



# **North West Shelf Trunklines Operations (State Waters) Environment Plan Summary**

Australian Operations

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Revision 3

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# 1. INTRODUCTION

## 1.1 Overview

This North West Shelf (NWS) Trunklines Operations (State Waters) Environment Plan Summary (the Summary) summarises the NWS Trunklines Operations (State Waters) Environment Plan (EP). This Summary has been prepared in accordance with *Regulation 11(7)* and *Regulation 11(8)* of the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA)* and the *Petroleum Pipelines (Environment) Regulations 2012 (WA)*.

The scope of the EP covers the following activities associated with the operations of the trunkline and the chemical supply line within State waters:

- routine operation of the trunklines (1TL and 2TL)
- routine onshore pigging operations
- routine inspection, maintenance and repair activities
- accidental incident and non-routine activities
- activities of support vessels within the Operational Area.

The NWS trunklines connect the NWS offshore facilities, including the North Rankin Complex, Angel, Goodwyn Alpha, and Okha facility to the onshore Karratha Gas Plant (KGP). The infrastructure covered by this EP includes:

- the portion of the NWS trunklines in State waters (licence TPL/15 and TPL/16)
- onshore portion of 2TL from the mean low water mark (MLWM) to pig receiver, within the KGP boundary (licence PL/58).

The Operational Area is situated in the waters of Mermaid Sound within the Dampier Archipelago and adjacent to the shores of the Burrup Peninsula. This area includes:

- an area 500 m either side of the infrastructure from the MLWM to the boundary of the State/Commonwealth boundary (~3 NM offshore)
- the area defined by licence PL/58

The Operational Area excludes any portion of the Murujuga Cultural Landscape World Heritage property that extends within 500 m of the trunklines.

Infrastructure and vessel activities beyond the Operational Area are considered outside the scope of the EP. This EP does not include the operation of the offshore facilities or KGP, which are covered under separate environmental approvals.

## 1.2 Contact details

Woodside Burrup Proprietary Limited

11 Mount Street

Perth, Western Australia

T: 08 9348 4000

ACN: 63 005 482 986

Nicolas Wirtz  
Corporate Affairs Advisor  
11 Mount Street  
Perth,  
Western Australia  
T: 08 9348 4000  
feedback@woodside.com.au

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## 2. DESCRIPTION OF THE ACTIVITY

### 2.1 Location and Operational Area

The NWS trunklines are approximately 134 km in length each and connect the NWS offshore facilities, including the North Rankin Complex, Angel, Goodwyn Alpha, and Okha facility to the onshore KGP.

The State waters section of 1TL is 29.7 km long, and the 40-inch carbon steel trunkline was installed in 1982. The State waters section of 2TL is 29.2 km long, and the 42-inch carbon steel trunkline was installed in 2002 to support the onshore expansion of liquified natural gas (LNG) facilities at KGP.

The sections of the NWS trunklines located in State waters are covered by pipeline licences TPL/15 and TPL/16 from the MLWM (KP0.0) to the boundary between State and Commonwealth waters (~3 NM offshore) (Figure 2-1). A small onshore portion of 2TL is licenced under PL/58, which covers the area between the MLWM to a pig receiver within the KGP site boundary.

The NWS trunklines form an integral part of the NWS offshore gas and condensate production system. The objective of the overall system is to supply the KGP with sufficient gas and condensate to:

- meet domestic gas (DOMGAS) contract requirements
- meet LNG contract requirements
- maximise LNG and condensate production.

A summary of the Petroleum Activity is provided in Table 2-1.

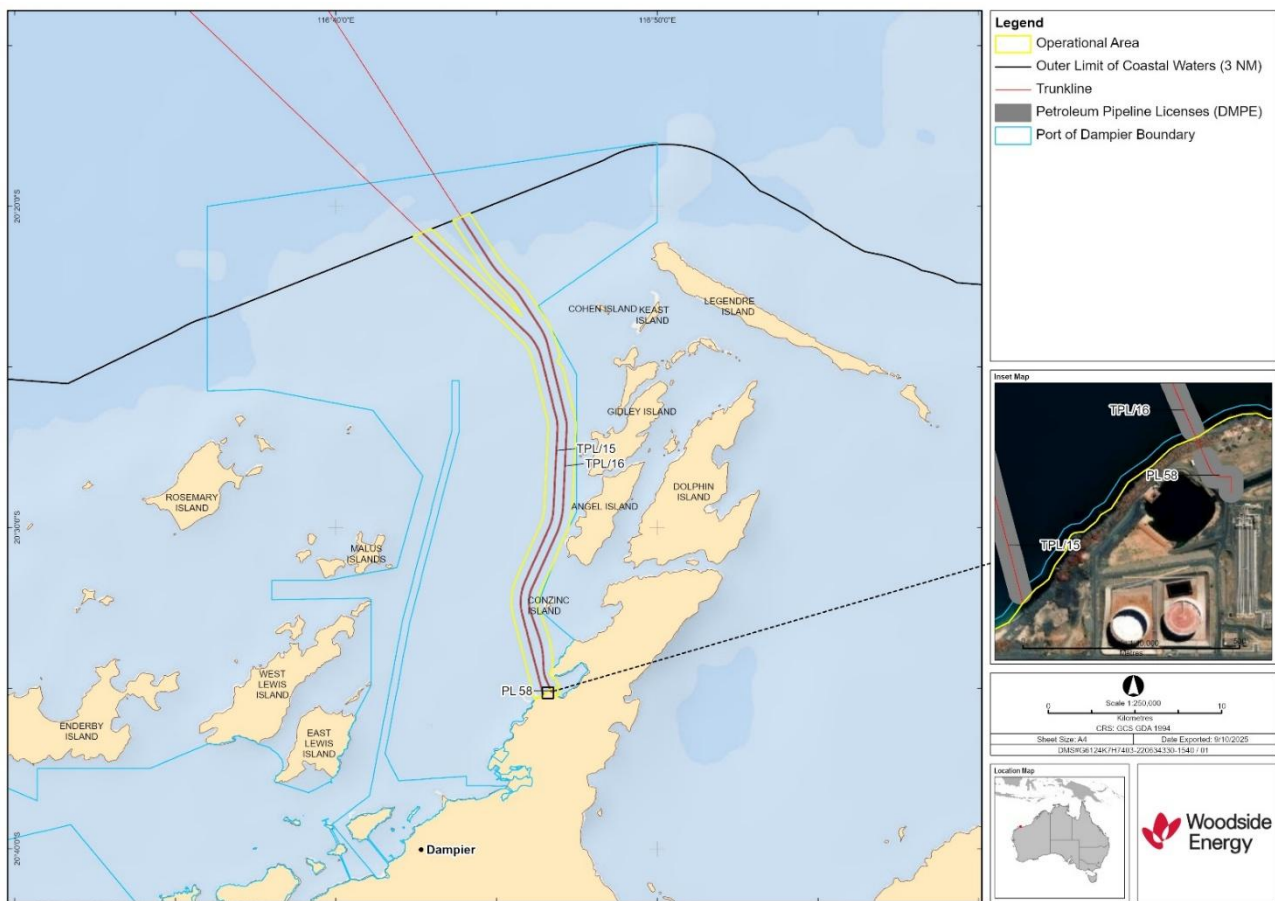


Figure 2-1: Location of the Petroleum Activity<sup>1</sup>

<sup>1</sup> Inset map indicates a gap between licence TPL/16 and PL/58. The Department of Local Government, Industry Regulation and Safety (LGI Rs) Petroleum & Geothermal Register confirms PL/58 extends to the MLWM. The geographic information data set used to inform this Figure is the Department of Mines, Industry Regulation and Safety's Western Australian Petroleum Pipeline Polygons (DMIRS-007).

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## 2.2 Timing

The NWS trunklines operate 24 hours per day, 365 days per year. Supporting operations, such as inspections and maintenance activities, take place intermittently as required.

## 2.3 Key activities

An overview of the Petroleum Activity is provided in Table 2-1.

**Table 2-1: Petroleum Activity overview**

Item	Description
<b>Permit Titles</b>	TPL/15, TPL/16 and PL/58
<b>Location</b>	Dampier Archipelago from the shore crossing (MLWM) to the boundary between State and Commonwealth waters (~3 NM offshore) Onshore portion of 2TL from the MLWM to the pig receiver, within the KGP site boundary
<b>Water depth</b>	Ranges from the MLWM at the shore crossing to about 39 to 40 m (mean sea level) at the boundary between State and Commonwealth waters (~3 NM offshore)
<b>Subsea infrastructure</b>	1TL 2TL
<b>Vessels</b>	Crewed and uncrewed support vessels carrying out activities such as subsea inspection, maintenance, monitoring and repair (IMMR)
<b>Key activities</b>	Routine operation of 1TL and 2TL Trunkline pigging operations Vessel-based routine and non-routine IMMR activities along the trunklines in State waters

### 2.3.1 Trunkline operations

Normal operations involve the delivery of gas/condensate fluid from the NWS offshore facilities to KGP. Process control of the trunkline is predominantly through management of production system pressures via both well flow controls and the trunkline onshore terminal. All process systems are designed to meet international, national and local industry practice.

### 2.3.2 Trunkline pigging operations

Pigging involves sending an internal tool through a trunkline using a pressure driver. During the trunklines' lifecycle, there may be a need to conduct trunkline pigging for various reasons (e.g. inspection, maintenance, repair or to facilitate modifications). The entire trunkline pigging system, including the launcher, receiver and the respective trunkline, is designed for maximum operation pressure of the production system. Pigging duration of the full length of 1TL and 2TL (MLWM to NRC) may take up to two weeks and is undertaken every four to 12 years. The pig launcher and receiver for 1TL is located on NRC and in KGP, respectively; therefore, emissions and discharges associated with pigging of 1TL are not considered in this EP. The receiver for 2TL is included in PL/58; therefore, emissions and discharges associated with pigging of 2TL are considered in this EP. The pig receiver for 2TL is in a bunded area and pigging discharges are collected and disposed at a licenced waste facility. A small volume of hydrocarbon gas is vented before opening the pig receiver.

### 2.3.3 Inspection, maintenance, monitoring and repairs activities (IMMR)

Subsea infrastructure installed within the Operational Area is designed not to require significant intervention. Inspection and maintenance activities are undertaken to help ensure the integrity of the infrastructure and identify problems before they present a risk of loss of containment. Intervention may be required to repair identified problems. Subsea activities are typically undertaken from a support vessel and may use a vessel crane, remotely operated vehicles (ROVs) with transponders, autonomous underwater vehicles (AUVs), and divers. Inspection of shallower water sections often requires smaller offshore support vessels.

The scope and frequency of subsea IMMR activities are determined via a risk-based inspection process and routinely updated as operating experience grows and/or as specific vulnerabilities are identified. Vessels will typically undertake IMMR activities within the Operational Area for around one week, every five years.

Subsea activities can be broadly categorised into IMMR. IMMR activities associated with the Petroleum Activity are described below.

**Table 2-2: Potential trunkline IMMR activities**

Item	Description
IMMR Activities	<p>Typical inspection and monitoring activities undertaken include:</p> <ul style="list-style-type: none"> <li>• visual inspections to assess infrastructure integrity</li> <li>• cathodic protection testing</li> <li>• wall thickness surveys to monitor the condition of subsea infrastructure</li> <li>• side scan sonar (SSS) and multibeam echo sounder (MBES) to monitor trunkline movement and seabed features</li> <li>• water quality and seabed sampling around the trunkline</li> <li>• sampling of marine growth on the trunkline and stabilising rocks</li> <li>• operational pigging (sending an internal tool through the trunkline using a pressure driver)</li> <li>• post cyclone inspections using ROV or SSS to confirm position and integrity of trunkline.</li> </ul> <p>There are generally little maintenance and repair required for the trunkline in State waters.</p> <p>Typical maintenance and repair activities may include:</p> <ul style="list-style-type: none"> <li>• marine growth removal using of diluted acid, water jetting and/or brush systems</li> <li>• corrosion protection (replacement of the sacrificial anodes spaced along the trunklines)</li> <li>• scour prevention (installation of grout bags/ gravel to prevent seabed scour)</li> <li>• pipeline coating repair</li> <li>• pipeline stabilisation which may require the use of grout.</li> </ul>

Support vessels are used for IMMR activities. The specifications of the vessel may vary depending on operational requirements, vessel schedules, capability and availability. Support vessels have appropriate lighting to enable a safe working environment as per maritime requirements. Vessels are required to undergo a Woodside marine assurance inspection to review compliance with marine laws and Woodside safety and environment requirements.

### **3. DESCRIPTION OF THE EXISTING ENVIRONMENT**

#### **3.1 Overview**

The key existing environment characteristics of the activity are described in terms of the Operational Area, and the environment that may be affected (EMBA). The Operational Area encompasses the key existing environment characteristics and receptors that may be affected by planned aspects of the Petroleum Activity. The EMBA encompasses all environmental characteristics and receptors with the potential to be impacted by unplanned activities.

For the purposes of this EP, Woodside has identified the EMBA by combining the potential spatial extent of surface and in-water (dissolved and entrained) hydrocarbons, from modelling of a worst-case credible spill. The EMBA also includes areas that are predicted to experience shoreline contact with hydrocarbons above threshold concentrations. Woodside recognises that surface hydrocarbons may be present at low concentrations that may be visible but are not expected to cause ecological impacts. An additional socio-cultural EMBA has therefore been defined for surface hydrocarbons, which encompasses the spatial extent within which social-cultural impacts may potentially occur from changes to the visual amenity of the marine environment. Receptors relevant to the socio-cultural EMBA include Commonwealth and State marine protected areas, National and Commonwealth Heritage Listed places, areas of tourism and recreation, and commercial and traditional fisheries.

For this EP, the socio-cultural EMBA for surface hydrocarbons encompasses an area fully within the boundaries of the EMBA for ecological impacts (which includes the spatial extent of entrained and dissolved hydrocarbons in addition to the surface slick). The ecological EMBA and socio-cultural EMBA are shown in Figure 3-1.

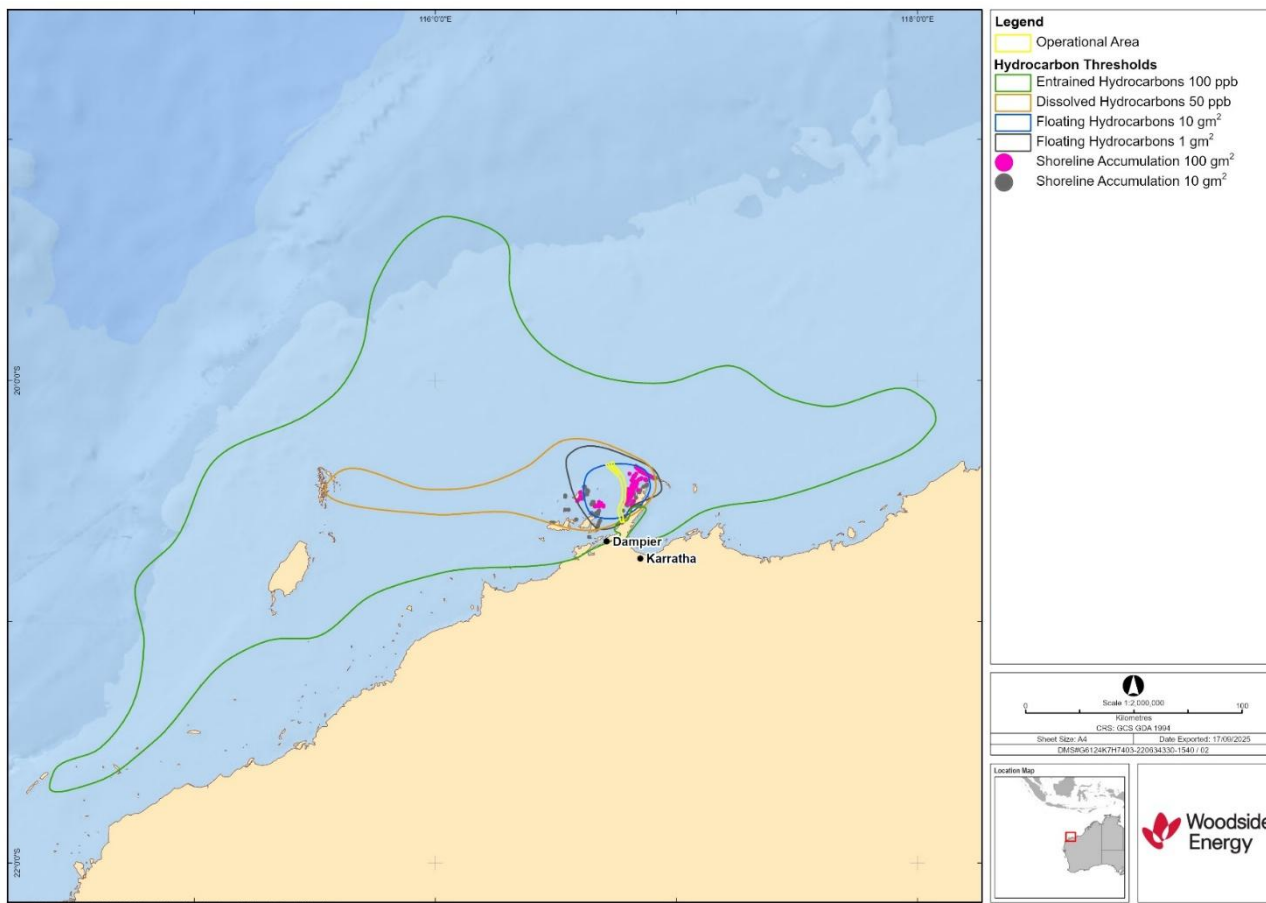


Figure 3-1: Environment that may be affected (EMBA) by the Petroleum Activity

### 3.2 Physical environment

Table 3-1 provides a summary of the physical environment of the Operational Area and EMBA in the context of the wider North-West Marine Region (NWMR).

Table 3-1: Physical environment receptors and characteristics

Receptor	Description
<b>Climate and meteorology</b>	
Seasonal patterns	The climate within the region is dry tropical, exhibiting a hot summer season from October to April and a milder winter season between May and September.
Temperature and rainfall	Maximum temperatures in the region reach an average maximum of 36.2°C in March, falling to an average maximum of 26.3°C in July. Rainfall in the region typically occurs during the wet season, with highest rainfalls observed during late summer, often associated with tropical low pressure systems and cyclones.
Wind	Winds are generally south-westerly during the wet season and south-easterly during the dry season. Winds typically weaken and are more variable during the transitional months between the wet and dry season.
Tropical cyclones	Tropical low cyclones are relatively common in the region, with the Pilbara coast experiencing more cyclonic activity than any other region of the Australian mainland coast. Tropical cyclones occur between November and April and are most common between December and March.

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Receptor	Description
<b>Oceanography</b>	
Currents and tides	<p>The Leeuwin Current and the Indonesian Through Flow (ITF) are significant drivers of the NWMR ecosystems and are strongest during late summer and winter. Tidally driven currents are also a significant component of water movement in the north west shelf (NWS).</p> <p>Currents in the Dampier Archipelago are driven by tides, local winds, large-scale ocean circulation, and strongly influenced by the local topography. Currents are generally weak in Mermaid Sound and stronger in seaward entrances to the Archipelago and interisland water passages.</p> <p>Tides in the Dampier Archipelago are semi-diurnal and have a tidal range of up to 6 m, with pronounced spring and neap tides. Wind driven currents become dominant during the neap tide. Mean temperature of the nearshore waters of the Dampier Archipelago ranges from 22.5 °C in July/August to 30.4 °C in February.</p>
Waves	<p>Waves are predominantly from a south-west direction, with swell height averaging 1 to 2 m and rising to 3 m during June to August. Waves in the Dampier Archipelago are driven by westerly winds in summer, while the western shores of the Burrup Peninsula and the islands to its north are protected from the persistent winter easterlies (Woodside, 1998). During cyclone season, intense low-pressure systems and extreme winds can generate swells higher than 8 m.</p>
<b>Bathymetry</b>	
Bathymetry	<p>Gently sloping seabed where the 10 m bathymetric contour is generally between 1 and 2 NM offshore. The Operational Area is located on the continental shelf, in depths of 0 m to 35 m at the intersection of the state and Commonwealth waters boundary. The portion of the Operational Area within the Dampier Archipelago has a relatively consistent gradient, with depths less than 15 m. The gradient increases towards the northern end of the Operational Area, sloping north-west to depths of about 35 m.</p>
<b>Other physical attributes</b>	
Air quality	<p>Air quality in nearshore and offshore waters of the Pilbara area is considered high given remote setting. Previous monitoring (e.g., DEP, 2002; CSIRO, 2007) around the Burrup Peninsula suggest that concentrations of measured air quality parameters remain low (ERM, 2012). Air quality on the Burrup Peninsula has been monitored by Woodside from 2008 to 2015 and results concluded that both nitrogen oxides and ozone were below the relevant National Environment Protection Ambient Air Quality standard (Woodside, 2019; NEPC, 2016).</p>
Ambient light	<p>Light in the waters of the Operational Area is expected to be limited to vessels traversing through the area. At the southern end of the Operational Area, anthropogenic light will be increased due to the proximity to industrial activity. Heavy vessel traffic exists within the Port of Dampier area.</p>
Ambient marine noise	<p>Physical (wind and waves), biological (vocalisations of marine species) and anthropogenic (vessels and other industrial activity) processes contribute to ambient marine noise. The Operational Area overlaps with the Port of Dampier and heavy vessel traffic exists within the defined shipping fairways which will contribute to background noise levels.</p>
<b>Marine water quality and characteristics</b>	
Water temperature and salinity	<p>These nearshore waters are semi-enclosed from the offshore waters by the islands of the Archipelago, resulting in warmer temperatures in summer and cooler temperatures in winter. Mean temperature of the nearshore waters of the Dampier Archipelago ranges from 22.5 °C in July/August to 30.4 °C in February (Pearce et al., 2003).</p> <p>Within the Dampier Archipelago salinity is generally vertically stratified, wedging seaward beneath the open waters of the continental shelf. Though typically the nearshore waters are more saline, surface water salinity is diluted during periods of cyclonic activity and heavy rainfall within the Archipelago. Salinity in offshore waters typically remains uniform.</p>
Turbidity and suspended solids	<p>The waters in the inner Archipelago are characterised as having naturally higher levels of turbidity than the clearer offshore environment, related to the continual resuspension of fine sediment material through natural inputs such as winds, tidal currents and wave energy, which is exacerbated in shallow areas where strong tidal flows exist (such as through Flying Foam Passage) or where a high volume of vessel movements occur (such as shipping channel and berthage areas). Periodic events, such as major sediment transport associated with tropical cyclones, may influence turbidity on a regional scale (CSIRO, 2007).</p>

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Receptor	Description
Trace metals and organics	A study measuring trace metals and organics, found water quality in the Dampier Archipelago met the guidelines for a 'very high' level of ecological protection (99% species protection) based on the recommended guidelines and approaches in ANZECC/ARMCANZ (2000) (Wenziker et al., 2006). The study (Wenziker et al., 2006) found no detectable levels of organics in the waters of the Dampier Archipelago.
Nutrients	In the Dampier region, intertidal blue-green algal mats have been observed that have the potential to increase nutrient levels in the sediments (Wells and Walker, 2003). The distribution of algal mats is controlled by tidal height, tidal current, sediment influx and sediment drainage (Wells and Walker, 2003). The nutrients from the algal mats provide a significant source of nutrient input to mangrove communities in the region (Paling and McComb, 1994).
<b>Marine sediment quality and characteristics</b>	
Contaminants	<p>Regionally, past studies have rarely found contaminants in sediments of the Dampier Archipelago. This is considered attributable to the lack of riverine inputs and controls on discharges associated with low levels of industrial development (MScience, 2004). Historically, sediments in Mermaid Sound have been generally clean (in that they were below screening levels of National Ocean Disposal Guidelines for Dredged Material (NAGD)) with tributyltin, which has been used as an anti-foulant on ships, the only contaminant of concern (Woodside, 2006; DEC, 2006) and only found in the upper sediment layer, in areas used by the shipping industry (IRCE, 2003a; 2003b).</p> <p>More recent studies performed throughout the Archipelago, within Port limits, have indicated surficial sediments (upper 1 m of sediment) were still considered generally clean. From recent sampling (Advisian 2019; O2 Marine 2021), no hydrocarbons were detected above the respective screening level (ANZG 2018: total TPH 280 mg/kgb, NAGD 2009: total PAH 10,000 mg/kg). Recent studies (Advisian 2019; Advisian, 2017; Jacobs, 2015; GHD, 2016) found that the only analytes to exceed NAGD screening levels were nickel and arsenic (only in a subset of studies), and only at a small subset of sampling locations. These elevated levels were considered attributable to the natural geology of the region, which accords with the findings of previous studies (DEC, 2006; Woodside, 2006). Stoddart et al. (2019), found that natural concentrations of nickel routinely occur in sediments off the Pilbara coast at levels above the NAGD (low) screening levels. The GHD study also determined locations with the smallest particle grain size had higher adsorption potential and generally had higher concentrations of metals, metalloids and total organic carbon (GHD, 2016). The good spatial coverage and sampling of recently deposited fine sediments suggests that sediments within the port continue to exhibit low levels of contamination.</p>
Grain size	<p>Seabed sediment grain size in the Dampier Archipelago region is highly variable, due to the presence of strong tidal currents, periodic cyclones, protected embayments and sediment producing organisms such as coral reefs (Talbot et al., 1985). Analysis of particle size distribution sediment survey for the Pluto LNG Foundation project dredging footprint in January 2006, found sediments adjacent to Holden Point to be predominantly sand (particle size of 0.06 to 2.0 mm). Further offshore, within the navigation channel, the sediments were comprised of sand (particle size of 0.06 to 2.0 mm); silt (0.002 to 0.06 mm) and clay (<math>\leq</math> 0.002 mm) (Woodside, 2006). Similarly, most sites sampled by Jacobs (2015) within Mermaid Sound were dominated by silt and clay.</p> <p>Particle size distribution data within the trunkline footprint was collected as part of the Scarborough Project Sampling and Analysis Plan implementation Study. Sand was the dominant fraction of sediments at all sites within the nearshore zone KP0 to KP3.6. Levels of silt varied a little across sites, though generally comprised &lt;30% of sediments and small fractions of clay were at nine of the 19 sites. Very small amounts of gravel were present at most sites. Between KP3.6 and KP4.6 sediments were much coarser, with higher percentages of gravel and sand and less than 21% silt. Between KP11 and KP15, particle sizes were similar to those observed between KP0 to KP3.6, but with a slightly lower proportion of silt (&lt;25%).</p> <p>Particle size distribution data was also collected from a geotechnical survey of the Scarborough trunkline route (Fugro, 2019). Between KP15 and KP21.3, increasing proportions of clay and coarse sand were observed (on average around 7% clay, 23% silts, 70% sand), trending towards higher proportions of larger particle sizes between KP23 and KP38 (on average around 9% clay, 16% silts, 75% sand), and KP38 and KP50 (on average around 3% clay, 10% silts, 87% sand) (Fugro, 2019).</p>

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### 3.3 Biological environment

Table 3-2 provides a summary of the biological environment of the Operational Area and EMBA.

**Table 3-2: Biological environment receptors and characteristics**

Receptor	Description
<b>Marine habitats and communities</b>	
Critical Habitats or Threatened Ecological Communities	No marine critical habitats or threatened ecological communities as listed under the <i>EPBC Act</i> are known to occur within the Operational Area or EMBA. Under the <i>Biodiversity Conservation Act 2016</i> (WA) the Burrup Peninsula rock pool communities, occurring along rocky shores of the Burrup Peninsula have been identified as a Priority 1 Priority Ecological Community (PEC) for containing calcareous tufa deposits and interesting aquatic snails (DBCA, 2020).
Soft sediments and sandy beaches	Dominant subtidal habitat in Mermaid Sound consists of soft sediment composed of sand and silt, with broad areas of low or no benthic communities and habitats. Sedimentary infauna associated with unconsolidated soft sediments likely to be widespread and well represented. Sandy habitat may overlay reef platforms and interspersed with seasonal or permanent areas of seagrass, macroalgae or other invertebrate fauna. Silty subtidal habitats in sheltered areas typically support a rich variety of infauna (e.g., polychaete worms, crustaceans and molluscs). Intertidal mudflats in the EMBA support significant arid-zone mangrove communities and associated avifauna. Subtidal soft-bottom communities are recognised as important to traditional custodians for their support of invertebrate diversity (MAC, 2021).
Rocky shores	Intertidal fauna along rocky shores within the Archipelago consist of sponges, molluscs, crustaceans etc., becoming increasingly diverse in the lower intertidal and featuring benthic algae and a range of sessile and motile invertebrates. Rocky shores are recognised as important to Traditional Custodians as habitats for intertidal organisms and feeding sites for shorebirds (MAC, 2021).
Reef habitat	Reef habitat is considered as anywhere hard bottom exists in the subtidal environment, supporting a range of coral, macroalgae and mixed biota communities. A band of reef crosses the entrance to Mermaid Sound; however, towed video footage (Advisian, 2019) shows the reef is largely devoid of epibenthic communities, with some smaller patches of mixed communities to the west of the trunkline route. Some areas, such as Madeleine Shoals, feature soft corals and gorgonians in shallow areas as well as siltier sediments and sea whips in deeper water depths.
Mixed communities	Soft corals and sponges are assigned to the mixed community classification. The Pilbara region has a very high diversity of marine sponges (Fromont et al., 2016); 275 sponge species have been recorded within the Dampier Archipelago. About 20% of these species are presently known to be limited to WA and are likely to be endemic (Fromont, 2003). Surveys conducted by Fromont (2004) found the highest diversity of sponges in the Dampier Archipelago occurred in sponge communities that were either low relief or pavement habitats, often with a sediment layer with strong tidal currents.
Coral	Coral communities occur in narrow linear features, fringing the shorelines of islands and Burrup Peninsula between 2m – 10 m. Coverage ranges from 5.7% to 56.7% throughout Mermaid Sound. Mass coral spawning generally occurs between February to April. Corals are recognised as important to Traditional Custodians for attracting fish and other marine organisms, the potential for symbiotic relationships between fish and corals, and for their aesthetic values (MAC, 2021).
Seagrass	Seagrass in the Dampier Archipelago, occur in low abundance on shallow sandy sediments in sheltered areas and interspersed with other benthic communities and habitats (BCH) (Department of Conservation and Land Management (CALM), 2005; Jones, 2004; MScience, 2014). The species composition and temporal patterns of abundance and distribution of seagrasses in northwest Australia are highly dynamic and highly variable, often seasonal, dying off over certain periods of the year and subsequently re-establishing (Vanderkliff et al. 2017).

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Receptor	Description
	Seagrasses are recognised as important to Traditional Custodians as refuges for small marine fauna and foraging habitat for dugongs (MAC, 2021).
Macroalgae and microphytobenthos	<p>Macroalgal assemblages in the Pilbara region display an ephemeral growth pattern and may not be present year-round, despite the presence of hard substrate, sufficient light and water clarity. The most abundant group of algae in the region is brown algae.</p> <p>In the Dampier region, many areas of the otherwise bare substrate contain intertidal blue-green algal mats (Wells and Walker, 2003).</p> <p>Macroalgal communities are recognised as important to traditional custodians as primary production sites, habitats and food sources (MAC, 2021).</p>
Mangroves	<p>Six species of mangrove occur in the Dampier region, and most communities contain many species, and a variety of structures of zonation persist, dependent on the underlying sediment type, tidal height and wave and current action (Semeniuk &amp; Wurm, 1987). Regionally significant areas of mangroves that occur in the Dampier Archipelago include communities at West Intercourse Island, Enderby Island Complex and Searipple Passage/Conzinc Bay (EPA, 2001). The nearest mangrove community to the Operational Area occurs in No Name Bay and has been studied as part of the long-term Chemical and Ecological Monitoring Program of Mermaid Sounds.</p> <p>Traditional custodians also report mangrove populations in Flying Foam Passage and the north-east bay of West Lewis Island, which are important for shelter, crab and shellfish resources and possible turtle nurseries (MAC, 2021).</p>
Pelagic and demersal fish communities	<p>Fish fauna in the Pilbara region is considered diverse (Sainsbury et al., 1985) and shows a trend of decreasing species richness as depth increases (Last et al., 2005). Fish species richness has been shown to correlate with habitat complexity, with more complex habitat supporting greater species richness and abundance than bare areas (Gratwicke and Speight, 2005).</p> <p>Species found within the Dampier Archipelago include coral reef fishes and mangrove and silty bottom dwellers. Coastal waters support schools of baitfish, and offshore, pelagic species include marlin, sailfish, sharks and trevally.</p> <p>Fish are reported by traditional custodians as culturally important species in Mermaid Sound and surrounds, with Thalu ceremonies associated with increasing fish stocks. Further fish traps in Conzinc Bay, and others would have/do exist in coastal areas of islands (e.g., Angel and Gidley Islands), as well as harvesting of squid from the ocean around Conzinc Island are also important aspects of the marine environment to traditional custodians (MAC, 2021).</p>
Planktonic communities	In the NWMR, productivity is typically greater during the wet season when the weakening of surface currents allows for increased upwelling (DEWHA, 2008; Brewer et al., 2007). Productivity is greater in shallow nearshore environments within State waters than in the offshore waters. During the warmer months, algal blooms occur on a regional scale, including within the Dampier Archipelago however its role in the trophic system and the nutrient cycle is not well understood.

### 3.3.1 Species

A total of 127 *EPBC Act* listed species considered to be MNES were identified in the Protected Matters Search Tool (PMST) as potentially occurring within the EMBA, of which a subset of 88 species were identified as potentially occurring within the Operational Area (Figure 3-2). The full list of species identified from the PMST report is provided in Appendix A. Two conservation-dependent marine species have also been identified with potential to occur within the Operational Area and EMBA. Species identified as potentially occurring within the Operational Area and EMBA are summarised in Table 3-3.

**Table 3-3: Threatened and migratory marine and terrestrial species under the *EPBC Act* potentially occurring within both the Operational Area and EMBA**

Receptor	Description
Fish, sharks and rays	<ul style="list-style-type: none"> <li>• Seven shark <i>EPBC Act</i> listed species were identified that may occur within the Operational Area and EMBA, including the great white shark, whale shark, grey nurse shark, scalloped hammerhead, oceanic whitetip shark, shortfin mako, and longfin mako.</li> <li>• A whale shark foraging BIA overlaps the EMBA, 23km north of the Operational Area.</li> <li>• Four species of sawfish were identified as potentially occurring within the Operational Area and EMBA including the green sawfish, dwarf sawfish, freshwater sawfish and narrow sawfish.</li> <li>• Reef manta rays and giant manta rays may also be present in the Operational Area and EMBA.</li> </ul>
Marine reptiles	<ul style="list-style-type: none"> <li>• Five marine turtle species were identified as potentially occurring within the Operational Area and EMBA including the loggerhead turtle, green turtle, hawksbill turtle, flatback turtle and leatherback turtle.</li> <li>• Nesting and internesting Habitat Critical to the Survival of a Species have been identified as overlapping the Operational Area for green turtles, flatback turtles, and hawksbill turtles.</li> <li>• Dampier Archipelago is a BIA for hawksbill turtle (foraging, nesting and internesting), loggerhead turtle (nesting and internesting), green turtle (foraging, nesting and internesting), and flatback turtle (foraging, nesting and internesting).</li> <li>• Peak nesting periods are December to February for green turtles, November to January for flatback turtles, October to January for hawksbill turtles, and January for loggerhead turtles.</li> <li>• Hatching periods are February to March for green turtles, February to March for flatback turtles, all year for hawksbill turtles, with combined peak hatchling emergence period from December to March, and January to May for loggerhead turtles.</li> <li>• The habitat critical to the survival of the turtle species and the BIAs listed above overlap the majority of the EMBA. Internesting buffers are about 60 km for flatback turtles and 20 km for hawksbill turtles, green turtles, and loggerhead turtles.</li> <li>• Two species of seasnake may also occur in the Operational Area; the short-nosed sea snake and the leaf-scaled seasnake</li> <li>• The short-nosed sea snake is a species endemic to WA and has been recorded from the Exmouth Gulf to the reefs of the Sahul Shelf.</li> <li>• Seasnakes and turtles are reported by traditional custodians as culturally important species, with a turtle songline reaching Withnell Bay from Fortescue (MAC, 2021).</li> <li>• Salt-water crocodiles may also be present in the Operational Area or EMBA.</li> </ul>
Marine mammals	<ul style="list-style-type: none"> <li>• Thirteen cetacean species were identified that may occur including the blue whale, humpback whale, bryde's whale, killer whale, the Australian humpback dolphin, the spotted bottlenose dolphin, Australian snubfin dolphin, sei whale, fin whale, southern right whale, sperm whale, Antarctic minke whale and the dugong. These species may transverse the Operational Area at certain times of the year, but the likelihood of their occurrence is low. Other cetacean species are likely to occur at low densities and may traverse through the Operational Area infrequently through the year.</li> <li>• Dugongs may transit within the Operational Area.</li> <li>• A humpback whale migration corridor (north and south) BIA overlaps the Operational Area and the majority of the EMBA; occurrence is expected between May and November.</li> <li>• A pygmy blue whale migration BIA overlaps the EMBA; approximately 150 km from the Operational Area.</li> <li>• Whales and dolphins are recognised as important to traditional custodians as totems (MAC, 2021). Whales are recognised as culturally significant to traditional custodians (MAC, 2021).</li> </ul>

Receptor	Description
Seabirds and shorebirds	<ul style="list-style-type: none"> <li>• Forty-nine <i>EPBC Act</i> listed seabird and migratory shorebird were identified as potentially occurring within the Operational Area and wider EMBA.</li> <li>• The Dampier Archipelago is a breeding and foraging BIA for a number of seabirds and shorebirds. Three BIAs overlap the Operational Area including the BIA for the Australian fairy tern (breeding/foraging), roseate tern (breeding/foraging), and the wedge-tailed shearwater (breeding/foraging).</li> <li>• Peak breeding periods occur from August to April (wedge-tailed shearwater), and year-round for the roseate tern and Australian fairy tern.</li> </ul>

### 3.4 Cultural features and heritage values

#### 3.4.1 Native title

In order to understand cultural features of the environment for First Nations groups, Woodside uses the existing systems, such as native title, to identify First Nations groups that may be consulted. To that end, Woodside identifies native title representative bodies and nominated representative entities, as well as native title claims, determinations and Indigenous Land Use Agreements (ILUAs) which the Operational Area overlaps or is adjacent to. Native title claims, determinations and ILUAs are defined under the *Native Title Act 1993* (Cth). While acknowledging that cultural features and heritage values may exist outside of the native title framework, Woodside considers this to be the broadest extent over which First Nations groups have claimed native title rights and interests.

A summary of native title claims, determinations and ILUAs overlapping or coastally adjacent to the Operational Area is illustrated in Figure 3-2 and set out in Table 3-4. Claims and determinations have not been differentiated in this table, as it is acknowledged that either of these may indicate the existence of rights and interests.

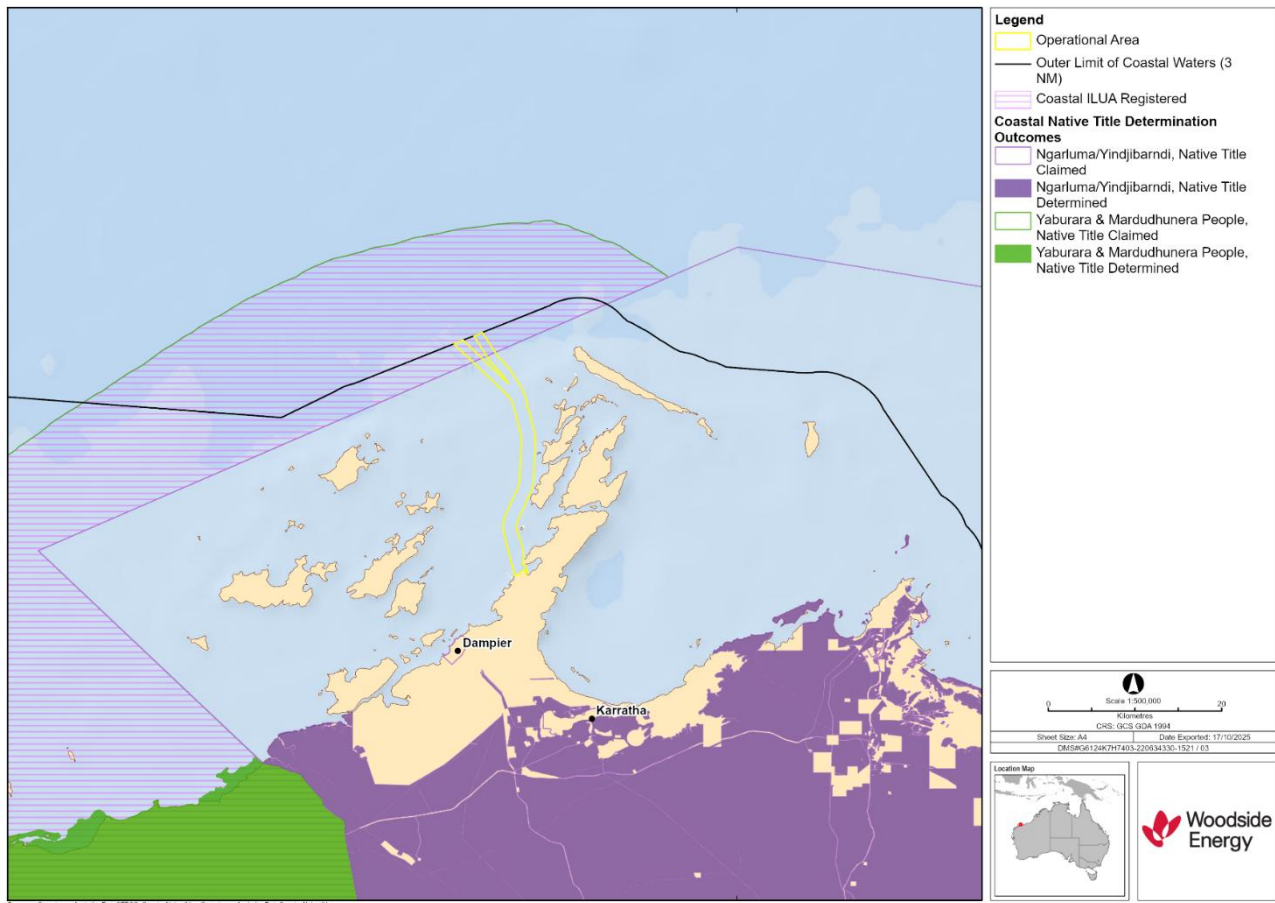


Figure 3-2: Operational Area overlap with native title claims, determinations, and ILUAs

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**Table 3-4: Summary of Native Title Claim or determination and ILUA Operational Area overlap**

Claim/ determination, ILUA	Registered Native Title Body Corporate	Overlap with Operational Area	Coastally Adjacent to the Operational Area
<b>Claim/ determination</b>			
Ngarluma/Yindjibarndi People	Ngarluma Aboriginal Corporation, Yindjibarndi Aboriginal Corporation	x	✓
Yaburara and Mardudhunera People	Wirrawandi Aboriginal Corporation	x	✓
<b>ILUA</b>			
Kuruma Marthudunera and Yaburara and Coastal Mardudhunera ILUA	Wirrawandi Aboriginal Corporation, Robe River Kuruma Aboriginal Corporation	✓	✓
KM & YM ILUA	Wirrawandi Aboriginal Corporation, Robe River Kuruma Aboriginal Corporation	✓	✓

### 3.4.2 Protected places

Woodside acknowledges that protected places have sought to recognise cultural values of First Nations groups. A summary of protected places that overlap the Operational Area or EMBA are provided in Table 3-5.

**Table 3-5: Established protected places and other sensitive areas overlapping the Operational Area and EMBA**

	Distance and direction from Operational Area to protected place or sensitive area (km)	IUCN category* or relevant park zone overlapping the Operational Area or EMBA
<b>AMPs</b>		
Montebello	108 km west of Operational Area	VI
Dampier	10 km northeast of Operational Area	IV
Dampier	27 km northeast of Operational Area	VI
Dampier	35 km northeast of Operational Area	II
<b>National Parks</b>		
Murujuga National Park	Abuts Operational Area	II
<b>State Marine Parks</b>		
Montebello Islands Marine Park	108 km west of Operational Area	VI, Class A
Barrow Island Marine Park	144 km west southwest of Operational Area	VI, Class A
<b>Marine Management Areas</b>		
Barrow Island Marine Management Area	120 km southwest of Operational Area	IV, Class A
Muiron Island Marine Management Area	268 km southwest of Operational Area	VI, Class A
<b>Conservation Parks</b>		
Montebello Islands Conservation Park	115 km west of Operational Area	II, Class A
<b>Nature Reserves</b>		
Lowendal Islands Nature Reserve	124 km west of Operational Area	Ia

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	<b>Distance and direction from Operational Area to protected place or sensitive area (km)</b>	<b>IUCN category* or relevant park zone overlapping the Operational Area or EMBA</b>
Barrow Island Nature Reserve	135 km southwest of Operational Area	Ia, Class A
Angel Island, Brigadier Island, Cohen Island, Conzinc Island, Dane McRae Island, Dolphin Island, Egret Island, Enderby Island, Gidley Island, Goodwyn Island, Hauy Island, Keast Island, Lady Nora Island, Malus Island, Mawby Island, Quartermaine Island, Rosemary Island, Tozer Island, Wilcox Island	<1 - 30 km of Operational Area	Ia, Class A
Eaglehawk and Delambre Islands	34 km southwest and 30 km east of Operational Area	Ia
Great Sandy (Beagle) Island	135 km southwest of Operational Area	Ia
Serrurier Island	244 km west of Operational Area	Ia
Boodie, Double, Middle islands	134 km – 152 km west to southwest of Operational Area	Ia
Bessieres Island	232 km southwest of Operational Area	Ia, Class A
<b>Other sensitive areas and Section 5(1)(h) reserves</b>		
North West Island	122 km west northwest of Operational Area	V
Trimouille Island	118 km west of Operational Area	V
Rosemary Island	16 km west of Operational Area	V
Point Malus Island	7 km west of Operational Area	II
West Lewis Island	8 km west of Operational Area	II
East Lewis Island	10 km west southwest of Operational Area	II
Bessieres Island	232 km southwest of Operational Area	V

### 3.4.3 Sea Country values

'Sea Country' can be defined as the area of sea over which a First Nations group has interests, cultural value, connection and use.

Sea Country values have been defined using multiple lines of evidence including:

- desktop assessment of Sea Country values from publicly available sources
- consultation with First Nations groups and individuals.

Cultural features and heritage values identified through both consultation and the desktop assessment are summarised in Table 3-6.

**Table 3-6 Summary of cultural features and heritage values**

Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
<b>Archaeological heritage and landscapes</b>					
Coastal/island archaeological sites	Coastal archaeological sites include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources.	✓	✓	No	Possible (shoreline accumulation only)
Petroglyphs	Petroglyphs are a form of rock art. Petroglyphs are a prominent feature at Murujuga particularly, where it is found on hard, volcanic rock.	✓	✓	Possible (submerged)	Possible (submerged)
Fish traps	Stone arrangements constructed in intertidal areas that fill with fish at high tide and trap them at low tide.	✓	✓	No	Possible (submerged)
Submerged archaeological sites	The Ancient Landscape extends between 125 m and 130 m below current sea level. Ancient occupation of this area may have left traces through now submerged archaeological sites.	✓	✓	No	Possible
Rivers, waterholes, tidal channels and seeps	Water sources on the Ancient Landscape that may be culturally significant or archeologically prospective.	✓	✓	No	Possible
Submerged hills	Hills on the Ancient Landscape that may be culturally significant or archeologically prospective. As sea level rose these hills would have become islands and eventually submerged.	x	✓	No	Possible
<b>Intangible values</b>					
Songlines	Publicly available literature talks to songlines associated with ancestral beings that travelled Sea Country.	✓	✓	Possible (unspecified)	Possible (unspecified)
Creation/Dreaming sites, sacred sites and ancestral beings	Publicly available literature talks to Creation/Dreaming and ancestral beings, including water serpents, connected to or originating from the sea generally.	✓	✓	Possible (unspecified)	Possible (unspecified)
Ceremonial sites	Places where ceremony (e.g. thalu ceremonies) are performed. All identified ceremonial sites are located onshore.	✓	✓	No	Possible (unspecified)

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Cultural obligations to care for Country	Cultural obligation to care for the environmental values of Sea Country. Exclusion of Traditional Custodians from Sea Country or decision-making processes may inhibit ability to care for Country.	✓	✓	Possible (unspecified)	Possible (unspecified)
Knowledge of Country/customary law and transfer of knowledge	The preservation and transmission of knowledge depends on the preservation of the environment generally. Exclusion of Traditional Custodians from Sea Country may inhibit the transfer of knowledge.	✓	✓	Possible (unspecified)	Possible (unspecified)
Connection to Country	Connection to Country is described in publicly available literature as “important to the Traditional Owners’ spirituality and religion”. Connection to Country may be damaged where people are displaced or disrupted (e.g. during colonisation) or where there is a loss of technical skills or environmental knowledge	✓	✓	Possible (unspecified)	Possible (unspecified)
Access to Country	Limitations on Traditional Custodians accessing or enjoying areas of Sea Country.	✓	✓	No	No (no limitations on access beyond the Operational Area)
Kinship systems and totemic species	Traditional Custodians have connection to species through kinship and totemic systems. An individual may have obligation to care for or not consume a species to which they are kin.	✓	✓	Possible	Possible
Resource collection	Fishing, hunting, gathering of marine species including marine mammals, marine reptiles, fish and invertebrates.	✓	✓	No	Possible
<b>Marine ecosystems and species</b>					
Water quality	Interest only, raised as a natural environment interest.	✓	✓	Possible	Possible
Marine species	Generally raised in consultation and literature as an interest.	✓	✓	Possible	Possible
Marine mammals: dolphins	Cultural ceremonies associated with dolphins. Culturally important species.	✓	✓	Possible	Possible

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Marine mammals: dugongs	Culturally important species. Used as a resource.	✓	✓	No	Possible
Marine reptiles: marine turtles	Culturally important species and migration. There are thalu ceremonies associated with turtles. Turtles and turtle eggs as a resource.	✓	✓	Possible	Possible
Marine mammals: whales	Generally raised in consultation and identified in publicly available literature. Thalu species of totemic importance. Linked to songlines and Dreaming stories. Humpback whales in particular.	✓	✓	Possible	Possible
Fish: fish, whale sharks, sharks and rays	Culturally important species. Used as a resource. Law run through the sea, including fish. There are thalu ceremonies associated with increasing fish stocks. Fish, including bream and sting rays are totemic species. Fish, including sharks and rays raised as a natural environment interest.	✓	✓	Possible	Possible
Cephalopods: squid and octopus	Thalu species of totemic importance. Resource.	✓	✓	Possible	Possible
Intertidal communities: bivalves, gastropods, echinoderms (sea urchins), crustaceans	Resource.	✓	✓	No	Possible
Seabirds	Culturally important species. Birds (including shags, seagulls and osprey) and bird eggs as a resource.	✓	✓	Possible	Possible
Benthic habitats: Macroalgal communities	Interest only, raised as a natural environment interest.	✓	✓	No	Possible

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Shoreline habitats: mangroves	Critical breeding ground for marine and terrestrial wildlife. Mangroves would have provided shelter, crabbing, digging for shellfish, could be turtle nurseries. Mangrove seeds as resource.	✓	✓	No	Possible
Shoreline habitats: intertidal sand/ mudflat communities	Interest only, raised as a natural environment interest.	✓	✓	No	Possible
Shorelines	Interest only, raised as a natural environment interest.	✓	✓	No	Possible
Marine Park/coastal reserves	Interest and responsibility.	✓	✓	No	Possible

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#### **3.4.3.1 Marine ecosystems and species**

First Nations people have raised through consultation that they have a general interest in environmental management and ecosystem health (i.e., natural environment interest), where a group/individual was seeking further information about potential impacts and risks from the Petroleum Activity on marine species and benthic communities in the Operational Area and EMBA. This includes marine mammals, marine reptiles, fish, seabirds, plankton, benthic and shoreline habitats and marine parks, which are described in context of their distribution and populations in Section 3.2 and 3.3.

#### **3.4.3.2 First Nations archaeological heritage assessment**

The Department of Planning, Lands and Heritage (DPLH) Aboriginal Cultural Heritage Inquiry system was searched for the EMBA, which indicated 402 Registered Aboriginal Places. The exact location, access and traditional practices for a number of these sites may not be disclosed and if required, such as in the event of a major oil spill, would involve prioritising further consultation with key contacts within DPLH and relevant local First Nations communities.

No sites of significance within the Operational Area or EMBA were identified by First Nations people during consultation when preparing the EP.

#### **3.4.4 Underwater cultural heritage (UCH)**

All actions involving seabed contact, and most actions undertaken near the seabed, have potential to cause adverse impact to underwater cultural heritage (UCH) if present (DCCEEW, 2024). Planned activities for this Petroleum Activity include seabed contact. Woodside engages a qualified consultant to undertake a desktop assessment of the potential for submerged archaeological material in areas of proposed seabed disturbance, using available geophysical and bathymetric data. This approach is consistent with Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (DCCEEW, 2024).

The seabed disturbance footprint from planned activities is expected to be limited to within the existing Operational Area and therefore have low potential for unlocated archaeological material. Management controls and further assessment of the potential impacts on archaeological material by the proposed activity is discussed in Section 5.

#### **3.4.5 Historic underwater heritage**

The Australasian Underwater Cultural Heritage Database records all known Maritime Cultural Heritage (shipwrecks, aircraft, relics and other UCH) in Australian waters. The Australian National Shipwreck Database lists all known shipwrecks in Australian waters. Known historical shipwreck sites in WA waters are listed in the WA Maritime Museum Shipwreck Database. A search of these databases indicated there are four underwater heritage sites within 50 km of the Operational Area.

#### **3.4.6 World, National and Commonwealth Heritage Listed Places**

One National Heritage listed place occurs within the Operational Area. This is the Dampier Archipelago (including Burrup Peninsula), classified as an Indigenous class feature on the National Heritage.

Four World or National Heritage places occur within the EMBA including the Ningaloo Coast, Murujuga Cultural Landscape, Dampier Archipelago (including the Burrup Peninsula), and the Barrow Island and Montebello-Barrow Islands Marine Conservation Reserves. The Murujuga Cultural Landscape World Heritage Area, relating to the outstanding universal values of Indigenous heritage values of Murujuga, abuts the Operational Area.

No Commonwealth Heritage places occur within the Operational Area or EMBA.

## **3.5 Socioeconomic environment**

### **3.5.1 Commercial fisheries**

A number of Commonwealth and State fisheries designated management areas overlap the Operational Area, however only the following WA State fisheries have the potential to interact with the Operational Area including:

- Western Australian Mackerel Managed Fishery (near surface trolling, jig)
- Pilbara Crab Managed Fishery (trap)
- Nickol Bay Prawn Managed Fishery (trawl)
- Marine Aquarium Fish Managed Fishery (dive based)
- Specimen Shell Managed Fishery (hand collected)
- Pilbara Trap Managed Fishery (trap)
- Onslow Prawn Managed Fishery (trawl)
- Western Australian Sea Cucumber Fishery (dive based).

### **3.5.2 Traditional fisheries**

The Indigenous communities who are traditionally from the Burrup Peninsula are understood to have strong connections and uses for the sea, which includes the coastal areas adjacent to the Operational Area.

The Indigenous community continue to use the marine environment for a diverse range of traditional fishing methods, including hunting (dugongs, turtles, egg collecting (turtles, seabirds), capturing fish (spearing, reef trapping, herding, line fishing, collecting in stone fish traps, poisoning), and gathering shellfish and other marine sources.

### **3.5.3 Tourism and recreational fishing**

Recreational fishing is expected to occur throughout the Operational Area and EMBA. The Dampier Archipelago and Montebello Islands are particularly popular for marine nature-based tourist activities. Tourism in the region typically peaks in winter when significant numbers of metropolitan and interstate tourists travel through the area and visit the Pilbara. Licenced fishing tours in the region are also a popular tourist attraction.

### **3.5.4 Industrial development and shipping**

The Operational Area is located within the Pilbara region, within the state waters component in the Port of Dampier limits, managed by Pilbara Ports. Dampier Port is a major industrial port in the northwest of Western Australia. The coastal waters of the region support significant commercial shipping activity, mostly associated with mining and oil and gas.

The Operational Area abuts the Burrup Peninsula, which is an area of established oil and gas operations including the Karratha Gas Plant and PLP (operated by Woodside), King Bay Supply Base and Dampier Port.

### **3.5.5 Defence**

There are designated defence practice areas in the offshore marine waters off Ningaloo and North West Cape, beyond the Operational Area. A Royal Australian Air Force base at Learmonth, on North West Cape, is about 330 km from the Operational Area.

### 3.5.6 Oil and gas

There are a number of petroleum titles held by various title holders within the EMBA. The pipeline route crosses the Woodside channel which contains pipelines associated with existing oil and gas infrastructure. Subsea infrastructure in the area includes oil and gas trunklines including Woodside's NWS and Pluto trunklines and the Scarborough trunkline. The onshore Pluto LNG Plant is adjacent to the shore crossing site. The Pluto trunkline is about 100 m to the west of the NWS 1TL trunkline at the closest point. The Pluto and Scarborough trunklines are west of the NWS trunklines. The closest trunkline is Pluto, which is about 100 m from the NWS trunklines at its closest point.

## 4. CONSULTATION

Woodside consults relevant authorities and other relevant interested persons and organisations in the course of developing an EP in accordance with regulation 17(1)(b) of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA) and the Petroleum (Pipelines) (Environment) Regulations 2012 (WA) (the Environment Regulations).

The consultation process is designed to provide information to enable relevant authorities, other relevant interested persons and organisations to provide feedback for Woodside to consider in developing its EP and to help build ongoing positive relationships. Woodside assesses feedback received during consultation to assist Woodside to identify appropriate measures in response to the feedback so that the activity may be carried out in a manner in which the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable (ALARP) and will be of an acceptable level.

The purpose of consultation is to enable Woodside to better understand how others, with an objective stake in the environment where it proposes to undertake the activity, perceive the potential environmental impacts and risks, and to provide those persons and organisations with an opportunity to provide feedback. This process provides the opportunity to acquire information that may improve the overall environmental outcome or refine or change the control measures Woodside proposes to address those risks and impacts. This information also provides a basis for Department of Mines, Petroleum and Exploration (DMPE) considerations of the control measures, if any, that Woodside proposes to take or has taken to lessen or avoid the effect of its proposed activity on the environment. This is the intended outcome of consultation.

Woodside notes that consultation is voluntary for relevant authorities and other relevant interested persons and organisations and does not carry with it any obligation for Woodside to seek or to reach agreement with the person or organisation being consulted. Woodside understands that, in community consultation, there may be persons within a group who did not participate for various reasons and the absence of their participation does not invalidate the process, especially when reasonable efforts were made to consult with them.

### 4.1 Identification of relevant authorities and other relevant interested persons and organisations for consultation

In developing its methodology to identify relevant persons to consult with on its proposed petroleum activity, Woodside assesses relevance based on overlap with the planned activities of the Petroleum Activity (see Section 2). In this instance, the risk of an unplanned hydrocarbon release associated with the activity and the potential impact that it may have on the environment was considered in consultation. Woodside defines the broadest extent of the unplanned activities as the EMBA. The EMBA for this Petroleum Activity is used to inform consultation with government departments or agencies based on their potential involvement in a spill / incident response or with a regulatory or decision-making role in response planning.

Woodside's methodology for identifying relevant authorities and other relevant interested persons and organisations considers the following, but is not limited to:

- the defined responsibilities of the departments and agencies to which the activities in the Operational Area to be carried out under the EP may be relevant
- the defined responsibilities of the departments and agencies and other users with regulatory or decision-making roles in response for unplanned events
- relevance based on overlap with its planned activities within the Operational Area.

A list of relevant authorities and other relevant interested persons and organisations, together with persons Woodside chose to contact (see Section 4.3), is provided in Table 4-1.

### 4.2 Assessment of additional persons

The methodology also allows for additional persons and organisations to be identified during the course of developing the EP. Additional persons are persons and organisations identified following Woodside's initial assessment and consultation.

### **4.3 Persons or organisations Woodside chooses to contact**

As per Woodside's ongoing consultation approach, feedback and comments received continue to be assessed and responded to, as appropriate, through the life of an EP, including during EP assessment and throughout the duration of the approved EP, in accordance with the intended outcome of consultation (as set out above).

### **4.4 Ongoing consultation**

As per Woodside's ongoing consultation approach, feedback and comments received continue to be assessed and responded to, as appropriate, through the life of an EP, including during EP assessment and throughout the duration of the approved EP, in accordance with the intended outcome of consultation (as set out above).

### **4.5 Consultation for this EP**

Woodside advertised consultation for this EP in two state and local newspapers and ran a social media advertising campaign.

A Consultation Information Sheet was provided to persons and organisations being consulted which included details such as an activity overview, maps, a summary of key risks and/or impacts and management measures. The Consultation Information Sheet has been available on Woodside's website since the commencement of the consultation period on 14 June 2025. Due to an Activity Update, an updated Consultation Information Sheet was posted on Woodside's website on 16 October 2025, the start of the Activity Update consultation period.

A Summary Information Sheet was also provided to relevant Traditional Custodian groups. The resource is developed and reviewed by subject matter experts with knowledge and experience in Indigenous affairs, in collaboration with technical experts to ensure content is appropriate to the intended recipients.

Where appropriate, Woodside conducted phone calls, meetings and community information sessions with persons and organisations being consulted and sent targeted follow-up emails.

Woodside considered relevant responses of persons and organisations being consulted.

Woodside hosted community liaison group information sessions, including the Karratha Community Liaison Group quarterly meetings in March and June 2025.

**Table 4-1: Relevant authorities and other relevant persons or organisations, and persons Woodside chose to contact for the proposed activity**

Authority, person or organisation	Summary of responsibilities
<b>Commonwealth and WA State government departments or agencies – marine</b>	
Australian Border Force (ABF)	Responsible for coordinating maritime security
Australian Communications and Media Authority (ACMA)	Regulator for communications and media
Australian Fisheries Management Authority (AFMA)	Responsible for managing Commonwealth fisheries
Australian Hydrographic Office (AHO)	Responsible for maritime safety and Notices to Mariners
Australian Maritime Safety Authority (AMSA) – Marine Safety	Statutory agency for vessel safety and navigation
Australian Maritime Safety Authority (AMSA) – Marine Pollution	Legislated responsibility for oil pollution response in Commonwealth waters. Consulted on the basis of unplanned events.
Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries	Responsible for implementing Commonwealth policies and programs to support agriculture, fishery, food and forestry industries.
Department of Primary Industries and Regional Development (DPIRD)	Responsible for managing State fisheries
Department of Transport and Major Infrastructure (DTMI)	Legislated responsibility for oil pollution response in State waters. Consulted on the basis of planned activities and unplanned events.
Pilbara Ports	Responsible for the operation of the Port of Dampier. Consulted on the basis of planned activities and unplanned events.
Western Australian Museum (WAM)	Manages 200 shipwreck sites of the 1,500 known to be located off the Western Australian coast. Administers the <i>Maritime Archaeology Act 1973</i> (State) which is responsible for unexpected finds in WA State waters.
<b>Commonwealth and WA State government departments or agencies – environment</b>	
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel)	DAFF administers, implements and enforces the <i>Biosecurity Act 2015</i> . The Department requests to be consulted where an activity has the potential to transfer marine pests. DAFF also has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft) arriving in Australian territory comply with international health regulations and that biosecurity risk is managed. The Department requests to be consulted where an activity involves the movement of aircraft or vessels between Australia and offshore petroleum activities either inside or outside Australian territory.
Department of Biodiversity, Conservation and Attractions (DBCA)	Responsible for managing WA's parks, forests and reserves to achieve wildlife conservation and provide sustainable recreation and tourism opportunities

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Authority, person or organisation	Summary of responsibilities
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Responsible for implementing Commonwealth policies and programs to support climate change, sustainable energy use, water resources, the environment and our heritage. Administers the <i>Underwater Cultural Heritage Act 2018</i> in collaboration with the States, Northern Territory and Norfolk Island, which is responsible for the protection of shipwrecks, sunken aircraft and other types of underwater heritage and their associated artefacts in Commonwealth waters.
Director of National Parks (DNP)	Responsible for the management of Commonwealth parks and conservation zones. Whilst no field activities are planned that would trigger DNP's responsibilities, Woodside has chosen to provide information on arrangements for unplanned events, such as an oil spill, which have potential to impact the values within a Commonwealth marine park.
<b>Commonwealth and State government departments or agencies –industry</b>	
Department of Industry, Science and Resources (DISR)	Department of relevant Commonwealth Minister
Department of Mines, Petroleum and Exploration (DMPE)	Department of relevant State Minister
<b>Commonwealth commercial fisheries and representative bodies</b>	
ASBTIA	Represents the interests of the Southern Bluefin Tuna Fishery and Western Skipjack Fishery
Commonwealth Fisheries Association (CFA)	Represents the interests of commercial fishers with licences in Commonwealth waters
Pearl Producers Association (PPA)	Peak representative organisation of The Australian South Sea Pearling Industry, with members in Western Australia and the Northern Territory
Tuna Australia	Represents the interests of the Western Tuna and Billfish Fishery
<b>State commercial fisheries and representative bodies</b>	
Aquaculture Council of Western Australia (ACWA)	State peak body for WA's aquaculture industry
Western Australian Fishing Industry Council (WAFIC)	Represents the interests of commercial fishers with licences in State waters
Mackerel Managed Fishery (Area 2)	State commercial fishery
Marine Aquarium Managed Fishery	State commercial fishery
Nickol Bay Prawn Managed Fishery	State commercial fishery
Onslow Prawn Managed Fishery (Area 1 and 2)	State commercial fishery
Pilbara Crab Managed Fishery	State commercial fishery
Pilbara Trawl Fishery	State commercial fishery

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Authority, person or organisation	Summary of responsibilities
Pilbara Trap Fishery	State commercial fishery
Specimen Shell Managed Fishery	State commercial fishery
Western Australian Sea Cucumber Fishery	State commercial fishery
<b>Recreational marine users and representative bodies</b>	
Pilbara/Kimberley Recreational Marine Users	Pilbara/Kimberley-based dive, tourism and charter operators
Recfishwest	Represents the interests of recreational fishers in WA
Marine Tourism WA	Represents the interests of marine tourism in WA
WA Game Fishing Association	Represents the interests of game fishers in WA
<b>Peak industry representative bodies</b>	
Australian Energy Producers (AEP)	Represents the interests of oil and gas explorers and producers in Australia
<b>Local government and community representative groups or organisations</b>	
City of Karratha	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Baynton, Baynton West, Bulgarra, Cossack, Dampier, Gap Ridge, Karratha, Karratha Industrial Estate, Jingarri, Madigan, Millars Well, Nickol, Pegs Creek, Point Samson, Roebourne, Whim Creek and Wickham.
Karratha Community Liaison Group (CLG)	The Karratha CLG is the recognised community group that represents the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Pilbara region.
Karratha and Districts Chamber of Commerce and Industry	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Karratha and surrounding areas.
<b>Other non-government groups or organisations (NGOs)</b>	
Australasian Centre for Corporate Responsibility (ACCR)	Non-government organisation
Australian Conservation Foundation (ACF)	Non-government organisation
Australian Marine Conservation Society (AMCS)	Non-government organisation
Climate Council	Non-government organisation
Conservation Council of Western Australia (CCWA)	Non-government organisation
Doctors for the Environment Australia (DEA)	Non-government organisation

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Authority, person or organisation	Summary of responsibilities
Friends of Australian Rock Art. Inc (FARA)	Non-government organisation
Greenpeace Australia Pacific (GAP)	Non-government organisation
Market Forces	Non-government organisation
<b>Research institutes and local conservation groups or organisations</b>	
Australian Institute of Marine Science (AIMS)	Research institute
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Research institute
Western Australian Marine Science Institution (WAMSI)	Research institute
Curtin University	Research institute
University of Western Australia (UWA)	Research institute
<b>Traditional Custodians and nominated representative corporations</b>	
Murujuga Aboriginal Corporation (MAC)	Representative Aboriginal Corporation.
Ngarluma Aboriginal Corporation RNTBC (NAC)	Representative Aboriginal Corporation
Robe River Kuruma Aboriginal Corporation (RRKAC)	Representative Aboriginal Corporation
Wirrawandi Aboriginal Corporation (WAC)	Representative Aboriginal Corporation
Yindjibarndi Aboriginal Corporation (Yindjibarndi)	Representative Aboriginal Corporation
<b>Native title representative bodies</b>	
Yamatji Marlpa Aboriginal Corporation (YMAC)	Native Title Representative Body
<b>Self-identified First Nations groups</b>	
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	Representative Aboriginal Corporation
<b>Other First Nations Groups</b>	
Save Our Songlines (SOS)	Representatives of Non-Government Organisation Save Our Songlines

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## **5. ENVIRONMENTAL IMPACT AND RISK ASSESSMENT SUMMARY**

Woodside undertook an environmental risk and impact assessment to understand the potential environmental impacts associated with the Petroleum Activity, using Woodside standards and methods so that they are reduced to ALARP and will be of an acceptable level. Control measures described below will be implemented so that risks and impacts are reduced to ALARP and an acceptable level.

Table 5-1 summarises the environmental impact assessment and relevant control measures for risks deemed credible to the Petroleum Activity.

### **5.1 Cumulative impacts**

Woodside has assessed the cumulative impacts of the Petroleum Activity in relation to other relevant petroleum activities which could realistically result in overlapping temporal and spatial extents. It is noted that other petroleum activities overlapping the Operational Area are operated by Woodside or Woodside Joint Ventures and will be managed under a simultaneous operations plan.

Due to the Operational Area occurring wholly inside the Port of Dampier, cumulative impact potential is managed through adherence to the Port of Dampier Handbook. The addition of a vessel planned to carry out activities one week every five years is unlikely to contribute significantly to cumulative impacts such as noise and light due to the temporary, transient and short-term nature of potential IMMR activities.

**Table 5-1: Environmental impact analysis summary**

Aspect	Source of environmental impact/risk	Description of impact/risk	Summary of control measures
<b><i>Planned Activities in State Waters (Routine and Non-routine)</i></b>			
Interaction with other marine users	Physical presence of trenched and buried subsea infrastructure as well as support vessels	Localised impact with no lasting effect arising from: <ul style="list-style-type: none"> <li>• subsea infrastructure with potential to interact with other marine users such as commercial fisheries where fishing methods are at or near the seabed.</li> <li>• displacement or exclusion of other marine users during IMMR activities.</li> </ul>	<ul style="list-style-type: none"> <li>• vessels complying with Marine Orders for safe vessel operations:                             <ul style="list-style-type: none"> <li>– Marine Order 21 (Safety and emergency arrangements)</li> <li>– Marine Order 27 (Safety of navigation and radio equipment)</li> <li>– Marine Order 30 (Prevention of Collisions).</li> </ul> </li> <li>• designation of applicable temporary exclusion zones around relevant vessels in the event of unplanned IMMR, where applicable, which are communicated to marine users.</li> <li>• compliance with relevant requirement in the Port of Dampier Handbook.</li> <li>• activity notifications to relevant parties (where vessels will be in Operational Area &gt; 3 weeks).</li> <li>• development of a simultaneous operations plan if more than one Woodside-contracted vessel is operating in the Operational Area.</li> <li>• implement a risk-based management approach to determine IMMR requirements.</li> </ul>

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Aspect	Source of environmental impact/risk	Description of impact/risk	Summary of control measures
Disturbance to seabed	Seabed disturbance resulting from: <ul style="list-style-type: none"> <li>• presence of subsea infrastructure</li> <li>• support vessels and activities</li> </ul>	Slight and low-level impact to the seabed arising from: <ul style="list-style-type: none"> <li>• localised modification of seabed habitat within the Operational Area</li> <li>• localised change in habitat, water quality, and sediment quality, which may affect fauna</li> <li>• indirect disturbance from suspended sediment and sediment deposition due to interactions with the seabed</li> </ul>	<ul style="list-style-type: none"> <li>• no planned anchoring within the Operational Area unless emergency.</li> <li>• Supplementary impact assessment undertaken for all IMMR activities within 500 m of identified sensitive benthic habitat, so that there is no physical disturbance to known nearshore coral habitat that overlap the Operational Area.</li> <li>• Implement an Unexpected Finds Procedure in the event of discovery of what appears to be Underwater Cultural Heritage.</li> <li>• Implement a risk-based management approach to determine IMMR requirements.</li> </ul>
Acoustic emissions from generation of noise during support vessel operations	Noise generated within the Operational Area from: <ul style="list-style-type: none"> <li>• subsea infrastructure</li> <li>• support vessels and activities.</li> </ul>	Localised impact with no lasting effect arising from behavioural impacts to marine fauna around support vessels.	<ul style="list-style-type: none"> <li>• Compliance with EPBC Regulations 2000 Part 8.1: Interacting with Cetaceans.</li> <li>• Speed limits and approach limits in place for turtles.</li> <li>• Manage IMMR vessel speed during humpback whale migration seasons.</li> </ul>
Discharge of chemicals during IMMR activities	Discharge of chemicals during IMMR activities	Slight and low-level impact arising from localised and temporary effects to water quality and marine biota.	<ul style="list-style-type: none"> <li>• Compliance with relevant requirement in the Port of Dampier Handbook.</li> <li>• Woodside's Environment Chemical Selection and Assessment Procedure - Australia will be applied which ensures that suitable chemicals are selected to reduce the environmental impacts.</li> <li>• Implement a risk-based management approach to determine IMMR requirements.</li> </ul>

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Aspect	Source of environmental impact/risk	Description of impact/risk	Summary of control measures
Vessel discharges during IMMR activities	Routine and non-routine discharge to the marine environment of greywater, cooling water and brine.	Localised impact with no lasting effect arising from change in water quality, which may affect fauna.	<ul style="list-style-type: none"> <li>• Vessels comply with relevant Marine Orders including:                             <ul style="list-style-type: none"> <li>– Marine Order 95 – pollution prevention – garbage (as appropriate to vessel class)</li> <li>– Marine Order 96 – pollution prevention – sewerage (as appropriate to vessel class)</li> <li>– Marine Order 91 – pollution prevention – oil (as appropriate to vessel class).</li> </ul> </li> <li>• Compliance with relevant vessel discharge requirements in the Port of Dampier Handbook.</li> </ul>
Atmospheric and greenhouse gas (GHG) emissions	Atmospheric and GHG emissions associated with: <ul style="list-style-type: none"> <li>• the use of internal combustion engines and incinerators on support vessels</li> <li>• Pigging operations of 2TL</li> </ul>	Localised impact with no lasting effect arising from: <ul style="list-style-type: none"> <li>• Temporary reduction in air quality in the immediate vicinity of support vessels.</li> <li>• Temporary, infrequent reduction in air quality in the immediate vicinity of the pig receiver.</li> </ul>	<ul style="list-style-type: none"> <li>• Vessel compliance with Marine Order 97 – marine pollution prevention – air pollution (as appropriate to vessel class).</li> <li>• National Greenhouse and Energy Reporting Scheme (NGERS) reporting and National Pollutant Inventory (NPI) reporting.</li> <li>• Compliance with relevant vessel discharge requirements in the Port of Dampier Handbook.</li> <li>• Pigging operations will follow Woodside’s Operational Pigging Guideline.</li> </ul>
Routine light emissions from vessel and IMMR activity lighting	Light emissions from external lights on support vessels and submersible equipment required for safe operation.	Slight and low-level impact arising from a change in ambient light in proximity of support vessels and submersible equipment, which may affect the behaviour of marine fauna including seabirds and shorebirds.	<ul style="list-style-type: none"> <li>• Implementation of a Seabird Management Plan.</li> <li>• Best practice lighting design as described in the National Light Pollution Guidelines for Wildlife.</li> <li>• Lighting will be limited to the minimum required for navigational and safety requirements, except in emergency events.</li> </ul>

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Aspect	Source of environmental impact/risk	Description of impact/risk	Summary of control measures
<b>Unplanned Events in State Waters (Accidents/ Incidents)</b>			
Unplanned hydrocarbon release from vessel collision or grounding	Loss of hydrocarbons to marine environment due to vessel collision or grounding	Potential major impact arising from: <ul style="list-style-type: none"> <li>• Long-term impacts to sensitive nearshore areas of offshore islands and coastal shorelines.</li> <li>• Reduction in water and sediment quality.</li> <li>• Disruption to marine fauna including protected species.</li> <li>• Interference with or displacement of other marine users including activities of other regional petroleum activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Vessel compliance with relevant Marine Orders (as appropriate to vessel class) including:                             <ul style="list-style-type: none"> <li>– Marine Order 21 – safety and emergency arrangements</li> <li>– Marine Order 27 – safety of navigation and radio equipment</li> <li>– Marine Order 30 – prevention of collisions.</li> </ul> </li> <li>• Development, testing, and implementation of the Pipelines Nearshore Oil Pollution First Strike Plan.</li> <li>• Notification to relevant authorities prior to activity (where vessels will be in Operational Area &gt; 3 weeks).</li> <li>• Designation of temporary exclusion zones.</li> <li>• Development of a simultaneous operations plan if more than one Woodside-contracted vessel is operating in the Operational Area.</li> <li>• Incident reports are raised within the event reporting system for unplanned releases.</li> <li>• Develop SIMOPS plan if more than one Woodside contracted vessel is operating at any time.</li> <li>• Apply Woodside Marine Offshore Vessel Assurance Procedure.</li> <li>• Spill response kits onboard vessels.</li> <li>• IMMR vessels to be equipped with depth sounder to avoid vessel grounding.</li> </ul>

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Aspect	Source of environmental impact/risk	Description of impact/risk	Summary of control measures
Unplanned hydrocarbon release from trunkline loss of containment	Loss of trunkline integrity resulting in a release of hydrocarbons and chemicals.	<p>Potential major impact arising from:</p> <ul style="list-style-type: none"> <li>• Long-term impacts to sensitive nearshore areas of offshore islands and coastal shorelines.</li> <li>• Reduction in water and sediment quality.</li> <li>• Disruption to marine fauna including protected species.</li> <li>• Interference with or displacement of other marine users including activities of other regional petroleum activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance of trunkline integrity to avoid loss of containment.</li> <li>• Maintenance of Safety Instrumented System to detect and respond to conditions and/or responses that put equipment in safe condition.</li> <li>• Maintain availability of external and internal communication systems to facilitate response to accidents and emergencies.</li> <li>• Maintenance of environmental incident response equipment.</li> <li>• Development, testing, and implementation of the Pipelines Nearshore Oil Pollution First Strike Plan.</li> <li>• <i>Compliance with DMPE Work Health and Safety (Petroleum and Geothermal Energy Operations) Regulations 2022: Accepted Safety Case for the trunkline.</i></li> <li>• Incident reports are raised within the event reporting system for unplanned releases.</li> <li>• Implementation of management systems to maintain operational procedures and emergency response.</li> </ul>

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Aspect	Source of environmental impact/risk	Description of impact/risk	Summary of control measures
Unplanned discharge from release of chemicals and hydrocarbons	Discharge of chemicals and hydrocarbons from support vessels and submersible equipment	Potential slight and low-level impact arising from: <ul style="list-style-type: none"> <li>• Reduction in water quality.</li> <li>• Disruption to marine fauna including protected species.</li> </ul>	<ul style="list-style-type: none"> <li>• Vessel compliance with Marine Order 91 – pollution prevention – oil (as appropriate to vessel class).</li> <li>• Chemicals will be stored safely to prevent the release to the marine environment.</li> <li>• Woodside’s Environment Chemical Selection and Assessment Procedure - Australia will be applied which ensures that suitable chemicals are selected to reduce the environmental impacts.</li> <li>• Incident reports are raised within the event reporting system for unplanned releases.</li> <li>• Spill response kits onboard vessels.</li> <li>• Implement a risk-based management approach in determining inspection, monitoring and maintenance requirements.</li> </ul>
Unplanned discharge from loss of hazardous and non-hazardous solid waste	Discharge of non-hazardous and hazardous solid waste from support vessels or submersible equipment.	Potential localised impact with no lasting effect arising from: <ul style="list-style-type: none"> <li>• Reduction in water and sediment quality.</li> <li>• Disruption to marine fauna including protected species.</li> </ul>	<ul style="list-style-type: none"> <li>• Vessel compliance with relevant Marine Orders including:                             <ul style="list-style-type: none"> <li>– Marine Order 95 – marine pollution prevention – garbage (as appropriate to vessel class)</li> <li>– Marine Order 94 – packaged harmful substances (as appropriate to vessel class).</li> </ul> </li> <li>• Implementation of waste management procedures.</li> <li>• Recovery of dropped objects where safe and practicable to do so.</li> <li>• Incident reports are raised within the event reporting system for unplanned releases.</li> </ul>

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Aspect	Source of environmental impact/risk	Description of impact/risk	Summary of control measures
Interaction with marine fauna	Support vessels or submersible equipment colliding with marine fauna.	Potential slight and low-level impact arising from injury or death to marine fauna (single individual) including protected species.	<ul style="list-style-type: none"> <li>• Compliance with <i>EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with Cetaceans</i>.</li> <li>• Speed limits and approach limits in place for turtles.</li> <li>• Management of IMMR vessel speed during humpback whale migration seasons.</li> <li>• Incident reports are raised within the event reporting system for unplanned releases.</li> <li>• Implementation of actions as per Woodside's Cetacean Strike Incident Response Guidance.</li> </ul>
Introduction of invasive marine species (IMS)	IMS may be present on support vessels or submersible equipment, or in ballast water tanks.	Potential moderate impact arising from introduction and establishment of IMS in the Operational Area.	<ul style="list-style-type: none"> <li>• Compliance with Australian Ballast Water Management Requirements.</li> <li>• Internationally sourced vessels to manage biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.</li> <li>• Implementation of Woodside's IMS risk assessment process which identifies potential risks and additional controls to minimise the likelihood of introducing IMS.</li> <li>• Incident reports are raised within the event reporting system for unplanned releases.</li> </ul>

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Aspect	Source of environmental impact/risk	Description of impact/risk	Summary of control measures
Cultural Features and Heritage Values Assessment	As described in the above sources of environmental risk.	As described above.	<ul style="list-style-type: none"> <li>• Apply a 'living heritage' management approach.</li> <li>• The environmental impacts and risks of the activity will continue to be managed to ALARP and an acceptable level for cultural features and heritage values.</li> <li>• Inductions to relevant marine crew, prior to the individual commencing the activity.</li> <li>• Implement the Petroleum Activity in a manner that is not inconsistent with the objectives of the Murujuga National Park Management Plan 78, through execution of the Conservation Agreement and Deep Gorge Joint Statement.</li> <li>• Implement the Petroleum Activity in a manner that is not inconsistent with UNESCO Operational Guidelines for the Implementation of the World Heritage Convention.</li> <li>• Should it be identified that relevant cultural authorities may be affected in the unlikely event of a spill, Woodside will engage with those parties as appropriate and in alignment with the First Strike Plan.</li> <li>• Activities under the Petroleum Activity will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the <i>ATSIHP Act 1984</i>.</li> <li>• Implement an Unexpected Finds Procedure in the event of discovery of what appears to be Underwater Cultural Heritage.</li> </ul>

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## 6. IMPLEMENTATION STRATEGY

### 6.1 Systems, practice and procedures

Operational activities are planned and carried out in accordance with relevant legislation and standards, management measures (i.e., controls) identified in the EP and internal environment standards and procedures (Section 5).

### 6.2 Woodside Management System

The Woodside Management System (WMS) provides a structured framework of documentation to set common expectations governing how all employees and contractors at Woodside will work. Many of the standards presented in the EP are drawn from the WMS documentation, which comprises the following four elements:

- **Our Values and Policies:** Set the enterprise-wide direction for Woodside by governing our behaviours, actions, and business decisions and ensuring we meet our legal and other external obligations.
- **Expectations:** Set essential activities or deliverables required to achieve the objectives of the Key Business Activities and provide the basis for developing processes and procedures.
- **Processes and Procedures:** Processes identify the set of interrelated or interacting activities that transforms inputs into outputs, to systematically achieve a purpose or specific objective. Procedures specify what steps, by whom, and when required to carry out an activity or a process.
- **Guidelines:** Provide recommended practice and advice on how to perform the steps defined in Procedures, together with supporting information and associated tools. Guidelines provide advice on how activities or tasks may be performed, information that may be taken into consideration, or, how to use tools and systems.

### 6.3 Management of change

Woodside's Change Management Procedure describes Woodside's requirements for change management at Woodside owned or controlled operations. Changes relevant to the EP will be managed in accordance with the Change Management Procedure. Such changes may concern activity description, including review of advances in technology, new equipment selected, changes in understanding of the environment, and potential new advice from external stakeholders.

In the event of a change to Woodside's nominated liaison person, or a change to the contact details for the titleholder or the nominated liaison person, Woodside will notify DMPE of the change in writing as soon as practicable.

### 6.4 Roles and responsibilities

Key roles and responsibilities for Woodside and Contractor personnel in implementing, managing and reviewing the EP are described in Table 6-1.

**Table 6-1: Roles and Responsibilities**

Title (role)	Environmental responsibilities
<b>Office-based personnel</b>	
Asset Manager	<ul style="list-style-type: none"> <li>• Be accountable for ensuring all necessary regulatory approvals are in place to operate.</li> <li>• Approve (decide on) the content to be contained in the EP.</li> <li>• be accountable for managing the asset throughout its operations in accordance with legislative/regulatory requirements (including this EP).</li> <li>• Be responsible for continuous improvement of operations of the facility, including environmental performance.</li> <li>• Be the decider on technical decisions where required based on assessed current level of risk.</li> <li>• Be accountable for incident notification, reporting and investigation in line with regulatory requirements and EP requirements.</li> </ul>
Subsea and Pipeline (IMMR) Activity Manager (or delegate/s)	<ul style="list-style-type: none"> <li>• Monitor and manage the activity so it is undertaken as per the relevant standards and commitments in this EP.</li> <li>• Notify the Woodside Environment Adviser of scope changes in a timely manner.</li> <li>• Liaise with regulatory authorities as required.</li> <li>• Review this EP as necessary and manage change requests.</li> <li>• Ensure all relevant operations and vessel crew members complete an HSE induction.</li> <li>• Verify that contractors meet environmental-related contractual obligations.</li> <li>• Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside’s HSE Reporting and Investigation Procedure.</li> <li>• Monitor and close out corrective actions identified during environmental monitoring or audits.</li> </ul>
Woodside Environmental Adviser	<ul style="list-style-type: none"> <li>• Verify relevant environmental approvals for the activities exist before starting activity.</li> <li>• Track compliance with environmental performance outcomes (EPOs) and environmental performance standards (EPSs) as per the requirements of this EP.</li> <li>• Prepare the environmental component of the relevant Induction Package.</li> <li>• Assist with the review, investigation and reporting of environmental incidents.</li> <li>• Ensure environmental monitoring and inspections/audits are undertaken as per the requirements of this EP.</li> <li>• Liaise with relevant regulatory authorities as required.</li> <li>• Assist in preparing external regulatory reports required, in line with environmental approval requirements and Woodside incident reporting procedures.</li> <li>• Monitor and close out corrective actions (Environmental Compliance Action Register) identified during environmental monitoring or audits.</li> <li>• Advise relevant Woodside personnel and contractors to assist them to understand their environment responsibilities.</li> <li>• Liaise with contractors to ensure communication and understanding of environment requirements as outlined in this EP and in line with Woodside’s values and management systems.</li> </ul>
Woodside Corporate Affairs Adviser	<ul style="list-style-type: none"> <li>• Prepare and implement the Stakeholder Consultation Plan for the Petroleum Activity.</li> <li>• Report on stakeholder consultation.</li> <li>• Perform ongoing stakeholder liaison as required.</li> </ul>
Woodside Marine Assurance Superintendent	<ul style="list-style-type: none"> <li>• Conduct relevant audit and inspection to confirm vessels comply with relevant Marine Orders and Woodside Marine Charters Instructions requirements to meet safety, navigation and emergency response requirements.</li> </ul>

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Title (role)	Environmental responsibilities
Woodside Corporate Incident Management Team (CIMT) Incident Commander	<ul style="list-style-type: none"> <li>• On receiving notification of an incident, the Woodside CIMT Incident Commander shall:                             <ul style="list-style-type: none"> <li>– establish and take control of the CIMT and establish an appropriate command structure for the incident assess situation, identify risks and actions to minimise the risk</li> <li>– communicate impact, risk and progress to the Crisis Management Team and stakeholders</li> <li>– develop the Incident Action Plan, including setting objectives for action</li> <li>– approve, implement and manage the Incident Action Plan</li> <li>– communicate within and beyond the incident management structure</li> <li>– manage and review safety of responders</li> <li>– address the broader public safety considerations</li> <li>– conclude and review activities.</li> </ul> </li> </ul>
<b>Vessel-based personnel</b>	
Vessel Master	<ul style="list-style-type: none"> <li>• Ensure the vessel management system and procedures are implemented.</li> <li>• Ensure personnel commencing work on the vessel receive an induction that meets the relevant requirements specified in this EP.</li> <li>• Ensure personnel are competent to undertake the work they have been assigned.</li> <li>• Verify Ship Oil Pollution Emergency Plan (SOPEP) drills are conducted as per the vessel's schedule.</li> <li>• Ensure the vessel Emergency Response Team has been given sufficient training to implement the SOPEP.</li> <li>• Ensure environmental incidents or breaches of relevant EPOs or EPSs detailed in this EP are reported immediately to the Woodside Site Representative.</li> <li>• Ensure corrective actions for incidents or breaches are developed, communicated to the Woodside Site Representative, and tracked to closeout in a timely manner. Communicate closeout of actions to the Woodside Site Representative.</li> </ul>
Logistics Coordinators	<ul style="list-style-type: none"> <li>• Ensure waste is managed on the relevant vessels and sent to shore as per the relevant Waste Management Plan.</li> </ul>
Offshore Campaigns Woodside Site Representative	<ul style="list-style-type: none"> <li>• Ensure relevant management measures in this EP are implemented on the vessels.</li> <li>• Ensure vessel induction attendance is recorded.</li> <li>• Ensure periodic environmental inspections are completed.</li> <li>• Ensure environmental incidents or breaches of EPOs, EPSs or measurement criteria are reported in accordance with Woodside and regulatory requirements.</li> </ul>

## 6.5 Woodside decommissioning framework

Decommissioning is a routine, planned activity for the offshore oil and gas industry. Woodside's internal processes for decommissioning include:

- designing for decommissioning during the development phase of projects/facilities
- removing property, equipment and infrastructure, such as a facility or a pipeline, associated with a petroleum activity
- assessing decommissioning options and opportunities during the operational life of the asset leading up to cessation of production
- selecting, developing and planning the selected decommissioning option
- executing decommissioning plans
- restoring the marine environment.

### 6.5.1 Decommissioning requirements

Section 104(2)(c) of the *Petroleum (Submerged Lands) Act 1982* (WA) says the Minister shall not give his consent to a surrender of an instrument unless the registered holder has, to the satisfaction of the Minister, removed, or caused to be removed, from the area to which the surrender relates all property brought into that area by any person engaged or concerned in the operations authorised by the instrument, or has made arrangements that are satisfactory to the Minister with respect to that property. Further, sub-section (f) requires that damage to the seabed or subsoil in that area caused by any person engaged or concerned in the operation of an authorised instrument must be made good to the Minister’s satisfaction.

### 6.5.2 Decommissioning process

Woodside’s decommissioning process has been developed to comply with section 104(2) of the *Petroleum (Submerged Lands) Act*, and having regard for DMPE’s ‘Decommissioning of petroleum and geothermal energy property, equipment and infrastructure in Western Australian onshore areas and State coastal waters’ policy (DMPE 2024).

Woodside’s decommissioning process outlines a two-phased approach to decommissioning, including:

- decommissioning planning (before cessation of production)
- decommissioning execution (after cessation of production).

An overview of this process is displayed on Figure 6-1.

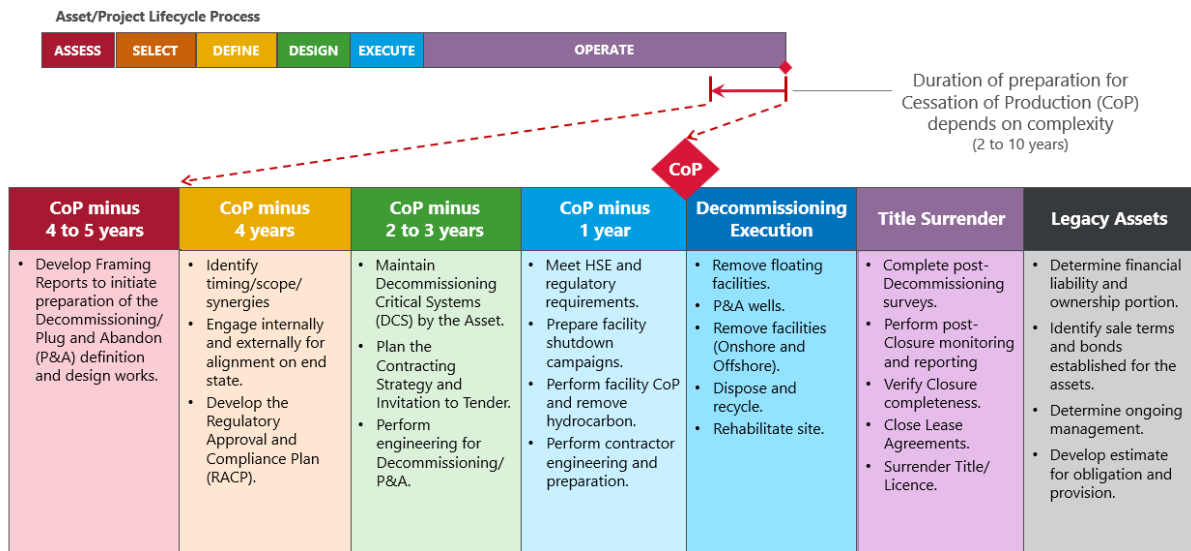


Figure 6-1: Woodside’s process for decommissioning planning

### 6.5.3 Decommissioning planning

#### 6.5.3.1 Timing

Decommissioning planning generally begins two to 10 years before cessation of production, depending on the complexity of the activity (Figure 6-1). The timeframe selected for decommissioning planning depends on the complexity of the facility and infrastructure requiring decommissioning.

During the decommissioning planning phase, infrastructure will be managed and maintained within the scope of this EP to meet Woodside’s obligations under the *Petroleum (Submerged Lands) Act 1982* (WA).

#### 6.5.3.2 Planning activities

Woodside’s decommissioning process (Figure 6-1) details activities conducted in each stage of decommissioning planning. Activities to support each stage of planning include:

- review or completion of desktop studies

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- review of engineering design
- technical engineering studies
- contracting activities
- approvals planning
- consultation with stakeholders
- assessment of decommissioning options
- maintenance planning to prepare infrastructure
- decommissioning scheduling
- risk reviews.

Data collated from inspections and other activities undertaken during IMMR scopes within the scope of the Petroleum Activity may also be used to support decommissioning planning.

## 6.6 Decommissioning of the NWS trunklines

Cessation of production for the NWS trunklines is estimated to be 2036 for 1TL and 2030 for 2TL. This timing is indicative only and subject to change based on production forecasting, infrastructure condition, changes to Woodside's decommissioning process, and regulatory requirements.

In line with Woodside's decommissioning planning process shown on Figure 6-1, preliminary concept engineering studies will take place in the five years preceding cessation of production.

A detailed execution strategy will be developed during the decommissioning planning phase, which will inform execution activities and timeframes.

## 6.7 Training and competency

As part of its contracting process Woodside undertakes assessments of a proposed Contractor's environmental management system to determine the level of compliance with the standard AS/NZS ISO 14001. This assessment is undertaken for the Petroleum Activity part of the pre-mobilisation process. The assessment determines whether there is a clearly defined organisational structure that clearly defines the roles and responsibilities for key positions. The assessment also assesses whether there is an up-to-date training matrix that defines corporate and site/activity-specific environmental training and competency requirements.

As a minimum, environmental awareness training during inductions is required for all personnel, detailing awareness and compliance with the Contractor's environmental policy and environmental management system.

Inductions are provided to relevant personnel (e.g. Contractors and Company representatives) before mobilising to or on arrival at the activity location. The induction covers the HSE requirements and environmental information specific to the activity location. Attendance records are maintained.

## 6.8 Monitoring and management of compliance

Monitoring is conducted during an activity to monitor compliance against the environmental performance objectives, environmental performance standards and measurement criteria which are developed based on the impacts, risks and associated controls described above. These are reviewed throughout the life of the EP to identify opportunities for improvement.

Non-conformances with the environmental performance objectives and environmental performance standards in the EP are classified as environmental incidents. These are reported and managed in accordance with Woodside's Health, Safety and Environment Event Reporting and Investigation Procedure and the EP.

Emissions and discharges to the environment associated with vessels will be monitored to assess the environmental performance, as required in the EP.

Throughout this activity, Woodside will continuously identify new source-based risks and impacts through monitoring and auditing systems and tools.

## 6.9 Reporting

To meet the environmental performance objectives and standards outlined in the EP, Woodside reports at a number of levels. Internal reporting includes:

- daily progress reports and meetings onboard vessels
- regular HSE meetings
- performance reporting.

External routine reporting also occurs, which includes documenting:

- environmental performance review and reporting
- incident reporting
- emissions and discharges reporting (including greenhouse gas emissions).

## 6.10 Emergency preparedness and response

Woodside has a detailed Hydrocarbon Spill Australia Regulatory Framework and Hydrocarbon Spill Preparedness and Response guidelines. These are supported by various plans that detail the actions and resources available in the event of various emergency scenarios.

Vessels are required to have a SOPEP in accordance with the requirements of the Australian Marine Orders. These plans outline responsibilities, specify procedures and identify resources available in a hydrocarbon or chemical spill from vessel activities.

The Nearshore Pipelines Oil Pollution First Strike Plan provides immediate actions required to commence a response if hydrocarbons are released to the marine environment and would be implemented in conjunction with the SOPEP and the Tactical Response Plans that have been developed for priority protection areas.

In the event of a major spill, the DTMI, as the administrator of the State Hazard Plan Maritime Environmental Emergencies, provides support to Woodside through advice and access to equipment, people and liaison. The interface and responsibilities are described in the Hydrocarbon Spill Australia Regulatory Framework and the Nearshore Pipelines Oil Pollution First Strike Plan.

In the event of a Level 2/3 spill, the role of Controlling Agency may be appointed to either DTMI or Pilbara Ports and will be determined by the Jurisdictional Authority (DTMI) in consultation with Pilbara Ports. The Controlling Agency will be the agency deemed most capable of performing the role of Controlling Agency. The Controlling Agency will appoint an Incident Controller and form a separate Incident Management Team.

### 6.10.1 Emergency and spill response drills and exercises

Woodside's capability to respond to incidents will be tested periodically, in accordance with the Emergency and Crisis Management Procedure.

The overall objective of exercises is to test procedures, skills and the teamwork of the Emergency Response Teams and Incident Management Teams in their ability to respond to major accident and major environment events. After each exercise, the team holds a debriefing session during which the exercise is reviewed. Any lessons learned or areas for improvement are identified and incorporated into revised procedures, where appropriate.

### 6.10.2 Hydrocarbon spill testing of arrangements

Woodside's arrangements for spill response are common across Australian operating assets and activities to ensure controls are consistent. The overall objective of testing these arrangements is so that Woodside maintains an ability to respond to a hydrocarbon spill, specifically to:

- ensure relevant responders, contractors and key personnel understand and practice their assigned roles and responsibilities
- test response arrangements and actions to validate response plans

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- ensure lessons learned are incorporated into Woodside's processes and procedures, and improvements made where required.

If new response arrangements are introduced, or existing arrangements significantly amended, additional testing is undertaken accordingly. Additional activities or activity locations are not anticipated to occur but, if they do, response arrangements will be tested as soon as practicable.

In addition to the testing of response capability, up to eight formal exercises are planned annually, across Woodside, to specifically test arrangements for responding to a hydrocarbon spill to the marine environment.

### **6.10.3 Cyclone and dangerous weather preparation**

Tropical cyclones and other severe weather events are a potential risk to the safety and health of personnel and can potentially cause spills of hazardous materials into the environment from infrastructure and damaged vessels.

Facilities and relevant support vessels on hire to Woodside receive regular forecasts from Woodside meteorologists, who liaise closely with the Bureau of Meteorology (BoM). If a cyclone (or severe weather event) is forecast, the path and its development is plotted and monitored using the BoM data. If there is the potential for the cyclone (severe weather event) to affect the Petroleum Activity, the asset Cyclone Contingency Plan and the vessel's Cyclone Contingency Plan will be actioned. If required, vessels can transit from the proposed track of the cyclone (severe weather event).

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## APPENDIX A THREATENED AND MIGRATORY SPECIES PREDICTED TO OCCUR WITHIN THE OPERATIONAL AREA AND EMBA

Threatened and migratory marine and terrestrial species identified by the EPBC Act Protected Matters Search Tool as potentially occurring within the Operational Area or EMBA.

Species name	Common name	Threatened status under the WA BC Act	Threatened status under the EPBC Act	Migratory status	Potential for interaction	
					Operational Area	EMBA
<b>Marine mammals</b>						
<i>Balaenoptera musculus</i>	Blue whale	Endangered	Endangered	Migratory	Species or its habitat likely to occur in area	Migration route known to occur in area
<i>Megaptera novaeangliae</i>	Humpback whale	Conservation dependent	N/A	Migratory	Breeding and migration known to occur in area	Breeding and migration known to occur in area
<i>Balaenoptera edeni</i>	Bryde's whale	Not listed	N/A	Migratory	Species or its habitat may occur in area	Species or its habitat likely to occur in area
<i>Orcinus orca</i>	Killer whale	Not listed	N/A	Migratory	Species or its habitat may occur in area	Species or its habitat may occur in area
<i>Sousa sahalensis</i> as <i>Sousa chinensis</i>	Australian humpback dolphin	Priority 4	Vulnerable	Migratory	Species or its habitat likely to occur in area	Species or its habitat known to occur in area
<i>Tursiops aduncus</i>	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	Not listed	N/A	Migratory	Species or its habitat known to occur in area	Species or its habitat known to occur in area
<i>Dugong dugon</i>	Dugong	Other specifically protected fauna	N/A	Migratory	Species or its habitat known to occur in area	Species or its habitat known to occur in area
<i>Orcaella heinsohni</i>	Australian snubfin dolphin	Priority	Vulnerable	Migratory	Species or its habitat likely to occur in area	Species or its habitat known to occur in area
<i>Balaenoptera borealis</i>	Sei whale	Endangered	Vulnerable	Migratory	N/A	Species or its habitat likely to occur in area
<i>Balaenoptera physalus</i>	Fin whale	Endangered	Vulnerable	Migratory	N/A	Species or its habitat likely to occur in area

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Species name	Common name	Threatened status under the WA BC Act	Threatened status under the EPBC Act	Migratory status	Potential for interaction	
					Operational Area	EMBA
<i>Eubalaena australis</i>	Southern right whale	Vulnerable	Endangered	Migratory	N/A	Species or its habitat may occur in area
<i>Physeter macrocephalus</i>	Sperm whale	Vulnerable	N/A	Migratory	N/A	Species or its habitat may occur in area
<i>Balaenoptera bonaerensis</i>	Antarctic minke whale	Endangered	N/A	Migratory	N/A	Species or its habitat may occur in area
<b>Fish, shark, and rays</b>						
<i>Carcharodon carcharias</i>	Great white shark	Vulnerable	Vulnerable	Migratory	Species or its habitat may occur in area	Species or its habitat may occur in area
<i>Rhincodon typus</i>	Whale shark	Other specifically protected fauna	Vulnerable	Migratory	Species or its habitat may occur in area	Foraging, feeding or related behaviour known to occur in area
<i>Pristis zijsron</i>	Green sawfish	Vulnerable	Vulnerable	Migratory	Species or its habitat known to occur in area	Species or its habitat known to occur in area
<i>Pristis clavata</i>	Dwarf sawfish	Vulnerable	Vulnerable	Migratory	Species or its habitat known to occur in area	Species or its habitat known to occur in area
<i>Pristis pristis</i>	Freshwater sawfish	Vulnerable	Endangered	Migratory	Species or its habitat may occur in area	Species or its habitat likely to occur in area
<i>Carcharias taurus</i>	Grey nurse shark (west coast population)	Vulnerable	Vulnerable	Migratory	Species or its habitat likely to occur in area	Species or its habitat likely to occur in area
<i>Sphyrna lewini</i>	Scalloped hammerhead	Not listed	Conservation dependent	N/A	Species or its habitat likely to occur in area	Species or its habitat known to occur in area
<i>Anoxypristis cuspidata</i>	Narrow sawfish	Not listed	N/A	Migratory	Species or its habitat likely to occur in area	Species or its habitat likely to occur in area
<i>Manta birostris</i>	Giant manta ray	Not listed	N/A	Migratory	Species or its habitat likely to occur in area	Species or its habitat known to occur in area
<i>Manta alfredi</i>	Reef manta ray	Not listed	N/A	Migratory	Species or its habitat known to occur in area	Species or its habitat known to occur in area

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Species name	Common name	Threatened status under the WA BC Act	Threatened status under the EPBC Act	Migratory status	Potential for interaction	
					Operational Area	EMBA
<i>Carcharhinus longimanus</i>	Oceanic whitetip shark	Not listed	N/A	Migratory	Species or its habitat likely to occur in area	Species or its habitat likely to occur in area
<i>Isurus oxyrinchus</i>	Shortfin mako	Not listed	N/A	Migratory	N/A	Species or its habitat likely to occur in area
<i>Isurus paucus</i>	Longfin mako	Not listed	N/A	Migratory	N/A	Species or its habitat likely to occur in area
<b>Seabirds</b>						
<i>Sternula nereis</i>	Australian fairy tern	Vulnerable	Vulnerable	Migratory	Breeding known to occur in area	Breeding known to occur in area
<i>Sternula albifrons</i>	Little tern	N/A	Vulnerable	Migratory	Breeding known to occur in area	Species or its habitat may occur in area
<i>Macronectes giganteus</i>	Southern giant petrel	Endangered	Endangered	Migratory	Species or its habitat may occur in area	Species or its habitat may occur in area
<i>Erythrotriorchis radiatus</i>	Red goshawk	N/A	Endangered	Migratory	Species or its habitat may occur in area	Species or its habitat may occur in area
<i>Phaethon rubricauda</i>	Red-tailed tropicbird	N/A	Endangered	Migratory	Species or its habitat likely to occur in area	Species or its habitat likely to occur in area
<i>Phaethon lepturus fulvus</i>	Christmas Island white-tailed tropicbird	N/A	Endangered	Migratory	Species or its habitat may occur in area	Species or its habitat may occur in area
<i>Limosa lapponica menzbieri</i>	Northern Siberian bar-tailed godwit	N/A	Endangered	Migratory	Species or its habitat known to occur in area	Species or its habitat known to occur in area
<i>Anous stolidus</i>	Common noddy	N/A	N/A	Migratory	Species or its habitat may occur in area	Species or its habitat likely to occur in area
<i>Calonectris leucomelas</i>	Streaked shearwater	N/A	N/A	Migratory	Species or its habitat likely to occur in area	Species or its habitat likely to occur in area
<i>Fregata ariel</i>	Lesser frigatebird	N/A	N/A	Migratory	Species or its habitat likely to occur in area	Species or its habitat known to occur in area
<i>Sterna dougallii</i>	Roseate tern	N/A	N/A	Migratory	Breeding likely to occur in area	Breeding known to occur in area

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Species name	Common name	Threatened status under the WA BC Act	Threatened status under the EPBC Act	Migratory status	Potential for interaction	
					Operational Area	EMBA
<i>Phaethon lepturus</i>	White-tailed tropicbird	N/A	N/A	Migratory	Species or its habitat may occur in area	Species or its habitat likely to occur in area
<i>Ardenna pacifica</i>	Wedge-tailed shearwater	N/A	N/A	Migratory	Species or its habitat may occur in area	Breeding known to occur in area
<i>Apus pacificus</i>	Fork-tailed swift	N/A	N/A	Migratory	Species or its habitat likely to occur in area	Species or its habitat likely to occur in area
<i>Pandion haliaetus</i>	Osprey	N/A	N/A	Migratory	N/A	Breeding known to occur in area
<i>Onychoprion anaethetus</i>	Bridled tern	N/A	N/A	Migratory	N/A	Breeding known to occur in area
<i>Fregata minor</i>	Great frigatebird	N/A	N/A	Migratory	N/A	Species or its habitat may occur in area
<i>Hydroprogne caspia</i>	Caspian tern	N/A	N/A	Migratory	N/A	Breeding known to occur in area
<i>Thalasseus bergii</i>	Greater crested tern	N/A	N/A	Migratory	N/A	Breeding known to occur in area
<i>Thalassarche carteri</i>	Indian yellow-nosed albatross	N/A	Vulnerable	Migratory	N/A	Species or its habitat may occur in area
<b>Shorebirds</b>						
<i>Calidris ferruginea</i>	Curlew sandpiper	Critically endangered	Critically endangered	Migratory	Species or its habitat may occur in area	Species or its habitat known to occur in area
<i>Numenius madagascariensis</i>	Eastern curlew	Critically endangered	Critically endangered	Migratory	Species or its habitat known to occur in area	Species or its habitat known to occur in area
<i>Calidris canutus</i>	Red knot	Endangered	Vulnerable	Migratory	Species or its habitat may occur in area	Species or its habitat known to occur in area
<i>Charadrius leschenaultii</i>	Greater sand plover	Vulnerable	Vulnerable	Migratory	Species or its habitat likely to occur in area	Species or its habitat known to occur in area
<i>Rostratula australis</i>	Australian painted snipe	Endangered	Endangered	N/A	Species or its habitat may occur in area	Species or its habitat may occur in area

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Species name	Common name	Threatened status under the WA BC Act	Threatened status under the EPBC Act	Migratory status	Potential for interaction	
					Operational Area	EMBA
<i>Actitis hypoleucos</i>	Common sandpiper	N/A	N/A	Migratory	Species or its habitat known to occur in area	Species or its habitat known to occur in area
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	N/A	Vulnerable	Migratory	Species or its habitat may occur in area	Species or its habitat known to occur in area
<i>Calidris melanotos</i>	Pectoral sandpiper	N/A	N/A	Migratory	Species or its habitat may occur in area	Species or its habitat may occur in area
<i>Charadrius veredus</i>	Oriental plover	N/A	N/A	Migratory	Species or its habitat may occur in area	Species or its habitat may occur in area
<i>Glareola maldivarum</i>	Oriental pratincole	N/A	N/A	Migratory	Species or its habitat may occur in area	Species or its habitat may occur in area
<i>Tringa nebularia</i>	Common greenshank	N/A	Endangered	Migratory	Species or its habitat likely to occur in area	Species or its habitat likely to occur in area
<i>Limosa lapponica</i>	Bar-tailed godwit	N/A	N/A	Migratory	Species or its habitat known to occur in area	Species or its habitat known to occur in area
<i>Limnodromus semipalmatus</i>	Asian dowitcher	N/A	Vulnerable	Migratory	N/A	Species or its habitat may occur in area
<i>Calidris tenuirostris</i>	Great knot	Critically endangered	Vulnerable	Migratory	N/A	Species or its habitat known to occur in area
<i>Pluvialis squatarola</i>	Grey plover	N/A	Vulnerable	Migratory	N/A	Species or its habitat known to occur in area
<i>Charadrius mongolus</i>	Lesser sand plover	Endangered	Endangered	Migratory	N/A	Species or its habitat known to occur in area
<i>Arenaria interpres</i>	Ruddy turnstone	N/A	Vulnerable	Migratory	N/A	Species or its habitat known to occur in area
<i>Xenus cinereus</i>	Terek sandpiper	N/A	Vulnerable	Migratory	N/A	Species or its habitat known to occur in area
<i>Limosa limosa</i>	Black-tailed godwit	N/A	Endangered	Migratory	N/A	Species or its habitat known to occur in area

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					Operational Area	EMBA
<i>Limicola falcinellus</i>	Broad-billed sandpiper	N/A	N/A	Migratory	N/A	Species or its habitat known to occur in area
<i>Tringa totanus</i>	Common redshank, redshank	N/A	N/A	Migratory	N/A	Species or its habitat known to occur in area
<i>Tringa brevipes</i>	Grey-tailed tattler	Priority 4	N/A	Migratory	N/A	Species or its habitat known to occur in area
<i>Calidris subminuta</i>	Long-toed stint	N/A	N/A	Migratory	N/A	Species or its habitat known to occur in area
<i>Tringa stagnatilis</i>	Marsh sandpiper	N/A	N/A	Migratory	N/A	Species or its habitat known to occur in area
<i>Pluvialis fulva</i>	Pacific golden plover	N/A	N/A	Migratory	N/A	Species or its habitat known to occur in area
<i>Phalaropus lobatus</i>	Red-necked phalarope	N/A	N/A	Migratory	N/A	Species or its habitat known to occur in area
<i>Calidris ruficollis</i>	Red-necked stint	N/A	N/A	Migratory	N/A	Species or its habitat known to occur in area
<i>Calidris alba</i>	Sanderling	N/A	N/A	Migratory	N/A	Species or its habitat known to occur in area
<i>Numenius phaeopus</i>	Whimbrel	N/A	N/A	Migratory	N/A	Species or its habitat known to occur in area
<b>Marine Reptiles</b>						
<i>Caretta caretta</i>	Loggerhead turtle	Endangered	Endangered	Migratory	Foraging, feeding or related behaviour known to occur in area	Breeding known to occur in area
<i>Chelonia mydas</i>	Green turtle	Vulnerable	Vulnerable	Migratory	Breeding known to occur in area	Breeding known to occur in area
<i>Eretmochelys imbricata</i>	Hawksbill turtle	Vulnerable	Vulnerable	Migratory	Breeding known to occur in area	Breeding known to occur in area

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					Operational Area	EMBA
<i>Natator depressus</i>	Flatback turtle	Vulnerable	Vulnerable	Migratory	Breeding known to occur in area	Breeding known to occur in area
<i>Dermochelys coriacea</i>	Leatherback turtle	Vulnerable	Endangered	Migratory	Breeding likely to occur in area	Species or its habitat known to occur in area
<i>Aipysurus apraefrontalis</i>	Short-nosed sea snake	Critically endangered	Critically endangered	N/A	Species or its habitat known to occur in area	Species or its habitat known to occur in area
<i>Aipysurus foliosquama</i>	Leaf-scaled sea snake	Critically endangered	Critically endangered	N/A	Species or its habitat likely to occur in area	Species or its habitat known to occur in area
<i>Crocodylus porosus</i>	Salt-water crocodile	N/A	N/A	Migratory	Species or its habitat may occur in area	Species or its habitat may occur in area

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