



**PYRENEES EXPANSION INSTALLATION, HOOK UP
AND COMMISSIONING
ENVIRONMENT PLAN SUMMARY**

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1 INTRODUCTION

BHP Billiton Petroleum Pty Ltd (BHP Billiton) acting as operator of the 'Pyrenees Facilities', on behalf of a joint venture comprising BHP Billiton Petroleum (Australia) Pty Ltd and Apache Northwest Pty Ltd, is proposing to install, hook up and commission additional wells to the Pyrenees facility. The Pyrenees expansion project is located in the BHP Billiton operated Permit Area WA-42-L. The field is approximately 27 km northwest of the tip of the North West Cape and 46 km northwest of Exmouth, Western Australia.

The project specific Environment Plan (EP) has been accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) and ensures that all operations are planned and conducted in line with BHPBP's environmental standards and comply with statutory requirements.

The EP will serve as a practicable environmental management tool to be used throughout the activity by operators to implement targeted environmental control measures.

This summary EP contains the findings and conclusions of the environmental impact assessment undertaken for the proposed activity. This process ensures any potential environmental impacts associated with the activity, during both routine and non-routine (abnormal) operations, have been identified and appropriately assessed. Relevant preventative and mitigation measures have been developed and implemented to ensure any adverse impacts are eliminated where possible or managed to be as low as reasonably possible.

2 LOCATION OF THE ACTIVITY

The Pyrenees expansion is located on the shelf break, the transition from continental shelf to slope, with water depths sloping seaward from 190 m at the shelf edge, to depths of 212 m. The coordinates of the installation activities are provided in Table 2.1 and the location illustrated by Figure 2.1. The midpoint of the fields is approximately 25 km offshore from the North West Cape.

Table 2-1. Pyrenees Expansion well locations (GDA94)

Well Name	Latitude	Longitude	Depth (m)
Moodyne-1 H1	21° 32' 5.458"	114° 9' 17.979"	191
Moodyne-2 H2	21° 32' 5.488"	114° 9' 19.715"	191
Moodyne-3 W1	21° 32' 3.834"	114° 9' 18.011"	191
Tanglehead-1 H1	21° 31' 21.398"	114° 7' 26.487"	195
Tanglehead-2 H2	21° 31' 21.614"	114° 7' 27.733"	195
Wildbull-1 H1	21° 31' 12.516"	114° 5' 5.527"	212

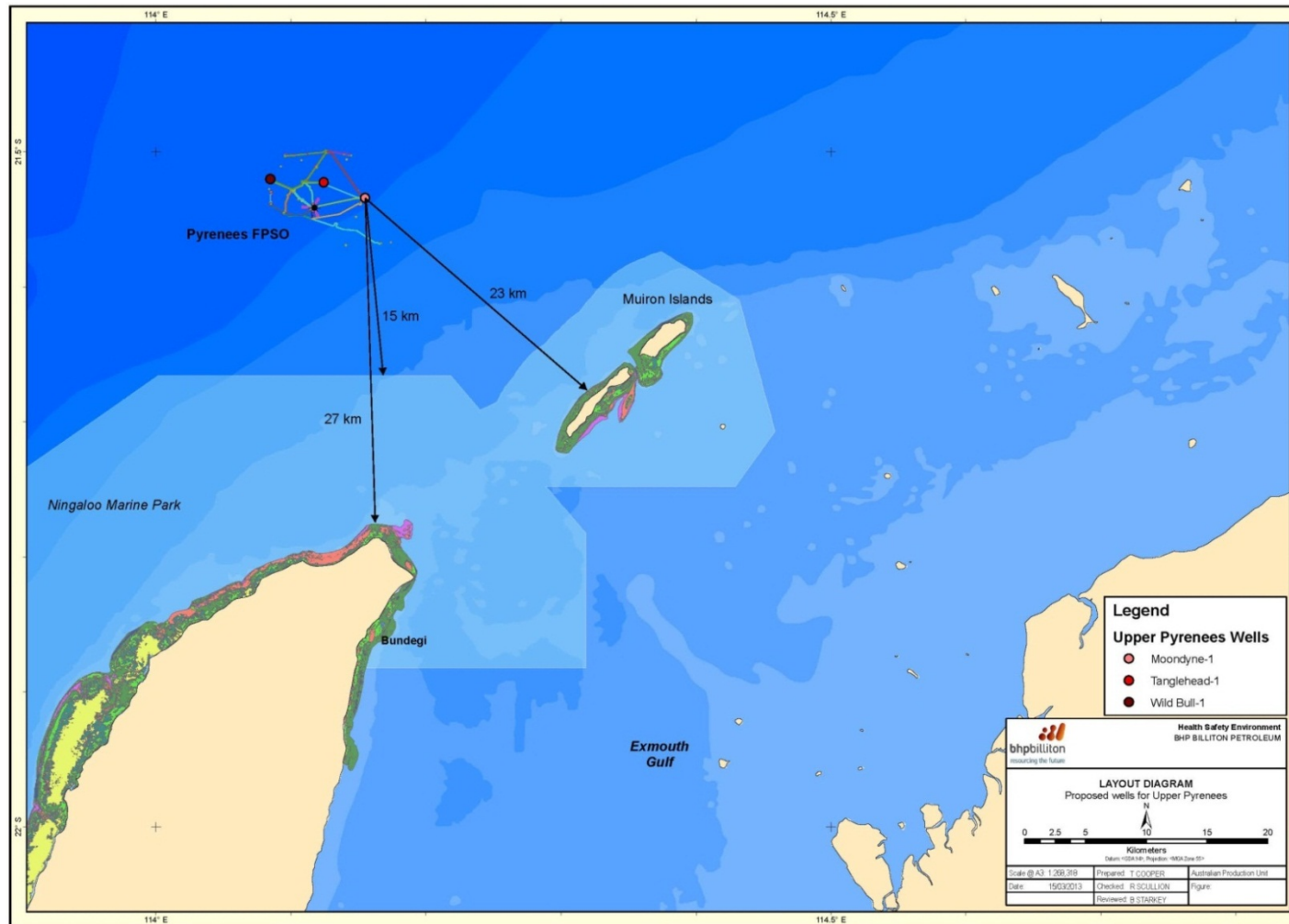


Figure 2-1. Location diagram showing well centres for installation, hook up and commissioning

3 DESCRIPTION OF THE ACTION

The scope of activities includes the installation, hook up and commissioning within the Permit Area from arrival of the installation vessel through to demobilisation. The scope of work consists of heavy lift transportation, installation, and pre-commissioning of the manifolds, riser, flow lines, jumpers, umbilicals, and interconnecting flying leads for the Upper Pyrenees and Moondyne tiebacks to the Pyrenees FPSO. It includes the engineering, procurement, assembly, and test of all equipment necessary for the successful installation and also performing the necessary monitoring and testing of the umbilicals and distribution kit required before, during, and post-installation. Post-installation pre-commissioning, flooding, and hydro-test of the flow lines and jumpers are also included in this project.

The *Normand Clough* will be the main Installation Support Vessel (ISV) utilised for the project activities. The *Normand Clough* accommodates up to 120 persons. A reel hub drive system will be used for laying all flexible risers and flow lines capable of handling 9.2 m diameter reels for up to 350te. A tensioner will be used for laying flexible risers, flow lines and umbilical.

The flow line installation and connection activities include removal of long term preservation/debris cap, hub cleaning and removal and replacement of seals.

A Heavy Lift Vessel (HLV) will be used for load-out, transportation to site, offloading, handling and storage of equipment such as flexible flow lines, umbilicals and flying leads.

Testing equipment will be mobilised on the ISV to support testing of umbilical / flow line during installation. The equipment will be transferred onto the FPSO if required to perform post tie-in system leak testing.

3.1 Timing

The Pyrenees expansion Installation, Hook up and Commissioning will be conducted over an approximate 9 month period between August 2013 into early 2014 inclusive.

4 DESCRIPTION OF RECEIVING ENVIRONMENT

4.1 Natural Environment

The Pyrenees expansion wells lie on the shelf slope within the Central Western Shelf Transition (CWST) Bioregion. This bioregion covers approximately 7,340 km² on the continental shelf from north of Carnarvon to the tip of the North West Cape.

The western half of the development area (190 to 260 m depth) is characterised by gravely fine to coarse carbonate sands, while the seabed sediments in the eastern part of the area (190 to 200 m depth) are soft, fine sediments, mainly carbonate silts and clays.

4.2 Biological Environment

Seabed communities in the Pyrenees area are relatively sparse, with diversity and abundance tending to decrease with increasing depth, except where occasional areas of exposed or outcropping rock occur, resulting in localised increases of abundance and diversity. Soft sediment communities are dominated by invertebrate infauna, including polychaetes, crustaceans, molluscs, echinoderms and sponges. Exposed or outcropping rocky areas are dominated by sponges, soft corals and gorgonians, with various finfish, ascidians, crustaceans, echinoderms (urchins and brittle stars), polychaetes and molluscs also occurring.

A number of different pelagic fish occur in the deeper offshore waters of the region. Pelagic fish species are seasonally abundant and may pass through the area during annual migrations. The most notable species of deep water pelagic fishes in the area are the billfish, which include sailfish, marlin and swordfish.

The region also supports diverse and abundant shark and ray populations. Whaler sharks are the most numerous and diverse, occurring in a wide range of habitats such as intertidal (black-tip reef shark), offshore reef drop-offs (grey reef shark) and deep ocean areas (oceanic white-tip). The whale shark is also known to frequent the region.

Five species of sea turtle are known to possibly occur in the region, including green turtles, loggerhead turtles, hawksbill turtles, flatback turtles and leatherback turtles.

The most common whale species in the North West Shelf region is the humpback whale, which migrates through the region, during their movement along the Western Australian coast. In addition to the humpback whale, the blue whale, the minke whale and several other toothed whales may be sighted in the vicinity of the proposed wells. The abundance of the whales present in the Pyrenees area is likely to vary seasonally from low numbers during December to May and low to moderate abundance from June to November.

Dolphins are common inhabitants of the offshore waters of the region. Spinner dolphins and striped dolphins are expected in deeper waters while bottle-nosed dolphins are common in shallow water areas of the North West Shelf.

A large number of seabird species migrate across the region, and may pass through the permit areas, including ten species of migratory seabirds protected under international agreements. The southern giant petrel and the soft plumaged petrel, which are listed Threatened species, may be sighted in the vicinity of the Pyrenees development.

4.3 Socio-Economic Environment

There are no conservation reserves or parks located within the WA-42-L permit area. The closest marine conservation areas to the Pyrenees expansion are the Muiron Islands Marine Management Area (24 km), the Gascoyne Marine Reserve Multiple Use Zone (20 km) the Ningaloo Marine Park (Commonwealth boundary) (15 km).

No state-managed fisheries overlap with the area. There are three Commonwealth commercial fisheries operating in the area of potential effect, these being:

- Western Deepwater Fishery - the fishery is mainly focused on the continental slope along the western coast of Australia. It is therefore unlikely that this fishery will be actively operating in the area of activity.
- Western Tuna and Billfish Fishery - the fishing season is currently open all year (from February–January), but most activity occurs during November to February. Due to the timing of the activity, it is possible that vessels operating in this fishery will occur in the area, albeit in low numbers.
- North West Slope Trawl Fishery - given the activity occurs within the boundaries of this fishery, it is possible that vessels operating in the fishery may occur in the area in low numbers

There are not any shipwrecks in the area of the Pyrenees drilling

5 MAJOR ENVIRONMENTAL HAZARDS AND CONTROLS

Risk analysis has been undertaken for all environmental aspects of the activity, consistent with the procedures outlined in the Australian and New Zealand Standards AS/NZS ISO 31000:2009 (Risk Management – Principles and Guidelines) and BHP Billiton's Management Policies.

These aspects, potential impacts and preventative and mitigative controls are indicated below. All mitigation measures associated with hazards will be used to reduce environmental risk to ALARP and will be of an acceptable level.

Environmental/Other Aspect	Potential Impact	Management and Mitigation Methods
Timing and location of activity/ physical presence	Interference with fishing, shipping and/or other users	Maintaining 500m safety zone; Maritime Safety Information Notice; Notice to Mariners; Consultation Plan
Seabed contact	Damage to seabed habitat	Anchors will be carried to the location and lowered directly rather than dragged; dropped objects recovered where practicable
Interference to fauna	Interference with fauna migratory patterns Displacement or attraction of fauna Physical impact from collisions	Adherence to EPBC Regulations; Briefing/induction for AHSV and helicopter personnel on cetacean/turtle interaction guidelines; Trained Marine Fauna Observer onboard
Noise	Acoustic disturbance to marine fauna Noise annoyance to residents/ tourists	Adherence to EPBC Regulations ; Briefing/ induction of personnel on cetacean, whale sharks and turtle interaction regulations/ guidelines; Trained Marine Fauna Observer onboard; environmental awareness program
Light	Disorientation of marine fauna	Consideration of potential for lighting impacts has been evaluated and where applicable, actions taken
Atmospheric emissions	Emission of greenhouse gases	Vessels hold current International Air Pollution Prevention Certificates; annual general inspection of machinery; fuel records; training
Flushing water	Localised reduction in water quality (turbidity); potential toxicity to marine fauna	Test water additives are to be ranked "D" or better on OCNS ranked list or "Gold" CHARM
Liquid wastes	Localised nutrient increase; minor increase in salinity; introduction of potential contaminants in water column from sewage, grey water, food waste, RO brine rejects, cooling water Oil and grease contamination to marine environment from deck drainage	Certificate of STP compliance with either MEPC.159(55) [post 2010 installation] or MEPC.2(VI) [installed pre 2010]; macerator on board; discharge records kept Current IOPP certificate (International Oil Pollution Prevention); compliant oil in water separator and meter
Solid wastes	Impact on the marine environment from waste disposal	Waste stored on board is segregated and in appropriate containers; training of personnel in waste management procedures; Waste Management Plan
Introduction of non-indigenous or invasive marine species	Displacement of native species by marine pests from ballast water and biofouling	Adherence to AQIS Australia Ballast Water Management Requirements; IMS risk assessment; Installation vessels have current Certificate of Anti-Fouling Systems (IAFS)
Marine spills of stored chemicals or refined oil	Contamination or pollution of the water column; visual pollution and potential toxicity	Compliant SOPEP and SOPEP kit; IOPP certificate; SOPEP drills undertaken
Uncontrolled leak of diesel from bulk storage	Contamination or pollution of the water column; potential large area of acute and chronic toxicity; visual pollution; impact to other users; complaints	Petroleum safety zone; support vessel on standby to maintain exclusion zone; SOPEP; spill kits on board and personnel trained; IOPP certificate; Maritime Safety Information Notice; Notice to Mariners
Spill of diesel during transfer operations	Contamination or pollution of the water column; visual pollution	Transfers only under acceptable sea state and daylight hours; Certified transfer hoses; dry break couplings; clean up kit in proximity; SOPEP; IOPP certificate

6 MANAGEMENT APPROACH

The Pyrenees Expansion project activities will be managed in compliance with the Pyrenees Expansion Installation, Hook-up and Commissioning Environment Plan accepted by NOPSEMA under the regulations and BHP Billiton's risk management policy.

The objective of the Environment Plan is to ensure that potential adverse impacts on the environment associated with the activities, during both routine and non-routine operations, are identified, will be reduced to ALARP and will be of an acceptable level.

The Environment Plan details specific objectives and standards for each environmental aspect that was identified and assessed in the Environmental Risk Assessment. The Environment Plan then details for each environmental aspect the range of controls to be implemented (consistent with standards) to achieve the performance objectives. The Environment Plan then established the specific measurement criteria that will be used to demonstrate that performance objectives are achieved.

The implementation strategy identifies the roles and responsibilities and the training and competency requirements for all personnel (BHP Billiton and contractors) in relation to implementing controls, managing noncompliance, emergency response (oil spills) and meeting monitoring and auditing and reporting requirements during the activity. The Environment Plan details the types of monitoring and auditing that will be undertaken (including audits and monitoring during the activity) and reporting requirements for environmental incidents (recordable and reportable incidents) and reporting overall compliance of the activity.

7 CONSULTATION

BHP Billiton has been actively involved in stakeholder engagement in the region since 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.

An Exmouth Sub-basin Stakeholder Engagement Management Plan (SEMP) has been in place since the start-up of the Stybarrow FPSO in November 2010. The SEMP is reviewed and updated annually. The stakeholder list contained within the Exmouth Sub-basin SEMP is updated each time a new activity is planned within the region or an Environment Plan is to be submitted.

In support of the Pyrenees expansion project, BHP Billiton undertook an assessment of the proposed activities and potential environmental, social and economic impacts. All relevant stakeholders were sent an Environment Plan Fact Sheet, containing: a map showing the location of the proposed activity; a description of the activity including timing and duration; a description of the socio-environmental risks and mitigation measures; and details on where to seek additional information if required.

In addition, stakeholders were provided with

- face to face meetings;
- a presentation of information on the activity via the Exmouth Community Reference Group meeting;
- follow-up telephone calls to solicit comments or questions relating to the proposed activities; and
- a toll-free 1800 number and email address for queries

BHP Billiton will continue to engage with stakeholders in the lead up to the commencement of activities through regular community reference group meetings. In addition, we will directly communicate any material change to the activity as described in the Fact Sheet to all relevant stakeholders. Prior to mobilisation of the vessel, BHP Billiton will issue a notice to mariners and distribute a vessel fact sheet to Exmouth and regional recreational and commercial marine users.

8 CONTACT DETAILS

For further information about this activity please contact BHPB Petroleum Government and External Affairs Team on 1800 110 258 or send an email to bhppetexternalaffairs@bhpbilliton.com.