directly with Aboriginal people.

## Underwater Cultural Heritage

- Shell have searched the WA and NT government systems for registered sites. While many intersect with the larger planning areas, there are no **UCH sites currently registered within the operational areas.**
- The Crux platform is below the historical seabed levels (below 130m sea level). **Its very unlikely there are tangible cultural heritage that far out to sea – the area was never above sea levels when human occupation existed.**
- Further work is being done on what tangible UCH could be in the **broader planning area**
- Shell still needs to understand sites and places that have spiritual and sacred importance

## What Shell doesn't know

- Shell's understanding of what is important to Aboriginal people is limited and partial.
- Shell doesn't fully understand the concerns Aboriginal people have for particular areas and sites, especially as these differ from group to group.
- If Shell's current management methods are good enough

# Shell Community Programs relevant to NT & Tiwi Islands

## Prelude to the future (Darwin)

- Qualifications and training in areas of skills shortage for to get people employed
- Shell co-funds the program with Department of Trade, Business and Innovation, and Group Training NT (GTNT) run the program.
- 70 of the 83 graduates have gained full time work since the program commenced in 2016
- A sixth group intake focussing on areas of skills shortage will occur in the second half of 2023.

# Shell Community Programs relevant to NT & Tiwi Islands

## Indigenous Business Support Program – Darwin

- TOs have said they want pathways to jobs and business opportunities for economic independence.
- The IBS program is delivered by Northern Territory Indigenous Business Network (NT IBN) and supported by Shell as part of Shells social investment portfolio.
- The program provides business development, training and networking services.

## Lidiar Group – Darwin and Brisbane

- Enterprise development support available for Indigenous businesses within our supply chain.
- Assist with retaining and growing genuine Indigenous business opportunities within our supply chain.

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# Environmental Panel

A panel of subject matter experts has been established.  
Indigenous relevant can use the panel, with the costs incurred by Shell.

Shell wants to ensure that anyone can ask whatever they like from people who are not part of Shell, but who are experts in the areas of environmental protection .

The panel made up of specialists who are independent of Shell although there is some who have previously worked for Shell.

Key points to know:

- Costs to be covered by Shell
- Selection of what panel member to be used is up to you
- You will be the panel's clients – Shell will not see any of the information shared, or advice sought between the panel and the client, only the amount of hours worked and to which party the advice was provided for acquittal purposes.

## Crux Environment Plans – Additional Information

Additional information is available on the Shell Crux Website:

[www.shell.com.au/crux](http://www.shell.com.au/crux)

Independent technical environmental assistance:

- There is an independent panel, who you can go to with questions, concerns and complaints. Its anonymous, unless you want it not to be. These consultants don't work for Shell and will comment freely on their project, give their opinion and help answer your questions.





# Shell Crux Project

After this?

- Possible further meetings – let Shell know
- Talk to your communities
- Ask questions of the Panel
- Ask questions of Shell what you want to know more about or have concerns
- Info on the web

Email:

[SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com)

Web:

- [www.shell.com.au/about-us](http://www.shell.com.au/about-us)
- Google “Shell Crux”



**SHELL AUSTRALIA INVITES YOU TO COME AND TALK TO US ABOUT THE CRUX PROJECT**

In Australia, Shell has an integrated energy solution portfolio which includes gas production and liquefaction, as well as renewable energy and energy services businesses.

With our gas energy partner, SGN Energy, we are progressing to develop the Crux natural gas field. This is a major natural gas field in the North West Shelf area, located about 300 km offshore from the coast of Western Australia. The field will be developed and operated by a joint venture between Shell Australia and SGN Energy. Further information is available at [www.shell.com.au/crux](http://www.shell.com.au/crux).

If you are interested in learning more, Shell Australia invites you to join us at two forums as follows:

Forum 1: Wednesday, 19 April 2023  
Forum 2: Wednesday, 10 May 2023  
Locations: Please contact us for more information.

For more information please visit [www.shell.com.au/crux](http://www.shell.com.au/crux).

SGN | Energy

#### REGISTRATION INSTRUCTIONS

Shell Australia is extending invitations to relevant persons and organisations, to attend our upcoming forums on 19 April and 10 May 2023 to talk to us about our Crux Project.

You have an opportunity to nominate one person to represent your Organisation, Native Title Determination Group, Native Title Holders, Native Title Claimants, or Individual's Family Groups, at the Shell forums.

- All Shell forum participants will be provided with travel and accommodation support.
- All Shell forum participants will have an opportunity to vote on the location of the forum.
- Due to the venue capacity, the forums will be restricted to a maximum of 120 participants.
- To register for the Shell forums, please complete this form by Friday 7th April 2023, 5pm (AWST) and return your form to [SDAcruxproject@shell.com](mailto:SDAcruxproject@shell.com).



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**Appendix A - 7.06 Presentation - Bardi Jawi, Mayala and  
Walalakoo Meeting – 15 August 2023**



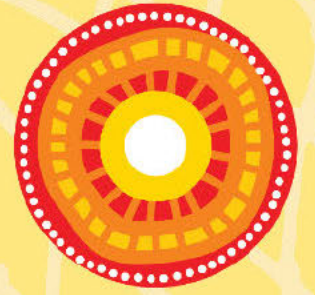


Shell Australia  
Bardi and Jawi Niimidiman  
Aboriginal Corporation, Mayala  
Inninalang Aboriginal  
Corporation and Walalakoo  
Aboriginal Corporation

15 August 2023

# Aims of today

1. Introductions – who's in the room – Walalakoo, Mayala, Bardi Jawi, Shell
2. Some background on Shell in Australia and Shell in WA
3. Crux - what it is, where it is at now.
4. Environmental issues – Q and A
5. Priorities for Aboriginal groups- Indigenous Social and Economic Impacts
6. Traditional Owner only time
7. Regroup - Where to from here – relationships into the future, opportunities





# Who is Shell?



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● Crux	82%
● Gangarri	100%
● Prelude	67.5%
● QGC	75%

## WHOLLY OWNED SUBSIDIARIES

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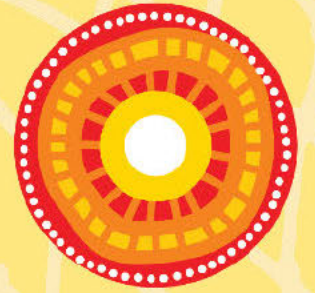
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▲ Gorgon	25%
▲ Kondinin Energy	50%
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▲ WestWind	49%

# Crux

- **What is the Crux Project?**
- **The four Environmental Plans and what they cover**
  1. Seabed survey
  2. Drilling template
  3. Drilling development
  4. Installation and Commissioning
  5. There will be more EPs to come

- Crux Video -

- **What the Crux Environmental Plans do to protect cultural heritage, marine systems, coastlines, TO access to country**
- **Ongoing engagement with TO groups and other Relevant Persons.**
- **The Independent Panel**



# What is Prelude?

- Prelude is a Floating Liquefied Natural Gas (FLNG) project located 475km north-northeast of Broome, Western Australia, in the Browse Basin.
- The Prelude FLNG facility is moored over the Prelude gas field in 250m water depth and more than 200km from the coastline.
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**Location:**  
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**Facility Type:**  
Floating liquefied natural gas (FLNG) facility

**Number of wells:**  
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**Production capacity:**  
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**Water depths:**  
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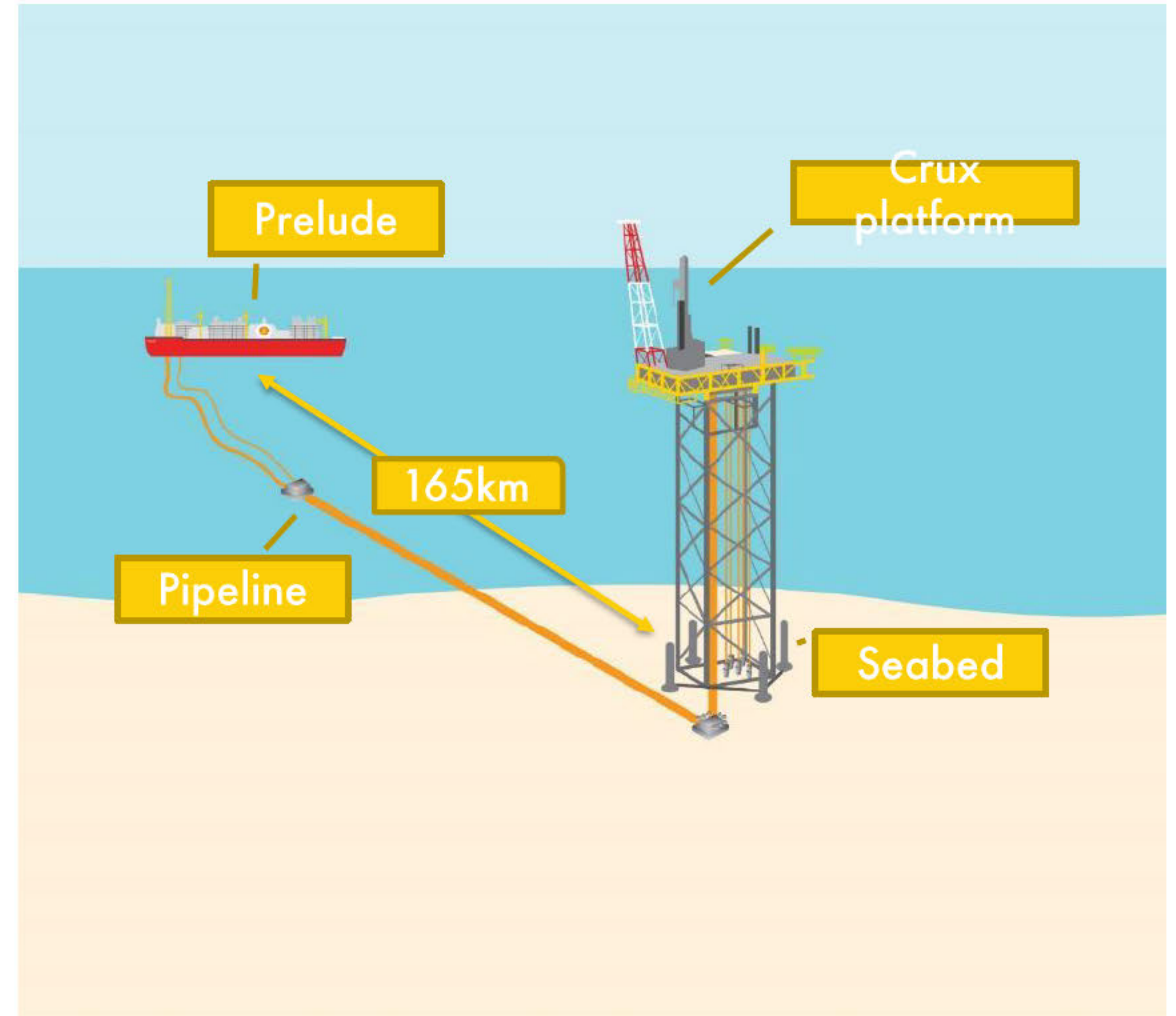
**Status:**  
In operation





# What is Crux?

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- The project is a long-term extension to the existing Prelude FLNG facilities.
- Crux consists of a platform (which is not normally manned), above 5 gas wells. The gas is delivered via a pipeline to Shell's Prelude project, which is moored some 165 Km away, and processed onboard.
- The project is part of Shell's strategy to help meet the needs of gas users as the energy market moves to a lower carbon future.



# The environmental plans

There are four Environment Plans for Crux that describe what Shell will do to protect the environment. These must be submitted to, and approved by NOPSEMA.

1. *Seabed Survey Environment Plan – submitted*
2. *Drilling Template Environment Plan – submitted*
3. **Development Drilling Environment Plan – submitted**
4. **Crux Installation and Cold Commissioning Environment Plan – to be submitted in November**
5. **Additional EPs will deal with the operations of Crux and modifications to Prelude.**



# Crux Environment Plans

These describe the impacts and risks, both planned and accidental that may occur

**Planned impacts** are known activities that result in physical impact to the environment, i.e.:

- Disturbances to the seabed.
- Drilling Fluid Discharges.
- Noise generated from construction activities.

These planned impacts will occur within close proximity to the operational area. Shell has means to control the impact of these.

**Accidents** could include:

- Diesel spill as a result of a vessel collision.
- Hydrocarbon spill as a result of loss of well control.
- Introduction of invasive species from the vessels that will be entering Australian waters.

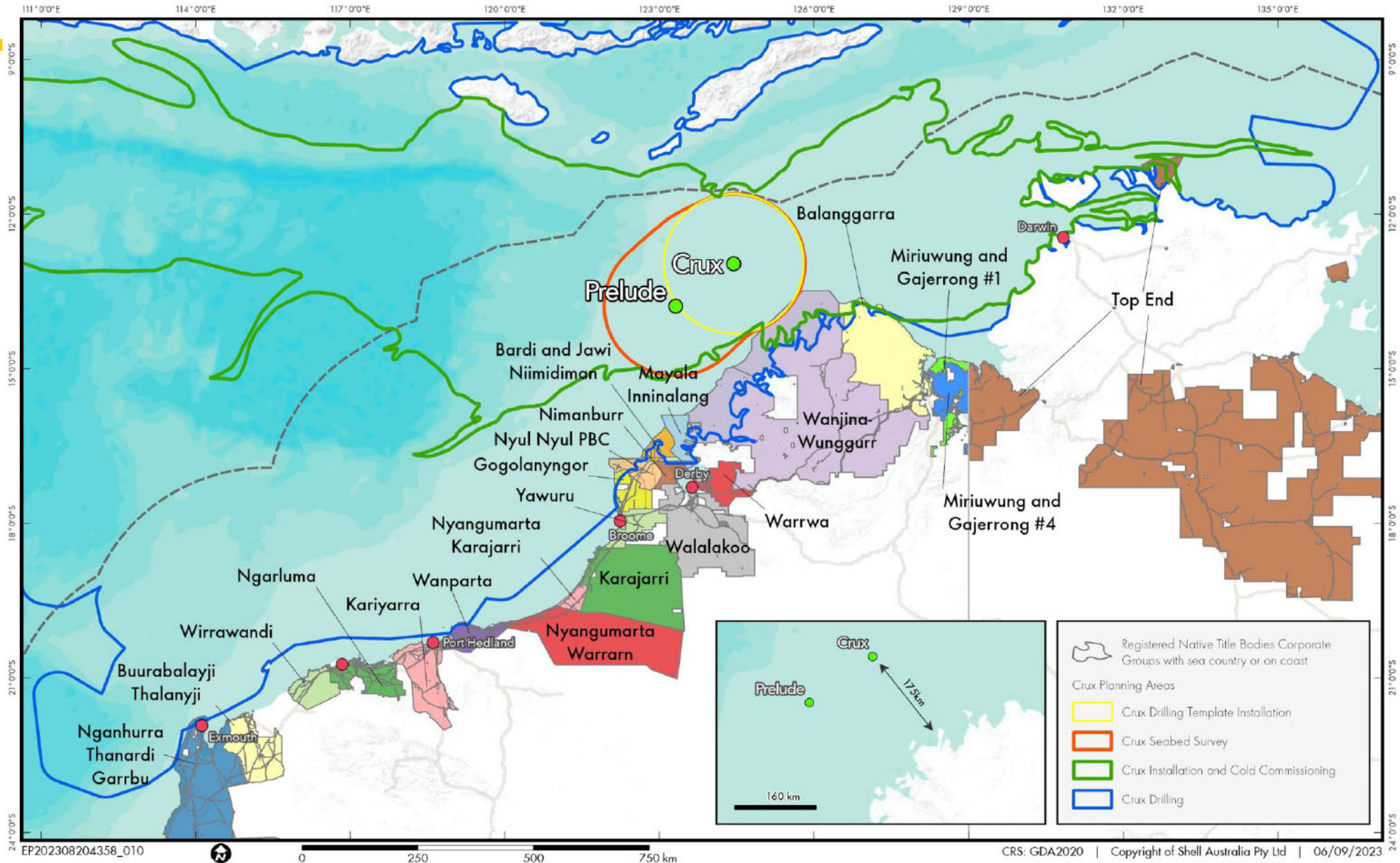
Such accidents are very rare. Shell has to be prepared for them, to ensure they have adequate controls. For each key stage of Crux, Shell develops an Environmental Plan which looks at the key risks of that stage, and the size and scale of any impacts – planned or accidental.

**The Environmental Planning Areas are the outside limit of hundreds of individual, mapped accidents**

# Oil Spill modelling



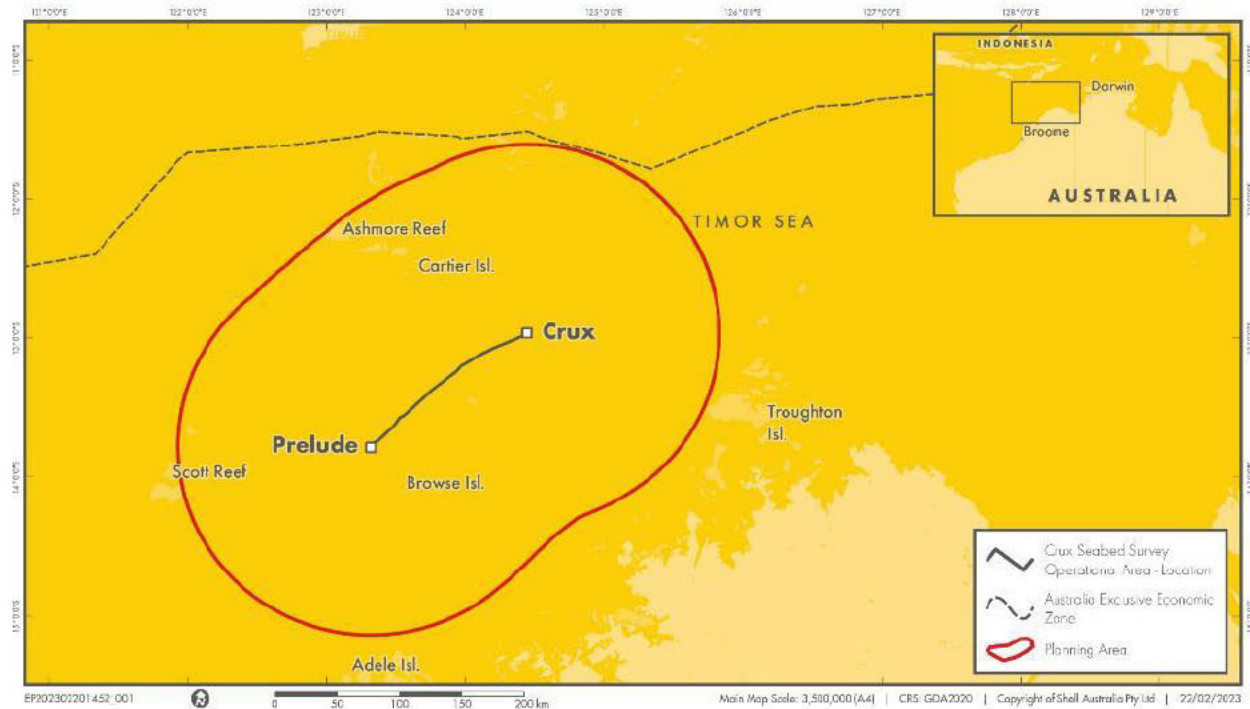
# The 4 EP planning areas





# 1. Crux Seabed Survey Environment Plan -

Looking at the seabed and sub-seabed conditions



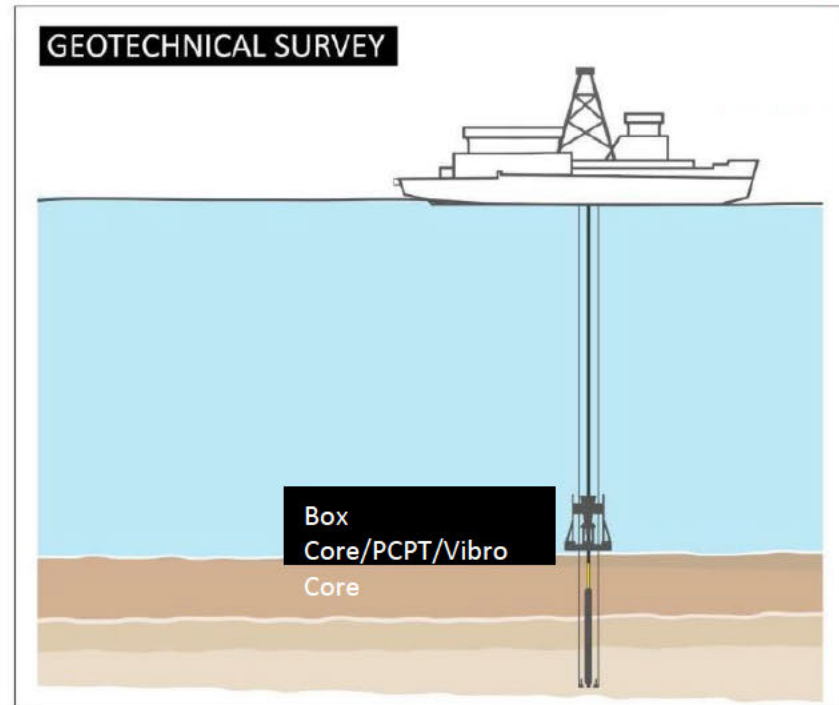
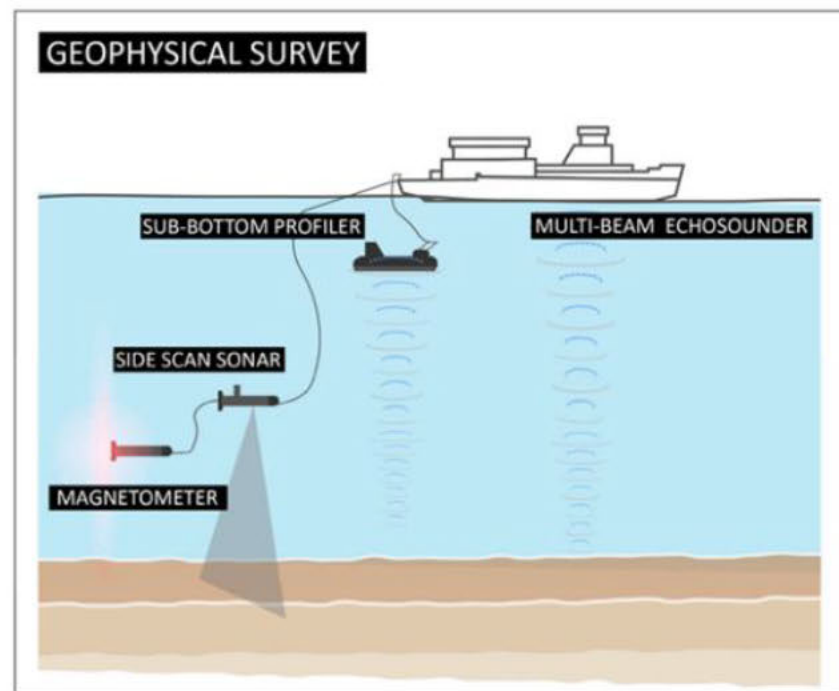
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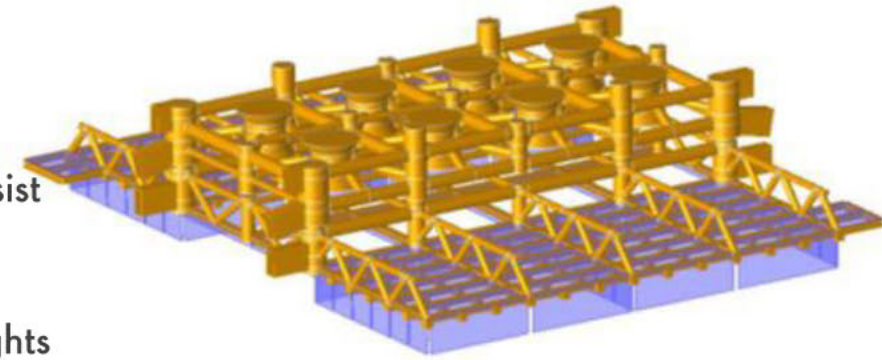
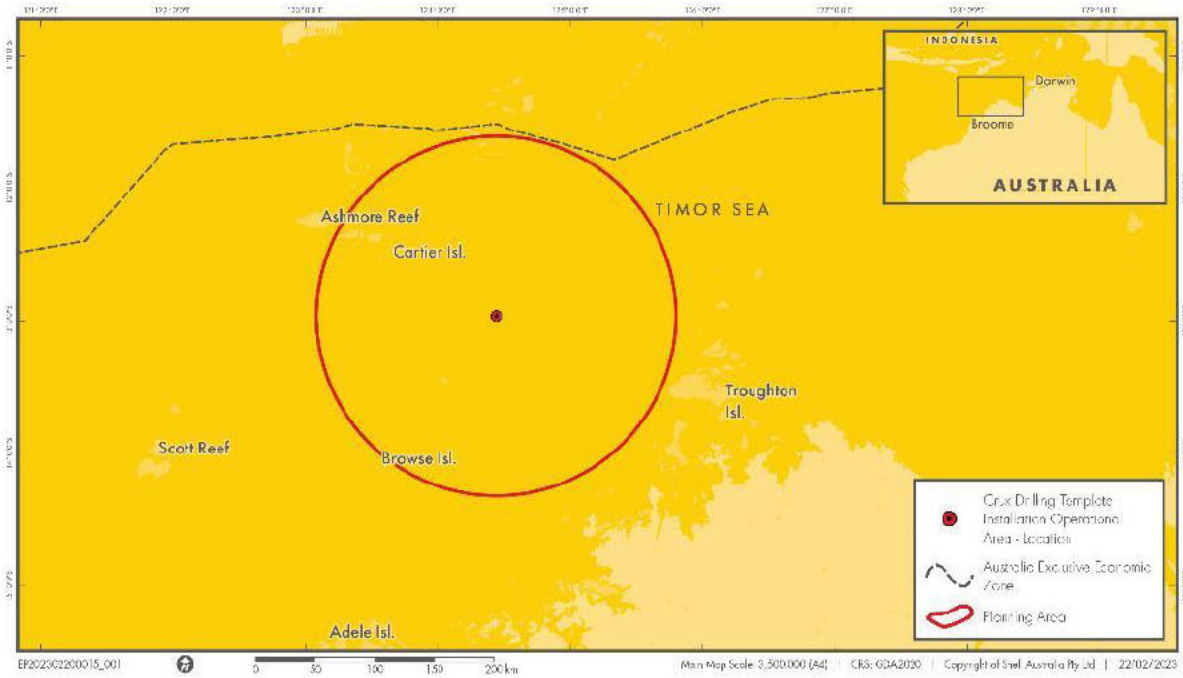
**Timing:** 1 July - 31 December 2023\*

**Key points**



## 2. Crux Drilling Template Installation Environment Plan -

The template will act as a guide for the drill bits during drilling operations



**Activity:** Shell is planning to lower a fabricated steel structure onto the seabed, which will assist with orienting and locating the drilling activities and the installation of the Crux platform.

**Dimensions:** 19m length, 14m width, 4m high and covers a seabed footprint of 266m<sup>2</sup>. It weights 200 tonnes

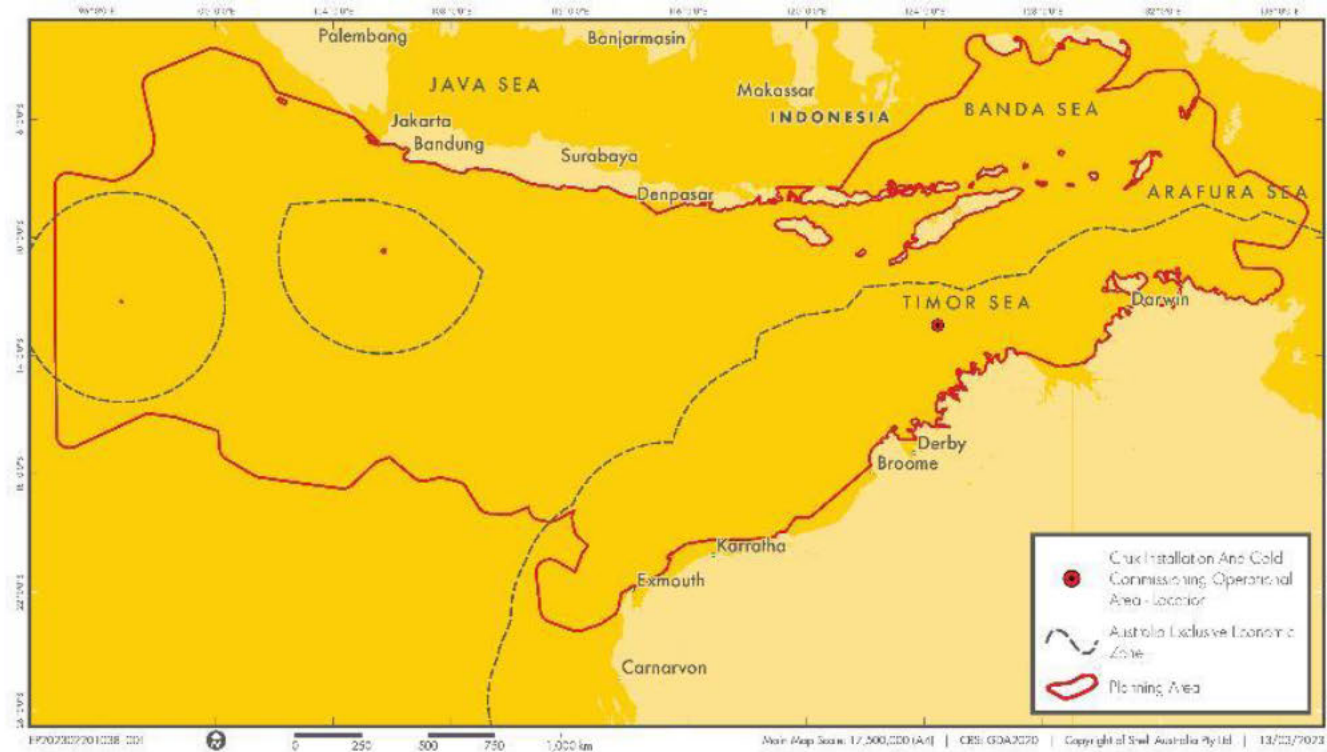
**Duration:** <7 days

**Timing:** 1 September 2023 – 1 April 2024\*

**Key points**



### 3. Crux Development Drilling Environment Plan – drilling the wells



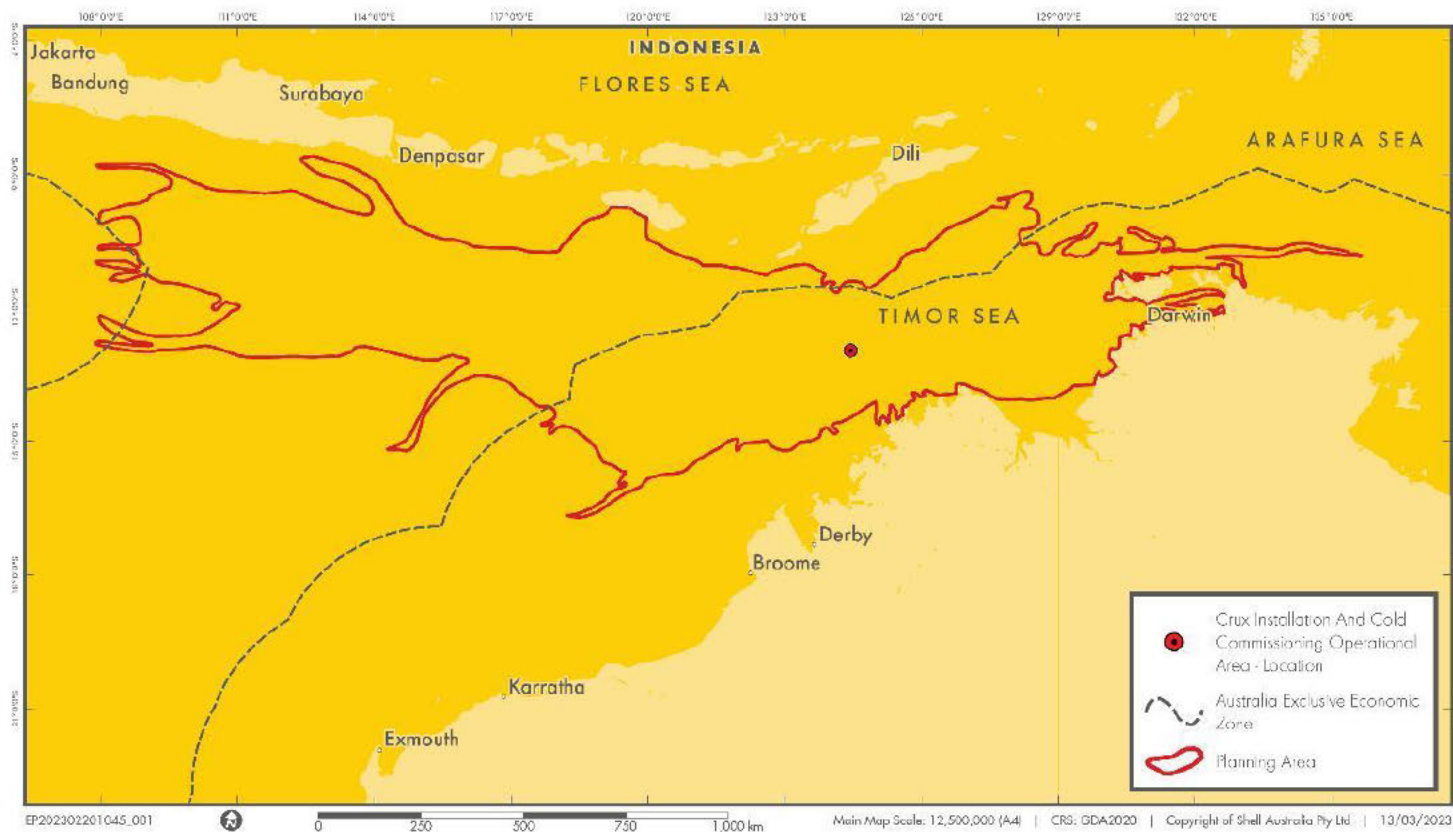
**Activity:** Shell is planning to drill five production wells through a drilling template and suspend them. The suspended wells will be commissioned once the Crux facility has been installed.

**Duration:** approximately 10 months, with 10 months contingency. Expected temporary well suspension period, approximately 2-3 years.

**Timing:** Expected Mobile Offshore Drilling Unit Operations start date – end 2023 - early 2024.

**Key point**

## 4. Crux Installation and Commissioning Environment Plan – putting in the pipeline and substructure and checking everything works



### Crux pipelay

- Putting in the 26-inch export pipeline (~165 km long) from Prelude to Crux
- Vessel operations
- Pre- and post-lay surveys
- Testing it all



The facility will commence cold commissioning (testing) once installation is complete.

**Duration:** Mid 2024 – Dec 2026

**Timing:** start mid 2024, pending regulatory approvals.

### Key points

*Dates for the commencement of activities and duration are subject to schedule change*



Shell has done a lot of research into what is important to Aboriginal people in the Crux Planning area.

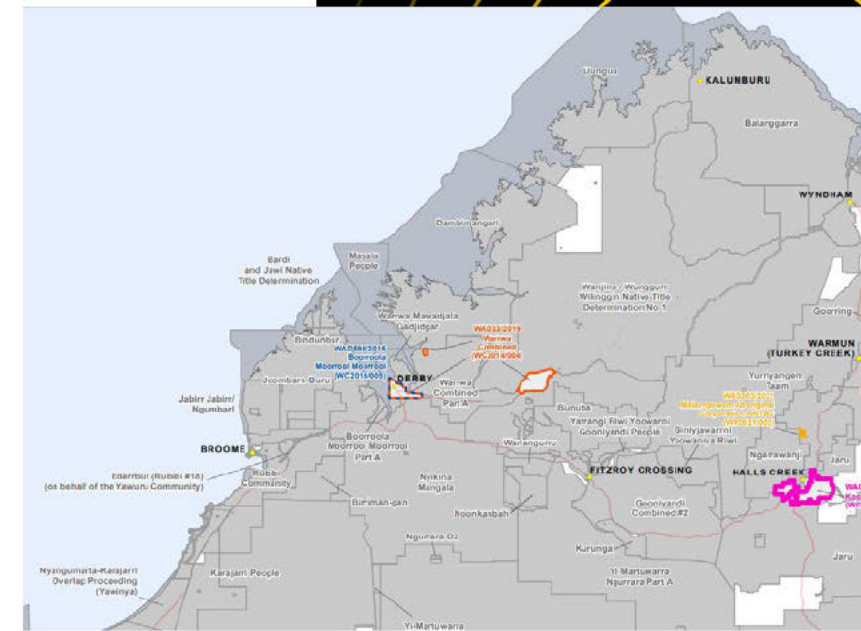
This has been done using Healthy Country plans, Native Title Determinations, ILUAs, IPAs, Cultural Heritage Surveys and Assessments, heritage site registration and talking directly with Aboriginal groups.

### Underwater Cultural Heritage

- We've looked at WA and NT databases for registered sites. There are no sites currently registered within the operational areas.
- The Crux operating area is below the historical seabed levels (below 130m sea level). Its very unlikely there is any cultural heritage that far out to sea – the area was never above sea levels when human occupation existed.
- Further work mapping is being done on what tangible underwater cultural heritage could remain in the larger planning area

### What we don't know

- Any concerns for particular areas and sites that may exist for each different TO groups
- What you think of our current management methods



## Crux Operations Protecting land and sea Country.

# Environmental Panel

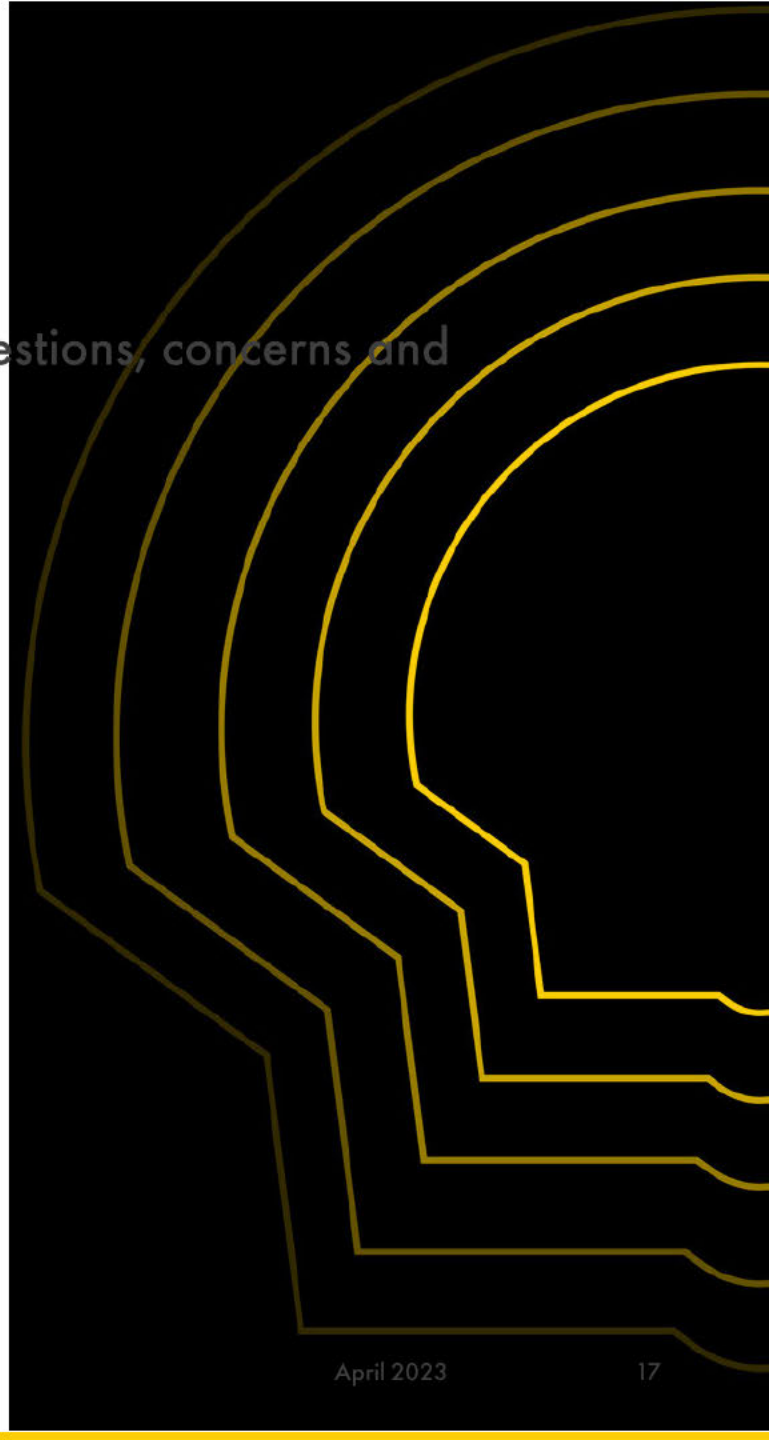
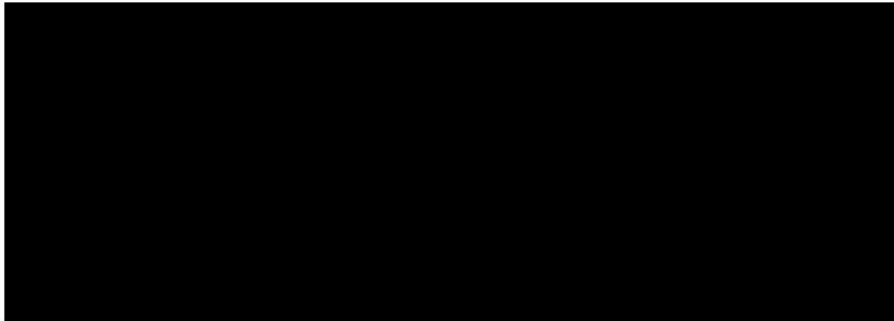
A panel of subject matter experts has been established, who you can go to with questions, concerns and complaints

You have access to the panel, with the costs incurred by Shell. It is anonymous.

You can ask whatever you like from the Panel.

They are independent of Shell ( although some have previously worked for Shell)

- Shell will not see any of the information shared.
- Any conversation is between you and the panel member.





# Now what

Shell is keen to keep in touch and develop stronger relationships.

- Possible further meetings – let Shell know
- Talk to your communities
- Ask questions of the Panel
- Ask questions of Shell what you want to know more about or have concerns
- Info on the web

## Web:

- [www.shell.com.au/about-us](http://www.shell.com.au/about-us)
- Google “Shell Crux”



**SHELL AUSTRALIA INVITES YOU TO COME AND TALK TO US ABOUT THE CRUX PROJECT**

In Australia, Shell has an integrated energy solutions portfolio which includes gas production and liquefaction, as well as renewable power and energy solutions businesses.

With our joint venture partner, SGH Energy, we are preparing to develop the Crux natural gas field. This is to ensure a continued supply of gas to Shell's Pacific Floating Liquefied Natural Gas (FLNG) facility, which extracts, liquefies and stores natural gas at sea, before it is transported and shipped to customers. The field is located around 470km north-west of Broome in Western Australia.

As part of the Crux development, we will be seeking environmental approvals for submission to the Western Offshore Petroleum Safety and Environmental Management Authority (WOPSEMA), Commonwealth and state government regulatory bodies.

If you are interested in learning more, Shell Australia invites you to join us at two forums as follows:

**Date:** Forum 1: Wednesday, 19 April 2023  
Forum 2: Wednesday, 10 May 2023  
**Location:** Please complete survey to select location options.

For more information please visit [www.shell.com.au/crux](http://www.shell.com.au/crux)

**REGISTRATION INSTRUCTIONS**  
Shell Australia is extending invitations to relevant persons and organisations, to attend our upcoming forums on 19 April and 10 May 2023 to talk to us about our Crux Project.

You have an opportunity to nominate one person to represent your Organisation, Native Title Determination Group, Native Title Holders, Native Title Claimants, or Individual's Family Groups, at the Shell forums.

- All Shell forum participants will be provided with travel and accommodation support.
- All Shell forum participants will have an opportunity to vote on the location of the forum.
- Due to the venue capacity, the forums will be restricted to a maximum of 120 participants.
- To register for the Shell forums, please complete this form by Friday 7th April 2023, 5pm (AWST) and return your form to [SDAcruxproject@shell.com](mailto:SDAcruxproject@shell.com).



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**Appendix A - 7.07 Presentation – Wunambal Gaambera  
Aboriginal Corporation – 15 September 2023**



# Shell Australia Wunambal Gaambera

15 September 2023



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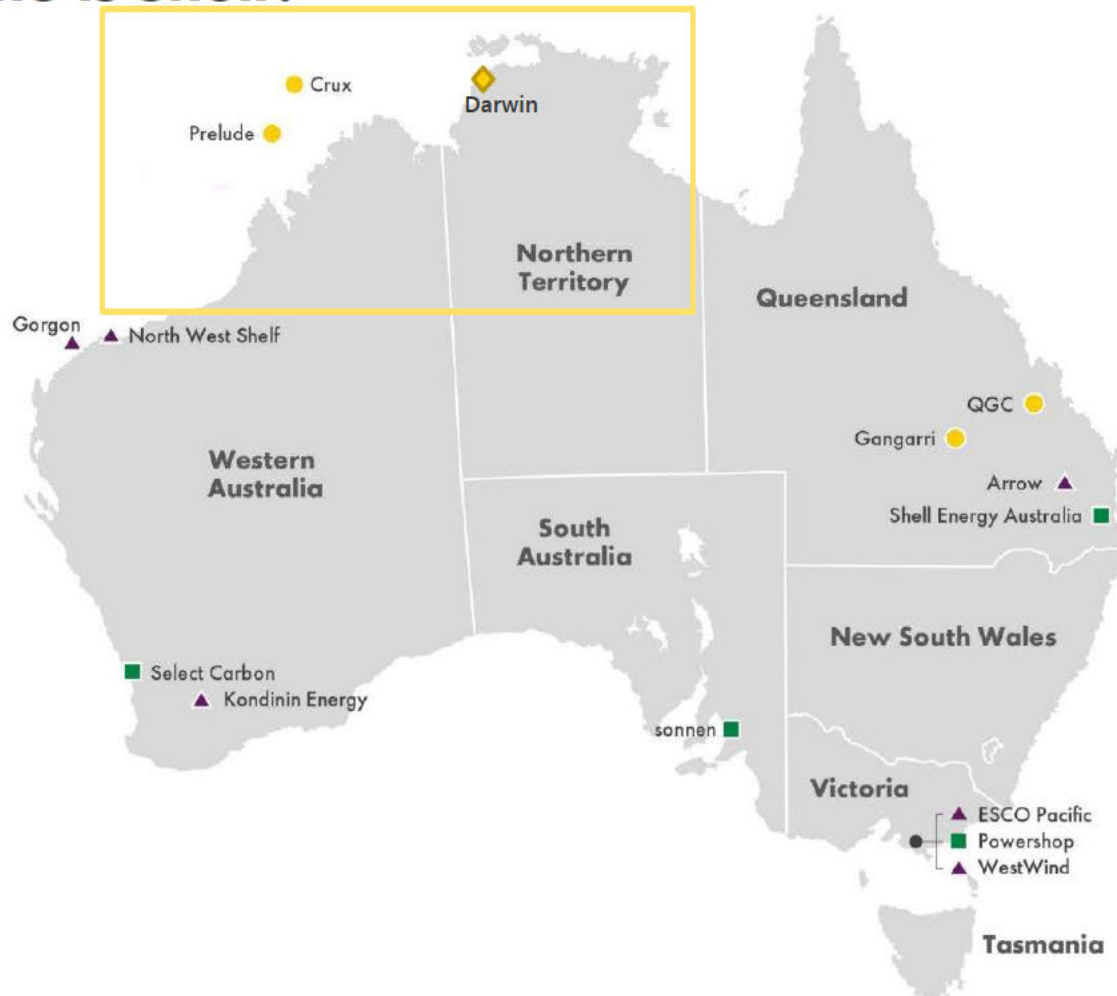
## Aims of today

1. Some background on Shell in Australia and Shell in WA
2. Crux - what it is, where it is at now.
3. Environmental Management and Impacts
4. Your priorities
5. Where to from here

- ask questions at any time -



# Who is Shell?



## SHELL OPERATED

● Crux	82%
● Gangarri	100%
● Prelude	67.5%
● QGC	75%

## WHOLLY OWNED SUBSIDIARIES

■ Powershop	100%
■ Select Carbon	100%
■ Shell Energy Australia	100%
■ sonnen	100%

## NON-OPERATED

▲ Arrow	50%
▲ Browse	27%
▲ ESCO Pacific	49%
▲ Gorgon	25%
▲ Kondinin Energy	50%
▲ North West Shelf	16.67%
▲ WestWind	49%

March 2023



# What is Prelude?

- Prelude is a Floating Liquefied Natural Gas (FLNG) project located 475km north-northeast of Broome, Western Australia, in the Browse Basin.
- The Prelude FLNG facility is moored over the Prelude gas field in 250m water depth and more than 200km from the coastline.
- Prelude produces LNG, LPG and condensate.
- Prelude has an onshore supply base in Darwin.



**Location:**  
WA-44-L, in Commonwealth marine waters, 475 km north-north east of Broome in Western Australia

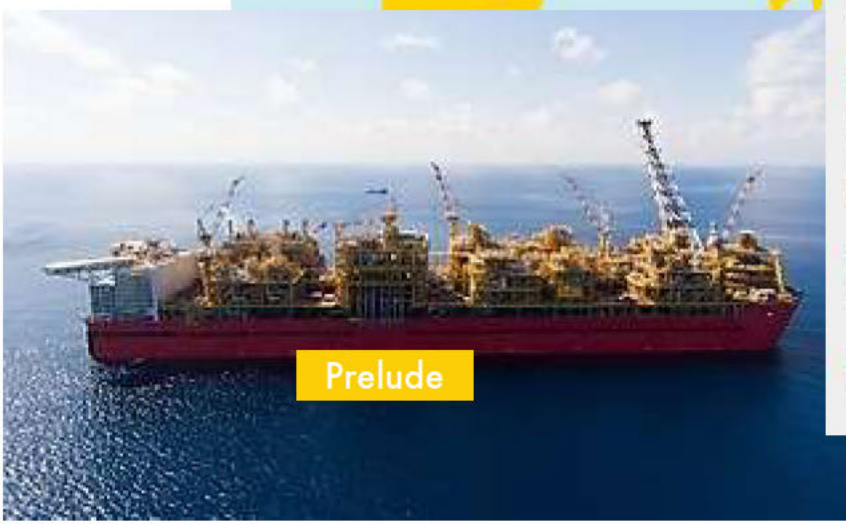
**Facility Type:**  
Floating liquefied natural gas (FLNG) facility

**Number of wells:**  
Seven

**Production capacity:**  
3.6 million tonnes per annum (mtpa) LNG, 1.3 mtpa LPG, 1.3mtpa condensate

**Water depths:**  
250m

**Status:**  
In operation



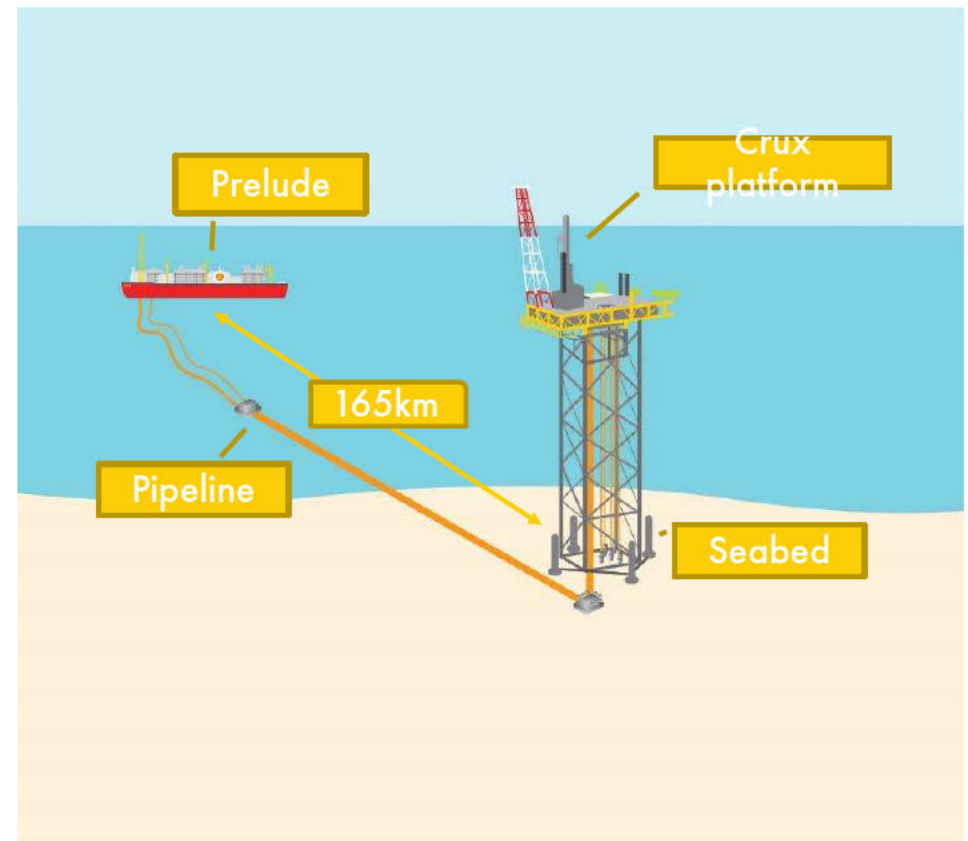


# The Crux Project



## What is Crux?

- In May 2022, Shell Australia and SGH decided to go ahead with Crux.
- The project is a long-term extension to the existing Prelude FLNG facilities.
- Crux consists of a platform (which is not normally manned), above 5 gas wells. The gas is delivered via a pipeline to Shell's Prelude project, which is moored some 165 Km away, and processed onboard.
- The project is part of Shell's strategy to help meet the needs of gas users as the energy market moves to a lower carbon future.



# Crux

- The five Environment Plans and what they cover
  1. Seabed survey
  2. Drilling template
  3. Drilling development
  4. Installation and Commissioning
  5. Completions, Start-up and Operations (just started preparation)
- Shell's obligations to consult, and your rights to raise objections and claims.
- Are there others we should consult?
- What the Crux Environmental Plans do to protect <sup>WNFSP1</sup> cultural heritage, marine systems, <sup>WNFSP0</sup> coastlines, Traditional Owner access to country
- Ongoing engagement with Traditional Owner groups and other Relevant Persons.
- The Independent Panel

## Slide 7

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**WNFSP0** Important this stays in every Shell consultation information package initially sent out from now moving forward. Good to reinforce in the meeting too.

Waugh, Nathan F SDA-PTS/SD/I, 2023-09-04T01:32:05.897

**WNFSP1** This is also a question we should ask all TO groups now moving forward. Put it in the slide is important I think.

Waugh, Nathan F SDA-PTS/SD/I, 2023-09-04T01:32:55.634



## **Crux Environment Plans**

These describe the impacts and risks, both planned and accidental that may occur

**Planned impacts** are known activities that result in physical impact to the environment, i.e.:

- Disturbances to the seabed.
- Drilling Fluid Discharges.
- Noise generated from construction activities.

These planned impacts will occur within close proximity to the operational area. Shell has means to control the impact of these.

**Accidents** could include:

- Diesel spill as a result of a vessel collision.
- Hydrocarbon spill as a result of loss of well control.
- Introduction of invasive species from the vessels that will be entering Australian waters.

Such accidents are very rare. Shell has to be prepared for them, to ensure they have adequate controls. For each key stage of Crux, Shell develops an Environmental Plan which looks at the key risks of that stage, and the size and scale of any impacts – planned or accidental.

**The Environmental Planning Areas represent the maximum outside limit of hundreds of individual, possible spill incidents. They take into account weather, waves, currents, and other conditions.**

## The environmental plans

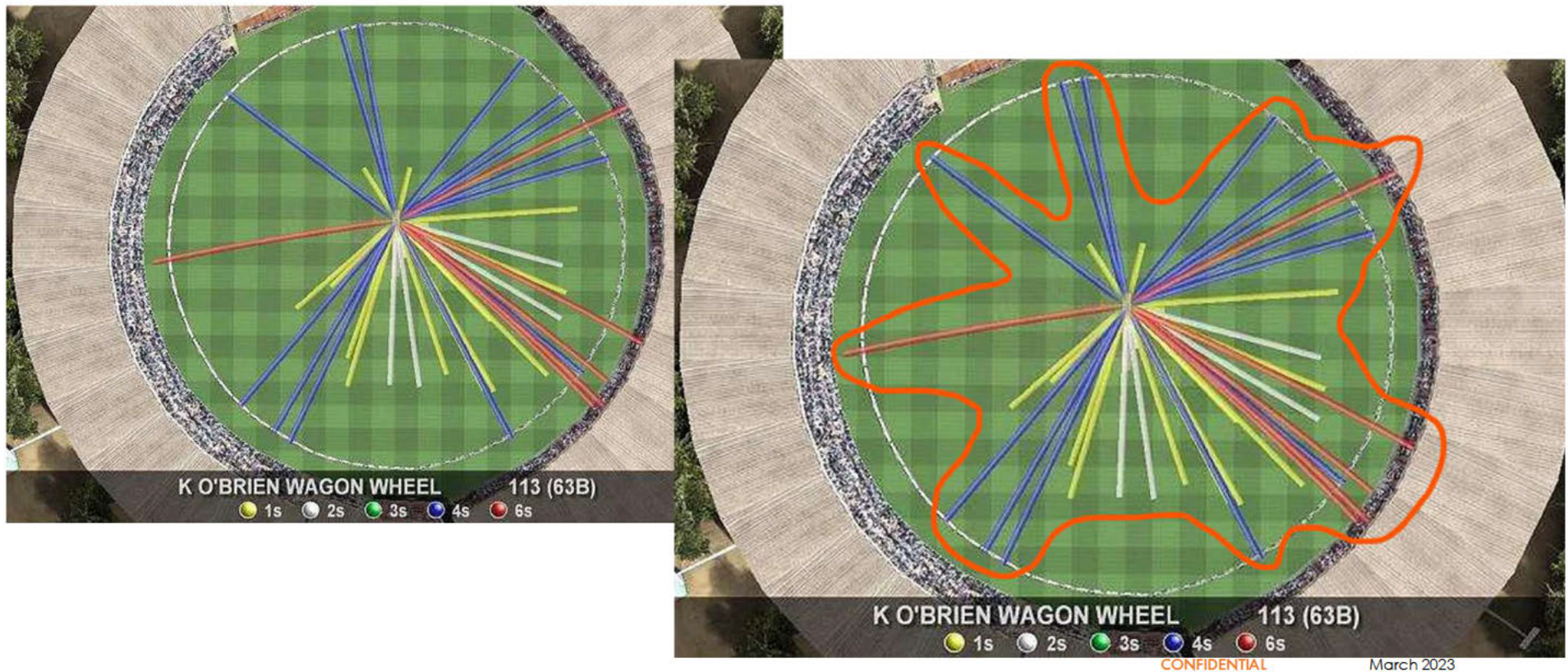
There are four Environment Plans for Crux that describe what Shell will do to protect the environment. These must be submitted to, and approved by NOPSEMA.

1. *Seabed Survey Environment Plan – submitted*
2. *Drilling Template Environment Plan – submitted*
3. **Development Drilling Environment Plan – submitted**
4. **Crux Installation and Cold Commissioning Environment Plan – to be submitted in November**
5. **Completions, Start-up and Operations Environment Plan – just started preparation**



## Environmental Plans

The Environmental Planning Areas are the outside limit of hundreds of individual, mapped accidents. A single incident will not affect the entire Planning area. Like in a cricket game...



# Oil Spill modelling





## Crux Operations - Protecting land and sea Country.

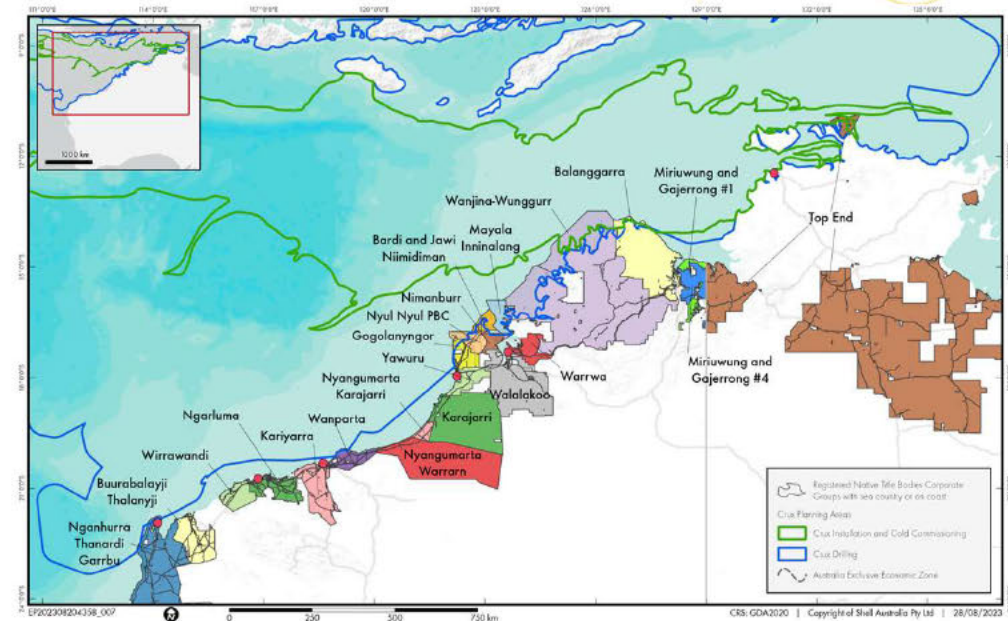
Shell has done a lot of research into what is important to Aboriginal people in the Crux Planning area. We used Healthy Country plans, Native Title Determinations, ILUAs, IPAs, Cultural Heritage Surveys and Assessments, heritage site registration and are talking directly with Aboriginal groups.

### Underwater Cultural Heritage

- We've looked at WA and NT databases for registered sites. There are no sites currently registered within the operational areas.
- The Crux operating area is below the historical seabed levels (below 130m sea level). Its very unlikely there is any cultural heritage that far out to sea – the area was never above sea levels when human occupation existed.
- Further work mapping is being done on what tangible underwater cultural heritage could remain in the larger planning area

### What we don't know

- Any concerns for particular areas and sites that may exist for each different Traditional Owner groups
- What you think of our current management methods



---

# Environmental Panel

A panel of subject matter experts has been established, **who you can go to with questions, concerns and complaints**

You have access to the panel, with the costs incurred by Shell. It is anonymous.

You can ask whatever you like from the Panel.

They are independent of Shell ( although some have previously worked for Shell)

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- Any conversation is between you and the panel member.

# Now what

Shell is keen to keep in touch and develop stronger relationships.

- Possible further meetings – let Shell know
- Talk to your communities
- Ask questions of the Panel
- Ask questions of Shell what you want to know more about or have concerns
- Info on the web

## Web:

- [www.shell.com.au/about-us](http://www.shell.com.au/about-us)
- Google "Shell CruX"

**SHELL AUSTRALIA INVITES YOU TO COME AND TALK TO US ABOUT THE CRUX PROJECT**

In Australia, Shell has an integrated energy solution portfolio which includes gas production and liquefaction, as well as renewable power and energy solution businesses.

With our gas solution partner, SGH Energy, we are preparing to develop the CruX natural gas field. This is to ensure a continued supply of gas to Shell's Pacific Floating Liquefied Natural Gas (FLNG) facility, which extracts, liquefies and stores natural gas at sea, before it is transported and shipped to customers. Pacific FLNG is located around 470km north-west of Perth in Western Australia.

As part of the CruX development, we will be preparing environmental approvals for a determination by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), Commission for Environmental Offshore (CEO) and other relevant government agencies.

If you are interested in learning more, Shell Australia invites you to join us at two forums as follows:

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**Locations:** Please complete survey to view our location options.

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SGH | Energy

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**CRUX PROJECT**

The proposed environmental Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), Commission for Environmental Offshore (CEO) and other relevant government agencies.

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SGH | Energy

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**Appendix A - 7.08 Presentation - Dambimangari Meeting – 19  
September 2023**





# Shell Australia Dambimangari Aboriginal Corporation

19 September



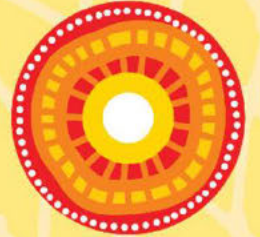




**Acknowledgement of Country**

# Aims of today

1. Introductions – who's in the room
2. Shell and the Crux project
3. Overview of the environmental management plans (incl clarification on question from DAC re seismic surveys)
4. Key issues for Dambimangari
5. Further consultation from here



# Who is Shell?



## SHELL OPERATED

● Crux	82%
● Gangarri	100%
● Prelude	67.5%
● QGC	75%

## WHOLLY OWNED SUBSIDIARIES

■ Powershop	100%
■ Select Carbon	100%
■ Shell Energy Australia	100%
■ sonnen	100%

## NON-OPERATED

▲ Arrow	50%
▲ Browse	27%
▲ ESCO Pacific	49%
▲ Gorgon	25%
▲ Koninin Energy	50%
▲ North West Shelf	16.67%
▲ WestWind	49%

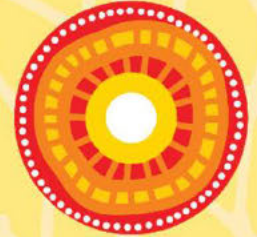
March 2023

# Crux

- What is the Crux Project?
- The four Environmental Plans and what they cover
  1. Seabed survey
  2. Drilling template
  3. Drilling development
  4. Installation and Commissioning
  5. There will be more EPs to come

- Crux Video -

- What the Crux Environmental Plans do to protect cultural heritage, marine systems, coastlines, TO access to country
- Ongoing engagement with TO groups and other Relevant Persons.
- The Independent Panel





# What is Prelude?

- Prelude is a Floating Liquefied Natural Gas (FLNG) project located 475km north-northeast of Broome, Western Australia, in the Browse Basin.
- The Prelude FLNG facility is moored over the Prelude gas field in 250m water depth and more than 200km from the coastline.
- Prelude produces LNG, LPG and condensate.
- Prelude has an onshore supply base in Darwin.



**Location:**  
WA-44-L, in Commonwealth marine waters, 475 km north-north east of Broome in Western Australia

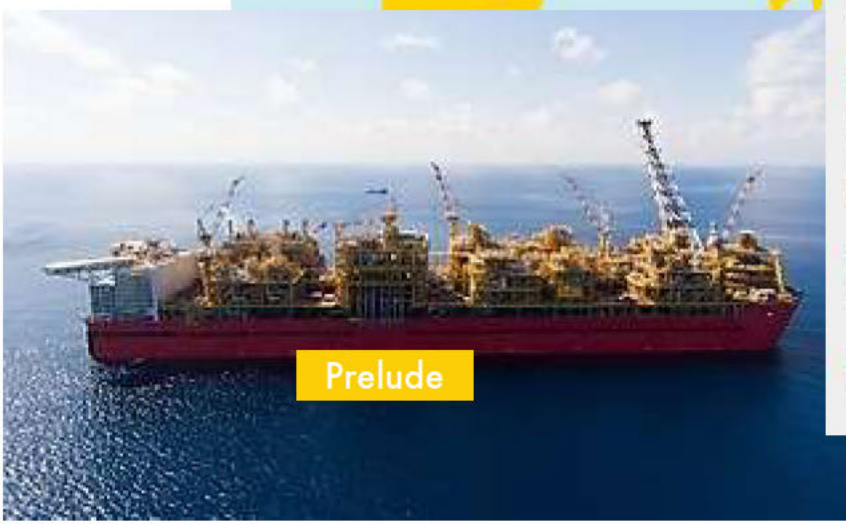
**Facility Type:**  
Floating liquefied natural gas (FLNG) facility

**Number of wells:**  
Seven

**Production capacity:**  
3.6 million tonnes per annum (mtpa) LNG, 1.3 mtpa LPG, 1.3mtpa condensate

**Water depths:**  
250m

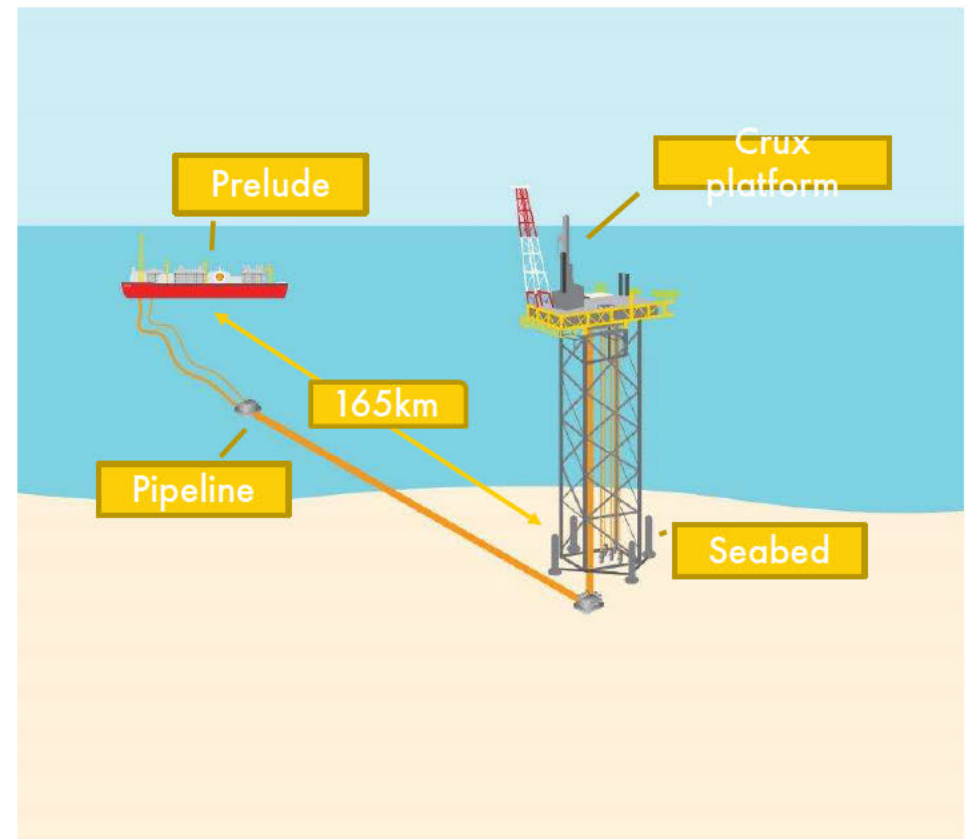
**Status:**  
In operation





## What is Crux?

- In May 2022, Shell Australia and SGH decided to go ahead with Crux.
- The project is a long-term extension to the existing Prelude FLNG facilities.
- Crux consists of a platform (which is not normally manned), above 5 gas wells. The gas is delivered via a pipeline to Shell's Prelude project, which is moored some 165 Km away, and processed onboard.
- The project is part of Shell's strategy to help meet the needs of gas users as the energy market moves to a lower carbon future.



## The environmental plans

There are four Environment Plans for Crux that describe what Shell will do to protect the environment. These must be submitted to, and approved by NOPSEMA.

1. *Seabed Survey Environment Plan – submitted*
2. *Drilling Template Environment Plan – submitted*
3. **Development Drilling Environment Plan – submitted**
4. **Crux Installation and Cold Commissioning Environment Plan – to be submitted in November**
5. **Additional EPs will deal with the operations of Crux and modifications to Prelude.**

## **Crux Environment Plans**

These describe the impacts and risks, both planned and accidental that may occur

**Planned impacts** are known activities that result in physical impact to the environment, i.e.:

- Disturbances to the seabed.
- Drilling Fluid Discharges.
- Noise generated from construction activities.

These planned impacts will occur within close proximity to the operational area. Shell has means to control the impact of these.

**Accidents** could include:

- Diesel spill as a result of a vessel collision.
- Hydrocarbon spill as a result of loss of well control.
- Introduction of invasive species from the vessels that will be entering Australian waters.

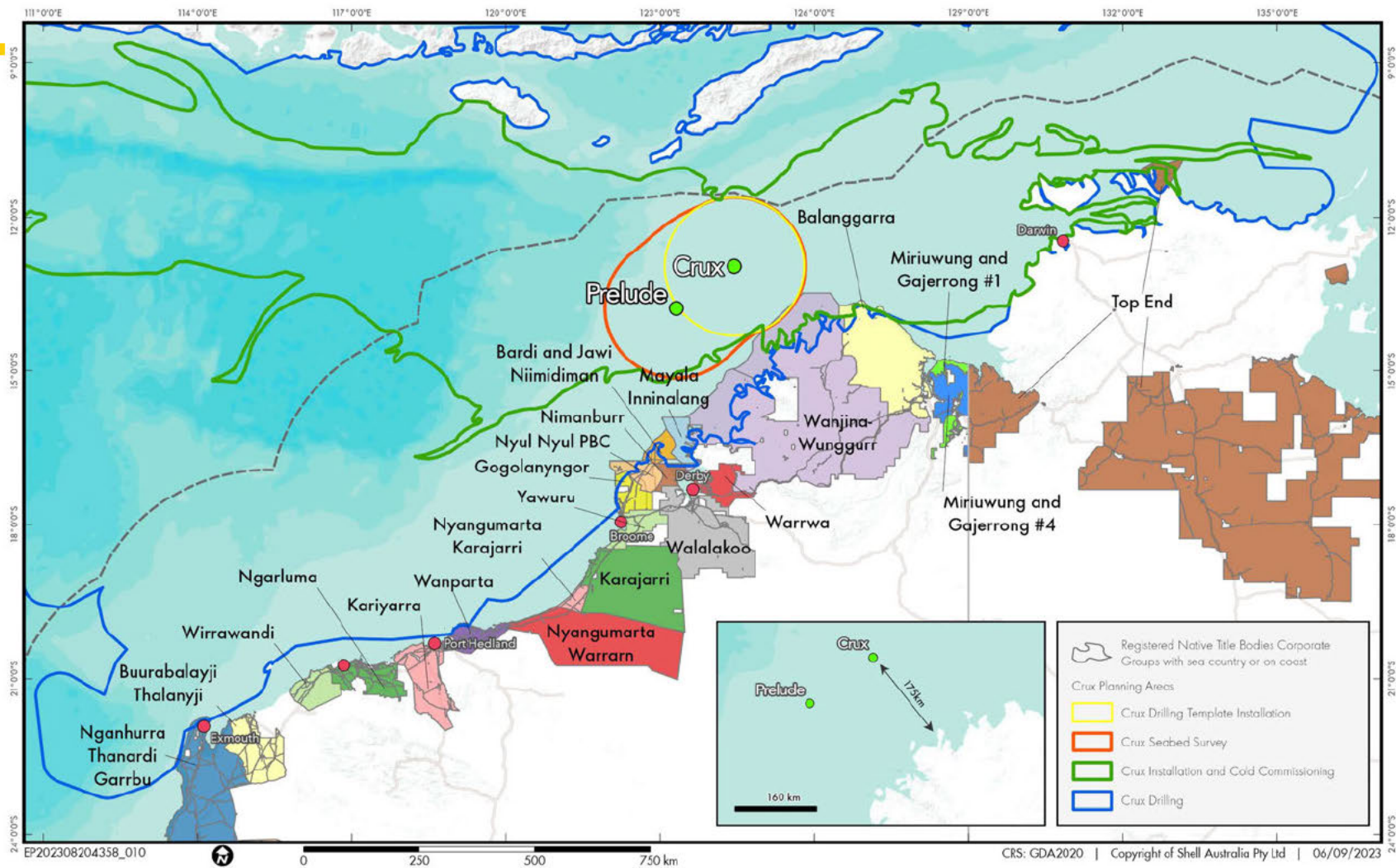
Such accidents are very rare. Shell has to be prepared for them, to ensure they have adequate controls. For each key stage of Crux, Shell develops an Environmental Plan which looks at the key risks of that stage, and the size and scale of any impacts – planned or accidental.

**The Environmental Planning Areas are the outside limit of hundreds of individual, mapped accidents**

# Oil Spill modelling



# The 4 EP planning areas

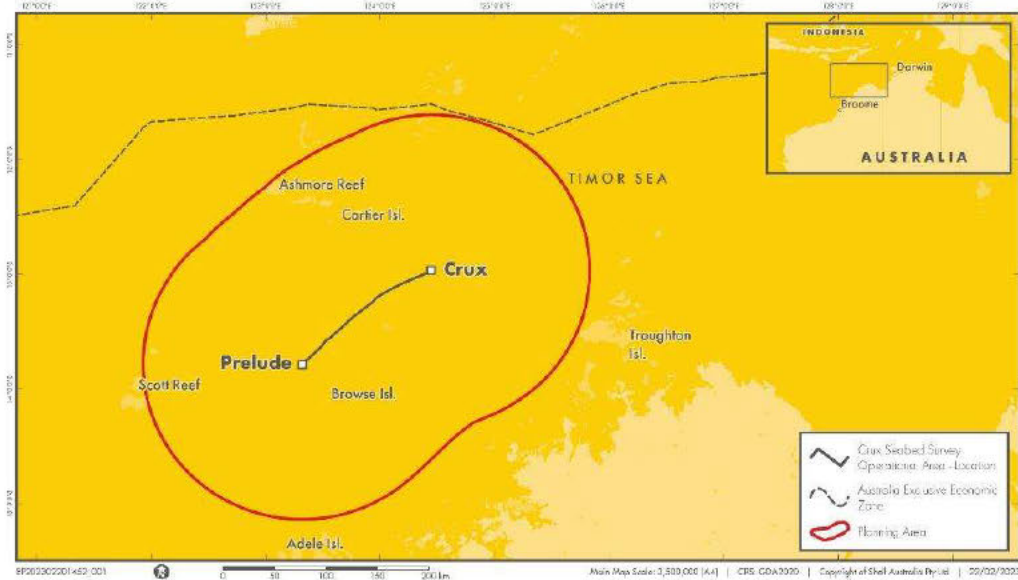


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CRS: GDA2020 | Copyright of Shell Australia Pty Ltd | 06/09/2023



# 1. Crux Seabed Survey Environment Plan - Looking at the seabed and sub-seabed conditions



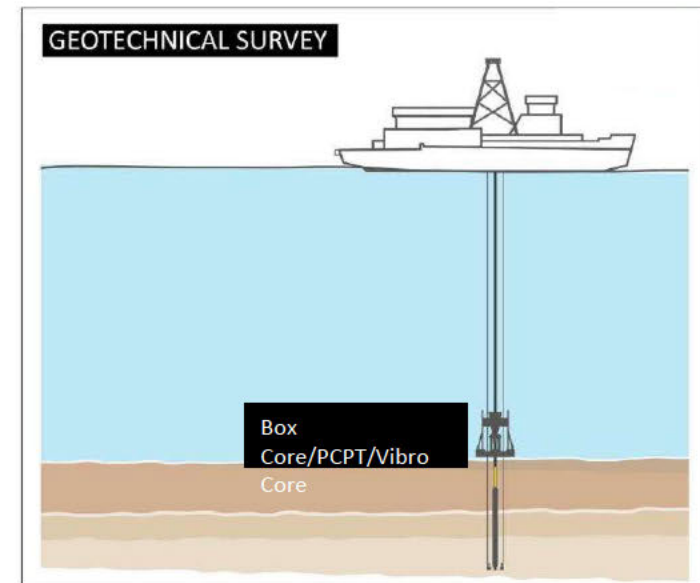
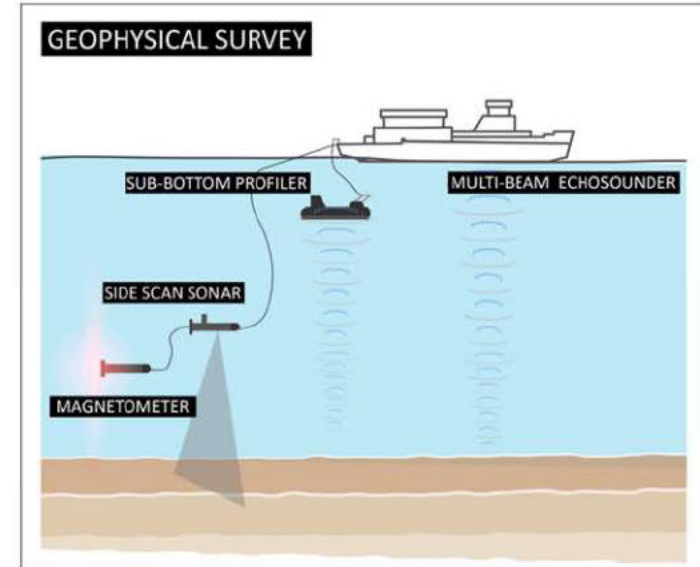
**Activity:** Shell is planning to carry out a survey of the pipeline route and terminals connecting the Crux and Prelude facilities.

A vessel will traverse the pipeline route, towing survey equipment and deploying coring equipment.

**Duration:** <5 days

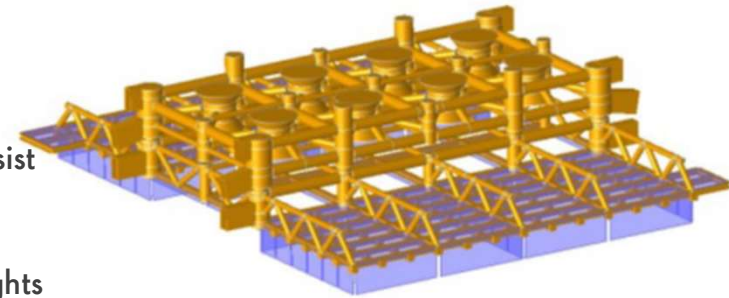
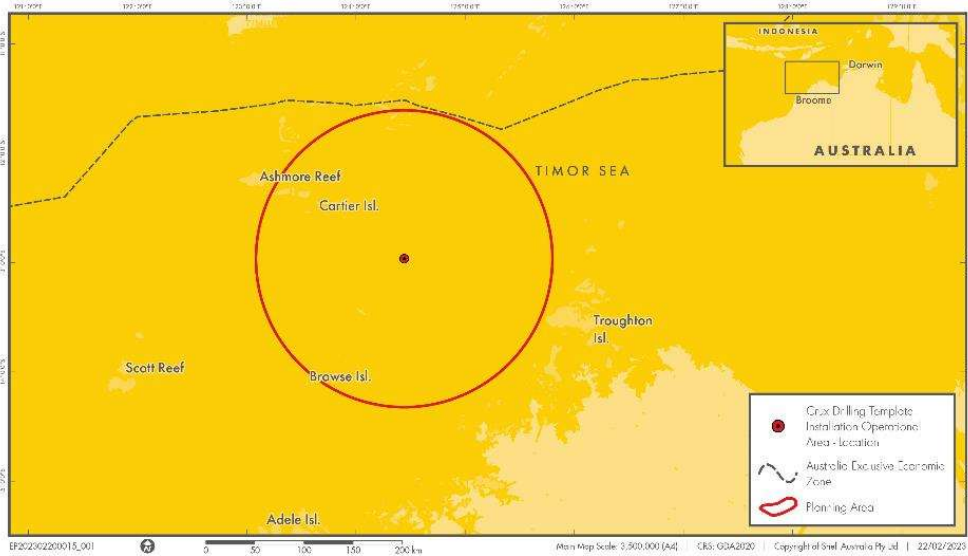
**Timing:** 1 July - 31 December 2023\*

**Key points**



## 2. Crux Drilling Template Installation Environment Plan -

The template will act as a guide for the drill bits during drilling operations



**Activity:** Shell is planning to lower a fabricated steel structure onto the seabed, which will assist with orienting and locating the drilling activities and the installation of the Crux platform.

**Dimensions:** 19m length, 14m width, 4m high and covers a seabed footprint of 266m<sup>2</sup>. It weights 200 tonnes

**Duration:** <7 days

**Timing:** 1 September 2023 – 1 April 2024\*

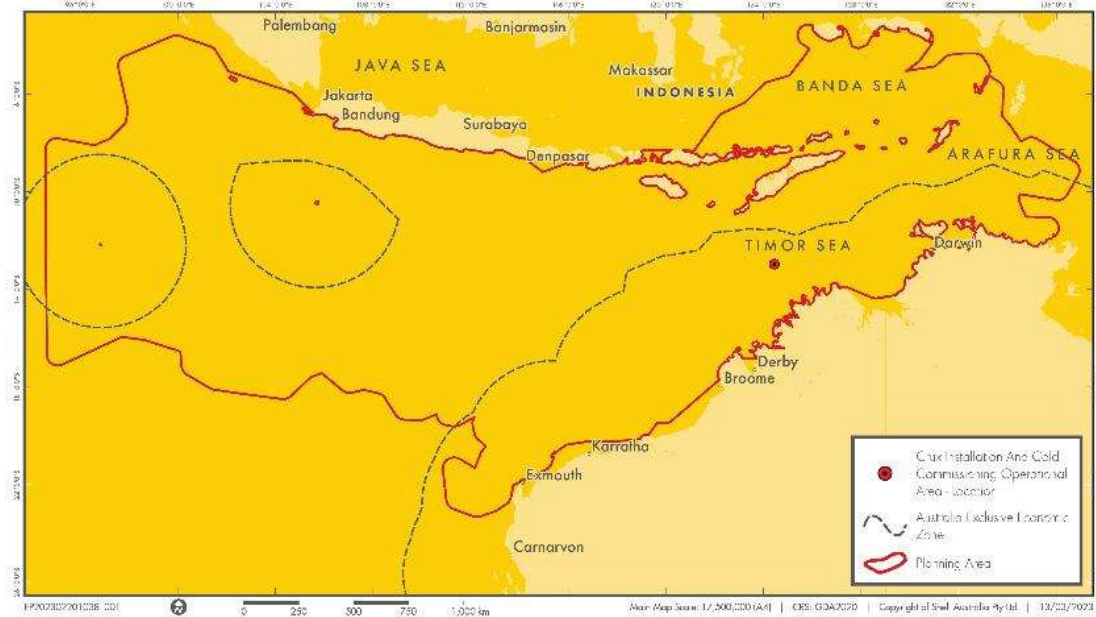
**Key points**

CONFIDENTIAL

March 2023

13

### 3. Crux Development Drilling Environment Plan – drilling the wells



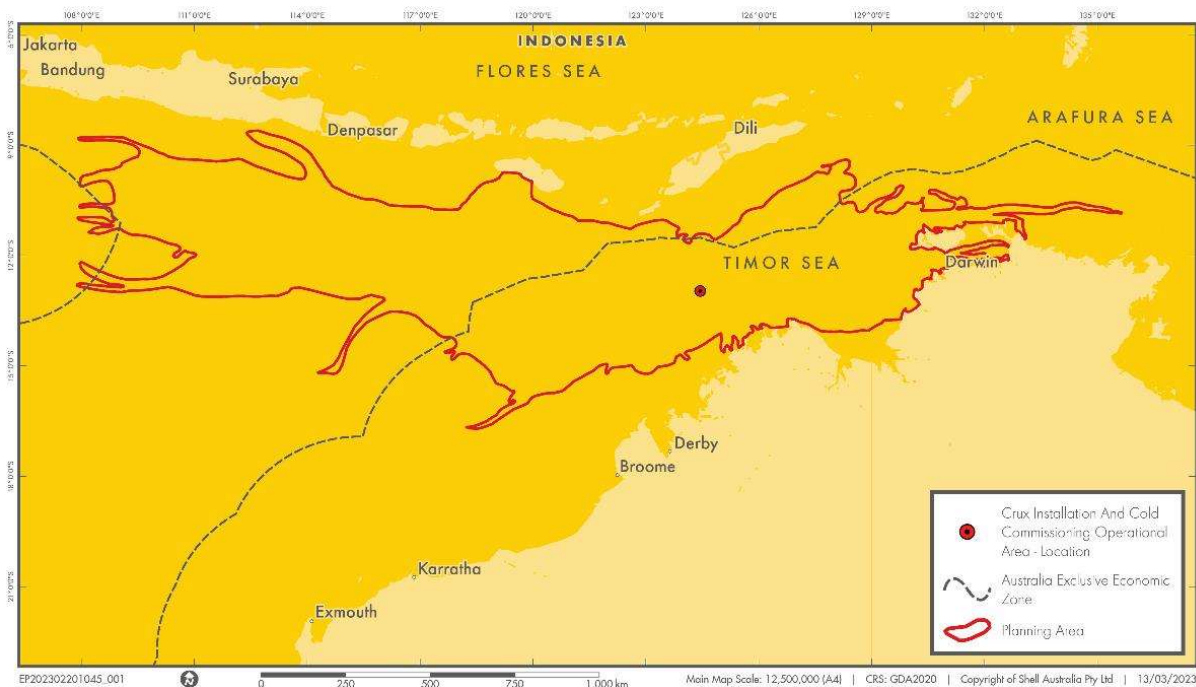
**Activity:** Shell is planning to drill five production wells through a drilling template and suspend them. The suspended wells will be commissioned once the Crux facility has been installed.

**Duration:** approximately 10 months, with 10 months contingency. Expected temporary well suspension period, approximately 2-3 years.

**Timing:** Expected Mobile Offshore Drilling Unit Operations start date – end 2023 - early 2024.

**Key point**

## 4. Crux Installation and Commissioning Environment Plan – putting in the pipeline and substructure and checking everything works



### Crux pipelay

- Putting in the 26-inch export pipeline (~165 km long) from Prelude to Crux
- Vessel operations
- Pre- and post-lay surveys
- Testing it all



The facility will commence cold commissioning (testing) once installation is complete.

**Duration:** Mid 2024 – Dec 2026

**Timing:** start mid 2024, pending regulatory approvals.

### Key points

*Dates for the commencement of activities and duration are subject to schedule change*



Shell has done a lot of research into what is important to Aboriginal people in the Crux Planning area.

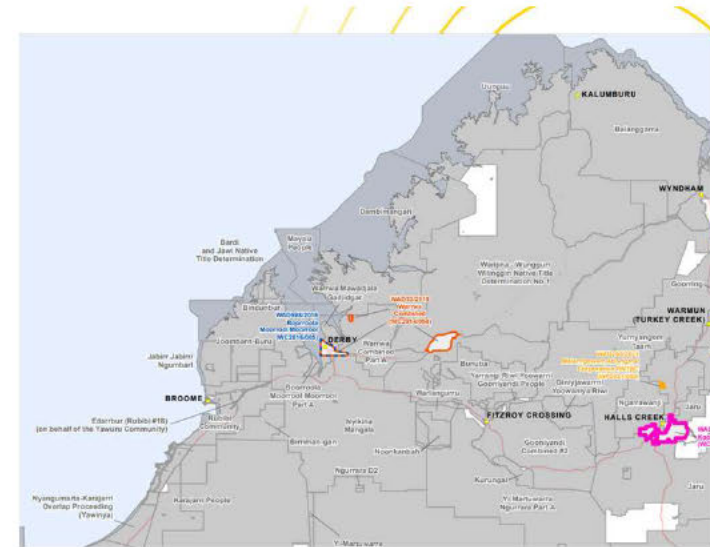
This has been done using Healthy Country plans, Native Title Determinations, ILUAs, IPAs, Cultural Heritage Surveys and Assessments, heritage site registration and talking directly with Aboriginal groups.

### Underwater Cultural Heritage

- We've looked at WA and NT databases for registered sites. There are no sites currently registered within the operational areas.
- The Crux operating area is below the historical seabed levels (below 130m sea level). Its very unlikely there is any cultural heritage that far out to sea – the area was never above sea levels when human occupation existed.
- Further work mapping is being done on what tangible underwater cultural heritage could remain in the larger planning area

### What we don't know

- Any concerns for particular areas and sites that may exist for each different TO groups
- What you think of our current management methods



## Crux Operations Protecting land and sea Country.



# Environmental Panel

A panel of subject matter experts has been established, who you can go to with questions, concerns and complaints

You have access to the panel, with the costs incurred by Shell. It is anonymous.

You can ask whatever you like from the Panel.

They are independent of Shell ( although some have previously worked for Shell)

- Shell will not see any of the information shared.
- Any conversation is between you and the panel member.



# Now what

Shell is keen to keep in touch and develop stronger relationships.

- Possible further meetings – let Shell know
- Talk to your communities
- Ask questions of the Panel
- Ask questions of Shell what you want to know more about or have concerns
- Info on the web

Web:

- [www.shell.com.au/about-us](http://www.shell.com.au/about-us)
- Google “Shell CruX”



**SHELL AUSTRALIA INVITES YOU TO COME AND TALK TO US ABOUT THE CRUX PROJECT**

In Australia, Shell has an integrated energy solution portfolio which includes gas production and liquefaction, as well as renewable energy and energy solutions businesses.

With our gas-to-liquids process, SGN Energy are preparing to develop the CruX natural gas field. This is a major natural gas field in the North West Shelf and will produce gas at well, before it is liquefied and shipped to customers. Further FID is being assessed at this well with a view to bringing it online in Western Australia.

As part of the CruX development, we will be installing conventional and renewable energy solutions. This includes the installation of a 100MW solar farm and a 100MW wind farm. We are also installing a 100MW battery storage system.

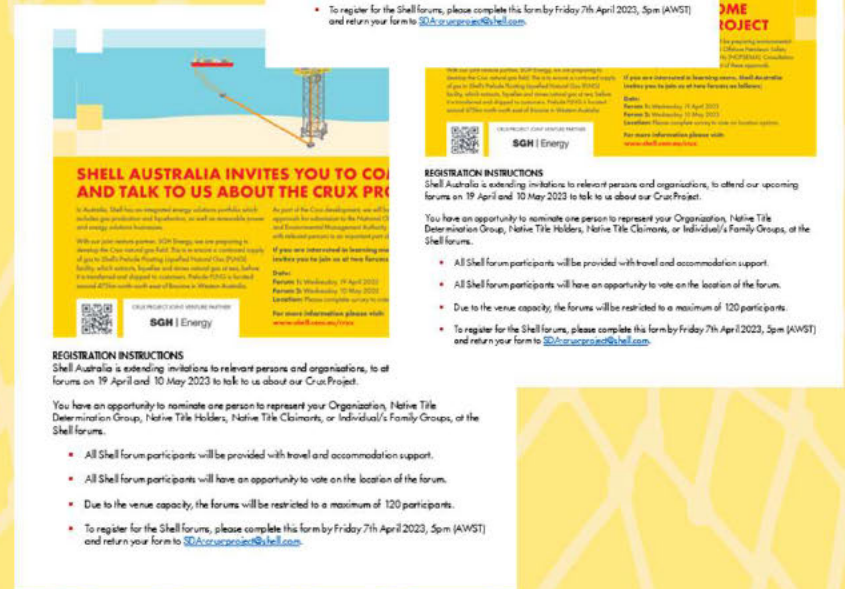
If you are interested in learning more, Shell Australia invites you to join us at two forums as follows:

**Forum 1:** Wednesday, 19 April 2023  
**Forum 2:** Wednesday, 10 May 2023  
**Locations:** Please complete survey on our website.

For more information please visit [www.shell.com.au/cruX](http://www.shell.com.au/cruX)

SGN | Energy

- REGISTRATION INSTRUCTIONS**
- Shell Australia is extending invitations to relevant persons and organisations, to attend our upcoming forums on 19 April and 10 May 2023 to talk to us about our CruX Project.
- You have an opportunity to nominate one person to represent your Organisation, Native Title Determination Group, Native Title Holders, Native Title Claimants, or Individual's Family Groups, at the Shell forums.
- All Shell forum participants will be provided with travel and accommodation support.
  - All Shell forum participants will have an opportunity to vote on the location of the forum.
  - Due to the venue capacity, the forums will be restricted to a maximum of 120 participants.
  - To register for the Shell forums, please complete this form by Friday 7th April 2023, 5pm (AWST) and return your form to [SDA@sgnenergy.com.au](mailto:SDA@sgnenergy.com.au)



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SGN | Energy

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- Due to the venue capacity, the forums will be restricted to a maximum of 120 participants.
- To register for the Shell forums, please complete this form by Friday 7th April 2023, 5pm (AWST) and return your form to [SDA@sgnenergy.com.au](mailto:SDA@sgnenergy.com.au)



**Appendix A - 7.09 Email invitation to Broome forum – end of April**

Traditional Owners in Australia's North West,

You are invited to a meeting to talk about Shell Australia's Crux project.

Crux is a gas project, located 190km off the Kimberley coast which will provide future supply for Shell's existing Prelude Floating Liquid Natural Gas (FLNG) facility. We want to give you the opportunity to hear about the project and for you to ask any questions. Detailed information about the project is available on our website

- <http://www.shell.com.au/crux>

We are holding a full day forum, details as follows :

**Date:** Wednesday 10 May 2023

**Time:** 9.30am – 3.00pm

**Venue:** Nyamba Buru Yawuru, 55 Reid Road Cable Beach, Broome

*Food and drink provided.*

(If you received an earlier invite from us, this meeting was called "Forum 2")

If you missed Forum 1 in Perth, Forum 2 will cover a similar update. If you attended Forum 1 and have feedback or new questions– please come along.

We'll provide food and drinks throughout the day, so come as early as you like – we'll start around 9.30am. We'll provide a good lunch at 12.30 too.

Please let us know if you are coming, by sending your RSVP to [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com) by Friday 5 May . In your response please let us know if you need to travel to Broome as we may be able to assist.

Also, please pass the word on –TO groups from Exmouth through to Darwin have land and sea country and your views matter - we want to hear from you. If you can't come, but still want to talk to us, let us know and we will follow up with you.

In the meantime if you have any questions, please call [details redacted]

The Crux Team





## **Appendix A - 7.10 Email follow up – end of May**

## **PBCs, Traditional Owners, and Aboriginal Organisations,**

In recent weeks, Shell has held several forums and meetings to provide information about plans to install a gas platform, called Crux.

Crux will be installed offshore, about 620km north-east of Broome, and it will supply gas to Prelude, via a 160km pipeline, which is Shell's existing gas facility in the Browse basin.

To do this, environmental approvals need to be in place, from NOPSEMA. NOPSEMA is the National Offshore Petroleum Safety and Environmental Management Authority. To give approval, NOPSEMA must be confident that Shell will act responsibly to protect the environment, limit emissions, and that it can respond quickly and effectively to any incidents.

NOPSEMA also require that Shell has made information available to all relevant persons who may be affected.

If you have attended one of the forums, you will know a bit about the project by now, but you or your community may have other questions.

If you were not able to attend, Shell is still keen to hear from you, and to respond to your questions.

- Either way, **you can contact Shell via this email address: [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com), or call: 1800 059 152.**

Shell also filmed the first forum, and you can watch parts of it via this link: [link redacted].

Shell has also established an independent environmental panel – people who are not employed by Shell, who can answer any questions you have. If you are unsure about what you've heard at a Forum, or would like more information, please contact any of the people listed below. There is no cost to this, and anything you ask or say will be confidential.

### **Independent Panel Members**

[Details redacted]

Detailed information about these activities is available on our website - <http://www.shell.com.au/crux-> together with maps of impacted areas. For convenience, please review the below factsheets outlining the main areas of activity for your understanding of the project overall:

- [Seabed Survey Environment Plan Factsheet](#)
- [Drilling Template Environment Plan Factsheet](#)
- [Development Drilling Environment Plan Factsheet](#)
- [Crux Installation and Cold Commissioning Factsheet](#)

There are also draft versions of the Environment Plans that will be submitted to NOPSEMA.

**A final forum will be held in Darwin at the Hilton Boardroom on 31 May (32 Mitchell St, Darwin), from 9.30 – 1.30pm.**

We hope to see you there. Please let Shell know on this email address [SDA-crux-project@shell.com](mailto:SDA-crux-project@shell.com), if you are attending, or need help getting there, as Shell can help with travel.

Thanks,  
The Crux Team.



**Appendix A - 8.01 NOPSEMA Consultation on Offshore  
Petroleum Environment Plan Brochure**



**NOPSEMA**

Australia's offshore  
energy regulator

# Consultation on offshore petroleum environment plans

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Information for the community



The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) is Australia's independent expert regulator for health and safety, structural and well integrity, and environmental management for offshore petroleum and greenhouse gas storage activities in Commonwealth waters.



The protection and preservation of the marine environment is best achieved when there are opportunities for the community to participate in the environmental approvals process through consultation.

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## Who can participate?

Under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (the regulations) there are several ways the community can participate in the environmental approvals process for offshore petroleum activities in Commonwealth waters.

### Public comment for new projects and exploration activities

Offshore project proposals (OPPs) for new offshore petroleum projects and environment plans for offshore petroleum exploration activities are subject to a mandatory public comment period. Public comment must be done before the OPP or environment plan is submitted to NOPSEMA for assessment. Further information about public comment can be found at [nopsema.gov.au](http://nopsema.gov.au).

### Relevant persons consultation

Titleholders must consult with a specific category of people or organisations referred to as 'relevant persons' while preparing an environment plan for any offshore petroleum activity. This consultation must be done before the environment plan is submitted to NOPSEMA.

Some categories of relevant persons are specified in the regulations, such as government departments, however the information in this brochure is for the category of relevant persons who are not specified but who have 'functions, interests or activities' that may be affected by the offshore activity.

### Correspondence directly to the regulator (NOPSEMA)

You can send correspondence directly to NOPSEMA; however, this generally cannot be considered until after the environment plan has been submitted. It is always better to use the public comment and relevant persons consultation processes in the first instance.

## What is 'relevant persons' consultation?

Consultation on offshore petroleum activities is a two-way process where information is shared between titleholders and relevant persons. It is a requirement for titleholders when preparing an environment plan and is an important part of good environmental management.

Consultation provides an opportunity for people or organisations who may be affected by an offshore petroleum activity to raise concerns, including objections or claims, about the potential impacts of the activity, to seek information about how they may be affected, and how the titleholder intends to manage the activity to ensure the associated impacts are as low as reasonably practicable and are acceptable.

Information provided by relevant persons in consultation may also help titleholders better understand the values and sensitivities of the environment and inform the evaluation of the potential impacts and risks associated with the activity and how to manage them appropriately.

## Am I a relevant person?

You may be a relevant person if you or your organisation have functions, interests, or activities that may be affected by an offshore petroleum activity proposed under an environment plan being prepared or already underway under an environment plan being revised.

The terms 'functions' 'interests' and 'activities' should be read broadly. You do not have to have a legal or financial interest that may be affected by an offshore petroleum activity to be a relevant person.

Interests that may be affected can include things like cultural and spiritual connections to the sea or interests in the protection of specific marine species. However, to be a relevant person your interests should be more than a general interest in the environment and/or offshore petroleum activities.

## If I am a representative body, can I consult on behalf of all my members?

The law recognises that interests may be held communally. In some cases, all members of a community may agree that their representative body can consult on their behalf. However, this may not always be the case. Representative bodies should inform titleholders whether or not they have the authority to consult with titleholders on behalf of all their members.

Representative bodies, such as peak bodies and prescribed body corporates, may be relevant persons in their own right. They may also be an initial point of contact for titleholders to seek information about who else they should approach for consultation.

It is the titleholder's responsibility to provide all members of a community who have a shared interest opportunities to participate in consultation. In some circumstances, representative bodies may offer to assist titleholders with this.

## Do I have to participate?

If you are a relevant person, you have the right to be consulted by titleholders of offshore petroleum activities when they are preparing an environment plan to submit to NOPSEMA.

Titleholders have a duty to provide you an opportunity to be consulted, however there is no obligation on you to participate in consultation. If you do not wish to be consulted, you should advise titleholders of this when they first contact you.

Titleholders must make reasonable efforts to consult with relevant persons, but the regulations do not require them to get a response to their requests. If you want to participate in consultation but need more information or time then it is best to communicate this to titleholders when they contact you. If you do not respond, they might assume you do not wish to be consulted.

If you are an organisation or representative body that is regularly approached for consultation you may consider developing guidance outlining how and when you want to be consulted. You could also consider documenting your functions, interests and activities. Both measures may help with managing regular requests for consultation.

In some instances, the likelihood of you being affected by an activity is very low and/or the impact on your functions, interests or activities may be minor. For example, if you are only going to be affected by the activity in the very unlikely event of an oil spill you may wish to inform titleholders you only want to be consulted if a spill occurs as part of the requirement for ongoing consultation set out in the regulations.



## What if I want to be consulted but the titleholder hasn't contacted me?

Titleholders have a duty to identify who may be a relevant person and provide them opportunities to participate in consultation. However, even with best endeavors, titleholders may miss people or organisations who may be relevant.

If you believe you are a relevant person and you want to be consulted on offshore petroleum activities, then you should contact titleholders directly and identify yourself as a relevant person.

If a titleholder refuses to consult with you, and you believe you are a relevant person, you can write to NOPSEMA. Once an environment plan is submitted to NOPSEMA, this information can be considered in the assessment of whether or not the titleholder has met the requirements for consultation.

It is always better to attempt to resolve issues with the titleholder in the first instance. Relevant persons consultation is carried out before an environment plan is submitted, so NOPSEMA is limited in its ability to require titleholders to consult with a particular person or organisation.



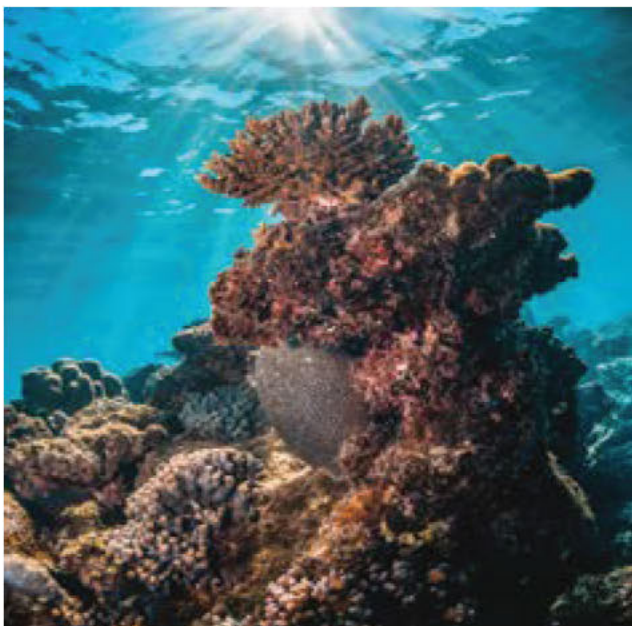
## What is the process for consultation?

There is no detailed process set out for how consultation should be carried out, however there are requirements that must be met under the regulations. These include:

- That you are given sufficient information to make an informed assessment about whether you are likely to be affected by the activity, how you may be affected, and to raise any concerns, including objections or claims, about the potential impacts of the activity.
- That you are given a reasonable period of time to consider the information provided to you and give feedback to the titleholder on the potential impacts of the activity on your functions, interests or activities.

What constitutes sufficient information and a reasonable period of time depends on several factors including the nature of your functions, interests and activities. You should communicate as early as possible in consultation with titleholders about what information and how much time you may need so that they can consider, respond and address these in their planning.

The information provided to you should be in a form that is appropriate and readily accessible to you. Consultation is generally a two-way process where information is shared between titleholders and relevant persons rather than a one-way process of seeking feedback to a fact sheet or high-level information.



## What if I don't have the resources to participate?

If you are a relevant person and you believe you have information that is important to the understanding of the potential impacts of an offshore petroleum activity or you want to raise concerns, including objections or claims, then you should discuss with the titleholder how you can participate in consultation.

This might include requesting information in a different format, asking for more time to consider information or help to understand the information to provide an informed response.

There is no requirement in the law for titleholders to pay the costs incurred by relevant persons to be consulted, however they may choose to provide assistance to relevant persons to ensure consultation is carried out efficiently and is robust. This is a matter between the titleholder and relevant persons.

## How do I make sure my views are considered?

It is important to communicate clearly when participating in consultation with titleholders. You may provide information to titleholders that helps them understand the environment and raise specific concerns, objections or claims about the potential impacts of the activity or the way the titleholder proposes to manage the activity to ensure the associated impacts are as low as reasonably practicable and are acceptable.

The information you provide to a titleholder during consultation must be considered by that titleholder and addressed in their environment plan for NOPSEMA to consider in its assessment and decision-making.

NOPSEMA publishes environment plans on its website when they are submitted for public comment, for assessment and when they are approved. Relevant persons have the right to request that the information they have provided in consultation is not published and titleholders must ensure they communicate this right to relevant persons.

Relevant persons should be aware that while you are free to respond on any matter and raise any concern, this may not be able to be considered if it is outside the scope or purpose of the environment plan and approval process. Examples of issues that may not be considered under the regulations include statements of fundamental objection to offshore petroleum activities or information containing personal threats or profanities.

## Do titleholders need my consent?

Titleholders are not required by law to obtain agreement or consent from relevant persons for their offshore petroleum activities to proceed; however, they are required to demonstrate in their environment plan how the concerns, objections or claims raised by relevant persons were considered and demonstrate that their response to that information was appropriate.

NOPSEMA's assessment and decision-making will consider if titleholders have adequately demonstrated in the environment plan that genuine consultation has taken place with relevant persons in accordance with regulations.

## Do I need to respond to a request for consultation?

There is no obligation for relevant persons to respond to a request for consultation from a titleholder. However, if you are provided an opportunity to participate in consultation and you do not want to be consulted, or you only want to be consulted on specific offshore petroleum activities or environmental matters, then it is best that you communicate this to titleholders as soon as they contact you. If you do not respond to requests for consultation, titleholders may make many repeated attempts to contact you.

**NOPSEMA can help you understand the requirements for consultation and how to effectively participate in the process. Please contact [communications@nopsema.gov.au](mailto:communications@nopsema.gov.au) for assistance.**



**NOPSEMA**

Australia's offshore  
energy regulator

### Further information

For further information visit [nopsema.gov.au](http://nopsema.gov.au) or  
contact [communications@nopsema.gov.au](mailto:communications@nopsema.gov.au).

### Key legislation

Offshore Petroleum and Greenhouse Gas  
Storage Act 2006

Offshore Petroleum and Greenhouse Gas  
Storage (Environment) Regulations 2009

Environment Protection and Biodiversity  
Conservation Act 1999.

### Contact details

p: +61 (08) 6188 8700

e: [communications@nopsema.gov.au](mailto:communications@nopsema.gov.au)

Head office: Level 10, Alluvion Building  
58 Mounts Bay Road, Perth WA 6000

Postal: GPO Box 2568 - Level 10 58 Mounts  
Bay Road, Perth WA 6000

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[nopsema.gov.au](http://nopsema.gov.au)

National Offshore Petroleum Safety and Environmental  
Management Authority (NOPSEMA)

ABN 22 385 178 289

Published May 2023



## Appendix A- 9. Crux EP Web page Snapshots





## Crux Environment Plan

Discover the Environmental Plans for the Crux Project and get in touch with Shell to comment on the plans.

Contact us for more information

Download Faqsheet: What is an Environment Plan? (PDF, 839 kB)

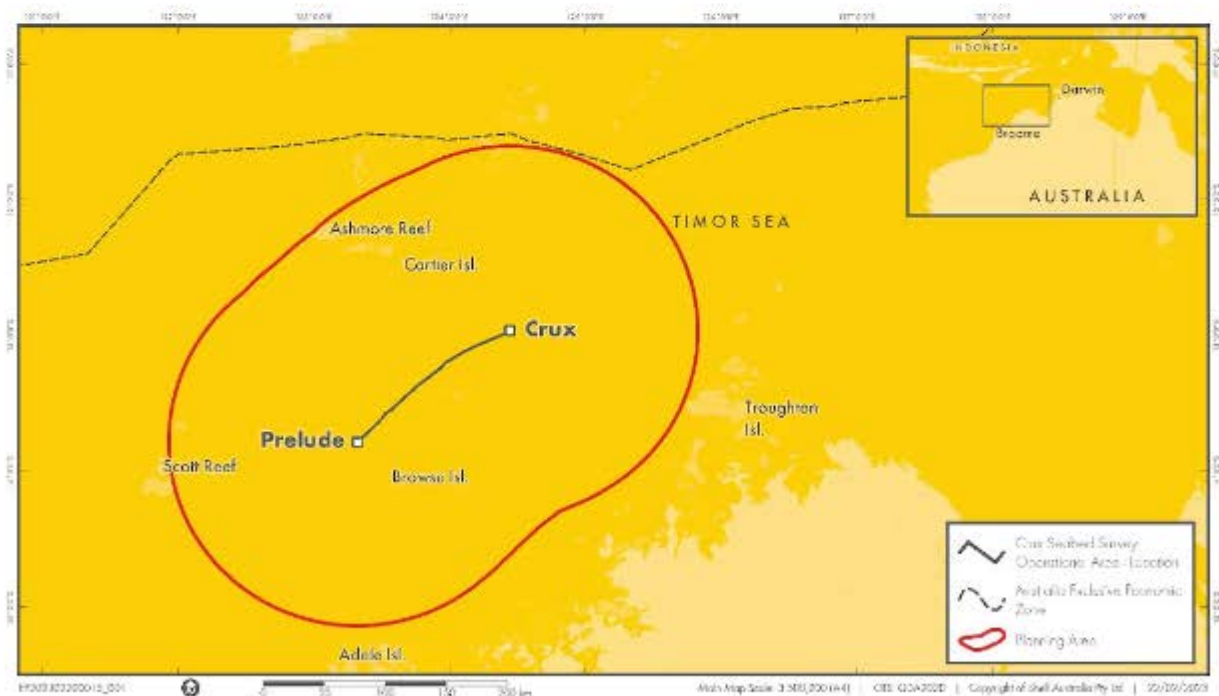
Download Cultural and Social Values Summary (PDF, 1 MB)

Click on the boxes below to find out more information.

Installation & Cold Commission Seabed Survey Drilling Template Installation Development Drilling

### Crux seabed survey planning area

Under assessment with NOP/SEMA.



Read the transcript

Seabed Survey Environment Plan Faqsheet (PDF, 839 kB)

## Activity Description

Shell is planning to carry out a survey of the pipeline route and terminals connecting the Crux and Prelude facilities. A vessel will traverse the pipeline route, towing survey and monitoring equipment.

## Activity Details

- **Project:** Crux
- **Status:** Not Started
- **Duration:** <5 days
- **Timing:** 1 May – 31 December 2023<sup>1</sup>
- **Location:** 200km offshore Northwest Australia
- **Adjacent State:** Western Australia
- **JV Partner:** SGH Energy

<sup>1</sup>Dates for the commencement of activities and duration are subject to schedule change.

## Links

[Draft Seabed Survey EP \(PDF, 10 MB\)](#) 

## NOPSEMA's consultation on offshore petroleum environment plans

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) have developed an information sheet to understand the process of participating in the environmental approvals process through consultation. Shell Australia is following this process as part of the Environment Plans consultation for the Crux Project.

[Read the information sheet for the community \(PDF\)](#) 



## Stay connected with Shell on the Crux Environment Plans

If you have functions, interests or activities that may be affected, Shell Australia invites you to get in touch. Please fill in the form below or [call our community hotline on 1800 068 162](#).

Name \*

First Name

Last Name

Phone \*

Email \*

Environment Plan of interest \*

Preferred engagement method \*

Area of interest \*

Submit Form

	<b>Shell Australia Pty Ltd</b>	Revision 6
	<b>Crux Seabed Survey Environment Plan</b>	16/11/2023

**Appendix B      Summary of Consultation for the Crux Seabed Survey Environment Plan**



Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
<b>Commonwealth and State Government Departments or Agencies</b>						
2.	Australian Hydrographic Office (AHO) - Department of Defence Operations Branch	27 March 2023 <i>(initial email)</i> Email to Shell 28 March 2023 27 April 2023 Email from Shell 22 May 2023	[Redacted]	<p><b>Email on 22 May 2023</b></p> <p>Close out email sent which covered the following:</p> <ul style="list-style-type: none"> <li>thanked relevant person for their feedback.</li> <li>confirming that Shell will ensure we are informed as to the risks associated with conducting activities in the and we will continue to liaise with the Australian Hydrographic Service (AHS) for Notices to Mariners (NOTMAR).</li> <li>recapped on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>notified of the management of feedback if any details should be considered sensitive information.</li> <li>reconfirmed contact details.</li> </ul>	<p><b>Assessment</b></p> <p>No objections or claims have been received about activity impacts or risks.</p> <p><b>Relevant/Non-Relevant Matters</b></p> <p>The issuance of information to support a notice to mariners is a relevant matter. An existing control, performance standard (Table 9-8) and notification requirement (Table 10-5) is detailed within the EP.</p> <p>Shell investigated the risk of unexploded ordnance. The NAXA is located within the broader planning area of the activity. The NAXA does not intersect the operational area where seabed disturbance is planned, therefore this is not a relevant matter for the preparation of this EP.</p>	Table 9-8 and Table 10-5 has been updated to reflect the requested submission timing and contact details to provide information to support issuance of a notice to mariners. No other additional measures have been adopted.
3.	Australian Maritime Safety Authority (AMSA)	27 March 2023 <i>(initial email)</i> Email to Shell 28 March 2023 04 April 2023 24 April 2023 26 April 2023  Email from Shell 20 April 2023 26 April 2023 04 May 2023 22 May 2023  In person 27 April 2023	[Redacted]	<p><b>Email on 04 May 2023</b></p> <p>Shell shared presentation and public EPs with AMSA post the Industry Forum.</p> <p><b>Email on 22 May 2023</b></p> <p>Close out email sent which covered the following:</p> <ul style="list-style-type: none"> <li>Thanked relevant person for their feedback.</li> <li>Shell notes AMSA's initial advice that we: Contact the Australian Hydrographic Office no less than 4 weeks prior to operations, with details relevant to the operations.</li> <li>Notify AMSA's Joint Rescue Coordination Centre by email for promulgation of radio navigation warnings at least 24-48 hours before operations commence.</li> <li>Adhere to vessel compliance requirements - appropriate lights and shapes to reflect the nature of operations.</li> <li>recapped on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>notified of the management of feedback if any details should be considered sensitive information.</li> <li>reconfirmed contact details.</li> </ul>	<p><b>Assessment</b></p> <p>No objections or claims have been received about activity impacts or risks.</p> <p><b>Relevant/Non-Relevant Matters</b></p> <p>Raised relevant matters in regards pre-activity notifications and vessel navigation compliance requirements. Matters raised have been addressed as controls, EPS and/or notifications requirements stipulated in the EP.</p>	<p>Requirement to notify AHO 4 weeks prior to operations is included as a control in EP Table 9 8 and listed in notifications table (Table 10-5)</p> <p>Requirement to notify AMSA's JRCC 24-48 hrs prior to vessel activities commencing is stipulated in EP notifications Table 10-5.</p> <p>Navigation safety requirements for vessels are included as a control and EPS in Table 9-8.</p>
4.	Australian Communications and Media Authority (ACMA)	27 March 2023 <i>(initial email)</i> Email to Shell	[Redacted]	<p><b>Email on 23 May 2023</b></p> <p>Close out email sent which covered the following:</p> <ul style="list-style-type: none"> <li>thanked relevant person for their feedback.</li> </ul>	<p><b>Assessment</b></p> <p>No objections or claims have been</p>	Based on consultation undertaken for preparation of this EP, no additional

Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
		03 April 2023 <b>Email from Shell</b> 20 April 2023 23 May 2023	[REDACTED]	<ul style="list-style-type: none"> <li>confirmed we have a contract in place with Vocus for the Prelude fibre optic cable and hold weekly operational meetings with them. Vocus is up to date with the Crux project development and is in scope to connect the Crux platform to the existing North-West Cable System.</li> <li>recapped on what we're consulting on and the obligation to consult under the regulations.</li> <li>notified of the management of feedback if any details should be considered sensitive information.</li> <li>reconfirmed contact details.</li> </ul>	received about activity impacts or risks. <b>Relevant/Non-Relevant Matters</b> Provided information regarding existing and proposed submarine cables in the Planning Area which was considered to be a relevant matter. Shell confirmed through consultation with the owner/proponents that the cables would not be affected by the activity covered by this EP.	measures have been adopted.
5.	<b>Australian Fisheries Management Authority (AFMA)</b>	27 March 2023 (initial email) <b>Email to Shell</b> 30 March 2023 06 April 2023 26 April 2023 12 September 2023 13 September 2023  <b>Email from Shell</b> 04 April 2023 20 April 2023 21 April 2023 26 April 2023 27 April 2023 11 September 2023 13 September 2023	[REDACTED]	<p>Information was used to obtain relevant licensed fishers contact details.</p> <p><b>Email on 11 September 2023</b></p> <p>I'm hoping you might be able to help me, I am working on the Crux Environment Plans and we have recently become aware that there is a requirement that we consult with fisheries who operate in MOU Box 74. Is there someone at AFMA that I could talk to about this, or can you share the process for consulting with these Traditional Fishers?</p> <p><b>Email on 13 September 2023</b></p> <p>Thanks, greatly appreciate your help.</p>	<p><b>Assessment</b></p> <p>No objections or claims have been received about activity impacts or risks.</p> <p><b>Relevant/Non-Relevant Matters</b></p> <p>Provided information regarding fishing activity/ contacts for fishers that may be affected by the activity which is considered a relevant matter. Shell has consulted with relevant fishers during preparation of this EP.</p> <p>The approach to consultation with MOU Box fisher is document in Section 5.5.2.3.</p>	<p>EP Section 5.6.6 details how Shell has undertaken consultation with relevant commercial fishers. Outcomes of consultation with fishers and associated fishing industry representatives is summarised in this table and considered where relevant in the description of environment (Section 7.3.5) and the assessment of impacts (e.g., Section 9.3; Section 9.12).</p> <p>The consultation approach with MOU box fishers is described in Section 5.5.2.3.</p> <p>Accordingly, consultation during preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.</p>
6.	<b>Director of National Parks (DNP)</b>	27 March 2023 (initial email) <b>Email to Shell</b> 14 April 2023 21 April 2023 <b>Email from Shell</b> 20 April 2023 22 May 2023 7 June 2023	[REDACTED]	<p><b>Email on 22 May 2023</b></p> <p>Close out email sent which covered the following:</p> <ul style="list-style-type: none"> <li>thanked relevant person for their feedback.</li> <li>recapped on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>notified of the management of feedback if any details should be considered sensitive information.</li> <li>reconfirmed contact details.</li> </ul> <p><b>Email on 7 June 2023</b></p>	<p><b>Assessment</b></p> <p>No objections or claims have been received about activity impacts or risks.</p> <p><b>Relevant/Non-Relevant Matters</b></p> <p>Requested to be notified in the event of an incident that is within or likely to affect</p>	<p>A description of the objectives and values of Australian Marine Parks within the Planning Area, is included in EP Section 7.3.4 and considered in the assessment of potential impacts from the activity (e.g. Section 9.12.4). The listed acceptable level of impacts set during</p>



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ID	Name					
						completed in accordance with the OPPGS (E) Regulations.
8.	<b>Australian Border Force (Maritime Border Command)</b>	27 March 2023 <i>(initial email)</i> <b>Email from Shell</b> 04 April 2023 <i>(Calendar invite)</i> 20 April 2023 09 May 2023	No response	Not applicable	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.
9.	<b>Department of Foreign Affairs (DFAT)</b>	27 March 2023 <i>(initial email)</i> <b>Email to Shell</b> 26 April 2023 19 May 2023 08 June 2023 14 Sept 2023 22 Sept 2023 29 Sept 2023 <b>Email from Shell</b> 04 April 2023 <i>(Calendar invite for industry forum)</i> 20 April 2023 04 May 2023 09 May 2023 17 May 2023 07 June 2023 11 Sept 2023 14 Sept 2023	[REDACTED]	<b>Email on 7 June 2023</b> Close out email sent which covered the following: <ul style="list-style-type: none"> <li>• Thanked relevant person for their feedback.</li> <li>• We note your advice that as the activities will be conducted in Australian waters, environmental management is therefore a matter for Australian domestic regulators. Shell confirms it will submit the required environmental plans for the Crux project to NOPSEMA in accordance with the relevant regulations and NOPSEMA can contact the relevant part of DFAT should this be necessary. We also note your advice DFAT can provide assistance contacting the Indonesian or Timor-Leste Governments if required.</li> <li>• recapped on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>• notified of the management of feedback if any details should be considered sensitive information.</li> <li>• reconfirmed contact details.</li> </ul> <b>Email on 11 September 2023</b> I am working on Environment Plan Consultation related to Shell's Crux Project and we are looking for some guidance on consulting with Traditional Fishers in MOU Box 74. Could you advise who would be best to speak to about this?	<b>Assessment</b> No objections or claims have been received about activity impacts or risks. <b>Relevant/Non-Relevant Matters</b> Shell's response to DFAT's feedback, detailing how that feedback has been actioned, is set out here. It is noted that AMFA had also be contacted regarding MOU box fishers.  Shell considered the suggestion to contact the email provided for the Indonesian Ministry for Marine Affairs and Fisheries. Shell has a local presence within Indonesia, including	With regarding to MOU Box fishers, in consultation with both DFAT and AMFA, the resulting consultation approach with MOU box fishers is described in Section 5.5.2.3.  Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.

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ID	Name					
		21 Sept 2023 10 October 2023	[REDACTED]	<p><b>Email on 14 September 2023</b></p> <p>Just following up my email below as I am seeking to resolve an issue, we have related to consulting with Traditional Indonesian Fishers in MOU Box 74 and would really value some advice from DFAT. I'd be happy to have a quick call on this if that's easiest.</p> <p><b>Email on 21 September 2023</b></p> <p>Thought I'd follow up your message from last week to check if you've heard anything from the Indonesian Branch yet?</p> <p><b>Email on 10 October 2023</b></p> <p>Thank you for your response on this. We have reached out to AFMA and received the same advice that you outline below - they don't have contact details for Indonesian Fishers in the MOU Box. Appreciate you sharing the contact details for the Indonesian Government.</p>	specialist government affairs personnel, who were engaged to advise on this matter. This advice was that making contact with this department would not lead to the ascertainment of individual MOU Box fishers contact details within a reasonable period.	
10.	Clean Energy Regulator (CER)	27 March 2023 (initial email) Email to Shell 06 April 2023 Email from Shell 04 April 2023 (calendar invite) 06 April 2023 20 April 2023 26 April 2023	[REDACTED]	Not applicable	No feedback, objections or claims received.	
11	Department of Jobs, Tourism, Science, and Innovation (JTSI)	27 March 2023 (initial email) Email to Shell 06 April 2023 (Calendar decline) Email from Shell 04 April 2023 (calendar invite) 20 April 2023	No response	Not applicable	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in



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ID	Name					
						accordance with the OPPGS (E) Regulations.
12.	Department of Primary Industries and Region Development (DPIRD) – Fisheries Division	<p>27 March 2023 <i>(Initial email)</i></p> <p><b>Email to Shell</b> 05 April 2023 06 April 2023 <i>(Calendar decline)</i> 21 April 2023</p> <p><b>Email from Shell</b> 04 April 2023 <i>(Calendar invite)</i> 20 April 2023</p>	No response	Not applicable	No feedback, objections or claims received.	<p>In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8).</p> <p>Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.</p>
13.	Department of Climate Change, Energy, the Environment and Water (DCCEEW)	<p><b>Email to Shell</b> 21 April 2023 24 April 2023 26 April 2023 27 April 2023 24 May 2023</p> <p><b>Email from Shell</b> 04 April 2023 <i>(calendar invite)</i> 17 April 2023 20 April 2023 22 April 2023 <i>(initial email)</i> 04 May 2023 23 May 2023 7 June 2023</p> <p><b>Virtual attendance at Industry Forum</b> 27 April 2023</p>	[REDACTED]	<p><b>Virtual attendance at Industry Forum on 27 April 2023</b> Yes, the two smaller EPs will be public within the week, and we can share the links with you.</p> <p><b>Email on 04 May 2023</b> Shell thanked DEECCW for attendance at Industry Forum and provided links to draft EPs as agreed.</p> <p><b>Email on 23 May 2023</b> Close out email sent.</p> <p><b>Email on 24 May 2023</b> Close out email sent which covered the following:</p> <ul style="list-style-type: none"> <li>thanked relevant person for their feedback.</li> <li>recapped on what we're consulting on and the obligation to consult under the regulations.</li> <li>notified of the management of feedback if any details should be considered sensitive information.</li> <li>reconfirmed contact details.</li> </ul> <p><b>Email on 7 June 2023</b> In addition to the close out email on 24 May 2023, Shell provided a further response as follows:</p>	<p><b>Assessment</b> No objections or claims have been received about activity impacts or risks.</p> <p><b>Relevant/Non-Relevant Matters</b> DCCEEW raised the following matters that were considered relevant to the activity:</p> <ul style="list-style-type: none"> <li>need to engage a suitably qualified and experienced maritime or underwater archaeologist to assist with identifying and managing potential impacts to UCH.</li> <li>inclusion of DCCEEW UCH team in ongoing consultation</li> </ul>	<p>The outcomes of an archaeological UCH assessment have been incorporated into the EP description of environment (e.g., Section 7.3.1.3) and the assessment of potential impacts (e.g. Section 9.6.2).</p> <p>Extensive consultation has been undertaken with First Nations peoples (Section 5.6.5), consistent with relevant guidance (Section 5.3 – including the Interim Guidance) and outcomes used to inform EP description of the environment (e.g., Section 7.3.1.3).</p> <p>For any matters regarding the likelihood, or actual establishment of cultural heritage</p>







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		27 June 2023		<p><b>Phone call 22 June 2023</b></p> <ul style="list-style-type: none"> <li>Quick call covering the following: We want to make best use of DoT's time and don't want to waste it by them reviewing OPEP's they have reviewed before.</li> <li>The Prelude OPEP which relates to a few of the EP's has been reviewed by DoT before (last time was 2020 under the last Prelude EP revision). It's still largely unchanged and is the OPEP we are linking to for the Seabed Survey and Drilling Template EP</li> <li>The new Browse Regional Oil Pollution Emergency Plan (BROPEP) is Shell's adoption of the INPEX BROPEP, which DoT were heavily consulted on in its development also. The Shell BROPEP is largely unchanged.</li> <li>Plan to schedule a meeting to further understand if DoT want to review both of these OPEP's again.</li> </ul> <p><b>Meeting on 27 June 2023</b> Relevant actions agreed as follows:</p> <ul style="list-style-type: none"> <li>Provide the Development Drilling EP and Browse Regional OPEP for DoT review of OPEP requirements. A 6 week turn around on this has been noted as stated in their guidance document sent to Shell on the 13th of April. Worth noting that DoT's review is not a regulatory function, it's a function they opt for via RP consultation requirements. DoT require the opportunity to provide feedback prior to acceptance of the EP/OPEP by NOPSEMA.</li> </ul> <p><b>Email 30 June 2023</b> Thanks for meeting me on Tuesday to discuss Shell oil pollution emergency plans associated with the Crux Environment Plans. As discussed, the following is a summary of Shells plans and associated arrangements: The Crux Seabed Survey EP and Drilling Template Installation EP:</p> <ul style="list-style-type: none"> <li>These is a single vessel campaign which bridge the assessment of oil spill risk and associated response arrangements to the Prelude OPEP.</li> <li>The Prelude OPEP has been previously provided to DoT for review during Relevant Persons consultation between the 07 November 2019 and the 21 January 2020 and it has not been updated since.</li> <li>As discussed, for the activities described within these EPs, these are viewed by Shell as an extension to the existing Prelude oil spill arrangements, therefore these should not trigger a new review of the Prelude OPEP by DoT.</li> <li>A copy of the draft Crux Seabed Survey Environment Plan and the Drilling Template Environment Plan can be found here: <ul style="list-style-type: none"> <li>crux-drilling-template-installation-environment-plan.pdf</li> <li>crux-seabed-survey-environment-plan-rev-03.pdf</li> </ul> </li> <li>The existing Prelude OPEP can be found on the NOPSEMA website, here: <a href="https://docs.nopsema.gov.au/A763759">https://docs.nopsema.gov.au/A763759</a></li> </ul> <p>The Crux Development Drilling EP and Crux Installation and Cold Commissioning EP:</p> <ul style="list-style-type: none"> <li>These two EPs bridge the assessment of oil spill risk and associated response arrangements to Shells new Browse Regional OPEP.</li> </ul>		



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				<ul style="list-style-type: none"> <li>It is noted that Shell Browse Regional OPEP is an extension of the existing Inpex Browse Regional OPEP, which DoT were engaged throughout the development of.</li> <li>As requested, I have transferred the Crux Development Drilling EP and Browse Regional OPEP via Large File transfer (today at 1300), for your review. A draft copy of the Crux Installation and Cold Commissioning EP will be transferred to you by the end of July as it is still under development.</li> </ul>		
17.	Department of Water & Environmental Regulation (DWER)	27 March 2023 (initial email) Email to Shell 28 March 2023 Email from Shell 20 April 2023 09 May 2023	[Redacted]	Not applicable	<b>Assessment</b> No objections or claims have been received about activity impacts or risks.	Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.
18.	Federal Member for Kimberley - Melissa Price	27 March 2023 (initial email) Email to Shell 05 April 2023 Email from Shell 04 April 2023 (Calendar invite) 22 May 2023	[Redacted]	<b>Email on 22 May 2023</b> Thanks for your response. We will continue to keep the Hon Melissa Price MP updated on the Crux project as it progresses.	<b>Assessment</b> No objections or claims have been received about activity impacts or risks. <b>Relevant/Non-Relevant Matters</b> No relevant matters raised. Shell's response to the feedback, detailing the response and how that feedback has been actioned, is set out here.	Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.
19.	State Member for Kimberley - Divina Grace D'Anna	27 March 2023 (initial email) Email from Shell 04 April 2023 (Calendar invite) 20 April 2023 09 May 2023	No response	Not applicable	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation

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						of the EP has been completed in accordance with the OPPGS (E) Regulations.
20.	<b>Environment Protection Authority (EPA)</b>	27 March 2023 <i>(initial email)</i> <b>Email from Shell</b> 04 April 2023 <i>(Calendar invite)</i> 20 April 2023	No response	Not applicable	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.
21.	<b>Department of Environment, Parks, and Water Security (DEPWS)</b>	01 May 2023 <i>(registered letter)</i>	No response	Not applicable	No feedback, objections or claims received.	
22.	<b>Indigenous Land and Sea Corporation (ILSC)</b>	01 May 2023 <i>(registered letter)</i>	No response	Not applicable	No feedback, objections or claims received.	
23.	<b>Department of Planning Lands and Heritage (DPLH)</b> <i>(Includes Heritage Council of WA and Aboriginal Cultural Material Committee (ACMC))</i>	27 March 2023 <i>(initial email)</i> <b>Email to Shell</b> 06 April 2023 02 May 2023  <b>Email from Shell</b> 04 April 2023 <i>(Calendar invite)</i> 17 April 2023 18 May 2023 30 May 2023	[REDACTED]	<b>Email on 17 April 2023</b> Thanks for your email and apologies that the link didn't work for you. Try this: drilling-template-environment-plan-factsheet.pdf (shell.com.au) All of our activity is offshore, so there is no land development. <b>Email on 18 May 2023</b> Close out email sent which covered the following: <ul style="list-style-type: none"> <li>• Thanked relevant person for their feedback.</li> <li>• Recapped on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>• Notified of the management of feedback if any details should be considered sensitive information.</li> <li>• Reconfirmed contact details.</li> </ul>	<b>Assessment</b> No objections or claims have been received about activity impacts or risks. <b>Relevant/Non-Relevant Matters</b> Requested information regarding the activity and advised re Commonwealth heritage sites in/proximal to the Planning Area, which is considered a relevant matter. The	The Commonwealth heritage listing of Ashmore Reef is described in EP Section 7.3.3.2.





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				Crux project, including the current versions of the National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds and Offshore Petroleum Industry Guidance Note.		
27.	Department of Mines, Industry Regulation and Safety (DMIRS)	27 March 2023 (initial email) Email to Shell 17 April 2023 Email from Shell 04 April 2023 (calendar invite) 20 April 2023 09 May 2023	[REDACTED]	Not applicable	No feedback, objections or claims received.	
28.	Department of Industry Tourism and Trade (DITT) Marine safety branch and Fisheries	27 March 2023 (Initial email) Email to Shell 21 April 2023 26 April 2023 Email from Shell 04 April 2023 17 April 2023 20 April 2023 08 May 2023 In person at Darwin Drop-in 17 May 2023	[REDACTED]	<b>In person on 17 May 2023</b> Shell advised that Darwin-based fishers on matters unrelated to this EP.	<b>Assessment</b> No objections or claims have been received about activity impacts or risks. <b>Relevant/Non-Relevant Matters</b> Shell's response to DITT's feedback, detailing our response and how that feedback has been actioned, is set out here.	Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.
<b>Indigenous people and organisations</b>						
29.	Bardi and Jawi Niimidiman Aboriginal Corporation (BJNAC) (Tier 3)	31 March 2023 (initial email) refer to Appendix A Email to Shell 14 April 2023 23 May 2023 04 July 2023 23 August 2023 27 October 2023 Email from Shell 12 April 2023 26 April 2023 17 May 2023 25 May 2023 26 May 2023 26 June 2023 10 July 2023	[REDACTED]	<b>Email on 17 May 2023</b> Thank you for your response to our most recent invitation to attend the Shell Crux project forum, following our request to meet in early February 2023 on an update to Shell's operations in Australia. In February you noted that the PBC was planning a meeting to discuss our project, but that the earliest opportunity would be late March, early April. We also refer to our emails to you on 31 March, and 12 April, setting out the specific opportunities for you to discuss the Crux Environmental Plans (EPs) and other planned Crux project activities with us as part of our Crux consultation programme. We then received your response on 14 April. We understand the importance of the PBC working through the implications of the Tipakalippa decision and appreciate that this has created additional work for the PBC and the community it represents. To this end, we would welcome receipt of your draft resourcing protocol for our consideration (noting that the 28-day period you advised for providing the resourcing protocol has elapsed). I also draw your attention to Shell's offer to make available an Independent Environmental Panel to provide advice to Indigenous groups. If you would like to access this resource, please let us know and we will facilitate an introduction. To be clear – Shell would not see any of the questions or advice shared between you and the Panel (panel member chose by you). Shell is committed to ensuring that sufficient information about the Crux drilling program, and its other Crux project activities, is provided to	<b>Assessment</b> No objection or claims received about activity impacts or risks. <b>Relevant/Non-Relevant Matters</b> The following relevant matters were raised regarding the activity and/ or their functions, interests, or activities: • presence of songlines up the [west Kimberley] coastline and associated cultural heritage sites that are not all registered. • important cultural connections with Country particularly to the	Description of heritage values in the EP (e.g., Section 7.3.2) updated to incorporate information received and updated information considered in risk assessment (e.g., Section 9.12.6). Section 7.3.2.2.3 notes that a number of the heritage sites in the Planning Area have not been recorded in Government databases. Consultation included collective engagement with the 3 neighbouring cultural groups and facilitating on-country meetings wherever



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		03 August 2023 04 August 2023 08 August 2023 10 August 2023 23 August 2023 28 August 2023 17 October 2023 7 November 2023  <b>Phone call</b> 17 October 2023 02 November 2023 x 2  <b>In Person</b> 15 August 2023 25 August 2023	[REDACTED]	relevant persons in a timely manner, and a reasonable period is given to allow relevant persons to consider that information and raise any concerns or objections.  Further, Shell is committed to ongoing consultation with relevant persons (in this case Bardi and Jawi Niimidiman Aboriginal Corporation), to hear and consider their feedback and concerns, throughout the implementation and operation of the Crux project.  While we await the resourcing protocol, and to allow the PBC to further understand the projects involved and what resourcing may be relevant, we attach facts sheets relevant to the Crux project and EPs for your consideration. You can also find more information about the Crux project at the links below. We understand that the PBC Board were meeting on 19-20 April to discuss this and other matters. We would be happy to provide any clarifications or further information on the project or the relevant EPs if these ended up being discussed at the meeting.  The project: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a> The EPs for the project: Draft EPs for Shell Crux Project  We would like to reiterate our invitation to meet with you, either on-country or through one-on-one conversations with Shell representatives via email or phone. We are planning to conclude formal consultation with relevant persons for the submission of the Crux drilling environment plan by the end of May 2023. As mentioned above, we will continue to engage with stakeholders as a fundamental part of executing the Crux project.  Thanks again and we look forward to being in touch. <b>Email on 25 May 2023</b> Thanks for your response and for providing the resourcing protocol, we will review and revert back to you shortly. <b>Email on 26 May 2023</b> Close out email to all Indigenous RPs wrapping up the consultation: <ul style="list-style-type: none"> <li>• sharing the videos from Forum 1.</li> <li>• reminding Indigenous RPs of the environment panel available to them.</li> <li>• recap on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>• reconfirmed contact details.</li> </ul> <b>Email on 26 June 2023</b> Thank you for sending through the Resourcing Protocol Agreement. Shell appreciates the work that has been completed to date and, together we can work a formal Resourcing Protocol for multipurpose use to cover any future consultations / engagements. Please find attached the proposed changes to the Resourcing Protocol Agreement including the schedule of rates as aligned with our existing prescribed body corporate Resourcing Protocols.  Whilst we work together on establishing a Resourcing Protocol should consultation be required in the near term; Shell offer the below approach in the interim:  We can agree a cap on the PBC's consultation costs which we will reimburse, or alternatively pre-agree amounts with the PBC for the cost of distinct parts of the consultation, in line with the agreed cost schedule- (see proposed amendments on the- cost schedule attachment).  Shell concluded formal consultation with relevant persons for the submission of the Crux Seabed Survey, Drilling Template, Development Drilling and Cold Commissioning and Installation environment plans at the end of May 2023, however we will continue to engage with relevant persons as a fundamental part of executing the Crux project. I	Reef and King Sound. <ul style="list-style-type: none"> <li>• preferred engagement process to ensure culturally appropriate consultation.</li> </ul> Shell incorporated this information into its assessment of potential impacts and processes for engagement, as reflected in the EP - see Measures adopted for detail.  Other feedback included interest in investigating a local spill response capacity, for quicker initial response, and a resourcing protocol. Table 9-52 of the EP demonstrates that response timeframes for spills are adequate to ensure the risks to areas of heritage significance are ALARP. A resourcing protocol in relation to consultation for this EP was provided by BJNAC. Shell has assessed the resourcing protocol as not a relevant matter on the basis that it does not relate to BJNAC's functions, interests or activities that may be affected by the activities. Although one aspect of it relates to funding for consultation, Shell considers that this aspect has been covered separately by covering reasonable costs for the engagements to date. Nevertheless, Shell has committed to work towards getting an updated resource protocol in place with Bardi Jawi to support ongoing consultation (Section 5.8) and to	requested/practicable (Section 5.6.5).  Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPGGS(E) Regulations.

Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out																
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			<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>understand the PBC Board were meeting on 19-20 April to discuss this and other matters. We would be happy to provide any clarifications or further information on the project or the relevant EPs if these ended up being discussed at the meeting.</p> <p><b>Email on 10 July 2023</b></p> <p>Thank you for your email on 4 July.</p> <p>In regard to the Resourcing Protocol, we recognise the importance of this agreement as an ongoing engagement agreement between Shell and the Bardi Jawi Niimidiman Aboriginal Corporation. In the spirit of collaboration, we feel it would be better to discuss this face to face and can make Shell personnel available to attend a meeting with you at a convenient time and place. As previously outlined, prior to a formal resourcing protocol in place, Shell can assist with financial assistance to bring people together, we can pay TO's costs associated with consultation. The consultation can take place on-country or through one-on-one conversations with Shell representatives via email or phone. There would need to be a pre-agreed cap on expenses, and expenses would be paid against itemised tax invoices.</p> <p>In terms of Environment Plan consultation, please find attached a NOPSEMA brochure which helps outline the requirements.</p> <p>There are four Environment Plans (EPs) that Shell will be submitting to NOPSEMA as part of the Crux approvals process. The first two deal with relatively small-scale activities (surveying the seabed and installation of a drilling 'guide' template, which sits on the sea floor). These both have small potential impact areas and do not extend to the coast of Australia. The third and fourth EPs deal with the drilling of the gas wells, and the installation of the equipment and testing, and have larger potential impact areas.</p> <p>The submission dates for these EPs are outlined in the table below. If we do not meet prior to submission, then Shell is happy to consult at any time with the Bardi and Jawi Niimidiman AC as part of the ongoing consultation process. Either way your feedback, claims or objections will be considered.</p> <table border="1"> <thead> <tr> <th>EP</th> <th>Date of submission to NOPSEMA</th> <th>If meeting with relevant persons occurs prior to EP submission date</th> <th>If meeting with relevant persons occurs after submission date</th> </tr> </thead> <tbody> <tr> <td>1 – Seabed survey</td> <td>20 July 2023</td> <td rowspan="3">Feedback, comments and objections will be included in the EP</td> <td rowspan="3">Feedback, comments and objections be included as part of ongoing consultation</td> </tr> <tr> <td>2 – Drilling template</td> <td>13 July 2023</td> </tr> <tr> <td>3 – Development drilling</td> <td>23 July 2023</td> </tr> <tr> <td>4 – Installation and commissioning</td> <td>27 November 2023</td> <td></td> <td></td> </tr> </tbody> </table> <p>We remain open to meeting with you at any time.</p> <p><b>Email on 03 August 2023</b></p>	EP	Date of submission to NOPSEMA	If meeting with relevant persons occurs prior to EP submission date	If meeting with relevant persons occurs after submission date	1 – Seabed survey	20 July 2023	Feedback, comments and objections will be included in the EP	Feedback, comments and objections be included as part of ongoing consultation	2 – Drilling template	13 July 2023	3 – Development drilling	23 July 2023	4 – Installation and commissioning	27 November 2023			<p>participate in industry collaboration on training of indigenous peoples in spill preparedness.</p> <p>All other issues raised were considered to not be relevant matters. Shell's response to the feedback received is set out here.</p>	
EP	Date of submission to NOPSEMA	If meeting with relevant persons occurs prior to EP submission date	If meeting with relevant persons occurs after submission date																			
1 – Seabed survey	20 July 2023	Feedback, comments and objections will be included in the EP	Feedback, comments and objections be included as part of ongoing consultation																			
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				<p>I'm just following through on the emails re meeting in a few weeks.</p> <p>Another group are asking for a meeting on 16 August in Port Hedland, so, if possible, if we can confirm the meeting for 15th August in Broome that would be good. If the 15th works, we will try to hold the meetings at Yawuru's conference rooms at Nyamba Buru Yawuru.</p> <p>We'll start at 10, and finish after lunch. Shell will be able to cover travel and other reasonable costs on presentation of an invoice.</p> <p><b>Email on 08 August 2023</b></p> <p>Please find attached an agenda for Tuesday's meeting next week.</p> <p>We look forward to seeing you at 9.30 at the Dampier Room, at the Mangrove Hotel. Details are on the agenda – it's at 47 Carnarvon Rd, Broome. The agenda is fairly relaxed and the focus from our side is getting to know you all and responding fully to your questions and discussions. I'm linking it all together so please call me with any issues. Morning tea and lunch provided, and we'll see you there.</p> <p><b>Email on 10 August 2023</b></p> <p>Please find the updated agenda with the revisions mentioned and also added in morning tea and lunch. I will have printed copies on the day. Thanks, and will speak soon,</p> <p>Meeting Agenda for 15 August 2023</p> <p>Agenda</p> <ol style="list-style-type: none"> <li>1. Introductions a. Walalakoo b. Mayala c. Bardi Jawi d. Shell</li> <li>2. Some background on Shell in Australia and Shell in WA</li> <li>3. Crux - what it is, where it is at now. 4. Environmental issues – Q and A</li> <li>5. Priorities for Aboriginal groups- Indigenous Social and Economic Impacts</li> <li>6. Traditional Owner only time</li> <li>7. Regroup - Where to from here – relationships into the future, opportunities</li> </ol> <p><b>Meeting Notes from 15 August 2023</b></p> <p>Walalakoo mentioned at the start that Oil and gas has been bypassing the Traditional Owners in the Kimberley and the Traditional Owners are very concerned about the impacts on their Country. Feeling of anxiousness at the start to meet as there has been no engagement with Traditional Owners in the Kimberley with Oil and Gas Companies</p> <ul style="list-style-type: none"> <li>• Walalakoo discussed the important cultural connections with Country in particularly to the Reef and King Sound and are directly affected by the oil and gas industry. There is a strong cultural block up in the Dampier Peninsula and the 3 groups of Bardi Jawi, Walalakoo and Mayala are deeply interconnected.</li> <li>• Bardi Jawi - Discussed the historic relationship of Shell and Bardi Jawi and that there has been economic loss to the community and fractured relationships internally due to airport decisions at Djarindjin</li> <li>• Discussion around RAP came up and since we are working towards a RAP. Bardi Jawi mentioned they want to work with us and assist us with working on KPI targets.</li> <li>• Walalakoo discussed job opportunities and asked how many Indigenous people work on Prelude. Discussion around the job opportunities we do offer as well as our Contractors. NETTS program was also mentioned.</li> <li>• Walalakoo also discussed history (dating back some 10 years+) with applying as a vendor with Shell and hasn't had a positive experience</li> </ul>		

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				<p>previously. Discussion was had around Indigenous Suppliers and supply chain in general. Mentioned processes around local content plans and procedures in place to ensure we consider local content as part of the tendering process currently.</p> <ul style="list-style-type: none"> <li>• Discussion around Oil Spill Impacts were had and the different scenarios. Questions were asked around first responders and where do they come from. Mentioned responders are in Singapore and Fremantle. 4-8 hours it takes to organize the response. Some concern with how long this would take for them to get to the scene. Interest in developing capacity of local oil spill preventive groups and Shell discussed that we are acting on this as well as a whole Industry approach.</li> <li>• Bardi Jawi mentioned they may be interested in conducting their own oil spill modelling independently of Shell</li> <li>• Bardi Jawi brought up the need for cultural awareness/ cultural competency training that Bardi Jawi can offer.</li> <li>• NOPSEMA have committed to cultural competency training and have been out on the Dampier Peninsula with the Traditional Owners. Part of building genuine relationships. Subtext was that Shell should engage Bardi Jawi to provide similar training.</li> <li>• The Traditional Owner groups have access to independent Environmental panel and can access this at any point if they would like assistance. This is something the groups will do independently.</li> <li>• Bardi Jawi made comment to effect that they did not consider this meeting consultation, but pre-consultation.</li> <li>• Bardi Jawi comments on this process being one-sided, ie; Shell talking about what it is wanting to do; no allowance for what Bardi Jawi wants to do/ offer (in the form of cultural competency training, assistance in helping industry become more sensitized to Indigenous values.</li> <li>• Walalakoo made strong case for engagement with TO groups and RNTBCs being seen as a direct cost, and as essential precursor activity to any proponent development. That involving TO groups later as an afterthought, or simply to meet regulatory requirements was inappropriate.</li> <li>• Shell talked around Shell's commitment to looking at the Social and Cultural Heritage Values and the process Shell took around this. Walalakoo flagged concerns around our assessment of Cultural Heritage sites and only the ones that currently come up as registered as there are some significant song lines up the coastline that go up to Kalamburu. The Walanadi. 3 groups have strong connection to sea country and important to view sea country as all interconnected not just piece by piece as within Shell boundaries.</li> <li>• Concern from Walalakoo around Well integrity and stability</li> <li>• Drilling fluid spills and what is Shell's management plans around that. Majority is non-toxic fluids and cause minimal impacts.</li> <li>• Bardi Jawi strong on Resourcing protocol needing to be addressed with Bardi Jawi before progressing any further with the relationship. Bardi Jawi highly likely to object if protocol not addressed. Concerns with Shells response to the Resourcing protocol, in particular the following: references to Native title removed, reference to engaging in good faith has been removed, removed FPIC, removed clause around cultural sensitivities.</li> <li>• Walalakoo and Mayala stated they are likely to develop Protocols based on Bardi Jawi Protocol. Frank discussion around Shell won't be able to accept all the requirements in the protocol and will address this and need to give a response back to Bardi Jawi</li> <li>• Importance of having a Social Impact Assessment as they have had with Woodside as part of NW Shelf agreement and Walalakoo will send this through</li> </ul>		

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				<ul style="list-style-type: none"> <li>The Importance of investing in the younger generations was emphasised by Walalakoo</li> <li>The groups stated that this is a preliminary discussion, and that further consultation is to be had with other members in the group. Further meetings will likely be in Derby and One Arm Point</li> <li>The groups emphasized their limited capacity as PBCs and lack of ability to attend all the meetings with all of Industry. Shell noted this concern.</li> <li>Meeting concluded with expressed good will and some confidence from TOs that Shell was genuinely committed to doing things differently.</li> <li>Commitment from Shell to ongoing relationship and responding in particular to resourcing protocol, further meetings on country (i.e., not in Broome) as advised/ directed by the PBCs, and to working together for progress on Indigenous procurement, employment and community programming.</li> </ul> <p><b>Email on 23 August 2023</b></p> <p>Thank you for your time last week meeting with Shell people and myself. We came away feeling that the conversations were open and positive, and we appreciated the groups questions and feedback. Just to reiterate - it is a key Shell value to build a strong relationship with Aboriginal organisations, because of the fundamental connection of Aboriginal groups, like Bardi Jawi, to land and sea. This is also a value we hold personally.</p> <p>We understood from your comments that the resourcing protocol needs to be worked through and agreed upon, so that future meetings avoid any financial disadvantage to Traditional Owners and staff, and that cultural expertise and input is appropriately valued. I remember you mentioned you were going to be in Perth later this month. Is there capacity in your schedule to meet when you are here?</p> <p>If you have time, we'd like to get together to continue discussion on the resourcing protocol. Look forward to hearing from you,</p> <p><b>Email on 23 August 2023</b></p> <p>Would 11am work this Friday?</p> <p>I will send a meeting invite through shortly.</p> <p><b>Email on 23 August 2023</b></p> <p>Thanks for the meeting last week. We've now following up on the issues raised. We've written to each group about the logistics of next meetings - where to meet, who should be there, sorting out costs and so on. We look forward to seeing you again,</p> <p><b>In Person Meeting 25 August 2023</b></p> <ul style="list-style-type: none"> <li>Introductions were made, Shell acknowledged past difficulties with Bardi Jawi and reaffirmed that Shell is wanting open and frank conversations.</li> <li>Noted that Shell is wanting to establish a platform to move forward to work on developing a broad relationship scope with Bardi Jawi that not only encompasses EPs.</li> <li>Bardi Jawi were happy with last week's meeting in Broome and are also keen to build a relationship with Shell that is not only around protecting ceremonial grounds and saltwater country but working toward the broader picture of recruitment and procurement opportunities. Bardi Jawi feel that some opportunities were lost to them 10 years ago.</li> <li>It was acknowledged that Shell had heard the concerns around Djarindjin and wanted to work with Bardi Jawi to discuss.</li> <li>While in Perth, Bardi has had meetings with NOPSEMA, DoT and AMOSC and will be attending Spillcon in Brisbane next month. It is</li> </ul>		



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				<p>important for Bardi Jawi to gain a greater understanding of the oil and gas industry and the risk it presents to Traditional Owners.</p> <ul style="list-style-type: none"> <li>Both Parties are interested in establishing a resourcing protocol for all engagements (not solely focused on EPs). To support the resourcing protocol (which only outline service and rates covered for consultation) a Memorandum of Understanding (MoU) or a Letter of Intent that is acceptable to both parties will be produced. This will outline the nature and objective of engagements between the two parties to work towards developing a genuine relationship between the Parties.</li> <li>Current Shell Resourcing Protocol Rates (as used in Queensland) document shared – Shell gave a run through of the intent and how they are applied.</li> <li>Moving forward, once there is an agreement on rates, meeting requirements and general intentions and understandings, a Letter of Intent or MoU will define how Shell and Bardi Jawi will engage in good faith.</li> <li>Two things that are extremely important to Bardi Jawi are, <ul style="list-style-type: none"> <li><input type="checkbox"/> Confidentiality on Culturally Sensitive Information and</li> <li><input type="checkbox"/> Acting in good faith to develop an equitable relationship.</li> </ul> </li> <li>All agree that the development of a MoU, which is not just dedicated to EP consultation, was the way forward, appreciate it will still take time as the Law Bosses will need internal conversation and Shells legal team will need to review.</li> <li>Shell to draft a Memorandum of Understanding (for Bardi Jawi and Shell) to support the resource protocol rates and services.</li> <li>All agree that the meeting has been very positive.</li> </ul> <p><b>Email on 28 August 2023</b></p> <p>Great to meet on Friday – thanks, and thanks to your Elder, for being there. I'm attaching a draft of the MoU as we discussed. This has already had a pass by Shell Legal, so in essence, as it stands, it is good to go. Obviously, you need to review it with the right people in BJNAC, and once you're happy with it, and we get it back, together we can move to finalise and sign off – which will be great.</p> <p>I'm attaching the Resourcing Protocol too. The MoU and the Resourcing Protocol should be read together and when the MoU is finalised, the Resourcing Protocol will be a part of the full document.</p> <p>In the spirit of confidentiality, we trust you will share this with the right people in BJNAC but not further! Thanks – hope you had a good weekend and enjoyed the footy.</p> <p><b>Draft MoU and Resourcing Protocol Rates contained in the Sensitive Matters Report.</b></p> <p><b>Email on 17 October 2023</b></p> <p>Thanks for taking my call always good to stay in touch. As discussed, let us know whenever you are ready for next steps following your review of the Resourcing Protocol (for use for general relationship engagement between Shell and Bardi Jawi for all Shell's activities).</p> <p>Also as discussed on the separate topic of EPs, we want to keep you in the loop of the updated Shell EP timeline. Shell is re-submitting the Environmental Plans to NOPSEMA on the 27th of October. So, if there is other additional information Bardi Jawi wish to provide, beyond the information shared with Shell in Broome and Perth, please let me know before Friday 27th October. After this time, consultation for the purposes of preparing the below Environmental plans will be considered closed.</p> <p>Recapping the meeting we had in Broome:</p> <p>We discussed the four different Environmental Plans and how Bardi Jawi, as Relevant Persons (under the NOPSEMA guidelines), need to be</p>		

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				<p>consulted, and have an opportunity to provide input into the Plans. Specifically, this input helps inform.</p> <ul style="list-style-type: none"> <li>• our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li><input type="checkbox"/> how our activities might impact the existing environment (including its cultural features); and</li> <li><input type="checkbox"/> how controls and mitigation measures may be adopted to protect what is important to you.</li> </ul> <p>The four Environmental plans cover off on the four key stages to the Crux Project development.</p> <ol style="list-style-type: none"> <li>1. The Drilling template – installing the drilling 'jig' or structure on the seabed</li> <li>2. The Seabed survey – checking the route on the seabed floor between Crux and Prelude to make sure it is safe and clear</li> <li>3. Development Drilling – drilling the wells</li> <li>4. Installation and Cold Commissioning – installing the rest of the Platform, the pipelines and testing it all.</li> </ol> <p>Shells relationship with Bardi Jawi is important to us, and as previously discussed we are open to meeting for other areas outside of these EPs, including keeping you updated as the project progresses, future EPs required for this project and/or to keep the relationship strong. The meetings you mentioned in December could be a good opportunity for this.</p> <p><b>Email on 7 November 2023</b></p> <p>Thank you for your email of 27 October and our recent telephone calls.</p> <p>Further to our email of 17 October on the four different environment plans covering the activities specified in that email (the Crux EPs), Shell is required to consult with all relevant persons about its activities under the Crux EPs, and to provide them with sufficient information and a reasonable time to consult with Shell on matters that are relevant to the Crux EPs. Shell considers that Bardi Jawi is a relevant person for the Crux EPs and has engaged with Bardi Jawi in relation to the activities proposed to be conducted pursuant to the Crux EPs since March 2023. This engagement has included meetings in Broome and Perth, as well as email discussions with Bardi Jawi Traditional Owners and representatives, about the Crux Project, as well as the provision of information to Bardi Jawi about Shell's proposed activities.</p> <p>The consultation period for the Crux EPs has now closed for the purposes of the submission of these EPs to NOPSEMA. However, we want to assure you that Shell has processes and procedures in place to address relevant new information that Bardi Jawi may raise in the future concerning risks and impacts of activities to be carried out under Crux EPs once they are accepted.</p> <p>Further, as noted in our email of 17 October, we wish to foster a good and genuine relationship with Bardi Jawi people outside of Shell's EPs, including by progressing the resourcing protocol we discussed earlier this year which will assist relationship building more broadly. I hope this gives additional context to the email I sent, and we look forward to continuing the relationship, including providing updates on the Crux Project, and hearing from Bardi Jawi people about their hopes and aspirations for country.</p>		

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30.	Bardi Jawi Rangers	See 38 KLC	No response	Not applicable	No feedback, objections or claims received.	
31.	Dambimangari Aboriginal Corporation (DAC) (Tier 2)	<p>31 March 2023 (Initial email) refer to Appendix A</p> <p><b>Email to Shell</b></p> <p>06 Sept 2023</p> <p>07 Sept 2023</p> <p>15 Sept 2023</p> <p>20 Sept 2023</p> <p>17 October 2023</p> <p>18 October 2023</p> <p>23 October 2023</p> <p>24 October 2023</p> <p><b>Email from Shell</b></p> <p>12 April 2023</p> <p>26 April 2023</p> <p>02 May 2023</p> <p>19 May 2023</p> <p>25 May 2023</p> <p>26 May 2023</p> <p>28 August 2023</p> <p>31 August 2023</p> <p>06 Sept 2023</p> <p>07 Sept 2023</p> <p>19 Sept 2023</p> <p>20 Sept 2023</p> <p>18 Oct 2023</p> <p>23 October 2023</p> <p>24 October 2023</p> <p>26 October 2023</p> <p>06 November 2023</p> <p><b>Phone calls</b></p> <p>16 May 2023</p> <p>-no answer</p> <p>31 August 2023</p> <p>20 October 2023</p> <p>24 October 2023 x 5</p> <p>25 October 2023 x 2</p> <p>26 October 2023</p> <p>-no answer</p> <p>27 October 2023</p> <p>-no answer (incoming)</p>	<p>No response</p>	<p><b>Email on 26 May 2023</b></p> <p>Close out email wrapping up the consultation:</p> <ul style="list-style-type: none"> <li>Sharing the videos from Forum 1</li> <li>Reminder of the environment panel available</li> <li>Recap on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>Reconfirming contact details.</li> </ul> <p><b>Email on 28 August 2023</b></p> <p>I am a consultant with Advisian, and I am presently assisting Shell Australia with the Crux Project, a gas project off the Kimberley coast with potential environmental impacts for Traditional Owner groups who have sea country. I've left a message on the Office phone, I tried to get in touch with (name redacted), and I have emailed before too – just trying to make sure you guys are in the loop.</p> <p>The Shell Crux project is an extension to Shell's Prelude gas facility, about 190km offshore north-west Australia and 620km off the coast of Broome, WA. As part of the environmental approvals process, Shell is consulting with persons and organisations who may be affected by its activities on how it plans to manage environmental impacts. Shell is also consulting in order to improve its understanding of the sensitivities and values of the regions, and in particular, welcomes receiving of additional key information, or feedback on these.</p> <p>So far, Shell has held a number of consultations, in Perth, Broome and Darwin, and send out information in April and again in May, via email to all the relevant identified groups. However, we recognise that emails can get lost or overlooked, and so are following up with certain organisations, like Dambimangari – in particular those with sea country, or those active on coastal areas, where the Crux project may have an impact in the unlikely event of an accident or uncontrolled hydrocarbon spill. The priority is to make sure all the relevant groups have had the opportunity to hear about Crux and be consulted.</p> <p>I've attached some factsheets on the project, and links to the environmental plans for your information. There are 4 Environmental Plans (at this point), but only two of these have potential impacts coastline impact (Environmental Plans 3 and 4). I've also attached a map showing the modelled full possible extent of environmental impacts associated with these 2 Environmental Plans.</p> <p>The project details can be accessed at: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a> And the full draft Environmental Plans for the project can be accessed at:</p> <p>Draft Seabed EP</p> <p>Draft Drilling template EP</p> <p>Draft Development Drilling EP</p> <p>Please call if you have questions, comments, or concerns, and I can respond or can connect you with people in the Shell Crux project for further information. We can also organise additional information sessions via Teams or other options, if you think that would be useful for Dambi people.</p> <p><b>Email on 31 August 2023</b></p> <p>I am a consultant with Advisian, and I am assisting Shell Australia with the Crux Project, a gas project off the Kimberley coast. I've just spoken with reception and briefly one of the Directors and am now contacting you about Crux.</p>	<p><b>Assessment</b></p> <p>Raised objection/claim that impact to DAC country from a major spill would be unacceptable. This is consistent with Shell's position regarding acceptability of major spills and has been noted in the relevant section of the EP – see Measures adopted for detail.</p> <p><b>Relevant/Non-Relevant Matters</b></p> <p>Provided feedback that sea country may extend past current native title borders, going a "long way from shore" which was considered a relevant matter and EP amended to incorporate - see Measures adopted for detail.</p>	<p>Description of cultural heritage features in Planning Area (Section 7.3.1.2.2) updated to note that sea country may extend beyond current native title boundaries. EP Table 8-4 updated to note that consultation with DAC had identified impact to their sea country from a major spill was considered unacceptable.</p> <p>Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPGGS(E) Regulations. Refer to Table 5-10 for further information supporting this.</p>

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		<p>-message left. 27 October 2023</p> <p>-no answer (outgoing) 30 October 2023 x 2</p> <p><b>In Person</b> 19 Sept 2023</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>Crux project is gas facility, about 190km offshore north-west Australia and 620km off the coast of Broome, WA. At its closest point, it is around 230 km from the Dambi coastline. Crux will tie in with Shell's existing gas facility, Prelude. It is all offshore, but nonetheless, TO groups, Aboriginal Corporations and PBCs along the Kimberley coast need to have the opportunity to hear about Crux, ask questions and meet with Shell if they want. Details:</p> <p>Shell is consulting with persons and organisations who may be affected by its activities on how it plans to manage the environmental impacts. It is required to do this. Shell is also consulting in order to better understand what's valuable and important to people in the regions. In particular, Shell welcomes receiving of additional key information, or feedback on the plans.</p> <p>So far, Shell has held a number of consultations, in Perth, Broome and Darwin, and sent out information several times, to all the relevant identified groups.</p> <p>I'm attaching some factsheets on the project, and links to the environmental plans for your information are below. There are 4 Environmental Plans (at this point), but only two of these have potential impacts coastline impact (Environmental Plans 3 and 4). I've also attached a map showing the modelled full possible extent of environmental impacts associated with these 2 Environmental Plans.</p> <p>The project details can be accessed at: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a> And the full draft Environmental Plans for the project can be accessed at:</p> <p>Draft Seabed EP</p> <p>Draft Drilling template EP</p> <p>Draft Development Drilling EP</p> <p>Please call if you have questions, comments, or concerns. We can organise additional information sessions on country, in Derby, or via Teams, if you think that would be useful.</p> <p><b>Email on 6 September 2023</b></p> <p>Thanks for making contact – good to hear from you. I know of your name from different work I've done with some of the groups along the Kimberly coast. The week of the 18th is good to meet, bearing in mind that school holidays start on the Saturday of that week and Friday might be a good day to avoid. I'm copying in the National Indigenous Engagement Manager. He is based in Brisbane but will try to join by Teams I expect. Are you available 19th Tues or 20th Wed at 9am? We can probably meet at the Shell offices, or if that isn't possible you are welcome to come to the Advisian offices, or I can come to you. Thanks again and look forward to meeting,</p> <p>We're just trying to line it up from this side. Will confirm soon.</p> <p><b>Email on 7 September 2023</b></p> <p>The National Indigenous Engagement Manager is not available, but the External Affairs Manager is – he is similarly across the project.</p> <p>Shell will book a room for 9am on the 19th and send to Ric?</p> <p>I'll attend in person too.</p> <p>From our side, I'd propose we spend up to an hour, discussing,</p> <ol style="list-style-type: none"> <li>1. Shell and the Crux project</li> <li>2. Overview of the environmental management plans</li> <li>3. Key issues for Dambimangari</li> <li>4. Further consultation from here</li> </ol> <p>Is there anything else you'd like to put on the agenda? – we'll keep it pretty informal with just the three of us, and I think also important to note this is</p>		

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				<p>just the first meeting together and we can work out what further meetings should be held. Thanks all – see you then.</p> <p><b>Email 19 September 2023</b></p> <p>Thanks for the meeting this morning. Good to meet and as mentioned, we are very keen to continue discussions with Dambimangari, at times and places appropriate for them. If there is a way we can fit into upcoming Board meetings before the end of the year, that would be great, but otherwise, as noted, consultations will continue next year, and the consultation is a continuous and ongoing process.</p> <p>We mentioned the panel of subject matter experts that has been established, who Traditional Owners can go to with questions, concerns, and complaints.</p> <p>TO groups, Aboriginal corporations and their staff have access to the panel, with the costs incurred by Shell. It is anonymous. The panel is independent of Shell (although some have previously worked for Shell). Shell will not see any of the information shared - any conversation is between the person and the panel member. Names of panel members redacted. Please get back in touch with any further questions and we look forward to further meetings with Dambi people.</p> <p><b>Face to face meeting on 19 September 2023</b></p> <p>Dambimangari gave an overview of current DAC operations and land and sea area as per the Dambimangari Native Title Determination.</p> <p>Shell provided an overview of the Crux Project via PowerPoint. DAC has already received Factsheets by email on 31 August 2023 along with the NOPSEMA Consultation Information for the Community Brochure.</p> <p>Dambi adviser clarified that there are multiple native title groups under the Wanjina Wunggurr (Native Title) Aboriginal Corporation RNTBC. Dambi adviser reiterated that any impact to DAC country from a spill would be unacceptable. Shell agreed that spills are unacceptable, while noting that the risk of a spill event cannot be completely excluded, but this awareness is what drives the robust and extensive prevention and management process. It was noted that the attention given to spill prevention can be reinforced throughout the consultation process also.</p> <p>Representative of DAC agreed to liaise with DAC CEO to summarise the meeting and a further consult should occur in Derby with the DAC Board. A new board was being elected in October so late October/November were suggested or alternatively early 2024.</p> <p>Shell discussed project activities schedule and EP submission timing.</p> <p>DAC spoke to priority to maximize economic and employment opportunities, he also queried Shell's interest in an unrelated supply base project by Kimberley Technology Solutions on Cockatoo Island. Shell will provide information on this to clarify.</p> <p><b>Meeting notes contained in Sensitive Matters Report.</b></p> <p><b>Email on 20 September 2023</b></p> <p>I've had a request from Shell to clarify a few points from their side – I guess that happens when minutes are taken by 3 people!</p> <p>Please find attached a v3 of the minutes. The changes are highlighted here, just for your attention, and a revised version attached.</p> <p>For Shell, it is important that the record of the meeting show 1] that there were earlier efforts to contact Dambimangari, and 2] that there is agreement on spills being unacceptable, but that it be clear that in marine activity involving such a complexity of activities over a sustained period of time, a spill event cannot be completely excluded. Certainly, Shell is willing to provide full information to concerned persons regarding the actions to</p>		



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				<p>hand, both by Shell but also by State and Federal authorities, in the event of a spill.</p> <p>We look forward to further meetings with the Dambimangari board.</p> <p><b>Email on 17 October 2023</b></p> <p>It was good meeting in September and hope you are doing well.</p> <p>In the meeting we had in Perth, we talked about the four different Environmental Plans relevant to the Crux project and how you, as Relevant Persons (under the NOPSEMA guidelines), need to be consulted, and have an opportunity to provide input into the Plans. Specifically, this input helps inform.</p> <ul style="list-style-type: none"> <li>our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li>how our activities might impact the existing environment (including its cultural features); and</li> <li>how controls and mitigation measures may be adopted to protect what is important to you.</li> </ul> <p>The four Environmental Plans cover off on the four key stages to the Crux Project development (see the map and links to plans below):</p> <ol style="list-style-type: none"> <li>The Drilling Template – installing the drilling 'jig' or structure on the seabed</li> <li>The Seabed Survey – checking the route on the seabed floor between Crux and Prelude to make sure it is safe and clear</li> <li>Development Drilling – drilling the wells.</li> <li>Installation and Cold Commissioning – installing the rest of the Platform, the pipelines and testing it all.</li> </ol> <p>We haven't heard further from you as yet so are just checking in to see how these are going, as well as update you on Shell timeframes. At this point, Shell is planning to commence submitting the Environmental Plans to NOPSEMA in the next weeks, in order to meet internal deadlines. So, if there is other information you can provide, or comment you want to make, please let us know as soon as possible, and definitely before Friday 27th October. After this time, consultation for the purposes of preparing the Environmental Plans will be considered closed.</p> <p>Relationships beyond Environmental Plans are very important to us. We are open to meeting for other areas outside of these Environmental Plans as previously discussed with you, including keeping you updated as the project progresses, future Environmental Plans required for this project, learning more about your country and culture, and to keep the relationship strong.</p> <p>I will give you a call to follow up later in the week, but my mobile is below if you needed to reach me in the interim.</p> <p><b>Email on 17 October 2023</b></p> <p>Having made a few enquiries, I can confirm there are no plans to engage services out of Cockatoo or Koolan Islands.</p> <p>Transport activities to support the Crux project during operation are planned to be run from existing Shell facilities that currently support the activities in the area. During the construction phase offshore for Crux, the Truscott airbase will be the primary heliport for activities infield for Crux.</p> <p>Hope this gives some clarity.</p> <p>Phone call on 20 October 2023 - summary</p> <ul style="list-style-type: none"> <li>Dambi would like to meet predominantly around broadening Shell's focus and efforts from Broome more broadly across the Kimberley</li> </ul>		

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				<p>with a specific focus for them in Derby. They are very aware and accept our current tight timeframe of 27/10 and recognise they will not be able to meet in this timeframe however they would still welcome a meeting in future to discuss project however understand that their circumstances prevent them from being able to meet the 27/10 timeframe.</p> <ul style="list-style-type: none"> <li>• Advisor to Dambi indicated that internal induction and governance training now commences for Board from early Nov and there is a 50% chance of a Board meeting which would be open to 3rd parties in 2023. If this doesn't occur the next Board meeting would be late Feb/early March and he was happy to communicate if going ahead to us.</li> <li>• -Would like to be kept in loop with project progress</li> <li>• -They have a long list of 3rd parties to get through inclusive of ILUA's they have in place and preference given to projects like ours rather than ideas/concepts</li> </ul> <p>Apologised that they couldn't meet this timeline and recognised that they wouldn't have input in EP but would like to discuss in future. No specific cultural values were identified/discussed.</p> <p><b>Email on 23 October 2023</b></p> <p>Hope you had a great weekend and thanks again for the phone call on Friday, as discussed Shell are more than happy to meet with Dambimangari AC to discuss opportunities for broadening our impact across the Kimberley by potentially building on current partnerships and community engagement that we have established in Broome. For Dambi we recognise that Derby would be an area of focus and we look forward to hearing further about community needs. We look forward to meeting with Dambi to discuss this at the earliest appropriate timeframe and will be led by you around this timing.</p> <p>For the purpose of our current Environment Plan (EP) activities consultation closes this Friday as discussed. I noted from our discussion that you are satisfied that consultation with Dambi in preparation of the EP is complete, which is important for us to clearly document for the purposes of preparing the EP for the Crux project.</p> <p>In the interim we will keep you updated as the project progresses as requested (we will reflect this within the EP as an ongoing consultation commitment to Dambi), please reach out if you need anything further from our end.</p> <p>Good luck with the upcoming induction and governance training!</p> <p><b>Email on 24 October 2023</b></p> <p>We've not met but I know a bit about Dambi and was with (name redacted) and a bunch of rangers in Nepal a few years back.</p> <p>I'm making contact on behalf of Shell – it would be easier if I can talk to you, but I don't have a number and the Dambi office number is not answering.</p> <p>Would you please call me or indicate when I can call you and on what number?</p> <p>Thanks, and look forward to talking.</p> <p><b>Email on 26 October 2023</b></p> <p>I'm writing with regard to Shell Australia's consultation with Dambimangari Aboriginal Corporation (DAC) in relation to the [Seabed Survey, Drilling Template, Development Drilling and Cold Commissioning Environment Plans] for the Crux Project (Crux EPs). We (Phil Sparrow) have been trying to reach you by phone and have left messages for you – our apologies for not being able to speak to you directly.</p>		

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				<p>We've met with Ric Davies, an advisor to DAC, and I understand he has passed on information to you. To recap, Shell is required to consult with all relevant persons about its activities under the Crux EPs, and to provide them with sufficient information and a reasonable time to consult with Shell on matters that are relevant to the Crux EPs.</p> <p>Specifically, this consultation helps inform:</p> <ul style="list-style-type: none"> <li>our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li>how our activities might impact the existing environment (including its cultural features); and</li> <li>the development of appropriate controls and mitigation measures to reduce impacts to as low as reasonably practicable and an acceptable level.</li> </ul> <p>Shell considers DAC is a relevant person for the Crux EPs. We provided DAC with information about Shell's planned activities in March 2023, to allow DAC and the people it represents to assess how they may be affected by Shell's activities under the Crux EPs. Since then, we have followed up through multiple avenues (via reception, the Healthy Country Manager, and Ric Davies).</p> <p>As we advised Ric Davies on 17 October 2023, the consultation period for the Crux EPs is closing on Friday, 27 October 2023 to allow final preparation and submission to NOPSEMA. If you choose to provide input on the Crux EPs, we request that you provide it by this Friday, 27 October 2023.</p> <p>We want to stress that this consultation requirement is separate to Shell's interest in, and commitment to engagement with, TO groups on wider matters such as partnerships, employment, and social and economic investments. So, while the consultation period for the Crux EPs is closing to allow final preparation and submission to NOPSEMA, this has no bearing on Shell's wish for a stronger and ongoing relationship with DAC. We understand that a new Board has just formed, and we would be pleased to meet on an ongoing basis with the (new) Board and discuss issues of common interest (including matters relating to Shell's activities), social investment opportunities, and so forth, at a time and place that works for the Board.</p> <p>We also want to assure you that Shell has processes and procedures in place to address any new matters DAC raises in connection with Shell's activities as and when new information comes to light.</p> <p>Please let us know your response to this letter by Friday, 27 October 2023, either by email or phone on (number redacted).</p> <p><b>Email on 6 November 2023</b></p> <p>Thanks for your email on 24th October and apologies for the long phone tag we had until speaking Thursday! In our phone conversation we discussed a Dambimangari Board meeting to be held the week of 11th December as the earliest opportunity for Shell to meet the new Board. We would be grateful if this was possible and if so, will make this a priority.</p> <p>I do apologise for not including the CEO in my email back to you, confirming we will include the CEO and you going forward having confirmed their email address. I absolutely did not intend to misrepresent our previous conversation so wanted to clarify further below.</p> <p>Further to discussions on Thursday and our email on 17th October on the four different environment plans covering the activities specified in that email (the Crux EPs), Shell is required to consult with all relevant persons about its activities under the Crux EPs, and to provide them with sufficient information and a reasonable time to consult with Shell on matters that are relevant to the Crux EPs. Shell considers that Dambimangari is a relevant person for the Crux EPs and has engaged</p>		

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				<p>with Dambimangari in relation to the activities proposed to be conducted outlined in the Crux EPs since March 2023.</p> <p>The consultation period for the Crux EPs has now closed for the purposes of the submission of these EP's to NOPSEMA. However, we want to assure you that Shell has processes and procedures in place to address relevant new information that the Dambimangari people may raise in the future concerning risks and impacts of activities to be carried out under Crux EPs once they are accepted.</p> <p>Shell welcomes the opportunity to meet the Board at the earliest opportunity and wish to foster a sustainable and genuine relationship with Dambimangari people outside of our EP's including discussing further opportunities to extend community engagement beyond Broome, providing further updates on the Crux project and hearing from Dambimangari people about their hopes and aspirations for country. Happy to chat further on the phone as needed.</p>		
32.	<b>Djarindjin Aboriginal Corporation (DAC)</b> <i>(Tier 3)</i>	<p>31 March 2023  <i>(Initial email refer to Appendix A)</i></p> <p><b>Email to Shell</b></p> <p>04 April 2023                      11 April 2023                      26 April 2023                      18 May 2023                      26 May 2023                      20 July 2023</p> <p><b>Email from Shell</b></p> <p>12 April 2023                      14 April 2023                      26 April 2023                      18 May 2023                      26 May 2023                      20 July 2023                      24 July 2023</p> <p><b>In Person</b></p> <p>19 April 2023                      10 May 2023</p>	<p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p> <p>[Redacted text]</p>	<p><b>In person on 19 April 2023</b>                      DAC attended the Indigenous Forum in Perth.</p> <p><b>In person on 10 May 2023</b>                      Advised that Shell invests in community benefits activities as part of its national Social Investment program and committed to ongoing engagement about the opportunities offered under these programs for community funding, including related to renewables and energy solutions projects.</p> <p>Advised Shell has commenced an underwater archaeological assessment of our project area and the larger planning areas that includes the assessment and likelihood of underwater Indigenous tangible heritage, including drowned cultural landscapes and the use of predictive modelling on land usage based on known anthropological data. This assessment is still underway and is in addition to the standard searches of existing databases of Indigenous and non-Indigenous heritage.</p> <p>This information will be used to inform an impact assessment on any values (if any) identified through this assessment, as well as the need for subsequent development of controls where potential impacts require mitigation.</p> <p>The above is in addition to engaging with Indigenous people on their values and interests (including heritage) as part of the consultation approach.</p> <p>Shell has engaged specialist consultants experienced in Indigenous consultation to support Shell carrying out consultation in preparation of the Crux EPs with Indigenous People. Shell will consider the feedback further though regarding consultation approaches moving forward with Indigenous People.</p> <p>While impacts to underwater heritage sites or shipwrecks are possible in the event of an unplanned hydrocarbon spill, Shell considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill.</p> <p><b>Email on 18 May 2023</b>                      Close out email sent which covered the following:</p> <ul style="list-style-type: none"> <li>• Thanked relevant person for their feedback.</li> <li>• Your advice has been noted, Shell has already, or will, comply will all requirements below.</li> <li>• Recap on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>• Notified of the management of feedback if any details should be considered sensitive information.</li> <li>• Reconfirmed contact details.</li> </ul>	<p><b>Assessment</b></p> <p>Raised objection/claim about potential for major spills to impact an ancient ceremonial site underwater on the Dampier Peninsula coast that's 40,000 years old and the huts on the small island reef, about 1-3km off the Dampier Peninsula that are part of their songlines. Shell considers the objection to have merit because it provides information about cultural values and features which could be affected in the event of a major spill. The EP has been updated accordingly, refer to measures adopted for further details.</p> <p><b>Relevant/Non-Relevant Matters</b></p> <p>The feedback received around suggestions to improve consultation were mostly adopted, in the form of having face to face meetings where possible and making phone calls where information is available. The suggestion to put an indigenous advisor committee in place to support Shell carrying out consultation on our behalf was considered</p>	<p>Shell has updated the EP description of the environment (eg Section 7.3.1.3) with identified features and values provided by DAC and these have been specifically assessed within the impact and risk assessment in Section 9.12.</p> <p>Shell updated the approach to consultation as a result of the feedback from TO Forum 2 on the 10th May which is reflected in updates made in Section 5.6.5.</p> <p>Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPGGS(E) Regulations.</p>

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				<p><b>Email on 26 May 2023</b></p> <p>Close out email wrapping up the consultation:</p> <ul style="list-style-type: none"> <li>• sharing the videos from Forum 1</li> <li>• reminder of the environment panel available</li> <li>• recap on what we're consulting on and the obligation to consult under the regulations.</li> <li>• reconfirmed contact details.</li> </ul> <p><b>Email on 20 July 2023</b></p> <p>We want to update you on where Shell is with the submission of the four Crux Environmental Plans. The first two EPs – the Seabed survey and the Drilling template (both of which have very limited potential impact areas, well offshore) will be submitted to NOPSEMA by the end of this week.</p> <p>The Drilling Development EP will be submitted next week, and the Cold Commissioning EP will be submitted later in the year, in November.</p> <p>We are grateful for the meetings we have had with you both during the consultation period. One of the repeated comments we heard loud and clear over the course of these meetings, is the importance of ongoing relationships – that Aboriginal groups are looking for long term relationships with industry operators, where they can partner to share knowledge, resources, and skills, provide consultancy on critical cultural heritage matters, and collaborate in providing opportunities.</p> <p>Shell is keen to build on the relationships is already has with Djarindjin, to strengthen and expand these. We'd like to return to Broome in the next few months and meet again to provide an update on the Crux project, hear any concerns and respond to issues that may have arisen, and discuss future partnership opportunities. Shell invests and works with communities close to its operations and looks forward to conversations about opportunities and priorities for your people.</p> <p>At this stage, we are looking at being in Broome in September/ October of this year. If this is an opportunity you'd like to take up, please let us know so we can work on schedules and timing. Please stay in touch also with any other issues relating to the Crux project.</p> <p><b>Email on 24 July 2023</b></p> <p>It would be good if you can provide dates, thanks. I assume Shell could delay these proposed trips till November too, if that is better. December is probably getting a bit hot and late.</p>	and deemed not appropriate considering Shell already have experienced support to assist with Indigenous People and Organisation consultation.	
33.	<b>Gogolanyngor Aboriginal Corporation</b> (Tier 3)	See 38 KLC  Phone call 04 October 2023 -no answer -message left	No response		No feedback, objections or claims received.	Shell has provided sufficient information, made reasonable efforts to elicit feedback and provided a reasonable period to assess information, seek input from the communal group and provide feedback. Therefore, consultation in preparation of this EP has been carried out in accordance with the Shell methodology.



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34.	Jaru PBC (Tier 3)	31 March 2023 (initial email) <b>Email to Shell</b> 07 April 2023 <b>Email from Shell</b> 12 April 2023 14 April 2023 27 June 2023	[REDACTED]	<b>Email on 27 June 2023</b> Close out email wrapping up the consultation: <ul style="list-style-type: none"> <li>Sharing the videos from Forum 1.</li> <li>Reminder of the environment panel available.</li> <li>Recap on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>Reconfirming contact details.</li> </ul>	No feedback, objections or claims received.	Shell has provided sufficient information, made reasonable efforts to elicit feedback and provided a reasonable period to assess information, seek input from the communal group and provide feedback. Therefore, consultation in preparation of this EP has been carried out in accordance with the Shell methodology.
35.	Joombarn-Buru Aboriginal Corporation (Tier 3)	<b>In person</b> 27 April 2023 <b>Email to Shell</b> 28 April 2023 (Refer to RP 58) <b>Email from Shell</b> 27 April 2023 02 May 2023 27 June 2023	[REDACTED]	<b>In person on 27 April 2023</b> Shell advised we had provided Joombarn-Buru Aboriginal Corporation with information on the seabed survey EP and requested assistance in distributing invite to Broome Indigenous Forum 2. This was not a scheduled meeting but a quick catch-up between friends.  Refer to relevant person 58, for the response to the email received on the 28 April 2023.  <b>Email on 02 May 2023</b> Seeking to get contacts for organisations and groups, to invite to them to the meetings Shell is holding about the Crux project. Shell has also been seeking other arrangements that would suit groups who they haven't been able to reach.  Shell wants to hear from as many TOs as possible, to understand concerns and respond to questions. In terms of consultation, there was a meeting in Perth a few weeks back. There is a second meeting in Broome on May 10. Other meetings can be arranged with specific TO groups, individuals, organisations and PBCs – Shell is very open to that. So, if you and others would like to meet separately with Shell about Crux, just let me know or email to SDA-crxproject@shell.com and someone will respond to sort out details.  I'd encourage you and others to come to the meeting next week, as a starting point. People from Shell will be there, to hear questions and provide responses, and organise follow up.	<b>Assessment</b> No objections or claims have been received about activity impacts or risks.  <b>Relevant/Non-Relevant Matters</b> Provided information identifying other relevant First Nation contacts which Shell added to its consultation program – see Measures adopted for detail.	Additional persons/organisations identified were incorporated into the consultation undertaken for this EP (Section 5.6.5).  Shell has provided sufficient information, made reasonable efforts to elicit feedback and provided a reasonable period to assess information, seek input from the communal group and provide feedback. Therefore, consultation in preparation of this EP has been carried out in accordance with the Shell methodology.
36.	Karajarri Traditional Lands Association (KTLA) (Including Nyangumarta Karajarri Aboriginal Corporation) (Tier 3)	See 38 KLC  <b>Email from Shell</b> 17 October 2023  <b>Phone call</b> 4 October 2023 -no answer 17 October 2023 24 October 2023 -no answer	[REDACTED]	<b>Email on 17 October 2023</b> I hope this finds you and the Karajarri mob well. I've been out to the Ranger office at Bidyadanga a few times, but I don't think we have met. I'm writing to follow up on the Shell Crux project consultations. I understand the Karajarri TLA received our correspondence regarding Crux. Just to reiterate at its closest point, Crux is about 175km off the coast of the Kimberley. When built, it will supply gas to Shell's existing gas operations, at Prelude, which is also offshore. There are no onshore construction activities at all.  Over the last months, Shell has been progressing the four different Environmental Plans for the Crux Project. Under the NOPSEMA guidelines, Karajarri TLA is considered as Relevant Person and as such, need to be consulted, and have an opportunity to provide input into the Environmental Plans. The input we've received from different groups helps inform. <ul style="list-style-type: none"> <li>our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> </ul>	No feedback, objections or claims received.	Shell has provided sufficient information, made reasonable efforts to elicit feedback and provided a reasonable period to assess information, seek input from the communal group and provide feedback. Therefore, consultation in preparation of this EP has been carried out in accordance with the Shell methodology.

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				<ul style="list-style-type: none"> <li>how our activities might impact the existing environment (including its cultural features); and</li> <li>how controls and mitigation measures may be adopted to protect what is important to you.</li> </ul> <p>The four Environmental plans cover off on the four key stages to the Crux Project development (see the map below):</p> <ol style="list-style-type: none"> <li>The Drilling template – installing the drilling 'jig' or structure on the seabed</li> <li>The Seabed survey – checking the route on the seabed floor between Crux and Prelude to make sure it is safe and clear</li> <li>Development Drilling – drilling the wells</li> <li>Installation and Cold Commissioning – installing the rest of the Platform, the pipelines and testing it all.</li> </ol> <p>Information we receive from Traditional Owners and Aboriginal Corporations will be documented in each of the activity specific Environment Plans, which are submitted to Australia's offshore energy regulator, NOPSEMA, for assessment and following acceptance, published online.</p> <p>The purpose of this consultation is further detailed in the attached NOPSEMA Consultation on Offshore Petroleum Environment Plans Brochure.</p> <p>General information is available about the project on our website <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a>. Factsheets describing each of the activities that we are consulting on are available below and outline the associated environmental risks and impacts:</p> <p>Draft Seabed EP  Draft Drilling template EP  Draft Development Drilling EP</p> <p>The full text of the draft Environment Plans is also available online.</p> <p>We want to hear from you.</p> <p>Over the last 6 months, we've tried to talk to as many Traditional Owners, RNTBC's and PBC's as well as businesses and Aboriginal Corporations as we can. We have emailed and called in an attempt to provide an opportunity to discuss the cultural features and values that are important to you and how we could protect them.</p> <p>After attempting consultation with you over the last 6 months, we are approaching our hard deadlines, and will be submitting the above Environment Plans by Friday 27th October.</p> <p>If we have not heard from you about the above date, Shell plans to close consultation in preparation for the EP. If you can't provide the information requested by this date Shell will address any other feedback through ongoing consultation.</p> <p>We look forward to hearing from you,</p> <p>Hope to hear from you – I'll follow this up with a phone call later in the week.</p> <p><b>Phone call 17 October 2023</b>  Confirmed they had received Shell's email on 8 May.</p>		
38.	Kimberley Land Council (KLC) (Tier 1)	31 March 2023 (initial email) refer to Appendix A	[REDACTED]	<p><b>Email on 12 April 2023</b>  Responded with group details.</p> <p><b>Email on 26 April 2023</b></p>	<p><b>Assessment</b>  No objections or claims have been</p>	<p>Shell contacted/ attempted to contact all the groups identified (Section 5.6.5).</p>

Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
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		<p><b>Email to Shell</b></p> <p>12 April 2023 27 April 2023 03 May 2023 31 August 2023 17 October 2023</p> <p><b>Email from Shell</b></p> <p>12 April 2023 26 April 2023 27 April 2023 12 May 2023 19 May 2023 26 May 2023 10 July 2023 20 July 2023 31 August 2023 17 October 2023</p> <p><b>Online Form in</b></p> <p>26 April 2023</p> <p><b>Phone calls</b></p> <p>11 May 2023 x2 12 May 2023 15 May 2023 16 May 2023 18 May 2023 31 August 2023 04 October 2023 -no answer -left message</p>	[Redacted]	<p>Responded to online form interest with information pack and contact details.</p> <p><b>Email on 27 April 2023</b></p> <p>Acknowledged message and thanked for response.</p> <p>Reiterated Shell's committed to consultation and set out communication undertaken to date with First Nations relevant persons.</p> <p>Reiterated invitation to Traditional Owner Forums.</p> <p>Requested support in encouraging community members to attend either the forum or provide feedback through the alternative channels.</p> <p>Asked for feedback on consultation methodology.</p> <p><b>Email on 12 May 2023</b></p> <p>Acknowledged message and thanked for response.</p> <p>Reiterated Shell's committed to consultation and set out communication undertaken to date with First Nations relevant persons.</p> <p>Reiterated invitation to Traditional Owner Forums.</p> <p>Requested support in encouraging community members to attend either the forum or provide feedback through the alternative channels.</p> <p>Asked for feedback on consultation methodology.</p> <p><b>Email on 19 May 2023</b></p> <p>Sharing details of Indigenous Forum in Darwin.</p> <p><b>Email on 26 May 2023</b></p> <p>Requesting assistance from KLC to distribute information to the groups previously contacted.</p> <p><b>Email on 10 July 2023</b></p> <p>Close out email sent which covered the following:</p> <ul style="list-style-type: none"><li>• Thanked relevant person for the feedback.</li><li>• Recapped on what Shell is consulting on and the obligation to consult under the regulations.</li><li>• Notified of the management of feedback if any details should be considered sensitive information.</li><li>• Reconfirmed contact details.</li></ul> <p><b>Email on 20 July 2023</b></p> <p>We want to update you on where Shell is with the submission of the four Crux Environmental Plans, and what happens next.</p> <p>The first two EPs – the Seabed survey and the Drilling template (both of which have very limited potential impact areas, well offshore) will be submitted to NOPSEMA by the end of this week. The Drilling Development EP will be submitted next week, and the Cold Commissioning EP will be submitted later in the year, in November.</p> <p>We are grateful for the meetings we have had with different PBCs and TO groups during the consultation period, and for the assistance provided by KLC in reaching people.</p> <p>One of the repeated comments we heard loud and clear over the course of these meetings, is the importance of building ongoing relationships – that Aboriginal groups are looking for long term relationships with industry operators, where they can partner to share knowledge, resources and skills, provide consultancy on critical cultural heritage matters, and collaborate in providing opportunities.</p> <p>Shell is keen to build the relationship with the KLC and is aware we have not yet found the time that works for us to meet with you. Shell plans to return to Broome in the next few months, to provide an update on the Crux</p>	<p>received about activity impacts or risks.</p> <p><b>Relevant/Non-Relevant Matters</b></p> <p>Provided information regarding additional groups that Shell could/should contact.</p>	<p>Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPGGS(E) Regulations. Refer to Table 5-10 for further information supporting this.</p>

The version previously published contained text quoted directly from responses by relevant persons, contrary to the requirements of the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 (section 26(8)). That text has now been redacted. This EP remains in force.

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			<p>[REDACTED]</p>	<p>project, hear any concerns and respond to issues that may have arisen - and to discuss future partnership opportunities. Shell invests and works with communities close to its operations and looks forward to conversations about opportunities and priorities for groups the KLC works with.</p> <p>At this stage, we are looking at being in Broome in September/ October of this year. If this is an opportunity you think would be of interest to the KLC or groups for whom it is the NTRB, let us know so we can work on schedules and timing, and please forward this email to them. Please stay in touch also with any other issues relating to the Crux project.</p> <p><b>Email on 31 August 2023</b></p> <p>As per our conversation just now, I am keen to talk to key people (CEO, General manager, key liaison person etc.) at Wilinggin and Wunambul re the Shell Crux project. We've emailed them and I know you forwarded information to them also, but we'd really like to have a direct conversation with them to ensure they've had a full opportunity to ask about Crux, request more info, have a meeting with Shell, or whatever it might be. Just for your info:</p> <p>I've emailed Wilinggin CEO, I got his details – no response from him.</p> <p>I've emailed Wunambul – don't know him and not sure if he got anything as no response.</p> <p>I've left phone messages at both places too. Dambi is fine – I've spoken with the right people there. If you can help provide phone numbers or specific contacts, it would be great and much appreciated.</p> <p><b>Email on 31 August 2023</b></p> <p>I appreciate your assistance. Unfortunately, as you may know, ORIC details are often out of date.</p> <p>Re Wanjina – Thanks for emailing. The phone number for Wanjina on ORIC is the KLC number.</p> <p>Re Wilinggin - I've emailed the gm@wilinggin.com.au address a few times – no response, and the number for Wilinggin goes through to a message bank.</p> <p>Similar with Wunambul.</p> <p>I'll keep trying but appreciate your help.</p> <p><b>Email on 17 October 2023</b></p> <p>Hope you're well, apologies for the e-introduction I am the Indigenous Participation Advisor with Shell. I know you have been previously liaising as the conduit to a number of TO Groups identified as Relevant Persons for Environmental Plans relating to the Crux project.</p> <p>I would be grateful if you could pass on the below email to the appropriate representative from Nimanburr Aboriginal Corporation? I had Regina Manado listed as the appropriate contact however if you could confirm that would be much appreciated.</p> <p>Please let me know if you need any further info from my end, my mobile is (redacted) if you need to reach me.</p> <p><b>Email on 17 October 2023</b></p> <p>Thanks for your prompt response and for passing on the email, appreciate the clarification around correct email addresses and will wait to potentially hear back from Nimanburr AC by the 27th.</p> <p>When I am next in Broome, I will let you know and come by to meet in person if you're available.</p>		

The version previously published contained text quoted directly from responses by relevant persons, contrary to the requirements of the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 (section 26(8)). That text has now been redacted. This EP remains in force.

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				<p>Earlier today there were a couple of emails sent through to this address for</p> <ul style="list-style-type: none"> <li>Nyul Nyul PBC</li> <li>Gogolanyngor Aboriginal Corporation.</li> </ul> <p>Would you please be able to send through to the groups as the only email address we had was through KLC.</p>		
39.	<b>Kimberley Ranger Network</b>	See 38 KLC	No response	Not applicable	No feedback, objections or claims received.	Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPGGS(E) Regulations.
40.	<b>KRED</b>	27 April 2023 <i>(Initial email)</i> 26 May 2023 <i>(Follow-up email)</i>	No response	Not applicable	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPGGS (E) Regulations.
41.	<b>Kullari Regional Communities Incorporated (KRCI)</b>	04 April 2023 <i>(Initial email)</i> 08 May 2023 <i>(Follow-up email)</i>	No response	Not applicable	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult



Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
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						with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.
42.	<b>Lombadina Aboriginal Corporation</b> Including Lombadina Accommodation & Tours.	31 March 2023 <i>(initial email)</i> <i>refer to Appendix A</i> <b>Email from Shell</b> 04 April 2023 26 April 2023 08 May 2023 19 May 2023 25 May 2023 26 May 2023 20 June 2023 <b>Phone call</b> 20 June 2023	No response	<p><b>Email on 26 May 2023</b> Close out email wrapping up the consultation:</p> <ul style="list-style-type: none"> <li>• Sharing the videos from Forum 1.</li> <li>• Reminder of the environment panel available.</li> <li>• Recap on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>• Reconfirming contact details.</li> </ul> <p><b>Phone call on 20 June 2023</b> Spoke to Director of LAC who requested further information, which was emailed through.</p> <p><b>Email on 20 June 2023</b> Thanks for the call just now, As discussed, I'm assisting Shell Australia with the consultations with Traditional Owner groups for the Crux Project. The Shell Crux project is an extension to Shell's Prelude gas facility, about 190km offshore north-west Australia and 620km off the coast of Broome, WA. As part of the environmental approvals process, Shell is consulting with persons and organisations who may be affected by its activities on how it plans to manage environmental impacts. Shell is also consulting in order to improve its understanding of the sensitivities and values of the regions, and in particular, welcomes receiving of additional key information, or feedback on these. So far, Shell has held a number of consultations, in Perth, Broome and Darwin, and send out information via email to all the relevant identified groups, including those around Broome. However, we know that emails can get lost or overlooked, and so are following up with certain organisations – in particular those with sea country, or active on coastal areas, where the Crux project may have an impact in the unlikely event of an accident or uncontrolled hydrocarbon spill. I've attached some factsheets on the project, and links to the environmental plans for your information. There are four Environmental Plans (at this point), but only two of these have potential impacts on coastal areas (EPs 3 and 4) – the other two are offshore. I've also attached a map showing the modelled full possible extent of environmental impacts associated with these two Environmental Plans, and you can see that one of these (the green line in the map) does intersect with the coastline of the Kimberley. The project details can be accessed at: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a> And the full draft Environmental Plans for the project can be accessed at: Draft Seabed EP Draft Drilling template EP Draft Development Drilling EP Please call me on 0415 4242 48 if you or others in Lombadina have questions, concerns or</p>	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.

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				<p>comments, and I can answer high level questions, or connect you with people in the Shell Crux project for further information. We can also organise additional information sessions via Teams or in person, if you think that would be useful.</p> <p><b>Email on 27 June 2023</b> Close out email wrapping up the consultation:</p> <ul style="list-style-type: none"> <li>• Sharing the videos from Forum 1.</li> <li>• Reminder of the environment panel available.</li> <li>• Recap on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>• Reconfirming contact details.</li> </ul>		
44.	<p><b>Mayala Inninalang Aboriginal Corporation (MIAC) (incl Mayala 2)</b> (Tier 3)</p>	<p>Also consulted via 38 – KLC</p> <p><b>Email from Shell</b> 23 August 2023 17 October 2023</p> <p><b>In person</b> 15 August 2023</p>	<p>No response. Meeting arrangements took place via Walalakoo.</p>	<p><b>Meeting Notes from 15 August 2023</b></p> <p>Walalakoo mentioned at the start that Oil and gas has been bypassing the Traditional Owners in the Kimberley and the Traditional Owners are very concerned about the impacts on their Country. Feeling of anxiousness at the start to meet as there has been no engagement with Traditional Owners in the Kimberley with Oil and Gas Companies</p> <ul style="list-style-type: none"> <li>• Walalakoo discussed the important cultural connections with Country in particularly to the Reef and King Sound and are directly affected by the oil and gas industry. There is a strong cultural block up in the Dampier Peninsula and the 3 groups of Bardi Jawi, Walalakoo and Mayala are deeply interconnected.</li> <li>• Bardi Jawi - Discussed the historic relationship of Shell and Bardi Jawi and that there has been economic loss to the community and fractured relationships internally due to airport decisions at Djarindjin</li> <li>• Discussion around RAP came up and since we are working towards a RAP. Bardi Jawi mentioned they want to work with us and assist us with working on KPI targets.</li> <li>• Walalakoo discussed job opportunities and asked how many Indigenous people work on Prelude. Discussion around the job opportunities we do offer as well as our Contractors. NETTS program was also mentioned.</li> <li>• Walalakoo also discussed history (dating back some 10 years+) with applying as a vendor with Shell and hasn't had a positive experience previously. Discussion was had around Indigenous Suppliers and supply chain in general. Mentioned processes around local content plans and procedures in place to ensure we consider local content as part of the tendering process currently.</li> <li>• Discussion around Oil Spill Impacts were had and the different scenarios. Questions were asked around first responders and where do they come from. Mentioned responders are in Singapore and Fremantle. 4-8 hours it takes to organize the response. Some concern with how long this would take for them to get to the scene. Interest in developing capacity of local oil spill preventive groups and Shell discussed that we are acting on this as well as a whole Industry approach.</li> <li>• Bardi Jawi mentioned they may be interested in conducting their own oil spill modelling independently of Shell</li> <li>• Bardi Jawi brought up the need for cultural awareness/ cultural competency training that Bardi Jawi can offer.</li> <li>• NOPSEMA have committed to cultural competency training and have been out on the Dampier Peninsula with the Traditional Owners. Part of building genuine relationships. Subtext was that Shell should engage Bardi Jawi to provide similar training.</li> <li>• The Traditional Owner groups have access to independent Environmental panel and can access this at any point if they would like assistance. This is something the groups will do independently.</li> </ul>	<p><b>Assessment</b></p> <p>No feedback, objections or claims received about activity impacts or risks.</p> <p><b>Relevant Matters and Not Relevant Matters</b></p> <p>The following relevant matters were raised regarding the activity or their functions, interests, or activities:</p> <ul style="list-style-type: none"> <li>• presence of songlines up the [west Kimberley] coastline and associated cultural heritage sites that are not all registered.</li> <li>• important cultural connections with Country particularly to the Reef and King Sound.</li> <li>• preferred engagement process to ensure culturally appropriate consultation.</li> </ul> <p>Shell incorporated this information into its assessment of potential impacts and processes for engagement, as reflected in the EP - see Measures adopted for detail.</p> <p>Other feedback included interest in investigating a local spill response capacity, for quicker</p>	<p>Description of heritage values in the EP (eg Section 7.3.2.2.2) updated to incorporate information received</p> <p>Section 7.3.2.2.3 notes that a number of the heritage sites in the Planning Area have not been recorded.</p> <p>Consultation included collective engagement with the 3 neighbouring cultural groups and facilitating on-country meetings wherever requested/practicable (Section 5.6.5).</p> <p>Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPGGS(E) Regulations.</p>

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				<ul style="list-style-type: none"> <li>• Bardi Jawi made comment to effect that they did not consider this meeting consultation, but pre-consultation.</li> <li>• Bardi Jawi comments on this process being one-sided, ie; Shell talking about what it is wanting to do; no allowance for what Bardi Jawi wants to do/ offer (in the form of cultural competency training, assistance in helping industry become more sensitized to Indigenous values.</li> <li>• Walalakoo made strong case for engagement with TO groups and RNTBCs being seen as a direct cost, and as essential precursor activity to any proponent development. That involving TO groups later as an afterthought, or simply to meet regulatory requirements was inappropriate.</li> <li>• Shell talked around Shell's commitment to looking at the Social and Cultural Heritage Values and the process Shell took around this. Walalakoo flagged concerns around our assessment of Cultural Heritage sites and only the ones that currently come up as registered as there are some significant song lines up the coastline that go up to Kalamburu. The Walanadi. 3 groups have strong connection to sea country and important to view sea country as all interconnected not just piece by piece as within Shell boundaries.</li> <li>• Concern from Walalakoo around Well integrity and stability</li> <li>• Drilling fluid spills and what is Shell's management plans around that. Majority is non-toxic fluids and cause minimal impacts.</li> <li>• Bardi Jawi strong on Resourcing protocol needing to be addressed with Bardi Jawi before progressing any further with the relationship. Bardi Jawi highly likely to object if protocol not addressed. Concerns with Shells response to the Resourcing protocol, in particular the following: references to Native title removed, reference to engaging in good faith has been removed, removed FPIC, removed clause around cultural sensitivities.</li> <li>• Walalakoo and Mayala stated they are likely to develop Protocols based on Bardi Jawi Protocol. Frank discussion around Shell won't be able to accept all the requirements in the protocol and will address this and need to give a response back to Bardi Jawi</li> <li>• Importance of having a Social Impact Assessment as they have had with Woodside as part of NW Shelf agreement and Walalakoo will send this through</li> <li>• The Importance of investing in the younger generations was emphasised by Walalakoo</li> <li>• The groups stated that this is a preliminary discussion, and that further consultation is to be had with other members in the group. Further meetings will likely be in Derby and One Arm Point</li> <li>• The groups emphasized their limited capacity as PBCs and lack of ability to attend all the meetings with all of Industry. Shell noted this concern.</li> <li>• Meeting concluded with expressed good will and some confidence from TOs that Shell was genuinely committed to doing things differently.</li> <li>• Commitment from Shell to ongoing relationship and responding in particular to resourcing protocol, further meetings on country (i.e., not in Broome) as advised/ directed by the PBCs, and to working together for progress on Indigenous procurement, employment and community programming.</li> </ul> <p><b>Email on 23 August 2023</b></p> <p>Thank you for the meeting last week while we were in Broome. We really appreciated the opportunity to hear directly from you and begin a closer relationship. We look forward to meeting you face to face soon. We are keen to follow through on the issues discussed and would appreciate your guidance on this.</p> <p>Meet on country.</p>	<p>initial response, and a resourcing protocol., Table 9-52 of the EP demonstrates that response timeframes for spills are adequate to ensure the risks to areas of heritage significance are ALARP. A resourcing protocol to support consultation for this EP was agreed and implemented. Nevertheless, Shell has committed to work towards getting an updated resource protocol in place with Mayala to support ongoing consultation (Section 5.8 and to participate in industry collaboration on training of indigenous peoples in spill preparedness.</p> <p>All other issues raised were considered to not be relevant matters. Shell's response to the feedback received is set out here.</p>	

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				<p>We heard that meetings would work better for you if they were closer to country. This also makes it possible for a wider group of elders and senior people to be present at the next meeting to hear about Shell's work and the Crux project, which is important.</p> <p>We are very happy to arrange for Shell staff to come to the best location that works for you. We can spend a day or more in meetings, with men and women separately or in whatever combination is appropriate. We need your guidance on this. If you can let us know when and where we should plan for the next meeting and give a rough indication of what groups you think are the right ones to be there, we can start planning.</p> <p>Resourcing protocol</p> <p>From Shell's side, we understood that you are looking to get a resourcing protocol in place, one that works for both Shell and Mayala, so that Traditional Owners are not financially disadvantaged. Shell has a standard resourcing protocol that it uses with Traditional Owner groups, that ensures compensation for time, travel, expert advice, and other costs. We'd be happy to discuss this, and reach an agreement, so that future meetings can take place without having to worry about the financial side. Let us know and we'll get this in motion.</p> <p>Should any consultation be required prior to establishing the resourcing protocol we are open to covering meeting costs as per the recent meeting. We look forward to further discussions with you and consultation on:</p> <ol style="list-style-type: none"> <li>1. Seeking to understanding cultural values and features which could be impacted by our activities; and</li> <li>2. Ensuring adequate controls are in place to minimise impacts and risks to these identified cultural features and values.</li> <li>3. Other relevant topics of interest to you.</li> </ol> <p>Please get back to me when it is convenient, when and where next meetings should take place.</p> <p><b>Email on 23 August 2023</b></p> <p>Thanks for the meeting last week. We've now following up on the issues raised. We've written to each group about the logistics of next meetings - where to meet, who should be there, sorting out costs and so on. We look forward to seeing you again,</p> <p><b>Email on 17 October 2023</b></p> <p>It was good meeting back in August (albeit by phone!) and hope you and the mob are doing well.</p> <p>In the meeting we had in Broome, we talked about the four different Environmental Plans and how you, as Relevant Persons (under the NOPSEMA guidelines), need to be consulted, and have an opportunity to provide input into the Plans. Specifically, this input helps inform.</p> <ul style="list-style-type: none"> <li>• our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li>• how our activities might impact the existing environment (including its cultural features); and</li> <li>• how controls and mitigation measures may be adopted to protect what is important to you.</li> </ul> <p>The four Environmental plans cover off on the four key stages to the Crux Project development (see the map below):</p> <ol style="list-style-type: none"> <li>5. The Drilling template – installing the drilling 'jig' or structure on the seabed.</li> <li>6. The Seabed survey – checking the route on the seabed floor between Crux and Prelude to make sure it is safe and clear.</li> <li>7. Development Drilling – drilling the wells.</li> <li>8. Installation and Cold Commissioning – installing the rest of the Platform, the pipelines and testing it all.</li> </ol>		

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				<p>We haven't heard back from you as yet so are just checking in to see how these are going, as well as update you on Shell timeframes. At this point, Shell is planning to commence submitting the Environmental Plans to NOPSEMA in the next weeks, in order to meet internal deadlines. So, if there is other information you can provide, or comment you want to make, please let us know as soon as possible, and definitely before Friday 27th October. After this time, consultation for the purposes of preparing the Environmental plans will be considered closed.</p> <p>Relationships beyond Environmental Plans are important to us. We are open to meeting for other areas outside of these Environmental Plans, including keeping you updated as the project progresses, future Environmental Plans required for this project, learning more about your country and culture, and to keep the relationship strong.</p> <p>Hope to hear from you – I'll follow this up with a phone call later in the week.</p>		
45.	<b>Mowanjum Aboriginal Art &amp; Culture Centre</b>	04 April 2023 <i>(Initial email)</i> 08 May 2023 <i>(Follow-up email)</i>	No response	Not applicable	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.
46.	<b>Nagula Jarndu Women's Arts and Resource Centre</b>	04 April 2023 <i>(Initial email)</i> 08 May 2023 <i>(Follow-up email)</i>	No response	Not applicable	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed



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						activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.
47.	<b>Ngarrawanji Aboriginal Corporation</b> (Tier 3)	31 March 2023 (initial email) refer to Appendix A  <b>Email to Shell</b> 07 April 2023 17 April 2023  <b>Email from Shell</b> 14 April 2023 17 April 2023 18 May 2023 31 May 2023  <b>In person at Indigenous Forum</b> 19 April 2023	[REDACTED]	<b>Email on 14 April 2023</b> Confirmation on attendance and providing details for InTravel for travel and accommodation.  <b>Email on 14 April 2023</b> Confirming point of travel to Perth.  <b>Email on 17 April 2023</b> Confirming event to be held at RAC Arena.  <b>Email on 18 May 2023</b> Close out email sent which covered the following: <ul style="list-style-type: none"> <li>• Thanked relevant person for their attendance at the event.</li> <li>• Recapped on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>• Notified of the management of feedback if any details should be considered sensitive information.</li> <li>• Reconfirmed contact details.</li> </ul> <b>Email on 31 May 2023</b> Sharing links and details from Forum 1 (including film links).	<b>Assessment</b> No objections or claims have been received about activity impacts or risks.	Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.  Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPGGS(E) Regulations.
48	<b>Northern Australian Indigenous Land and Sea Management Alliance</b>	03 April 2023 (initial email) <b>Email from Shell</b> 26 April 2023 19 May 2023 25 May 2023 26 May 2023	No response	<b>Email on 26 May 2023</b> Close out email wrapping up the consultation: <ul style="list-style-type: none"> <li>• Sharing the videos from Forum 1.</li> <li>• Reminder of the environment panel available.</li> <li>• Recap on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>• Reconfirming contact details</li> </ul>	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the

Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
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						implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.
49.	Nyamba Buru Yawuru Aboriginal Corporation (include Rubibi Community) (Tier 3)	31 March 2023 (Initial email) refer to Appendix A  Email to Shell 01 May 2023 05 May 2023 10 May 2023 15 May 2023 16 May 2023 25 August 2023  Email from Shell 26 April 2023 01 May 2023-via KLC 03 May 2023 08 May 2023 10 May 2023 15 May 2023 26 May 2023 10 July 2023 20 July 2023  Phone call 05 May 2023  In person 18 May 2023	[REDACTED]	<p><b>Email on 08 May 2023</b></p> <p>We would prioritise a chance to meet with the PBC board on 18 May 2023. I understand that Scott will likely attend the Forum and will be able to provide you feedback – I'm happy to wait until you've had a chance to discuss with Scott his attendance and understanding of the project. We can also organise to pull a package together of the relevant materials (such as facts sheets, maps etc.) that may assist the Board in understanding the project. I also draw your attention to the offer in our recent invitation that Shell has made available an Independent Environmental Panel to provide advice to Indigenous groups. If you would like to access this, please let us know.</p> <p>As a PBC Shell understands that you have legislated requirements of the duties you need to perform, and so in consideration of this Shell would be happy to discuss and explore opportunities to support the Yawuru PBC in assisting and advising on the consultation for the Crux project.</p> <p>We also understand the importance of PBCs working through the implications of the Santos case, and as you noted, this has created additional work for PBCs and the communities they represent.</p> <p><b>In person on 18 May</b></p> <p>Gave an overview of technology and activity for the EP. The wells will be approximately 3 kms.</p> <p>Provided overview on how Planning Area maps are generated, area a function of various factors i.e., different fuels etc., that they represent the total potential area that could be impacted instead of the area that would be impacted.</p> <p>Explained that Crux is essentially about extended current operations on Prelude, but there would be some activity during the construction phase that would be based in Broome. Undertook to keep them informed regarding business / local content opportunities, but also see if we could identify any materials that provide a broader industry view of the forward-looking economic opportunity.</p> <p>Acknowledged the feedback and undertook to follow-up to discuss future social investment opportunities, particularly in training and employment.</p> <p><b>Email on 26 May 2023</b></p> <p>Close out email wrapping up the consultation:</p> <ul style="list-style-type: none"> <li>• Sharing the videos from Forum 1.</li> <li>• Reminder of the environment panel available.</li> <li>• Recap on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>• Reconfirming contact details.</li> </ul> <p><b>Email on 10 July 2023</b></p> <p>Close out email sent which covered the following:</p> <ul style="list-style-type: none"> <li>• Thanked relevant person for the feedback.</li> </ul>	<p><b>Assessment</b></p> <p>No material objections or claims have been received about activity impacts or risks.</p> <p><b>Relevant / Non-Relevant Matters</b></p> <p>Raised a relevant matter regarding preferred engagement process to ensure culturally appropriate consultation. NBY declined the initial on country meeting offer. Also requested additional information. Shell provided further information as requested on the proposed activity.</p> <p>Shell also provided information on Shell's Social Investment programs and committed to ongoing engagement about partnership opportunities.</p> <p>All other matters raised are considered to not be relevant matters. Shell has provided a reasonable period in which to receive feedback which is consistent with the intended outcome of consultation.</p>	<p>Shell adjusted its engagement process, accordingly, including facilitating on-country meetings wherever requested/practicable (Section 5.6.5).</p> <p>Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPPGS(E) Regulations.</p>

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				<ul style="list-style-type: none"> <li>Recapped on what Shell are consulting on and the obligation to consult under the regulations.</li> <li>Notified of the management of feedback if any details should be considered sensitive information.</li> <li>Reconfirmed contact details.</li> </ul> <p><b>Email on 20 July 2023</b></p> <p>It was good to meet you and the Yawuru board back in May. We want to give you a brief update on where Shell is with the submission of the four Crux Environmental Plans, and what happens next.</p> <p>The first two EPs – the Seabed survey and the Drilling template (both of which have very limited potential impact areas, well offshore) will be submitted to NOPSEMA by the end of this week. The Drilling Development EP will be submitted next week, and the Cold Commissioning EP later in the year, in November.</p> <p>We are grateful for the meetings we have had with Yawuru and other PBCs and TO groups, during the consultation period. One of the repeated comments we heard loud and clear over the course of these meetings, is the importance of ongoing relationships -that Aboriginal groups are looking for long term relationships with industry operators, where they can partner to share knowledge, resources, and skills, provide consultancy on critical cultural heritage matters, and collaborate in providing opportunities. I think this was something you particularly noted – for Yawuru, it is less about this particular project and more about building a long-term relationship.</p> <p>So- Shell is keen to build the relationship. We'd like to return to Broome in the next few months and meet again to provide an update on the Crux project, hear any concerns from Yawuru and respond to issues that may have arisen. And to discuss future partnership opportunities. Shell invests and works with communities close to its operations and we look forward to conversations with you about opportunities and priorities for your people.</p> <p>At this stage, we are looking at being in Broome in September/ October of this year. If this is an opportunity you'd like to take up, please let us know so we can work on schedules and timing. Please stay in touch also with any other issues relating to the Crux project.</p>		
50.	<b>Nyikina Mangala Rangers</b>	31 March 2023 <i>(Initial email) refer to Appendix A</i>  <b>Email from Shell</b> 12 April 2023 26 April 2023 19 May 2023 25 May 2023 26 May 2023	No response	<p><b>Email on 26 May 2023</b></p> <p>Close out email wrapping up the consultation:</p> <ul style="list-style-type: none"> <li>Sharing the videos from Forum 1.</li> <li>Reminder of the environment panel available.</li> <li>Recap on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>Reconfirming contact details.</li> </ul>	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the

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						EP (Section 5.8). Accordingly, consultation during preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.
51.	Nyul Nyul PBC Aboriginal Corporation (Tier 3)	Also consulted via KLC 38. <b>Email to Shell</b> 26 October 2023 <b>Email from Shell</b> 17 October 2023 27 October 2023 07 November 2023	[REDACTED]	<p><b>Email on 17 October 2023 (via KLC 38)</b></p> <p>Further to our earlier correspondence, Shell has previously identified you as a relevant person for purposes of one or more of the Environment Plans (EPs) listed below.</p> <p>Shell is planning to extend its offshore gas production operations at the Prelude Floating Liquefied Natural Gas Facility. This extension requires new infrastructure to be installed offshore. This project is called Crux. At its closest point, Crux is about 175km off the coast of the Kimberley. When built, it will supply gas to Shell's existing gas operations, at Prelude, which is also offshore. There are no onshore activities.</p> <p>Over the past six months, Shell has tried to talk to as many Traditional Owners, RNTBC's and PBC's as well as businesses and Aboriginal Corporations, which are relevant persons for our Crux activities. We have emailed and called you to allow for an opportunity to discuss and provide information on matters that are important to you and how we could protect them.</p> <p>The purpose of this consultation is to give you an opportunity to provide input into:</p> <ul style="list-style-type: none"> <li>our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li>how our activities might impact the existing environment (including its cultural features); and</li> <li>how controls and mitigation measures may be adopted to protect what is important to you.</li> </ul> <p>This information will be documented in activity specific EPs, which will be submitted to Australia's offshore energy regulator, NOPSEMA, for assessment and following acceptance, published online. However, you may request that information you provide not be published.</p> <p>The purpose of this consultation is further detailed in the NOPSEMA Consultation on Offshore Petroleum Environment Plans Brochure.</p> <p>Information about the project has been provided previously and is available on our website: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a>. Factsheets describing each of the activities that we have been consulting on are available below and outline the associated environmental risks and impacts:</p> <ul style="list-style-type: none"> <li>the Crux Seabed Survey Factsheet</li> <li>the Crux Drilling Template Installation Factsheet</li> <li>the Crux Development Drilling Factsheet and</li> <li>the Crux Installation and Cold Commissioning Factsheet.</li> </ul> <p>Full, draft Environment Plans, are also available on the Shell website..</p> <p>We want to offer you a final opportunity to consult on the relevant EPs before we resubmit them to NOPSEMA.</p> <p>If you wish to provide feedback on the Crux EPs, Shell requests that you please do so by no later than Thursday 26 October. After that date, Shell will close consultation in preparation for the resubmission of the EPs. Please call our Community Hotline on 1800 059 152 if you wish to discuss further.</p>	<p><b>Assessment</b></p> <p>No objection or claims were raised during the consultation.</p> <p><b>Relevant Matters/Not Relevant Matters</b></p> <p>The request for a sitting fee to attend a workshop organised by Shell is deemed to be a relevant matter. However, given the PBC has indicated they do not have availability this calendar year and therefore would not be able to provide input prior to EP resubmission, Shell does not believe it is practicable to implement for this EP.</p>	<p>Shell has provided sufficient information, made reasonable efforts to elicit feedback and provided a reasonable period to assess information, seek input from the communal group and provide feedback. Therefore, consultation in preparation of this EP has been carried out in accordance with the Shell methodology.</p>

The version previously published contained text quoted directly from responses by relevant persons, contrary to the requirements of the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 (section 26(8)). That text has now been redacted. This EP remains in force.

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				<p><b>Email on 27 October 2023</b></p> <p>Thank you for your email of 26 October regarding the Crux project. We understand that the board is unable to meet until sometime in 2024 and we would welcome the opportunity to meet at a time that suits the board to discuss matters such as partnerships, employment, and social and economic investments.</p> <p>In terms of the environmental plans, Shell is required to consult with all relevant persons about its activities under the Crux EPs, and to provide them with sufficient information and a reasonable time to consult with Shell on matters that are relevant to the Crux EPs.</p> <p>Specifically, this consultation helps inform:</p> <ul style="list-style-type: none"> <li>our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li>how our activities might impact the existing environment (including its cultural features); and</li> <li>the development of appropriate controls and mitigation measures to reduce impacts to as low as reasonably practicable and an acceptable level.</li> </ul> <p>Shell considers Nyul Nyul RNTBC is a relevant person for the Crux EPs. We provided Nyul Nyul RNTBC with information about Shell's planned activities in April 2023, to allow Nyul Nyul RNTBC and the people it represents to assess how they may be affected by Shell's activities under the Crux EPs. Since then, we have followed up through multiple avenues (including phone calls in May and emails). We note your email yesterday that advised us that the Nyul Nyul PBC board will not be in a position to engage with Shell until 2024.</p> <p>As we advised KLC on 17 October 2023, the consultation period for the Crux EPs is closing today, Friday, 27 October 2023 to allow final preparation and submission to NOPSEMA.</p> <p>We want to stress that this consultation requirement, specifically for supporting preparation of the Crux EP noted above, is separate to Shell's interest in, and commitment to engagement with, TO groups on wider matters such as partnerships, employment, and social and economic investments. So, while the consultation period for the Crux EPs is closing to allow final preparation and submission to NOPSEMA, this has no bearing on Shell's wish for a stronger and ongoing relationship with Nyul Nyul RNTBC. We would be pleased to meet on an ongoing basis with the Board and discuss issues of common interest (including matters relating to Shell's activities), social investment opportunities, future environment plan Shell has in preparation or is soon to start preparation of and so forth, at a time and place that works for the Board.</p> <p>We also want to assure you that Shell has processes and procedures in place to address any new matters Nyul Nyul RNTBC raises in connection with Shell's activities as and when new information comes to light.</p> <p><b>Email on 7 November 2023</b></p> <p>Thank you for your email of 26 October regarding the Crux project. We understand that the board is unable to meet until sometime in 2024 and we would welcome the opportunity to meet at a time that suits the board to discuss matters such as partnerships, employment, and social and economic investments.</p> <p>In terms of the environmental plans, Shell is required to consult with all relevant persons about its activities under the Crux EPs, and to provide them with sufficient information and a reasonable time to consult with Shell on matters that are relevant to the Crux EPs.</p> <p>Specifically, this consultation helps inform:</p> <ul style="list-style-type: none"> <li>our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li>how our activities might impact the existing environment (including its cultural features); and</li> </ul>		



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				<ul style="list-style-type: none"> <li>the development of appropriate controls and mitigation measures to reduce impacts to as low as reasonably practicable and an acceptable level.</li> </ul> <p>Shell considers Nyul Nyul RNTBC is a relevant person for the Crux EPs. We provided Nyul Nyul RNTBC with information about Shell's planned activities in April 2023, to allow Nyul Nyul RNTBC and the people it represents to assess how they may be affected by Shell's activities under the Crux EPs. Since then, we have followed up through multiple avenues (including phone calls in May and emails). We note your email yesterday that advised us that the Nyul Nyul PBC board will not be in a position to engage with Shell until 2024.</p> <p>As we advised KLC on 17 October 2023, the consultation period for the Crux EPs is closing today, Friday, 27 October 2023 to allow final preparation and submission to NOPSEMA.</p> <p>We want to stress that this consultation requirement, specifically for supporting preparation of the Crux EP noted above, is separate to Shell's interest in, and commitment to engagement with, TO groups on wider matters such as partnerships, employment, and social and economic investments. So, while the consultation period for the Crux EPs is closing to allow final preparation and submission to NOPSEMA, this has no bearing on Shell's wish for a stronger and ongoing relationship with Nyul Nyul RNTBC. We would be pleased to meet on an ongoing basis with the Board and discuss issues of common interest (including matters relating to Shell's activities), social investment opportunities, future environment plan Shell has in preparation or is soon to start preparation of and so forth, at a time and place that works for the Board.</p> <p>We also want to assure you that Shell has processes and procedures in place to address any new matters Nyul Nyul RNTBC raises in connection with Shell's activities as and when new information comes to light.</p>		
52.	<b>Pudakul Aboriginal Cultural Tours</b>	04 April 2023 <i>(Initial email)</i> 08 May 2023 <i>(Follow-up email)</i>	No response	Not applicable	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.

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53.	Specialised Indigenous Services	31 March 2023 (Initial email) Email from Shell 12 April 2023 26 April 2023 26 May 2023	No response	<p><b>Email on 26 May 2023</b> Close out email wrapping up the consultation:</p> <ul style="list-style-type: none"> <li>Sharing the videos from Forum 1.</li> <li>Reminder of the environment panel available.</li> <li>Recap on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>Reconfirming contact details.</li> </ul>	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8). Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.
54.	Walalakoo Aboriginal Corporation (Tier 3)	Also consulted via 38 KLC  Email to Shell 27 June 2023 28 June 2023 10 July 2023 17 July 2023 20 July 2023 25 July 2023 02 August 2023 03 August 2023 04 August 2023 08 August 2023 09 August 2023 17 October 2023  Email from Shell 31 March 2023 12 April 2023 26 April 2023 08 May 2023 19 May 2023 25 May 2023	[Redacted]	<p><b>Phone call on 27 June 2023</b> Left a message with the CEO and spoke with the EA on a different number - would pass a message on to the CEO and the board.</p> <p><b>Email on 28 June 2023</b> Thanks for getting back to us. I have phoned a few times and left a message – if there is a better way to get hold of you, please let me know. We would like to work out with you when is a good time to come and speak with the board, and other PBCs or language groups. Can you please let us know when works, and we will get back to you. I think it is the case that Shell can assist with costs of getting people to a consultation, within reason, but we should wait for Shell staff to confirm this – I am a consultant assisting Shell and can't make financial commitments on their behalf.</p> <p><b>Email on 30 June 2023</b> I hope the board meetings have gone well. I am writing to outline a few options with regard to meeting with Shell representatives about the Crux project. There are four Environmental Plans (EPs) that will be submitted to NOPSEMA as part of the Crux approvals process. The first two deal with relatively small-scale activities (surveying the seabed and installation of a drilling 'guide' template, which sits on the sea floor). These both have small potential impact areas – see attached Fact Sheets, which do not extend to the coast of Australia. The third and fourth EPs deal with the drilling of the gas wells, and the installation of the equipment and testing, and have larger potential impact areas.</p>	<p><b>Assessment</b> No objections or claims received about activity impacts or risks.</p> <p><b>Relevant Matters and Not Relevant Matters</b> The following relevant matters were raised regarding the activity or their functions, interests, or activities:</p> <ul style="list-style-type: none"> <li>presence of songlines up the [west Kimberley] coastline and associated cultural heritage sites that are not all registered.</li> <li>important cultural connections with Country particularly to the Reef and King Sound.</li> <li>preferred engagement</li> </ul>	Description of heritage values in the EP (e.g., Section 7.3.2) updated to incorporate information received and updated information considered in risk assessment (eg Section 9.12.4.4). Section 7.3.2.2.3 notes that a number of the heritage sites in the Planning Area have not been recorded. Consultation included collective engagement with the 3 neighbouring cultural groups and facilitating on-country meetings wherever requested/practicable (Section 5.6.5). Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in

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		26 May 2023 28 June 2023 30 June 2023 10 July 2023 17 July 2023 20 July 2023 24 July 2023 25 July 2023 01 August 2023 02 August 2023 03 August 2023 04 August 2023 08 August 2023 09 August 2023 10 August 2023 23 August 2023  <b>Phone call</b> 27 June 2023 20 October 2023  <b>In Person</b> 15 August 2023	[REDACTED]	<p>The Seabed Survey (EP1) and the Drilling Template (EP2) will be submitted to NOPSEMA by late next week.</p> <p>Shell can make personnel available to consult prior to this date – i.e., early next week - or alternatively can arrange to meet with Walalakoo and other interested parties, as part of the ongoing consultation process. Either way your feedback, claims or objections will be considered and included in the EPs – if the meeting occurs after next week, this will occur under the ‘ongoing consultation process’.</p> <table border="1"> <thead> <tr> <th>EP</th> <th>Date of submission to NOPSEMA</th> <th>If meeting with relevant persons occurs prior to EP submission date</th> <th>If meeting with relevant persons occurs after submission date</th> </tr> </thead> <tbody> <tr> <td>1 – Seabed survey</td> <td>7 July 2023</td> <td rowspan="3">Feedback, comments, and objections will be included in the EP</td> <td rowspan="3">Feedback, comments, and objections be included as part of ongoing consultation</td> </tr> <tr> <td>2 – Drilling template</td> <td>7 July 2023</td> </tr> <tr> <td>3 – Development drilling</td> <td>23 July 2023</td> </tr> <tr> <td>4 – Installation and commissioning</td> <td>27 November 2023</td> <td></td> <td></td> </tr> </tbody> </table> <p>With regard to financial assistance to bring people together, Shell can pay TO’s costs associated with consultation. The consultation can take place on-country – e.g., Derby, or Broome, or through one-on-one conversations with Shell representatives via email or phone. There would need to be a pre-agreed cap on expenses, and expenses would be paid against itemized tax invoices.</p> <p><b>Email on 10 July 2023</b> Thank you for getting back to us. Would you like Shell to come to you in Derby? And if so, what timing for the meeting works best for you?</p> <p><b>Email on 17 July 2023</b> We will look forward to hearing from you. From Shell’s side, there may be 2 or 3 people who are relevant to attend a meeting with Walalakoo (and other neighbouring groups – if they are interested), so, if possible, if you can allow a time to ensure it can be organised from Shell’s side.</p> <p><b>Email on 20 July 2023</b> We are looking forward to the opportunity of meeting with you and others from Walalakoo. In the meantime, we want to give you a brief update on where Shell is with the submission of the four Crux Environmental Plans, and what happens next.</p> <p>The first two EPs – the Seabed survey and the Drilling template (both of which have very limited potential impact areas, well offshore) will be submitted to NOPSEMA by the end of this week. The Drilling Development EP will be submitted next week, and the Cold Commissioning EP later in the year, in November. As noted, Shell is open to receiving questions and providing information on all of these, on an ongoing basis.</p> <p>One of the repeated comments we heard loud and clear in meetings with PBCs and Traditional Owner groups, is the importance of ongoing relationships – that Aboriginal groups are looking for long term relationships with industry operators, where they can partner to share</p>	EP	Date of submission to NOPSEMA	If meeting with relevant persons occurs prior to EP submission date	If meeting with relevant persons occurs after submission date	1 – Seabed survey	7 July 2023	Feedback, comments, and objections will be included in the EP	Feedback, comments, and objections be included as part of ongoing consultation	2 – Drilling template	7 July 2023	3 – Development drilling	23 July 2023	4 – Installation and commissioning	27 November 2023			<p>process to ensure culturally appropriate consultation.</p> <p>Shell incorporated this information into its assessment of potential impacts and processes for engagement, as reflected in the EP - see Measures adopted for detail.</p> <p>Other feedback included interest in investigating a local spill response capacity, for quicker initial response, and a resourcing protocol.</p> <p>Table 9-52 of the EP demonstrates that response timeframes for spills are adequate to ensure the risks to areas of heritage significance are ALARP. A resourcing protocol to support consultation for this EP was agreed and implemented. Nevertheless, Shell has committed to work towards getting an updated resource protocol in place with WAC to support ongoing consultation (Section 5.8) and to participate in industry collaboration on training of indigenous peoples in spill preparedness.</p> <p>All other issues raised were considered to not be relevant matters. Shell’s response to the feedback received is set out here.</p>	<p>preparation of this EP in accordance with the OPGGS(E) Regulations.</p>
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			<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>knowledge, resources, and skills, provide consultancy on critical cultural heritage matters, and collaborate in providing opportunities.</p> <p>So- Shell is keen to build these relationships. We will return to Broome in the next few months and meet again to provide an update on the Crux project, hear any new concerns and respond to issues that may have arisen. And, to discuss future partnership opportunities. Shell invests and works with communities close to its operations and we look forward to conversations with you about opportunities and priorities for your people.</p> <p>At this stage, we are looking at being in Broome in September/ October of this year (this is separate to any meetings that we have with Walalakoo directly). If this is an opportunity you'd like to take up, please let us know so we can work on schedules and timing.</p> <p><b>Email on 20 July 2023</b></p> <p>Thank you and please pass on our thanks also.</p> <p>Shell senior personnel will respond to this I am sure as a matter of priority – I am a consultant working with Shell, so the proper response will come from them.</p> <p><b>Email on 24 July 2023</b></p> <p>On behalf of Shell, thank you for the email.</p> <p>With regards the consultations requested by yourself, and on behalf of Bardi Jawi Niimidiman and Mayala Inninalang PBCs, Shell staff would be very happy to meet. At this first stage, Shell would like to propose to hold a high-level meeting with yourself and the Chairs of the other PBCs, PBC CEOs, and interested board members. This meeting would help put names to faces, allow different people to start to get to know each other, and Shell can also better outline what Crux is.</p> <p>There are a few reasons for this is. Unlike mining, Crux is an entirely offshore project, and operates under a different set of rules and regulatory bodies, with different requirements as to consent, the place of ILUAs and so on. As you have noted, for example, under NOPSEMA regulations, consultations with relevant persons (groups) is an obligation.</p> <p>And while Shell is obliged to do this consultation, one of messages from different Traditional Owner groups that Shell has heard loud and clear, is that approaching relevant Aboriginal groups simply to 'consult and inform' is not enough; its disrespectful and ignores the Capacity, history, and cultural strength of Indigenous people. Shell is keen to do better by Aboriginal people, and seeks to develop long term, mutually beneficial and supportive relationships with PBCs and Aboriginal Corporations in areas close to its operations. This is already how Shell works with TO groups in Queensland, and Shell wants to start building these relationships here in the West.</p> <p>Following from this first meeting, next steps including future meeting approaches and formats can be agreed, where they are considered necessary (by both yourselves, and from Shell's side).</p> <p>We'd be happy to try to make this meeting happen soon. Meeting costs – venue hire, and travel by Aboriginal representatives, catering and so on, can be covered by Shell (within reason and against receipts as per usual).</p> <p><b>Email on 25 July 2023</b></p> <p>Thanks very much, we look forward to knowing what dates will work for you and can plan a meeting from there.</p> <p><b>Email on 1 August 2023</b></p> <p>Just checking in re possible meeting dates – please do let us know when suits.</p> <p><b>Email on 02 August 2023</b></p>		

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				<p>That week looks like it will work, and Broome is a good location. Would the different groups be happy to meet at Nyamba Buru Yawuru? They have good meeting rooms there and it is a place that is really well set up. Would it work to meet on the Tues 15th or Wed 16th? That way people can travel in on the Monday.</p> <p>I think if we look at meeting from 10-2pm on one of those days, and then allow the afternoon and the following morning for any follow up meetings or conversations. Does that sound ok?</p> <p>Can you please give me an indication of how many people from Bardi Jawi, Walalakoo and Mayala would be attending? In principle Shell is happy to cover costs of travel – we would just need to get some details around number of people etc.</p> <p>I look forward to hearing back from you.</p> <p><b>Email on 03 August 2023</b></p> <p>I'm just following through on the emails re meeting in a few weeks.</p> <p>Another group are asking for a meeting on 16 August in Port Hedland, so, if possible, if we can confirm the meeting for 15th August in Broome that would be good. If the 15th works, we will try to hold the meetings at Yawuru's conference rooms at Nyamba Buru Yawuru.</p> <p>We'll start at 10, and finish after lunch. Shell will be able to cover travel and other reasonable costs on presentation of an invoice.</p> <p><b>Email on 03 August 2023</b></p> <p>Thanks very much we are having a discussion this morning and will get back to you as soon as possible.</p> <p>We can confirm 15th August to meet with Walalakoo, Mayala and Bardi and Jawi representatives – thankyou, and we look forward to that. I've made a booking at Nyamba Buru Yawuru, at 55 Reid Rd, Broome, and think we could plan to start about 10am, and go for as long as we need.</p> <p>Shell will put on morning tea and lunch, and as mentioned, will cover travel costs to Broome and back, as well as overnight accommodation for those who need it. Costs will be reimbursed against invoices. It would be helpful if you could prepare a budget for this, and this will help Shell to quickly reimburse costs.</p> <p>I'll confirm with you from Shell's side who is attending early next week. I think from our side, Shell people are really keen to get to know the different groups, to hear some of their story and to start to form ongoing relationships – and of course to fully respond to questions about Crux. Thanks again for your work in getting this organised.</p> <p><b>Email on 04 August 2023</b></p> <p>I'll see what I can do but it is Race week in Broome so may be quite busy.</p> <p><b>Email on 04 August</b></p> <p>We are chasing a booking at either Lotteries House or the Mangrove Hotel – I expect one of these will work out. We will let you know asap. Thanks for the heads up. Also, will be in touch mid next week with an agenda for you all to review and add things to if you'd like. Please do send through indicative costs if you can – will help ensure prompt reimbursements.</p> <p><b>Email on 08 August 2023</b></p> <p>We can confirm that we have booked the Dampier room at the Mangrove Hotel for the meetings next week. I'll send through an agenda today.</p> <p>Meetings time and venue:</p> <p>9.30am – 2.30pm Tuesday August 15</p> <p>the Dampier Room, Mangrove Hotel,</p>		



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				<p>47 Carnarvon St, Broome (Ph: 9192 1303)</p> <p>We look forward to seeing you.</p> <p><b>Email on 08 August 2023</b></p> <p>Please find attached an agenda for Tuesday's meeting next week.</p> <p>We look forward to seeing you at 9.30 at the Dampier Room, at the Mangrove Hotel. Details are on the agenda – it's at 47 Carnarvon Rd, Broome. The agenda is fairly relaxed and the focus from our side is getting to know you all and responding fully to your questions and discussions. I'm linking it all together so please call me with any issues. Morning tea and lunch provided, and we'll see you there.</p> <p><b>Email on 09 August 2023</b></p> <p>Thank you, these are accepted by Shell and will be reimbursed on invoice, assuming final costs are similar.</p> <p><b>Email on 10 August 2023</b></p> <p>Please find the updated agenda with the revisions mentioned and also added in morning tea and lunch. I will have printed copies on the day.</p> <p><b>Meeting Notes from 15 August 2023</b></p> <ul style="list-style-type: none"> <li>• Walalakoo mentioned at the start that Oil and gas has been bypassing the Traditional Owners in the Kimberley and the Traditional Owners are very concerned about the impacts on their Country. Feeling of anxiousness at the start to meet as there has been no engagement with Traditional Owners in the Kimberley with Oil and Gas Companies</li> <li>• Walalakoo discussed the important cultural connections with Country in particularly to the Reef and King Sound and are directly affected by the oil and gas industry. There is a strong cultural block up in the Dampier Peninsula and the 3 groups of Bardi Jawi, Walalakoo and Mayala are deeply interconnected.</li> <li>• Bardi Jawi - Discussed the historic relationship of Shell and Bardi Jawi and that there has been economic loss to the community and fractured relationships internally due to airport decisions at Djarindjin</li> <li>• Discussion around RAP came up and since we are working towards a RAP. Bardi Jawi mentioned they want to work with us and assist us with working on KPI targets.</li> <li>• Walalakoo discussed job opportunities and asked how many Indigenous people work on Prelude. Discussion around the job opportunities we do offer as well as our Contractors. NETTS program was also mentioned.</li> <li>• Walalakoo also discussed history (dating back some 10 years+) with applying as a vendor with Shell and hasn't had a positive experience previously. Discussion was had around Indigenous Suppliers and supply chain in general. Mentioned processes around local content plans and procedures in place to ensure we consider local content as part of the tendering process currently.</li> </ul> <p>Discussion around Oil Spill Impacts were had and the different scenarios. Questions were asked around first responders and where do they come from. Mentioned responders are in Singapore and Fremantle. 4-8 hours it takes to organize the response. Some concern with how long this would take for them to get to the scene. Interest in developing capacity of local oil spill preventive groups and Shell discussed that we are acting on this as well as a whole Industry approach.</p> <ul style="list-style-type: none"> <li>• Bardi Jawi mentioned they may be interested in conducting their own oil spill modelling independently of Shell</li> <li>• Bardi Jawi brought up the need for cultural awareness/ cultural competency training that Bardi Jawi can offer.</li> </ul>		

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				<ul style="list-style-type: none"> <li>• NOPSEMA have committed to cultural competency training and have been out on the Dampier Peninsula with the Traditional Owners. Part of building genuine relationships. Subtext was that Shell should engage Bardi Jawi to provide similar training.</li> <li>• The Traditional Owner groups have access to independent Environmental panel and can access this at any point if they would like assistance. This is something the groups will do independently.</li> <li>• Bardi Jawi made comment to effect that they did not consider this meeting consultation, but pre-consultation.</li> <li>• Bardi Jawi comments on this process being one-sided, ie; Shell talking about what it is wanting to do; no allowance for what Bardi Jawi wants to do/ offer (in the form of cultural competency training, assistance in helping industry become more sensitized to Indigenous values.</li> <li>• Walalakoo made strong case for engagement with TO groups and RNTBCs being seen as a direct cost, and as essential precursor activity to any proponent development. That involving TO groups later as an afterthought, or simply to meet regulatory requirements was inappropriate.</li> <li>• Shell talked around Shell's commitment to looking at the Social and Cultural Heritage Values and the process Shell took around this. Walalakoo flagged concerns around our assessment of Cultural Heritage sites and only the ones that currently come up as registered as there are some significant song lines up the coastline that go up to Kalamburu. The Walanadi. 3 groups have strong connection to sea country and important to view sea country as all interconnected not just piece by piece as within Shell boundaries.</li> <li>• Concern from Walalakoo around Well integrity and stability</li> <li>• Drilling fluid spills and what is Shell's management plans around that. Majority is non-toxic fluids and cause minimal impacts.</li> <li>• Bardi Jawi strong on Resourcing protocol needing to be addressed with Bardi Jawi before progressing any further with the relationship. Bardi Jawi highly likely to object if protocol not addressed. Concerns with Shells response to the Resourcing protocol, in particular the following: references to Native title removed, reference to engaging in good faith has been removed, removed FPIC, removed clause around cultural sensitivities.</li> <li>• Walalakoo and Mayala stated they are likely to develop Protocols based on Bardi Jawi Protocol. Frank discussion around Shell won't be able to accept all the requirements in the protocol and will address this and need to give a response back to Bard Jawi.</li> </ul> <p>Importance of having a Social Impact Assessment as they have had with Woodside as part of NW Shelf agreement and Walalakoo will send this through.</p> <ul style="list-style-type: none"> <li>• The Importance of investing in the younger generations was emphasised by Walalakoo</li> <li>• The groups stated that this is a preliminary discussion, and that further consultation is to be had with other members in the group. Further meetings will likely be in Derby and One Arm Point</li> <li>• The groups emphasized their limited capacity as PBCs and lack of ability to attend all the meetings with all of Industry. Shell noted this concern.</li> <li>• Meeting concluded with expressed good will and some confidence from TOs that Shell was genuinely committed to doing things differently.</li> <li>• Commitment from Shell to ongoing relationship and responding in particular to resourcing protocol, further meetings on country (i.e., not in Broome) as advised/ directed by the PBCs, and to working together for progress on Indigenous procurement, employment and community programming.</li> </ul>		

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				<p><b>Email on 23 August 2023</b></p> <p>Thank you for the meeting last week in Broome. We really appreciated the opportunity to hear directly from you and begin a closer relationship.</p> <p>We are keen to follow through on the issues discussed and would appreciate your guidance on this.</p> <p>Meet on country.</p> <p>We heard that meetings would work better for you if they were closer to country – so, in Derby, not Broome. This also makes it possible for a wider group of elders and senior people to be present at the next meeting to hear about Shell's work and the Crux project, which is important.</p> <p>We are very happy to arrange for Shell staff to come to Derby or the best location that works for you. We can spend a day or more in meetings, with men and women separately or in whatever combination is appropriate. We need your guidance on this. If you can let us know when and where we should plan for the next meeting and give a rough indication of what groups you think are the right ones to be there, we can start planning.</p> <p>Resourcing protocol</p> <p>From Shell's side, we understood that you are looking to get a resourcing protocol in place, one that works for both Shell and Walalakoo, so that Traditional Owners are not financially disadvantaged. Shell has a standard resourcing protocol that it uses with Traditional Owner groups, that ensures compensation for time, travel, expert advice, and other costs. We'd be happy to discuss this, and reach an agreement, so that future meetings can take place without having to worry about the financial side. Let us know and we'll get this in motion.</p> <p>Should any consultation be required prior to establishing the resourcing protocol we are open to covering meeting costs as per the recent meeting. We look forward to further discussions with you and consultation on:</p> <ol style="list-style-type: none"> <li>4. Seeking to understanding cultural values and features which could be impacted by our activities; and</li> <li>5. Ensuring adequate controls are in place to minimise impacts and risks to these identified cultural features and values.</li> <li>6. Other relevant topics of interest to you.</li> </ol> <p>Please get back to me when it is convenient, when and where next meetings should take place.</p> <p><b>Email on 23 August 2023</b></p> <p>Thanks for the meeting last week. We've now following up on the issues raised. We've written to each group about the logistics of next meetings - where to meet, who should be there, sorting out costs and so on. We look forward to seeing you again,</p> <p><b>Email on 17 October 2023</b></p> <p>It was good meeting back in August and hope you are doing well.</p> <p>In the meeting we had in Broome, we talked about the four different Environmental Plans and how you, as Relevant Persons (under the NOPSEMA guidelines), need to be consulted, and have an opportunity to provide input into the Plans. Specifically, this input helps inform.</p> <ul style="list-style-type: none"> <li>• our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li>• how our activities might impact the existing environment (including its cultural features); and</li> <li>• how controls and mitigation measures may be adopted to protect what is important to you.</li> </ul> <p>The four Environmental plans cover off on the four key stages to the Crux Project development (see the map below):</p>		

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				<p>9. The Drilling template – installing the drilling 'jig' or structure on the seabed.</p> <p>10. The Seabed survey – checking the route on the seabed floor between Crux and Prelude to make sure it is safe and clear.</p> <p>11. Development Drilling – drilling the wells.</p> <p>12. Installation and Cold Commissioning – installing the rest of the Platform, the pipelines and testing it all.</p> <p>We haven't heard back from you as yet so are just checking in to see how these are going, as well as update you on Shell timeframes. At this point, Shell is planning to commence submitting the Environmental Plans to NOPSEMA in the next weeks, in order to meet internal deadlines. So, if there is other information you can provide, or comment you want to make, please let us know as soon as possible, and definitely before Friday 27th October. After this time, consultation for the purposes of preparing the Environmental plans will be considered closed.</p> <p>Relationships beyond Environmental Plans are important to us. We are open to meeting for other areas outside of these Environmental Plans, including keeping you updated as the project progresses, future Environmental Plans required for this project, learning more about your country and culture, and to keep the relationship strong.</p> <p>Hope to hear from you – I'll follow this up with a phone call later in the week.</p>		
55.	<p><b>Wanjina-Wunggurr Aboriginal Corporation (WWAC)</b> (Tier 2)</p>	<p>See 38 KLC</p> <p>Wanjina-Wunggurr Aboriginal Corporation is the formal RNTBC for the Dambimangari, Unguu Part A, Unguu - Area B, Wanjina - Wunggurr Wilinggin Native Title claim, determined between 2004 and 2012. Day to day management of the Determined area is in the hands of three separate Aboriginal Corporations:</p> <p>Dambimangari Aboriginal Corporation (DAC) – RP- 31</p> <p>Wilinggin Aboriginal</p>	No response	Not applicable	No feedback, objections or claims received.	Refer to Table 5-10 for further details demonstrating sufficient information, reasonable efforts and a reasonable period have been provided to carry out consultation in preparation of this EP.

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		Corporation (WAC) - RP-57  Wunambul Gaambera Aboriginal Corporation (WGAC) – RP - 125				
56.	<b>Warrwa Mawadjala Gadjidgar</b> (Tier 3)	See 38 KLC	No response	Not applicable	No feedback, objections or claims received.	Shell has provided sufficient information, made reasonable efforts to elicit feedback and provided a reasonable period to assess information, seek input from the communal group and provide feedback. Therefore, consultation in preparation of this EP has been carried out in accordance with the Shell methodology.
57.	<b>Wilinggin Aboriginal Corporation (WAC)</b> (Tier 3)	Also consulted via KLC-38. 31 March 2023 (Initial email) refer to Appendix A  <b>Email from Shell</b> 12 April 2023 26 April 2023 19 May 2023 25 May 2023 19 June 2023 30 August 2023 17 October 2023  <b>Phone call</b> 19 June 2023 31 August 2023 -no answer	No response	<b>Phone call on 19 June 2023</b> Spoke with the Fire Officer – described in brief the Crux project and why it is potentially significant to the Wilinggin mob. Mentioned that Shell had not had any response from WAC so far and that we considered engagement with them a priority and asked how to get information through to the right people. The fire officer provided contact details and names for the CEO and admin.  <b>Email on 30 August 2023</b> I am a consultant with Advisian, and I am assisting Shell Australia with the Crux Project, a gas project off the Kimberley coast.  This project has potential environmental impacts for Traditional Owner groups who have sea country, and we think you need to know about it. I have emailed before too, but we really want to ensure you are in the loop.  Details:  Crux project is an extension to Shell's Prelude gas facility, about 190km offshore north-west Australia and 620km off the coast of Broome, WA. As part of environmental approvals, Shell is consulting with persons and organisations who may be affected by its activities on how it plans to manage the environmental impacts. Shell is also consulting in order to better understand the sensitivities and values of people in the regions. In particular, Shell welcomes receiving of additional key information, or feedback on the plans.  So far, Shell has held a number of consultations, in Perth, Broome and Darwin, and send out information several times, via email to all the relevant identified groups. However, we know that emails can get lost or overlooked, and so are following up with certain organisations, like Wilinggin. The priority is to make sure all the relevant groups have had the opportunity to hear about Crux and be consulted.  I've attached some factsheets on the project, and links to the environmental plans for your information. There are 4 Environmental Plans (at this point), but only two of these have potential impacts coastline impact (Environmental Plans 3 and 4). I've also attached a map showing the	No feedback, objections or claims received.	Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPGGS(E) Regulations.



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				<p>modelled full possible extent of environmental impacts associated with these 2 Environmental Plans.</p> <p>The project details can be accessed at: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a></p> <p>And the full draft Environmental Plans for the project can be accessed at:</p> <p>Draft Seabed EP</p> <p>Draft Drilling template EP</p> <p>Draft Development Drilling EP</p> <p>Please call if you have questions, comments, or concerns, and I can respond or can connect you with people in the Shell Crux project for further information.</p> <p>We can also organise additional information sessions on country, or via Teams, if you think that would be useful.</p> <p><b>Email on 17 October 2023</b></p> <p>Further to our earlier correspondence, Shell has previously identified you as a relevant person for purposes of one or more of the Environment Plans (EPs) listed below.</p> <p>Shell is planning to extend its offshore gas production operations at the Prelude Floating Liquefied Natural Gas Facility. This extension requires new infrastructure to be installed offshore. This project is called Crux. At its closest point, Crux is about 175km off the coast of the Kimberley. When built, it will supply gas to Shell's existing gas operations, at Prelude, which is also offshore. There are no onshore activities.</p> <p>Over the past six months, Shell has tried to talk to as many Traditional Owners, RNTBC's and PBC's as well as businesses and Aboriginal Corporations, which are relevant persons for our Crux activities. We have emailed and called you to allow for an opportunity to discuss and provide information on matters that are important to you and how we could protect them.</p> <p>The purpose of this consultation is to give you an opportunity to provide input into:</p> <ul style="list-style-type: none"> <li>our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li>how our activities might impact the existing environment (including its cultural features); and</li> <li>how controls and mitigation measures may be adopted to protect what is important to you.</li> </ul> <p>This information will be documented in activity specific EPs, which will be submitted to Australia's offshore energy regulator, NOPSEMA, for assessment and following acceptance, published online. However, you may request that information you provide not be published.</p> <p>The purpose of this consultation is further detailed in the NOPSEMA Consultation on Offshore Petroleum Environment Plans Brochure.</p> <p>Information about the project has been provided previously and is available on our website: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a>. Factsheets describing each of the activities that we have been consulting on are available below and outline the associated environmental risks and impacts:</p> <ul style="list-style-type: none"> <li>the Crux Seabed Survey Factsheet</li> <li>the Crux Drilling Template Installation Factsheet</li> <li>the Crux Development Drilling Factsheet and</li> <li>the Crux Installation and Cold Commissioning Factsheet.</li> </ul> <p>Full, draft Environment Plans, are also available on the Shell website..</p> <p>We want to offer you a final opportunity to consult on the relevant EPs before we resubmit them to NOPSEMA.</p>		

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				If you wish to provide feedback on the Crux EPs, Shell requests that you please do so by no later than Thursday 26 October. After that date, Shell will close consultation in preparation for the resubmission of the EPs. Please call our Community Hotline on 1800 059 152 if you wish to discuss further.		
58.	Individual Indigenous person-self identified. (Tier 3)	27 April 2023 (Initial email via Joombarn-Buru Aboriginal Corporation)  Email to Shell 28 April 2023 09 May 2023 14 May 2023 17 May 2023 22 June 2023 08 August 2023  Email from Shell 28 April 2023 02 May 2023 12 May 2023 17 May 2023 22 June 2023 26 June 2023 10 July 2023	[Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted] [Redacted]	<p><b>Email on 28 April 2023</b> Acknowledged message and affirmed Shell's commitment to understanding impacts of proposed activities so they can be managed to ALARP. Requested opportunity to consult further through phone call or in-person meeting at whatever time or place would be convenient. Encouraged representatives to attend Traditional Owner Forum in Broome on 10 May. Provided further details on format and agenda for the forum and invited feedback on how they would prefer to be consulted.</p> <p><b>Email on 02 May 2023</b> Provided information on Shell's consultation and communications with First Nations relevant persons. Reiterated Shell's commitment to consultation. Provided details and information of the efforts Shell has been making to identify relevant persons and alternative means to contact as many individuals as possible, such as direct telephone numbers, Provided information on Traditional Owner Forums Shell hosted in Perth and information about upcoming forum in Broome. Encouraged representation to attend forum. Reiterated offer of meeting at whatever time and place would be convenient. Provided information on alternative communications channels and tools available to provide feedback or ask questions. Requested support in sharing information about the consultation process with their community members.</p> <p><b>Email on 12 May 2023</b> Provided information on Shell's consultation and communications with First Nations relevant persons. Reiterated Shell's commitment to consultation. Provided details and information of the efforts Shell has been making to identify relevant persons and alternative means to contact as many individuals as possible, such as direct telephone numbers, Provided information on Traditional Owner Forums Shell hosted in Perth and information about upcoming forum in Broome. Encouraged representation to attend forum. Reiterated offer of meeting at whatever time and place would be convenient. Provided information on alternative communications channels and tools available to provide feedback or ask questions. Requested support in sharing information about the consultation process with their community members.</p> <p><b>Email on 17 May 2023</b> Acknowledged individuals do not represent other PBCs. Provided information on Shell's consultation and communications with First Nations relevant persons. Reiterated Shell's commitment to consultation. Provided details and information of the efforts Shell has been making to identify relevant persons and alternative means to contact as many individuals as possible, such as direct telephone numbers, Provided information on Traditional Owner Forums Shell hosted in Perth and information about upcoming forum in Broome.</p>	<p>Raised objection/claim that the activities could affect indigenous people's law, culture and ceremonies/men's ceremonies which come from the ocean and reefs north of King Sound and Blue [Brue] Reef, an area that was traditionally fished and hunted. Blue Reef has strong cultural significance. Objection/claim is deemed to have merit as it relates to potential impacts on indigenous cultural features/values. The EP has been updated accordingly - see Measures adopted for detail.</p> <p><b>Relevant Matters and Not Relevant Matters</b> Raised a relevant matter regarding preferred engagement process to ensure culturally appropriate consultation. Shell adjusted its engagement process accordingly.</p>	<p>Consultation included RTNBCs from north of King Sound and facilitating on-country meetings wherever requested/practicable (Section 5.6.5). The description of cultural heritage values in the EP (eg section 7.3.2.3.1) has been updated with the information provided regarding Blue [Brue] Reef.</p> <p>Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPGGS(E) Regulations.</p>

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				<p>Encouraged representation to attend forum. Reiterated offer of meeting at whatever time and place would be convenient.</p> <p>Provided information on alternative communications channels and tools available to provide feedback or ask questions.</p> <p>Requested support in sharing information about the consultation process with their community members.</p> <p><b>Email on 17 May 2023</b></p> <p>Follow up on request for feedback, and reiterated offer of meeting at whatever time and place would be convenient.</p> <p><b>Email on 22 June 2023</b></p> <p>Follow up on request for feedback, and reiterated offer of meeting at whatever time and place would be convenient.</p> <p><b>Email on 26 June 2023</b></p> <p>Thanks also for passing on the email.</p> <p>I'm just checking in to see if the Walalakoo Board had made a decision to have Shell Crux team address the Board or attend or otherwise provide information?</p> <p>Shell can send through to the Walalakoo Board copies of the factsheets, and Environmental Plans for Crux, and other material, and can do this immediately. As the consultation period for the Drilling template, Seabed survey and development drilling Environmental Plans is now closing, can let us know by the end of this week, so we can respond in time?</p> <p><b>Email on 10 July 2023</b></p> <p>Close out email sent which covered the following:</p> <ul style="list-style-type: none"> <li>• Thanked relevant person for the feedback.</li> <li>• Recapped on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>• Notified of the management of feedback if any details should be considered sensitive information.</li> <li>• Reconfirmed contact details.</li> </ul>		
90.	<b>Jabirr Jabirr/Ngumbarl</b> (Tier 3)	See 38 KLC	No response.	Not applicable.	No feedback, objections or claims received.	In accordance with Shell approach, multiple attempts have been made to contact this Relevant Person during a reasonable period with no response received to date. In addition, other mechanisms have been used to comply with Shell's requirement to consult with Relevant Persons on the proposed activity. Further, Relevant Persons can provide feedback to Shell via the EP webpage during the implementation of the EP with any new relevant matters assessed in accordance with the EP (Section 5.8).



Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
				<p>Thanks so much for the meeting today. It was good to have some time, hear your questions and make the connection. I've passed the specific issues on to the Crux team to respond to – as noted, I'm the fixer in this process and specific responses I leave to the SMEs. Please do contact again though with any further concerns or issues and I'll ensure they are responded to. Here's the info about the final Crux forum. It is on next Wed – 9.30am -1.30, at the Hilton opposite NLC. If TOs need help getting there, Shell can help with travel. Great meeting you both.</p> <p><b>Email on 29 May 2023</b></p> <p>Request to forward on email with details of the Darwin drop-in session.</p> <p><b>Email on 19 June 2023</b></p> <p>We're in the process of closing off the Environmental Plan consultation phase, but we want to check on a few of the ranger groups who NLC represents. Is it possible you could forward this email to the following ranger teams?</p> <ul style="list-style-type: none"> <li>• Wudicupildiyerr Rangers</li> <li>• Garngi Land and Sea Management</li> <li>• Garngi Community Rangers</li> <li>• Kenbi Rangers</li> <li>• Malak Malak Land and Water Management Rangers</li> </ul> <p>I think that is all – but if there are others for whom NLC is the NTRB, we'd appreciate you forwarding to them also, and letting us know.</p> <p><b>Email on 03 July 2023</b></p> <p>My apologies it has taken so long to respond to your request.</p> <p>At the meeting of Friday 26, you asked that Shell provide a detailed early-warning procedure explaining how NLC would be notified of a worst-case-scenario spill that could affect communities and environments along the coastline of the Top End. You noted that this should include:</p> <ul style="list-style-type: none"> <li>• Emergency response timeframes.</li> <li>• Disaster and spill containment support.</li> <li>• Expected environmental impacts from such an event.</li> </ul> <p>Please see following links to Shell's Oil Pollution Emergency Plan (<a href="https://docs.nopsema.gov.au/A867083">https://docs.nopsema.gov.au/A867083</a>) and Operational and Scientific Monitoring Plan (<a href="https://docs.nopsema.gov.au/A865358">https://docs.nopsema.gov.au/A865358</a>) which cover our activities in the Browse Basin, including the Crux project activities.</p> <p>These plans cover off on the requested information regarding Shells spill response capability, arrangements and notification requirements which are summarised below.</p> <ul style="list-style-type: none"> <li>• Notifications to various authorities and entities in the event of a spill are covered within both the Oil Pollution Emergency Plan and the associated external reporting and notification table of each Crux Environment Plan. Shell intends to add a notification requirement to Section 10 of its environment plans which covers the process to notify the NLC of a hydrocarbon spill which has the potential to impact communities and environments in the Top End. The proposal is to add the following to the Crux Development Drilling Environment Plan and the Crux Installation and Cold Commissioning Environment Plan. It would be great if you could please confirm the appropriate contact mechanism phone number and email which we should use to complete this notification.</li> </ul> <p><b>Routine External Reporting and Notification Requirements</b></p>		



				Reporting Requirement	Description	Recipient	Submission/Notification Timing			
				Notification submitted to the NLC detailing any Tier 2 or 3 hydrocarbon spill which has the potential to impact communities and environments in the Top End.	The Notification will contain all material facts and circumstances concerning the incident, actions taken to avoid or mitigate any adverse impacts and corrective action taken.	NLC	Within 1 week of an event.			
					<ul style="list-style-type: none"> <li>Emergency response timeframes – The Oil Pollution Emergency Plan covers both first strike and secondary response tasks in the event of a spill. The first strike plan details the activities/tasks that are carried out immediately following a spill event. Please see Section 1. of the attached Oil Pollution Emergency Plan with includes details of the timeframes that these tasks are required to be completed as part of the first strike response. The secondary response measures are detailed in Section 4.5 of the attached Oil Pollution Emergency Plan. This covers all the secondary measure Shell can use to respond to a spill event, each subsection includes a detailed breakdown of the response timeframes associated with the equipment and resources specific to each activity.</li> <li>Disaster and spill containment support – Shell maintains capability across all the resources required to implement a response to a worst-case credible spill. This includes internal personnel trained and ready to participate in a spill response as part of Shells Incident Management Team (IMT); external specialist personnel from agencies that specialise in spill response tasks; and maintenance of and access to spill response equipment. These capability arrangements are described in detail within Attachments 1 and 2 of the OPEP which are summarised as follows: <ul style="list-style-type: none"> <li>Attachment 1 (PAGE 117 of OPEP at <a href="https://docs.nopsema.gov.au/A867083">https://docs.nopsema.gov.au/A867083</a>) : Browse Region Oil Pollution Emergency Plan (BROPEP) - Basis of Design and Field Capability Assessment (HSE_GEN_016764). <ul style="list-style-type: none"> <li>This document presents an overview of all Titleholder's offshore (Browse/Bonaparte basin) petroleum activities and associated oil spill risks. This document evaluates modelling outcomes from a series of selected WCSs and presents an oil spill response field capability analysis. This document also presents the EPOs and EPSs associated with the preparedness and environmental risk assessment of field response capability and arrangements.</li> </ul> </li> <li>Attachment 2 (PAGE 369 of OPEP at <a href="https://docs.nopsema.gov.au/A867083">https://docs.nopsema.gov.au/A867083</a>): BROPEP – Incident Management Team Capability Assessment Report <ul style="list-style-type: none"> <li>This document utilises the field capability assessments as inputs to evaluate the size and structure of the IMT necessary to</li> </ul> </li> </ul> </li> </ul>					

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ID	Name					
				<p>mobilise and maintain the field capability. The document also presents the EPOs and EPSs associated with the IMT capability and arrangements.</p> <ul style="list-style-type: none"> <li>Expected environmental risks and impacts from a worst-case credible spill are assessed within each Crux Environment Plan. The Development Drilling EP is currently available on the Crux Website where this information is contained in Section 9.12 and 9.13.</li> </ul> <p>You can also view the draft Environmental plans at the following links:</p> <ul style="list-style-type: none"> <li><a href="#">Seabed Survey EP</a></li> <li><a href="#">Template EP</a></li> <li><a href="#">Development Drilling</a></li> </ul> <p>I hope this is of assistance, and please make contact with any further questions.</p> <p><b>Email on 10 July 2023</b></p> <p>Close out email sent which covered the following:</p> <ul style="list-style-type: none"> <li>Thanked relevant person for the feedback.</li> <li>Recapped on what Shell is consulting on and the obligation to consult under the regulations.</li> <li>Notified of the management of feedback if any details should be considered sensitive information.</li> <li>Reconfirmed contact details.</li> </ul> <p><b>Email on 20 July 2023</b></p> <p>It was good to meet you both back in May. We want to give you a brief update on where Shell is with the submission of the four Crux Environmental Plans, and what happens next.</p> <p>The first two EPs – the Seabed survey and the Drilling template (both of which have very limited potential impact areas, well offshore) will be submitted to NOPSEMA by the end of this week. The Drilling Development EP will be submitted next week, and the Cold Commissioning EP later in the year, in November.</p> <p>We are grateful for the meetings we have had with NLC, other PBCs and TO groups, during the consultation period. One of the repeated comments we heard loud and clear over the course of these meetings, is the importance of ongoing relationships – that Aboriginal groups are looking for long term relationships with industry operators, where they can partner to share knowledge, resources, and skills, provide consultancy on critical cultural heritage matters, and collaborate in providing opportunities. Shell is keen to build the relationship. We would like to return to Darwin in the next few months and meet again to provide an update on the Crux project, hear any concerns from you and other groups, and respond to issues that may have arisen. And, to discuss future partnership opportunities. Shell invests and works with communities close to its operations and we look forward to conversations about opportunities and priorities for the groups the NLC supports.</p> <p>At this stage, we are looking at being in Darwin in September/ October of this year. If this is an opportunity you'd like to take up, or if there are PBCs, RNTBCs, or Indigenous Ranger groups that NLC supports, who would be interested, please let us know so we can work on schedules and timing. Please also forward this email to them.</p> <p>We'd be happy to respond to any other issues relating to the Crux project, too.</p>		

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				<p><b>Email on 27 July 2023</b> Your comments are noted, and Shell will document accordingly. Again, thanks for your time and it was a pleasure meeting.</p>		
122.	<p><b>Balanggarra Aboriginal Corporation</b> (Tier 3)</p>	<p>See 38 KLC <b>Email from Shell</b> 07 Sept 2023 17 October 2023  <b>Phone Call</b> 20 October 2023</p>	No response.	<p><b>Email on 7 September 2023</b> I am a consultant assisting Shell Australia with the Crux Project. This is a gas project off the Kimberley coast. I think KLC forwarded some info to you, I've tried emailing via the webform, and am still keen to get in touch.  If there was an oil, gas, or condensate spill from Crux, during the build or operations, it could affect Traditional Owner groups who have sea country. Balanggarra has coastal and sea country in the area that could be affected (see the map, attached). So, it is important you know about the project, and the issues involved.  What is Crux?  The Shell Crux project is an extension to Shell's Prelude gas facility, about 190km offshore north-west Australia and 620km off the coast of Broome, WA. It's around 250km from the Crux project to your country. It will be several years before it is operational, but the surveys and preliminary work will start towards the end of this year.  As part of the environmental approvals process, Shell must consult with people and groups who may be affected by its activities. Shell also wants to improve its understanding of what matters Aboriginal people in the region – areas that are special, sacred, or protected.  I've attached some factsheets on the project, and below are links to the environmental plans for your information.  There are 4 Environmental Plans (at this point), but only two of these have potential impacts coastline impact (Environmental Plans 3 and 4) that comes close to your country – these are the blue and green lines on the map.  If there was a hydrocarbon spill (gas, oil, or condensate) spill, it wouldn't affect the whole area, but rather a small section of it. The map shows the different areas that could be affected at different times during the project build, including where Balanggarra country is.  The project details can be accessed at: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a>  And the full draft Environmental Plans for the project can be accessed at:  Draft Seabed EP Draft Drilling template EP Draft Development Drilling EP  Please call if you have questions, comments, or concerns, and I can respond or can connect you with people in the Shell Crux project for further information.  We can also organise additional information or meetings.  <b>Email on 17 October 2023</b> Further to our earlier correspondence, Shell has previously identified you as a relevant person for purposes of one or more of the Environment Plans (EPs) listed below.  Shell is planning to extend its offshore gas production operations at the Prelude Floating Liquefied Natural Gas Facility. This extension requires new infrastructure to be installed offshore. This project is called Crux. At its closest point, Crux is about 175km off the coast of the Kimberley. When built, it will supply gas to Shell's existing gas operations, at Prelude, which is also offshore. There are no onshore activities.  <b>Phone call on 20 October 2023</b></p>	No feedback, objections or claims received.	Shell has provided sufficient information, made reasonable efforts to elicit feedback and provided a reasonable period to assess information, seek input from the communal group and provide feedback. Therefore, consultation in preparation of this EP has been carried out in accordance with the Shell methodology. Refer to Section 5.4 for further information.

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				<p>Spoke to administration assistant who confirmed that the CEO had received correspondence from Shell including factsheets dated 7 September 2023. Also confirmed that earlier correspondence regarding Crux project was received via Kimberley Land Council.</p> <p>Over the past six months, Shell has tried to talk to as many Traditional Owners, RNTBC's and PBC's as well as businesses and Aboriginal Corporations, which are relevant persons for our Crux activities. We have emailed and called you to allow for an opportunity to discuss and provide information on matters that are important to you and how we could protect them.</p> <p>The purpose of this consultation is to give you an opportunity to provide input into:</p> <ul style="list-style-type: none"> <li>our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li>how our activities might impact the existing environment (including its cultural features); and</li> <li>how controls and mitigation measures may be adopted to protect what is important to you.</li> </ul> <p>This information will be documented in activity specific EPs, which will be submitted to Australia's offshore energy regulator, NOPSEMA, for assessment and following acceptance, published online. However, you may request that information you provide not be published.</p> <p>The purpose of this consultation is further detailed in the NOPSEMA Consultation on Offshore Petroleum Environment Plans Brochure.</p> <p>Information about the project has been provided previously and is available on our website: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a>. Factsheets describing each of the activities that we have been consulting on are available below and outline the associated environmental risks and impacts:</p> <ul style="list-style-type: none"> <li>the Crux Seabed Survey Factsheet</li> <li>the Crux Drilling Template Installation Factsheet</li> <li>the Crux Development Drilling Factsheet and</li> <li>the Crux Installation and Cold Commissioning Factsheet.</li> </ul> <p>Full, draft Environment Plans, are also available on the Shell website.</p> <p>We want to offer you a final opportunity to consult on the relevant EPs before we resubmit them to NOPSEMA.</p> <p>If you wish to provide feedback on the Crux EPs, Shell requests that you please do so by no later than Thursday 26 October. After that date, Shell will close consultation in preparation for the resubmission of the EPs.</p> <p>Please call our Community Hotline on 1800 059 152 if you wish to discuss further.</p>		
125.	Wunambal Gaambera Aboriginal Corporation (WGAC) (Tier 2)	<p>Also consulted via 38 KLC</p> <p>31 March 2023 (Initial email)</p> <p>Email to Shell</p> <p>01 Sept 2023</p> <p>14 Sept 2023</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p><b>Email on 28 August 2023</b></p> <p>I am a consultant with Advisian, and I am presently assisting Shell Australia with the Crux Project, a gas project off the Kimberley coast with potential environmental impacts for Traditional Owner groups who have sea country. I've left a message on the Office phone but wanted to email also.</p> <p>The Shell Crux project is an extension to Shell's Prelude gas facility, about 190km offshore north-west Australia and 620km off the coast of Broome, WA. As part of the environmental approvals process, Shell is consulting with persons and organisations who may be affected by its activities on how it plans to manage environmental impacts. Shell is also consulting in order to improve its understanding of the sensitivities and values of the</p>	<p><b>Assessment</b></p> <p>No objections or claims received in relation to risks or impacts.</p> <p><b>Relevant Matters and Not Relevant Matters</b></p> <p>Provided advice regarding a source of heritage information and the community's</p>	<p>Shell updated its environment description of cultural values based on information sources provided by the WGAC representative (see Section 7.3.2.1).</p> <p>EP Section 9.12 describes the assessment and</p>

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ID	Name					
		<p><b>Email from Shell</b></p> <p>26 April 2023 19 May 2023 25 May 2023 26 May 2023 19 June 2023 28 August 2023 31 August 2023 01 Sept 2023 05 Sept 2023 13 Sept 2023 14 Sept 2023 19 Sept 2023 02 October 2023 17 October 2023</p> <p><b>Phone call</b></p> <p>31 August 2023 -no answer 12 Sept 2023 20 October 2023 x 2 -no answer 25 October 2023 -no answer 26 October 2023 x 2 -no answer -message left</p> <p><b>In Person</b></p> <p>15 Sept 2023</p>		<p>regions, and in particular, welcomes receiving of additional key information, or feedback on these.</p> <p>So far, Shell has held a number of consultations, in Perth, Broome and Darwin, and send out information in April and again in May, via email to all the relevant identified groups. However, we recognise that emails can get lost or overlooked, and so are following up with certain organisations, like Wunambal Gaambera – in particular those with sea country, or those active on coastal areas, where the Crux project may have an impact in the unlikely event of an accident or uncontrolled hydrocarbon spill. The priority is to make sure all the relevant groups have had the opportunity to hear about Crux and be consulted.</p> <p>I've attached some factsheets on the project, and links to the environmental plans for your information. There are 4 Environmental Plans (at this point), but only two of these have potential impacts coastline impact (Environmental Plans 3 and 4). I've also attached a map showing the modelled full possible extent of environmental impacts associated with these 2 Environmental Plans.</p> <p>The project details can be accessed at: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a> And the full draft Environmental Plans for the project can be accessed at:</p> <p>Draft Seabed EP Draft Drilling template EP Draft Development Drilling EP</p> <p>Please call if you have questions, comments, or concerns, and I can respond or can connect you with people in the Shell Crux project for further information.</p> <p>We can also organise additional information sessions on country, via Teams or other options, if you think that would be useful for Wunambal Gaambera people.</p> <p><b>Email on 31 August 2023</b></p> <p>I am a consultant with Advisian, and I am assisting Shell Australia with the Crux Project, a gas project off the Kimberley coast. I've tried emailing and phoning and am trying one more time to reach you.</p> <p>Crux project is gas facility, about 190km offshore north-west Australia and 620km off the coast of Broome, WA. At its closest point, it is around 230 km from the Wanjina coastline. Crux will tie in with Shell's existing gas facility, Prelude. It is all offshore, but nonetheless, TO groups, Aboriginal Corporations and PBCs along the Kimberley coast need to have the opportunity to hear about Crux, ask questions and meet with Shell if they want.</p> <p>Details:</p> <p>Shell is consulting with persons and organisations who may be affected by its activities on how it plans to manage the environmental impacts. It is required to do this.</p> <p>Shell is also consulting in order to better understand what's valuable and important to people in the regions. In particular, Shell welcomes receiving of additional key information, or feedback on the plans. So far, Shell has held a number of consultations, in Perth, Broome and Darwin, and sent out information several times, to all the relevant identified groups.</p> <p>I'm attaching some factsheets on the project, and links to the environmental plans for your information are below. There are 4 Environmental Plans (at this point), but only two of these have potential impacts coastline impact (Environmental Plans 3 and 4). I've also attached a map showing the modelled full possible extent of environmental impacts associated with these 2 Environmental Plans. The project details can be accessed at: <a href="http://www.shell.com.au/crux">www.shell.com.au/crux</a></p> <p>And the full draft Environmental Plans for the project can be accessed at:</p>	<p>general concern regarding oil spills, which Shell considers to be relevant matters and are appropriately addressed in the EP – see Measures adopted for detail.</p>	<p>management of potential spill risks and demonstrates that they have been reduced to ALARP, with Section 9.12.7 outlining Shell's position that a large-scale hydrocarbon release would be unacceptable.</p> <p>Shell has provided sufficient information and a reasonable period to assess information provided. Consultation has been carried out in preparation of this EP in accordance with the OPGGS(E) Regulations. Refer to Table 5-10 for further information supporting this.</p>



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				<p>Draft Seabed EP</p> <p>Draft Drilling template EP</p> <p>Draft Development Drilling EP</p> <p>Please call if you have questions, comments, or concerns. We can organise additional information sessions on country, in Kalumburu, or via Teams, if you think that would be useful.</p> <p><b>Email 01 September 2023</b></p> <p>Thanks very much, we'll follow up with them.</p> <p><b>Email 01 September 2023</b></p> <p>Good to hear from you and we will look forward to meeting up. As mentioned, we're happy to come out to Wunambul country or wherever works best for you and the people.</p> <p><b>Email on 13 September 2023</b></p> <p>Just following up on yesterday's call and your message last week.</p> <p>We're happy to try to meet this week here in Perth or can come to you in Wyndham. Let us know what works.</p> <p><b>Email on 13 September 2023</b></p> <p>Hope you're well, I've been passed on your details around a potential meeting at Shell House this Friday at 10am.</p> <p>We were hoping to move ahead with an initial meeting if this day and time still suits you.</p> <p>Really looking forward to meeting you and happy to chat to coordinate if easier. I have cc'd others into this email who will also be in attendance.</p> <p><b>Email on 14 September 2023</b></p> <p>Look forward to meeting you then also. If you could arrive 10 mins early so you can complete a quick site induction that would be great, I will come down and meet you in the Foyer.</p> <p><b>15 September 2023 meeting notes contained in sensitive matters report – summary of key outcomes:</b></p> <ul style="list-style-type: none"> <li>• WGAC did not have any specific objections to the Crux project.</li> <li>• It was noted that the impact from an oil spill is the biggest concern to community, not just from Crux.</li> <li>• No specific cultural values or sensitivities were identified.</li> <li>• WGAC made Shell aware of a book published on their heritage with stories passed down by the people.</li> </ul> <p><b>Email on 19 September 2023</b></p> <p>Thank you for your time last week meeting with Shell. We found the discussions to be very open, positive, and informative as to Wunambal Gaambera's current operations and priorities going forward. We will be continuing our planned submission timeframes for Environmental Plans (EP 1&amp;2 this week, EP 3 mid-October and EP End October) and are committed to ongoing genuine and transparent discussions with yourselves in alignment with your specific wishes.</p> <p>I have attached our notes from the meeting and trust these are an accurate representation of discussions held, if you would like anything amended, please let us know. As discussed, we will be in touch to work through logistics to arrange the suggested on-country meeting with Directors at Truscott Airport from mid to late October.</p> <p>If you need anything in the interim, please don't hesitate to reach out.</p>		

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ID	Name					
				<p><b>Email on 2 October 2023</b></p> <p>Hope you're well, just wanted to follow-up on the below email to see if you had any amendments to be made to the notes or were needing any further info from our end?</p> <p><b>Email on 17 October 2023</b></p> <p>It was good meeting in September and hope you are doing well.</p> <p>In the meeting we had in Perth, we talked about the four different Environmental Plans relevant to the Crux project and how you, as Relevant Persons (under the NOPSEMA guidelines), need to be consulted, and have an opportunity to provide input into the Plans. Specifically, this input helps inform.</p> <ul style="list-style-type: none"> <li>our understanding of the existing environment which may be affected by Shell's proposed activities, including the cultural features of that environment.</li> <li>how our activities might impact the existing environment (including its cultural features); and</li> <li>how controls and mitigation measures may be adopted to protect what is important to you.</li> </ul> <p>The four Environmental plans cover off on the four key stages to the Crux Project development (see the map below):</p> <ol style="list-style-type: none"> <li>The Drilling Template – installing the drilling 'jig' or structure on the seabed</li> <li>The Seabed Survey – checking the route on the seabed floor between Crux and Prelude to make sure it is safe and clear</li> <li>Development Drilling – drilling the wells.</li> <li>Installation and Cold Commissioning – installing the rest of the Platform, the pipelines and testing it all.</li> </ol> <p>We haven't heard back from you as yet so are just checking in to see how these are going, as well as update you on Shell timeframes. At this point, Shell is planning to commence submitting the Environmental Plans to NOPSEMA in the next weeks, in order to meet internal deadlines. So, if there is other information you can provide, or comment you want to make, please let us know as soon as possible, and definitely before Friday 27th October. After this time, consultation for the purposes of preparing the Environmental Plans will be considered closed.</p> <p>Relationships beyond Environmental Plans are really important to us. We are open to meeting for other areas outside of these Environmental Plans, including keeping you updated as the project progresses, future Environmental Plans required for this project, learning more about your country and culture, and to keep the relationship strong.</p> <p>I will give you a call to follow up later in the week, but my mobile is below if you needed to reach me in the interim.</p> <p><b>Phone call on 26 October 2023</b></p> <p>Voicemail left asking General Manager of Wunambal Gaambera return call or email in response to email from 17 October 2023.</p>		
<b>Commercial Fisheries</b>						
121.	<b>A12 Aquarium (9 license holders)</b>	27 April 2023 <i>(letter)</i>	No response	Not applicable	No feedback, objections or claims received.	
122.	<b>A5 Offshore Net Line (8 license holders)</b>	27 April 2023 <i>(letter)</i>	No response	Not applicable	No feedback, objections or claims received.	

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123.	<b>A4 Spanish Mackerel</b> (9 license holders)	27 April 2023 (letter)	No response	Not applicable	No feedback, objections or claims received.	
124.	<b>A6 Demersal</b> (12 license holders)	27 April 2023 (letter)	No response	Not applicable	No feedback, objections or claims received.	
125.	<b>A13 Trepang</b> (1 license holders)	27 April 2023 (letter)	No response	Not applicable	No feedback, objections or claims received.	
139.	<b>Abalone Managed Fishery Licence</b> (25 license holders)	26 April 2023 (Initial email)	No response	Not applicable	No feedback, objections or claims received.	
140.	<b>Aquatic Life Group</b>	28 April 2023 (Initial email-through WAFIC) 01 May 2023 (Email to Shell via WAFIC)	[REDACTED]	Not applicable	No feedback, objections or claims received.	
141.	<b>Broome Prawn</b> (1 license holder)	26 April 2023 (Initial email)	No response	Not applicable	No feedback, objections or claims received.	
142.	<b>Commonwealth Fisheries Association</b>	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
143.	<b>Individual fishery licence holder</b>	26 April 2023 (On-line form submission) <b>Email from Shell</b> 2 May 2023	[REDACTED]	<b>Email on 02 May 2023</b> Provided the relevant coordinates for Seabed Survey EP. Provided a map for the Crux Seabed Survey Operating Area. Noted that WAFIC will also be consulting on our behalf with all WA managed fisheries in the activity / operations area.	<b>Assessment</b> No objections or claims have been received about activity impacts or risks. <b>Relevant Matters and Not Relevant Matters</b> Requested further information regarding the activity. Shell's response to the feedback received is set out here.	Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.
144.	<b>Kimberley Crab Managed Fishery Licence</b> (1 license holder)	26 April 2023 (Letter)	No response	Not applicable	No feedback, objections or claims received.	
145.	<b>Kimberley Prawn Managed Fishery Licence</b> (65 license holders)	27 April 2023 (Letter)	No response	Not applicable	No feedback, objections or claims received.	

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Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
146.	<b>Mackerel Managed Fishery Licence</b> (24 license holders)	26 April 2023 (Letter)	No response	Not applicable	No feedback, objections or claims received.	
147.	<b>Marine Aquarium Fish Managed Fishery Licence</b> (11 license holders)	26 April 2023 (Letter)	No response	Not applicable	No feedback, objections or claims received.	
148.	<b>Northern Demersal Scalefish Managed Fishery Licence</b> (6 license holders)	26 April 2023 (Letter)	No response	Not applicable	No feedback, objections or claims received.	
149.	<b>North-West Slope Trawl Fishery</b> (3 license holders)	30 March 2023 (Initial email)	No response	Not applicable	No feedback, objections or claims received.	
150.	<b>Pearl Oyster Fishery</b>	28 April 2023 (Initial email)	No response	Not applicable	No feedback, objections or claims received.	
151.	<b>Seafood Industry Association</b>	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
152.	<b>South-West Coast Salmon</b> (7 license holders)	28 April 2023 (Initial email)	No response	Not applicable	No feedback, objections or claims received.	
153.	<b>Specimen Shell Managed Fishery Licence</b> (30 license holders)	26 April 2023 (Letter)	No response	Not applicable	No feedback, objections or claims received.	
154.	<b>West Coast Deep Sea Crustacean Managed Fishery Licence</b> (4 license holders)	26 April 2023 (Letter)	No response	Not applicable	No feedback, objections or claims received.	
155.	<b>Western Australian Fishing Industry Council (WAFIC)</b>	27 Mar 2023 (Initial email)  Email to Shell 04 April 2023 19 April 2023 28 April 2023 16 May 2023 17 May 2023	[REDACTED]	<b>Email on 27 March</b> Request for meeting to discuss appropriate consultation with WA State managed fisheries.  <b>Email on 17 April 2023 and call on 18 April.</b> Shell confirmed they would contract WAFIC to contact its relevant members as per information sent by WAFIC on 4 April. (In addition to contacting concession holders directly)  <b>Email and phone call on 26 April 2023</b> Provided a list of WA managed fisheries in the Crux operational area to WAFIC.	<b>Assessment</b> No objections or claims have been received about activity impacts or risks.  <b>Relevant Matters and Not Relevant Matters</b> WAFIC's recommendations/best practice suggestions	WAFIC's recommendations/best practice suggestions regarding the Crux Project have been appropriately addressed through the OPP and development of EPs – e.g. the description of environment (Section

Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
		<p>22 May 2023 26 May 2023 29 May 2023 01 June 2023</p> <p><b>Email from Shell</b></p> <p>04 April 2023 06 April 2023 17 April 2023 18 April 2023 19 April 2023 26 April 2023 09 May 2023 16 May 2023 17 May 2023 19 May 2023 02 June 2023</p> <p><b>Teams meeting</b></p> <p>06 April 2023 21 April 2023 27 April 2023</p> <p><b>Phone Calls</b></p> <p>18 April 2023 26 April 2023</p>	<p>[REDACTED]</p>	<p><b>Email on 28 April 2023</b></p> <p>WAFIC sent out consultation pack (produced in collaboration with Shell) to licence holders in the operational area:</p> <p>To Commercial Licence Holders,</p> <p>As part of the Environment Plan approvals process, Shell is undertaking consultation with relevant persons who may be impacted by the activities we are proposing in relation to the development of the Crux project. There are four relevant Environmental Plans that cover activities for the Crux project. Shell is working with the Western Australian Fishing Industry Council (WAFIC) to consult on these four Environmental Plans with WA managed fisheries who have activities and/or interests that overlap with the Crux project activity / operations area.</p> <p>The Crux project is an offshore gas development that is expected to be important in providing future supply for Shell's existing Prelude Floating Liquid Natural Gas (FLNG) facility. The proposed project consists of a not normally manned platform with five production wells. The platform will be connected to the Prelude FLNG facility via a 160km pipeline and will be operated remotely from the Prelude FLNG facility.</p> <p>The project is located in Commonwealth waters in the northern Browse Basin, 190 km offshore north-west Australia and 620 km north-east of Broome.</p> <p>Detailed information about these activities is available on our website (<a href="http://www.shell.com.au/crux">http://www.shell.com.au/crux</a>), together with maps of impacted areas. We have also attached relevant information to this email including four factsheets outlining the main areas of activity, relevant figures and pipeline coordinates in 1km intervals of the approximate 165km export pipeline (note exact pipeline coordinates are subject to change as the project progresses). Note the 500 m Petroleum Safety Zone will be in place and marked on all relevant marine navigation charts. The Safety Zone will remain in place for the life of the Crux project. A notice to mariners will be issued via the Australian Hydrographic Office in advance of any activities commencing.</p> <p>Attachments on this email included:</p> <ul style="list-style-type: none"> <li>• Shell's Crux Project</li> <li>• Seabed Survey Environment Plan Factsheet</li> <li>• Drilling Template Environment Plan Factsheet</li> <li>• Development Drilling Environment Plan Factsheet</li> <li>• Installation and Cold Commissioning Environment Plan Factsheet</li> <li>• Proposed Export pipeline coordinates (subject to change)</li> </ul> <p>Also provided were relevant coordinates, a map of the operations area and a map of the project location and the four overlapping WA Managed Fisheries in the activity / operational area for the Crux project.</p> <p>Further Consultation Opportunity and Information</p> <p>WAFIC will be in further contact via email to invite you to a consultation to seek any further clarification.</p> <p>Alternatively further information can be sort by:</p> <ul style="list-style-type: none"> <li>• visit <a href="http://www.shell.com.au/crux">http://www.shell.com.au/crux</a> for a more detailed breakdown of the Crux project</li> <li>• email: SDA-CRUX-PROJECT@shell.com</li> <li>• call: 1800 059 152.</li> </ul> <p>Can you please provide any concerns or feedback about the Environment Plans to this email by 26 May 2023.</p> <p><b>Email on 22 May 2023</b></p> <p>WAFIC Email invitation to a briefing session was sent to licence holders in the operational area on the 22 May 2023:</p> <p>To Commercial Licence Holders,</p>	<p>regarding the Crux Project have been appropriately addressed through the OPP and development of EPs – e.g., the description of environment (Section 7) was informed by baseline studies, timing/sensitivities and cumulative impacts considered in the assessment of impacts/risks (e.g., Section 9.2.2) and spill response measures described in detail (Section 9.13).</p> <p>With regard to the adjustment protocols developed for the NERA Collaboration EP, Shell commits to adopt these protocols when applicable to the unplanned activities described within this EP. This has been address in the implementation strategy Section 10.7.6.</p> <p>Based on consultation undertaken for preparation of this EP, no other additional measures have been adopted.</p> <p>Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.</p>	<p>7) was informed by baseline studies, timing/sensitivities and cumulative impacts considered in the assessment of impacts/risks (e.g. Section 9.2.2) and spill response measures described in detail (Section 9.13).</p> <p>With regard to the adjustment protocols developed for the NERA Collaboration EP, Shell commits to adopt these protocols when applicable to the unplanned activities described within this EP. This has been address in the implementation strategy Section 10.7.6.</p> <p>Based on consultation undertaken for preparation of this EP, no other additional measures have been adopted.</p> <p>Accordingly, consultation in the course of preparation of the EP has been completed in accordance with the OPPGS (E) Regulations.</p>



Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
			[REDACTED]	<p>Shell is inviting licence holders within the Crux Project Operations Area to participate in a briefing session to further inform the four Environment Plans (attached) previously delivered to you on the 28/04/23.</p> <p>The Crux Project which is in Commonwealth waters in the northern Browse Basin, 190 km offshore north-west Australia and 620 km north-east of Broome, is important in providing future supply for Shell's existing Prelude Floating Liquid Natural Gas facility.</p> <p>The briefing session will address any industry concerns and risks to the commercial fishing industry in the context of the marine environment. This session will be available online via zoom or in person at the WAFIC office in Fremantle.</p> <p><b>BRIEFING DATE:</b> Monday 29th May, 1:00–2:00pm AWST</p> <p>Please RSVP your attendance to (name redacted) @wafic.org.au and preferred method (online or in person at the WAFIC office) ahead of the briefing session to receive a zoom meeting invite/link. Please also direct any specific questions you have prior so these can be addressed in the briefing.</p> <p><b>Email on 2 June 2023</b></p> <p>Shell appreciates your guidance and support in consultation with your members and look forward to continuing meaningful consultation for future works.</p> <p>WAFIC's assessment of the works will be considered to inform production of our EPs.</p>		
156.	<b>Western Tuna and Billfish Fishery</b> (59 license holders)	30 March 2023 (Initial email)	No response	Not applicable	No feedback, objections or claims received.	
178.	<b>Pearl Producers Association</b>	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
179.	<b>Australian Southern Bluefin Tuna Industry Association</b>	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
180.	<b>Southern Bluefin Tuna Management Advisory Committee (SBTMAC)</b>	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
181.	<b>Tropical Tuna Management Advisory Committee</b>	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
182.	<b>TUNA Australia</b>	30 March 2023 (Initial email)  <b>Email to Shell</b> 30 March 2023 31 March 2023 05 April 2023 18 May 2023	[REDACTED]	<p><b>Email on 30 May 2023</b></p> <p>Many thanks for providing Tuna Australia's industry position statement on 'Engagement with companies seeking to conduct marine activities within Australian tuna longline fishery areas. On this occasion to ensure compliance with the revised NOPSEMA consultation guidelines, Shell has consulted directly with concession holders.</p> <p>We look forward to discussing your position statement further with NOPSEMA so it can be considered as the consultation mechanism for your members for future Environment Plans.</p>	<p><b>Assessment</b></p> <p>No objections or claims have been received about activity impacts or risks.</p> <p><b>Relevant Matters and Not Relevant Matters</b></p> <p>Provided information regarding preferred</p>	Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.

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Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
		<b>Email from Shell</b> 04 April 2023 09 May 2023 30 May 2023			engagement processes. Shell's response to the feedback received is set out here.	
<b>Industry</b>						
184.	<b>Carnarvon Energy Ltd</b>	08 May 2023 <i>(Initial email)</i>  <b>Email to Shell</b> 17 May 2023  <b>Email from Shell</b> 23 May 2023	<div style="background-color: black; width: 100px; height: 15px; margin-bottom: 5px;"></div> <div style="background-color: black; width: 400px; height: 15px;"></div>	<b>Email on 23 May 2023</b> Close out email sent which covered the following: <ul style="list-style-type: none"> <li>• Thanked relevant person for their feedback.</li> <li>• recapped on what we're consulting on and the obligation to consult under the regulations.</li> <li>• notified of the management of feedback if any details should be considered sensitive information.</li> <li>• reconfirmed contact details.</li> </ul>	<b>Assessment</b> No objections or claims have been received about activity impacts or risks.  <b>Relevant matters/ Non relevant matters</b> No relevant matters raised. Shell's response to the feedback received is set out here.	Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.
185.	<b>Finder No 1</b>	08 May 2023 <i>(Initial email)</i>	No response	Not applicable	No feedback, objections or claims received.	
186.	<b>Jadestone Energy</b>	08 May 2023 <i>(Initial email)</i>	No response	Not applicable	No feedback, objections or claims received.	
187.	<b>Melbana Energy AC/P70</b>	08 May 2023 <i>(Initial email)</i>	No response	Not applicable	No feedback, objections or claims received.	
188.	<b>PTTEP Australasia (Ashmore Cartier)</b>	08 May 2023 <i>(phone call – no email available. Number rings off).</i>	No contact made.	Not applicable	No feedback, objections or claims received.	
189.	<b>Santos Ltd</b>	08 May 2023 <i>(Initial email)</i>  <b>Email to Shell</b> 11 May 2023  <b>Email from Shell</b> 11 May 2023	<div style="background-color: black; width: 100px; height: 15px; margin-bottom: 5px;"></div> <div style="background-color: black; width: 200px; height: 15px;"></div>	<b>Email on 11 May 2023</b> Redirected email as per request.	No feedback, objections or claims received.	
190.	<b>Vulcan Exploration P/L</b>	08 May 2023 <i>(Initial email)</i>	No response	Not applicable	No feedback, objections or claims received.	
191.	<b>INPEX</b>	04 April 2023 <i>(Initial email)</i> 08 May 2023 <i>(Follow-up email)</i>	No response	Not applicable	No feedback, objections or claims received.	
<b>Tourism Operators</b>						
227.	<b>Mudz Enterprise</b>	22 April 2023 <i>(Initial email)</i>	No response	Not applicable	No feedback, objections or claims received.	

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ID	Name					
		08 May 2023 (Follow-up email)				
228.	Oolin Sunday Island Cultural Tours	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
229.	The Great Escape Charter Company	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
230.	True North Kimberley Cruises	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
374.	Unreel Adventure Safaris	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
Interest Groups						
375.	Australian Wildlife Conservancy	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
376.	10,000 Birds	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
377.	Australasian Seabird Group	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
378.	BirdLife WA	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
379.	Maritime Archaeological Association of Western Australia	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
380.	North Kimberley Land Conservation Committee	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
394.	Recfishwest	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	

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Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
<b>Non-Government Organisations</b>						
395.	<b>Ben and Jerry's</b>	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
396.	<b>Exmouth Sea Shepherd</b>	04 April 2023 (Initial email)  <b>Email from Shell</b> 03 May 2023 08 May 2023	No response	Not applicable	No feedback, objections or claims received.	
397.	<b>Surfrider Foundation Australia</b>	04 April 2023 (Initial email)	No response	Not applicable	No feedback, objections or claims received.	
398.	<b>Astron Environmental</b>	04 April 2023 (Initial email) 08 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
399.	<b>Australian Conservation Foundation</b>	01 May 2023 (Letter)	No response	Not applicable	No feedback, objections or claims received.	
400.	<b>Australian Marine Conservation Society</b>	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
401.	<b>Australian Marine Oil Spill Centre (AMOSOC)</b>	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
402.	<b>Conservation Council of WA</b>	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
403.	<b>Environmental Defenders Office WA</b>	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
404.	<b>Environs Kimberley</b>	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
405.	<b>Greenpeace</b>	04 April 2023 (Initial email) <b>Email to Shell</b> 05 June 2023	[REDACTED]	<b>Email on 23 June 2023</b> We refer to Greenpeace Australia Pacific Limited's (Greenpeace) letter to Shell Australia Pty Ltd (Shell) dated 5 June 2023 in relation to the four Crux Environment Plans (EPs) that Shell Australia is preparing for the Crux project (Letter). Thank you for taking the time to respond as part of our consultation process.	<b>Assessment</b> No objections or claims have been received about activity impacts or risks.	Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.

Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
		<p>Email from Shell</p> <p>09 May 2023</p> <p>23 June 2023</p>	<ul style="list-style-type: none"> <li>█ [Redacted]</li> <li>█ [Redacted]</li> <li>█ [Redacted]</li> <li>█ [Redacted]</li> <li>█ [Redacted]</li> <li>█ [Redacted]</li> <li>█ [Redacted]</li> <li>█ [Redacted]</li> <li>█ [Redacted]</li> <li>█ [Redacted]</li> <li>█ [Redacted]</li> </ul>	<p>Since Shell wrote to Greenpeace in April and May 2023, we have published full draft versions of the EPs for the Seabed Survey, Drilling Template and Development Drilling activities on our website. The Installation and Cold Commissioning EP will be published on our website in draft at a later date.</p> <p><b>Relevant Persons</b></p> <p>Shell's process has identified Greenpeace as a "relevant person" under regulation 11A 1(d) of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth) (Environment Regulations). We confirm that Shell will consult with all relevant persons, including Greenpeace, consistent with the requirements of relevant legislation and the National Offshore Petroleum Safety and Environmental Management Authority's (NOPSEMA) Consultation on offshore petroleum environment plans guidance, attached for your reference as Annexure A.</p> <p><b>Information Requests</b></p> <p>Given that Shell has identified Greenpeace as a Relevant Person, it is not necessary to answer questions 1 – 3 in the Letter.</p> <p><b>Greenhouse Gas Emissions</b></p> <p>The following is Shell's response to the information requested related to greenhouse gas (GHG) emissions for the four EPs listed in the Letter. Shell has considered the potential for 'indirect consequences' to arise in relation to the development and specifically the petroleum activity that is the subject of the EPs.</p> <p>The EPs do not permit the operation of other facilities required to produce and transport the reservoir hydrocarbons (i.e., natural gas). Notably in relation to s.527E(1)(b) and (2) of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act):</p> <ul style="list-style-type: none"> <li>• No natural gas is recovered as a result of the drilling activities. There are several subsequent, interposed petroleum activities that must be authorised under the Environment Regulations and then undertaken before any gas is capable of being recovered.</li> <li>• Gas consumption/combustion cannot reasonably be said to have been facilitated by a petroleum activity which has no resource extraction component. Even if some kind of facilitation could be observed, drilling activities cannot reasonably be characterised as an important or majority facilitator of that action. These activities are multiple steps removed from such a characterisation. Drilling activities are therefore not a primary action to a secondary action involving gas consumption/combustion.</li> <li>• There is a chain of events prior to resource (i.e., natural gas) recovery, and then a chain of events afterwards and ahead of any resource being consumed by a third party.</li> <li>• In this context, Shell has concluded that these activities do not facilitate to a major extent natural gas consumption/combustion and this petroleum activity is not a substantial cause of any associated scope 3 GHG emissions.</li> </ul> <p>Accordingly, Shell does not intend to include scope 3 GHG emissions information within the Seabed Survey EP or Drilling Template EP due to the minor nature and scale of these activities. However, the above content is planned to be included within the Development Drilling and Installation and Cold Commissioning EPs.</p> <p>At a later stage, Shell will also be submitting environment plans to extract, produce, and transport the natural gas. Shell will consider indirect consequences, such as associated scope 3 GHG emissions, in its future Production Operations Environment Plan (named the "Completions, Hot Commissioning, Start-Up and Operations Environment Plan"). Shell notes Greenpeace's requests and will respond later in the year with further information on this topic once the Production Operations Environment Plan is prepared.</p> <p>The Safeguard Mechanism Reforms proposed by the Department of Climate Change, Energy, the Environment and Water and administered</p>	<p><b>Relevant matters/ Non relevant matters</b></p> <p>Greenpeace requested information, which Shell considered the specifics of the request were not relevant matters however meeting the intent of what they were requesting, Shell supplied this information to Greenpeace as set out here. All other matters raised were considered not to be relevant matters.</p>	



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ID	Name					
				<p>by the Clean Energy Regulator will commence on 1 July 2023 and will apply from the Crux Project start-up phase. Shell and its contractors comply with all applicable laws when carrying out work, which includes the legislative changes that will be implemented as a result of the Safeguard Mechanism Reforms.</p> <p>Further, Australia is a signatory to the Paris Agreement, which intends to limit global temperature rise to 1.5-degree C. Australia's Climate Change Target is a 43% reduction in emissions by 2030 and NZE by 2050. The current Australian Labor government is increasing decarbonisation commitments, as evidenced by the Safeguard Mechanism Reforms. New gas fields that backfill existing LNG facilities will be subject to international best practice baselines for reservoir CO2 emissions, which is defined as zero given the existence of low-CO2 fields. The Crux Project will be required to offset 100% of its reservoir CO2.</p> <p><b>Spill Modelling</b></p> <p>As part of the Crux EP consultation process, Shell publishes draft copies of EPs online to allow access by Relevant Persons, with the intent to facilitate feedback on the information presented. Each of these EPs have a detailed section which covers the establishment of the worst-case credible spill scenarios and associated modelling completed to inform spill risk. Please refer to the following sections of these EPs to understand how Shell establishes worst case credible spills, timeframes, and modelling inputs for each EP:</p> <ul style="list-style-type: none"> <li>• Crux Seabed Survey Environment Plan – Section 9.12: Emergency Events; and</li> <li>• Crux Drilling template Environment Plan - Section 9.12: Emergency Events; and</li> <li>• Crux Development Drilling Environment Plan Section 9.14: Emergency Events; and</li> <li>• Crux Installation and Cold Commissioning Environment Plan (not yet published, but please see Annexure B: Emergency Events, which is attached to this letter for your information).</li> </ul> <p>Should Greenpeace have any queries on or require any further information on the Crux EP process (not covered above or in the full publications of the EPs), please contact us via SDA-CRUX-PROJECT@shell.com or 1800 059 152. Shell would be happy to meet with Greenpeace to discuss further. Shell intends to submit the EPs to NOPSEMA by 10 July 2023. We will be available to meet with Greenpeace at any time prior to this date.</p>		
406.	High Seas Alliance	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
407.	Martowarra Fitzroy River Council	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
408.	Protect Ningaloo	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
409.	Protecting the Kimberley	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	

The version previously published contained text quoted directly from responses by relevant persons, contrary to the requirements of the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 (section 26(8)). That text has now been redacted. This EP remains in force.

Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
410.	Save the Kimberley	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
411.	Sea Turtle.org	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
412.	The Wilderness Society	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
413.	United Nations	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
414.	WA Marine Science Institute	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
415.	WA Parks Foundation	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
427.	WWF	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
<b>Academic and Research</b>						
428.	Deep History of Sea Country Research Project	04 April 2023 (Initial email)  Email to Shell 08 May 2023  Email from Shell 08 May 2023 11 May 2023 18 May 2023	██████████ ██████████	<p><b>Email on 10 May 2023</b></p> <p>Submerged landscapes and sites, especially Indigenous is an emerging field. When Shell originally carried out baseline surveys in the development process of the overall project impact assessment from about 2016-2019 (outlined within Crux OPP - <a href="https://www.nopsema.gov.au/sites/default/files/documents/2021-03/A742335.pdf">https://www.nopsema.gov.au/sites/default/files/documents/2021-03/A742335.pdf</a> - the baseline surveys did not include a submerged archaeological assessment or report.</p> <p>However, since the growing understanding of underwater archaeology in more recent times, Shell have commenced an underwater archaeological assessment of our project area and the larger planning areas that includes the assessment and likelihood of underwater Indigenous tangible heritage, including drowned cultural landscapes and the use of predictive modelling on land usage based on known anthropological data. This assessment is still underway and is in addition to the standard searches of existing databases of Indigenous and non-Indigenous heritage.</p> <p>This information will be used to inform an impact assessment on any values (if any) identified through this assessment, as well as the need for subsequent development of controls where potential impacts require mitigation.</p> <p>The above is in addition to engaging with Indigenous people on their values and interests (including heritage).</p>	<p><b>Assessment</b></p> <p>No objections or claims have been received about activity impacts or risks.</p> <p><b>Relevant matters/ Non relevant matters</b></p> <p>Queried Shell's approach to managing potential impacts on submerged archaeology. Shell's response to the feedback received is set out here.</p>	Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.

The version previously published contained text quoted directly from responses by relevant persons, contrary to the requirements of the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 (section 26(8)). That text has now been redacted. This EP remains in force.

Relevant Person		Dates of correspondence and follow up	Summary of relevant person response	Summary of Shell's response	Assessment of merits of objection or claim. Relevant matters / non-relevant matters	Measures adopted and Consultation Carried Out
ID	Name					
528.	Fisheries Research and Development Corporation (FRDC)	04 April 2023 (Initial email) 09 May 2023 (Follow-up email)	No response	Not applicable	No feedback, objections or claims received.	
<b>Industry Representative Bodies</b>						
436.	Australian Energy Producers	04 April 2023 (calendar invite)  Email from Shell 20 April 2023 04 May 2023  In person 27 April 2023	<p>[REDACTED]</p> <p>[REDACTED]</p> <ul style="list-style-type: none"> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> </ul>	<p><b>In person on 27 April</b></p> <p>Shell provided the following responses to the feedback:</p> <ul style="list-style-type: none"> <li>• EPs must consider waste management with fairly standard controls - waste is either discharged or bought back to land, in line with MARPOL requirements.</li> <li>• Emissions are fairly limited in terms of CO<sub>2</sub>. The Crux Operations EP and Prelude EPs will need more specific information around CO<sub>2</sub> emissions.</li> <li>• Shell has global ambitions to achieve net zero emissions by 2050.</li> <li>• The Crux Offshore Project Proposal (OPP), which was accepted by NOPSEMA in 2020 and is a publicly available document, also references this.</li> <li>• NOPSEMA guidance and community expectations are clear that this is something that we need to include.</li> <li>• The current number of relevant persons involved in our consultations is ~500, last year it was ~70.</li> </ul>	<p><b>Assessment</b></p> <p>No objections or claims have been received about activity impacts or risks.</p> <p><b>Relevant matters/ Non relevant matters</b></p> <p>Queried some aspects of the project. Shell's response to the feedback received is set out here.</p>	<p>Based on consultation undertaken for preparation of this EP, no additional measures have been adopted.</p>

	<b>Shell Australia Pty Ltd</b>	Revision 6
	<b>Crux Seabed Survey Environment Plan</b>	16/11/2023

## Appendix C      EPBC Act Protected Matters Reports

This appendix consists of two reports issued by the Australian Government Department of the Environment and Energy (renamed to Department of Agriculture, Water and the Environment at the time of submission of this EP):

- EPBC Act Protected Matters Report (Seabed Survey Operational Area, Report created: 07/07/23 (24 pages) – PMST input data shown in Figure A-1
- EPBC Act Protected Matters Report, Seabed Survey Planning Area Report created: 07/07/23 (37 pages) – PMST input data shown in Figure A2

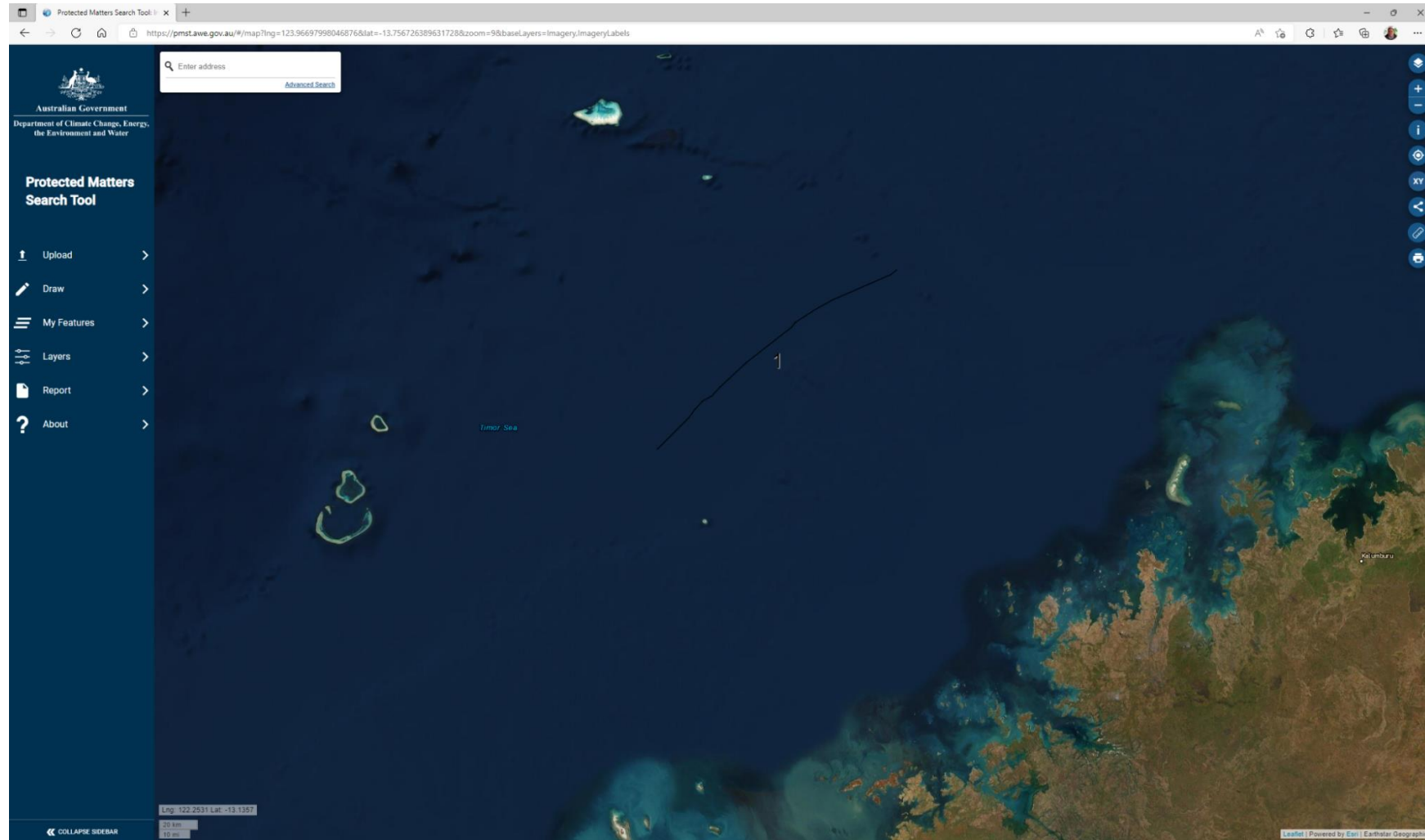


Figure A-1: GIS data layer of the Operational Area input into the PMST





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: 07-Jul-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](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	1
<a href="#">Listed Threatened Ecological Communities:</a>	None
<a href="#">Listed Threatened Species:</a>	23
<a href="#">Listed Migratory Species:</a>	36

## 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.

<a href="#">Commonwealth Lands:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	68
<a href="#">Whales and Other Cetaceans:</a>	23
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	1

## Extra Information

This part of the report provides information that may also be relevant to the area you have

<a href="#">State and Territory Reserves:</a>	None
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">EPBC Act Referrals:</a>	40
<a href="#">Key Ecological Features (Marine):</a>	2
<a href="#">Biologically Important Areas:</a>	5
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

### Commonwealth Marine Area

[\[ Resource Information \]](#)

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

### Feature Name

EEZ and Territorial Sea

### Listed Threatened Species

[\[ Resource Information \]](#)

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

### Scientific Name

### Threatened Category

### Presence Text

#### BIRD

#### [Anous tenuirostris melanops](#)

Australian Lesser Noddy [26000]

Vulnerable

Foraging, feeding or related behaviour likely to occur within area

#### [Calidris canutus](#)

Red Knot, Knot [855]

Endangered

Species or species habitat may occur within area

#### [Calidris ferruginea](#)

Curlew Sandpiper [856]

Critically Endangered

Species or species habitat may occur within area

#### [Numenius madagascariensis](#)

Eastern Curlew, Far Eastern Curlew [847]

Critically Endangered

Species or species habitat may occur within area

#### [Papasula abbotti](#)

Abbott's Booby [59297]

Endangered

Species or species habitat may occur within area

#### FISH

#### [Thunnus maccoyii](#)

Southern Bluefin Tuna [69402]

Conservation Dependent

Breeding known to occur within area

#### MAMMAL

Scientific Name	Threatened Category	Presence Text
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area

## REPTILE

<a href="#">Aipysurus apraefrontalis</a> Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Aipysurus foliosquama</a> Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
<b>SHARK</b>		
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
<a href="#">Glyphis garricki</a> Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat may occur within area
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Sphyrna lewini</a> Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area
<b>Listed Migratory Species</b> <span style="float: right;"><a href="#">[ Resource Information ]</a></span>		
Scientific Name	Threatened Category	Presence Text
<b>Migratory Marine Birds</b>		
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
<a href="#">Sula sula</a> Red-footed Booby [1023]		Breeding known to occur within area
<b>Migratory Marine Species</b>		
<a href="#">Anoxypristis cuspidata</a> Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Isurus oxyrinchus</a> Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
<a href="#">Isurus paucus</a> Longfin Mako [82947]		Species or species habitat likely to occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Species or species habitat known to occur within area
<a href="#">Mobula alfredi as Manta alfredi</a> Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
<a href="#">Mobula birostris as Manta birostris</a> Giant Manta Ray [90034]		Species or species habitat likely to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

## Other Matters Protected by the EPBC Act

Listed Marine Species		[ <a href="#">Resource Information</a> ]
Scientific Name	Threatened Category	Presence Text
Bird		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area
<a href="#">Anous tenuirostris melanops</a> Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Papasula abbotti</a> Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
<a href="#">Sula sula</a> Red-footed Booby [1023]		Breeding known to occur within area
<b>Fish</b>		
<a href="#">Bhanotia fasciolata</a> Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
<a href="#">Campichthys tricarinatus</a> Three-keel Pipefish [66192]		Species or species habitat may occur within area
<a href="#">Choeroichthys brachysoma</a> Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
<a href="#">Choeroichthys suillus</a> Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
<a href="#">Corythoichthys amplexus</a> Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
<a href="#">Corythoichthys flavofasciatus</a> Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Corythoichthys intestinalis</a> Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
<a href="#">Corythoichthys schultzi</a> Schultz's Pipefish [66205]		Species or species habitat may occur within area
<a href="#">Cosmocampus banneri</a> Roughridge Pipefish [66206]		Species or species habitat may occur within area
<a href="#">Doryrhamphus dactyliophorus</a> Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
<a href="#">Doryrhamphus excisus</a> Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
<a href="#">Doryrhamphus janssi</a> Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
<a href="#">Filicampus tigris</a> Tiger Pipefish [66217]		Species or species habitat may occur within area
<a href="#">Halicampus brocki</a> Brock's Pipefish [66219]		Species or species habitat may occur within area
<a href="#">Halicampus dunckeri</a> Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
<a href="#">Halicampus grayi</a> Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
<a href="#">Halicampus spinirostris</a> Spiny-snout Pipefish [66225]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Haliichthys taeniophorus</a> Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
<a href="#">Hippichthys penicillus</a> Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
<a href="#">Hippocampus angustus</a> Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
<a href="#">Hippocampus histrix</a> Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
<a href="#">Hippocampus kuda</a> Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
<a href="#">Hippocampus planifrons</a> Flat-face Seahorse [66238]		Species or species habitat may occur within area
<a href="#">Hippocampus spinosissimus</a> Hedgehog Seahorse [66239]		Species or species habitat may occur within area
<a href="#">Micrognathus micronotopterus</a> Tidepool Pipefish [66255]		Species or species habitat may occur within area
<a href="#">Solegnathus hardwickii</a> Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
<a href="#">Solegnathus lettiensis</a> Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
<a href="#">Solenostomus cyanopterus</a> Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus bicoarctatus</a> Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus longirostris</a> Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
<b>Reptile</b>		
<a href="#">Acalyptophis peronii</a> Horned Seasnake [1114]		Species or species habitat may occur within area
<a href="#">Aipysurus apraefrontalis</a> Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Aipysurus duboisii</a> Dubois' Seasnake [1116]		Species or species habitat may occur within area
<a href="#">Aipysurus eydouxii</a> Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
<a href="#">Aipysurus foliosquama</a> Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Aipysurus laevis</a> Olive Seasnake [1120]		Species or species habitat may occur within area
<a href="#">Astrotia stokesii</a> Stokes' Seasnake [1122]		Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chitulia ornata as Hydrophis ornatus</a> Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Disteira kingii</a> Spectacled Seasnake [1123]		Species or species habitat may occur within area
<a href="#">Disteira major</a> Olive-headed Seasnake [1124]		Species or species habitat may occur within area
<a href="#">Emydocephalus annulatus</a> Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
<a href="#">Enhydrina schistosa</a> Beaked Seasnake [1126]		Species or species habitat may occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Hydrophis elegans</a> Elegant Seasnake [1104]		Species or species habitat may occur within area
<a href="#">Hydrophis macdowelli as Hydrophis mcdowelli</a> Small-headed Seasnake [75601]		Species or species habitat may occur within area
<a href="#">Lapemis curtus as Lapemis hardwickii</a> Spine-bellied Seasnake [83554]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Leioselasma coggeri</a> as <a href="#">Hydrophis coggeri</a> Black-headed Sea Snake, Slender-necked Seasnake [87373]		Species or species habitat may occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pelamis platurus</a> 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
<b>Mammal</b>		
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Feresa attenuata</a> Pygmy Killer Whale [61]		Species or species habitat may occur within area



Current Scientific Name	Status	Type of Presence
<a href="#">Globicephala macrorhynchus</a> Short-finned Pilot Whale [62]		Species or species habitat may occur within area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
<a href="#">Kogia breviceps</a> Pygmy Sperm Whale [57]		Species or species habitat may occur within area
<a href="#">Kogia sima</a> Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Species or species habitat known to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Peponocephala electra</a> Melon-headed Whale [47]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pseudorca crassidens</a> False Killer Whale [48]		Species or species habitat likely to occur within area
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
<a href="#">Stenella coeruleoalba</a> Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
<a href="#">Stenella longirostris</a> Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
<a href="#">Steno bredanensis</a> Rough-toothed Dolphin [30]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area
<a href="#">Ziphius cavirostris</a> Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

### Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Dec - Jan		
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Nesting	Known to occur

### Extra Information

EPBC Act Referrals <span style="float: right;"><a href="#">[ Resource Information ]</a></span>			
Title of referral	Reference	Referral Outcome	Assessment Status
<a href="#">Project Crux Cable Lay and Operation</a>	2022/09441		Completed
<b>Controlled action</b>			
<a href="#">Develop Ichthys gas-condensate field permit area W</a>	2006/2767	Controlled Action	Completed
<a href="#">Development of Browse Basin Gas Fields (Upstream)</a>	2008/4111	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Controlled action</b>			
<a href="#">Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline</a>	2008/4208	Controlled Action	Post-Approval
<a href="#">Prelude Floating Liquefied Natural Gas Facility and Gas Field Development</a>	2008/4146	Controlled Action	Post-Approval
<b>Not controlled action</b>			
<a href="#">Adele Trend TQ3D Seismic Survey</a>	2001/252	Not Controlled Action	Completed
<a href="#">Crux-A and Crux-B appraisal wells, Petroleum Permit Area AC/P23</a>	2006/2748	Not Controlled Action	Completed
<a href="#">Crux gas-liquids development in permit AC/P23</a>	2006/3154	Not Controlled Action	Completed
<a href="#">Drilling of 12 Hydrocarbon Exploration Wells, Permit Area WA-371-P</a>	2006/3005	Not Controlled Action	Completed
<a href="#">Echuca Shoals-2 Exploration of Appraisal Well</a>	2006/3020	Not Controlled Action	Completed
<a href="#">Exploration Well AC/P23</a>	2001/234	Not Controlled Action	Completed
<a href="#">Kaleidoscope exploration well</a>	2001/182	Not Controlled Action	Completed
<a href="#">Project Highclere Geophysical Survey</a>	2021/9023	Not Controlled Action	Completed
<b>Not controlled action (particular manner)</b>			
<a href="#">2D Marine Seismic Survey</a>	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D Seismic Marine Survey</a>	2001/363	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D Seismic survey</a>	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D seismic survey in permit areas WA-274P and WA-281P</a>	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D Marine Seismic Survey, Permit AC/P 23</a>	2005/2364	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
		(Particular Manner)	
<a href="#">AC/P37 3D Seismic Survey Ashmore Cartier</a>	2007/3774	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Aurora MC3D Marine Seismic Survey</a>	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Bassett 3D Marine Seismic Survey</a>	2010/5538	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Braveheart 2D Infill Marine Seismic Survey 100km offshore</a>	2008/4442	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Braveheart 2D Marine Seismic Survey</a>	2005/2322	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Canis 3D Marine Seismic Survey</a>	2008/4492	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Cartier East and Cartier West 3D Marine Seismic Surveys</a>	2009/5230	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Caswell MC3D Marine Seismic Survey</a>	2012/6594	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Deep Water Northwest Shelf 2D Seismic Survey</a>	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Exploration Drilling Campaign</a>	2011/6047	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Exploration Drilling Campaign, Browse Basin, WA-341-P, AC-P36 and WA-343-P</a>	2013/6898	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">Gicea 3D Marine Seismic Survey</a>	2008/4389	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Ichthys 3D Marine Seismic Survey</a>	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Kingtree &amp; Ironstone-1 Exploration Wells</a>	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Octantis 3D Marine Seismic Survey, Permit Area AC/P41 off northern Western Australia</a>	2007/3369	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Offshore Fibre Optic Cable Network Construction &amp; Operation, Port Hedland WA to Darwin NT</a>	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Schild Phase 11 MC3D Marine Seismic Survey, Browse Basin</a>	2013/6894	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Vampire 2D Non Exclusive Seismic Survey, WA</a>	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Westralia SPAN Marine Seismic Survey, WA &amp; NT</a>	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
<b>Referral decision</b>			
<a href="#">2D Marine Seismic Survey</a>	2008/4623	Referral Decision	Completed
<a href="#">BRSN08 3D Marine Seismic Survey</a>	2008/4582	Referral Decision	Completed
<a href="#">Seismic Data Acquisition, Browse Basin</a>	2010/5475	Referral Decision	Completed

## Key Ecological Features

[ [Resource Information](#) ]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
------	--------



Name	Region
<a href="#">Ancient coastline at 125 m depth contour</a>	North-west
<a href="#">Continental Slope Demersal Fish Communities</a>	North-west

## Biologically Important Areas

Scientific Name	Behaviour	Presence
<b>Seabirds</b>		
<a href="#">Ardena pacifica</a> Wedge-tailed Shearwater [84292]	Breeding	Known to occur
<a href="#">Fregata ariel</a> Lesser Frigatebird [1012]	Breeding	Known to occur
<a href="#">Fregata minor</a> Greater Frigatebird [1013]	Breeding	Known to occur
<a href="#">Sula sula</a> Red-footed Booby [1023]	Breeding	Known to occur
<b>Sharks</b>		
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Foraging	Known to occur

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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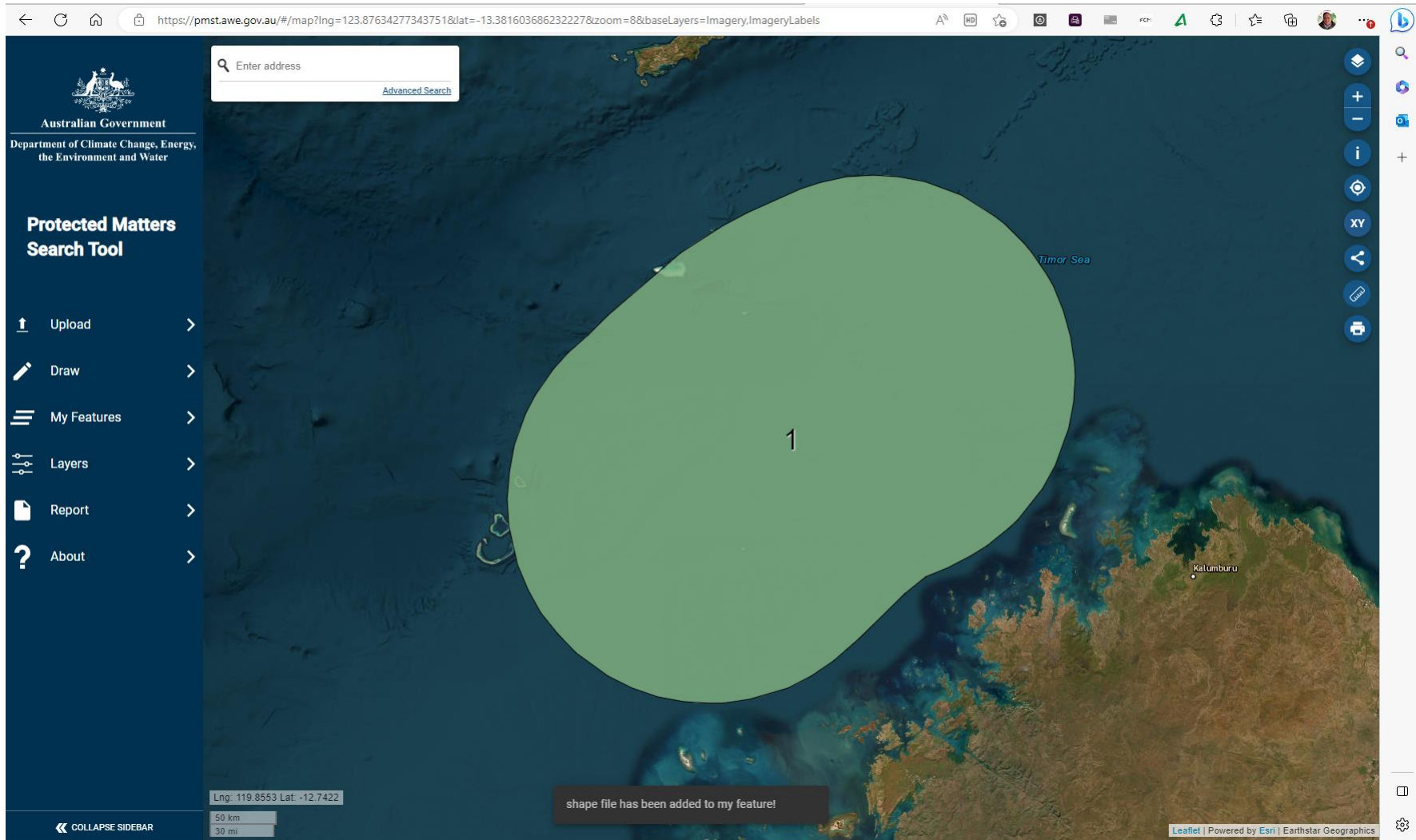


Figure A-2: GIS data layer of the Planning Area input into the PMST





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: 07-Jul-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](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	1
<a href="#">Wetlands of International Importance (Ramsar)</a>	1
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	2
<a href="#">Listed Threatened Ecological Communities:</a>	None
<a href="#">Listed Threatened Species:</a>	27
<a href="#">Listed Migratory Species:</a>	59

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

<a href="#">Commonwealth Lands:</a>	3
<a href="#">Commonwealth Heritage Places:</a>	2
<a href="#">Listed Marine Species:</a>	92
<a href="#">Whales and Other Cetaceans:</a>	27
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	7
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	1

## Extra Information

This part of the report provides information that may also be relevant to the area you have

<a href="#">State and Territory Reserves:</a>	5
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Nationally Important Wetlands:</a>	1
<a href="#">EPBC Act Referrals:</a>	106
<a href="#">Key Ecological Features (Marine):</a>	5
<a href="#">Biologically Important Areas:</a>	33
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

### National Heritage Places [\[ Resource Information \]](#)

Name	State	Legal Status
Natural		
<a href="#">The West Kimberley</a>	WA	Listed place

### Wetlands of International Importance (Ramsar Wetlands) [\[ Resource Information \]](#)

Ramsar Site Name	Proximity
<a href="#">Ashmore reef national nature reserve</a>	Within Ramsar site

### Commonwealth Marine Area [\[ Resource Information \]](#)

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

Feature Name
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
<b>BIRD</b>		
<a href="#">Anous tenuirostris melanops</a> Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Limosa lapponica menzbieri</a> Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Papasula abbotti</a> Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
<b>FISH</b>		
<a href="#">Thunnus maccoyii</a> Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
<b>MAMMAL</b>		
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<b>REPTILE</b>		
<a href="#">Aipysurus apraefrontalis</a> Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Aipysurus foliosquama</a> Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<b>SHARK</b>		
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
<a href="#">Glyphis garricki</a> Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat may occur within area
<a href="#">Pristis clavata</a> Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Sphyrna lewini</a> Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

## Listed Migratory Species [ [Resource Information](#) ]

Scientific Name	Threatened Category	Presence Text
<b>Migratory Marine Birds</b>		
<a href="#">Anous stolidus</a> Common Noddy [825]		Breeding known to occur within area
<a href="#">Ardenna pacifica</a> Wedge-tailed Shearwater [84292]		Breeding known to occur within area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
<a href="#">Hydroprogne caspia</a> Caspian Tern [808]		Breeding known to occur within area
<a href="#">Onychoprion anaethetus</a> Bridled Tern [82845]		Breeding known to occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Breeding known to occur within area
<a href="#">Phaethon rubricauda</a> Red-tailed Tropicbird [994]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding known to occur within area
<a href="#">Sternula albifrons</a> Little Tern [82849]		Congregation or aggregation known to occur within area
<a href="#">Sula dactylatra</a> Masked Booby [1021]		Breeding known to occur within area
<a href="#">Sula leucogaster</a> Brown Booby [1022]		Breeding known to occur within area
<a href="#">Sula sula</a> Red-footed Booby [1023]		Breeding known to occur within area
<b>Migratory Marine Species</b>		
<a href="#">Anoxypristis cuspidata</a> Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Crocodylus porosus</a> Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Dugong dugon</a> Dugong [28]		Breeding known to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Isurus oxyrinchus</a> Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
<a href="#">Isurus paucus</a> Longfin Mako [82947]		Species or species habitat likely to occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Mobula alfredi</a> as <a href="#">Manta alfredi</a> Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
<a href="#">Mobula birostris</a> as <a href="#">Manta birostris</a> Giant Manta Ray [90034]		Species or species habitat likely to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Orcaella heinsohni</a> Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pristis clavata</a> Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Sousa sahalensis</a> as <a href="#">Sousa chinensis</a> Australian Humpback Dolphin [87942]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Cecropis daurica</a> Red-rumped Swallow [80610]		Species or species habitat may occur within area
<a href="#">Cuculus optatus</a> Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
<a href="#">Hirundo rustica</a> Barn Swallow [662]		Species or species habitat known to occur within area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat known to occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat known to occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Acrocephalus orientalis</a> Oriental Reed-Warbler [59570]		Species or species habitat known to occur within area
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Limnodromus semipalmatus</a> Asian Dowitcher [843]		Species or species habitat known to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Thalasseus bergii</a> Greater Crested Tern [83000]		Breeding known to occur within area

## Other Matters Protected by the EPBC Act

### Commonwealth Lands [\[ Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Unknown	
Commonwealth Land - [52278]	ACI
Commonwealth Land - [52277]	ACI
Commonwealth Land - [52276]	ACI

### Commonwealth Heritage Places [\[ Resource Information \]](#)

Name	State	Status
Natural		
<a href="#">Ashmore Reef National Nature Reserve</a>	EXT	Listed place
<a href="#">Scott Reef and Surrounds - Commonwealth Area</a>	EXT	Listed place

Listed Marine Species		[ Resource Information ]
Scientific Name	Threatened Category	Presence Text
Bird		
<a href="#">Acrocephalus orientalis</a> Oriental Reed-Warbler [59570]		Species or species habitat known to occur within area overfly marine area
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Anous minutus</a> Black Noddy [824]		Breeding known to occur within area
<a href="#">Anous stolidus</a> Common Noddy [825]		Breeding known to occur within area
<a href="#">Anous tenuirostris melanops</a> Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
<a href="#">Ardenna pacifica as Puffinus pacificus</a> Wedge-tailed Shearwater [84292]		Breeding known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Cecropis daurica as Hirundo daurica</a> Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
<a href="#">Hirundo rustica</a> Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area
<a href="#">Hydroprogne caspia as Sterna caspia</a> Caspian Tern [808]		Breeding known to occur within area
<a href="#">Limnodromus semipalmatus</a> Asian Dowitcher [843]		Species or species habitat known to occur within area overfly marine area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Onychoprion anaethetus</a> as <a href="#">Sterna anaethetus</a> Bridled Tern [82845]		Breeding known to occur within area
<a href="#">Papasula abbotti</a> Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Breeding known to occur within area
<a href="#">Phaethon rubricauda</a> Red-tailed Tropicbird [994]		Breeding known to occur within area
<a href="#">Rostratula australis</a> as <a href="#">Rostratula benghalensis (sensu lato)</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding known to occur within area
<a href="#">Sternula albifrons</a> as <a href="#">Sterna albifrons</a> Little Tern [82849]		Congregation or aggregation known to occur within area
<a href="#">Sula dactylatra</a> Masked Booby [1021]		Breeding known to occur within area
<a href="#">Sula leucogaster</a> Brown Booby [1022]		Breeding known to occur within area
<a href="#">Sula sula</a> Red-footed Booby [1023]		Breeding known to occur within area
<a href="#">Thalasseus bengalensis</a> as <a href="#">Sterna bengalensis</a> Lesser Crested Tern [66546]		Breeding known to occur within area
<a href="#">Thalasseus bergii</a> as <a href="#">Sterna bergii</a> Greater Crested Tern [83000]		Breeding known to occur within area
<b>Fish</b>		
<a href="#">Bhanotia fasciolata</a> Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Campichthys tricarinatus</a> Three-keel Pipefish [66192]		Species or species habitat may occur within area
<a href="#">Choeroichthys brachysoma</a> Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
<a href="#">Choeroichthys suillus</a> Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
<a href="#">Corythoichthys amplexus</a> Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
<a href="#">Corythoichthys flavofasciatus</a> Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
<a href="#">Corythoichthys intestinalis</a> Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
<a href="#">Corythoichthys schultzi</a> Schultz's Pipefish [66205]		Species or species habitat may occur within area
<a href="#">Cosmocampus banneri</a> Roughridge Pipefish [66206]		Species or species habitat may occur within area
<a href="#">Doryrhamphus dactyliophorus</a> Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
<a href="#">Doryrhamphus excisus</a> Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
<a href="#">Doryrhamphus janssi</a> Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Filicampus tigris</a> Tiger Pipefish [66217]		Species or species habitat may occur within area
<a href="#">Halicampus brocki</a> Brock's Pipefish [66219]		Species or species habitat may occur within area
<a href="#">Halicampus dunckeri</a> Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
<a href="#">Halicampus grayi</a> Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
<a href="#">Halicampus spinostris</a> Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
<a href="#">Haliichthys taeniophorus</a> Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
<a href="#">Hippichthys penicillus</a> Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
<a href="#">Hippocampus angustus</a> Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
<a href="#">Hippocampus histrix</a> Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
<a href="#">Hippocampus kuda</a> Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
<a href="#">Hippocampus planifrons</a> Flat-face Seahorse [66238]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Hippocampus spinosissimus</a> Hedgehog Seahorse [66239]		Species or species habitat may occur within area
<a href="#">Micrognathus micronotopterus</a> Tidepool Pipefish [66255]		Species or species habitat may occur within area
<a href="#">Solegnathus hardwickii</a> Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
<a href="#">Solegnathus lettiensis</a> Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
<a href="#">Solenostomus cyanopterus</a> Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus bicoarctatus</a> Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus longirostris</a> Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
<b>Mammal</b>		
<a href="#">Dugong dugon</a> Dugong [28]		Breeding known to occur within area
<b>Reptile</b>		
<a href="#">Acalyptophis peronii</a> Horned Seasnake [1114]		Species or species habitat may occur within area
<a href="#">Aipysurus apraefrontalis</a> Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Aipysurus duboisii</a> Dubois' Seasnake [1116]		Species or species habitat may occur within area
<a href="#">Aipysurus eydouxii</a> Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
<a href="#">Aipysurus foliosquama</a> Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Aipysurus fuscus</a> Dusky Seasnake [1119]		Species or species habitat known to occur within area
<a href="#">Aipysurus laevis</a> Olive Seasnake [1120]		Species or species habitat may occur within area
<a href="#">Astrotia stokesii</a> Stokes' Seasnake [1122]		Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chitulia ornata as Hydrophis ornatus</a> Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
<a href="#">Crocodylus porosus</a> Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Disteira kingii</a> Spectacled Seasnake [1123]		Species or species habitat may occur within area
<a href="#">Disteira major</a> Olive-headed Seasnake [1124]		Species or species habitat may occur within area
<a href="#">Emydocephalus annulatus</a> Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
<a href="#">Enhydrina schistosa</a> Beaked Seasnake [1126]		Species or species habitat may occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Hydrelaps darwiniensis</a> Black-ringed Seasnake [1100]		Species or species habitat may occur within area
<a href="#">Hydrophis elegans</a> Elegant Seasnake [1104]		Species or species habitat may occur within area
<a href="#">Hydrophis macdowelli as Hydrophis mcdowelli</a> Small-headed Seasnake [75601]		Species or species habitat may occur within area
<a href="#">Lapemis curtus as Lapemis hardwickii</a> Spine-bellied Seasnake [83554]		Species or species habitat may occur within area
<a href="#">Leioselasma coggeri as Hydrophis coggeri</a> Black-headed Sea Snake, Slender-necked Seasnake [87373]		Species or species habitat may occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Pelamis platurus</a> 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
<b>Mammal</b>		
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Feresa attenuata</a> Pygmy Killer Whale [61]		Species or species habitat may occur within area
<a href="#">Globicephala macrorhynchus</a> Short-finned Pilot Whale [62]		Species or species habitat may occur within area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area



Current Scientific Name	Status	Type of Presence
<a href="#">Kogia breviceps</a> Pygmy Sperm Whale [57]		Species or species habitat may occur within area
<a href="#">Kogia sima</a> Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
<a href="#">Lagenodelphis hosei</a> Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Breeding known to occur within area
<a href="#">Mesoplodon densirostris</a> Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
<a href="#">Orcaella heinsohni</a> Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Peponocephala electra</a> Melon-headed Whale [47]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pseudorca crassidens</a> False Killer Whale [48]		Species or species habitat likely to occur within area
<a href="#">Sousa sahalensis</a> Australian Humpback Dolphin [87942]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
<a href="#">Stenella coeruleoalba</a> Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
<a href="#">Stenella longirostris</a> Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
<a href="#">Steno bredanensis</a> Rough-toothed Dolphin [30]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area
<a href="#">Ziphius cavirostris</a> 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	
Kimberley	Habitat Protection Zone (IUCN IV)	
Kimberley	Multiple Use Zone (IUCN VI)	
Oceanic Shoals	Multiple Use Zone (IUCN VI)	
Kimberley	National Park Zone (IUCN II)	
Ashmore Reef	Recreational Use Zone (IUCN IV)	

Park Name	Zone & IUCN Categories
Ashmore Reef	Sanctuary Zone (IUCN Ia)
Cartier Island	Sanctuary Zone (IUCN Ia)

### Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Dec - Jan		
<a href="#">Chelonia mydas</a>		
Green Turtle [1765]	Nesting	Known to occur

### Extra Information

#### State and Territory Reserves [\[ Resource Information \]](#)

Protected Area Name	Reserve Type	State
Browse Island	Nature Reserve	WA
North Kimberley	Marine Park	WA
North Lalang-garram	Marine Park	WA
Scott Reef	Nature Reserve	WA
Unnamed WA41775	5(1)(h) Reserve	WA

#### Nationally Important Wetlands [\[ Resource Information \]](#)

Wetland Name	State
<a href="#">Ashmore Reef</a>	EXT

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

Title of referral	Reference	Referral Outcome	Assessment Status
<a href="#">Browse to North West Shelf Development, Indian Ocean, WA</a>	2018/8319		Approval
<a href="#">Project Crux Cable Lay and Operation</a>	2022/09441		Completed

#### Controlled action

Controlled action	Reference	Controlled Action	Post-Approval
<a href="#">2-D seismic survey Scott Reef</a>	2000/125	Controlled Action	Post-Approval
<a href="#">Audacious Oil Field Standalone Development</a>	2001/407	Controlled Action	Completed
<a href="#">Browse FLNG Development, Commonwealth Waters</a>	2013/7079	Controlled Action	Post-Approval
<a href="#">Conduct an exploration drilling campaign</a>	2010/5718	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Controlled action</b>			
<a href="#">Decommissioning of Challis Oilfield</a>	2003/942	Controlled Action	Post-Approval
<a href="#">Develop Ichthys gas-condensate field permit area W</a>	2006/2767	Controlled Action	Completed
<a href="#">Development of Browse Basin Gas Fields (Upstream)</a>	2008/4111	Controlled Action	Completed
<a href="#">Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline</a>	2008/4208	Controlled Action	Post-Approval
<a href="#">Montara 4, 5, and 6 Oil Production Wells, and Montara 3 Gas Re-Injection Well</a>	2002/755	Controlled Action	Post-Approval
<a href="#">Prelude Floating Liquefied Natural Gas Facility and Gas Field Development</a>	2008/4146	Controlled Action	Post-Approval
<a href="#">PTTEP AA Floating LNG Facility</a>	2011/6025	Controlled Action	Completed
<a href="#">Torosa South Initial Appraisal Drilling</a>	2007/3500	Controlled Action	Completed
<b>Not controlled action</b>			
<a href="#">3D marine seismic survey in WA 314P and WA 315P</a>	2004/1927	Not Controlled Action	Completed
<a href="#">Adele Trend TQ3D Seismic Survey</a>	2001/252	Not Controlled Action	Completed
<a href="#">AEC International Hydrocarbon Well Puffin 6</a>	2000/36	Not Controlled Action	Completed
<a href="#">Audacious-3 oil drilling well</a>	2003/1042	Not Controlled Action	Completed
<a href="#">Coot-1 hydrocarbon exploration well, Permit Area AC/L2 or AC/L3</a>	2001/296	Not Controlled Action	Completed
<a href="#">Crux-A and Crux-B appraisal wells, Petroleum Permit Area AC/P23</a>	2006/2748	Not Controlled Action	Completed
<a href="#">Crux gas-liquids development in permit AC/P23</a>	2006/3154	Not Controlled Action	Completed
<a href="#">Drilling of 12 Hydrocarbon Exploration Wells, Permit Area WA-371-P</a>	2006/3005	Not Controlled Action	Completed
<a href="#">Drilling of exploration well Audacious-1 in AC/P17</a>	2000/5	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action</b>			
<a href="#">Echuca Shoals-2 Exploration of Appraisal Well</a>	2006/3020	Not Controlled Action	Completed
<a href="#">Exploration Drilling in AC/P17, AC/P18 and AC/P24</a>	2001/359	Not Controlled Action	Completed
<a href="#">Exploration Well AC/P23</a>	2001/234	Not Controlled Action	Completed
<a href="#">Kaleidoscope exploration well</a>	2001/182	Not Controlled Action	Completed
<a href="#">Marine Seismic Survey in WA-239-P</a>	2000/24	Not Controlled Action	Completed
<a href="#">Marine Survey for the Australia-ASEAN Power Link AAPL</a>	2020/8714	Not Controlled Action	Completed
<a href="#">Montara-3 Offshore Hydrocarbon Exploration Well Permit Area AC/RL3</a>	2001/489	Not Controlled Action	Completed
<a href="#">P30 Hydrocarbon Exploration Well</a>	2001/293	Not Controlled Action	Completed
<a href="#">Project Highclere Geophysical Survey</a>	2021/9023	Not Controlled Action	Completed
<a href="#">Puffin Oil wells 7, 8 &amp; 9 development</a>	2005/2336	Not Controlled Action	Completed
<a href="#">Saucepan 1 Exploration Well ACP23</a>	2000/2	Not Controlled Action	Completed
<a href="#">Skua and Swift Oilfields</a>	2006/3195	Not Controlled Action	Completed
<a href="#">Strumbo-1 Gas Exploration Well Permit Area WA-288-P</a>	2002/884	Not Controlled Action	Completed
<b>Not controlled action (particular manner)</b>			
<a href="#">2 (3D) Marine Seismic Surveys</a>	2009/4994	Not Controlled Action (Particular Manner)	Completed
<a href="#">2D and 3D Seismic Survey</a>	2011/6197	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D Marine Seismic Survey</a>	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval



Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">2D marine seismic survey of Braveheart, Kurrajong, Sunshine and Crocodile</a>	2006/2917	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D or 3D Marine Seismic Survey in Petroleum Permit Area AC/P35</a>	2009/4864	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D Seismic Marine Survey</a>	2001/363	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D Seismic survey</a>	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D seismic survey in permit areas WA-274P and WA-281P</a>	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2 geotechnical surveys - preliminary and final</a>	2006/2886	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D Marine Seismic Survey</a>	2008/4437	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D Marine Seismic Survey, Permit AC/P 23</a>	2005/2364	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D marine seismic Survey - Maxima 3D MSS</a>	2006/2945	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D Seismic Survey, Browse Basin, WA</a>	2009/5048	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D Seismic Survey, near Scott Reef, Browse Basin</a>	2005/2126	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D Seismic Survey, petroleum exploration permit AC/P33</a>	2006/2918	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
		Manner)	
<a href="#">3D seismic survey of AC/P4, AC/P17 and AC/P24</a>	2006/2857	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">AC/P37 3D Seismic Survey Ashmore Cartier</a>	2007/3774	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Auralandia 3D marine seismic survey</a>	2011/5961	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Aurora MC3D Marine Seismic Survey</a>	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Bassett 3D Marine Seismic Survey</a>	2010/5538	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Bonaparte 2D &amp; 3D marine seismic survey</a>	2011/5962	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Braveheart 2D Infill Marine Seismic Survey 100km offshore</a>	2008/4442	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Braveheart 2D Marine Seismic Survey</a>	2005/2322	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Canis 3D Marine Seismic Survey</a>	2008/4492	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Cartier East and Cartier West 3D Marine Seismic Surveys</a>	2009/5230	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Caswell MC3D Marine Seismic Survey</a>	2012/6594	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">Conduct an exploration drilling campaign</a>	2011/5964	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Deep Water Northwest Shelf 2D Seismic Survey</a>	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Drilling of Audacious-5 appraisal well</a>	2008/4327	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Drilling of Exploration &amp; Appraisal Wells Braveheart-1 &amp; Cornea-3</a>	2009/5160	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Drilling of two appraisal wells</a>	2011/5840	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Endurance 3D Marine Seismic Data Acquisition Survey</a>	2007/3667	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Exploration Drilling Campaign</a>	2011/6047	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Exploration Drilling Campaign, Browse Basin, WA-341-P, AC-P36 and WA-343-P</a>	2013/6898	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.</a>	2008/4064	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Geoscience Australia - Marine survey in Browse Basin to acquire data to assist assessment of CO2 sto</a>	2013/6747	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Gicea 3D Marine Seismic Survey</a>	2008/4389	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Gigas 2D Pilot Ocean Bottom Cable Marine Seismic Survey</a>	2007/3839	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
		Manner)	
<a href="#">Ichthys 3D Marine Seismic Survey</a>	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Kingtree &amp; Ironstone-1 Exploration Wells</a>	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Kraken, Lusca &amp; Asperus 3D Marine Seismic Survey</a>	2013/6730	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Octantis 3D Marine Seismic Survey, Permit Area AC/P41 off northern Western Australia</a>	2007/3369	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Offshore Exploration Drilling Campaign</a>	2011/6222	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Offshore Fibre Optic Cable Network Construction &amp; Operation, Port Hedland WA to Darwin NT</a>	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Offshore Gas Exploration Drilling Campaign</a>	2012/6384	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Pilot Appraisal Well - Torosa South 1</a>	2008/3991	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Rosebud 3D Marine Seismic Survey in WA-30-R and TR/5</a>	2012/6493	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Sandalford 3D Seismic Survey</a>	2012/6261	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Schild MC3D Marine Seismic Survey</a>	2012/6373	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">Schild Phase 11 MC3D Marine Seismic Survey, Browse Basin</a>	2013/6894	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Scott Reef Seismic Research</a>	2006/2647	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Searcher bathymetry &amp; geochemical seismic survey, Browse Basin, Timor Sea, WA</a>	2013/6980	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Songa Venus Drilling and Testing Operations</a>	2009/5122	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Thoar 3D Marine Seismic Survey</a>	2010/5668	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Tiffany 3D Seismic Survey</a>	2010/5339	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Torosa-5 Apraisal Well, WA-30-R</a>	2008/4430	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Tow West Atlas wreck from present location to boundary of EEZ</a>	2010/5652	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Tridacna 3D Ocean Bottom Cable Marine Seismic Survey</a>	2011/5959	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Ursa 3D Marine Seismic Survey</a>	2008/4634	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Vampire 2D Non Exclusive Seismic Survey, WA</a>	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Westralia SPAN Marine Seismic Survey, WA &amp; NT</a>	2012/6463	Not Controlled Action (Particular	Post-Approval



Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
		Manner)	
<a href="#">Woodside Southern Browse 3D Seismic Survey, WA</a>	2007/3534	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Zeppelin 3D Seismic Survey</a>	2011/6148	Not Controlled Action (Particular Manner)	Post-Approval

#### Referral decision

<a href="#">2D Marine Seismic Survey</a>	2008/4623	Referral Decision	Completed
<a href="#">Aurora extension MC3D Marine Seismic Survey</a>	2011/5887	Referral Decision	Completed
<a href="#">BRSN08 3D Marine Seismic Survey</a>	2008/4582	Referral Decision	Completed
<a href="#">Experimental Study of Behavioural and Physiological Impact on Fish of Seismic Ex</a>	2006/2625	Referral Decision	Completed
<a href="#">Pilot Appraisal Well - Torosa South-1</a>	2008/3985	Referral Decision	Completed
<a href="#">Puffin South-West Development of Oil Reserves</a>	2007/3834	Referral Decision	Completed
<a href="#">Seismic Data Acquisition, Browse Basin</a>	2010/5475	Referral Decision	Completed

#### Key Ecological Features

[ [Resource Information](#) ]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
<a href="#">Ancient coastline at 125 m depth contour</a>	North-west
<a href="#">Ashmore Reef and Cartier Island and surrounding Commonwealth waters</a>	North-west
<a href="#">Carbonate bank and terrace system of the Sahul Shelf</a>	North-west
<a href="#">Continental Slope Demersal Fish Communities</a>	North-west
<a href="#">Seringapatam Reef and Commonwealth waters in the Scott Reef Complex</a>	North-west

## Biologically Important Areas

Scientific Name	Behaviour	Presence
<a href="#">Dugong</a>		
<a href="#">Dugong dugon</a>		
Dugong [28]	Breeding	Known to occur
<a href="#">Dugong dugon</a>		
Dugong [28]	Calving	Known to occur
<a href="#">Dugong dugon</a>		
Dugong [28]	Foraging	Known to occur
<a href="#">Dugong dugon</a>		
Dugong [28]	Foraging (high density seagrass beds)	Known to occur
<a href="#">Dugong dugon</a>		
Dugong [28]	Nursing	Known to occur

## Marine Turtles

<a href="#">Chelonia mydas</a>		
Green Turtle [1765]	Foraging	Likely to occur
<a href="#">Chelonia mydas</a>		
Green Turtle [1765]	Internesting buffer	Known to occur
<a href="#">Chelonia mydas</a>		
Green Turtle [1765]	Internesting buffer	Likely to occur
<a href="#">Chelonia mydas</a>		
Green Turtle [1765]	Mating	Likely to occur
<a href="#">Chelonia mydas</a>		
Green Turtle [1765]	Nesting	Known to occur
<a href="#">Chelonia mydas</a>		
Green Turtle [1765]	Nesting	Likely to occur
<a href="#">Eretmochelys imbricata</a>		
Hawksbill Turtle [1766]	Foraging	Likely to occur
<a href="#">Eretmochelys imbricata</a>		
Hawksbill Turtle [1766]	Internesting buffer	Likely to occur
<a href="#">Eretmochelys imbricata</a>		
Hawksbill Turtle [1766]	Internesting buffer	Known to occur

Scientific Name	Behaviour	Presence
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Nesting	Known to occur
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Nesting	Likely to occur
<b>Seabirds</b>		
<a href="#">Ardena pacifica</a> Wedge-tailed Shearwater [84292]	Breeding	Known to occur
<a href="#">Fregata ariel</a> Lesser Frigatebird [1012]	Breeding	Known to occur
<a href="#">Fregata minor</a> Greater Frigatebird [1013]	Breeding	Known to occur
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]	Breeding	Known to occur
<a href="#">Sterna dougallii</a> Roseate Tern [817]	Breeding	Known to occur
<a href="#">Sternula albifrons sinensis</a> Little Tern [82850]	Resting	Known to occur
<a href="#">Sula leucogaster</a> Brown Booby [1022]	Breeding	Known to occur
<a href="#">Sula sula</a> Red-footed Booby [1023]	Breeding	Known to occur
<a href="#">Thalasseus bengalensis</a> Lesser Crested Tern [66546]	Breeding	Known to occur
<b>Sharks</b>		
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Foraging	Known to occur
<b>Whales</b>		
<a href="#">Balaenoptera musculus brevipinna</a> Pygmy Blue Whale [81317]	Distribution	Known to occur
<a href="#">Balaenoptera musculus brevipinna</a> Pygmy Blue Whale [81317]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
<a href="#">Balaenoptera musculus brevicauda</a> Pygmy Blue Whale [81317]	Migration	Known to occur
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Calving	Known to occur
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Migration	Known to occur
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Nursing	Known to occur
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Resting	Known to occur

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.



# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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