ICHTHYS PROJECT GAS EXPORT PIPELINE (PRESERVATION STAGE) ENVIRONMENT PLAN- SUMMARY

EP Summary

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Abbreviations and acronyms

Abbreviation / acronym	Description
AFMA	Australian Fisheries Management Authority (Cwlth)
AMOSC	Australian Marine Oil Spill Centre
AMSA	Australian Maritime Safety Authority (Cwlth)
APASA	Asia-Pacific Applied Science Associates
ASBTIA	Australian Southern Bluefin Tuna Industry Association
BIA	biologically important area
BOM	Bureau of Meteorology
CFA	Commonwealth Fisheries Association
CMR	Commonwealth marine reserve
CMT	crisis management team
CP	cathodic protection
CPF	central processing facility (offshore)
DAWR	Department of Agriculture and Water Resources (Cwlth)
DER	Department of Environment Regulation (WA)
DGPS	Differential Global Positioning System
DoE	Department of the Environment (Cwlth)
DoFWA	Department of Fisheries (WA)
DMP	Department of Mines and Petroleum
DP	dynamic positioning
DPaW	Department of Parks and Wildlife (WA)
DPIF	Department of Primary Industries and Fisheries (NT)
EMBA	environment that may be affected
EP	environment plan

Abbreviation / acronym	Description
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
ERT	emergency response team
ESC	environment and scientific coordinator
FIS	filtered inhibited seawater
FPSO	floating production, storage and offtake (facility)
ha	hectare
HAZID	hazard identification
HSEQ-MS	health, safety, environment and quality management system
GEP	gas export pipeline
GERB	gas export riser base
I-GEM	Industry–Government Environmental Metadata
IMO	International Maritime Organization
IMP	invasive marine pest
IMR	inspection, maintenance and repair
IMT	incident management team
INPEX	INPEX Ichthys Pty Ltd
KEF	key ecological feature
LNG	liquefied natural gas
LPG	liquefied petroleum gas
MEG	monoethylene glycol
MGO	marine gas oil
MoC	management of change
MoU	memorandum of understanding
NEBA	net environmental benefit analysis

Abbreviation / acronym	Description
NMR	North Marine Region
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority (Cwlth)
NOPTA	National Offshore Petroleum Titles Administrator
NT EPA	Northern Territory Environment Protection Authority
NWMR	North-west Marine Region
OM	operational monitoring
OPEP	oil pollution emergency plan
OPGGS (E) Regulations 2009	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cwlth)
OSMP	operational and scientific monitoring
OSRL	Oil Spill Response Limited
OVID	offshore vessel inspection database
PDCA	plan, do, check, act
PLR	pig launcher and receiver
ppb	parts per billion
PPRR	prevention, preparedness, response, recovery
ROV	remotely operated underwater vehicle
SIMOPS	simultaneous operations
SM	scientific monitoring
SOPEP	shipboard oil pollution emergency plan
DoTWA	Department of Transport (WA)
WA EPA	Western Australia Environmental Protection Authority
WAFIC	Western Australian Fishing Industry Council
WestPlan MOP	State Emergency Management Plan for Marine Oil Pollution (WA)

1 INTRODUCTION

This Environment Plan Summary has been prepared to meet Regulation 11(4) of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS (E) Regulations 2009) and summarises the information provided within Ichthys Project Gas Export Pipeline (Preservation Stage) EP (the EP) accepted by NOPSEMA.

1.1 Background

INPEX Ichthys Pty Ltd (INPEX), on behalf of the Ichthys Upstream Unincorporated Joint Venture Participants intends to develop the Ichthys Field in the Browse Basin off the north-west coast of Western Australia to produce liquefied natural gas (LNG), liquefied petroleum gases (LPGs) and condensate for export to markets in Japan and elsewhere.

The Ichthys Field is located within the area covered by production licence WA-50-L in the northern Browse Basin, approximately 210 km north-west of the coast of mainland Western Australia and 820 km south-west of Darwin. Gas from the Ichthys Field will undergo preliminary processing on an offshore central processing facility (CPF) to remove water and raw liquids, including the greater part of the condensate. This condensate will be pumped to a nearby floating production, storage and offtake (FPSO) facility, from which it will be transferred to tankers for export to overseas markets. The gas will be transferred from the CPF via an 889 km gas export pipeline (GEP), covered by pipeline licences WA-22-PL and NT-PL/4 in Commonwealth waters, to an onshore processing plant at Bladin Point in Darwin (Figure 1-1).

1.2 Activity overview

The *Ichthys Project Gas Export Pipeline (Preservation Stage) Environment Plan* (the EP) describes inspection maintenance and repair (IMR) activities, conducted from vessels, that may occur along the GEP during the preservation stage.

1.3 Pipeline preservation stage

After the mechanical completion stage is complete in the first quarter (Q1) of 2016, the 889 km pipeline will remain preserved for a period of up to two years, until hydrocarbons are introduced into the GEP (and the operations stage commences).

The preservation stage comprises two periods:

1. During the first period (after the flooding and hydrotesting is completed, during the GEP mechanical completion activity), the pipeline remains filled with filtered inhibited seawater (FIS) at ambient pressure to prevent microbiologically induced corrosion of the GEP.
2. During the second period, after the pipeline is precommissioned – managed under the *GEP Precommissioning EP* (C050-AH-PLN-10001) accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) – the GEP is put under a partial vacuum and filled with nitrogen gas to inert the pipeline. Once inert, the pipeline will remain preserved, under a partial vacuum (~0.1 atmospheres) until hydrocarbons are introduced.

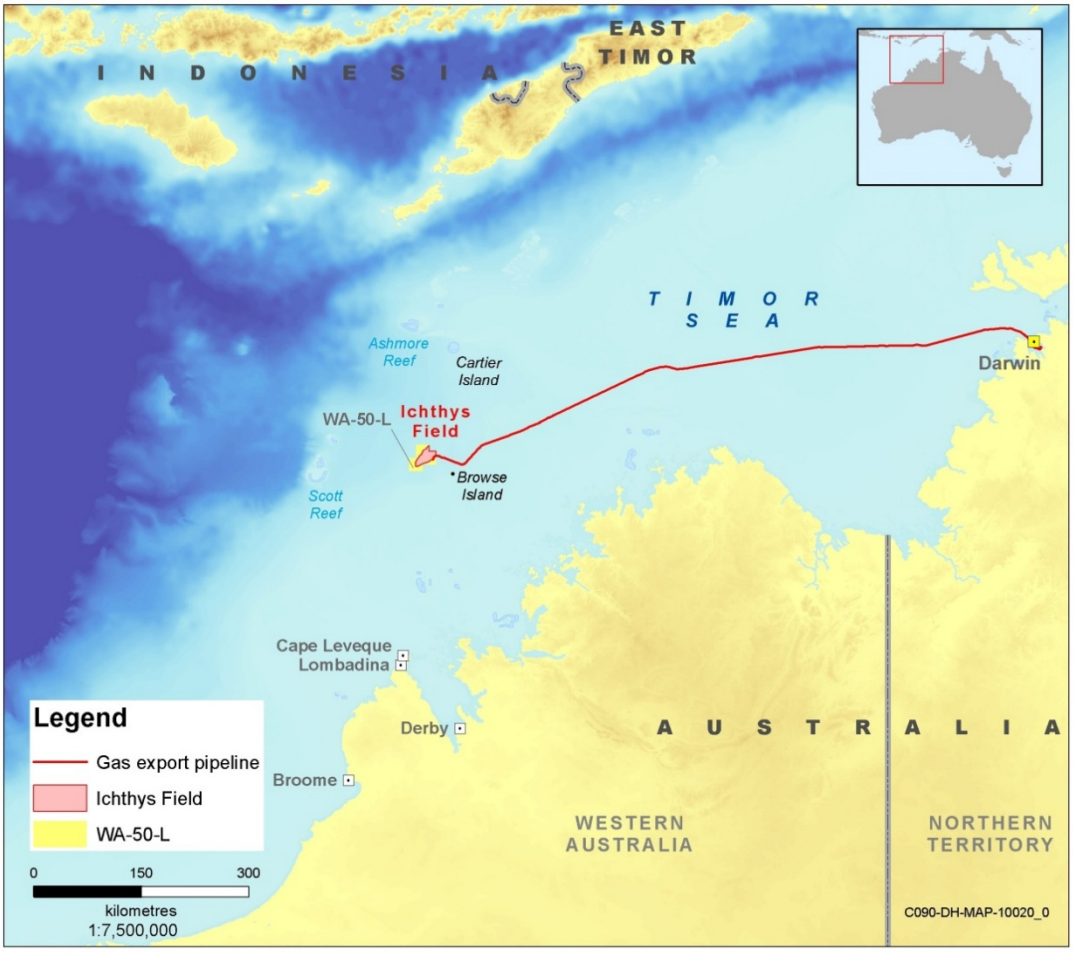


Figure 1-1: Location of the GEP route and the Ichthys Field

1.4 Titleholder's nominated liaison person

In accordance with Regulation 15(2) of the OPGGS (E) Regulations 2009, details of the titleholder's nominated liaison person are provided in Table 1-1.

Table 1-1: Titleholder's nominated liaison person

Name	Jake Prout
Business address	Level 22 100 St Georges Terrace, Perth, WA 6000
Telephone number	+61 8 6213 6000
Email address	Jake.prout@inpex.com.au

2 DESCRIPTION OF ACTIVITY

2.1 Operational area

The GEP is approximately 889 km long, with approximately 793 km located within Commonwealth waters, between the Ichthys Field and the Northern Territory 3 n mile limit. The operational area (Zone 1) for the petroleum activity is defined as a 2 km wide corridor, 1 km either side of the GEP centreline, up to, and including, the GERB. Zone 1 represents the area where planned activities may be undertaken. Zone 2 represents the extent of the environment that may be affected (EMBA) by unplanned activities in relation to the petroleum activity. This has been defined using predictive oil spill modelling for the identified worst-case spill scenarios relevant to the activity.

2.2 Inspection activities

Inspections of the pipeline will generally involve a support vessel travelling along the route of the pipeline using towed acoustic instruments or a remotely operated underwater vehicle (ROV) connected to the support vessel via an umbilical.

Confirmed planned activities that will occur along the GEP under the management of this EP are ROV inspections. The other activities as described in Table 2-1 and Table 2-2, although not planned, may occur as a result of the ROV inspections and have therefore been included for contingency purposes. Typically, support vessels will be on site for between 5 and 60 days per year, depending on the type of inspection. Events such as cyclones, seismic activity or third-party interference that could affect the GEP infrastructure may also trigger inspections. Potential inspection activities are described in Table 2-1.

Table 2-1: Inspection activities

Inspection activity	Description
ROV inspections	ROVs will be deployed from a vessel to undertake visual, cathodic protection (CP) and infrastructure integrity inspections.
Marine acoustic surveys	These may include the use of sidescan sonar and multibeam echo sounders and are typically conducted from a support vessel using towed (or autonomous) underwater vehicles with acoustic instruments.

2.3 Maintenance and repair activities

Maintenance and repair activities are expected to be infrequent and rare, with frequency dependent on the results of inspections and monitoring of GEP infrastructure. If maintenance or repairs are required, a vessel may remain on site for between 5 and 60 days at a time, depending on the nature of the work required. However, additional field time may be required for an activity, depending on the specific circumstances. Potential maintenance and repair activities are described in Table 2-2.

Table 2-2: Maintenance and repair activities

Activities	Description
Maintenance activity	

Activities	Description
Seabed intervention activities	These may involve activities such as physical seabed intervention/excavation alongside infrastructure to gain access to, or enable repairs of, infrastructure. Excavation may involve activities such as jetting, sidecasting or mass flow excavation. Seabed intervention activities may also include the installation of grout bags, concrete mattresses, rock placement or other physical structures to stabilise and protect infrastructure on the seabed.
Cathodic protection system maintenance	This may involve activities such as the replacement of anodes and CP equipment may be added to, or placed adjacent to infrastructure using a vessel and ROV spread.
Marine growth removal activities	These may involve the removal of marine growth and calcareous deposits using mechanical techniques and/or chemical treatments using a vessel and ROV spread.
Repair activity	
Clamp repair	Minor repairs using clamps may be required following a minor physical impact or integrity issue with the GEP infrastructure. In the event a minor / clamp repair is required, the seabed around the GEP may need to be excavated to enable access for the clamp to be placed around the full diameter of the GEP. Alternatively, the GEP may be lifted and grout-bags placed under the GEP, or mud-mats and hydraulically operated pipe-lifting frames may be installed on the seabed to raise the GEP off the seafloor to allow clamp access. Once full access to the GEP is achieved, the GEP concrete weight and asphalt enamel coating will be removed using physical removal techniques such as high-pressure water blasting. The exposed GEP outer steel surface will then be physically smoothed in preparation for the clamp installation. The clamp will then be lowered around the GEP section to be repaired, locked into position, and grout injected to seal the clamp around the GEP repair location.
Pigging (before a major repair)	In the event of a major repair (i.e. pipe section replacement due to integrity loss), pig trains could be launched from the gas export riser base (GERB), onshore LNG plant, or both, to isolate the GEP from seawater ingress during the repair at the defect / repair location. A pig launcher and receiver (PLR) is available in Darwin and would be used to launch pigs from the onshore LNG plant into the GEP. A PLR would also be installed at the GERB to launch pigs into the GEP. During a major repair, it is likely that support vessels, a ROV and a flooding spread would be required. Pig trains would likely contain monoethylene glycol (MEG) to recondition the inner walls of the GEP and pigs would be driven with FIS, nitrogen gas or air. If FIS is used to drive the pig train, the same FIS chemicals will be used as assessed under the *GEP Precommissioning EP* (C050-AH-PLN-10001). Upon pig train arrival at either side of the repair location, the pigs will “lock” into position, isolating either side of the GEP from the repair location. The original contents of the GEP (FIS or nitrogen gas and any seawater which has entered the GEP) would be pushed in front of the pig trains and expelled from the GEP at the defect / repair location, or via the PLR at the GERB or in Darwin (depending whether the repair location is “piggable”).

2.4 Support vessel description

The lengths of the support vessels used for inspection, maintenance and repair (IMR) activities are expected to range from between approximately 70 m and 130 m. However, vessel type and specifications will depend on vessel availability and specific activity requirements. All vessels will be required to hold station or operate using dynamic positioning (DP), thereby preventing the need to anchor.

Vessels will only use a Group II hydrocarbon fuel with similar characteristics to those of marine gas oil (MGO) and will not be bunkered when undertaking an activity. Lifting and transfer of equipment and supplies from one support vessel to another may also be required.

3 DESCRIPTION OF RECEIVING ENVIRONMENT

An indication of the spatial extent of Zone 1 (GEP corridor) and Zone 2 (EMBA) is depicted in Figure 3-1. Zone 2 is defined by the sum of identified, credible worst-case spill scenarios, using the outermost extent of several modelled spill scenarios (all seasons) based on a 10 g/m^2 thickness for surface hydrocarbons and 500 parts per billion (ppb) for entrained hydrocarbons. The characteristics of the environment within this area are described in this section.

3.1 Regional setting

Australia's offshore waters have been divided into six marine regions in order to facilitate their management by the Australian Government under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Zones 1 and 2 are located within both the North-west Marine Region, and North Marine Region.

3.1.1 North-west Marine Region

The North-west Marine Region (NWMR) comprises Commonwealth waters from the Western Australian – Northern Territory border in the north, to Kalbarri in the south.

The NWMR is distinguished by its wide continental shelf, very high-amplitude tidal regimes (especially in the north), high cyclone incidence, unique current systems and warm, low-nutrient surface waters.

The Department of the Environment (DSEWPaC 2012) states that the NWMR region supports high species richness of tropical Indo-West Pacific biota, but low levels of endemism. The vast size of the region and its range of geomorphic features and habitats are reflected in its high species diversity, unique ecosystems and associated trophic interactions and communities. The marine environment of the NWMR encompasses a number of regionally important marine communities and habitats which support a high biodiversity of marine life and feeding and breeding aggregations. These include the following:

- Ashmore Reef and Cartier Island
- Scott Reef
- Rowley Shoals
- Browse Island.

The GEP route (Zone 1) does not traverse these reefs and islands. Only Browse Island is within the EMBA (Zone 2).

3.1.2 North Marine Region

The North Marine Region (NMR) comprises Commonwealth waters from west Cape York Peninsula to the Western Australian – Northern Territory border.

This region is highly influenced by tidal flows and less so by ocean currents.

The marine environment of the NMR is known for its high diversity of tropical species but relatively low endemism, in contrast to other bioregions. DEWHA (2008) indicates within the NMR, particularly rich areas of biodiversity include:

- the Gulf of Carpentaria coastal zone
- the plateau and saddle north-west of the Wellesley Islands
- submerged coral reefs of the Gulf of Carpentaria.

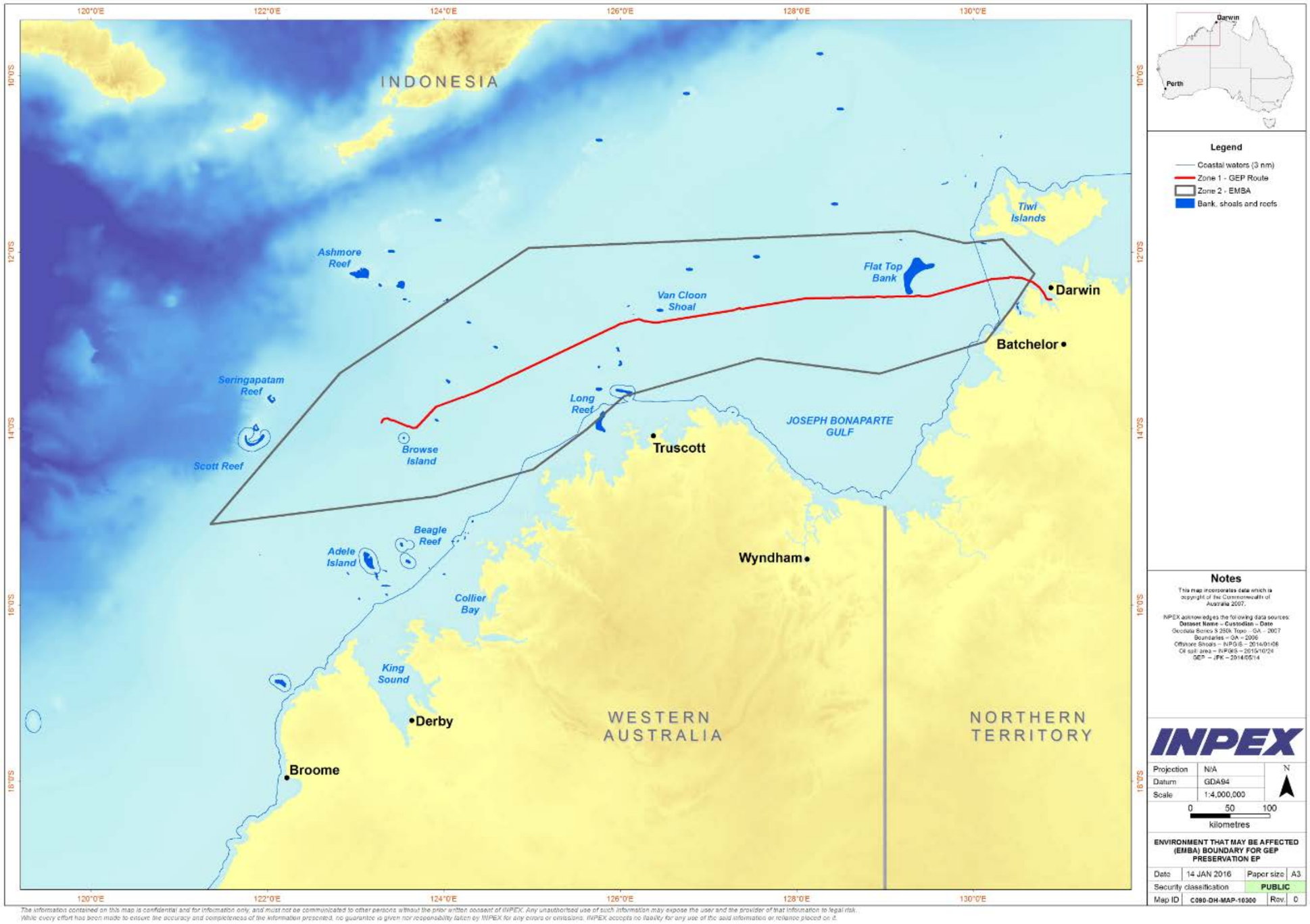


Figure 3-1: Indicative environment that may be affected – Zone 1 and Zone 2

None of these biodiversity-rich areas are traversed by the GEP route (Zone 1) and all are outside the EMBA defined by Zone 2.

3.1.3 Commonwealth marine reserves

Commonwealth marine reserves (CMRs) have been established around Australia as part of the National Representative System of Marine Protected Areas, the primary goal of which is to establish and effectively manage a comprehensive, adequate and representative system of marine reserves to contribute to the long-term conservation of marine ecosystems and protect marine biodiversity. The CMRs located within Zone 2 are as follows:

- Kimberley Commonwealth Marine Reserve
- Oceanic Shoals Commonwealth Marine Reserve.

These CMRs are shown in Figure 3-2 and are described below.

Kimberley Commonwealth Marine Reserve

The Kimberley CMR is located approximately 20 km south of the closest point of approach to Zone 1. It occupies an area of approximately 74,500 km^2.

This CMR provides an important migration pathway and nursery areas for the protected humpback whale, and foraging areas for migratory seabirds, migratory dugongs, dolphins and threatened and migratory marine turtles. It is adjacent to important foraging and pupping areas for sawfish and important nesting sites for green turtles.

Two key ecological features (KEFs) are included in the reserve, namely the Ancient Coastline and the Continental Slope Demersal Fish Communities, that are both described in Section 3.1.5

Oceanic Shoals Commonwealth Marine Reserve

Zone 1 traverses the southern edge of the Oceanic Shoals CMR. This CMR occupies an area of approximately 72 000 km^2. The reserve is an important resting area for turtles between egg-laying events (inter-nesting area), for the threatened flatback turtle and olive ridley turtle. It is also an important foraging area for the threatened loggerhead turtle and olive ridley turtle.

Four KEFs are represented in the reserve: the carbonate bank and terrace system of the Van Diemen Rise (unique seafloor feature), the carbonate banks of the Joseph Bonaparte Gulf (enhanced productivity, high biodiversity, unique seafloor feature), pinnacles of the Bonaparte Basin (enhanced productivity, unique seafloor feature), and shelf break and slope of the Arafura Shelf (unique seafloor feature). These are described in Section 3.1.5.

3.1.4 Western Australian marine reserves

There are no Western Australian marine reserves within Zone 1 however Browse Island and a portion of the proposed North Kimberley Marine Park are within Zone 2.

Browse Island

Browse Island is the nearest landform to Zone 1 (14 km away) and is a Class C nature reserve. It is an isolated sandy cay surrounded by an intertidal reef platform and shallow fringing reef.

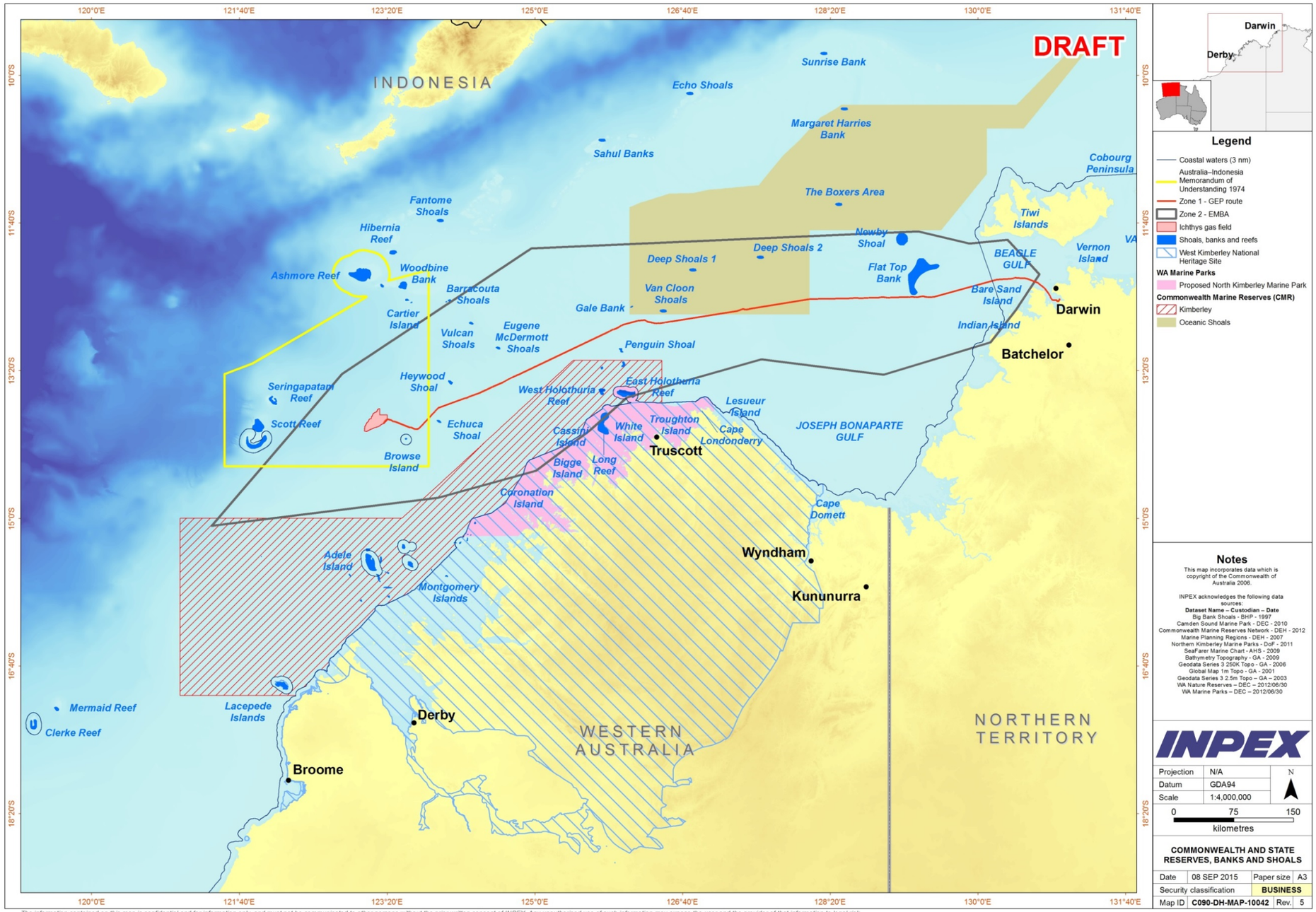


Figure 3-2: Commonwealth and state marine reserves

The Browse Island reef complex is an outer shelf, biohermic structure rising from a depth of approximately 200 m. It is a flat-topped, oval-shaped, platform reef with the largest diameter being about 2.2 km. The island is a triangular, vegetated sandy cay, standing just a few metres above high tide level. It measures approximately 700 m by 400 m.

Reef habitats at Browse Island are not diverse. Rocky shore habitat is represented only by exposed beach rock, and there are no intertidal sand flats. The lagoon habitat is poorly developed, with poor water circulation, and it shows evidence of recent infill and high mortality.

The reef platform, especially on the western side, is high and barren in many places. Only the reef crest and seaward ramp habitats around the edge of the reef support moderately rich assemblages of molluscs. The shallow subtidal zone is narrow, and supports relatively small areas of well-developed coral assemblages (INPEX 2010). Green and flatback turtle nesting occurs during the summer months. Browse Island also provides habitat for seabirds and shorebirds. These are further discussed in Section 3.3 under the description of the biological environment.

Proposed North Kimberley Marine Park

The proposed North Kimberley Marine Park will extend all the way from the northern boundary of the Camden Sound Marine Park to the Northern Territory border. This vast area has a complex coastline with many gulfs, headlands, cliff-lined shores and archipelagos. Extensive tidal flats have formed in places, some associated with the mouths of the numerous rivers that drain to the coast here. Together, these environments support a wide range of habitats and marine life.

The proposed park, which will be the second largest marine park in Australia, has important populations of manta rays, dugongs and all six species of threatened marine turtle found in Australia, extensive fringing mangrove forests and remote and virtually untouched coral reefs and sponge gardens (DPAW 2015).

3.1.5 Key ecological features

The Commonwealth Government (DEWHA 2008; DSEWPaC 2012) has identified parts of Australian marine ecosystem that are considered to be of importance for a marine region's biodiversity or ecosystem function and integrity.

Three KEFs occur within Zone 1 and seven KEFs occur within Zone 2 (Figure 3-3). KEFs that are within each zone are identified below and described thereafter.

Zone 1:

- an ancient coastline at the 125 m depth contour
- the carbonate bank and terrace system of the Sahul Shelf
- the pinnacles of the Bonaparte Basin.

Zone 2:

- an ancient coastline at the 125 m depth contour
- the carbonate bank and terrace system of the Sahul Shelf
- carbonate bank and terrace system of the Van Diemen Rise
- continental slope demersal fish communities
- the pinnacles of the Bonaparte Basin.

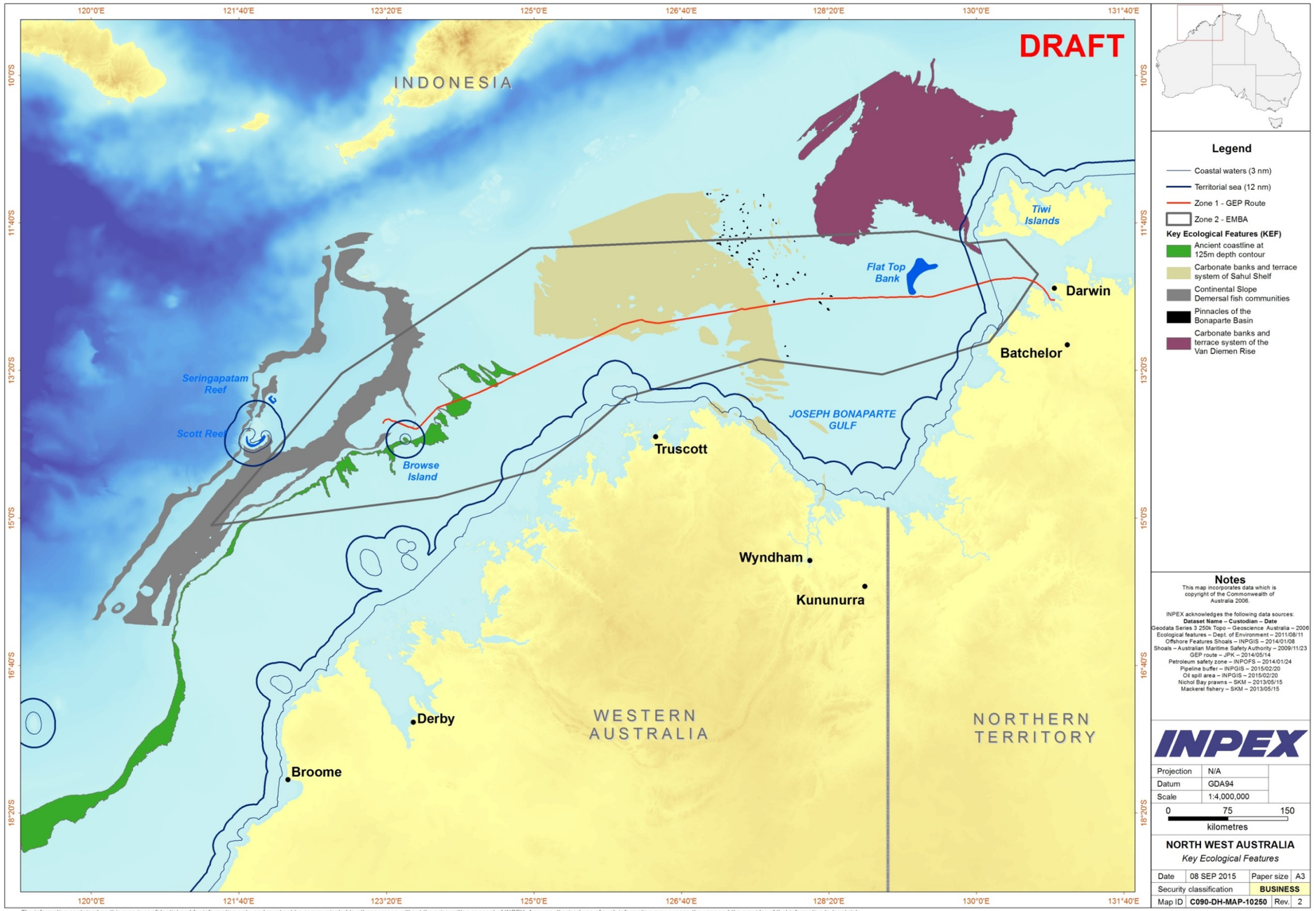


Figure 3-3: Key ecological features within Zone 1 and Zone 2

Ancient coastline at the 125 m depth contour

The ancient coastline runs diagonally in a north-easterly direction and is traversed by the GEP (Zone 1) as shown in Figure 3-3. Parts of the ancient coastline, particularly where it exists as a rocky escarpment, are thought to provide biologically important habitats in areas otherwise dominated by soft sediments. The topographic complexity of the escarpments may facilitate vertical mixing of the water column, providing relatively nutrient-rich local environments. The ancient coastline is an area of enhanced productivity attracting baitfish which, in turn, supplies food for migrating species.

While there is little information available on the fauna associated with the hard substrate of the escarpment, it is likely to include sponges, corals, crinoids, molluscs, echinoderms and other benthic invertebrates, representative of hard substrate fauna in the North West Shelf (DSEWPaC 2012).

Carbonate bank and terrace system of the Sahul Shelf

The carbonate bank and terrace system of the Sahul Shelf is located in the western Joseph Bonaparte Gulf and is traversed by the GEP (Zone 1) as shown in Figure 3-3. It is recognised for its biodiversity values (unique seafloor feature with ecological properties of regional significance), which apply to both its benthic and pelagic habitats. The banks consist of a hard substrate with flat tops between 150 and 300 m deep. Each bank occupies an area generally less than 10 km^2 and is separated from the next bank by narrow sinuous channels.

The banks support a high diversity of organisms including reef fish, sponges, soft and hard corals, gorgonians, bryozoans, ascidians and other sessile filter-feeders. They are foraging areas for loggerhead, olive ridley and flatback turtles. Humpback whales and green and freshwater sawfish are also likely to occur in the area (DEWHA 2008).

Carbonate bank and terrace system of the Van Diemen Rise

The Van Diemen Rise, located north-west of the Tiwi Islands (the two principal islands of which are Melville Island and Bathurst Island), supports a complex system of shallow carbonate banks and shoals over a limestone terrace, strongly dissected by tidal channels and paleo-river channels (including the over 150 m deep Malita Shelf Valley). Shallow, clear waters provide for a deep euphotic zone (the depth to which sufficient light for photosynthesis penetrates into the ocean), and therefore enhanced benthic primary production, while localised upwellings generated by interactions between the complex topography and tidal currents encourage phytoplankton productivity and aggregations of fish. The banks, shoals and channels offer a heterogeneous environment of shallow to deep reef, canyon, soft sediment and pelagic habitats to a diverse range of tropical species of predominantly Western Australian affinities.

Continental slope demersal fish community

The continental slope demersal fish community is, at its nearest, approximately 20 km from Zone 1. The level of endemism of demersal fish species in this community is the highest among Australian continental slope environments.

The biota present on the continental slope is the basis of the food web for demersal fish and higher-order consumers in this system. Loss of benthic habitat along the continental slope at depths known to support demersal fish communities could lead to a decline in species richness, diversity and endemism associated with this feature (DSEWPaC 2012).

Pinnacles of the Bonaparte Basin

An area containing limestone pinnacles, up to 50 m high (above surrounding seabed), is located in the western Joseph Bonaparte Gulf on the mid to outer edge of the shelf. This general area is traversed by the GEP (Zone 1) as shown in Figure 3-3. The pinnacles provide areas of hard substrate in an otherwise relatively featureless, soft sediment environment and are thus presumed to support a high number of species. Associated communities are thought to include sessile benthic invertebrates including hard and soft corals and sponges, and aggregations of demersal fish species such as snapper, emperor and grouper. The pinnacles are thought to be a feeding area for flatback, loggerhead and olive ridley turtles, while green turtles may traverse the area. Freshwater and green sawfish as well as humpback whales may also occur in the area (DSEWPaC, 2012). It should be noted that the GEP route has been designed to avoid any significant seabed features and the GEP route (Zone 1) does not traverse any large pinnacles.

3.2 Physical environment

3.2.1 Climate and meteorology

NWMR

The air temperature at Troughton Island shows mean maximum temperatures of 32.9 °C and a minimum of 22.1 °C (BOM 2015a). Air temperatures in the Browse Basin remain warm throughout the year, with means and maxima ranging from 26 °C to 30 °C, and 32 °C to 35 °C, respectively (INPEX 2010).

The climate of Northern Australia has two distinct seasons: winter, from April to September; and summer, from October to March. There are rapid transitional periods between the two main seasons, generally in April and September to October (RPS MetOcean Pty Ltd 2011).

The winter season is characterised by steady north-east to south-east winds of 5 m/s to 12 m/s driven by south-east trade winds. The prevailing south-east winds bring predominantly fine conditions throughout the north of Australia. The summer season is the period of the predominant north-west monsoon. It is characterised by north-west to south-west winds of 5 m/s for periods of five to 10 days, with surges in airflow of 8 m/s to 12 m/s for periods of one to three days.

NMR

Darwin is located in the monsoonal tropics of northern Australia and experiences two distinct seasons – a hot, wet season from November to March, and a warmer dry season from May to September. April and October are transitional months between the wet and dry seasons. Maximum temperatures are defined as hot all year round, but November is the hottest month with an average of 33.3 °C, while June and July usually experience the lowest average daily temperatures with a range of 20 °C minimum to 30 °C maximum (BOM 2015b).

The strongest winds and heaviest rainfalls are associated with the passage of tropical cyclones which can occur in the region at any time during the period from November to April. From October to March, prevailing winds are generally from a northerly or north-westerly direction and vary in intensity. From April to September, south-easterly trade winds predominate and are more consistent than the monsoonal winds (DSEWPaC 2012; INPEX 2010).

3.2.2 Rainfall

NWMR

The region experiences strong seasonality in wind direction and rainfall, with monsoonal climate patterns and highly variable tidal regimes. The region has a pronounced cyclone season between December and March. Troughton Island historical rainfall data shows the highest maximum (269.8 mm) and mean (>100 mm) monthly rainfalls occur from December to March (BOM 2015a). Heavy rainfall is typical of the tropical wet seasons (spring and summer) and is associated with cyclones. Rainfall intensity is expected to range from approximately 215–460 mm/h over 5-minute intervals (based on 1-year and 200-year average recurrence intervals) (AMEC 2011).

NMR

The rainfall in the NMR is highly seasonal and is largely generated by monsoonal thunderstorms and tropical cyclones between December and March. The catchments across northern Australia receive around half of the rain that falls on the Australian continent. There is a latitudinal gradient in annual rainfall across the NMR, with the southern Gulf of Carpentaria receiving higher rainfalls than northern areas of the NMR. Rainfall is largely affected by fluctuations in the value of the Southern Oscillation Index, which gives an indication of the development and intensity of El Niño and La Niña climatic episodes. El Niño events are characterised by sustained warming of the central and eastern tropical Pacific Ocean, a reduction in winter rainfall and the erratic behaviour of cyclones. La Niña events are more likely to be associated with above-average rainfall and an earlier start to the northern monsoon season in tropical Australia. Darwin has a mean annual rainfall of 1739.7 mm, with rain falling on an average of 94 days, mainly in the wet season (BOM 2015b).

Monthly mean evaporation ranges from 167 mm in February, to 259 mm in October. The humidity is higher during the wet season (72% in February) than in the dry season (37% in July), mirroring rainfall patterns (BOM 2015b).

3.3 Biological environment

3.3.1 Benthic communities

Surveys within Zone 1 (Neptune Geomatics 2009) recorded featureless, unconsolidated clay–silt sands along the greater part of the pipeline route (>98%), with the most dominant seabed features being areas of pockmarks and sand waves. Rock subcrop occurred in some areas and exposed outcrop was very rare.

Given the large regional area associated with Zone 2, a large number of different benthic communities occur within this area. These habitats include banks and shoals (Figure 3-2), coral reefs and seagrasses.

3.3.2 Shoreline habitats

There are no islands or shorelines within Zone 1; however, these habitats do exist within Zone 2. Shoreline habitats within Zone 2 are mainly associated with islands comprised of sandy beaches, mangroves and other habitat that sustains feeding and breeding sites for important seabird species and marine reptiles.

Mangroves

Mangrove communities make up a common shoreline habitat along the Northern Territory and Western Australian coastlines, with extensive mangrove communities along the Kimberley, Joseph Bonaparte and Melville islands coastlines.

More than a quarter of the world's species of mangroves can be found along the Kimberley coast, covering an area of approximately 140 000 hectares (ha). During 2009, shoreline ecological aerial and ground surveys were conducted from Darwin in the Northern Territory, to Broome in Western Australia, in response to the Montara oil spill (Duke et al. 2010). Approximately 5102 km of shoreline was surveyed, analysed and mapped to quantitatively characterise coastal ecological features. Mangroves were found to grow along 63% of the surveyed shoreline, and salt marshes occurred over 23.8% of the shoreline.

Although mangrove communities are not well developed on most islands along the northern Western Australian and Northern Territory coastlines, small stands of mangroves do exist on some of these islands.

Sandy beaches

Sandy beaches are located throughout the region and some are considered significant habitat for turtles and seabirds, with turtle and seabird nesting occurring above the high tideline. Generally, sands are highly mobile and therefore do no support a high level of biodiversity. Fauna within beach habitats usually consists of polychaete worms, crustaceans and bivalves, which provide a valuable food source for resident and migratory seabirds and shorebirds (CALM 2005). Natural processes tend to supply fresh sediments and larval stock with each tidal influx.

3.3.3 Marine fauna

Species of conservation significance

Species of conservation significance within Zone 2 were identified through a search of the Department of the Environment (DoE) Protected Matters database (summary provided in Appendix A). The search identified a total of 30 "Threatened" species and 48 "Migratory" species that potentially use or pass through Zone 2. In addition, the search identified 98 "Listed marine species" and 26 "whales and other cetaceans" that may occur at, or immediately adjacent to, the area.

Given the large number of species that have the potential to be present, further investigations were undertaken to identify if any biologically important areas (BIAs) associated with species of conservation significance were present within either of the zones.

Marine mammals

There are no BIAs for marine mammals within Zone 1. However, within Zone 2, four BIAs are present as shown in Figure 3-4:

- humpback whale aggregation and calving areas
- a humpback whale migration route
- a pygmy blue whale migration route
- breeding, calving and foraging areas for inshore dolphins.

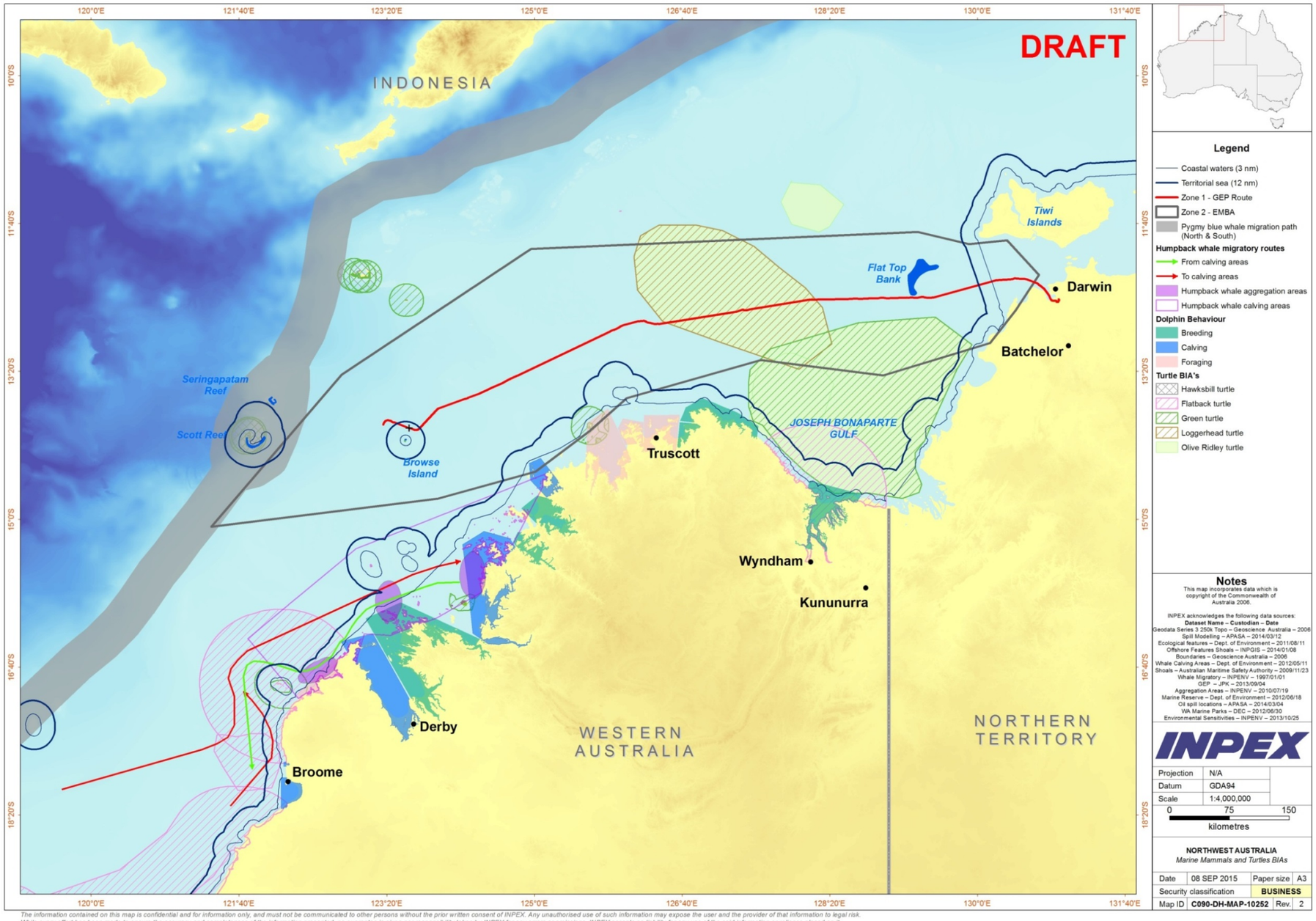


Figure 3-4: Biologically important areas associated with marine mammals and turtles

Marine reptiles

There is one BIA for marine reptiles intersected by Zone 1. This is the Bonaparte Depression, which provides significant foraging habitat for olive ridley and loggerhead turtles (Figure 3-4). Within Zone 2, a range of BIAs are present for all species of marine turtles. These important areas can be split into foraging, nesting and internesting areas and have been identified as:

- foraging – Joseph Bonaparte Gulf and Bonaparte Depression
- nesting areas – Browse Island and Cassini Island.

Fishes and sharks

Within Zone 1 and Zone 2, a single DoE-defined BIA exists: a whale shark foraging area (Figure 3-5). Although not specifically identified by the DoE as a BIA, KEFs within Zone 2 are also known to provide important habitat to diverse fish assemblages.

Marine avifauna

A single BIA overlaps Zone 1 as shown in Figure 3-6. This is associated with lesser frigatebirds that make high use of areas around breeding sites (i.e. areas within 30 km of breeding sites). These birds are partly resident and partly nomadic dispersing widely between breeding seasons. Breeding in this area is associated with Ashmore Reef, Long Reef, Adele Island, the Lacepede Islands and Bedout Island which are all located within Zone 2.

Zone 2 overlaps a large number of BIAs present for a number of different marine avifauna species. These areas are generally associated with coastal areas of north-west WA and islands within the region. Coastal habitat is generally used for resting and breeding, while adjacent offshore areas are used for foraging activities.

Figure 3-5: Biologically important areas associated with fish and sharks

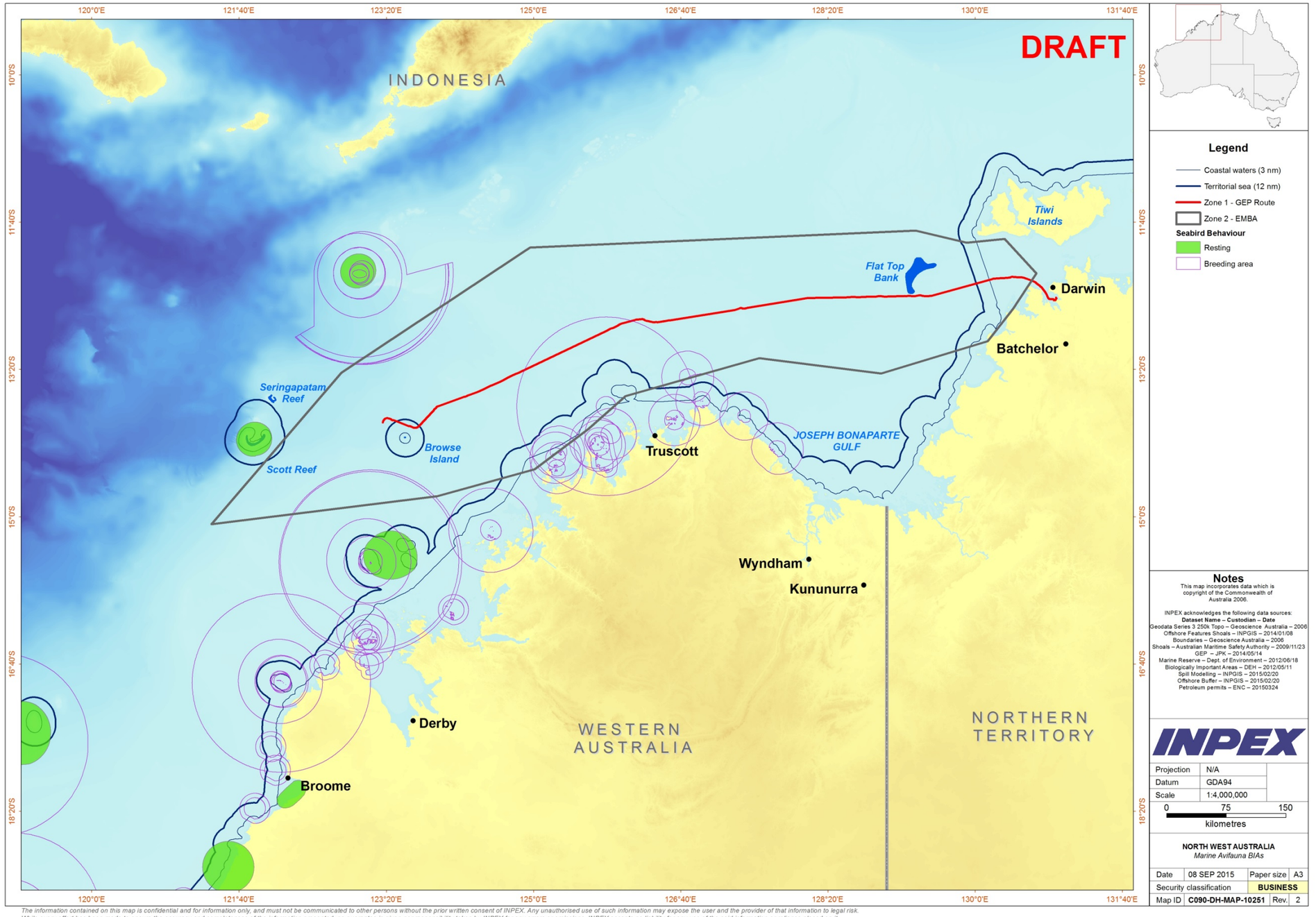


Figure 3-6: Biologically important areas associated with marine avifauna

3.4 Existing users and uses

Commercial fishing

Within Zone 2, five Commonwealth-managed fisheries and eight state-managed/ territory-managed commercial fisheries have the potential to operate. The Commonwealth-managed fisheries are the:

- Northern Prawn Fishery
- North West Slope Trawl Fishery
- Western Tuna and Billfish Fishery
- Southern Bluefin Tuna Fishery
- (Western) Skipjack Tuna Fishery

The state-managed/territory-managed fisheries are the:

- Coastal Line Fishery
- Coastal Net Fishery
- Offshore Net and Line Fishery
- Spanish Mackerel Fishery
- Kimberley Prawn Managed Fishery
- Northern Demersal Scalefish Managed Fishery
- Mackerel Managed Fishery
- Joint Authority Northern Shark Fishery

Traditional Indonesian fishing

The Australian and Indonesian governments signed a memorandum of understanding (MoU) in 1974 (DSEWPaC 2012) which permits fishing by Indonesian and Timorese fishers, using traditional fishing methods only, in an area of Australian waters in the Timor Sea. The MoU area, covers Scott Reef and its surrounds, Seringapatam Reef, Browse Island, Ashmore Reef, Cartier Island and various banks and shoals.

The MoU requires fishers to use traditional, sail-powered fishing vessels and non-motorised equipment, and prohibits them from taking protected species, such as turtles, dugongs and clams. Fishers target a range of animals, including sea cucumbers (bêche-de-mer), *trochus* (topshell snail), reef fish and sharks. Indonesian fishing effort is high at Scott Reef, and also takes place at Browse Island.

Although a portion of Zone 1 falls within the MoU, actual fishing activities on Browse Island are within Zone 2 only.

3.5 Particular values and sensitivities

A summary of the environmental values and sensitivities, with the potential to occur within Zone 1 and Zone 2, is provided in Sections 3.5.1 and 3.5.2 below.

3.5.1 Zone 1

The particular values and sensitivities with the potential to occur within Zone 1 are summarised in Table 3-1.

Table 3-1: Particular values and sensitivities within Zone 1

Values and sensitivities	Description
Receptors that are considered socially important as identified during stakeholder engagement (including social and cultural heritage matters).	Commonwealth-managed and state-managed/territory-managed commercial fisheries.
Benthic primary producer habitats. These have been defined as seabed communities where algae (e.g. macroalgae, turf and benthic microalgae), seagrasses, mangroves, corals, or mixtures of these groups are prominent components (WA EPA 2009).	None identified within this area.
Regionally important areas of high diversity (such as shoals and banks).	None identified along the GEP route. However, Zone 1 includes the following: Commonwealth marine reserves (CMRs) • Oceanic Shoals CMR. KEFs • ancient coastline at 125 m depth contour • the carbonate bank and terrace system of the Sahul Shelf • the pinnacles of the Bonaparte Basin.
World heritage values of a declared World Heritage property within the meaning of the EPBC Act.	None identified within this area.
National heritage values of a National Heritage place within the meaning of the EPBC Act.	None identified within this area.
Ecological character of a declared Ramsar wetland within the meaning of the EPBC Act.	None identified within this area.
Presence of a listed threatened species or listed threatened ecological community within the meaning of the EPBC Act.	Biologically important areas (BIAs): Turtles • foraging (Joseph Bonaparte Gulf and the Bonaparte Depression). Fish • whale sharks foraging area • Zone 1 KEFs, due to increased species diversity and abundance. Marine avifauna • foraging adjacent to breeding areas associated with lesser frigatebirds. A large number of threatened species or migratory species have been identified as having the potential to transit the area.

Values and sensitivities	Description
Presence of a listed migratory species within the meaning of the EPBC Act.	A large number of threatened species or migratory species have been identified as having the potential to transit the area.
Values and sensitivities that exist in, or in relation to, part or all of: • a Commonwealth marine area within the meaning of the EPBC Act • Commonwealth land within the meaning of the EPBC Act. Specifically, values and sensitivities include receptors (e.g. plankton and benthic communities) that when exposed have the potential to affect regionally significant ecological diversity and productivity from benthic and planktonic communities.	Plankton: Planktonic communities within Zone 1 are likely to be the same planktonic communities that are found within Zone 2 and the broader areas of the NWMR and NMR. Benthic communities: There are no primary producer benthic communities or other significant or sensitive benthic communities within Zone 1.

3.5.2 Zone 2

The particular values and sensitivities with the potential to occur within Zone 2 are identified in Table 3-2.

Table 3-2: Particular values and sensitivities within Zone 2

Values and sensitivities	Description
Receptors that are considered socially important, as identified during stakeholder engagement (including social and cultural heritage matters).	Commonwealth-managed and state-managed/territory-managed commercial fisheries, traditional and recreational fishing. Flat Top Bank has been identified as a location of specific value for recreational fishing. The unique coastline of the West Kimberley National Heritage Place has been recognised as important by Aboriginal stakeholders.
Benthic primary producer habitats. These have been defined as seabed communities within which algae (e.g. macroalgae, turf and benthic microalgae), seagrasses, mangroves, corals, or mixtures of these groups are prominent components (WA EPA 2009).	Benthic primary producer habitats including corals, seagrasses and mangroves are present within Zone 2.
Regionally important areas of high diversity (such as shoals and banks).	Zone 2 includes the following: CMRs • Kimberley CMR • Oceanic Shoals CMR. KEFs • ancient coastline at 125 m depth contour • the carbonate bank and terrace system of the Sahul Shelf • the carbonate bank and terrace system of the

Values and sensitivities	Description
	Van Diemen Rise • continental slope demersal fish communities • the pinnacles of the Bonaparte Basin. Benthic communities, including banks and shoals, and benthic primary producer habitats, including corals, seagrasses and mangroves, are present within Zone 2. Shoreline habitats, including mangroves and sandy beaches, are present within Zone 2.
World heritage values of a declared World Heritage property within the meaning of the EPBC Act.	None identified within this area.
National heritage values of a National Heritage place within the meaning of the EPBC Act.	The West Kimberley National Heritage Place.
Ecological character of a declared Ramsar wetland within the meaning of the EPBC Act.	None identified within this area.
Presence of a listed threatened species or listed threatened ecological community within the meaning of the EPBC Act.	BIAs: Marine mammals • humpback migration routes, aggregation areas and calving areas • a pygmy blue whale migration route • breeding, calving and foraging areas for inshore dolphins. Turtles • foraging (Joseph Bonaparte Gulf and the Bonaparte Depression) • nesting areas including Browse Island and Cassini Island. Fishes and sharks • whale shark foraging area • all KEFs in Zone 2 due to species diversity and abundance. Marine avifauna • a number of resting and breeding areas associated with shoreline habitats • a large number of offshore foraging areas adjacent to resting and breeding sites. A large number of threatened species or migratory species have been identified as having the potential to transit the area.
Presence of a listed migratory species within the meaning of the EPBC Act.	A large number of threatened species or migratory species have been identified as having the potential to transit the area.

Values and sensitivities	Description
Values and sensitivities that exist in, or in relation to, part or all of: • a Commonwealth marine area within the meaning of the EPBC Act Commonwealth land within the meaning of the EPBC Act. Specifically, receptors (e.g. plankton and benthic communities) that when exposed have the potential to affect regionally significant ecological diversity and productivity from benthic and planktonic communities.	Planktonic communities within Zone 2 are the same planktonic communities within the broader areas of NWMR and NMR. There are many primary producer benthic habitats and other significant/sensitive benthic communities within Zone 2.

4 STAKEHOLDER CONSULTATION

INPEX has been a member of the Australian business community since 1986 and, during this time, has engaged with stakeholders on a regular basis for a broad range of activities. INPEX also participates in industry forums, conferences and community meetings in order to facilitate opportunities for meaningful engagement.

In 2013, INPEX began an annual campaign, designed to provide up-to-date information to stakeholders on the offshore components of the Ichthys Project on a regular basis, while attempting to reduce stakeholder fatigue.

Engagement for this activity was carried out in accordance with a process that involved the following:

- stakeholder identification and classification
- stakeholder engagement
- stakeholder monitoring and reporting
- stakeholder complaints and grievance management.

4.1 Stakeholder identification and classification

This stage involved a workshop to identify relevant stakeholders and assess the levels of interest and influence that each stakeholder would specifically, or potentially, have in relation to the activities.

4.2 Stakeholder engagement

In order to facilitate the engagement process, INPEX prepared consultation fact sheets (in 2013, 2014 and 2015) which described the following:

- the components of the offshore facilities, including the GEP
- the Ichthys Project schedule
- logistics support
- field management
- regulatory requirements
- environmental sensitivities
- emissions and discharges
- environmental management
- enquiries and feedback information.

The fact sheets are produced in both electronic and printed formats to enable all modes of engagement.

4.3 Stakeholder monitoring and reporting

All queries and feedback were recorded and forwarded for follow-up, where applicable. All responses provided to stakeholders were appropriate to the nature of their communication, e.g. technical queries were investigated by area experts and responses were provided.

4.4 Stakeholder complaints and grievance management

Any queries received in response to the proposed activities were treated as issues and dealt with in the course of developing the EP and associated oil pollution emergency plan (OPEP). Any complaints raised in relation to the conduct of engagement would have been treated as grievances and managed in accordance with the INPEX Community Grievance Management Procedure. However, no grievances were recorded during the engagement process.

4.5 Consultation summary

A summary of relevant stakeholders, and any concerns of merit they identified during the consultation process, is provided in Table 4-1. A summary of the relevant matters raised by those stakeholders and their feedback is provided in Table 4-2.

Table 4-1: Stakeholder engagement summary

Stakeholder	Relevant matter raised
Commonwealth Government departments and agencies; Ministers of relevant portfolios	
Australian Maritime Safety Authority (AMSA)	No
Australian Fisheries Management Authority (AFMA)	Yes
Parliamentary Secretary to the Minister for Agriculture (jurisdiction for Fisheries)	No
Department of Agriculture and Water Resources (DAWR) – Biosecurity	No
Department of Industry (DoI)	No
National Offshore Petroleum Titles Administrator (NOPTA)	No
Minister for Industry	No
Department of the Environment (DoE)	No
Minister for the Environment	No
Department of Defence (Northern Command)	No
Australian Customs and Border Protection Service (Broome Office)	No
Western Australian Government departments and agencies; Ministers of relevant portfolios	
Department of Environment Regulation (DER) – Hazard Management and Contaminated Sites branches	Yes
Department of Parks and Wildlife (DPaW) – Environmental Management Branch	Yes
Minister for the Environment	No

Stakeholder	Relevant matter raised
Department of Transport (WA DoT) – Marine Safety Branch	Yes
Department of Fisheries (DOFWA)	Yes
Minister for Fisheries	No
Department of Mines and Petroleum (DMP)	Yes
Minister for Mines and Petroleum	No
Minister for Energy	No
Shire of Broome	No
Shire of Derby / West Kimberley	No
Shire of Wyndham / East Kimberley	No
Kimberley Ports Authority	No
Northern Territory Government departments and agencies; Ministers of relevant portfolios	
Chief Minister	No
Northern Territory Environment Protection Authority (NT EPA)	No
Parks and Wildlife Commission	No
Department of Transport – Marine Safety Branch	No
Department of Primary Industry and Fisheries (DPIF)	Yes
Department of Mines and Energy	No
Minister for Primary Industry and Fisheries; Mines and Energy	No
Darwin Port Corporation	No
National Native Title Tribunal, relevant Aboriginal and Torres Strait Islander (ATSI) land councils and prescribed bodies corporate, traditional owners and relevant land councils in areas potentially impacted by the operations activities	
National Native Title Tribunal	No
Kimberley Land Council	No
Indigenous Land Corporation	No
Larrakia Development Corporation	No

Stakeholder	Relevant matter raised
Larrakia Nation Aboriginal Corporation	No
Bardi and Jawi Niimidiman Aboriginal Corporation (prescribed body corporate) (represents traditional owners in Dampier Peninsula and other areas)	No
Wanjina-Wunggurr (Native Title) Aboriginal Corporation (represents traditional owners in Kalumburu and other areas)	No
Nyamba Buru Yawuru Ltd (Yawuru Native Title Holders Aboriginal Corporation) (represents traditional owners of Broome)	No
Djarindjin Community (Dampier Peninsula)	No
Kooljaman at Cape Leveque (Dampier Peninsula)	No
Lombadina Community (Dampier Peninsula)	No
Commonwealth-managed fisheries stakeholders	
Commonwealth Fisheries Association (CFA)	No
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	No
Jamaclan Marine Services	No
NPF Industry Pty Ltd	No
Northern Prawn Fishery (QLD) Trawl Association Inc. – no longer in operation in 2016)	No
WA Seafoods	No
Individual licence/permit holders in the following fisheries: • Northern Prawn Fishery • North West Slope Trawl Fishery • Western Skipjack Fishery • Western Tuna and Billfish Fisheries	No
Western Australian-managed fisheries stakeholders	
Western Australian Fishing Industry Council (WAFIC) (also represents Commonwealth-managed fisheries in offshore WA)	No
Pearl Producers Association of Western Australia	No
Individual licence/permit holders in the following fisheries: • Kimberley Prawn Managed Fishery	No

Stakeholder	Relevant matter raised
• Mackerel Managed Fishery • Northern (North Coast) Shark Fishery • Northern Demersal Scalefish Fishery • Pearl Oyster Managed Fishery (through Pearl Producers Association)	
Northern Territory-managed fisheries stakeholders	
Northern Territory Seafood Council	Yes
Northern Territory Guided Fishing Industry Association	No
Individual licence/permit holders in the following fisheries: • Coastal Line Fishery • Demersal Fishery • Jigging Fishery • Spanish Mackerel Fishery • Mud Crab Fishery • Offshore Net & Line Fishery • Pearl Oyster Fishery • Trepang Fishery	No
Recreational fishing associations	
Recfishwest (WA)	No
Amateur Fishermen's Association of the Northern Territory	No
Environmental, heritage and marine research groups	
Centre for Whale Research (WA) Inc.	No
Australian Conservation Foundation	No
World Wildlife Fund for Nature	No
Conservation Council of WA	No
Environment Centre of the Northern Territory	No
Australian Marine Conservation Society	No
Oil spill response	
Australian Marine Oil Spill Centre (AMOSC)	Yes
Asia-Pacific Applied Science Associates (APASA)	No

Stakeholder	Relevant matter raised
Oil Spill Response Limited (OSRL)	No
Other businesses	
Mermaid Marine Australia Limited	No
Industry Capability Network – Northern Territory	No

Table 4-2: Summary of relevant objections or claims associated with stakeholder consultation

Category, jurisdiction, subcategory	Stakeholder organisation	Engagement	Feedback summary
Authority, Australia, central authority	AFMA	Engagement in 2013, 2014 and 2015 with AFMA for determinations of relevant fisheries (potentially impacted by INPEX activities), updated contact details for licence holders in relevant fisheries and representative industry associations.	AFMA advised INPEX to continue engagement with identified fisheries, and that the identified fisheries remained accurate according to their records. INPEX continues to check validity of the licence holders with AFMA and issues fact sheets on an annual basis to inform licence holders of Project updates.
Authority, Western Australia, state/local authority	DoFWA	Email messages sent in 2013, 2014 and 2015 requesting determination of relevant fisheries offering to consult DoFWA at its discretion.	DoFWA advised INPEX to continue engagement with identified fisheries and representative bodies (WAFIC, Recfishwest, Pearl Producers Association), and that the identified fisheries remained accurate according to their records. INPEX continues to check validity of the licence holders with DoFWA and issues fact sheets on an annual basis to inform licence holders of Project updates.
Authority, Western Australia, state/local authority	DER: Hazard Management Branch Contaminated Sites Branch	Email messages in 2013, 2014 and 2015 to DER Pollution Reporting Line and Contaminated Sites contacts regarding spill notifications (OPEP emergency contacts list).	DER requested that, should there be an oil spill with the potential to impact Browse Island in WA state waters, INPEX should notify DER about the oil spill as soon as possible, as per Section 72 of the *Environmental Protection Act 1986* (WA). Notification can be made to DER 24/7, year-round, via the Pollution Reporting Line, Tel: 1300 784 782.

Category, jurisdiction, subcategory	Stakeholder organisation	Engagement	Feedback summary
Authority, Western Australia, state/local authority	WA DoT – Marine Safety Branch	Email fact sheets in 2013. Email of fact sheet and a briefing held in 2014. Fact sheet also sent in 2015 – no response received. 2015 – INPEX attended WA DoT oil and gas operators briefing on proposed revision to the State Emergency Management Plan for Marine Oil Pollution (WestPlan MOP) in Sept 2015.	2014 briefing discussed potential for credible spill scenarios to enter WA state waters. INPEX committed to ensuring that the OPEPs will be aligned with state and national response networks and that INPEX will continue to engage with WA DoT in the following ways: • INPEX will provide a copy of the final approved OPEPs before the activity begins. • OPEPs will include a description of proposed Operational and Scientific Monitoring Programs to be implemented in the event of spill. • INPEX will include early notification of incidents that could potentially impact state waters (i.e. within 2 hours). Notifications will be directed to the Oil Spill Response Coordination Unit's 24-hour reporting number: (08) 9480 9924. • INPEX will notify WA DoT of any change of activity where the functions, interests and activities of WA DoT are altered from the previous consultation in relation to the Project. • INPEX will continue to monitor potential changes that may affect the OPEP when the WestPlan MoP is revised.
Authority, Western Australia, state/local authority	Department of Mines and Petroleum (DMP)	Stakeholder sent fact sheets in 2013, 2014 and 2015.	INPEX to provide DMP with pre-start notifications confirming the proposed start dates of each activity, and cessation notifications, to inform DMP upon completion of each activity via email to: petroleum.environment@dmp.wa.gov.au.
Authority, Western Australia, state/local authority	Department of Parks and Wildlife	Email of fact sheets in 2013. Fact sheet and e-mails in July 2014 March 2015- Phone call and follow-up	INPEX and DPAW discussed the possibility of including metadata within IGEMS where possible. DPAW advised INPEX would require a permit to haze birds

Category, jurisdiction, subcategory	Stakeholder organisation	Engagement	Feedback summary
		e-mail messages May 2015- Briefing provided on INPEX activities and baseline monitoring in Browse basin and follow- up emails.	from DOT as this is considered a pre-emptive action. DPAW requested that INPEX should consider that risk of oiled wildlife occurring on Browse Island is considered higher than the risk of surface or entrained oil reaching the island because birds affected closer to a spill may fly back to, and seek refuge on the island when preparing the OPEP. In addition DPAW confirmed that they may support wildlife response but that INPEX should maintain their own independent capacity to respond.
Authority, Northern Territory, state/local authority	Northern Territory Department of Primary Industry and Fisheries (DPIF)	Emails sent in 2013, 2014 and 2015 requesting determination of relevant fisheries with respect to Operations facilities, offering to consult with DPIF at its discretion.	In conjunction with the Northern Territory Seafood Council, provided confirmation of relevant fisheries, updated contact details for licence holders in those fisheries, and details of representative industry associations to contact. INPEX continues to check the validity of the licence holders with DPIF and issues fact sheets on an annual basis to inform licence holders of Project updates.
Businesses, Australia, industry associations – marine (Northern Prawn Fishery)	Northern Territory Seafood Council	E-mail messages sent in 2013, 2014 and 2015 requesting determination of relevant fisheries with respect to Operations facilities, offering to consult the Department at its discretion (refer to Department of Primary Industry and Fisheries entry).	In conjunction with DPIF, provided confirmation of relevant fisheries, updated contact details for licence holders in those fisheries, and details of representative industry associations to contact. INPEX continues to check the validity of the licence holders with the Northern Territory Seafood Council and issues fact sheets on an annual basis to inform licence holders of Project updates.
Oil spill response	AMOSC	Fact sheets sent in 2013, 2014 and 2015. Confirmation that AMOSC can meet obligations described in the OPEP.	AMOSC provided minor comments on the OPEP that have since been addressed in the document, and issued a statement advising that they can provide resources and capability in relation to the OPEP.

4.6 Ongoing stakeholder consultation

Regulation 14(9) of the OPGGS (E) Regulations 2009 specifies a requirement for consultation with relevant authorities of the Commonwealth, states or territories, and other relevant interested persons or organisations. The mechanisms to provide ongoing opportunities for consultation in relation to the EP's implementation are summarised in Table 4-3.

Table 4-3: Ongoing stakeholder consultation

Stakeholder	Information supplied	Frequency
AMSA	Project updates (fact sheet). INPEX will attend MoU forums with AMSA representatives.	Annually
AFMA	AFMA will be advised of any engagement with Commonwealth-managed fisheries stakeholders, highlighting the issues raised.	As required
Department of Fisheries (WA)	DoFWA will be advised of any engagement with WA-managed fisheries stakeholders, highlighting the issues raised.	As required
Department of Primary Industry and Fisheries	DPIF will be advised of any engagement with NT-managed fisheries stakeholders, highlighting the issues raised.	As required
• Parliamentary Secretary to the Minister for Agriculture (jurisdiction for Fisheries) • Department of Agriculture and Water Resources (DAWR) – Biosecurity • Department of Industry • National Offshore Petroleum Titles Administrator (NOPTA) • Minister for Industry (DoI) • Department of the Environment (DoE) • Minister for the Environment • Department of Defence (Northern Command) • Australian Customs and Border Protection Service (Broome Office) • DER – Hazard Management and Contaminated Sites branches • DPaW – Environmental Management Branch • Minister for the Environment	Project updates (fact sheet).	Annually (stakeholder relevance reviewed at same date)

Stakeholder	Information supplied	Frequency
• WA DoT – Marine Safety Branch • Minister for Fisheries • Department of Mines and Petroleum (DMP) • Minister for Mines and Petroleum • Minister for Energy • Shire of Broome • Shire of Derby / West Kimberley • Shire of Wyndham / East Kimberley • Kimberley Ports Authority • Chief Minister • Northern Territory Environment Protection Authority • Parks and Wildlife Commission • Department of Mines and Energy • Minister for Primary Industry and Fisheries; • Minister for Mines and Energy • Darwin Port Corporation • National Native Title Tribunal • Kimberley Land Council • Indigenous Land Corporation • Larrakia Development Corporation • Larrakia Nation Aboriginal Corporation • Bardi and Jawi Niimidiman Aboriginal Corporation • Wanjina-Wunggurr (Native Title) Aboriginal Corporation • Nyamba Buru Yawuru Ltd (Yawuru Native Title Holders AC) • Djarindjin Community (Dampier Peninsula) • Kooljaman at Cape Leveque (Dampier Peninsula) • Lombadina Community (Dampier Peninsula) • Commonwealth Fisheries Association • Australian Southern Bluefin Tuna Industry Association (ASBTIA) • Jamaclan Marine Services • NPF Industry Pty Ltd • WA Seafood Exporters • Individual licence/permit holders in relevant AFMA-managed fisheries • Western Australian Fishing Industry Council • Pearl Producers Association of Western Australia • Individual licence/permit holders in relevant WA-managed fisheries • Northern Territory Seafood Council • Northern Territory Guided Fishing Industry Association • Individual licence and permit holders in relevant Northern Territory-managed fisheries		

Stakeholder	Information supplied	Frequency
• Recfishwest (Western Australia) • Amateur Fishermen's Association of the Northern Territory • Centre for Whale Research (Western Australia) Inc. • Australian Conservation Foundation • World Wildlife Fund for Nature • Conservation Council of Western Australia Inc. • Environment Centre Northern Territory • Australian Marine Conservation Society • Australian Marine Oil Spill Centre (AMOSC) • RPS APASA Pty Ltd • Oil Spill Response Limited (OSRL) • Mermaid Marine Australia Limited • Industry Capability Network Northern Territory.		

5 ENVIRONMENTAL IMPACTS AND RISKS

In accordance with Division 2.3, Regulation 13(5) of the OPGGS (E) Regulations 2009, an environmental risk assessment was undertaken to evaluate impacts and risks arising from the petroleum activity.

Environmental hazard identification (HAZID) workshops were undertaken for the EP, chaired by independent facilitators. The workshops involved numerous environmental, health, safety, project, and emergency response personnel, pipeline integrity engineers, subsea engineers and marine advisers. The workshops were undertaken in accordance with INPEX risk management processes. The approach generally aligns with the processes outlined in Standards Australia and Standards New Zealand *AS/NZS ISO 31000:2009, Risk management—Principles and guidelines* and the AS/NZS handbook HB 203:2012 *Managing environment-related risk*.

The environmental impact and risk evaluation process was undertaken in nine distinct stages:

1. the establishment of context
2. the identification of aspects, hazards and threats (and evaluation of interaction to determine an impact pathway)
3. the identification of potential consequences (severity)
4. the identification of existing design safeguards and control measures
5. the proposed additional safeguards (ALARP evaluation)
6. an assessment of the likelihood
7. an assessment of the residual risk
8. an assessment of the acceptability of the residual risk
9. the definition of environmental performance outcomes, standards and measurement criteria.

The first stage in the process involved defining the activity, characterising the environment and identifying the particular values and sensitivities of that environment. An assessment was then undertaken to identify the aspects associated with the petroleum activity. The aspects identified for the petroleum activity were as follows:

- land disturbance (in this context- seabed disturbance)
- emissions and discharges
- noise and vibration
- loss of containment
- waste management
- biodiversity protection and conservation.

Hazards and threats were then identified using the following definition:

“A physical situation with the potential to cause harm to people, damage to property, damage to the environment”.

Therefore, for an environmental risk or impact to be realised, there needs to be a pathway to expose an environmental value or sensitivity to a hazard. If there is no credible potential for exposure, there is no risk of harm or damage. Subsequently, there is no potential for impact (or consequence).

Given the various receptors present in the environment, these have been refined to environmentally sensitive or biologically important receptors (values and sensitivities). These have been selected using regulations, government guidance and stakeholder feedback.

For the purposes of the exposure evaluation, environmental values and sensitivities considered included the following:

- receptors that are considered socially important as identified during stakeholder engagement (including social and cultural heritage)
- benthic primary producer habitats; these have been defined as seabed communities where algae (e.g. macroalgae, turf and benthic microalgae), seagrass, mangroves, corals or mixtures of these groups are prominent components (EPA 2009)
- regionally important areas of high diversity (such as shoals and banks)
- particular values and sensitivities as defined by Regulation 13(3) of the OPGGS(E)R,
  - the world heritage values of a declared World Heritage property within the meaning of the EPBC Act
  - the national heritage values of a National Heritage place within the meaning of that Act
  - the ecological character of a declared Ramsar wetland within the meaning of that Act
  - the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act
  - the presence of a listed migratory species within the meaning of that Act
  - any values and sensitivities that exist in, or in relation to, part or all of: Commonwealth marine area within the meaning of that Act[1], or
  - Commonwealth land within the meaning of that Act.
- Biologically important areas associated with EPBC Listed species.

An evaluation of the hazards and threats associated with aspects of the activity that interact with the environment was undertaken and where the evaluation determined credible exposure of a “value and sensitivity”, that aspect has been further assessed. The outcome of the exposure evaluation is presented in Table 5-1.

Table 5-1: Environmental exposure evaluation summary

Activity or aspect	Potential to result in environmental impact and risk?
IMR activities	
Seabed disturbance	
Seabed intervention activities such as jetting, mass flow excavation, grout bags/concrete mattress/rock placement on seabed	Yes

[1] Note that this value and sensitivity includes receptors (e.g. plankton and benthic communities) that when exposed have the potential to affect regionally significant ecological diversity and productivity from benthic and planktonic communities.

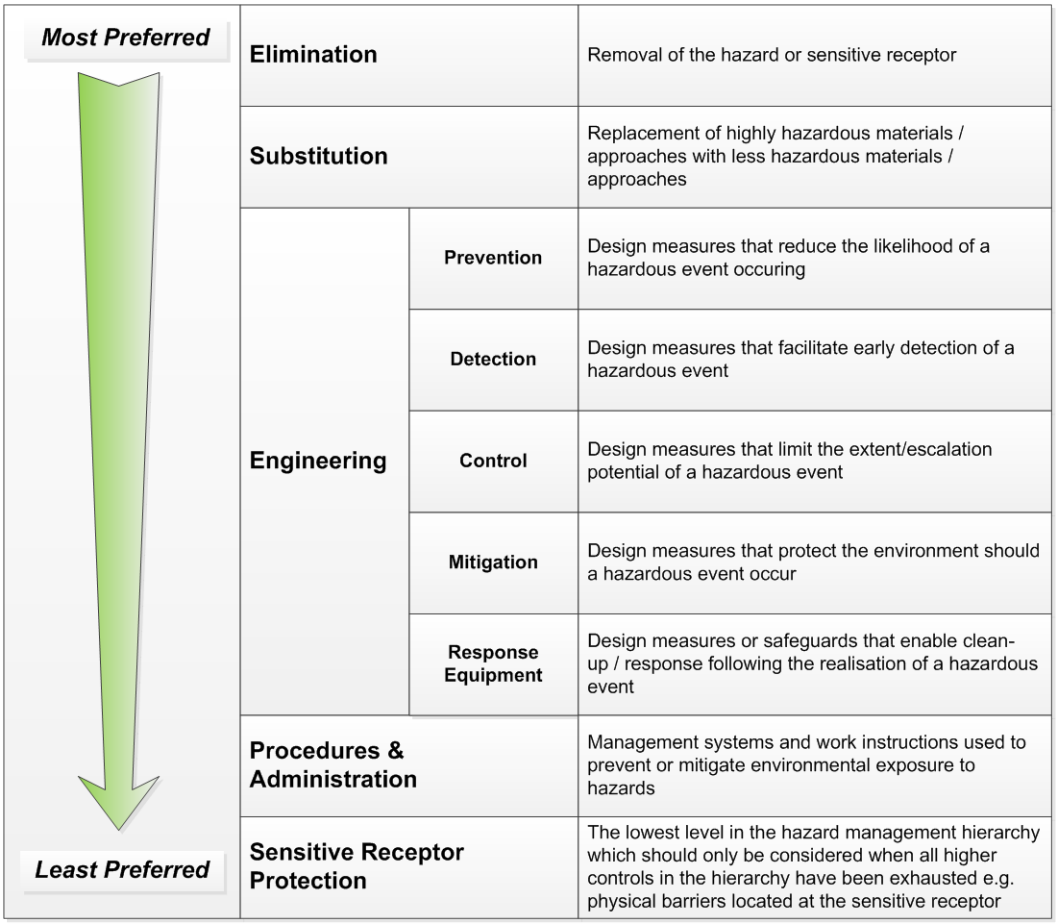
Activity or aspect	Potential to result in environmental impact and risk?
Emissions and discharges	
Grout/concrete/asphalt discharges	No
Marine growth and lime-scale removal chemicals	No
Noise and vibration	
Changes in ambient noise levels from marine acoustic surveys during inspection of subsea infrastructure and operation of seabed intervention equipment	No
Loss of containment	
Release of FIS/MEG/nitrogen due to minor or major defects in the GEP	Yes
Support vessel activities	
Seabed disturbance	
Anchoring will not be required for a general support vessel operations	No
Emissions and discharges	
Change in air quality from power generation (vessels)	No
Change in light levels from navigation lights (vessels)	No
Change in water temperatures from cooling water discharges (vessels)	No
Change in water quality from desalination brine and food scraps discharges (vessels)	No
Change in water quality from sewage and grey water discharges (vessels)	No
Change in water quality from contaminated deck drainage, surface water runoff and stormwater drainage discharges (vessels)	No
Noise and vibration	
Changes in ambient underwater noise levels from vessel operations	No
Loss of containment	

Activity or aspect	Potential to result in environmental impact and risk?
Accidental release overboard or from vessel or submerged IMR equipment	Yes
Vessel collision resulting in Group II spill (250 m^3 MGO)	Yes
Waste	
Solid waste management onboard vessels	No
Biodiversity protection and conservation	
Ballast-water discharge and biofouling of vessels and subsea IMR equipment	Yes
Fauna strike from physical presence of vessels	No

For each aspect with a potential to result in impact and risk, the greatest consequence (or potential impact) of an activity, was then evaluated with no safeguards or control measures in place enabling the identification of a maximum foreseeable consequence of the scenario. Control measures associated with existing design safeguards were then identified to prevent or mitigate the threat and/or its consequence(s).

Where existing safeguards or controls were judged as inadequate to manage the identified hazards, additional safeguards or controls were proposed.

Additional engineering and management control measures were identified taking account of the principle of preferences illustrated in Figure 5-1. The options were then systematically evaluated in terms of risk reduction. Where the level of risk reduction achieved by their selection was determined to be grossly disproportionate to the “cost” of implementing the identified control measures the control measure has not been implemented, and the risk is considered ALARP. Cost may include financial cost, time or duration, effort, occupational health and safety risks, or environmental impacts associated with implementing the control.



Elimination		Removal of the hazard or sensitive receptor
Substitution		Replacement of highly hazardous materials / approaches with less hazardous materials / approaches
Engineering	**Prevention**	Design measures that reduce the likelihood of a hazardous event occuring
	Detection	Design measures that facilitate early detection of a hazardous event
	Control	Design measures that limit the extent/escalation potential of a hazardous event
	Mitigation	Design measures that protect the environment should a hazardous event occur
	Response Equipment	Design measures or safeguards that enable clean-up / response following the realisation of a hazardous event
Procedures & Administration		Management systems and work instructions used to prevent or mitigate environmental exposure to hazards
Sensitive Receptor Protection		The lowest level in the hazard management hierarchy which should only be considered when all higher controls in the hierarchy have been exhausted e.g. physical barriers located at the sensitive receptor

Figure 5-1: ALARP options preference

The likelihood (or probability) of a consequence occurring was then determined, taking into account the control measures in place. The residual risk was then evaluated and ranked.

Potential environmental impacts and risks are only deemed acceptable once all reasonably practicable alternatives and additional measures have been taken to reduce the potential impacts and risks to ALARP. The potential environmental impacts and risks associated with implementing the activities described in the EP were determined to be acceptable if:

- the activities (and associated potential impacts and risks)
  - comply with relevant environmental legislation, industry standards/guidelines, and corporate policies, standards, and procedures specific to the operational environment,
  - take into consideration stakeholder feedback
- the level of environmental risk is assessed to be Low; or
- the level of environmental risk is assessed to be Moderate or High and the level of environmental risk is reduced to be ALARP.

A summary of the potential impacts and risks with details on identified control measures are shown in Table 5-2. It should be noted that, because of length of the GEP, the values and sensitivities with the potential to be affected could vary, depending on the specific location or nature of an activity.

Table 5-2: Summary of potential impacts and risks and associated control measures

Source of risk or impact	Potential impacts and risks	Control measures
IMR activities		
Aspect – seabed disturbance		
Seabed intervention activities, such as jetting, mass flow excavation, grout bags/concrete mattresses/rock placement on seabed. This is an unplanned activity that if required may last for approx. 5-60 days.	Physical disturbance of the seabed and localised generation of silt plumes could affect the surrounding benthic communities and have the potential to result in reduced ecosystem productivity.	DP vessels
		Differential Global Positioning System (DGPS)
		Engineering analysis / environmental assessment of possible intervention techniques.
Aspect – loss of containment		
Release of FIS, MEG or nitrogen due to minor or major defects in the GEP. This is an unplanned activity.	A loss of containment event will result in changes to ambient water quality. A decline in water quality has the potential to result in fauna mortality and/or result in reduced ecosystem productivity or diversity.	*GEP Integrity Management Plan* (this plan describes the types of inspections, testing and frequency of those controls undertaken to assure the integrity of the asset)
		Pressure monitoring of the GEP during the preservation stage, second period (nitrogen inerting).
		Controlled FIS discharge engineering analysis.
		An assessment of the impacts to the environment, in the event of a release associated with a major GEP repair will be undertaken by: • plume modelling to predict the nature and scale of the potentially affected sensitive receptors • collection and analysis of representative samples of the pipeline content to confirm the nature and scale of the potential impact, specific to the location of the event.
		If the nature and scale of the discharge is predicted to impact a KEF or the loggerhead turtle BIA, seabed hardness will be evaluated to determine if further seabed surveys and specific environmental sensitivity analysis needs to be conducted.

Source of risk or impact	Potential impacts and risks	Control measures
		Stakeholder engagement (to inform potentially affected parties in the event of a major GEP repair).
Support vessel activities		
Aspect – loss of containment		
Accidental release overboard from a vessel or submerged IMR equipment. This is an unplanned activity.	A loss of containment event will result in changes to ambient water quality. A decline in water quality has the potential to result in fauna mortality and/or result in reduced ecosystem productivity and/or diversity.	Appropriate storage of hydrocarbons and chemicals.
		Spill containment and recovery equipment on board vessels
		Routine servicing and inspection of submergible IMR equipment.
		Shipboard oil pollution emergency plans (SOPEPs) on vessels.
		Preventive maintenance system of external equipment, such as winches and cranes.
Vessel collision resulting in a Group II spill (250 m^3 MGO). This is an unplanned activity but may result in impacts and risks within the EMBA in the event of this scenario occurring.	Surface, entrained and shoreline hydrocarbon exposures have the potential to result in chronic and acute effects to marine fauna, depending on the magnitude of exposure.	No Group III or Group IV hydrocarbon fuels will be used by vessels.
		Stakeholder engagement campaign to inform stakeholders if they may be affected by incident related to a loss of containment
		MoU with AMSA (This agreement outlines the expectations and responsibilities during an response to a vessel related spill)
		Simultaneous Operations (SIMOPS) Plan (These plans describe in detail how simultaneous work can be achieved safely and can reduce the likelihood of a collision occurring)
		A Notice to Mariners will be issued by AMSA before vessels begin activities.
		Develop and implement an oil pollution emergency plan (OPEP) that is available on board all vessels.
		Response strategies, net environmental benefit analysis (NEBA) and monitoring

Source of risk or impact	Potential impacts and risks	Control measures
		response effectiveness will be implemented in accordance with the OPEP.
		Ensure response preparedness by implementing the EP.
		Protection of sensitive receptors, such as wildlife hazing.
Aspect – biodiversity protection and conservation		
Ballast-water discharge and biofouling of vessels and subsea IMR equipment. This is an unplanned activity.	Establishment of invasive marine pests (IMPs) can result in changes to the structure of benthic habitats and native marine organisms through predation and/or competition for resources, leading to a change in ecological function.	The International Maritime Organization (IMO) International Convention on the Control of Harmful Anti-fouling Systems on Ships.
		Australian Ballast Water Management Requirements Version 5 (DAWR 2013).
		Desktop vessel risk assessments.

6 MONITORING ENVIRONMENTAL PERFORMANCE

The INPEX health, safety, environment and quality management system (HSEQ-MS) includes standards and procedures from all business areas. It is based on the principle of a "plan, do, check, act" (PDCA) continual improvement cycle, and was developed in accordance with the following Australian standards:

- AS/NZS 4801:2001, *Occupational health and safety management systems—Specification with guidance for use*.
- AS/NZS ISO 14001:2004, *Environmental management systems—Requirements with guidance for use*.

It provides mandatory rules and processes for the systematic and consistent management of HSEQ risks, demonstration of compliance, and facilitation of continual improvement. In the context of the EP, the HSEQ-MS enables INPEX to ensure that:

- environmental risks of activities are identified and communicated
- organisational structures and resources are provided to ensure that control measures remain effective in reducing environmental risks to levels that are tolerable and ALARP
- performance outcomes and standards are being met
- continual improvement is achieved through application of lessons learned.

A summary of the elements associated with implementation of the EP and details on the arrangements for ongoing monitoring of environmental performance are provided in Table 6-1. The processes within the HSEQ-MS that specifically address how environmental performance is monitored and achieved are described in sections 6.1 to 6.3.

Table 6-1: Summary of INPEX HSEQ-MS elements

HSEQ-MS element	Description	Performance monitoring
Leadership and commitment	INPEX environmental performance is achieved through strong visible leadership, commitment and accountability at all levels of the organisation. Leadership includes defining performance targets and providing structures and resources to meet them.	Overall performance with respect to the implementation of the EP will be subject to an annual review by senior management. Formal review of the effectiveness and appropriateness of the INPEX HSEQ-MS is also performed by senior management on a periodic basis.
Capability and competence	INPEX appoints and maintains competent personnel to manage environmental risks, and provide assurance that the INPEX Environmental Policy, objectives and performance expectations will be achieved. This applies to both individual competencies and the overall capability of the organisation.	INPEX conducts training needs analysis for each of the key roles in relation to the EP to define minimum training requirements. The analysis is used to develop training plans for individuals that are then used to document, schedule and record completion of specific HSEQ training. Inductions are provided to all personnel (including INPEX representatives, contractors,

HSEQ-MS element	Description	Performance monitoring
		subcontractors and visitors) before they start work at or visit any of the vessels described in this EP. Inductions cover the health, safety and environment requirements under the INPEX HSEQ-MS, including information about the commitments contained in this EP.
Documentation, information and data	INPEX implements and maintains document and records management procedures and systems. These are in place to ensure that information required to support safe and reliable preservation of the GEP, and management of environmental risks, is identified, current, reliable and available to those who need it.	The EP and associated documentation are maintained within INPEX document management systems, with the current versions also available via the controlled document repository. Records to demonstrate implementation of the HSEQ-MS and compliance with legal and other obligations are identified and maintained for at least five years.
Risk management	Robust and structured processes are applied to identify hazards and ensure that risks arising from the preservation of the GEP are systematically identified, assessed, evaluated and controlled.	Impacts and risks associated with the EP are detailed in Table 5-2. Additional risk assessments will be undertaken when triggered by any of the following circumstances: • when there is a proposed change to the design or method of GEP IMR activities, as identified by a INPEX Management of Change (MOC) request • when flagged as necessary following the investigation of an event • when additional information about environmental impacts becomes available (e.g. through better knowledge of the receptors present within the environment that may be affected) • during scheduled reviews of the documentation associated with this EP.
Operate and maintain	INPEX implements and maintains processes to ensure that, while operating, records relevant to the implementation of the EP are maintained.	The INPEX HSEQ provides processes for the systematic and consistent management of HSEQ risks and demonstration of compliance during operations. Formal reviews of the effectiveness and appropriateness of the INPEX HSEQ-MS are performed by senior

HSEQ-MS element	Description	Performance monitoring
		management on a periodic basis.
Management of Change (MoC)	Where a change to management of an activity is proposed, internal notification will be communicated via an MoC request. The request will identify the proposed change(s) along with the underlying reasons, and highlight potential areas of risk or impact.	Where change could affect the environment, in accordance with the INPEX business rules, it is mandatory to undertake an environmental risk assessment in every case. Formal reviews of the effectiveness and appropriateness of the INPEX HSEQ-MS are performed by senior management on a periodic basis.
Stakeholder engagement	Robust processes to ensure: • ongoing consultation with relevant stakeholders • communication with INPEX employees regarding legal and other requirements.	Ongoing consultation is undertaken with relevant stakeholders either annually or on an as required basis predominantly through the issue of an annual factsheet. Communication with INPEX employees may include: • daily toolbox meetings • use of notice boards, HSEQ alerts and newsflashes • internal and external project reporting.
Contractors and suppliers	Selection and management processes are in place to ensure that organisations working for, or on behalf, of INPEX are able and willing to meet the minimum business expectations of INPEX, including those related to HSEQ and risk management.	Contract compliance audits, and quality control and assurance checks are conducted throughout the life of the contract as appropriate to the scope of work and risks involved. Contractors are required to provide regular reports to communicate their HSEQ performance and compliance status and periodic checks and reviews are conducted by INPEX representatives
Security and emergency management	INPEX implements and maintains security and emergency management processes to ensure: • capabilities and arrangements are in place to respond to an emergency • employees are trained and capable • response arrangements are tested.	A review and update of security and emergency management processes including lessons learned from drills and response arrangement testing occurs at least twice yearly. Inductions Inductions covering security and emergency management processes are provided to all personnel before they start work. Emergency response capability is maintained and updated on an annual basis.

HSEQ-MS element	Description	Performance monitoring
Incident investigation and lessons learned	INPEX implements and maintains processes for ensuring environmental incidents are investigated and reported, and that corrective actions are implemented.	The assessment of conformance with HSEQ obligations and goals ensures HSEQ risks are effectively managed, investigated and reported to support continuous improvement. HSEQ performance is regularly reviewed by senior management.
Monitoring, auditing and reviewing	INPEX implements and maintains robust monitoring, auditing and reviewing processes to evaluate environmental performance and ensure continual improvement.	INPEX's ongoing audit and inspection program including scheduled and unscheduled audits. Audit and inspection findings are reported and non-conformances, actions and improvement plans are managed in an action tracking system.

6.1 Management system audit

An audit and inspection program will be developed and implemented in accordance with the INPEX business standard for auditing. The program will include:

- self-assessment HSEQ audits against the HSEQ-MS
- regular inspections of workplace equipment and activities
- reviews to evaluate compliance with legal and other requirements.

Unscheduled audits may be initiated by INPEX in the event of an incident, non-compliance or for other valid reasons. Audit teams will be appropriately qualified, experienced and competent in auditing techniques. They will include relevant technical expertise, as required, and the audit team structure will be commensurate with the scope of the audit. HSEQ audit and inspection findings will be summarised in a report. Non-compliances, actions and improvement plans resulting from audits will be managed in an actions tracking system.

6.2 Vessel inspections

Offshore vessel inspection database (OVID) inspections will be undertaken to ensure that the environmental performance outcomes and standards documented in the EP can be achieved. The inspections will be conducted on support vessels before mobilisation to complete a scope of work. Findings of the audits will be converted into actions that will be tracked within an actions tracking database.

Should an IMR vessel's scope of work extend to a duration that requires a crew change, an additional environmental inspection, to confirm compliance with the EP, will be conducted during the crew change. Should an IMR vessel's scope of work extend beyond six months, six-monthly environmental inspections, to confirm compliance with the EP, will be conducted.

Following the completion of an IMR vessel's scope of work, a report on EP compliance will be prepared.

6.3 Performance reporting to regulator

For the purposes of regulatory reporting to NOPSEMA, an incident is classified as either “Reportable” or “Recordable” based upon the definitions contained in Regulation 4 of the OPGGS(E)R.

6.3.2 Reportable incidents

Based on the consequence assessments described in the EP, incidents identified as having the potential to be "reportable" incidents include:

- an unplanned release of FIS/MEG from GEP due to major defect
- the introduction of IMP
- a vessel collision resulting in an oil pollution emergency response

6.3.3 Recordable incidents

In the event of a recordable incident (for example if one of the controls identified in Table 5-2 is not implemented) INPEX will report the occurrence to NOPSEMA as soon as practicable after the end of the calendar month in which it occurs, and in any case not later than 15 days after the end of the calendar month.

For the purposes of regulatory reporting to DoE, any significant impact to “matters of national environmental significance” (as classified using the INPEX Risk Matrix) will be reported to DoE.

6.3.4 Annual performance reporting

In accordance with Regulation 14(2) of the OPGGS (E) Regulations 2009, INPEX will undertake a review of its compliance with the environmental performance outcomes and standards set out in the EP, and will provide a written report of its findings for the reporting period January 1 to December 31, to NOPSEMA on an annual basis, as agreed with NOPSEMA.

7 OIL POLLUTION EMERGENCY PLAN

An OPEP has been developed specifically to respond to emergency conditions defined in the EP. The purpose of the OPEP is to:

- Describe the oil spill emergency response arrangements and capabilities that are in place for the duration of the GEP preservation stage.
- Provide guidance and process support for the INPEX incident management team (IMT) and vessel emergency response teams (ERTs) during an oil pollution emergency.
- Demonstrate that the intent of Regulation 16 of the OPGGS (E) Regulations 2009 has been met.

INPEX adopts the emergency management principles of prevention, preparedness, response, recovery (PPRR). The aim of PPRR is to ensure that risks are identified and minimised; plans to respond are developed and practised; and recovery plans are in place.

INPEX maintains a trained and ready incident management team (IMT) and crisis management team (CMT). The IMT provides operational management support and the CMT provides strategic direction.

INPEX oil spill response arrangements shall be tested by the IMT:

- prior to an Activity commencing (i.e. prior to an EP being activated)
- when the arrangements for an Activity are significantly amended, and
- not later than 12 months following the most recent test
- notification and call-out drills that test communications channels and the ability to contact key individuals shall be conducted at least annually.

The INPEX IMT will conduct a minimum of two dedicated oil spill drills per year to test:

- the structure and capability of the INPEX IMT
- communications between the IMT and vessel emergency response teams (ERT)
- onsite (vessel) response capability (e.g. spill tracker buoys)
- Vessel ERT and INPEX IMT understanding of AMSA / INPEX Control Agency responsibilities
- capability and logistical arrangements with external service providers such as aviation support, trained aerial observers, oil spill modelling and equipment registers.

An integral part of the OPEP is determining which spill response measures can be implemented for the identified events. Response measures were evaluated to identify the primary and secondary measures for a Group II hydrocarbon spill.

7.1 Primary response measures

The outcomes of the evaluation, determined that the only appropriate primary response (first strike) measure was Operational Monitoring and Evaluation. This involves the use of vessels, aircraft, satellite imagery and surface tracking buoys to monitor the size, trajectory, weathering and fate of the oil.

The arrangements and capabilities in place to implement this response measure are summarised in Table 7-1.

Table 7-1: Resources for Operational Monitoring and Evaluation

Technique	Resource capability and availability	Minimum implementation time	Activation
Electronic surface tracking buoy(s)	INPEX has purchased several surface tracking buoys which it positions at high-risk locations, such as drilling rigs, the CPF, FPSO and other work activity sites, as deemed appropriate by INPEX. At least one tracking buoy will be maintained onshore (i.e. at Broome or Darwin) which can be deployed from an aircraft to any spill location.	Immediately, if available, on IMR vessels. 12–24 hours if being deployed by another vessel or aircraft.	Tracking buoy locations managed via the Oil Spill Equipment Tracking Register. Tracking buoys deployed from vessels or aircraft as directed by the IMT. Tracking buoy online tracking tool activated by the IMT.
Oil spill trajectory modelling	INPEX maintain a contracted spill modelling service provider to provide 24-hour support.	2 hours.	IMT via the INPEX *Emergency Contacts Directory*. Trajectory modelling activation forms.
Aerial surveillance	Aerial surveillance arrangements are sourced via AMOSC/AMSA. INPEX also contract aircraft for personnel transfers and medivac and maintain other call-off contracts for aviation assets. Therefore, the potential may exist for opportunistic use of INPEX-contracted aircraft.	24–48 hours for implementation of resource. Information from opportunistic aircraft may be available sooner.	IMT via the INPEX *Emergency Contacts Directory*
Vessel surveillance	Other Project vessels will be available for use as requested by INPEX or AMSA. Vessels of opportunity will also be available via call-off contracts.	24–48 hours. Information from opportunistic vessels may be available sooner.	IMT via the INPEX *Emergency Contacts Directory*
Satellite imagery analysis	Sourced via AMOSC and/or OSRL.	24–48 hours.	IMT via the INPEX *Emergency Contacts Directory*

7.2 Secondary response measures

Wildlife hazing was identified as the only suitable secondary response measure. It should be noted that this option is subject to regulatory approval. The arrangements and capabilities in place to implement this response measure are summarised in Table 7-2.

Table 7-2: Resources for wildlife hazing

Technique	Resource capability and availability	Minimum implementation time	Activation
Vessel surveillance	Project vessels will be available for use as requested by INPEX or AMSA. Vessels of opportunity will also be available via call-off contracts.	24–48 hours. Information from opportunistic vessels may be available sooner.	IMT via the INPEX *Emergency Contacts Directory*

7.3 Operational and scientific monitoring plans

In 2011, an operational and scientific monitoring program (OSMP) was developed by the Environment Group Browse Basin (of which INPEX is a member). The program encompasses a number of individual operational and scientific monitoring plans, referred to as OMs (operational monitoring plans) and SMs (scientific monitoring plans) to guide the spill response, assess potential environmental impacts and inform any remediation activities. The OSMP has been reviewed and refined for a Group II (250 m^3 MGO) emergency spill scenario as described in the EP.

Operational monitoring (OM) is to commence as soon as a spill occurs and aims to characterise the nature and scale of the spill for the duration of the spill to assist the spill response. Monitoring is designed to collect information on the predicted spread of the oil, locations it may impact, and in turn, informs the secondary oil spill response (if appropriate).

Scientific monitoring (SM) has an investigation component to assess the overall impact and recovery of the ecosystem to oil exposure informed by OMs. It does not directly inform spill response operations.

The activation and termination of OSMP will be signed off by the INPEX IMT Leader in consultation with AMOSC and the environmental service providers (and WA / NT DoT and Environment and Scientific Coordinator (ESC) if the spill has extended into state waters, or AMSA if the spill is from a vessel).

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APPENDIX A: EPBC ACT PROTECTED MATTERS SUMMARY

Australian Government
Department of the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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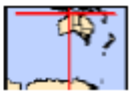

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	30
Listed Migratory Species:	48

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage/index.html

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	98
Whales and Other Cetaceans:	26
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	2

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	22
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	6