Summary

In December 2020, the Australian Government announced that it would decommission the Northern Endeavour Floating Production Storage and Offloading facility (the NE FPSO) (Figure 1) and associated subsea infrastructure and wells (the NE facility), and remediate the associated Laminaria and Corallina oil fields and infrastructure, to remove potential risks to the environment in three distinct phases.

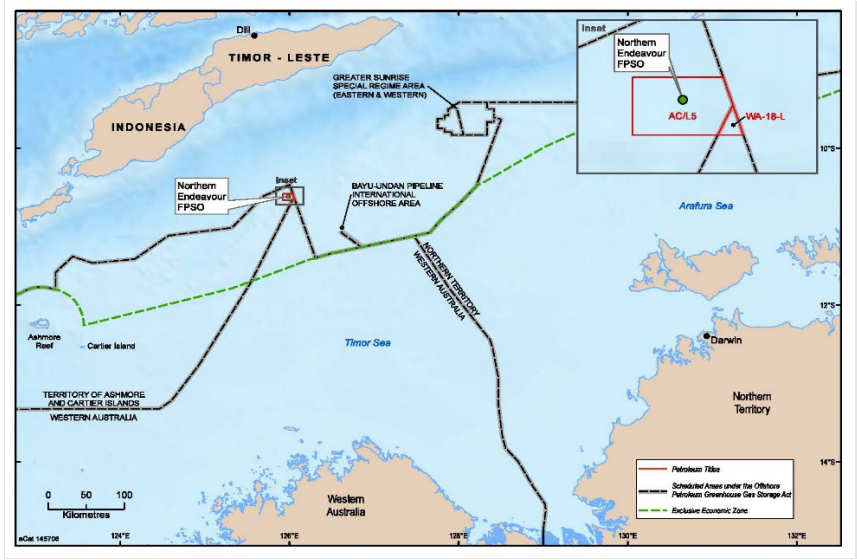
Figure 1: The Northern Endeavour FPSO

The purpose of this document is to provide relevant stakeholders with details on the proposed Phase 1 decommissioning activity, which is the first phase of the overall Northern Endeavour decommissioning program.

Background

The NE FPSO is located in Commonwealth waters in the Timor Sea, approximately 550 km northwest of Darwin, and was in production from 1999 to July 2019. The NE FPSO is situated within the Scheduled Area for the Australian Commonwealth Territory of Ashmore and Cartier Islands. It produced oil from the Laminaria and Corallina fields, located in petroleum production licence area AC/L5.

Figure 2: Location of the NE FPSO and Laminaria and Corallina fields



The NE FPSO is currently moored by a Bottom Mounted Internal Turret (BMIT) mooring system that enables the NE FPSO to weathervane around the turret and remain on station in all weather conditions. The facility is currently maintained in a non-production mode, with all wells shut-in or suspended, production facilities de-pressurised, and negligible crude oil cargo remaining on board. This has substantially reduced the safety and environmental risks.

From 2016 to early 2020, the Northern Oil and Gas Australia group of companies (NOGA) owned the facility and produced petroleum from the Laminaria and Corallina oil fields authorised by petroleum production licences AC/L5 and WA-18-L. Upstream Production Solutions Pty Ltd (Upstream PS) was the contracted and registered Operator, and Safety Case holder for the NE FPSO.

Following the liquidation of NOGA and the disclaiming by the liquidator of the facility and petroleum titles, early 2020, the registered titleholder no longer has rights or responsibilities in relation to the NE FPSO or under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act). Consequently, the Australian Government acted quickly to ensure the facility and surrounding maritime area remains safe and secure.

The Department of Industry, Science and Resources (the Department) engaged Upstream PS under contract to continue to operate and maintain the facility, in a non-production mode. In December 2020, the Department announced the decision to decommission the facility and remediate the Laminaria and Corallina fields. On 30 March 2022, the Commonwealth engaged Petrofac Facilities Management Limited (Petrofac) to deliver Phase 1 of the decommissioning program.

The three distinct phases of the Northern Endeavour decommissioning program are:

- Phase 1: Decommissioning and disconnection of the NE FPSO from the subsea equipment, including well suspension and isolation.
- Phase 2: Permanent plugging and abandonment of wells.
- Phase 3: Removal of subsea infrastructure and remediation.

The Phase 2 and 3 related activities will be addressed in subsequent Environment Plans (EPs) and as such, the Department is not seeking comment at this stage on these subsequent Phases, as part of the Phase 1 EP stakeholder consultation process. The Department will consult with the 'relevant persons' (as defined under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Environment Regulations)) on these later phases of work at the appropriate times.

The Department remains the managing entity of the NE FPSO. Petrofac will be the registered operator, responsible for the safe and compliant operation of the NE FPSO under non-production mode and for the Phase 1 decommissioning activities.

Why We're Consulting You

The Department has identified you, or your organisation, department, or agency, as a 'relevant person' whose functions, interests, or activities may be affected by this proposed petroleum activity. We have contacted you to inform you of the proposed Phase 1 decommissioning activities.

This stakeholder consultation flyer has been prepared to provide sufficient information for 'relevant persons' to understand how the proposed activity may affect your own functions, interests, or activities, and provide you with the opportunity to submit feedback, identify concerns, or direct additional questions about the proposed activities to the Department.

Feedback from stakeholders on potential or perceived impacts associated with the Phase 1 decommissioning activities will be carefully considered and assessed. Please note that stakeholder feedback and the Department's response will be included in the EP submission to the National Offshore Petroleum Safety and Environmental

Management Authority (NOPSEMA). If feedback is identified as sensitive by a stakeholder, the department will inform NOPSEMA, who through their assessment of the EP, can ensure it remains confidential.

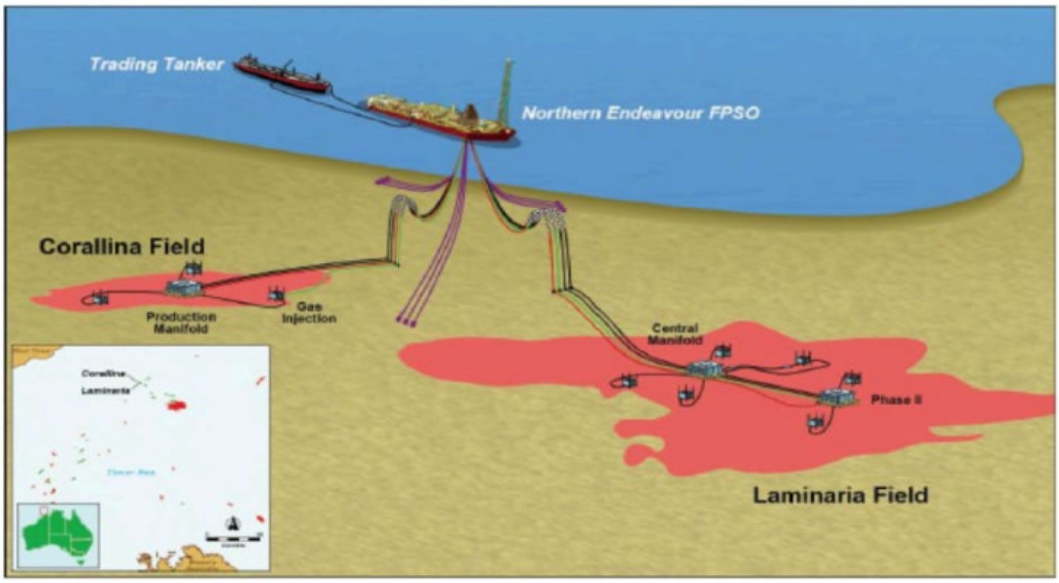
Phase 1 Decommissioning Activities

The facility, illustrated in Figure 3 below, consists of:

- Nine (9) development wells and associated production / control spools;
- Subsea infrastructure consisting of flexible flowlines and umbilicals out to each of the three (3) manifolds;
- Flowline risers and umbilical risers with buoyancy modules installed on the mid water arches; and
- The NE FPSO, which is held on station by a 3 x 3 catenary leg point mooring system.

Figure 3: NE FPSO and associated Corallina and Laminaria field layout

Please note the reference to trading tanker in the following illustration is a historical one and no longer relevant.



The Phase 1 decommissioning activities will include:

- Preparation of the NE FPSO and subsea production assets, including cleaning/flushing of topsides and subsea infrastructure. Cleaning and flushing fluids may be either taken ashore for treatment/disposal, discharged to the marine environment and/or disposed of down-hole within the existing wells, in accordance with the relevant regulatory requirements, permits and approvals.
- Suspension and isolation verification of the wells by installation of suitable and verified well barrier elements, to isolate the hydrocarbon bearing zones.
- Disconnection and laydown of risers on the seabed. Each riser will be cut below the hull, laid down and plugs inserted into the open ends. Risers will be left in a manner that will support eventual removal.
- Disconnection and laydown of umbilicals to the seabed, in a manner that will support eventual removal.
- Disconnection of the mooring chains and lay down onto the seabed, in a manner that will support eventual removal.
- Towing of the NE FPSO from location to an agreed handover point or delivery location.
- Removal, transport, and disposal of buoyancy modules from the risers.
- Periodic monitoring of the subsea wells and infrastructure post NE FPSO disconnection and tow away, until such time as the commencement of Phase 2.
- Various suitably rated support vessels will be required to undertake the Phase 1 activities, including but not limited to tugs, a light well intervention vessel, construction, and offshore support vessels.

Operational Area

The Operational Area applicable for the Phase 1 decommissioning scope includes the NE FPSO, moorings, subsea infrastructure, wells, flowlines, risers and umbilicals, and an area within 1,500 m around all infrastructure.

All activities within the Operational Area will be subject to the controls outlined in the Phase 1 decommissioning EP. Activities outside of the defined Operational Area will adhere to all applicable maritime regulations and will not be regulated under the OPGGS Act and are therefore out of scope of this stakeholder consultation process.

Timing

The Phase 1 decommissioning activities are anticipated to commence in Q1 2023, with FPSO tow away anticipated to occur in Q3 2023. Following this, monitoring of the subsea wells and infrastructure will continue until such time as the commencement of Phase 2 activities, which will be managed via a separate or revised EP.

Development and Assessment of the EP

As the Phase 1 operational area occurs within Commonwealth waters, the Department is committed to satisfying the regulatory requirements of the OPGGS Act and Environment Regulations, as administered by NOPSEMA, through its contractual arrangements with the operators.

The Phase 1 decommissioning EP (currently under development) describes the environment in which the petroleum activity takes place, provides an assessment of the impacts and risks arising from the activity, and identifies the control measures to manage the potential impacts and risks to levels that are acceptable and 'As Low As Reasonably Practicable' (ALARP).

The EP is also required to describe how the Department has engaged with relevant stakeholders whose interests, functions, and activities may be affected. The EP must describe how each stakeholder's feedback has been considered and addressed.

Once the consultation period concludes and feedback received has been appropriately considered and addressed, the EP will be submitted to NOPSEMA for assessment. NOPSEMA will review the EP and assess whether it is consistent with the requirements of the OPGGS Act, for managing environmental management obligations.

Summary of Key Environmental Risks and Control Measures

Environmental aspects associated with the Phase 1 decommissioning activities and preliminary proposed control measures to manage the impacts and risks associated with each of these aspects are summarised in the table below:

PLANNED ACTIVTIES		
Aspect	**Potential Impacts**	**Control Measures**
Physical presence of the NE FPSO and support vessels	Interference or exclusion of other marine users	• Prior to commencement of activities, Australian Hydrographic Office (AHO) informed to enable Notice to Mariners to be issued as required • A 500 m radius safety zone is maintained around the relevant infrastructure • Implementation of national and international regulations and conventions for collision prevention, safety, and navigation at sea • Detection systems and equipment on the NE FPSO will alert facility personnel of a potential collision • Consultation with relevant stakeholders • NE FPSO tow plan
Seabed and benthic habitat disturbance	Disturbance to benthic habitat (and	• Wet storage/laydown within the defined Operational Area limits the potential for environmental impacts

PLANNED ACTIVTIES		
Aspect	**Potential Impacts**	**Control Measures**
	associated fauna) in the operational area	• Anchoring only permitted through the Permit to Work system within the Operational Area - the support vessels typically use dynamic positioning in lieu of anchoring • Seabed surveys of infrastructure and laydown locations undertaken as required
Artificial light emissions	Attractant to fauna, temporary increase in predation rates on fauna attracted to lights	• Lighting is maintained at a level to make safe the work operations and in accordance with navigational standards • Lighting is normally directed onto work areas except when necessary for safe operations
Noise emissions	Temporary physiological impacts on sensitive fauna, such as cetaceans	• Interactions between support vessels/helicopters and cetaceans are consistent with EPBC Regulations 2000 – Part 8 Division 8.1 - Interacting with cetaceans • Maintenance and inspections are undertaken to maintain equipment and reduce noise and vibration • Marine fauna observations maintained

Routine atmospheric emissions	Temporary and localised reduction in air quality	• Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations
		• As appropriate to class, vessels will comply with requirements of Marine Order 97 (MARPOL 73/78 Annex VI), including:
		  ○ sulphur content of fuel oils
		  ○ nitrous oxides emissions limits
		  ○ having a valid International Air Pollution Prevention certificate
		  ○ having a valid Ship Energy Efficiency Management Plan
		• Engines and machinery are maintained in accordance with planned maintenance systems

Greenhouse gas emissions	Contribution to global greenhouse gas emissions.	• Comply with relevant requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) and associated regulations • Comply with the *National Greenhouse and Energy Reporting Act (2007)* and National Greenhouse and Energy Reporting Regulations (2008)
Planned vessel discharges	Temporary and localised reduction in water quality. Modification of fauna feeding patterns	• Discharges from vessels will comply with relevant International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations and the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* • Vessels will comply with Marine Order 96 (MARPOL 73/78 Annex IV) in relation to offshore sewage discharges • Vessels will comply with Marine Order 95 (MARPOL 73/78 Annex V) in relation to food waste discharges • Vessels will comply with Marine Order 91 (MARPOL 73/78 Annex I) in relation to oily bilge water discharges • Relevant vessels have a valid International Sewage Pollution Prevention (ISPP) and International Oil Pollution Prevention (IOPP) certificates
Planned FPSO and subsea discharges operational and flushing/cleaning fluids	Temporary and localised reduction in water quality Adverse effect to marine biota	• Consultation with Department of Climate Change, Energy, the Environment and Water (DCCEEW) on potential need for Sea Dumping Permit • Chemical selection and management procedure is in place to assess all chemicals planned for discharge for acceptability • Discharges management and monitoring procedures • Northern Endeavour FPSO Performance Standard – Environmental Emissions Monitoring and Controls

PLANNED ACTIVTIES		
Aspect	**Potential Impacts**	**Control Measures**
		• Hydrocarbon production system flushing related discharges not to exceed an Oil in Water (OIW) concentration of 30 mg/l
Hazardous and non-hazardous waste disposal	Temporary and localised reduction in water quality	• Discharges from vessels will comply with relevant International Convention for the Prevention of Pollution from Ships (MARPOL) requirements and associated regulations and the Protection of the Sea (Prevention of Pollution from Ships) Act 1983 • Waste generated on the vessels is managed in accordance with legislative requirements and a Waste Management Plan • Waste is stored and segregated, and handling equipment kept in good working order, to prevent accidental loss to the environment • Waste is transported and disposed of in a safe and environmentally responsible manner • Personnel are trained in waste management requirements • All wastes (other than those permitted for discharge) are sent ashore for recycling, reuse, treatment, or disposal at appropriately licensed facilities • The management and disposal of any quarantine risk material will be in accordance with state and commonwealth regulations • Waste tracking process implemented
Handling and disposal of Naturally Occurring Radioactive Materials (NORMs)	Marine pollution Chronic and acute toxicity impacts on marine biota	• Hazardous waste including NORMS are handled, stored, and disposed of to prevent water contamination, in accordance with the Waste Management Plan and associated operating procedures • NORMs are stored in a designated labelled radioactive storage bin and transported by a licensed carrier to an appropriate onshore disposal facility • Disposal of waste containing NORMs will undergo a risk assessment to determine the most appropriate disposal method in accordance with regulatory guidelines and best practice

UNPLANNED ACTIVITIES		
Hazard	**Potential Risk**	**Control Measures**
Emergency Events – Hydrocarbon Spills	Marine pollution Adverse effect to marine biota	• A 500 m radius safety zone is maintained around the relevant infrastructure • Implementation of national and international regulations and conventions for collision prevention, safety, and navigation at sea • The wells are managed to comply with Safety Critical Equipment Performance Standards, Well Operations Management Plan (WOMP) and Well Integrity Guidelines • Accepted safety case in place prior to commencing activities • All cargo oil tanks are currently empty and gas free, and will remain so for Phase 1 • All wells are currently shut-in, with Sub-Surface Safety Valves (SSSV) closed • The hydrocarbon production and gas lift systems are depressurised • Integrated Safe System of Work (ISSOW) permits in place • Standard operating procedures in place • Maintenance management system • Simultaneous operations management plans where required • FPSO internal fuel tanks are protected by wing ballast tanks • Monitoring/surveillance on a periodic basis to assess if there are any leaks from the wells • Australian Hydrographic Office (AHO) informed to enable Notice to Mariners to be issued as required

UNPLANNED ACTIVITIES		
Hazard	**Potential Risk**	**Control Measures**
		• Anchoring is not permitted within the 500 m radius safety zone, any anchoring within the wider Operational Area will be minimised to that required for operational or safety purposes • FPSO and support vessels are equipped with navigation aids to allow avoidance with other vessels and subsea obstructions • Stakeholder consultation process • Valid Shipboard Oil Pollution Emergency Plan or Shipboard Marine Pollution Emergency Plan (as appropriate for vessel classification) • Emergency Response Plan (ERP), Oil Pollution Emergency Plan (OPEP) and Operational and Scientific Monitoring Programme (OSMP) in place • Spill response kits are maintained and located near hydrocarbon and chemical storage areas • Spills on deck are cleaned up by trained and competent operations personnel using spill kits
Chemical spills	Marine pollution Localised adverse effect to marine biota	• Chemical Management Process for chemical assessment and selection • Chemical selection and management procedure is in place to assess all chemicals planned for discharge for acceptability • Spill response kits are maintained and located near hydrocarbon and chemical storage areas • Spills on deck are cleaned up by trained and competent operations personnel using spill kits • Valid Shipboard Oil Pollution Emergency Plan or Shipboard Marine Pollution Emergency Plan (as appropriate for vessel classification)
Dropped objects	Marine pollution Benthic habitat disturbance	• Crane and lifting equipment specifications and procedures • Crane and lifting equipment safety devices • Crane rated capacity indicators • Crane operator competency • Ongoing structural and potential dropped object surveys and remediation
Introduction of introduced marine species	Establishment of invasive species to open ocean and/or seabed, competing with and displacing native species	• Any international vessel will comply with Commonwealth regulations (*Biosecurity Act 2015*) and reporting requirements (Marine Arrivals Reporting System) • Vessels will comply with Commonwealth management requirements (Australian Ballast Water Management Requirements) • Support vessels will comply with requirements of Marine Order 98 and anti-fouling certificates (as appropriate to vessel class) • Biofouling management for vessels in accordance with state, national and international biofouling management guidelines • Ballast Water Management Plan is in place and implemented as required • Sediment from ballast water tanks is disposed of at an appropriate onshore facility where required
Marine fauna interaction	Injury or fatality due to collision with marine fauna.	• Interactions between support vessels, helicopters and cetaceans are consistent with EPBC Regulations 2000 – Part 8 Division 8.1 - Interacting with cetaceans • Marine fauna observations maintained

Comments

Based on the information in this flyer, we invite you to comment on environmental aspects of the proposed Phase 1 decommissioning activities and associated control measures.

All submissions must be made within 30 calendar days by **15 September 2022**.

Further Information and Contact Details

For further information, to provide feedback or submit an enquiry in relation to the EP, please use the following contact details:

Email Address	NEConsultation@industry.gov.au
Website	www.industry.gov.au/policies-and-initiatives/decommissioning-the-northern-endeavour