



**PYRENEES OPERATIONS
ENVIRONMENT PLAN (COMMONWEALTH)
SUMMARY**

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1 Introduction

As the operator of the offshore Pyrenees Production Facility (the Facility), BHP Billiton Petroleum Pty Ltd (BHP) proposes to continue ongoing operations activities under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009*. The Facility is split between production permit WA-42-L, with working interests BHP 71.4% and Santos 28.6%, and the adjacent permit WA-43-L, with working interest of BHP 40%, Santos 31.5% and Inpex 28.5%.

This document summarises the updated Pyrenees Facility Operations Environment Plan (EP) (Commonwealth), as accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), which was submitted prior to the five year anniversary of the previously accepted version of the EP to meet the requirements of Regulation 19(1) of the OPGGS (Environment) Regulations 2009. This EP will be valid for a five year period.

The Pyrenees Facility produces crude oil from the Ravenworth, Crosby, Stickle, Tanglehead, Wild Bull and Moondyne reservoirs via a single stand-alone Floating Production Storage and Offloading facility (the Pyrenees FPSO). Surplus gas to fuel and lift gas requirements is reinjected into the Macedon Reservoir via a bi-directional well. The Pyrenees Facility operates in Commonwealth waters approximately 45 km northwest of Exmouth, producing crude oil. The scope of this EP includes the following activities and infrastructure:

- Pyrenees Facility;
- Hydrocarbon reservoirs – Ravensworth, Crosby, Stickle, Tanglehead, Wild Bull (Upper Pyrenees) and Moondyne, with Macedon as a gas reinjection reservoir;

All subsea infrastructure associated with production from the above, including:

- Flowlines;
- Risers;
- Manifolds;
- Subsea trees;
- Umbilicals;
- Mid water and spider buoys; and
- Support vessels and helicopters operating within the Operations Area.

Activities associated with the above included in the scope of this EP are as follows:

- Routine production;
- Crude oil offloading;
- Routine inspection, maintenance and repair of all infrastructure listed above; and
- Non-routine and accidental activities and incidents.

The drilling and tie-back of new wells associated with the Pyrenees Expansion activities are the subject of separate EPs, however production associated with these new wells is covered under the scope of this EP.

2 Location of the Activity

The Pyrenees Facility is located in Commonwealth waters 45 km northwest of Exmouth, approximately 27 km northwest from the Muiron Islands, 13.8 km from the northern boundary of the Ningaloo Marine Park boundary (Commonwealth Waters) and 27 km north-west of North West Cape, in Western Australia.

Other nearby developments include the Vincent Development (Ngujima-Yin FPSO) and the Van Gogh Development (Ningaloo Vision FPSO). The Macedon Gas Development is located approximately 6 km to the south east, which produced first gas in mid-2013.

The Operations Area defines the geographical boundary of the activity (Figure 2-1). This includes the safety exclusion area which extends to a distance of 500 m from the outer edge of the each of the wells and subsea equipment, and a 100 m wide corridor extending either side of the outermost asset (pipeline or umbilical). All Pyrenees wells are detailed in table 2-1 and all infrastructure is shown in Figure 2-2.

Table 2-1: Coordinates of the Pyrenees Wells

Well name	Description		Status	MGA50	
				Easting (m) ¹	Northing (m)
Pyrenees Facility	-	-	-	201 298	7 615 199
Crosby - 3H1	Horizontal	Prod S/T Multilateral	Online	199 116	7 614 698
Crosby - 4H2	Horizontal	Production	Online	199 058	7 614 699
Crosby - 5H3	Horizontal	Prod S/T Multilateral	Online	199 755	7 616 513
Crosby - 6H4	Horizontal	Prod S/T Multilateral	Online	199 697	7 616 509
Moodyne-1H1	Horizontal	Production	Online	205 298	7 615 970
Moodyne-2H2	Horizontal	Production	Online	205 349	7 615 970
Ravensworth - 3H1	Horizontal	Production	Online	197 973	7 615 388
Ravensworth - 4H2	Horizontal	Production	Online	197 976	7 615 420
Ravensworth - 5H3	Horizontal	Prod S/T Multilateral	Online	198 004	7 615 471
Ravensworth - 6H4	Horizontal	Production	Online	198 002	7 615 493
Ravensworth - 7H5	Horizontal	Production	Online	198 029	7 616 357
Ravensworth - 8H6	Horizontal	Production	Offline Isolated	198 061	7 615 426
Ravensworth-10H7	Horizontal	Production	Online	198 128	7 616 364
Stickle - 4H1	Horizontal	Production	Online	200 591	7 617 169
Stickle - 5H2	Horizontal	Production	Online	200 545	7 617 219
Stickle - 6H3	Horizontal	Production	Online	200 527	7 617 233
Stickle - 8H4	Horizontal	Production	Online	200 648	7 617 161
Stickle-9H5	Horizontal	Production	Online	201 968	7 617 632
Tanglehead-1H1	Horizontal	Production	Offline Isolated	202 052	7 617 266
Tanglehead-2H2	Horizontal	Production	Online	202 299	7 617 261
Wildbull-1H1	Horizontal	Production	Online	198 015	7 617 444
Crosby - 7WI	Vertical	Water Injector	Online	202 299	7 619 851
Moodyne-3WI	Horizontal	Water Injector	Online	205 298	7 616 020
Ravensworth - 9WI	Vertical	Water Injector	Online (shut in)	199 047	7 619 422
Stickle - 7WI	Vertical	Water Injector	Online	204 186	7 619 526
Macedon - 6*	Horizontal	Gas Prod / Injector	Online	206 599	7 612 360

¹ Map datum is Geodetic Datum of Australia 1994 (GDA94). Eastings and Northings in Universal Transverse Mercator (UTM) Projections, Zone 50, Central meridian 117 °.

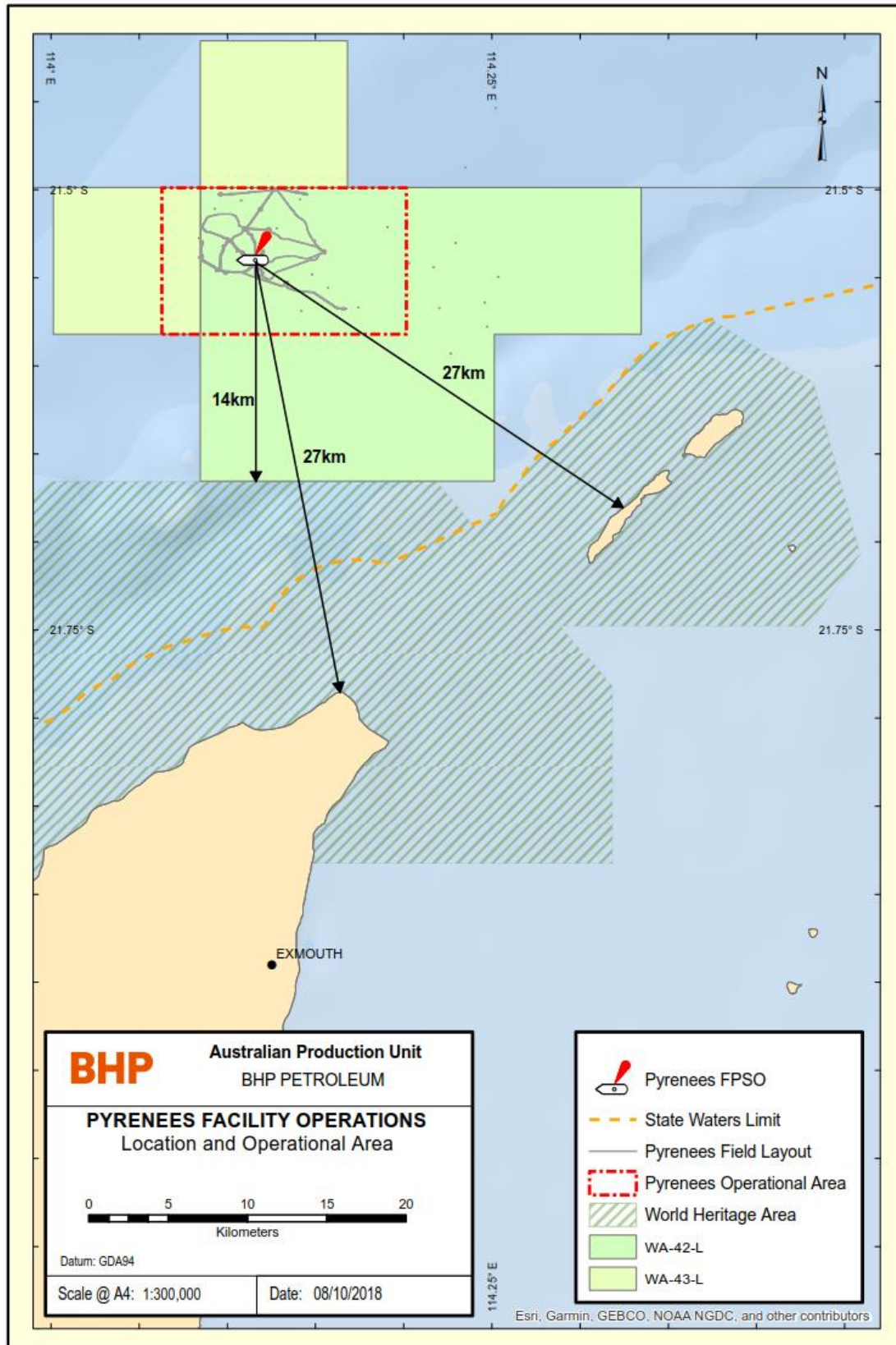


Figure 2-1: The Pyrenees Facility Location and Operational Area

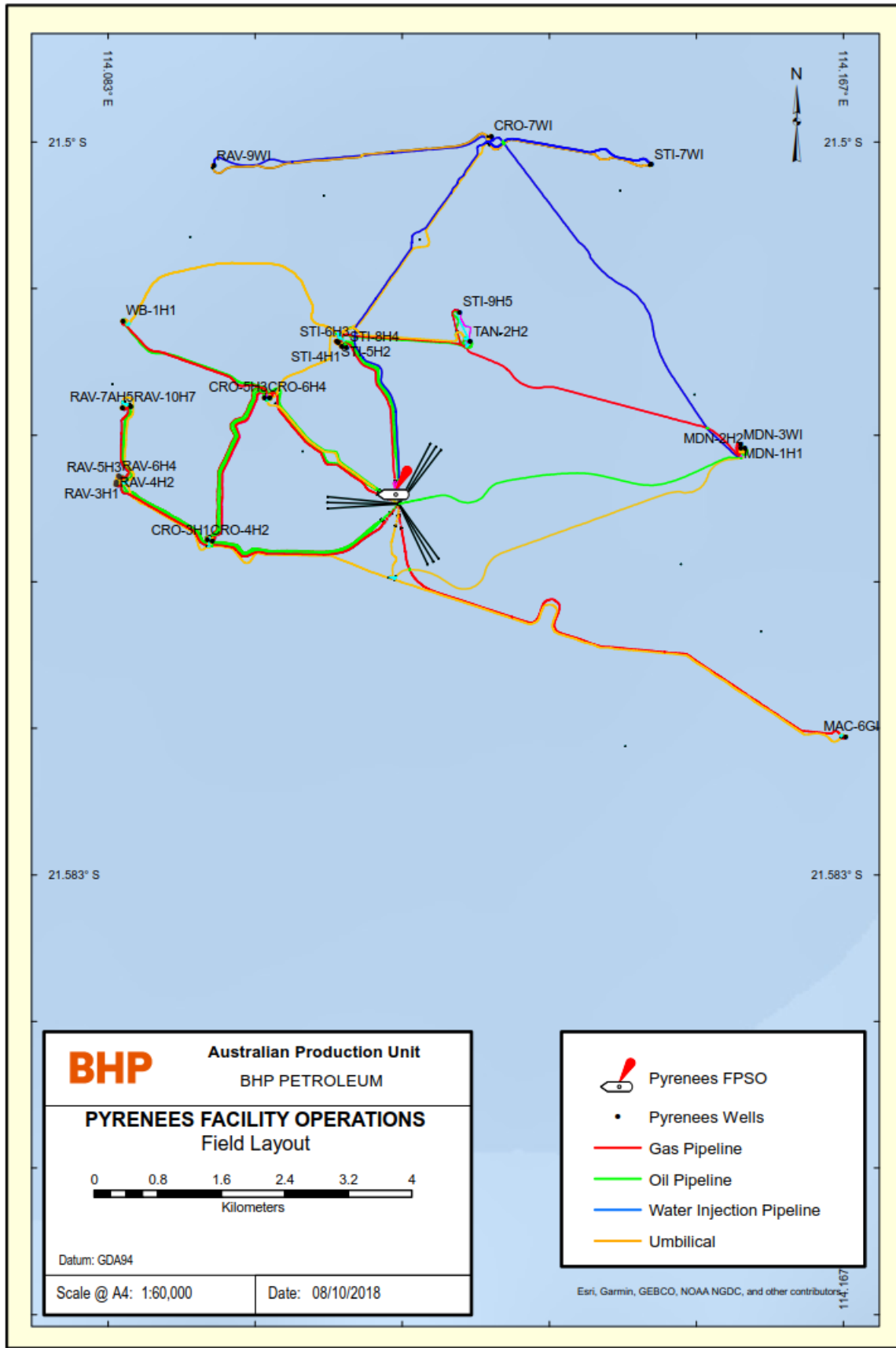


Figure 2-2 Pyrenees Infrastructure Layout

3 Description of the Receiving Environment

This section identifies the particular relevant values and sensitivities of the environment within the AMBAs for each of the impacts (planned activities) and risks (unplanned events). The environmental values in each AMBA were reviewed, including searches via the DoEE’s Protected Matters Search Tool (PMST), to identify any *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed species. The National Conservation Values Atlas (DoEE website) was also interrogated to identify biologically important areas for the region’s protected species.

3.1 Area May Be Affected (AMBA)

The purpose of this section is to describe the area that may be affected (AMBA) by the activity, including the area that could potentially be affected by emergency conditions. To determine the spatial extent of the area that may be affected by Pyrenees Facility Operations, stochastic hydrocarbon spill modelling was undertaken for the worst-case credible hydrocarbon spill scenario, i.e. a release of 10,000 m³ of bulk crude due to a vessel collision with the Pyrenees Facility.

3.2 Ecological Environment and Sensitivities

3.2.1 World Heritage Areas

No World Heritage Areas intercept with the offshore Operations Area. The Ningaloo World Heritage Property Area has boundaries that lie within the the worst-case crude oil spill (10,000 m³) AMBA (Table).

Table 3-1: World heritage properties within the AMBAs

Value / Sensitivity	Area That May Be Affected (AMBA)	
	Operations Area	Crude Oil Spill (10,000 m ³)
Ningaloo Coast	x	✓

3.2.2 National Heritage Places

There are no National Heritage Places located in the offshore Operations Area. One National Heritage Place, the Ningaloo Coast, has boundaries that lie within the worst-case crude oil spill (10,000 m³) AMBA (Table 3-2).

Table 3-2: National heritage places within the AMBAs

Value / Sensitivity	Area That May Be Affected (AMBA)	
	Operations Area	Crude Oil Spill (10,000 m ³)
Ningaloo Coast	x	✓

3.2.3 Marine Protected Areas

There are no Commonwealth or State Marine Parks located in the Operations Area. The worst-case crude oil spill (10,000 m³) AMBA intersects seven Australian (Commonwealth) Marine Parks and three State Marine Parks/Management Areas (Table 3-).

Table 3-3: Marine protected areas within the AMBAs

Value/ Sensitivity	Area That May Be Affected (AMBA)	
	Operations Area	Crude Oil Spill (10,000 m ³)
Australian Marine Parks		
Ningaloo Marine Park (National Park Zone) (Recreational Use Zone)	x	✓
Gascoyne Marine Park (Habitat Protection Zone)(Multiple Use Zone) (National Park Zone)	x	✓
Shark Bay (Multiple Use Zone)	x	✓
Abrolhos Marine Park (Multiple Use Zone)	x	✓
State Marine Parks and Management Areas		
Ningaloo Marine Park	x	✓
Muiron Islands Marine Management Area	x	✓

3.2.4 Key Ecological Features

Key ecological features (KEF) are areas of regional importance for either biodiversity or ecosystem function and integrity within the Commonwealth marine environment and have been identified through the marine bioregional planning process (DSEWPaC, 2012a). Five KEFs are intersected by the AMBA (Table 3-4).

Table 3-4: Key ecological features, values and description (sourced from Bioregion Plan)

Value/ Sensitivity	Area That May Be Affected (AMBA)	
	Operations Area	Crude Oil Spill (10,000 m ³)
Australian Marine Parks (Commonwealth)		
Ancient coastline at 125 m depth contour	✓	✓
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	✓	✓
Continental slope demersal fish communities	✓	✓
Commonwealth waters adjacent to Ningaloo Reef	x	✓
Exmouth Plateau	x	✓

3.2.5 Listed Threatened Species

A search of the EPBC Act Protected Matters database (September 2018) identified 21 listed threatened (19 of which are also listed migratory species) that may occur or have habitat within the Operations Area, and 36 listed threatened species (29 of which are also listed migratory species) that may occur or have habitat within the wider AMBA. No threatened ecological communities were identified. There are no Wetlands of International

Importance under the Convention on Wetlands of International Importance (the Ramsar Convention) in Western Australia. The threatened species are shown in Table .

Table 3-5: Listed threatened species that may occur within the AMBAs

Common Name	Species	EPBC Act Status	Operations Area	AMBA
Red knot	<i>Calidris canutus</i>	E, M	✓	✓
Southern giant petrel	<i>Macronectes giganteus</i>	E, M	✓	✓
Australian fairy tern	<i>Sternula nereis nereis</i>	V	✓	✓
Australian lesser noddy	<i>Anous tenuirostris melanops</i>	V	x	✓
Curlew sandpiper	<i>Calidris ferruginea</i>	CE, M	✓	✓
Amsterdam albatross	<i>Diomedea exulans amsterdamensis</i>	E, M	x	✓
Wandering albatross	<i>Diomedea exulans (sensu lato)</i>	V, M	x	✓
Northern giant petrel	<i>Macronectes halli</i>	V, M	x	✓
Eastern curlew	<i>Numenius madagascariensis</i>	CE, M	✓	✓
Great knot	<i>Calidris tenuirostris</i>	CE, M	x	✓
Abbott's booby	<i>Papasula abbottii</i>	E	X	✓
Greater sand plover	<i>Charadrius leschenaultia</i>	V, M	x	✓
Soft-plumaged petrel	<i>Pterodroma mollis</i>	V	x	✓
Indian yellow-nosed albatross	<i>Thalassarche carteri</i>	V, M	x	✓
Shy albatross, Tasmanian shy albatross	<i>Thalassarche cauta cauta</i>	V, M	x	✓
White-capped albatross	<i>Thalassarche cauta stedi</i>	V, M	x	✓
Black-browed albatross	<i>Thalassarche melanophris</i>	V, M	x	✓
Campbell albatross	<i>Thalassarche melanophris impavida</i>	V, M	x	✓
Bar-tailed godwit (baueri)	<i>Limosa lapponica baueri</i>	V	x	✓
Northern Siberian bar-tailed godwit	<i>Limosa lapponica menzbieri</i>	CE	x	✓
Blue whale	<i>Balaenoptera musculus</i>	E, M	✓	✓
Southern right whale	<i>Eubalaena australis</i>	E, M	✓	✓
Humpback whale	<i>Megaptera novaeangliae</i>	V, M	✓	✓
Sei whale	<i>Balaenoptera borealis</i>	V, M	✓	✓
Fin whale	<i>Balaenoptera physalus</i>	V, M	✓	✓
Short-nosed seasnake	<i>Aipysurus apraefrontalis</i>	CE	✓	✓

Common Name	Species	EPBC Act Status	Operations Area	AMBA
Loggerhead turtle	<i>Caretta caretta</i>	E, M	✓	✓
Green turtle	<i>Chelonia mydas</i>	V, M	✓	✓
Leatherback turtle	<i>Dermochelys coriacea</i>	E, M	✓	✓
Hawksbill turtle	<i>Eretmochelys imbricate</i>	V, M	✓	✓
Flatback turtle	<i>Natator depressus</i>	V, M	✓	✓
Grey nurse shark (west coast population)	<i>Carcharias Taurus</i>	V, M	✓	✓
Great white shark	<i>Carcharodon carcharias</i>	V, M	✓	✓
Dwarf sawfish	<i>Pristis clavata</i>	V, M	✓	✓
Green sawfish	<i>Pristis zijsron</i>	V, M	✓	✓
Whale shark	<i>Rhincodon typus</i>	V, M	✓	✓

Key: CE- critically endangered; E-endangered; V-vulnerable; M-migratory; L-Listed

3.2.6 Listed Migratory Species

The listed migratory species under the EPBC Act and JAMBA and/or CAMBA and/or KAMBA Listed seabirds that may occur within the AMBAs are presented in Table 6.

Table 3-6: Listed migratory species that may occur within the AMBAs

Common Name	Species	Operations Area	AMBA
Common noddy	<i>Anous stolidus</i>	✓	✓
Flesh-footed shearwater	<i>Ardenna carneipes</i>	✓	✓
Streaked shearwater	<i>Calonectris leucomelas</i>	✓	✓
Lesser frigatebird	<i>Fregata ariel</i>	✓	✓
Common sandpiper	<i>Actitis hypoleucos</i>	✓	✓
Sharp-tailed sandpiper	<i>Calidris acuminata</i>	✓	✓
Pectoral sandpiper	<i>Calidris melanotos</i>	✓	✓
Osprey	<i>Pandion haliaetus</i>	✓	✓
Fork-tailed swift	<i>Apus pacificus</i>	X	✓
Wedge-tailed shearwater	<i>Ardenna pacifica</i>	x	✓
Great frigate	<i>Fregata minor</i>	x	✓
Caspian tern	<i>Hydroprogne caspia</i>	x	✓

Common Name	Species	Operations Area	AMBA
Bridled tern	<i>Onychoprion anaethetus</i>	x	✓
Roseate tern	<i>Sterna dougallii</i>	x	✓
Ruddy turnstone	<i>Arenaria interpres</i>	x	✓
Sanderling	<i>Calidris alba</i>	x	✓
Red-necked stint	<i>Calidris ruficollis</i>	x	✓
Oriental plover	<i>Charadrius veredus</i>	x	✓
Oriental pratincole	<i>Glareola maldivarum</i>	x	✓
Bar-tailed godwit	<i>Limosa lapponica</i>	x	✓
Black-tailed godwit	<i>Limosa limosa</i>	x	✓
Whimbrel	<i>Numenius phaeopus</i>	x	✓
Grey plover	<i>Pluvialis squatarola</i>	x	✓
Crested tern	<i>Thalasseus bergii</i>	x	✓
Grey-tailed tattler	<i>Tringa brevipes</i>	x	✓
Common greenshank	<i>Tringa negularia</i>	x	✓
Terek sandpiper	<i>Xenus cinereus</i>	X	✓
Bryde's whale	<i>Balaenoptera musculus</i>	✓	✓
Orca, killer whale	<i>Orcinus orca</i>	✓	✓
Sperm whale	<i>Physeter microcephalus</i>	✓	✓
Spotted bottlenose dolphin (Arafura/Timor Sea populations)	<i>Tursiops aduncus</i> (Arafura/Timor Sea populations)	✓	✓
Antarctic minke whale	<i>Balaenoptera bonaerensis</i>	X	✓
Indo-Pacific humpback dolphin	<i>Sousa chinensis</i>	X	✓
Dugong	<i>Dugong dugon</i>	X	✓
Narrow sawfish, Knifetooth sawfish	<i>Anoxypristis cuspidate</i>	✓	✓
Shortfin mako	<i>Isurus oxyrinchus</i>	✓	✓
Longfin mako	<i>Isurus paucus</i>	✓	✓
Reef manta ray	<i>Manta alfredi</i>	✓	✓
Giant manta ray	<i>Manta birostris</i>	✓	✓
Porbeagle, Mackerel shark	<i>Lamna nasus</i>	x	✓

3.2.7 Biologically Important Areas

The North West Conservation Values Atlas (the NVCA)¹ identifies biologically important areas (BIAs) for some of the regions protected species. These are areas that are considered to be particularly important for the conservation of protected species and where aggregations of individuals display biologically important behaviour such as breeding, foraging, resting or migration. Seven BIAs intercept the Operations Area and eleven BIAs intercept the wider AMBA (Table 3-7).

Table 3-7: Biologically Important Areas within the AMBAs

Value / Sensitivity	Area That May Be Affected (AMBA)	
	Operations Area	Crude Oil Spill (10,000 m ³)
Biologically Important Areas		
Humpback whale	✓	✓
Pygmy blue whale	✓	✓
Dugong	x	✓
Green turtle	✓	✓
Hawksbill turtle	✓	✓
Loggerhead turtle	✓	✓
Flatback turtle	✓	✓
Whale shark	x	✓
Wedge-tailed shearwater	✓	✓
Roseate tern	x	✓
Fairy tern	x	✓

3.3 Socio-Economic and Cultural Heritage

3.3.1 Fisheries

The Commonwealth and State Managed Fisheries expected to be active within the Operations Area and the wider AMBA are provided in Table 8.

Table 3-8: Commonwealth and State Managed Fisheries within the AMBA

Value / Sensitivity	Area That May Be Affected (AMBA)	
	Operations Area	Crude Oil Spill (10,000 m ³)
North West Slope Trawl	✓	✓

¹ Department of the Environment. Commonwealth Australia. Atlas Accessed January 2013 <<http://www.environment.gov.au/arcgis-framework/apps/ncva/ncva.jsf>>

Value / Sensitivity	Area That May Be Affected (AMBA)	
	Operations Area	Crude Oil Spill (10,000 m ³)
Western Tuna and Billfish Fishery	✓	✓
Western Deepwater Fishery	x	✓
Western Skipjack Tuna Fishery	x	x
Southern Bluefish Tuna Fishery	x	x
Mackerel Managed Fishery	x	✓
Beche-de-mer Fishery	x	✓
Marine Aquarium Fish Managed Fishery	x	✓
Octopus	x	✓
Specimen Shell Managed Fishery	x	✓
Onslow Prawn Limited Entry Fishery	x	✓
Pearl Oyster Managed Fishery	x	✓
Pilbara Demersal Scale Fisheries (Trawl/Trap/Line)	✓	✓
Exmouth Gulf Prawn Managed Fishery	x	✓
Gascoyne Demersal Scalefish Fishery	x	✓
Shark Bay Prawn and Scallop Managed Fishery	x	✓
Shark Bay Crab Managed Fishery	x	✓
Shark Bay Beach Seine and Mesh Net Fishery	x	✓
West Coast Deep Sea Crustacean Managed Fishery	x	✓
West Coast Rock Lobster Fishery	x	✓
Roe's Abalone Fishery	x	✓
West Coast Demersal Gillnet / Demersal Longline (Interim) Managed Fishery	x	✓
West Coast Demersal Scalefish (Interim) Managed Fishery	x	✓

3.3.2 Key Regional Features

Key regional features and their proximities to the Operations Area and the wider AMBA are provided in Table 3-9.

Table 3-9: Distance of relevant key regional features from the AMBA

Regional Feature	Operations Area	AMBA
Ningaloo World Heritage Area	9 km	0 km

Regional Feature	Operations Area	AMBA
Ningaloo Marine Park	14 km	0km
Muiron Islands Marine Management Area Boundary	10 km	0 km
Gascoyne Marine Park	11 km	0 km
North West Cape Peninsula	23 km	0 km
Shark Bay World Heritage Area	320 km	0 km
Abrolhos Marine Park	480 km	0 km
Montebello Marine Park	140 km	13 km
Carnarvon Canyon Marine Park	337 km	11 km
Argo-rowley Terrace Marine Park	475 km	75 km

3.3.3 Habitat Critical to the Survival of Species

‘Habitat critical to the survival of a species’ is defined within the EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (DoE, 2013) as areas that are necessary:

- For activities such as foraging, breeding, roosting, or dispersal;
- For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species);
- To maintain genetic diversity and long-term evolutionary development; or
- For the reintroduction of populations or recovery of the species.

The Recovery Plan for Marine Turtles in Australia (DoEE, 2017) provides details of habitat critical to the survival of several species of marine turtle genetic stock (summarised in Table 3-1). The AMBA intercepts the following:

- Internesting habitat critical to the survival of flatback turtles (intercepts the Operations Area); and
- Internesting habitat critical to the survival of flatback, green, loggerhead and hawksbill turtles (intercepts the wider AMBA).

Table 3-1: Nesting and Internesting Areas identified as Habitat Critical to the Survival of Marine Turtles within the AMBAs

Turtle Species	Nesting Location / Internesting Buffer	Time of Year	Area That May Be Affected (AMBA)	
			Operations Area	Crude Oil Spill (10,000 m ³)
Green turtle (NWS genetic stock)	20 km radius of nesting locations: Serrurier Island, Northwest Cape, Exmouth Gulf, Shark Bay to Ningaloo coast	Nov-March	x	✓
Hawksbill turtle (WA stock)	20 km radius of nesting locations: Muiron Islands, and mainland beaches from Cape Range to Ningaloo and Gnaraloo to Red Buff, Cape Preston to mouth of Exmouth Gulf	Oct-Feb	x	✓

Turtle Species	Nesting Location / Internesting Buffer	Time of Year	Area That May Be Affected (AMBA)	
			Operations Area	Crude Oil Spill (10,000 m ³)
Loggerhead turtle (WA stock)	20 km radius of nesting locations: Dirk Hartog Island, Muiron Islands, Gnoraloo Bay, Ningaloo coast, North West Cape	Nov-May	x	✓
Flatback turtle (Pilbara stock)	60 km radius of nesting locations: Muiron Islands, Pilbara coast, coastal islands from Cape Preston to Locker Island	Oct-Mar	✓	✓

4 Description of the Activity

4.1 Timing of the Activity

Production commenced from the Facility in February 2010, current production rates (January 2018) from the Pyrenees Facility are 25,000 bbl/ day. Production is expected to continue to decline with end of field life predicted around 2035.

4.2 Pyrenees Facility

Production fluids from the Pyrenees fields are produced to the Pyrenees Venture, a double hulled stand-alone Facility (Figure 4-1). Crude oil, formation water and gas are produced with aid of gas lift to the Pyrenees Facility where it is processed to stabilise the crude oil and store before being offloaded to offtake tankers direct for export. Processed gas is used as fuel with excess being reinjected into the Macedon Field via the Macedon-6 bi-directional well. Processed gas is also used as the source of gas for gas lift, and minor amounts may be flared for process safety. The majority of produced formation water is reinjected into the disposal wells via water injection pumps; overboard disposal also occurs subject to strict water quality specifications and volume limits.

The Pyrenees Facility is a conventional double hulled converted Suezmax trading tanker with an overall length of 274 m and a cargo storage capacity of approximately 881,000 barrels of oil. The basis of design of the process is 96,000 bbl/day of oil, 150,000 bbl/day of water and 60 MMscf/day gas through the compression facilities. The Pyrenees Facility is equipped with a disconnectable turret mooring (DTM) and its own propulsion system to allow evasion of tropical cyclones. The topside processing facilities consist of oil/water/gas separation systems, water injection, and gas compression equipment.



Figure 4-1: Pyrenees Facility

Crude oil is exported directly from the Pyrenees Facility onto trading tankers. There were 53 offtakes from the Pyrenees Facility in the first year of production. As of January 2018, the cargo offtakes had reduced to

approximately 17 offtakes per year. The offtake frequency will steadily decline as the production rate decreases towards the end of field life.

4.3 Production System Overview

The Pyrenees Facility processing system receives well fluids (crude oil, reservoir or PFW and associated natural gas) from the production wells, processes it in three stages to separate the crude oil, stores it in the Pyrenees Facility cargo tanks then offloads cargo to trading tankers direct for export. Produced gas surplus to fuel (and lift gas) requirements is reinjected into the Macedon reservoir. During normal operations the majority of Produced Formation Water is reinjected, a small dilute stream will also be continuously discharged overboard. The Pyrenees topsides facilities include the following process functions:

- Production and test separation;
- Oil stabilisation and dewatering;
- Produced water treatment system (PWTS);
- Water injection facilities;
- Gas de-hydration, compression and reinjection;
- Fuel gas generation and treatment; and
- Flaring/blowdown facilities.

4.4 Support Services, Offshore Support Vessels and Aircraft

The Pyrenees Facility operations are supported by:

- A shared Offshore Support Vessel (OSV) for marine operations / logistical support operates between Dampier, the facilities and Exmouth;
- Onshore operations and administration support from Perth;
- Helicopter support from Exmouth;
- Helicopters crew changes occur in Learmonth and are used to transfer personnel to and from the Pyrenees Facility; and
- Vessels on-hired for inspection, maintenance and repair (IMR) activities as required.

4.5 Inspections, Maintenance and Repair Activities

IMR activities will generally comprise a single campaign every year, with the precise frequency and timing dependent on monitoring and previous results. Typically, total vessel days on-site are expected to be no more than one to two weeks per year, depending on work task requirements.

Specific IMR activities that may occur over the duration of this EP include:

Inspections

- Visual inspections of subsea components, looking for damage, degradation, debris etc. - may involve ROVs, AUVs, or divers deployed from a vessel;
- Cathodic Potential (CP) readings, to confirm corrosion protection is working - involves ROVs taking CP field measurements;
- Multi-beam echo sounder survey – involves high frequency, vessel-mounted or towed multi-beamed echo sounder along the pipeline and/or umbilical;
- Sidescan sonar surveys – involves the use of high frequency, directional sonar towed along the pipeline route by a vessel; and

- ROV / pigging operations; internal inspection of pipeline – pigs launched via subsea infrastructure in Commonwealth Waters will pass through the production pipeline to the onshore gas pipeline. Received fluids or wastes will be captured onshore.

Maintenance

- Cathodic Protection (CP) maintenance - replacement/new CP sacrificial anodes may be installed on or adjacent (within the operational area) to infrastructure using a vessel and ROV or divers;
- Burial / deburial of pipeline and / or umbilicals;
- Removal/relocation of foreign objects – such as boulders, debris;
- Valve / choke replacement (e.g. on subsea trees);
- Control lead replacement installation (e.g. HFL / EFL / FOFL);
- Pipe spool replacement;
- Stabilisation/ span correction – may involve activities such as installation of grout bags or concrete mattresses, or burial/de-burial via jetting or suction techniques, using a vessel and ROV; and
- Marine growth/ scale removal from subsea wellheads/ trees using ROVs to water blast and/ or acid chemical wash (if required to facilitate removal).

Repair

- Removal / replacement of manifold (control and production);
- Removal/ replacement of anode assembly skid(s);
- Removal / replacement of umbilical – typically 'like for like' replacement undertaken using ROV from a vessel; and
- Pipeline / umbilical repairs - could involve the installation of structural clamps or high-pressure repair clamps. These activities are generally undertaken from a single vessel using ROV spread and possibly requiring lifting equipment. Divers and/or support from an additional vessel may be required.

The scheduling of periodic visits for maintenance activities is expected to occur coincident with inspection works wherever practicable and to involve one to two weeks annually, although this is dependent on weather conditions, operational specifics and/or downtime.

4.6 Vessels

Vessels used to support IMR activities may range in length from 35 m to 120 m, and include multi-purpose support vessels and dive support vessels. Typically, only a single vessel would be required to implement IMR activities. Infrequently, there may be a requirement (e.g. a minor repair) for more than one vessel.

Vessels operate 24-hours a day. It is anticipated that vessel time for routine inspection activities along the pipeline will involve no more than one to two weeks per year, depending upon operational requirements. Maintenance and repair activities may result in additional vessel time, depending on the scale and complexity of the work scope, but such activities are expected to be infrequent.

Vessels will generally use dynamic positioning (DP) to maintain position, although anchoring may be required depending on the activity, water depth, and vessel specifications. All vessels will use marine diesel oil or marine gas oil and will be provisioned in Port. There will be no refuelling on site. It is expected that all vessels sourced for IMR activities will have been previously operating on the North-West Shelf (NWS).

5 Environmental Impacts and Risks

5.1 Evaluation of Impacts and Risks

A risk analysis was completed to identify the potential environmental impacts and risks associated with the activity and the control measures required to manage these impacts and risks to as low as reasonably practicable (ALARP) and an acceptable level. This risk assessment and evaluation process was consistent with the procedures outlined in the Australian and New Zealand Standards AS/NZS ISO 31000:2018 (Risk Management) and BHP's Risk Management Framework.

An Environmental Hazard Identification (ENVID) process was undertaken to identify the impacts and risks of each environmental aspect and source of hazard for the activity. The objective of the assessment was to develop an understanding of the impacts and risks, demonstrate its reduction to ALARP and demonstrate its acceptability to BHP. It provided definition on the decisions made during the ENVID process, taking into account the detailed impact assessment for the sources of hazard, the controls chosen to reduce or prevent the impact or risk and why some controls were not chosen. This also involved consideration of the sources of risk, their positive and negative consequences and the likelihood that those consequences may occur.

The ENVID process considered both planned (routine and non-routine) and unplanned (accidents/incidents) impacts with variation on how each of these impacts or risks was assessed through to ALARP and acceptability.

The ENVID assessment was conducted as a workshop with a range of personnel from different disciplines including Operations, HSE, Government Relations, Field Operations Manager, and Surface and Subsea Engineering. Decisions made within the ENVID included:

- Confirmation of the sources of hazard identified;
- Identification of all potential controls and their acceptance through an ALARP process;
- Allocation of likelihood rating for an unplanned source of hazard;
- Severity rating for all sources of hazard; and
- Final acceptability of the impact or risk to BHP using the acceptability criteria.

The outcome of the assessment process illustrated in Figure 5-1 is summarised in Section 5.2.

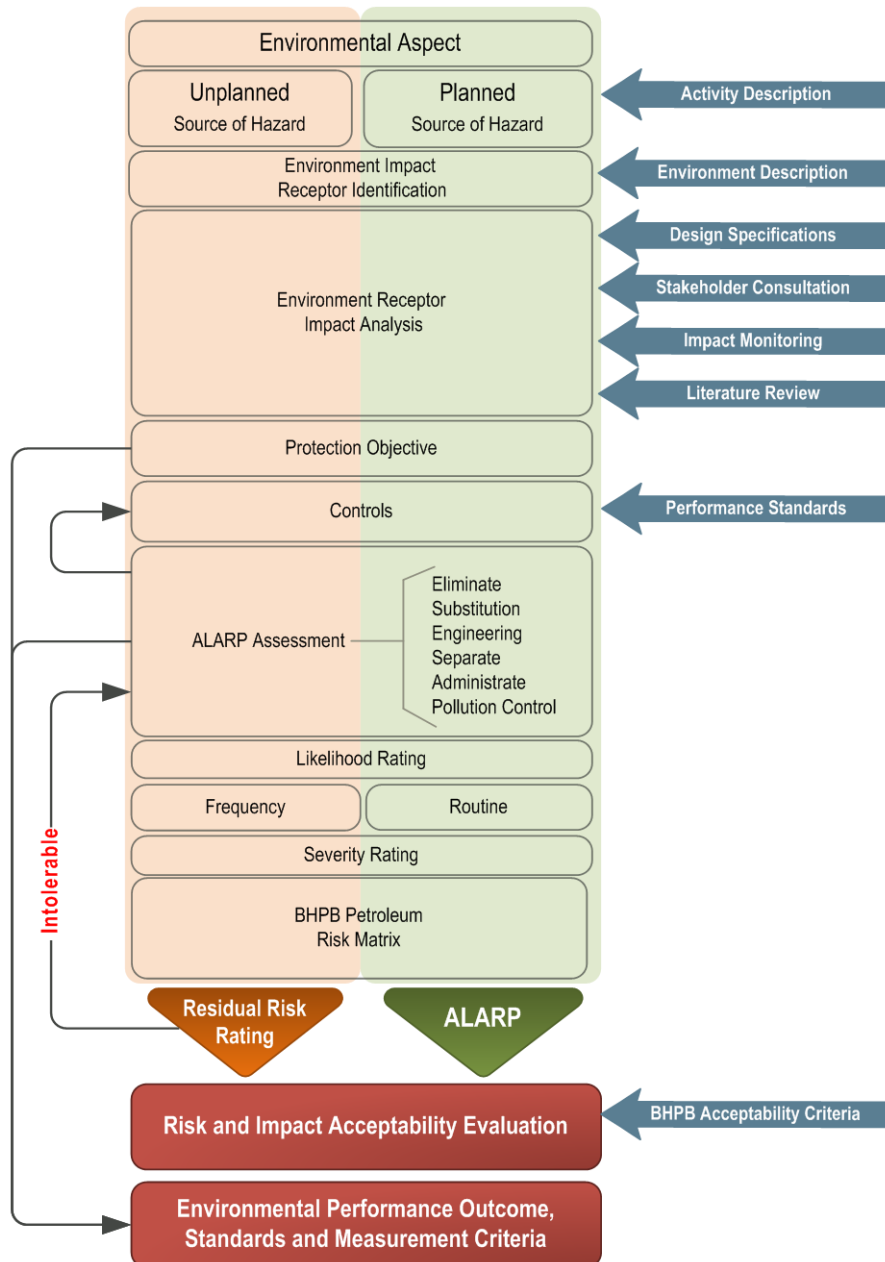


Figure 5-1: Environment Plan Integrated Impact and Risk Assessment

5.1.1 Environmental Impact Assessment

The environmental impacts were based on the environmental receptors described in Section 3 with the impact descriptions developed in an initial screening process that identified the specific receptor that may be impacted. Further quantitative or qualitative definition of the impact was then completed to ensure an understanding of the impact (planned or unplanned) to confirm that the severity of the risk and impact was correctly assigned during the evaluation process.

5.1.2 Demonstration of ALARP

Regulation 10A(b) of the OPGGS (Environment) Regulations 2009 requires demonstration that the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable (ALARP).

Determining whether risks have been reduced to ALARP requires an understanding of the nature and cause of the risk to be avoided and the sacrifice (in terms of safety, time, effort and cost) involved in avoiding that risk. The hierarchy of decision tools (from lowest risk to highest risk) has been adapted from the UKOOA *Framework for Risk Related Decision Support*² is:

- Codes and Standards;
- Good Oilfield Practice;
- Professional Judgement;
- Risk-based Analysis;
- BHP Values; and
- Societal Values.

A summary of the application of these decision tools and protocols in relation to the different categories of risk is presented in Table 5-1.

Table 5-1: Summary of Risk Ratings, Decision-Making Tools and Decision-Making Protocols

Risk Rating	Decision-Making Tool	Decision-Making Protocol
Tolerable	Comparison to codes and standards, good oilfield practice and professional judgement are used to determine risk acceptability.	If the environmental impact (for planned activities) was found to be “Low” or the environmental risk (for unplanned events) was found to fall within the “Tolerable” zone and the control measures are consistent with applicable standards and ‘good oilfield practice’ then no further action is required to reduce the impact or risk further. However, if a control measure that would further reduce the impact or risk is readily available, and the cost of implementation is not disproportionate to the benefit gained, then it is considered ‘reasonably practicable’ and should be implemented.
ALARP Zone	In addition to comparisons with codes and standards, good oilfield practice and professional judgement, risk-based analyses are used to determine risk acceptability.	If the environmental impact (for planned activities) was found to be “Minor” or the environmental risk (for unplanned events) of the hazard has been found to fall within the “ALARP Zone” then an iterative process to identify alternative/additional control mechanisms will be conducted to reduce the risk to the “Tolerable” zone. However, if the risk associated with a hazard cannot be reasonably reduced to the “Tolerable” zone without grossly disproportionate sacrifice (e.g. cost, time, resources and safety); then the mitigated environmental risk is considered to be ALARP and Tolerable.
Intolerable	All of the above decision making tools apply combined with consideration of BHP corporate values and societal values.	If the environmental impact (for planned activities) was found to be “Serious” or more severe or environmental risk of the hazard has been found to fall within the “Intolerable” zone then the source of hazard will need additional barriers and is not acceptable to BHP in the current condition. Work to reduce the level of risk should be assessed against the precautionary principle with the burden of proof requiring demonstration that the risk has been reduced to the ALARP Zone before the activity can commence.

The ALARP assessment process primarily considers good engineering plus industry practice and legal requirements as key factors affecting the acceptability of a risk. Other factors such as physical constraints,

² UKOOA. (2014). *Guidance on Risk Related Decision Making*. Issue 2. Oil & Gas, UK. London. 25 pp.

stakeholder perceptions, asset protection and the interaction between environmental and safety risk is also considered as part of the overall decision-making process.

The risk assessment approach described above implies a level of proportionality wherein the principles of decision-making applied to each particular hazard are proportionate to acceptability of environmental risk of that hazard. The decision-making principles for each level risk are based on the precautionary principle (as defined in the EPBC Act) and provide assurance that the environmental impacts and risks are reduced to ALARP and of an acceptable level.

All environmental risks and associated sources of hazard in this EP have been assessed through a tailored ALARP assessment that presents all identified controls in a hierarchical framework. All of the risks associated with Pyrenees Facility Operations and IMR activities correspond to Type A Decisions according to the UKOOA Guidance (UKOOA, 2014)³, which indicates they do not represent anything new or unusual, the risks are well understood, the adopted control measures represent established good oilfield practice and there are no conflicts with BHP corporate values or major stakeholder implications.

The general preference is to accept controls that are ranked in the Tier 1 categories of Eliminate, Substitute, Engineering and Separate as these controls provide a preventive means of reducing the likelihood of the hazard occurring. Tier 2 categories reduce the potential consequence of the impact or risk. This ranking of controls was considered during the determination of ALARP and the impact and risk acceptance process.

The ALARP process undertaken considers all possible controls for both planned and unplanned impacts and risks, analysis of risk reduction (prevent or mitigate) proportional to the benefit gained and their final acceptance as a control or rejection and reasoning as to why.

The hierarchy of controls applied in the EP are defined below and are in order of preference:

- Tier 1:
 - Eliminate – Remove the source preventing the impact, i.e. eliminate the hazard;
 - Substitution – Replace the source preventing the impact;
 - Engineering – Introduce engineering controls to prevent or control the source having an impact;
 - Separate – Separate the source from the receptor preventing impact;
- Tier 2:
 - Administrative – Procedures, competency and training implemented to minimise the source causing an impact;
 - Pollution Control – Implement a pollution control system to reduce the impact;
 - Contingency Planning – Mitigate control reducing the impact; and
 - Monitoring – Program or system used to monitor the impact over time.

The controls associated with each of the risks for planned and unplanned events of the activity, along with those for the response strategies proposed in the unlikely event of an oil spill, were assessed taking into consideration the potential environmental benefit gained if the control was implemented compared with the practicability of its implementation. If the control had high effectiveness (Availability, Functionality, Reliability, Survivability, Independence/Compatibility) and were practicable to implement, i.e. there was no disproportionate cost/time/safety/effort sacrifice, then the control was adopted. Similarly, if the controls were not practicable, i.e. the cost, time and effort to implement the control was grossly disproportionate to the benefit gained, then the control was rejected.

5.1.3 Demonstration of Acceptability

Regulation 10A(c) of the OPGGS (Environment) Regulations 2009 requires demonstration that the environmental impacts and risks of the activity will be of an acceptable level.

³ Op cit 2.

The process used to determine acceptability is as follows:

- Tolerable residual risks are 'Acceptable', if they meet legislative requirements, codes and standards, good industry practice and professional judgement; and
- ALARP residual risks are 'Acceptable' if ALARP can be demonstrated using risk based analysis in addition to legislative requirements, codes and standards, good industry practice and professional judgement.

In addition, BHP evaluates the following criteria for all Tolerable and ALARP residual risks:

- Principles of Ecological Sustainable Development (ESD) as defined under the EPBC Act;
- Internal context - the proposed controls and residual risk level to be consistent with BHP Policy and HSE Management System; and
- External context – consideration of the environmental best practice and stakeholder views.

Intolerable residual risks are not acceptable. The source of hazard requires additional barriers and is not acceptable to BHP in the current condition.

5.2 Risk and Impact Assessment

The environmental aspects and sources of risk identified during an ENVID assessment were divided into planned (i.e. routine operations) and unplanned (i.e. incidents) activities. A total of 8 planned and 10 unplanned activities were identified that had an associated potential source of risk that may have an environmental impact requiring risk assessment and evaluation.

Table 5-2: Summary of the key environmental hazards/ risks and control measures for Planned Activities

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
Physical presence	Presence of Pyrenees Facility, turret mooring system, subsea infrastructure, offtake tanker and OSV operations, and interactions with other users of the sea while undertaking vessel activities in the Operations Area.	Commercial fisheries and shipping activities restricted from entering a safety zone around the well field. Temporary loss of small part of fishing area or deviation from normal course to avoid area/vessels.	Navigation, bridge and communication equipment compliant with appropriate marine navigation and vessel safety and requirements. Vessel bridge-watch crew on duty 24 hours and qualified in accordance with International Conventions. Gazetted 500 m safety exclusion zone and 5 nm radius Cautionary Area on nautical charts. Permanent infrastructure is marked on marine charts by the Australian Hydrographic Office.	Ensure other marine users are aware of the presence of the vessels and are provided with information on timings of the activity, so that the maritime industry is aware of the petroleum activities.	Tolerable
Seabed disturbance	Seabed disturbance from subsea infrastructure and vessel activities in the Operations Area.	Small area of direct damage to seabed and associated communities. Temporary increase in local turbidity. Impact mitigated by ubiquitous distribution of similar habitat in the region.	Vessels will not anchor within the 500 m exclusion zone around the Pyrenees Facility during normal operations unless in an emergency (and only if safe to do so).	Vessels will use dynamic positioning systems to maintain position, rather than anchoring.	Tolerable
	Dropped objects from support/logistical operations – vessel to vessel lifting (eg. containers and materials).	No sensitive seabed features have been identified in any of the surveys conducted within the Operations Area or in similar water depths within the permit area.	Recovery of dropped objects where practical to do so. Work (lifting/ operating) procedures.	Avoids long term changes to seabed. Minimise risks of dropped objects during lifting activities.	Tolerable Tolerable
	Maintenance, repairs to or installation of (minor) subsea infrastructure.		Seafloor inspections (ROV, geophysical or similar) conducted to identify areas with least amount of benthic habitat and most suitable for disturbance when new disturbance is planned.	Avoids long term changes to seabed.	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
Light emissions	Artificial light from Pyrenees Facility, vessels and ROVs	The environmental risk is the light spill/ glow causing alterations to normal marine fauna behaviour whereby they are attracted to and/ or disorientated by the light from the Pyrenees Facility, vessels and flaring. The species with greatest sensitivity to light are turtles.	Compliance with EPBC Act 1999 – Referral Decision December 2009 (EPBC 2008/4065) Conditions in relation lighting on Pyrenees Facility and vessels: External lighting on Pyrenees Facility and vessels will be minimised to that required for safety of navigation and safety of deck operations.	Ensures lighting on Pyrenees Facility and vessels is ALARP and minimised to that required for safety of navigation and safety of deck operations.	Tolerable
	Flaring		Annual flaring plan will be developed and implemented.	Ensures lighting on Pyrenees Facility is ALARP and minimised to that required for normal operations.	Tolerable
			Surplus gas will be re-injected and therefore reducing the flare intensity during routine production operations.		Tolerable
Noise emissions	Noise emissions from Pyrenees Facility, offtake tankers and OSV operations (engines, DP thrusters) and associated IMR activities (e.g. ROVs, AUVs, side scan sonar, multibeam echo sounder) in the Operations Area.	Noise radiated underwater can cause marine fauna to take avoidance measures thereby causing disruption to normal behaviours. Noise interference from anthropogenic noise sources including industrial noise and vessels is identified as a potential threat to marine turtles in the Recovery Plan and the Approved Conservation Advice for humpback whales. No recognised breeding or resting area for cetaceans, turtles or shark species are known to occur in the area potentially impacted by noise emissions, although a Operations Area intercepts draft critical habitat for marine turtles, whale shark foraging BIA and humpback whale migration BIA so individuals are expected to pass through the area.	Vessel Masters to operate vessels in accordance with the EPBC Regulations 2000 Part 8 Division 8.1 (Regulation 8.05) Interacting with Cetaceans (modified to include turtles and whale sharks) to avoid interactions with cetaceans, whale sharks and turtles. Sightings of cetaceans, whale sharks and turtles will be reported and reported to the Vessel Master. All crew will complete Environmental Awareness induction, which includes sections on cetacean/whale sharks and vessel interactions. Stakeholder complaint register and annual review process.	Procedure for interacting with marine fauna, reduces risk of physical and behavioural impacts to marine fauna from vessels and associated activities.	Tolerable
			Noise emitting machinery/ equipment will be appropriately maintained to prevent excessive noise emissions.		

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
	Helicopters operations for crew changes		Helicopters will comply with Part 8 (Aircraft) of the EPBC Regulations for interacting with cetaceans, except for taking off and landing.	Procedure for interacting with marine fauna, reduces risk of physical and behavioural impacts to marine fauna from vessels and associated activities.	Tolerable
Atmospheric emissions	Emissions from Pyrenees Facility and vessels activities. Emissions from engines, generators, compressors, flaring and venting and mobile/fixed plant and equipment.	Atmospheric emissions generated during Operations and vessel activities will result in a localised, temporary reduction in air quality in the environment immediately surrounding the discharge point and contribute to the global greenhouse effect. Gaseous emissions under normal circumstances quickly dissipate into the surrounding atmosphere. Operation and vessel activities are located in an area where air emissions will disperse and rapidly assimilate with the surrounding environment.	Vessels will hold a current International Air Pollution Prevention Certificate, indicating that they meet the requirements of MARPOL Annex VI. Marine-grade, low sulphur diesel will be used (not heavy fuel oil).	Reduces probability of potential impacts to air quality due to ODS emissions, high NOx, SOx emissions.	Tolerable
			Surplus gas will be re-injected and therefore reducing the flare intensity during routine production operations.		Tolerable
			Ozone-depleting substances (ODS) will be managed in accordance with international standards.	Reduces probability of potential impacts to air quality due to ODS emissions.	Tolerable
Marine discharges – Production Waste	Produced Formation Water (PFW) and slops water discharged overboard	Discharge overboard causing changes in water quality (hydrocarbon/ chemical/ temperature) leading to environmental impacts to biota within the Operations Area.	Under normal operating conditions, 90% of PFW will be re-injected. PFW and slops water discharge to the sea from the Compact Flootation Unit (CFU) and Dissolved Gas Flootation unit (DGF) is not greater than an average of 30 mg/L over any rolling period of 24 hours. Automated capability to divert PFW to discharge system inboard if the 30 mg/L oil in water (OIW) concentration is reached. PFW and slops water discharge and reinjection volumes monitored at all times. Water for injection, overboard disposal and reinjection continuously monitored with	Reduces potential impacts of planned discharge of oily water to the environment. Ensures compliance with MARPOL requirements regarding oily water. Ensures CFU, DGF and OIW meters are tested and maintained in accordance with procedures, maintenance system requirements and manufacturer specifications to ensure efficiency and accuracy.	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
			MARPOL certified OIW inline analysers after the DGF and CFU. CFU, DGF and OIW analysers undergo regular maintenance and calibration in accordance with manufacturer's specifications.		
			Where Offshore Chemical Notification Scheme (OCNS) rating of D or E or a CHARM rating of Silver or Gold rated chemicals intended for liquid discharge are used, no further control required. If other non-rated chemicals intended for liquid discharge are used, chemical selection procedures described in Hazardous Materials Acquisition Environmental Supplement be followed.	Chemical selection aids in the process of chemical management that reduces the impact of discharges to sea. Only environmentally acceptable chemicals are used.	Tolerable
			Monitoring of chemical dosing rates.		Tolerable
			PFW discharge biocide concentration of less than or equal to concentration at 3 days (ecotox testing) after biocide dose. PFW will be diverted inboard if biocide levels exceed acceptable baseline, to ensure biocide is depleted prior to discharge to sea. Slops water biocide concentration will not exceed the calculated baseline biocide concentration prior to discharge overboard.	Monitoring of residual Biocide to ensure effects of PFW and slops discharge do not breach the 99% SPL spatial extent approved mixing zone.	Tolerable
			Bi-annual end of pipe sampling analysis of PFW and slopw water. Annual surface water quality-monitoring program.	Monitoring the quality of the PFW and slops water discharge and to assess potential changes in composition and to test	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
			<p>Biennial toxicity sampling of PFW discharge.</p> <p>Sediment quality sampling every 5 years with sampling to occur within one year after commissioning of the CFU.</p> <p>Sampling to be undertaken by trained personnel using approved procedures, sample replication to ensure representativeness, analysis by a NATA accredited laboratory and interpretation by Environmental Specialists.</p>	compliance with 99% SPL spatial extent approved mixing zone.	
			Non-performance and/or change to routine operations will trigger the Adaptive Management Framework to rectify and/or demonstrate acceptable performance of PFW discharges.	Adaptive Management Framework outlines the process if performance criteria are not met for PFW and slops water discharge overboard.	Tolerable
			Chemist and Production Operations Technicians will be trained in operating and calibration of the OIW analysers.	Training will ensure all personnel operating and calibrating the OIW analysers understand the task to the Manufacturers specification and are consistent in their practise.	Tolerable
Marine discharges - Liquid Wastes and Subsea Fluid	Routine Discharges from Pyrenees Facility and vessels including, sewage, grey water, RO brine water, food waste.	<p>Localised and temporary change in water quality surrounding discharge point – increase in nutrients, increase in salinity.</p> <p>Minor increase in water temperature.</p> <p>Potential for acute toxicity effects to marine biota.</p> <p>Potential water quality impacts leading to bioaccumulation and toxicity to biota immediately adjacent to vessels.</p>	<p>Current International Sewage Prevention Pollution certificate.</p> <p>Routine liquid waste discharges will comply with Australian standards and international maritime conventions.</p> <p>Putrescible and other food waste discharge from the vessels must be ground or comminuted to <25 mm and discharged only when >12 nm from the territorial baseline.</p> <p>Environmental awareness induction provided to Pyrenees Facility and vessel</p>	<p>Sewage treatment system reduces potential impacts of inappropriate discharge of sewage.</p> <p>Ensures Pyrenees facility and vessels compliance with MARPOL requirements (vessel discharges).</p>	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
			crew prior to activities to advise waste management requirements.		
			Where OCNS rating of D or E or a CHARM rating of Silver or Gold rated chemicals are used, no further control required. If other non-rated chemicals are required, chemical selection procedures described in BHP Hazardous Materials Acquisition Environmental Supplement Procedure will be followed.	Chemical selection aids in the process of chemical management that reduces the impact of discharges to sea. Only environmentally acceptable chemicals are used.	Tolerable
Deck Drainage.	Detergent, oil and grease discharge to marine environment during rainfall or wash-down activities.	Current International Oil Pollution Prevention (IOPP) certificate for oily water filtering equipment onboard vessel. Liquid from drains may only be discharged if the oil in water content does not exceed 15 ppm after treatment in a MARPOL-compliant oily water filter system. Fuels, oils and hazardous chemicals must be stored with secondary containment. Open and closed drainage systems will be maintained in accordance with maintenance system requirements. Scupper plugs or equivalent deck drainage control measures available where chemicals and hydrocarbons are stored and frequently handled.	Drainage from areas of a high risk of hydrocarbon or chemical contamination will be managed via a closed drainage system that drains to a slops tank with an automated Oil in Water sensor to ensure that it has an oil content of less than 15 ppm prior to overboard discharge, otherwise it will be sent to shore for disposal. Reduces potential impacts of planned discharge of oily water to the environment. Ensures compliance with MARPOL requirements regarding oily water.	Tolerable	
Cooling water.	Potential water quality impacts leading to bioaccumulation and toxicity to biota immediately adjacent to vessels.	Cooling water flow rates and temperatures monitored at all times to ensure discharge specifications are met.	Ensures Pyrenees facility and vessels compliance with MARPOL requirements (vessel discharges).	Tolerable	

¹ contain proprietary and/or confidential information.

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
	Planned subsea discharge of control fluids during normal operation of production well and IMR activities.	Release of small volumes of control fluids into the marine environment. Any reduction in water quality is expected to be short-term (hours) and localised (to within a few metres of the discharge point) given the small volumes, and the dispersive nature of the offshore, and water depth of Operations Area.	Where OCNS rating of D or E or a CHARM rating of Silver or Gold rated chemicals are used, no further control required. If other non-rated chemicals are required, chemical selection procedures described in BHP Hazardous Materials Acquisition Environmental Supplement Procedure will be followed.	Chemical selection aids in the process of chemical management that reduces the impact of discharges to sea. Only environmentally acceptable chemicals are used.	Tolerable
Waste management	Waste (hazardous and non-hazardous) generated by Operations and vessel activities.	Improper management of wastes may result in pollution and contamination of the environment. There is also the potential for secondary impacts (ingestion and/ entanglement) on marine fauna that may interact with wastes such as packaging and binding materials, should these enter the ocean.	Waste management plan implemented, including preventative and mitigating controls. Waste stored in clearly marked and covered waste containers prior to transfer to onshore licence waste disposal facility for recycling, disposal or treatment.	Waste management plan reduces probability of garbage being discharged to sea, reducing potential impacts to marine fauna. Stipulates putrescible waste disposal conditions and limitations. Ensure compliance with MARPOL requirements.	Tolerable
	Loss of non-hazardous solid waste (rubbish) overboard.	Accidental loss overboard of single items or units of waste may impact the environment through a reduction in water quality, or present a hazard to marine fauna, depending on the waste involved.	Waste bins have covers to reduce the potential for rubbish overboard. Environmental awareness induction to include BHP requirements for waste management. Any loss or discharge to sea of harmful materials is to be reported to the AMSA Rescue Coordination Centre (RCC).	Waste management practices, crew education and reporting reduce the potential loss of non-hazardous waste (rubbish) overboard.	Tolerable

Table 5-3: Summary of the key environmental hazards/ risks and control measures for Unplanned Activities

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
Interference to Marine Fauna	Presence of vessel, ROV, AUV or other inspection/ intervention activities.	Interference with marine fauna movements. Potential for migratory species to be diverted from following normal migratory route.	Environmental awareness induction provided to all marine crew to advise marine fauna interaction requirements.	Procedure for interacting with marine fauna, reduces risk of physical and behavioural impacts to marine fauna from vessels and associated activities.	Tolerable
	Collision of vessels with marine fauna.	Potential lethal impact or harm to protected species from collision. The risk assessment has identified speed of movement and observation effort as the two key variables affecting probability of collision that are under control of BHP.	<p>Vessel Masters to operate vessels in accordance with the EPBC Regulations 2000 Part 8 Division 8.1 (Regulation 8.05) to avoid interactions with cetaceans and whale sharks.</p> <ul style="list-style-type: none"> Vessels will not knowingly travel at speeds >6 knots within 300 m of a whale/ whale shark, 150 m for a dolphin (50 m for a turtle) (caution zone). Vessels will not knowingly approach closer than 100 m for a whale/ whale shark, or 50 m for a dolphin, and 25 m for a turtle. If the cetacean/whale shark shows signs of being disturbed, the vessel will immediately withdraw from the caution zone at a constant speed of less than 6 knots. Sightings of cetaceans, whale sharks and turtles will be reported and reported to the Vessel Master. Vessels must move at a constant slow speed and with minimal noise away from a cetacean that is approaching so that the vessel remains at least 300 m from the cetacean. <p>Sightings of cetaceans and whale sharks to be recorded by crew and reported to DoEE annually. Vessels Masters to apply additional vessel management considerations (increased no approach distances, avoiding resting / feeding whales or whales with calves) for cetaceans as described in the</p>	<p>Reduces injury or mortality to marine fauna as a result of vessel collision. Speed is managed by application of Part 8 of the EPBC Regulations 2000. Effort of observation is managed by induction of bridge crew.</p>	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
			Australian National Guidelines for Whale and Dolphin Watching (2017) during humpback migration period. Injury or death of any marine fauna species listed as threatened or migratory under the EPBC Act reported to NOPSEMA.		
Marine Spills of Stored Chemicals or Refined Oil	Accidental leaks from storage and equipment, including ROVs	Localised decrease in water quality causing toxicity/ oiling of marine receptors.	Current IOPP certificate for oily water filtering equipment. All oily water exceeding 15 ppm must be contained and disposed of at a licensed onshore reception facility or to a carrier licensed to receive waste. Liquids from drains may only be discharged if the oil-in-water content does not exceed 15 ppm after treatment in a MARPOL-compliant oily water filter system. Continuous bunding or drip trays are used around machinery or equipment with the potential to leak chemicals/ fuel. Any loss or discharge to sea of harmful materials to be report to the AMSA RCC. Hazardous waste materials (including empty packaging previously containing hazardous substances and contaminated material from spill response activities) are contained onboard for onshore disposal at a licensed reception facility or to a carrier licensed to receive waste Fuels, oils and hazardous chemicals must be stored with secondary containment at least 110% of largest single waste container. Critical hoses outside bunded areas are identified and regularly inspected/ maintained/replaced as part of the Preventative Maintenance System.	Hazardous chemical management procedures reduces the risk of spills and leaks (discharges) to sea by controlling the storage, handling and clean-up.	Tolerable
			Vessels will have current MARPOL-compliant Shipboard Oil Pollution Emergency Plan (SOPEP) and Shipboard Marine Pollution Emergency Plan (SMPEP -	Implements response plan for the effective management of an accidental hydrocarbon spill (discharge to sea) in order to	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
			<p>for noxious liquid) – the latter may be combined with a SOPEP.</p> <p>All shipboard hazardous liquid, chemical and hydrocarbon spills and leaks will be managed in accordance with the SOPEP/ SMPEP.</p> <p>Scupper plugs or equivalent deck drainage control measures available where hazardous chemicals and hydrocarbons are stored and frequently handled.</p>	<p>reduce impacts to the marine environment.</p>	
Diesel Spill from Bunkering	Human error/equipment failure	Visual pollution (i.e. slicks and sheens) potential acute toxic response over localised area.	<p>Diesel bunker transfer checklist will be completed prior to each bunkering activity, detailing load, communications, and alarm criteria.</p> <p>Bunkering only take place during daylight hours under specific sea state conditions.</p> <p>During whale migration season, visual whale watching procedures will be carried out for one hour prior to bunker tankers moving away from the FPSO to ensure interactions between vessels and whales are to ALARP.</p>	<p>Reduces risk of accidental release of environmentally hazardous chemicals or refined oil to the marine environment.</p> <p>Implements response plan for the effective management of an accidental hydrocarbon spill (discharge to sea) in order to reduce impacts to the marine environment.</p>	Tolerable
	Leak from piping, flanges, valves, hose connections		<p>Direct line of sight between vessels maintained during transfer.</p> <p>Diesel bunkering transfer hose will remain buoyant at all times during the bunkering activity.</p> <p>Dry break couplings will be used on hoses used for bulk transfer of diesel.</p> <p>A weak link breakaway coupling (for example a KLAWE coupling) will be in place within the transfer hose string.</p> <p>In line with MARPOL Annex I, all vessels involved in the vessel-based activities over 400 gross tonnage will have a current SOPEP in place.</p> <p>Spill clean-up equipment is available on the vessels.</p> <p>Scupper plugs or equivalent deck drainage control measures available where hazardous chemicals and hydrocarbons are stored and frequently handled.</p>	<p>Ensures compliance with MARPOL requirements.</p>	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
			OPEP will be developed and maintained for the duration of the activities. Oil spill response executed in accordance with the OPEP.		
Diesel Spill from Bulk Storage due to Vessel Collision	Diesel spill from ruptured fuel tank due to vessel collision.	Contamination / pollution of water column potentially causing localised acute toxic response.	<p>Navigation, bridge and communication equipment will be compliant with appropriate navigation and vessel safety requirements.</p> <p>Bridge-watch on all vessels to be maintained 24-hours per day</p> <p>Maintain a 500 m exclusion zone around subsea infrastructure and 5 nm Cautionary Area over Field.</p> <p>Activities permitted within the safety zone will be defined and SIMOPS in safety zone will be controlled.</p> <p>Permanent infrastructure is marked on marine charts by the Australian Hydrographic Office.</p> <p>Notification of location, duration of activities, etc. to AMSA RCC, which triggers RCC to issue an AusCoast Warning, and to the Australian Hydrographic Service (AHS) who will issue a 'Notice to Mariners'.</p> <p>Implement and maintain vessel MARPOL-compliant SOPEP.</p> <p>Develop and maintain OPEP. Implement Response strategies as per OPEP (refer to r: <i>Section 7 - Oil Pollution Emergency Plan Summary</i>).</p>	<p>Reduces risk of accidental release of environmentally hazardous chemicals or refined oil to the marine environment.</p> <p>Implements response plan for the effective management of an accidental hydrocarbon spill (discharge to sea) in order to reduce impacts to the marine environment.</p> <p>Ensures compliance with MARPOL requirements.</p>	Tolerable
Crude Oil Spill from failure to connect disconnect from Turret	Accidental leaks from storage and equipment, including ROVs.	Contamination / pollution of water column potentially causing localised acute toxic response.	<p>Turret connection and disconnection will be conducted in accordance with the procedure to prevent turret loss of containment during connection/disconnection.</p> <p>Monitoring of the status of the mooring lines to confirm that all lines are present/intact.</p>	Reduces risk of accidental release of environmentally hazardous chemicals or refined oil to the marine environment.	Tolerable
Crude Oil Spill from Subsea Infrastructure	Accidental releases/ leaks of crude oil from subsea infrastructure	Acute/ chronic toxic effect on marine organisms from hydrocarbons. Temporary and localised reduction in water quality	Create a minimum distance of 500-m Petroleum Safety Zone from the facility and associated activities or as required by regulations.	Reduces risk of accidental release of environmentally hazardous chemicals or refined oil to the marine environment.	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
		with potential for acute toxic response over localised area.	<p>Activities permitted within the safety zone will be defined and SIMOPS in safety zone will be controlled by the Safety Zone Entry Checklist.</p> <p>Permanent infrastructure is marked on marine charts by the Australian Hydrographic Office.</p> <p>Valve barriers will be used on Xmas tree gates as primary and secondary barrier elements. Flow base manual ROV operated valves are closed as additional barriers. Environmental plugs will be installed to flowlines disconnected from flowbase connections, which if successfully pressure tested will provide a barrier to loss of hydrocarbons.</p> <p>Subsea infrastructure surveys are undertaken by ROV every 5 years, the primary objective of which will be to: OPEP developed and maintained for the activity. Oil spill response executed in accordance with the OPEP.</p> <p>Pressure containment systems will prevent loss of containment of any hydrocarbons or substances.</p> <p>Emergency shutdown functions will be implemented to safeguard the process from escalation due to an upset condition beyond safe limits, including isolation of sections of the production process and related equipment, shutdown of related utility systems, de-energising hazardous electrical power, initiation of alarms and minimise loss of hydrocarbon containment.</p>		
Crude Oil Spill – Loss of Well Containment	Release of stabilised crude oil from well.	Acute/ chronic toxic effect on marine organisms from hydrocarbons. Temporary and localised reduction in water quality with potential for acute toxic response over localised area.	<p>Create a minimum distance of 500-m Petroleum Safety Zone from the facility and associated activities or as required by regulations.</p> <p>Activities permitted within the safety zone will be defined and SIMOPS in safety zone will be controlled by the Safety Zone Entry Checklist.</p> <p>Permanent infrastructure is marked on marine charts by the Australian Hydrographic Office.</p>	Reduces risk of accidental release of environmentally hazardous chemicals or refined oil to the marine environment.	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
			<p>OPEP developed and maintained for the activity. Oil spill response executed in accordance with the OPEP.</p> <p>Pressure containment systems will prevent loss of containment of any hydrocarbons or substances.</p> <p>Emergency shutdown functions will be implemented to safeguard the process from escalation due to an upset condition beyond safe limits, including isolation of sections of the production process and related equipment, shutdown of related utility systems, de-energising hazardous electrical power, initiation of alarms and minimise loss of hydrocarbon containment.</p>		
Crude Oil Spill – Transfer/ Offtake	Release of stabilised crude from equipment failure or processes (offloading, transferring).	Acute/ chronic toxic effect on marine organisms from hydrocarbons. Temporary and localised reduction in water quality with potential for acute toxic response over localised area.	<p>A Terminal Handbook will be developed and maintained in accordance with the Marine Operations Document Procedure for the management of tanker offtake activities;</p> <p>Tankers for the offtake of petroleum products will undergo a formal vetting and inspection process;</p> <p>The approved marine tanker vetting company will be audited on an annual basis to ensure compliance with industry vetting standards; and</p> <p>Critical controls associated with emergency response procedures will be tested prior to commencement of off-take activities and periodically thereafter against a schedule of drills.</p> <p>All offtake activities will be conducted in accordance with the Pyrenees Venture Berthing & Terminal Handbook.</p> <p>The approved marine tanker vetting company will be audited on an annual basis to ensure compliance with industry vetting standards;</p> <p>Safe operation and use of the FPSO cargo tank pumps for inter-take transfers.</p> <p>Safe operation of the FPSO ballast system pumps, eductor and tanks.</p>	Reduces risk of loss containment from the Pyrenees operation.	ALARP

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
			<p>Oil spill response executed in accordance with vessels' SOPEP.</p> <p>OPEP developed and maintained for the activity. Oil spill response executed in accordance with the OPEP.</p> <p>Structural integrity system will maintain the structural integrity of the Facility and equipment supports to prevent loss of containment of any hydrocarbon substances.</p> <p>Pressure containment systems will prevent loss of containment of any hydrocarbons or substances.</p>		
Crude Oil Spill – Cargo Storage	Large release of stabilised crude oil from bulk storage.	Acute/ chronic toxic effect on marine organisms from hydrocarbons. Temporary and localised reduction in water quality with potential for acute toxic response over localised area.	<p>Navigation (including lighting, compass/radar), bridge and communication equipment will be compliant with appropriate marine navigation and vessel safety requirements.</p> <p>Automatic Identification System (AIS) is fitted and maintained in accordance with Regulation 19-1 of Chapter V of SOLAS.</p> <p>Bridge-watch on all support vessels to be maintained 24-hours per day.</p> <p>Create a minimum distance of 500-metre Petroleum Safety Zone from the facility and associated activities or as required by regulations.</p> <p>Activities permitted within the safety zone will be defined and SIMOPS in safety zone will be controlled by the Safety Zone Entry Checklist.</p> <p>Permanent infrastructure is marked on marine charts by the Australian Hydrographic Office.</p> <p>OPEP developed and maintained for the duration of the vessel-based activities. Oil spill response executed in accordance with the OPEP.</p> <p>Emergency shutdown functions will be implemented to safeguard the process from escalation due to an upset condition beyond safe limits, including isolation of sections of the production process and related</p>	Reduces risk of loss of containment from bulk storage from the Pyrenees Facility due to vessel collision	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
			<p>equipment, shutdown of related utility systems, de-energising hazardous electrical power, initiation of alarms and minimise loss of hydrocarbon containment.</p> <p>Pressure containment systems will prevent loss of containment of any hydrocarbons or substances.</p> <p>Structural integrity system will maintain the structural integrity of the Facility and equipment supports to prevent loss of containment of hydrocarbons.</p> <p>Critical controls associated with emergency response procedures will be tested prior to commencement of off-take activities and periodically thereafter against a schedule of drills.</p>		
Introduced Marine Species	Movement of vessels from known high introduced marine species (IMS) risk areas.	Biofouling on vessel hulls and other external niche areas pose a potential risk of introduced marine species in Australian waters. Under the Commonwealth Government's National Biofouling Management Guidelines a risk assessment approach is applied to manage biofouling.	<p>Vessels sourced for IMR or supply activities will undergo IMS management verification in line with BHP Petroleum level documents Charter Notification & Audit Plan and Vessel Audit Review and Approval Form prior to hiring.</p> <p>In-water or out-of-water inspection reports demonstrate that the inspection is carried out by DPIRD approved inspectors.</p>	Reduces the risk of introducing IMS due to assessment procedure.	Tolerable
			<p>Newly sourced vessels will complete an IMS risk assessment, before mobilisation to permit area, as described in Introduced Marine Species Management Procedure.</p> <p>The IMS risk assessment assigns a final risk category of low, moderate, uncertain or high) to vessels based on a range of information including last port of call, age of antifouling coating etc. If a risk category of moderate, uncertain or high is scored, a range of management options are available including inspections, cleaning or treatment of internal seawater systems.</p> <p>Locally sourced vessels that can demonstrate that they have only operated within the North West Bioregion for a period of no greater than 3 years since they were last</p>	Reduces the risk of introducing IMS due to assessment procedure.	Tolerable

Aspect	Environmental Hazard/ Risk	Potential Environmental Impact	Mitigation Measures		Residual Risk Rating
			Control	Effectiveness of Control	
			<p>assessed as low risk as the result of an in-water or out-of-water IMS inspection (by a DPIRD approved inspector). This includes vessels that have exited the North West Bioregion for periods of less than seven consecutive days, yet remained within state (WA) or offshore (>12 nm).</p> <p>Any vessel contracted for greater than 12 months will be audited annually.</p>		
			<p>IMO Guidelines for the control and management of ships' biofouling to minimise the transfer of invasive aquatic species (Biofouling Guidelines) (resolution MEPC.207(62))</p> <ol style="list-style-type: none"> i. Biofouling Management and Record in accordance with BHP Pyrenees Venture Biosecurity Management Plan 2018; ii. Anti-foul system installed and maintained for FPSO and all OSV and IMR vessels; iii. In-water inspection cleaning and maintenance measures; and iv. Pyrenees Facility hull In-water inspections undertaken in line with Lloyds Register and AMSA Requirements, <3 yearly basis. 	<p>Reduces the risk of introducing IMS due to assessment procedure.</p> <p>Reduces the risk of introducing IMS through procedures managing ballast water exchange and identifying high risk ballast water.</p>	Tolerable
			<p>Ballast water management in accordance with the Australian Ballast Water Management Requirements, Version 7.</p> <p>Ballast water management:</p> <ul style="list-style-type: none"> • Approved Ballast Water Management Plan; • Approved ballast water management certificate; and • Ballast water records. 	<p>Reduces the risk of introducing IMS through procedures managing ballast water exchange and identifying high risk ballast water.</p>	Tolerable

6 Monitoring and Reporting of Environmental Performance

The environmental performance of Pyrenees Facility Operations will be reviewed in a number of ways in order to:

- Ensure all significant environmental aspects of the activity are covered in the EP;
- Ensure that management measures to achieve environmental performance outcomes are being implemented, reviewed and where necessary amended;
- Ensure that all environmental commitments have been met before completing the activity;
- Ensure that impacts and risks will be continuously identified and reduced to ALARP; and
- Identify potential non-conformances and opportunities for continuous improvement.

BHP conduct reviews and audits of their contractors at various stages including pre-award contract, pre-activity and during activity, in accordance with BHP HSEC Management System performance. The environmental performance of contractors to BHP involved in operation and IMR activities will be reviewed through activities including (but not necessarily limited to) the following:

- Inspections of contractors HSE management systems and procedures;
- Pre-activity audits (i.e. vessels);
- Scheduled audits and inspections during the activity;
- Review of reporting documentation;
- Monitoring of progress;
- Auditing and assurance program;
- Regular review of incident, audit, inspection, observation, safety meeting and daily operations reports; and
- End of activity reports.

The environmental mitigation and management commitments from the EP will be documented and a description of compliance with each commitment will be maintained.

Unplanned and unauthorised non-conformances will be notified, investigated and reported in accordance with Incident Management procedures. Key process steps include:

Notification of non-conformances to relevant personnel and regulatory bodies where required;

- Investigation and corrective/preventative action development to address non-conformance;
- Assigning of corrective/preventative action to responsible person(s);
- Recording and Tracking of non-conformance investigation and corrective/preventative actions in event management database to ensure prompt closeout; and
- Sharing of findings/learnings with other relevant parties and regulatory bodies where required.

Annually an Environmental Performance Review (EPR) will be undertaken with participants from Projects, APU and HSE. The EPR is conducted to determine the continuing suitability, adequacy and effectiveness of the implementation strategy. It is also reviews the performance of the activity against the Performance Outcomes, Standards and Measurement Criteria and provide for a review of the effectiveness of the control measures in the EP. The reviews are documented, including observations, conclusions, recommendations and follow-up. The EPR will review:

- Internal annual EP compliance audit, inspections and reports;
- Annual EP compliance assurance review;

- External (i.e. NOSPEMA) audits, inspections and reports;
- Incident reports from operations or other operations;
- ALARP and acceptability statements of activities including oil spill response strategies;
- Improvements in technology or capability for oil spill response.

Audit findings, close-out reports and feedback from on-going monitoring allow continuous improvement initiatives to be developed and inform the development of future EPs.

For the duration of Pyrenees Facility Operations and an additional 5 years thereafter, BHP will store records and reports such as, but not limited to the following:

- External communications (e.g. stakeholder consultation logs, reporting of incidents);
- Training and competency assessments;
- Emissions and discharges reports (e.g. ODS Record Book, Garbage Record Book, Envirosys Records; National Pollutant Inventory Report);
- Cetacean and whale shark sighting datasheets;
- Environmental Performance Reports;
- Reportable and recordable incidents reports and/ or near misses, and investigation reports where applicable;
- Audit and inspection reports, test certificates, non-conformance register; and corrective action reports;
- EP, EP revisions and supporting documentation;
- Daily/ Scheduled Reports;
- Records of periodical tests and maintenance of HSE-related (and other) equipment and tools;
- Records of HSE meetings and training/ emergency drills;
- Modification and changes authorised by BHP and/ or contractor; and
- Risk assessments (e.g. chemicals to be discharged; management of changes).

BHP will report information on environmental performance to regulators to remain in compliance with key environmental legislation and regulations.

Changes to the EP and OPEP will be made in accordance with BHP management of change procedures. The Management of Change will be assessed and subject to formal review to determine if a revision of the accepted EP in force for the activity is required to be submitted to NOPSEMA pursuant to Regulation 17 of the OPGGS (Environment) Regulations.

7 Oil Pollution Emergency Plan Summary

The Pyrenees Operations Oil Pollution Emergency Plan (OPEP) has been developed to establish the processes and procedures within BHP to ensure a constant vigilance and readiness is maintained to prevent and, where required, respond to and effectively manage incidents that may occur during operations in permit areas WA-42-L and WA-43-L, offshore Western Australia over a 5 year period.

This OPEP is an appendix to the Pyrenees Facility Operations EP and is required under the OPGGS (Environment) Regulations for approval to undertake petroleum activities in Commonwealth waters.

The Pyrenees Development was assessed and accepted under the EPBC Act in March 2005 (referral number 2005/2034). The Ministerial Conditions Annexure 1 – Condition 2 states that: The person taking the action must submit for the Minister’s approval an oil spill contingency plan to mitigate the environmental effects of any hydrocarbon spills. The specific requirements of this condition are documented in Appendix B of the Pyrenees Facility Operations EP.

7.1 Primary Response Strategies

Primary response strategies which may be applied following a hydrocarbon spill:

- Source Control:
 - Vessel Control – the primary response strategy for single point spills, transfer hose/ pipe failure, spills during diesel bunkering, tank overflows, hull leakage and spills in the event of a vessel collision. Activities will be dependent on the type of incident but may include:
 - Closing valves, isolating pipework and shutting down pumps;
 - Temporary patches or bungs/plugs to seal holes, until permanent measures are made;
 - Spill response equipment, including small booms, absorbent pads, spill absorbent litter, spill recovery containers, permissible cleaning agents and other materials; and
 - The transfer of product between tanks on the vessel or between vessels - in the event of a leaking tank or tank rupture from a vessel collision.
- Monitor and Evaluate – to maintain situational awareness and inform the response to any spill event:
 - Surveillance using boats and aircraft;
 - Oil spill trajectory modelling; and
 - Use of satellite imagery, surveillance and subsea plume tracking devices (oil spill tracker buoys and autonomous underwater vehicle) to track hydrocarbon spill trajectory.
- Dispersants - To prevent the impact of surface oil on extreme and highly sensitive shoreline receptors via application of dispersants from vessel or aircraft;
- Shoreline Protection – using shoreline protection equipment including booms, skimmers, power packs, sorbents, temporary waste storage and IBC’s to collect and deflect oil away from sensitive receptors; and
- Shoreline Clean-up – where natural recovery is unsuccessful and oil reaches shore, shoreline clean-up activities will be implemented requiring shoreline clean up and assessment (SCAT teams), multiple vessels, equipment, clean-up crew and waste management resources.

7.2 Secondary Response Strategies

Secondary response strategies may be implemented if needed and practicable:

- Natural Recovery – makes use of the natural degradation and weathering processes to breakdown and remove surface oil and stranded hydrocarbons;
- Marine Recovery - booms and skimmers to clean up the remnants of a spill and moderate the amount of weathered oil reaching a shoreline;

- Environmental Monitoring – to support the response strategies for large spills and to understand any effects on sensitive receptors;
- Oiled Wildlife Response – pre-oiling activities include: onshore exclusion barriers (e.g. fencing) to stop wildlife accessing shoreline areas affected by hydrocarbons; shepherding wildlife away from oil slicks or oiled shorelines with visual and auditory devices; and pre-emptive capture and removal of wildlife that may come into contact with hydrocarbons. Post-oiling activities include: collection and rehabilitation of oiled fauna at dedicated Oiled Wildlife Response Centres;
- Forward Command Post – Establishment of suitable local command post (location/ building) in Exmouth; and
- Waste Management – waste generated from shoreline clean-up response strategies through on-site waste handling and storage, segregation of waste, offsite transport and storage, waste treatment and disposal options, and waste monitoring and reporting.

7.3 BHP Oil Pollution Emergency Arrangements

BHP will implement its OPEP in the event of a significant oil spill. For Level 1 spills, responses can be resourced using shipboard or port located spill kits. All vessels over 400 gross tonnage are required to have a current SOPEP in place and appropriate spill kits, response capabilities and trained personnel. Likewise, designated ports and harbours are required to have as a minimum Level 1 response capability on site.

For Level 2-3 spills, BHP maintain a broad set of spill response capabilities, including contracts and Memorandums of Understanding (MOUs) with National and International third-party spill response providers to ensure response capabilities can be drawn upon in if required. This includes arrangements under the WOMP to monitor and manage subsea wells and infrastructure including contingencies in the unlikely event of loss of containment (leaks) from subsea infrastructure.

BHP has the following emergency response arrangements in place:

- Standing Agreement and Service Contract with Australian Marine Oil Spill Centre (AMOSC) for the supply of experience personnel and equipment, including National dispersant stockpiles;
- Contract agreement with Oil Spill Resources Limited (OSRL) to supply incident management / specialist personnel;
- Mutual Aid MOU with other regional oil and gas operators and APPEA to assist (including to source and mobilise offshore support vessels) in an oil spill situation;
- Other support services such as 24/7 oil spill trajectory modelling and satellite monitoring services as well as 'on-call' aerial, marine, logistics and waste management support;
- MOU with AMSA, as managers of the National Plan for Maritime Environmental Emergencies, will support BHP with response equipment from National stockpiles. Equipment stockpiles are located around Australia in strategic locations such as Exmouth, Dampier, Darwin and Fremantle; and
- Oiled Wildlife Reponse (OWR) capability in conjunction with AMOSC and Oil and Gas operators in the Exmouth/ Dampier region.

8 Stakeholder Consultation

BHP’s approach to stakeholder consultation aims to demonstrate to relevant persons and the general public that the environmental impacts and risks of an activity are being appropriately managed. BHP is committed to ongoing engagement and consultation with stakeholders during all project stages.

BHP has consulted broadly with relevant stakeholders regarding this Activity, including sharing information with stakeholders and responding directly to enquiries. No objections or significant concerns were raised by stakeholders during consultation in the preparation of this EP.

BHP has a process for ongoing stakeholder engagement and any concerns raised by stakeholders subsequent to EP submission will be duly considered and addressed.

8.1 Stakeholder Consultation History

A community reference group was first established in Exmouth during preparation of the Stybarrow Development Environmental Impact Statement (EIS) in 2004, meeting on a quarterly basis. These community reference group meetings were expanded in 2005 during preparation of the Pyrenees Development Draft EIS to encompass the Pyrenees Development.

The Pyrenees Development Draft EIS was advertised nationally and made available in libraries and on the internet for public review and comment over a six week period from the 9 September 2005 to 24 October 2005. Written submissions were received providing comment on the Draft EIS. BHP reviewed the submissions and prepared a Supplement document which detailed BHP response to the issues raised in these submissions. Table 10-1 details the mailing list for distribution of the Draft EIS and the Supplement document.

The Draft EIS and the Supplement document formed the “Pyrenees Petroleum Field Development Final Environmental Impact Statement”, which was submitted to the Department of the Environment and Heritage (now DoEE) for assessment in accordance with requirements of the EPBC Act.

A Stakeholder Engagement Management Plan (SEMP) has been in place since November 2010. The SEMP is reviewed and updated annually. The stakeholder list is updated each time a new activity is planned within the region or an EP is to be submitted so that we can:

- Tailor our engagement to be relevant to the planned activity;
- Meet the stakeholder engagement requirements of the Environment Regulations, and
- Ensure we have consulted all relevant stakeholders.

Table 8-1: Stakeholder Consultation List for Pyrenees Development Draft EIS and Supplement Document

Stakeholder List	
APPEA	Federal Member for Kalgoorlie
Aquaculture Association of WA	Federal Minister for the Environment
Battye Library	Gascoyne Development Commission
Boeing Australia Limited	Gnulli Native Title Working Party Member
Cape Conservation Group	Recfishwest
Conservation Council of WA	Shadow Minister for Resources
Exmouth Chamber of Commerce	Shadow Minister for the Environment
Exmouth Charter Boat Operators Association	Shire of Exmouth

Stakeholder List	
Exmouth District High School	The Marine and Coastal Community Network
Exmouth Expression	Karratha Community Library
Exmouth Police Station	Leader of the Opposition
Exmouth Tourist Bureau	Library of Department of the Environment and Heritage
Exmouth Visitor Centre	Library of DOE Information Centre DEP
Exmouth Community Library	MG Kailis Pty Ltd
Dallywater Consulting	Minister for the Environment
Department of Conservation & Land Management	Minister for Regional Development
Department of Defence	Office to the Minister of State Development
Department of Environmental Protection	Woodside
Department of Fisheries	WA National Parks & Reserves Ass (WANPARA)
Department of Industry & Resources	WA Labour Party
Department of Planning and Infrastructure	Whale Sharks WA Inc
Department of Premier and Cabinet	

8.2 Stakeholder Consultation 2018

For the 2018 revision to the Pyrenees Facility Operations EP, relevant persons have been identified based on BHP’s existing relationships and those identified in previous EP consultations for the permit area, together with desktop stakeholder identification and analysis.

In addition to ongoing CRG meetings, key stakeholders that have been engaged through the EP revision include:

- Commonwealth and State departments and agencies;
- Local Government;
- Other petroleum operators;
- Commercial fisheries, including representative associations and individual licence holders/operators within both Commonwealth and State managed fisheries that overlap AMBAs identified in this EP (using contact details provided by AFMA and DPIRD);
- Local businesses; and
- NGOs.

As part of BHP’s general stakeholder identification process, every licence holder of the WA State managed fisheries which are in the AMBA’s of BHP Petroleum WA activities was advised of the location of all BHP permit areas in offshore Western Australia. They were invited to provide phone numbers and email addresses if they wished to be consulted about BHP’s offshore activities. Fisheries stakeholders and individual licence holders who accepted the invitation for consultation were re-consulted as part of the revision to this EP.

In addition, using contact details provided by AFMA and DPIRD, broad consultation has been initiated with all individual licence holders/operators within both Commonwealth and State managed fisheries that overlap AMBAs identified in this EP.

BHP's consultation for this current revision to the Pyrenees Facility Operations EP included the wide distribution of an Activity Summary fact sheet and follow up phone and email correspondence. The information provided included the timing and duration of the activity, the mitigation measures for relevant impacts and risks, BHP's policies and experience, and contact details to facilitate providing feedback to BHP.

Recent stakeholder engagement and consultation activities informing this EP revision include:

- Exmouth CRG meeting on 8 November 2017 and 8 March 2018;
- Email communication to relevant stakeholders sent on 6 April 2018 that detailed the changes to the operation of the Pyrenees Facility and invited comment;
- Postal correspondence to fishing licence holders within State-managed fisheries on 3 April 2018 that detailed the changes to the operation of the Pyrenees Facility and invited comment;
- Follow up phone calls to several key stakeholders (Table 8-2), where possible, to confirm that email communication or mail correspondence had been received and to provide a direct opportunity to comment; and
- Consideration of all responses from stakeholders received prior to submission of the EP revision, providing additional information where requested.

All stakeholder engagement records are maintained by BHP Corporate Affairs.

Table 8-2 presents a summary of the consultation undertaken, responses received and a statement of BHP's response and actions, including assessment of any claims or objections made, in support of the revision of the EP.

No objections or significant concerns were raised by stakeholders during consultation in the preparation of this EP revision.

Table 8-2: Summary of stakeholder consultation and BHP’s assessment of feedback and response

Stakeholder	Date Consultation Commenced	Consultation Method	Stakeholder Response / Requests / Claim	BHP Response	Assessment of Merits of Claims and Objections	BHP Action / Commitment
CRG Meetings						
Onslow CRG	06/03/2014	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	23/07/2014	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	05/11/2014	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	13/08/2015	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	08/12/2015	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	09/03/2016	Regular APU update. Presentation provided an update on Pyrenees operations including	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable

Stakeholder	Date Consultation Commenced	Consultation Method	Stakeholder Response / Requests / Claim	BHP Response	Assessment of Merits of Claims and Objections	BHP Action / Commitment
		environmental risks identified.				
Exmouth CRG	20/07/2016	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	03/08/2016	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	05/12/2016	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Exmouth CRG	08/03/2017	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	04/04/2017	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Exmouth CRG	26/07/2017	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable

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Onslow CRG	09/08/2017	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Exmouth CRG	08/11/2017	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	27/11/2017	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Exmouth CRG	08/03/2018	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	30/03/2018	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Exmouth CRG	02/08/2018	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	30/07/2018	Regular APU update. Presentation provided an	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable

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		update on Pyrenees operations including environmental risks identified.				
Exmouth CRG	08/11/2018	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Onslow CRG	29/11/2018	Regular APU update. Presentation provided an update on Pyrenees operations including environmental risks identified.	No issues raised.	Minutes and actions recorded. No actions related to this EP.	None	Not applicable
Community Organisation						
Ecocean Ltd	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Exmouth District High School	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Exmouth Game Fishing Club	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Exmouth Info	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Exmouth Volunteer Marine Rescue Group	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Ningaloo Whale Shark Festival	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Onslow Volunteer Marine Rescue	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Ashburton Aboriginal Corporation	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable

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North West Cape Exmouth Aboriginal Corporation	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Research Institute / Consultancy						
Australian Institute of Marine Science	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Centre for Whale Research	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Fisheries Research and Developmental Corporation	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Oceans Institute University of Western Australia	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Oceanwise Australia Pty Ltd	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Asia-Pacific Applied Science Associates	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Environmental NGO						
Cape Conservation Group Inc.	11/03/2018	Email, Activity Summary	<p>Following attendance of the Stakeholder at the Exmouth CRG meeting on 8 November 2017, the Stakeholder emailed on 11 March 2018, requesting further information about:</p> <ol style="list-style-type: none"> 1) Flaring on the Pyrenees Facility over the last few years (stating observations of turtle hatchlings being attracted to light from flaring); 2) Changes to the discharge of produced water; 3) Any proposed drilling for Macedon; and 4) Griffin decommissioning plans. 	<p>BHP responded by email on 15 March 2018, advising the Stakeholder that:</p> <ol style="list-style-type: none"> 1) Pyrenees flaring is an approved activity under the inforce EP. Summary information regarding flaring activities was provided and stating that flaring forecast for the next 5-years would be significantly lower than previous years, and would only increase in the event of equipment failure/maintenance, or the addition of further wells. 2) An Activity Summary will be issued to Stakeholders later in March 2018 regarding details on proposed discharge of produced 	BHP has assessed stakeholder's comments regarding flaring and light emissions. No additional controls are required to manage stakeholder concerns.	Not applicable

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				<p>water at Pyrenees. Further information can be obtained from the WA Corporate Affairs Team.</p> <p>3) There is currently no proposed drilling for Macedon Operations in the five-year EP; and</p> <p>4) An Activity Summary was sent out in January 2018 regarding the Griffin Cessation Environment Plan activities. A separate EP will be developed later in the year for decommissioning at Griffin. Stakeholders will be consulted during that time.</p>		
	6 April 2018	Email, Activity Summary	No response at time of EP submission. No response received following BHP's email on 15 March 2018 or following BHP issuing the Activity Summary on 6 April 2018.	No response required	No claims or objections	Not applicable
Conservation WA	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Ningaloo Coast World Heritage Advisory Committee	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Fisheries Operators						
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[REDACTED]	6/04/2018	Email, Activity Summary	BHP received email bounceback.	-	-	-
[REDACTED]	30/04/2018	Telephone call	Follow-up telephone call was made on 30 April 2018. Stakeholder advised BHP of preferred email address.	-	-	-
[REDACTED]	30/04/2018	Email, Activity Summary Reissued	No response at time of EP submission.	No response required	No claims or objections	Not applicable
[REDACTED]	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable

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Hard Copy Letter and Activity Summary issued to State-Managed Fisheries Licencees

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Stakeholder	Date Consultation Commenced	Consultation Method	Stakeholder Response / Requests / Claim	BHP Response	Assessment of Merits of Claims and Objections	BHP Action / Commitment
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[REDACTED]	03/04/2018	By post: cover letter and Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Government - Commonwealth						
Australian Maritime Safety Authority	6/04/2018	Email, Activity Summary	The Stakeholder responded by email on 10 April 2018, acknowledging receipt of the information, and advising AMSA have reviewed the documents and have not comments to add at this time. The Stakeholder requested that all future correspondence relating to BHP's EPs is directed to nauticaladvice@amsa.gov.au.	BHP responded by email on 30 April 2018, advising the Stakeholder that BHP's records have been updated according. No further action from BHP was required.	No claims or objections	Not applicable

Stakeholder	Date Consultation Commenced	Consultation Method	Stakeholder Response / Requests / Claim	BHP Response	Assessment of Merits of Claims and Objections	BHP Action / Commitment
Australian Fisheries Management Authority	6/04/2018	Email, Activity Summary	The Stakeholder responded by email on 9 April 2018, requesting confirmation BHP had consulted with the Commonwealth Fishermen's Association.	BHP responded by email on 30 April 2018, confirming that BHP were also seeking feedback from the Commonwealth Fisheries Association on the revision to the EP.	No claims or objections	Not applicable
Australian Hydrographic Service	6/04/2018	Email, Activity Summary	The Stakeholder responded by email on 8 April 2018, acknowledging receipt of the information.	No response required	No claims or objections	Not applicable
Australian Customs and Border Protection	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Australian Defence Support Group - Central & West	6/04/2018	Email, Activity Summary	The Stakeholder responded by email on 8 April 2018, acknowledging receipt of the information at AIS-AF.	No response required.	No claims or objections	Not applicable
Department of Defence	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Department of Environment and Energy	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Department of Environment and Energy - Australian Marine Parks	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Department of Industry, Innovation and Science	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Department of Infrastructure and Regional Development	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Government - State						
Dampier Port Authority	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
	6/04/2018	Emails; Activity Summary; meeting	See below.	See below.	No claims or objections	Not applicable

Stakeholder	Date Consultation Commenced	Consultation Method	Stakeholder Response / Requests / Claim	BHP Response	Assessment of Merits of Claims and Objections	BHP Action / Commitment
Department of Agriculture and Water Resources			<p>A further email was sent by BHP to DAWR on 11 June 2018 to seek to meet to discuss the biosecurity management for the return voyage following dry dock campaign, with follow up emails between BHP and DAWR to confirm the meeting arrangement between 11 June 2018 and 22 June 2018, and a copy of BHP's <i>Pyrenees Venture Biosecurity Management Plan 2018 Dry dock</i> provided to DAWR by email on 22 June 2018.</p> <p>A follow up email was sent by BHP on 29 June 2018 to summarise the discussion and confirm the updates to the Biosecurity Management Plan. Additional emails were sent by BHP to DAWR on 6 July 2018 and 9 August 2018 to communicate progress on dry dock works, with acknowledgement of the update by DAWR on 10 August 2018.</p> <p>DAWR provided a confirmation letter by email on 7 September 2018 that the Pyrenees Venture was considered by DAWR to present an acceptable biosecurity risk.</p> <p>A separate notice of 'Released from Biosecurity Control' for the FPSO was issued by DAWR on 3 September 2018, via LGF Logistics on behalf of BHP.</p> <p>No further action required by BHP. No outstanding issues in relation to this EP.</p> <p>DAWR will be contacted on an as required basis should further consultation be required.</p>			
Department of Biodiversity, Conservation and Attractions – Parks and Wildlife	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Department of Health	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Department of Jobs, Tourism, Science and Innovation	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Department of Mines, Industry Regulation and Safety	6/04/2018	Email, Activity Summary	<p>DMIRS responded by email on 2 May 2018, acknowledging receipt of the information and advising the information provided did not provide adequate information regarding potential environmental impacts to State waters and land.</p> <p>DMIRS referred BHP to the DMIRS Consultation Guidance Note for the appropriate detail of information.</p>	BHP provided the Department with further information by email on 31 May 2018, consistent with the DMIRS Consultation Guidance Note.	No claims or objections	6/04/2018
		Email	<p>DMIRS responded by email on 31 May 2018, acknowledging receipt of the information relating to the proposed revision of the EP for the Pyrenees Facility in regards to changes to produced water</p>	No further action from BHP was required	No claims or objections	Not applicable

Stakeholder	Date Consultation Commenced	Consultation Method	Stakeholder Response / Requests / Claim	BHP Response	Assessment of Merits of Claims and Objections	BHP Action / Commitment
			processing, with no potential impacts on State land or waters. DMIRS advised that they required no further information.			
Department of Primary Industries and Regional Development	6/04/2018	Emails, Activity Summary	See below.	See below.	No claims or objections	Not applicable
		<p>BHP provided a copy of BHP's Dry Dock Biosecurity Plans by email on 6 July 2018. Additional communications were undertaken between BHP and DPRID by email between 6 July 2018 and 27 August 2018 specifically to communicate progress updates on Dry Dock works, with BHP providing copies of records and photographs of hull cleaning and coating following dry dock on 25 August 2018. No further action from BHP required. No outstanding issues in relation to this EP.</p>				
	27/09/2018	Emails, Activity Summary	See below.	See below.	No claims or objections	Not applicable
		<p>BHP commenced communications with DPIRDs Biosecurity Risk Scientists around IMS risk in the Dampier Port, by email on 27 September 2018. BHP followed up with a phone call on the same day to further clarify. Additional communications were undertaken between BHP and DPIRD by email and phone call on the 2 October 2018 to discuss IMS information that had been provided by NOPSEMA in relation to <i>D. perlucidum</i>. DPIRD confirmed the species is at Dampier, and is known as widespread along the WA coast, DPIRDs position was "that supply vessels transiting between the Pyrenees facility and Dampier Port would not pose an increased risk". A phone conversation between BHP and DPIRD occurred on the 9 November following an email from NOPSEMA. DPIRD confirmed that their was no increased risk of utilising vessels transiting from Dampier Port for up to 7 days. No further action from BHP required. No outstanding issues in relation to this EP. DPIRD will be contacted on an as required basis should further consultation be required.</p>				
Department of Transport	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Exmouth District High School	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Exmouth Police Station	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Gascoyne Development Commission	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Main Roads WA	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable

Stakeholder	Date Consultation Commenced	Consultation Method	Stakeholder Response / Requests / Claim	BHP Response	Assessment of Merits of Claims and Objections	BHP Action / Commitment
Member for North West Central (State Government Elected Representative)	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required	No claims or objections	Not applicable
Minister for Environment	6/04/2018	Email, Activity Summary	The Stakeholder responded by email on 6 April 2018, acknowledging receipt of the information and that a response would be provided in due course. The Stakeholder responded with a letter by email dated 8 May 2018, noting the Pyrenees Facility is located in Commonwealth waters under the jurisdiction of NOPSEMA. The Minister noted that BHP propose to install a Compact Floatation Unit module at the facility to improve the quality and reduce the volume of produced water discharge. The Minister advised that given the discharge is ~20 km from state coastal waters, it does not pose a risk to the WA marine environment, and as such no further comment from the Minister is required.	No response required.	No claims or objections	Not applicable
Minister for Mines and Petroleum	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Minister for Transport, Planning and Lands	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Minister for Water; Fisheries; Forestry Innovation and ICT; Science	6/04/2018	Email, Activity Summary	The Stakeholder responded by email on 6 April 2018, acknowledging receipt of the information.	No response required.	No claims or objections	Not applicable
Onslow Hospital	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Onslow Police Station	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable

Stakeholder	Date Consultation Commenced	Consultation Method	Stakeholder Response / Requests / Claim	BHP Response	Assessment of Merits of Claims and Objections	BHP Action / Commitment
Onslow Primary School	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Pilbara Development Commission	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Pilbara Port Authority	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Government – Local						
Shire of Ashburton	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Shire of Exmouth	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Industry Associations						
Australian Marine Oil Spill Centre	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Australian Petroleum Producers and Explorers Association	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Australian Institute of Petroleum	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Chamber of Commerce and Industry Western Australia	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Commonwealth Fisheries Association	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Exmouth Chamber of Commerce	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Onslow Chamber of Commerce & Industry	6/04/2018	Email, Activity Summary	The Stakeholder responded by email on 10 April 2018, acknowledging receipt of the information and enquiring where the activity will be serviced out of and opportunities for local businesses, if any.	BHP responded by email on 5 June 2018, advising the Stakeholder that the activity involved alteration to the existing produced water processing system for the Pyrenees Facility, as part of a larger five-yearly maintenance program whilst	No claims or objections	Not applicable

Stakeholder	Date Consultation Commenced	Consultation Method	Stakeholder Response / Requests / Claim	BHP Response	Assessment of Merits of Claims and Objections	BHP Action / Commitment
				the Facility is in Singapore for dry docking.		
			The Stakeholder acknowledged this information by email on 5 June 2018.	No further action from BHP required.	No claims or objections	Not applicable
Pearl Producers Association	6/04/2018	Email, Activity Summary	No response at time of EP submission.	Follow-up telephone calls were made twice on 30 April 2018 and twice on 3 May 2018 which were all unanswered. With no further telephone contact details available.	No claims or objections	Not applicable
Recfishwest	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Australian Southern Bluefin Tuna Industry Association	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Western Australian Fishing Industry Council	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Local Businesses						
Avis Australia	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Bgahwan Marine	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Bristow Australia Operations	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Bluewater Tackle World	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Cleanaway	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Driftwood Jewellers	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Exmouth Aviation Services	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable

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Exmouth Diving Centre	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Exmouth Engineering	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Exmouth Freight and Logistics	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Exmouth Light Engineering	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Exmouth Marina Village	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Exmouth Tackle and Camping Supplies	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Gunn Marine Services	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Manatarays Ningaloo Resort	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Ningaloo Lodge Exmouth	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
North Coast Charters	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Oil Spill Response Limited (OSRL)	6/04/2018	Email, Activity Summary	The Stakeholder responded by email on 9 April 2018, advising BHP of the change of contact details for stakeholder consultation.	No response required. Contact details updated for future engagement.	No claims or objections	Not applicable
Onslow Salt	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Exmouth Visitors Centre	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Onslow Tourist Information Centre	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Regional Operators						

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Chevron	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Quadrant Energy (now Santos WA Energy)	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Shell Australia	6/04/2018	Email, Activity Summary	The Stakeholder responded by email on 9 April 2018, advising BHP that they do not consider their organisation a "Relevant Person" for the purposes of the consultation.	No response required.	No claims or objections	Not applicable
Total E&P Australia	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable
Woodside Energy	6/04/2018	Email, Activity Summary	No response at time of EP submission.	No response required.	No claims or objections	Not applicable

8.3 Ongoing Consultation

Stakeholder consultation will be ongoing and BHP will work with stakeholders to address any future concerns if they arise throughout the validity of this EP. Should any new stakeholders be identified, they will be added to the stakeholder database and included in all future correspondence as required.

BHPs commitments to ongoing consultation include:

- Responding in a timely manner to all stakeholder and community contact regarding Pyrenees Facility activities;
- Stakeholders who raise objections and claims following EP submission will be responded to directly, and should any concerns raised have not already been addressed in the EP, these will be assessed in the same manner as all risks identified by BHP and an EP revision submitted to NOPSEMA if required; and
- Continued regular Exmouth and Onslow CRG meetings.

9 Titleholder Nominated Liaison Person

For further information about this activity please contact the BHP Corporate Affairs Team.

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bhppetexternalaffairs@bhpbilliton.com