Northern Endeavour Phase 1 Decommissioning

Application Number: **01359** Commencement Date: **08/08/2022** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Northern Endeavour Phase 1 Decommissioning

1.1.2 Project industry type *

Commonwealth

1.1.3 Project industry sub-type

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1.1.4 Estimated start date *

1/01/2023

1.1.4 Estimated end date *

1/01/2024

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

The Proposed Action comprises the Phase 1 Decommissioning of the Northern Endeavour floating production storage and offtake vessel (FPSO) and associated fields (the Facility), to disconnect the FPSO to enable an un-manned tow. The Decommissioning Envelope (DE) for the Proposed Action covers approximately 4,400 hectares (ha), which comprises a 1,500 metre (m) radius around the FPSO, subsea infrastructure and wells. ‘Att 1-EPBC Referral Supporting Document, Figure 1-1, pp 2’ shows the FPSO and DE for the Proposed Action.

The Proposed Action for Phase 1 Decommissioning can be characterised as consisting of two main classes of activity:

1. Routine operations and maintenance (also known as “Lighthouse Operations”) for the non-production operations of the FPSO. These operations and maintenance activities have been occurring since February 2020 under a national interest exemption under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), which is due to expire on 31 December 2022. For the purposes of this Referral, the operations and maintenance activities will commence on 1 January 2023. These activities are subject to a formal Non-production Safety Case, an emulated Non-production Environment Plan, and an emulated Non-production Well Operations Management Plan.
2. Decommissioning activities which will commence in Q2 2023 and cover a range of activities associated with flushing of the topsides and subsea equipment, suspension of the wells, disconnection of the FPSO and the commencement of towing. These activities will be subject to a formal Phase 1 Decommissioning Safety Case, an emulated Phase 1 Decommissioning Environment Plan and an emulated Phase 1 Decommissioning Well Operations Management Plan.

The Proposed Action involves the following activities:

(a) Safe and efficient operation, inspection and maintenance of the Facility;

(b) FPSO topsides, hull and marine systems remediation;

(c) Flushing of the topsides and subsea infrastructure;

(d) Offload and or disposal of any slops;

(e)Topsides demucking;

(f) Suspension of the subsurface wells and subsea infrastructure via a Light Well Intervention Vessel;

(g) Recovery of buoyancy modules;

(h) Cutting and lay-down of risers, mooring chains and umbilicals using an Intervention Support Vessel; and

(i) FPSO towage to an agreed point.

Activities (a) and (b) are operations and maintenance activities (“Lighthouse Operations”). Activities (c) to (i) are decommissioning activities.

For a full description of the activity details required for the Proposed Action refer to 'Att1-EPBC Referral Supporting Document, Section 2, pp 8-13’.

The Proposed Action has the potential to result in direct and indirect impacts to the environment, through planned and unplanned events associated with activities (a) to (e). Planned and unplanned events associated with the Proposed Action include:

- Planned events:
  - Facility operations and maintenance
  - Subsea and topside flushing (pumps, fugitive emission)
  - De-mucking (liquids with residue Naturally Occurring Radioactive Materials [NORM] content)
  - Well intervention
  - Disconnect and laydown risers
  - Disconnect mooring chains
  - FPSO towing
- Unplanned events:
  - Dropped objects/sinking of the FPSO
  - Collision or propeller suction with marine fauna
  - Solid waste disposal
  - Introduced marine species through accidental discharge of biological material
  - Accidental hydrocarbon discharge.

Direct impacts to the environment include the physical presence of the activity (i.e. dropped objects on the seabed), liquid waste disposal and solid waste disposal. Indirect impacts include noise, light and air emissions, introduced marine species and radioactive emissions. The Phase 1 Decommissioning also has potential to cause indirect impacts to the marine environment beyond the DE, due to the potential for unplanned discharge of hydrocarbons. The maximum area within which the Phase 1 Decommissioning may cause potential indirect impacts to the marine environment is termed the Zone of Potential Spill Impact (ZPSI). The ZPSI boundary is shown in 'Att 1-EPBC Referral Supporting Document, Figure 2-2, pp 15' and defined as follows:

The combined predicted extent of exposure of sea-surface (10 grams per square meter [g/m2]) and dissolved and entrained hydrocarbons (500 parts per billion [ppb]), and shorelines with accumulated hydrocarbons at concentration equal to and above ≥ 100 g/m2, as a result of the loss of oil (18,692 metres cubed [m3] over 77 days) from a subsea loss of containment from the wells, under annualised metocean conditions.

The potential direct and indirect impacts to the environment, through the planned events associated with the Proposed Action is detailed in 'Att 1-EPBC Referral Supporting Document, Table 4-2, pp 77-78'. The potential direct and indirect impacts to the environment through unplanned events is detailed in 'Att 1-EPBC Referral Supporting Document, Table 4-3, pp 79-81'.

The Department of Industry, Science and Resources (DISR) has engaged a lead contractor (who will engage specialist sub-contractors) to undertake the Phase 1 Decommissioning in accordance with all regulatory requirements. The Phase 1 Decommissioning contracts commenced in March 2022 and are expected to occur over a period of approximately 18 months. Decommissioning planning will occur in 2022, including preparation and acceptance of permitting documents under the emulated compliance with the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act).

Commencement of Phase 1 Decommissioning activities is expected to occur in early 2023 after the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) acceptance of permitting documents.

Following the Phase 1 Decommissioning, the secured creditor of the owner of the FPSO and DISR will engage a suitably qualified towing contractor to tow the FPSO to an international destination. The international destination will be nominated by the secured creditor. DISR will have no further direction or control over the FPSO once it reaches the destination.

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

Yes

1.2.3 Is the proposed action the first stage of a staged development (or a larger project)?

Yes

1.2.5 Provide information about the staged development (or relevant larger project).

Three distinct phases have been identified for decommissioning the Northern Endeavour FPSO and associated fields.

- Phase 1: Decommissioning and disconnection of the FPSO to enable unmanned tow to an international destination, and temporary well interventions and monitoring of temporary well suspension (approximately Quarter 1 2023 – Quarter 4 2023 (Q1 2023 – Q4 2023))
- Phase 2: Permanent plugging and abandonment of subsea wells (2024 – 2025)
- Phase 3: Subsea infrastructure removal and seabed remediation campaign (2025 – 2026).

The Proposed Action comprises the Phase 1 Decommissioning (where not otherwise covered by an exemption under section 158 of the EPBC Act) and towing of the FPSO. Detailed planning for Phases 2 and 3 would occur in the near future and remains subject to funding. The timeframes for Phases 2 and 3 are approximate and will depend on the scope and detailed planning. The three phases are sequential, although there may be some opportunity for concurrent works.

DISR is proceeding forward with detailed planning for the funded Phase 1 Decommissioning activities. DISR commenced planning with technical decommissioning contractors in March 2022 to achieve an FPSO tow target date around Q3 2023.

Due to the later staging of Phase 2 and Phase 3, which remains subject to funding, lack of detail in scope and methodology, the referral of these phases as separate Proposed Actions would occur in the future.

For further detail on information about the staged development refer to 'Att 1-EPBC Referral Supporting Document, Sections 1.4-1.5, pp 4-7'.

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

The Proposed Action will be undertaken as if the *Offshore Petroleum and Greenhouse Gas Storage Act 2009* and associated regulations (OPGGS framework) fully applied. The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has been contracted to provide advice, regulatory assessment and assurance support to ensure that all activities on the Facility, to the fullest extent possible, emulates the regime established by the OPGGS framework and Strategic Assessment.

The *Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009* fully apply to the Proposed Action. The lead contractor, Petrofac Facilities Management Limited, has been accepted as the registered operator of the FPSO. The Proposed Action will be subject to a formal Safety Case under those regulations.

The Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 and the Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011 rely upon the existence of a titleholder. The Proposed Action will be undertaken as if these regulations fully applied. The Proposed Action will be subject to an Environment Plan (EP) and a Well Operations Management Plan (WOMP) that emulates all of the usual requirements under the OPGGS framework.

The emulated Phase 1 Decommissioning EP would be the overarching management document for the Proposed Action and detail the environmental risks and management measures relating to the environmental aspects and impacts, including demonstrating that risks have been reduced to As Low as Reasonably Practicable (ALARP). The emulated Phase 1 Decommissioning EP would include a range of impact avoidance, reduction and remediation measures. The proposed content of this document is outlined in 'Att 3-Table of Contents for Emulated Phase 1 Decommissioning EP'.

The emulated Phase 1 Decommissioning WOMP and formal Phase 1 Decommissioning Safety Case are key management documents that address, inter alia, the avoidance of the worst-case scenario of a subsea well loss of containment.

All discharge of treated flushwater from cleaning of subsea infrastructure would be subject to meeting a 30 parts per million (ppm) oil in water (OIW) limit. The Department of Climate Change, Energy, the Environment and Water has recently confirmed that a Sea Dumping permit under the *Environment Protection (Sea Dumping) Act 1981* is not required for Phase 1.

All subsea infrastructure would be temporarily laid on the seabed pending the undertaking of Phase 2 and 3 activities.

All wastes removed from the FPSO during decommissioning, including subsea buoyancy aids, would be transported to a port for onshore disposal at suitably licenced facilities.

The Proposed Action would involve support vessel movements between the DE and ports, as well as landside waste transport from ports to licensed waste facilities. The locations of the ports and licensed waste facilities would be determined by the relevant contractors and operations would be undertaken in accordance with relevant State or Territory legislation, including intra-state and possibly inter-state tracking of controlled wastes and licensing of waste facilities. Any transport of hazardous wastes to international ports would be in accordance with Australia's commitments under the Basel Convention, as regulated under the *Hazardous Waste (Regulation of Exports and Imports) Act 1989*.

Any onshore transport and disposal of NORM would be undertaken in accordance with the *Radiation Protection and Nuclear Safety Act 1998* and the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Code of Practice: Safe Transport of Radioactive Material.

The FPSO would be towed away to an international destination nominated by the secured creditor. The towing would be conducted in accordance with all relevant legislation and other requirements, including requirements from the Australian Marine Safety Authority (AMSA), the classification society (such as Lloyd's Register) and international treaties including the International Convention for the Prevention of Pollution from Ships (MARPOL). Approvals applicable to the tow include:

- Towing Plan Approval issued by AMSA
- Certificate of Survey – Cargo Vessel Class 2A
- International Load Line Certificate
- International Tonnage Certificate
- International Oil Pollution Prevention Certificate –MARPOL annex I
- International Sewage Pollution Prevention Certificate – MARPOL annex IV
- Garbage Certificate of Compliance – MARPOL annex V
- International Air Pollution Prevention Certificate – MARPOL annex VI
- International Anti-Fouling Certificate
- International Maritime Labour Certificate, Bunkers Convention Certificate
- Letter of Verification for Hull, Accommodation, Helideck and Machinery systems
- Stability Book
- Ballast Water Plan and Certificate.

For further detail on Commonwealth or State legislation, planning frameworks or policy documents that are relevant to the Proposed Action, refer to 'Att 1-EPBC Referral Supporting Document, Section 2.5, pp 16'.

1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

DISR has undertaken targeted stakeholder consultation for Phase 1 decommissioning and towing. An Environment Plan (EP) flyer outlining proposed activities for these phases was made available to all 'relevant persons' whose functions, interests, or activities may be affected by the proposed petroleum activity, with these persons invited to provide feedback. A copy of the environment plan flyer is provided as 'Att-2-EP Stakeholder Consultation Flyer'. Consultation ran from 15 August 2022 through to 15 September 2022.

Targeted stakeholder consultation was also undertaken in September of 2021 through a consultation flyer which listed the proposed activities for the FPSO operations and maintenance. The flyer requested feedback from stakeholders. This was completed in conjunction with formal engagement with key stakeholders.

A website is established to describe the Northern Endeavour Phases 1-3 decommissioning and provide contact details for the members of the public to make enquiries. Interested parties may also remain informed about the decommissioning by registering their interest to receive updates.

For further detail on public consultation that has been undertaken for the Proposed Action, refer to 'Att 1-EPBC Referral Supporting Document, Section 2.6, pp 16-19'.

1.3.1 Identity: Referring party

Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The Department of Climate Change, Energy, the Environment and Water (the department) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the department to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the department will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

Personal information may be disclosed to other Australian government agencies, persons or organisations where necessary for the above purposes, provided the disclosure is consistent with relevant laws, in particular the Privacy Act 1988 (Privacy Act). Your personal information will be used and stored in accordance with the Australian Privacy Principles.

See our Privacy Policy to learn more about accessing or correcting personal information or making a complaint. Alternatively, email us at privacy@awe.gov.au.

☑ **Confirm that you have read and understand this Privacy Notice ***

1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details	
ABN	39008488373
Organisation name	GHD PTY LTD
Organisation address	Level 10, 999 Hay Street Perth, Western Australia 6000, Australia
Referring party details	
Name	Nick Houldsworth
Job title	Environment Market Leader, WA Environmental Assessment and Approvals
Phone	+61 8 62228086
Email	nick.houldsworth@ghd.com
Address	Level 10, 999 Hay Street Perth, Western Australia 6000, Australia

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

No

1.3.2.2 Is Person proposing to take the action an organisation or business? *

Yes

Person proposing to take the action organisation details	
ABN	74599608295
Organisation name	Department of Industry, Science and Resources (DISR)
Organisation address	National office: Industry House, 10 Binara Street, Canberra
Person proposing to take the action details	
Name	Shane McWhinney
Job title	Northern Endeavour Branch – Offshore Resources and Liquid Fuels Division

Phone	N/A
Email	NEBranch@industry.gov.au
Address	National office: Industry House, 10 Binara Street, Canberra

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

No

1.3.2.15 Are you proposing the action as part of a Trust? *

No

1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

Commonwealth agencies are required to meet statutory annual reporting requirements under section 516a of the EPBC Act. Under the Act, the Department reports annually on: how its activities accord with the principles of ecologically sustainable development (ESD), at subsection 6(a) of the EPBC Act; how its outcomes, as specified in relevant appropriation acts, contributed to ecologically sustainable development, at subsection 6(b) of the EPBC Act; and environmental performance and impacts of operations during the year on the natural environment, the mitigating measures to minimise impacts, and the mechanisms for monitoring and reviewing the effectiveness of measures, at subsections 6(c), (d) and (e) of the EPBC Act.

In February 2020, the Northern Oil & Gas Australia (NOGA) group of companies, which owned and operated the Northern Endeavour, went into liquidation. At this time the Government acted quickly to ensure the safety and security of the Facility, and to minimise risks to the environment. The Government thoroughly investigated options for the Facility. The decommissioning and remediation process was found to be the most cost-effective way to remove future potential risks and to protect the environment.

DISR confirms that, to the best of its knowledge, no past or present relevant proceedings exist against DISR.

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

Not applicable - DISR is not a corporation.

DISR does not have a Corporate Environment Policy, but has established a separate branch within the Department under its Oil and Gas Division that is dedicated to the management of the Proposed Action (Northern Endeavour).

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Proposed designated proponent organisation details

ABN	74599608295
Organisation name	Department of Industry, Science and Resources (DISR)
Organisation address	National office: Industry House, 10 Binara Street, Canberra

Proposed designated proponent details

Name	Shane McWhinney
Job title	Northern Endeavour Branch – Offshore Resources and Liquid Fuels Division
Phone	N/A
Email	NEBranch@industry.gov.au
Address	National office: Industry House, 10 Binara Street, Canberra

1.3.4 Identity: Summary of allocation

Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN	39008488373
Organisation name	GHD PTY LTD
Organisation address	Level 10, 999 Hay Street Perth, Western Australia 6000, Australia
Representative's name	Nick Houldsworth
Representative's job title	Environment Market Leader, WA Environmental Assessment and Approvals
Phone	+61 8 62228086
Email	nick.houldsworth@ghd.com
Address	Level 10, 999 Hay Street Perth, Western Australia 6000, Australia

Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN	74599608295
Organisation name	Department of Industry, Science and Resources (DISR)
Organisation address	National office: Industry House, 10 Binara Street, Canberra
Representative's name	Shane McWhinney
Representative's job title	Northern Endeavour Branch – Offshore Resources and Liquid Fuels Division
Phone	N/A
Email	NEBranch@industry.gov.au
Address	National office: Industry House, 10 Binara Street, Canberra

Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Has the department issued you with a credit note? *

No

1.4.5 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.7 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A? *

No

1.4.8 Would you like to add a purchase order number to your invoice? *

No

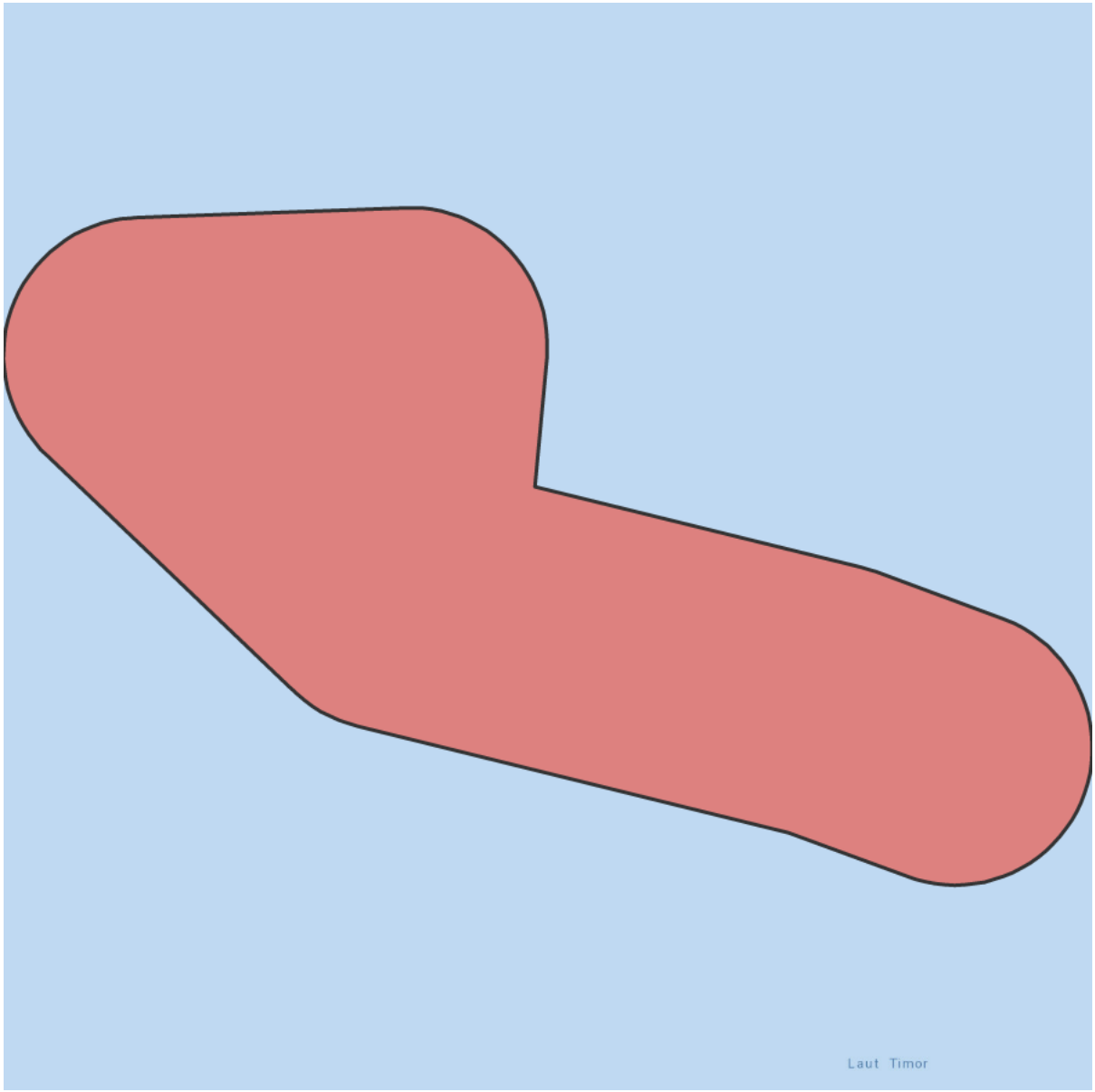
1.4 Payment details: Payment allocation

1.4.10 Who would you like to allocate as the entity responsible for payment? *

Person proposing to take the action

2. Location

2.1 Project footprint



2.2 Footprint details

2.2.1 What is the address of the proposed action? *

The FPSO is permanently moored in the Timor Sea at a location approximately 550 km west-northwest from Darwin, Australia

2.2.2 Where is the primary jurisdiction of the proposed action? *

Commonwealth Marine

2.2.3 Is there a secondary jurisdiction for this proposed action? *

Yes

2.2.4 Where is the secondary jurisdiction of the proposed action? *

International Waters

2.2.5 What is the tenure of the action area relevant to the project area? *

The DE for the Proposed Action is located entirely within Commonwealth waters. The DE is located over the extended continental shelf, in a Commonwealth Marine Area within the definition of section 24(d) of the EPBC Act.

The FPSO will be towed along an established shipping route, in international waters, to an international destination.

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

Throughout the year, water circulation in the Timor Sea is dominated by the southwest flowing Indonesian Through Flow (ITF) and this is the predominant current flow affecting the DE and ZPSI. The ITF dominates the majority of the water column and generally flows westwards through the Timor Trench (also known as the Timor Trough). During the summer, south-westerly winds cause a weakening of the ITF by pushing some of its waters eastwards building a pressure gradient in the adjacent Banda and Arafura Seas (DEWHA, 2008). At the end of the summer (March/April), this pressure is released, causing a south-westerly flow of water across the Sahul Shelf known as the Holloway Current (e.g. DEWHA, 2008; Holloway and Nye 1985).

Mean monthly surface water temperatures in the Timor Sea vary between about 26 degrees Celsius (°C) and 31 °C. Seawater temperature records collected from the Laminaria field over a one-year period show surface waters reached their maximum average temperatures in the period from November to April (average approximately 29.5 °C) and were coolest in the period of July, August, and September (average approximately 27.3 °C). Similarly, near-seabed seawater temperatures (360 m water depth) were warmest in May (average approximately 10.4 °C) and are coolest in September (average approximately 9.8 °C).

The DE lies on the outer shelf/continental slope in an area of uniformly smooth seabed ranging in depth from approximately 330 to 390 m, with an average slope of 1:120. Surface sediments at the DE are composed primarily of calcium carbonate material (approximately 80%) typically comprising approximately 50% silt, 30% clay and 20% sand particles. These surficial sediments, consisting of soft marine clays, form a layer tens of metres thick within the permit area. Remote Operated Vehicle (ROV) footage collected in May 2001 indicated that the muddy seabed immediately around the FPSO is characterised as flat and featureless. The muddy nature of seabed sediments in the DE are typical of surface seabed sediments from the continental slope in the Timor Sea region that are comprise of sandy and silty clays (van Andel and Veevers, 1967).

No Critical Habitats or Threatened Ecological Communities, as listed under the EPBC Act, occur within the DE or the ZPSI, as indicated by the EPBC Act Protected Matters Search Tool (PMST) report. The benthos in the deeper continental slope waters to the north of the Sahul Shelf are characterised by sparse invertebrate assemblages. A number of targeted surveys to investigate epibenthos and infauna of the slope and shelf environments of the Timor Sea were carried out by Woodside as the previous Titleholder and Operator. In 1996 a survey found deep areas were characterised by low abundance, low diversity benthic infauna dominated by polychaetes and crustaceans, which were generally characteristic of the region. A similar sampling program has since been conducted in the adjacent AC/P8 permit where low abundance benthic fauna was also recorded. Trawls conducted by Woodside in depths ranging between 320 to 340 m on the continental slope 120 km to the northeast of Laminaria field have indicated that epibenthic fauna in the area were sparsely distributed.

Sea floor communities in deeper shelf waters receive insufficient light to sustain ecologically sensitive primary producer habitats and communities such as seagrasses, macroalgae or zooxanthellate scleractinian (reef building) corals. Given the depth of water within the DE, and as indicated by the results of seabed surveys, these benthic primary producer groups do not occur in the DE. Nonetheless, infrastructure in the upper water column and euphotic zone may support the photo-dependent sessile benthos such as macroalgae in the upper water column.

Sedimentary infauna associated with soft unconsolidated sediments of the DE are widespread and well represented along the continental shelf and upper slopes in the region (Brewer et al., 2007). Consequently, in the context of the contiguous extent of habitats across the region, benthic habitat within the DE, is considered to be of relatively low environmental sensitivity.

Six years of Moderate Resolution Imaging Spectrometer (MODIS) Aqua satellite datasets from the North-West Marine Region (between November 2002 and December 2008) showed that chlorophyll (and inferred phytoplankton) levels are low in summer months (December to March) and higher in winter months (June to August).

Refer to 'Att 1-EPBC Referral Supporting Document, Sections 3.4-3.7, pp 25-29' for further detail on the current condition of the Proposed Action environment.

3.1.2 Describe any existing or proposed uses for the project area.

There are no known sites of Indigenous or European cultural or heritage significance within the DE or the ZPSI. The islands of several oceanic reef systems, namely Ashmore Reef and Cartier Island (outside the ZPSI) contain Indonesia artefacts (ceramics and graves) within the protected reserve areas. A search of the Australasian Underwater Cultural Heritage Database indicates there are no listed historic and other shipwrecks, artefacts or heritage sites within the DE or the ZPSI.

Given the remote and deep-water nature of the DE and the ZPSI, no tourism activities are known to take place. Recreational fishing generally tends to be concentrated in state waters adjacent to coastal population areas (DEWHA, 2008).

Commonwealth-managed fisheries include all commercial fisheries operating within the Australian Fishing Zone (AFZ), which extends 200 nautical miles (nm) from the mainland coast. The DE is in an offshore area outside the AFZ. Five Commonwealth-managed fisheries are licensed to operate adjacent to the DE, these being the:

- North West Slope Trawl Fishery

- Tuna fisheries
  - Western Tuna and Billfish Fishery
  - Western Skipjack Tuna Fishery
  - Southern Bluefin Tuna Fishery
- Northern Prawn Fishery.

A number of Western Australian fisheries, as outlined below, operate in the region, although they do not operate in or around the DE:

- Mackerel Fishery
- North Coast Demersal Scalefish Fishery (Kimberley sector)
- Northern Prawn Managed Fishery
  - Kimberley sector
  - Broome sector.

The Western Australia (WA) Fishing Industry Association (WAFIC) has previously advised that due to the location of the DE, state-managed fisheries would not be affected by its operation.

There are no aquaculture activities within the deep water, offshore area within the DE or the ZPSI, as such activities are typically restricted to shallow coastal waters.

Refer to 'Att 1-EPBC Referral Supporting Document, Sections 3.11-3.13, pp 60-73' for further information on the existing and proposed used of the Proposed Action Area.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

The Oceanic Shoals Australian Marine Park (AMP) covers an area of 71,743 km2 and lies within the Timor Sea with its northern boundary on the edge of Australia's Exclusive Economic Zone (EEZ), with waters depths ranging from less than 15 m to 500 m. Its nearest boundary is located 99 km (53 nm) south of the DE. The Oceanic Shoals AMP includes four zones; National Park, Habitat Protection, Multiple Use and Special Purpose zones.

There are 19 Commonwealth Heritage List sites in WA and 12 in the Northern Territory (NT), along with 49 in external territories. None of these are located within the DE or ZPSI; the nearest are the 'Scott Reef and surrounds', 'Seringapatam Reef and surrounds' and 'Ashmore Reef National Nature Reserve'.

Thirteen Key Ecological Features (KEFs) are identified within the North-west Marine Region, and eight identified within the Northern Marine Region. There are no KEFs intersected by the DE. The Carbonate Banks and terrace systems of the Sahul Shelf KEF is overlapped by the ZPSI.

There are an extensive series of submerged shoals/banks that occur in a northeast/southwest alignment along the outer edge of the Sahul Shelf spanning between Ashmore Reef in the southwest to Sunset Shoal in the north-east. Major shoal complexes along the outer shelf include the Sahul Shoals, East Sahul Shoals, Karmt Shoals, Big Banks Shoals and Echo Shoals. On the mid-Sahul Shelf, other shoals/banks of the Sahul Shelf include Echuca, Heywood, Vulcan, and Barracouta.

The closest shoals to the DE are the Big Banks Shoals:

- Upper submerged flats of Big Bank mainly comprised (90%) of macroalgal habitats, mostly comprised of the coralline alga Halimeda, with outer shoal dominated by corals.
- Most (80%) of the submerged flats of Bank 2 comprised Acroprid-dominated coral habitat
- Benthic communities of the bank slopes were characterised by the presence of sessile filter feeders including large erect sponges, gorgonians, bryozoans, ascidians and featherstars that were reported to be typical of a relatively nutrient rich and strong current environment

Hibernia Reef is located 42 km northeast of Ashmore Reef and just outside the ZPSI. The extensive reef has no permanently dry land area, although large parts of the reef flat become exposed at low tide. Along with the other surrounding reef systems (Ashmore Reef and Cartier Island), Hibernia Reef is notable for the high biodiversity associated with the shallow reef ecosystem, habitats, and communities. Hibernia Reef protects critical habitat for an unusually high diversity and abundance of sea snakes (Guinea, 2007) and diverse sponge community (Hooper, 1994).

The islands of Timor and Roti are included in the Lesser Sunda Ecoregion – an area encompassing the chain of islands from Bali in the west to Timor Leste in the east and the islands of Sumba, Savu and Roti to the south. The Lesser Sunda Ecoregion is a subregion identified within the hotspot marine diversity coral triangle region (Green & Mous, 2008) and the islands to the southwest of Timor Leste.

For further information regarding the outstanding natural features within the Proposed Action Area, refer to of 'Att 1-EPBC Referral Supporting Document, Section 3.13, pp 68-73'.

3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The DE lies on the outer shelf/continental slope in an area of uniformly smooth seabed ranging in depth from approximately 330 to 390 m, with an average slope of 1:120.

Further detail on the gradient of the Proposed Action is detailed in 'Att 1-EPBC Referral Supporting Document, Section 3.6, pp 27'.

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

No Critical Habitats or Threatened Ecological Communities, as listed under the EPBC Act, occur within the DE or the ZPSI, as indicated by the EPBC Act PMST report. The benthos in the deeper continental slope waters to the north of the Sahul Shelf are characterised by sparse invertebrate assemblages. A number of targeted surveys to investigate epibenthos and infauna of the slope and shelf environments of the Timor Sea were carried out by Woodside as the previous Titleholder and Operator. In 1996 a survey found deep areas were characterised by low abundance, low diversity benthic infauna dominated by polychaetes and crustaceans, which were generally characteristic of the region. A similar sampling program has since been conducted in the adjacent AC/P8 permit where low abundance benthic fauna was also recorded. Trawls conducted by Woodside in depths ranging between 320 to 340 m on the continental slope 120 km to the northeast of Laminaria field have indicated that epibenthic fauna in the area were sparsely distributed.

Sea floor communities in deeper shelf waters receive insufficient light to sustain ecologically sensitive primary producer habitats and communities such as seagrasses, macroalgae or zooxanthellate scleractinian (reef building) corals. Given the depth of water within the DE, and as indicated by the results of seabed surveys, these benthic primary producer groups do not occur in the DE. Nonetheless, infrastructure in the upper water column and euphotic zone may support the photo-dependent sessile benthos such as macroalgae in the upper water column.

Sedimentary infauna associated with soft unconsolidated sediments of the DE are widespread and well represented along the continental shelf and upper slopes in the region (Brewer et al., 2007). Consequently, in the context of the contiguous extent of habitats across the region, benthic habitat within the DE, is considered to be of relatively low environmental sensitivity.

Six years of MODIS Aqua satellite datasets from the North-West Marine Region (between November 2002 and December 2008) showed that chlorophyll (and inferred phytoplankton) levels are low in summer months (December to March) and higher in winter months (June to August).

An EPBC Act PMST search was undertaken for a 10 km radius from the ZPSI. The PMST identified a total of 24 EPBC Act listed threatened species and 40 EPBC Act listed migratory species as present/potentially present within the DE and/or the ZPSI. These included:

- Five species of birds
- One species of fish
- Four marine mammal species
- Eight marine reptile species
- Six species of sharks
- Eight species of migratory birds
- Twenty-six migratory marine species
- Six migratory wetland species.

The EPBC Act PMST search also identified a total of 72 EPBC Act listed marine species as present/potentially present within the DE. This included:

- Seventeen species of marine birds
- Thirty-one species of marine fish
- One species of marine mammal
- Twenty-three marine reptile species.

The presence/potential presence of 26 whales and other cetaceans were also identified within the DE.

Refer to ‘Att 1-EPBC Referral Supporting Document, Sections 3.7-3.8, pp 28-47’ and ‘Att 1-EPBC Referral Supporting Document, Section 3.10, pp 48-59’ for further detail regarding flora and fauna present within the DE and the ZPSI.

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

The DE lies over seabed at depths from approximately 330 to 390 m, which is devoid of vegetation.

Sea floor communities in deeper shelf waters receive insufficient light to sustain ecologically sensitive primary producer habitats and communities such as seagrasses, macroalgae or zooxanthellate scleractinian (reef building) corals. Given the depth of water within the DE, and as indicated by the results of seabed surveys, these benthic primary producer groups do not occur in the DE. Nonetheless, infrastructure in the upper water column and euphotic zone may support the photo-dependent sessile benthos such as macroalgae in the upper water column.

Refer to ‘Att 1-EPBC Referral Supporting Document, Section 3.7, pp 28-29’ for further information on the vegetation within the DE and the ZPSI.

3.3 Heritage

3.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

There are no World Heritage properties within the DE or the ZPSI, with the nearest World Heritage property being the Kakadu National Park, located approximately 988 km south-east of the DE and 816 km south-east of the ZPSI. There are also no National Heritage Places within the DE or the ZPSI, with the nearest marine National Heritage Place being the West Kimberley, located approximately 340 km south of the DE and 140 km south of the ZPSI.

There are no known sites of Indigenous or European cultural or heritage significance within the DE or the ZPSI. The islands of several oceanic reef systems, namely Ashmore Reef and Cartier Island (outside the ZPSI) contain Indonesia artefacts (ceramics and graves) within the protected reserve areas. A search of the Australasian Underwater Cultural Heritage Database indicates there are no listed historic and other shipwrecks, artefacts or heritage sites within the DE or the ZPSI.

There are 19 Commonwealth Heritage List sites in WA and 12 in the NT, along with 49 in external territories. None of these are located within the DE or ZPSI; the nearest are the ‘Scott Reef and surrounds’, ‘Seringapatam Reef and surrounds’ and ‘Ashmore Reef National Nature Reserve’.

Refer to 'Att 1-EPBC Referral Supporting Document, Section 3.9, 3.11 & 3.13, pp 48, 60 & 68-69' for further information about the recognised heritage values of the DE and the ZPSI.

3.3.2 Describe any Indigenous heritage values that apply to the project area.

There are no known sites of Indigenous or European cultural or heritage significance within the DE or the ZPSI. The islands of several oceanic reef systems, namely Ashmore Reef and Cartier Island (outside the ZPSI) contain Indonesia artefacts (ceramics and graves) within the protected reserve areas. A search of the Australasian Underwater Cultural Heritage Database indicates there are no listed historic and other shipwrecks, artefacts or heritage sites within the DE or the ZPSI.

Refer to 'Att 1-EPBC Referral Supporting Document, Section 3.11, pp 60' for indigenous heritage values of the DE and the ZPSI.

3.4 Hydrology

3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

Throughout the year, water circulation in the Timor Sea is dominated by the southwest flowing ITF and this is the predominant current flow affecting the DE and ZPSI. The ITF dominates the majority of the water column and generally flows westwards through the Timor Trench (also known as the Timor Trough). During the summer, south-westerly winds cause a weakening of the ITF by pushing some of its waters eastwards building a pressure gradient in the adjacent Banda and Arafura Seas (DEWHA, 2008). During this period, short lived mixing and upwelling processes can occur around the shelf break in the Timor Trench delivering cold deep water onto the shelf (DEWHA, 2008; Brewer et al., 2007; Holloway and Nye, 1985). At the end of the summer (March/April), this pressure is released, causing a south-westerly flow of water across the Sahul Shelf known as the Holloway Current (e.g. DEWHA, 2008; Holloway and Nye 1985). The Indonesian Through flow contributes to the westward flowing South Equatorial Current and the continued southward flow of currents along the coast of the North-West Shelf via the Holloway Current or via the Eastern Gyral Current.

Refer to 'Att 1-EPBC Referral Supporting Document, Section 3.4, pp 25' for information on the hydrology of the DE and the ZPSI.

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	Yes	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	Yes	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	No	Yes

EPBC Act section	Controlling provision	Impacted	Reviewed
S27B	Commonwealth heritage places overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	Yes	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

No World Heritage properties are in vicinity of the DE or ZPSI.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

No National Heritage places are in vicinity of the DE or ZPSI.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.3.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

There are no wetlands of international importance within the DE or ZPSI. The Ashmore Reef National Nature Reserve is the nearest Ramsar wetland, located approximately 340 km southwest of the DE and about 55 km south of the ZPSI.

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species
Yes	Yes	Anous tenuirostris melanops
Yes	Yes	Balaenoptera borealis
Yes	Yes	Balaenoptera musculus
Yes	Yes	Balaenoptera physalus
Yes	Yes	Calidris canutus
Yes	Yes	Calidris ferruginea
Yes	Yes	Carcharodon carcharias
No	No	Caretta caretta
No	No	Chelonia mydas
No	No	Dermochelys coriacea
No	No	Eretmochelys imbricata
No	No	Lepidochelys olivacea
No	No	Natator depressus
Yes	Yes	Numenius madagascariensis
Yes	Yes	Papasula abbotti
No	No	Pristis pristis
No	No	Pristis zijsron
Yes	Yes	Rhincodon typus
No	No	Sphyrna lewini
No	No	Thunnus maccoyii

Ecological communities

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4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

No Threatened Ecological Communities and/or Threatened species are known or are likely to occur within the DE and/or the ZPSI (refer to 'Att 1-EPBC Referral Supporting Document, Section 5.1, pp 82-83'). A likelihood of occurrence assessment (refer to 'Att 1-EPBC Referral Supporting Document, Section 3.8.1, pp 29-41') identified ten species with the potential to occur within the DE and/or the ZPSI.

Five Threatened bird species are considered to have the potential to occur within the DE and/or the ZPSI, including:

- *Numenius madagascariensis* (Eastern Curlew) – Critically Endangered
- *Calidris ferruginea* (Curlew Sandpiper) – Critically Endangered
- *Calidris canutus* (Red Knot) – Endangered
- *Papasula abbotti* (Abbott's Booby) – Endangered
- *Anous tenuirostris melanops* (Australian Lesser Noddy) – Vulnerable.

The Proposed Action may result in the following direct and/or indirect impacts to the above Threatened bird species that have the potential to occur within the DE and/or the ZPSI:

- Air, noise and light emissions, marine vessel movements and discharge of treated flushwater, stormwater, sewage and putrescible wastes resulting from the planned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-2, pp 77-78')
  - Impacts are expected to be localised to within the DE and may potentially impact individuals or small numbers of listed Threatened bird species overflying or opportunistically resting on the sea surface during migrations or solitary individuals foraging within the DE
- Accidental hydrocarbon and hazardous waste discharges, and the potential unplanned sinking of the FPSO during towing resulting from unplanned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-3, pp 79-81')
  - There is the potential for impacts to individuals or flocks of listed threatened bird species that rest on the sea surface during migrations or solitary individuals that forage within the spill area
  - The likelihood of an unplanned FPSO sinking during towing is low and, if occurring, would be at a location along an established shipping route which is not expected to be in proximity to important habitat for threatened bird species.

Three Threatened mammal species are considered to have the potential to occur within the DE and/or the ZPSI, including:

- *Balaenoptera musculus* (Pygmy Blue Whale) - Endangered
- *Balaenoptera borealis* (Sei Whale) – Vulnerable
- *Balaenoptera physalus* (Fin Whale) – Vulnerable.

The Proposed Action may result in the following direct and/or indirect impacts to the above Threatened mammal species that have the potential to occur within the DE and/or the ZPSI:

- Air, noise and light emissions, marine vessel movements and discharge of treated flushwater, stormwater, sewage and putrescible wastes resulting from the planned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-2, pp 77-78')
  - Impacts are expected to be localised to within the DE and may impact individuals or small groups if they pass through the DE
  - Noise emissions may cause behavioural impacts to whales for a distance of 5 km or more from the emission source
- Accidental hydrocarbon and hazardous waste discharges and the unplanned FPSO sinking during towing resulting from unplanned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-3, pp 79-81')
  - There is the potential for impacts to individuals or small groups of whales migrating through the ZPSI.

Two Threatened shark species are considered to have the potential to occur within the DE and/or the ZPSI, including:

- *Carcharodon carcharias* (White Shark) – Vulnerable
- *Rhincodon typus* (Whale Shark) – Vulnerable.

The Proposed Action may result in the following direct and/or indirect impacts to the above Threatened shark species that have the potential to occur within the DE and/or the ZPSI:

- Air, noise and light emissions, marine vessel movements and discharge of treated flushwater, stormwater, sewage and putrescible wastes resulting from the planned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-2, pp 77-78')
  - Impacts are expected to be localised to within the DE and may impact individuals or small numbers of Great White Sharks or Whale Sharks that pass through or forage within the DE
  - Sharks have a low vulnerability to noise related trauma due to the absence of a swim bladder and the Proposed Action is unlikely to cause death of sharks within the DE
- Accidental hydrocarbon and hazardous waste discharges and the unplanned FPSO sinking during towing resulting from the planned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-3, pp 79-81')
  - There is the potential for impacts to individuals or small groups of Great White Sharks and Whale Sharks moving through the ZPSI.

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.4.6 Describe why you do not consider this to be a Significant Impact. *

The Proposed Action is unlikely to have a significant impact on the Threatened bird, mammal and shark species that have the potential to occur within the DE and/or the ZPSI.

Two Critically Endangered and two Endangered bird species have potential to occur within the DE and/or the ZPSI, including:

- *Numenius madagascariensis* (Eastern Curlew)
- *Calidris ferruginea* (Curlew Sandpiper)
- *Calidris canutus* (RedKnot)
- *Papasula abbotti* (Abbott's Booby).

The above listed Threatened bird species are highly mobile with widespread distributions. These species may overfly the DE and the ZPSI during migrations, however they are unlikely to rely on foraging solely within the ZPSI.

One Endangered mammal, *Balaenoptera musculus* (Blue Whale), has the potential to occur within the ZPSI. Pygmy Blue Whales are highly mobile species that exhibit seasonal migratory movements between Australia and Indonesia. The species is known to migrate through the northern extent of the Timor Sea, passing through the ZPSI, with a possible foraging area at Scott Reef approximately 570 km to the southwest of the DE.

The Proposed Action is unlikely to significantly impact the Critically Endangered or Endangered bird or mammal species that have the potential to occur within the DE and/or the ZPSI, as it is unlikely to:

- Impact large numbers of mammals and birds through either planned or unplanned events
- Reduce the area of occupancy of the species
- Fragment an existing population into two or more populations
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species are likely to decline
- Interfere with the recovery of the species
- Adversely affect habitat critical to the survival of the species
- Disrupt the breeding cycle of a population
- Result in invasive species that are harmful to the species becoming established in the species' habitat
- Introduce disease that may cause the species to decline.

Refer to 'Att 1-EPBC Referral Supporting Document, Table 5-2, pp 85-88' for an assessment of the significance of potential impacts to listed Critically Endangered and Endangered species, based on the criteria in *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (DoE, 2013).

One vulnerable bird species has the potential to occur within the DE and/or ZPSI:

- *Anous tenuirostris melanops* (Australian Lesser Noddy)

The species is highly mobile with a wide range of habitats. The Australian Lesser Noddy is a marine seabird that occurs off the coast of WA and forages within the Indian Ocean. The ZPSI overlaps the eastern extent of the foraging area within the Indian Ocean. The species only breeds in the Houtman Abrolhos.

Two Vulnerable mammals have the potential to occur within the DE and/or the ZPSI:

- *Balaenoptera borealis* (Sei Whale)
- *Balaenoptera physalus* (Fin Whale).

These species are highly mobile and are thought to complete long annual seasonal migrations from subpolar summer feeding grounds to lower latitude winter breeding grounds. The species may migrate through and opportunistically forage within the DE and/or the ZPSI however it is unknown whether they breed in the Timor Sea.

Two Vulnerable shark species have the potential to occur within the DE and/or the ZPSI:

- *Carcharodon carcharias* (White Shark)
- *Rhincodon typus* (Whale Shark).

The Great White Shark and the Whale Shark are highly mobile species. The species may traverse through and forage within the ZPSI however it is unknown whether they breed in the Timor Sea.

The Proposed Action is unlikely to significantly impact the Vulnerable bird, mammal and/or shark species that have the potential to occur within the DE and/or the ZPSI, as it is unlikely to:

- Impact large numbers of mammals, birds or sharks through either planned or unplanned events
- Reduce the area of occupancy of an important population
- Fragment an important population into two or more populations
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species are likely to decline
- Interfere with the recovery of the species
- Adversely affect habitat critical to the survival of the species
- Disrupt the breeding cycle of an important population
- Result in invasive species that are harmful to the species becoming established in the species' habitat
- Introduce disease that may cause the species to decline.

Refer to 'Att 1-EPBC Referral Supporting Document, Table 5-3, pp 89-93' for an assessment of the significance of potential impacts to the listed Vulnerable species, based on the criteria in Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (DoE, 2013).

4.1.4.7 Do you think your proposed action is a controlled action? *

No

4.1.4.9 Please elaborate why you do not think your proposed action is a controlled action. *

The Proposed Action is not considered a controlled action, as it is unlikely to:

- Impact large numbers of mammals, birds or sharks through either planned or unplanned events
- Reduce the area of occupancy of an important population
- Fragment an important population into two or more populations
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species are likely to decline
- Interfere with the recovery of the species
- Adversely affect habitat critical to the survival of the species
- Disrupt the breeding cycle of an important population
- Result in invasive species that are harmful to the species becoming established in the species' habitat
- Introduce disease that may cause the species to decline.

Refer to 'Att 1-EPBC Referral Supporting Document, Section 5.2, pp 84-93' for details on the significance of impacts to EPBC Act listed Critically Endangered, Endangered and Vulnerable species that have the potential to occur within the DE and/or the ZPSI.

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

DISER propose to undertake the Proposed Action in accordance with permitting documents for Phase 1 Decommissioning activities that are reviewed and endorsed by NOPSEMA, including:

- Formal Phase 1 Decommissioning Safety Cases, prepared and reviewed from Q2-2022, acceptance in Q1/Q2 2023
- Emulated Phase 1 Decommissioning Well Operations Management Plan (WOMP), prepared and reviewed from Q3-2022, acceptance in Q1/Q2 2023
- Emulated Phase 1 Decommissioning Environment Plan (EP), prepared and reviewed from Q3 2022, acceptance in Q1/Q2 2023.
- These permissioning documents will be finalised in Q1/Q2 2023.

The emulated Phase 1 Decommissioning EP would be the overarching management document for the Proposed Action and detail the environmental risks and management measures relating to the environmental aspects and impacts, including demonstrating that risks have been reduced to As Low as Reasonably Practicable (ALARP). The emulated Phase 1 Decommissioning EP would include a range of impact avoidance, reduction and remediation measures. The proposed content of this document is outlined in 'Att3-Table of Contents for Emulated Phase 1 Decommissioning EP'.

The emulated Phase 1 Decommissioning WOMP and formal Phase 1 Decommissioning Safety Case are key management documents that address, inter alia, the avoidance of the worst-case scenario of a subsea well loss of containment. The subsea well loss of containment scenario is the only aspect for the Proposed Action that has the potential to cause a significant impact to the environment, due to the potential for hydrocarbon accumulation on the shorelines of Timor Leste, West Timor and/or Pulau Roti and the potential to cause the death of large marine animals.

The FPSO towing would be conducted in accordance with all relevant legislation and other requirements, including requirements from AMSA, the classification society (such as Lloyd's Register) and international treaties including MARPOL. The legislative framework applies a range of approvals that relate to structural integrity and safety of the tow, reducing the likelihood of the unplanned FPSO sinking, and managing pollution discharges during the tow (e.g. air emissions, sewage and solid waste).

Refer to 'Att 1-EPBC Referral Supporting Document, Section 7, pp 108-115' for full details on the avoidance and mitigation measures proposed for the Proposed Action.

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

No offsets are proposed as the Proposed Action is unlikely to cause significant impacts to EPBC Act listed threatened species.

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species
No	No	Actitis hypoleucos
Yes	Yes	Anous stolidus
No	No	Anoxypristis cuspidata
Yes	Yes	Balaenoptera borealis
Yes	Yes	Balaenoptera edeni
Yes	Yes	Balaenoptera musculus
Yes	Yes	Balaenoptera physalus
No	No	Calidris acuminata
No	No	Calidris canutus
Yes	Yes	Calidris ferruginea
No	No	Calidris melanotos
Yes	Yes	Calonectris leucomelas
No	No	Calonectris leucomelas
Yes	Yes	Carcharhinus longimanus

Direct impact	Indirect impact	Species
Yes	Yes	Carcharodon carcharias
No	No	Caretta caretta
No	No	Chelonia mydas
No	No	Dermochelys coriacea
No	No	Eretmochelys imbricata
Yes	Yes	Fregata ariel
Yes	Yes	Fregata minor
Yes	Yes	Isurus oxyrinchus
Yes	Yes	Isurus paucus
No	No	Lepidochelys olivacea
No	No	Megaptera novaeangliae
Yes	Yes	Mobula alfredi
Yes	Yes	Mobula birostris
No	No	Natator depressus
Yes	Yes	Numenius madagascariensis
Yes	Yes	Orcinus orca
Yes	Yes	Phaethon lepturus
Yes	Yes	Physeter macrocephalus
No	No	Pristis pristis
No	No	Pristis zijsron
Yes	Yes	Rhincodon typus
Yes	Yes	Sterna dougallii
Yes	Yes	Sula leucogaster
Yes	Yes	Sula sula
Yes	Yes	Tursiops aduncus (Arafura/Timor Sea populations)

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.5.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

Eight Migratory bird species are likely to occur within the DE and/or the ZPSI (refer to 'Att 1-EPBC Referral Supporting Document, Section 3.8.2, pp 42-47'), including:

- *Anous stolidus* (Common Noddy)
- *Calonectris leucomelas* (Streaked Shearwater)
- *Fregata ariel* (Lesser Frigatebird)
- *Fregata minor* (Great Frigatebird)
- *Sula sula* (Red-footed Booby)
- *Sula leucogaster* (Brown Booby)
- *Sterna dougallii* (Roseate Tern)
- *Phaethon lepturus* (White-tailed Tropicbird).

The Proposed Action may result in the following direct and/or indirect impacts to the above Migratory bird species that are likely to occur within the DE and/or the ZPSI:

- Air, noise and light emissions, marine vessel movements and discharge of treated flushwater, stormwater, sewage and putrescible wastes resulting from the planned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-2, pp 77-78')
  - Impacts are expected to be localised to within the DE and may potentially impact individuals or small numbers of seabirds overflying or opportunistically resting or foraging on the sea surface within the DE
- Accidental hydrocarbon and hazardous waste discharges, and the potential unplanned sinking of the FPSO during towing resulting from unplanned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-3, pp 79-81')
  - There is the potential for death of individuals or flocks of seabirds that may rest on the sea surface or forage within the spill area
  - The likelihood of the unplanned FPSO sinking during towing is low and is not expected to be in proximity to important habitat for migratory bird species.

Seven Migratory mammal species have the potential to occur within the DE and/or the ZPSI, including:

- *Balaenoptera borealis* (Sei Whale)
- *Balaenoptera edeni* (Bryde's Whale)
- *Balaenoptera musculus* (Pygmy Blue Whale)
- *Balaenoptera physalus* (Fin Whale)
- *Orcinus orca* (Killer Whale)
- *Physeter macrocephalus* (Sperm Whale)
- *Tursiops aduncus* (Arafura/Timor Sea populations) (Spotted Bottlenose Dolphin).

The Proposed Action may result in the following direct and/or indirect impacts to the above Migratory mammal species that are likely to occur within the DE and/or the ZPSI:

- Air, noise and light emissions, marine vessel movements and discharge of treated flushwater, stormwater, sewage and putrescible wastes resulting from the planned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-2, pp 77-78')
  - Impacts are expected to be localised to within the DE and unlikely to impact whales or obstruct migratory patterns of large groups of whales
- Accidental hydrocarbon and hazardous waste discharges, and the potential unplanned sinking of the FPSO during towing resulting from unplanned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-3, pp 79-81')
  - Impacts to individuals or small groups passing through the spill area and could potentially affect breeding success of pregnant females
  - The likelihood of the unplanned FPSO sinking during towing is low and may cause localised impacts to the seabed and potentially localised impacts to water quality of the extended continental shelf or Timor Trough.

Seven Migratory shark species have the potential to occur within the DE and/or the ZPSI, including:

- *Carcharodon carcharias* (White Shark)
- *Carcharhinus longimanus* (Oceanic Whitetip Shark)
- *Mobula alfredi as Manta alfredi* (Reef Manta Ray)
- *Isurus oxyrinchus* (Shortfin Mako)
- *Isurus paucus* (Longfin Mako)
- *Mobula birostris as Manta birostris* (Giant Manta Ray)
- *Rhincodon typus* (Whale Shark).

The Proposed Action may result in the following direct and/or indirect impacts to the above Migratory shark species that are likely to occur within the DE and/or the ZPSI:

- Air, noise and light emissions, marine vessel movements and discharge of treated flushwater, stormwater, sewage and putrescible wastes resulting from the planned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-2, pp 77-78')
  - Impacts are expected to be localised to within the DE, and include potential nuisance noise during the Proposed Action and a low likelihood of death by collisions in the vicinity of the DE
- Accidental hydrocarbon and hazardous waste discharges, and the potential unplanned sinking of the FPSO during towing resulting from unplanned events associated with the Proposed Action (refer to 'Att 1-EPBC Referral Supporting Document, Table 4-3, pp 79-81')
  - Temporary impacts to water quality within a very small portion of the Timor Sea, which may affect individuals or small numbers of sharks but is unlikely to affect large numbers of the species
  - The likelihood of the unplanned FPSO sinking during towing is low and may cause localised impacts to the seabed and potentially localised impacts to water quality of the extended continental shelf or Timor Trough.

4.1.5.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.5.6 Describe why you do not consider this to be a Significant Impact. *

The Proposed Action is unlikely to have a significant impact on Migratory birds, mammals and sharks and rays.

Migratory species within the DE and the ZPSI

Birds

Eight listed migratory bird species have the potential to occur within the ZPSI:

- *Anous stolidus* (Common Noddy)
- *Calonectris leucomelas* (Streaked Shearwater)
- *Fregata ariel* (Lesser Frigatebird)
- *Fregata minor* (Great Frigatebird)
- *Sula sula* (Red-footed Booby)
- *Sula leucogaster* (Brown Booby)
- *Sterna dougallii* (Roseate Tern)
- *Phaethon lepturus* (White-tailed Tropicbird).

These species are highly mobile seabirds, with widespread distributions. Migratory seabirds may transit through the ZPSI during migration and may rest on the ships and offshore facilities, as well as foraging on the open water. Migratory seabirds are highly unlikely to roost or breed within the ZPSI as there are no reefs or islands on which to form colonies.

Mammals

Seven listed migratory mammal species have potential to occur within the ZPSI:

- *Balaenoptera borealis* (Sei Whale)
- *Balaenoptera edeni* (Bryde's Whale)
- *Balaenoptera musculus* (Pygmy Blue Whale)
- *Balaenoptera physalus* (Fin Whale)
- *Orcinus orca* (Killer Whale)
- *Physeter macrocephalus* (Sperm Whale)
- *Tursiops aduncus* (Arafura/Timor Sea populations) (Spotted Bottlenose Dolphin).

These species are highly mobile, with widespread distributions. Migratory mammal species are likely to transit through and potentially forage within the ZPSI during migration. Some migratory mammals (e.g. Sei Whale, Fin Whale) may potentially breed in the Timor Sea however this remains to be confirmed.

Sharks and rays

Seven listed migratory sharks and rays have potential to occur within the ZPSI:

- *Carcharodon carcharias* (White Shark)
- *Carcharhinus longimanus* (Oceanic Whitetip Shark)
- *Mobula alfredi as Manta alfredi* (Reef Manta Ray)
- *Isurus oxyrinchus* (Shortfin Mako)
- *Isurus paucus* (Longfin Mako)
- *Mobula birostris as Manta birostris* (Giant Manta Ray)
- *Rhincodon typus* (Whale Shark).

These species are highly mobile, with widespread distributions. Migratory sharks and rays are likely to transit through the Timor Sea during migration. Some migratory sharks and rays (e.g. Great White Shark) may potentially breed in the Timor Sea, though this remains to be confirmed.

The Proposed Action is unlikely to lead to a long-term decrease in the size of Migratory bird, mammal or sharks and ray species, as it unlikely to:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species
- Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

Refer to ‘Att 1-EPBC Referral Supporting Document, Table 5-4, pp 95-96’ for an assessment of the significance of potential impacts to listed Migratory species, arising from planned and unplanned events associated with the Proposed Action, based on the criteria in *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (DoE, 2013).

4.1.5.7 Do you think your proposed action is a controlled action? *

No

4.1.5.9 Please elaborate why you do not think your proposed action is a controlled action. *

The Proposed Action is not considered a controlled action, as it is unlikely to:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species
- Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

Refer to ‘Att 1-EPBC Referral Supporting Document, Table 5-4, pp 95-96’ for details on the significance of impacts to EPBC Act listed Migratory species that have the potential to occur within the DE and/or the ZPSI.

4.1.5.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

DISER propose to undertake the Proposed Action in accordance with permitting documents for Phase 1 Decommissioning activities that are reviewed and endorsed by NOPSEMA, including:

- Formal Phase 1 Decommissioning Safety Cases, prepared and reviewed from Q2-2022, acceptance in Q1/Q2 2023
- Emulated Phase 1 Decommissioning Well Operations Management Plan (WOMP), prepared and reviewed from Q3-2022, acceptance in Q1/Q2 2023
- Emulated Phase 1 Decommissioning Environment Plan (EP), prepared and reviewed from Q3 2022, acceptance in Q1/Q2 2023.
- These permissioning documents will be finalised in Q1/Q2 2023.

The emulated Phase 1 Decommissioning EP would be the overarching management document for the Proposed Action and detail the environmental risks and management measures relating to the environmental aspects and impacts, including demonstrating that risks have been reduced to As Low as Reasonably Practicable (ALARP). The EP would include a range of impact avoidance, reduction and remediation measures. The proposed content of this document is outlined in ‘Att 3-Table of Contents for Emulated Phase 1 Decommissioning EP’.

The emulated Phase 1 Decommissioning WOMP and formal Phase 1 Decommissioning Safety Case are key management documents that address, inter alia, the avoidance of the worst-case scenario of a subsea well loss of containment. The subsea well loss of containment scenario is the only aspect for the Proposed Action that has the potential to cause a significant impact to the environment, due to the potential for hydrocarbon accumulation on the shorelines of Timor Leste, West Timor and/or Pulau Roti and the potential to cause the death of large marine animals.

The FPSO towing would be conducted in accordance with all relevant legislation and other requirements, including requirements from AMSA, the classification society (such as Lloyd’s Register) and international treaties including MARPOL. The legislative framework applies a range of approvals that relate to structural integrity and safety of the tow, reducing the likelihood of the unplanned FPSO sinking, and managing pollution discharges during the tow (e.g. air emissions, sewage and solid waste).

Refer to ‘Att 1-EPBC Referral Supporting Document, Section 7, pp 108-115’ for full details on the avoidance and mitigation measures proposed for the Proposed Action.

4.1.5.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

No offsets are proposed as the Proposed Action is unlikely to cause significant impacts to EPBC Act listed migratory species.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Proposed Action does not involve a nuclear action.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.7.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The DE and the ZPSI are located on the Extended Continental Shelf which is a Commonwealth marine area (refer to ‘Att 1-EPBC Referral Supporting Document, Section 3.2, pp 20-21’).

The Proposed Action has the potential to result in the following direct and/or indirect impacts to the Extended Continental Shelf resulting from the planned and unplanned events associated with the Proposed Action (refer to ‘Att 1-EPBC Referral Supporting Document, Section 4, pp 74-81’):

- Ballast water discharge or the highly unlikely event of the FPSO sinking could potentially result in an unplanned discharge of biological material that could potentially include an invasive marine species
- Unplanned sinking of the FPSO
- Accidental release of hydrocarbons due to a subsea loss of containment
- The planned discharge of treated flushwater would involve very small quantities of hydrocarbons.

4.1.7.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.7.6 Describe why you do not consider this to be a Significant Impact. *

The Proposed Action is unlikely to lead to significant impacts on a Commonwealth marine environment within the DE and ZPSI, as it unlikely to:

- Result in a known or potential pest species becoming established in the Extended Continental Shelf
- Modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in the Extended Continental Shelf
- Have a substantial adverse effect on a population of a marine species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution
- Result in 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
- Have a substantial adverse impact on heritage values of the Extended Continental Shelf, including damage or destruction of an historic shipwreck.

Refer to 'Att 1-EPBC Referral Supporting Document, Table 5-5, pp 98-99' for an assessment of the significance of potential impacts to the Commonwealth marine environment, arising from planned and unplanned events associated with the Proposed Action, based on the criteria in *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (DoE, 2013).

4.1.7.7 Do you think your proposed action is a controlled action? *

No

4.1.7.9 Please elaborate why you do not think your proposed action is a controlled action. *

The Proposed Action is not considered a controlled action, as it unlikely to:

- Result in a known or potential pest species becoming established in the Extended Continental Shelf
- Modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in the Extended Continental Shelf
- Have a substantial adverse effect on a population of a marine species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution
- Result in 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
- Have a substantial adverse impact on heritage values of the Extended Continental Shelf, including damage or destruction of an historic shipwreck.

Refer to 'Att 1-EPBC Referral Supporting Document, Table 5-5, pp 98-99' for details on the significance of impacts to the Extended Continental Shelf Commonwealth Marine Area that occurs within the DE and the ZPSI.

4.1.7.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

DISER propose to undertake the Proposed Action in accordance with permitting documents for Phase 1 Decommissioning activities that are reviewed and endorsed by NOPSEMA, including:

- Formal Phase 1 Decommissioning Safety Cases, prepared and reviewed from Q2-2022, acceptance in Q1/Q2 2023
- Emulated Phase 1 Decommissioning Well Operations Management Plan (WOMP), prepared and reviewed from Q3-2022, acceptance in Q1/Q2 2023
- Emulated Phase 1 Decommissioning Environment Plan (EP), prepared and reviewed from Q3 2022, acceptance in Q1/Q2 2023.
- These permissioning documents will be finalised in Q1/Q2 2023

The emulated Phase 1 Decommissioning EP would be the overarching management document for the Proposed Action and detail the environmental risks and management measures relating to the environmental aspects and impacts, including demonstrating that risks have been reduced to As Low as Reasonably Practicable (ALARP). The EP would include a range of impact avoidance, reduction and remediation measures. The proposed content of this document is outlined in 'Att 3-Table of Contents for Emulated Phase 1 Decommissioning EP'.

The emulated Phase 1 Decommissioning WOMP and formal Phase 1 Decommissioning Safety Case are key management documents that address, inter alia, the avoidance of the worst-case scenario of a subsea well loss of containment. The subsea well loss of containment scenario is the only aspect for the Proposed Action that has the potential to cause a significant impact to the environment, due to the potential for hydrocarbon accumulation on the shorelines of Timor Leste, West Timor and/or Pulau Roti and the potential to cause the death of large marine animals.

The FPSO towing would be conducted in accordance with all relevant legislation and other requirements, including requirements from AMSA, the classification society (such as Lloyd's Register) and international treaties including MARPOL. The legislative framework applies a range of approvals that relate to structural integrity and safety of the tow, reducing the likelihood of the FPSO sinking, and managing pollution discharges during the tow (e.g. air emissions, sewage and solid waste).

Refer to 'Att 1-EPBC Referral Supporting Document, Section 7, pp 108-115' for full details on the avoidance and mitigation measures proposed for the Proposed Action.

4.1.7.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

No offsets are proposed as the Proposed Action is unlikely to cause significant impacts to Commonwealth marine areas.

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The DE and ZPSI lie in the Timor Sea off the coast of Northern Territory and do not lie in proximity to the Great Barrier Reef.

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Proposed Action does not involve a coal seam gas or coal mine development.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.10.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

Commonwealth land does not lie in the vicinity of the DE or ZPSI.

4.1.11 Commonwealth heritage places overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

Commonwealth heritage places do not lie in the vicinity of the DE or ZPSI.

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

Yes

4.1.12.2 Briefly describe the nature and extent of the likely impact on the whole of the environment. *

The potential impacts from planned and unplanned events associated with the Proposed Action have the potential to impact upon whole of the environment matters. The potential impacts on the whole of the environment within the DE and the ZPSI include:

- Impacts on ocean forms, ocean processes and ocean life
- Pollutants, chemicals and toxic substances
- Impacts on animals
- Impacts on people and communities.

A summary of the impacts to the Whole of the Environment within the DE and ZPSI is provided below. Refer to ‘Att 1-EPBC Referral Supporting Document, Section 6, pp 102-109’ for an assessment of the significance of potential impacts to the whole of the environment, arising from planned and unplanned events associated with the Proposed Action, based on the criteria in *Significant Impact Guidelines 1.2 – Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies*.

Impacts on landscapes and soils

- **Not relevant**
- DE and ZPSI are offshore
- Terrestrial waste transport and disposal undertaken by third party in accordance with waste tracking and licencing under State/Territory legislation

Impacts on coastal landscapes and processes

- **Not relevant**
- DE and ZPSI are offshore. Proposed Action does not involve physical works on coastal areas

Impacts on ocean forms, ocean processes and ocean life

- **Relevant**
- Potential impacts within the DE and ZPSI.

Impacts on water resources

- **Not relevant**
- DE and ZPSI are offshore.
- Terrestrial waste transport and disposal undertaken by third party in accordance with waste tracking and licencing under State/Territory legislation

Pollutants, chemicals, and toxic substances

- **Relevant**
- Proposed Action involves waste storage, handling and transport

Impacts on plants

- **Relevant**
- Potential impacts to mangroves on southern coast of Timor or Pulau Roti

Impacts on animals

- **Relevant**
- Potential impacts to marine animals within the DE and ZPSI

Impacts on people and communities

- **Relevant**
- Potential impacts to social and economic uses within the ZPSI

Impacts on heritage

- **Not relevant**
- No identified heritage values within the ZPSI.

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

None

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Threatened Species and Ecological Communities (S18)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth heritage places overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

No

4.3.8 Describe why alternatives for your proposed action were not possible. *

The Facility was owned and operated by Woodside until 2015 when it was purchased by the Northern Oil and Gas Australia Ptd Ltd (NOGA) group of companies. In July 2019, the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) directed the NOGA group to halt hydrocarbon production and operations. The NOGA group went into voluntary administration in September 2019 and was liquidated in February 2020. The liquidator disclaimed the FPSO, associated subsea infrastructure and wells, and the titles AC/L5 and WA-18-L.

The Government thoroughly investigated options for the Facility and decided that a decommissioning and remediation process was the most cost-effective way to remove future potential risks presented by the Facility and to ensure protection of the surrounding marine environment.

Return of the Facility to production would unlikely be economical as it would require a substantial investment of both capital and time to bring the Facility back to production capability. Attempting to return the Facility to production would significantly increase the environmental and safety risk profile for the Facility and any workers on board. The fields are late in life with wells producing a low proportion of oil, thereby are not considered economically viable to restart.

Leaving the FPSO in-situ, and leaving the wells without permanent plugging, is not considered an acceptable alternative to the proposed action. The OPGGS Act and good oilfield practice require offshore petroleum well, structures, equipment and property to be decommissioned in a timely, safe and environmentally responsible manner.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

1.2.5 Information about the staged development

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

1.2.6 Commonwealth or state legislation, planning frameworks or policy documents that are relevant to the proposed action

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation
#2.	Att-3 Table of Contents for Emulated Phase 1 Decommissioning EP	Document	Table of Contents for Emulated Phase 1 Decommissioning EP

1.2.7 Public consultation regarding the project area

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation
#2.	Att 2-EP Consultation Flyer-2022-10-17	Document	Northern Endeavour EP Consultation Flyer

3.1.1 Current condition of the project area's environment

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation
#2.	Leeuwin Current and wind distributions on the southern part of the Australian North West Shelf	Link (Journal article)	https://www.semanticscholar.org/paper/Leeuwin-current-and-wind-distributions-on-the-part-Holloway-Ny
#3.	Morphology and basement of the Sahul Shelf	Link (Journal article)	https://Veevers, J. J., Van Andel, T. H. (1967). Morphology and basement of the Sahul Shelf. Marine
#4.	The North Marine Bioregional Plan Bioregional Profile	Link (Journal article)	https://parksaustralia.gov.au/marine/pub/scientific-publications/archive/north-marine-bioregional-pl
#5.	Trophic systems of the North West Marine Region	Link (Journal article)	https://www.agriculture.gov.au/sites/default/files/documents/nw-trophic-systems-1-3.pdf

3.1.2 Existing or proposed uses for the project area

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

3.1.3 Natural features, important or unique values that applies to the project area

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation
#2.	Conservation Status in Marine Biological and Heritage Resources of Cartier and Hibernia Reefs, Timor	Link (Journal article)	https://www.bing.com/search?q=Guinea%2C+M.+L.+(2007).+Sea+snakes+of+Ashmore+Reef%2C+Hibernia+Reef+an
#3.			

	Coral reef sponges of the Sahul Shelf — a case for habitat preservation	Link (Journal article)	http://www.researchgate.net/publication/233979389_Coral_reef_sponges_of_the_Sa_a_case_for
#4.	Delineating the Coral Triangle, its Ecoregions and Functional Seascapes.	Link (Journal article)	https://www.conservationgateway.org/Documents/Green%20and%20Mous%2

3.1.4 Gradient relevant to the project area

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

3.2.1 Flora and fauna within the affected area

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

3.2.2 Vegetation within the project area

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

3.3.1 Commonwealth heritage places overseas or other places that apply to the project area

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

3.3.2 Indigenous heritage values that apply to the project area

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

3.4.1 Hydrology characteristics that apply to the project area

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

4.1.4.2 (Threatened Species and Ecological Communities) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

4.1.4.6 (Threatened Species and Ecological Communities) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

4.1.4.9 (Threatened Species and Ecological Communities) Why you do not think your proposed action is a controlled action

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

4.1.4.10 (Threatened Species and Ecological Communities) Avoidance or mitigation measures proposed for this action

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation
#2.	Att-3 Table of Contents for Emulated Phase 1 Decommissioning EP	Document	Table of Contents for Emulated Phase 1 Decommissioning EP

4.1.5.2 (Migratory Species) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	

Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

4.1.5.6 (Migratory Species) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

4.1.5.9 (Migratory Species) Why you do not think your proposed action is a controlled action

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

4.1.5.10 (Migratory Species) Avoidance or mitigation measures proposed for this action

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation
#2.	Att-3 Table of Contents for Emulated Phase 1 Decommissioning EP	Document	Table of Contents for Emulated Phase 1 Decommissioning EP

4.1.7.2 (Commonwealth Marine Area) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

4.1.7.6 (Commonwealth Marine Area) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

4.1.7.9 (Commonwealth Marine Area) Why you do not think your proposed action is a controlled action

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

4.1.7.10 (Commonwealth Marine Area) Avoidance or mitigation measures proposed for this action

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation
#2.	Att-3 Table of Contents for Emulated Phase 1 Decommissioning EP	Document	Table of Contents for Emulated Phase 1 Decommissioning EP

4.1.12.2 (Commonwealth or Commonwealth Agency) Nature and extent of the likely impact on the whole of the environment

#1.	Att 1-EPBC Referral Supporting Document-V2-2022-10-17	Document	Northern Endeavour EPBC Referral Supporting Documentation

5.2 Declarations

Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN	39008488373
Organisation name	GHD PTY LTD
Organisation address	Level 10, 999 Hay Street Perth, Western Australia 6000, Australia
Representative's name	Nick Houldsworth

Representative's job title	Environment Market Leader, WA Environmental Assessment and Approvals
Phone	+61 8 62228086
Email	nick.houldsworth@ghd.com
Address	Level 10, 999 Hay Street Perth, Western Australia 6000, Australia

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ By checking this box, I, **Nick Houldsworth of GHD PTY LTD**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

✔ Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN	74599608295
Organisation name	Department of Industry, Science and Resources (DISR)
Organisation address	National office: Industry House, 10 Binara Street, Canberra
Representative's name	Shane McWhinney
Representative's job title	Northern Endeavour Branch – Offshore Resources and Liquid Fuels Division
Phone	N/A
Email	NEBranch@industry.gov.au
Address	National office: Industry House, 10 Binara Street, Canberra

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Shane McWhinney of Department of Industry, Science and Resources (DISR)**, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

✔ Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Shane McWhinney of Department of Industry, Science and Resources (DISR)**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *