



bhpbilliton

**BUNYIP-1 EXPLORATION DRILLING
ENVIRONMENT PLAN SUMMARY**

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1 INTRODUCTION

BHP Billiton Petroleum Pty Ltd (BHP Billiton), is proposing to drill the Bunyip-1 exploration well in Exploration Permit Area WA-335-P, in Commonwealth waters approximately 115 km northwest of Exmouth, Western Australia. BHP Billiton is operator on behalf of a joint venture comprising BHP Billiton Petroleum (Australia) Pty Ltd, Apache Northwest Pty Ltd and KUFPEC (Perth) Pty Ltd.

The project specific Environment Plan (EP) ensures that all operations are planned and conducted in line with BHPBP's environmental standards and complies with statutory requirements. It serves 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

Bunyip-1 is planned as a vertical exploration well to a planned maximum depth of 3175 m below the seabed targeting a formation approximately 58 km northeast of the Stybarrow FPSO. The proposed well location lies within BHP Billiton Permit Area WA-335-P (Figure 2-1).

The proposed well location is in deep water, about 1190 m deep, on the outer edge of the continental slope approximately 115 km north-west of Exmouth, 84 km north-west of the closest point of the Ningaloo Marine Park and approximately 102 km from the closest reef or coastline of Ningaloo Marine Park or Muiron Island Marine Management Area. The well coordinates are provided in Table 2-1.

Table 2-1: Bunyip-1 exploration well location (GDA94)

Well Name	Latitude	Longitude	Water Depth (m LAT)
Bunyip-1	20° 57' 50.5"	113° 41' 20.1"	1190

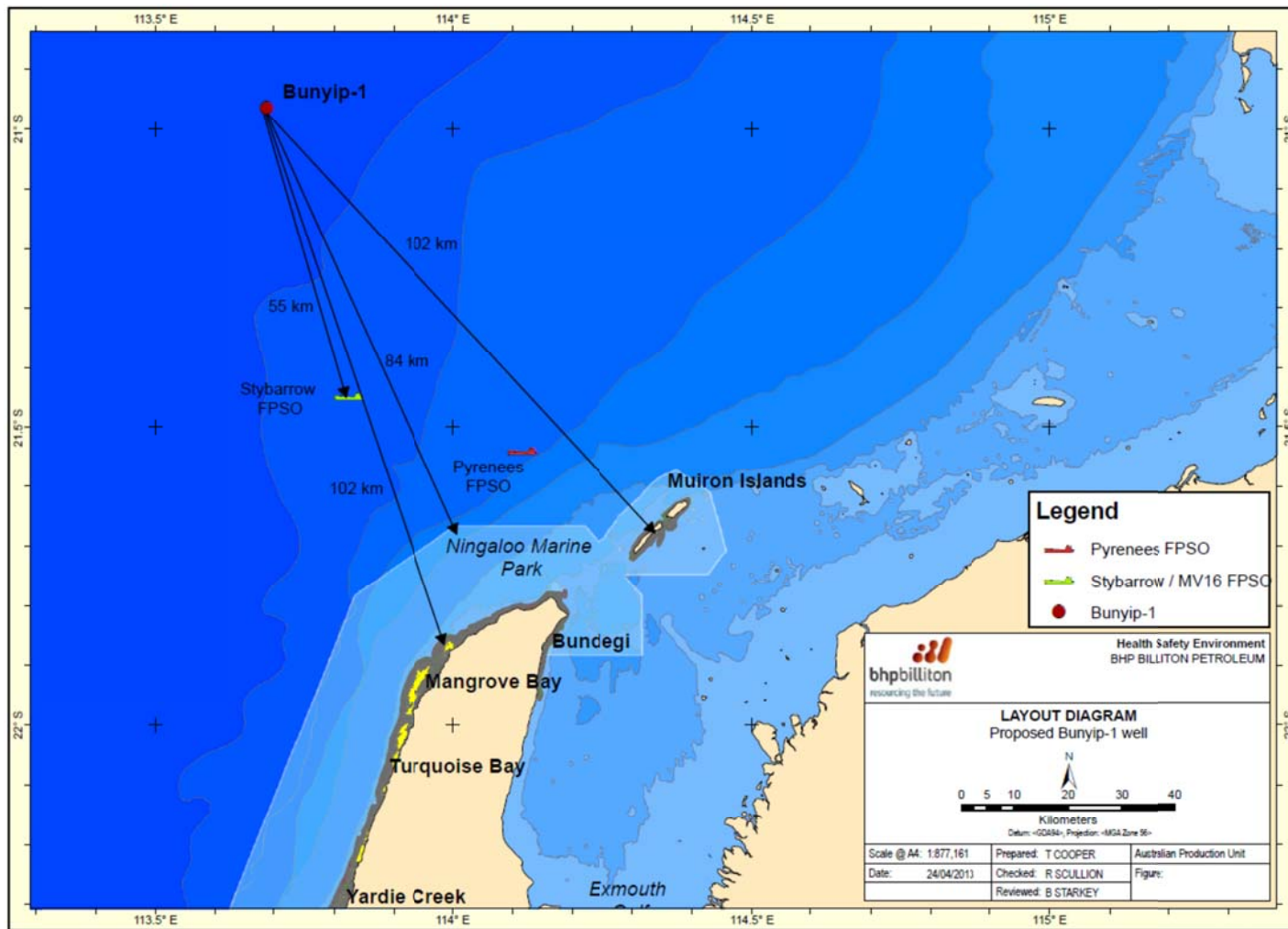


Figure 2-1: Location diagram showing Bunyip-1

3 DESCRIPTION OF THE ACTION

A semi-submersible drilling rig, will be used for the Bunyip-1 drilling campaign. The proposed semi-submersible drilling rig normally has accommodation for about 110 personnel and will be supported by two Anchor Handling and Supply Vessels (AHSVs).

A summary of activities to be undertaken for the well are detailed below:

- Run anchors
- Drill 914 mm (36") hole riser-less
- Install 762 mm (30") conductor and cement annular space back to the seabed
- Drill 444 mm (17 ½") hole riser-less
- Install 340 mm (13 3/8") casing and cement annular space back to the seabed
- Install, latch and pressure test BOP
- Drill 311 mm (12 ¼") hole to target depth, undertake formation evaluation that may comprise of:
 - FEWD
 - Coring
 - Wireline logging
- Plug and abandon
- Pull anchors

The base case for drilling is to use water based muds (WBM) for all hole sections. The basic formulation of WBM likely to be used has seawater brine as the base fluid with additives for controlling formation pressure, borehole stability improving drilling performance and reliability. Synthetic based muds (SBMs) may be used in some hole sections subject to finalisation of well design.

Cementing operations are undertaken to ensure well integrity. Cement is transported as dry bulk to the rig by the support vessels and is mixed with water in the cementing unit onboard the rig to form wet grout/concrete slurry immediately prior to use. The grout/concrete slurry is then injected down to the well by high pressure pumps.

3.1 Timing

The well is expected to be drilled in late 2013. Drilling operations are expected to take 30 to 40 days to complete. The drilling rig may be on location for a longer period if there are periods of non-drilling such as during a weather stand-down.

4 DESCRIPTION OF RECEIVING ENVIRONMENT

4.1 Natural Environment

The seabed at the Bunyip-1 location has not been surveyed but is likely to be characterised by soft fine sediments, mostly silts and clays with evidence of bioturbation.

4.2 Biological Environment

The continental slope and shelf are, for the most part, ecosystems built on a soft sediment habitat with gradational variation in species composition due to depth, water temperature, light penetration and sediment composition/structure. It consists of generally sparse populations of sessile sponges, soft corals and algae (at shallower depths), with a mobile population of burrowing crustaceans, echinoderms and molluscs.

The characteristics of the seabed at the Bunyip-1 location can be inferred from the most recent data derived from a geophysical and geotechnical survey conducted in 2001 to the south and east of the well location. Seabed communities 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.

The most dominant marine habitat in the general vicinity is the Ningaloo Reef comprising a mosaic of substrata that includes hard coral, macroalgae, turfing algae, limestone pavement and sand.

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 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 vicinity of the Bunyip-1 location is likely to vary seasonally from low numbers during December to May and low to moderate abundance from June to November.

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.

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. Whale 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.

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 area, 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 Bunyip-1 well location.

4.3 Socio-Economic Environment

There are no conservation reserves or parks located within the vicinity of the drilling location. The closest marine conservation areas are the Muiron Islands Marine Management Area and the Ningaloo Marine Park. The proposed well location is 84 km north-west of the closest point of the Ningaloo Marine Park and approximately 102 km from the closest reef or coastline of Ningaloo Marine Park or Muiron Island Marine Management Area.

There are a number of commercial fisheries in the area. The fisheries operating in the vicinity of the well location include the Western Deep Water Trawl Fishery, Mackerel Managed Fishery, Western Tuna and Billfish Fishery, West Coast Deep Sea Crustacean (Interim) Managed Fishery and the Exmouth Gulf Prawn Managed Fishery.

The proposed Bunyip-1 well is located at the convergence of two shipping fairways. The shipping fairways see significant traffic travelling from Australia to Lombok and on the Ombai Strait route.

The Western Australian Maritime Museum database identifies five shipwrecks in the general area off North West Cape, but none in the area of the Bunyip-1 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 Drilling Worldwide Management Policies (WWD000). Details are outlined in Table 1 below.

All mitigation measures associated with hazards will be used to reduce environmental risk to ALARP and will be of an acceptable level.

Table 1: Summary of environmental Aspects, potential impacts and management and mitigation methods.

Environmental/Other Aspect	Potential Impact	Management and Mitigation Methods
Timing and location of drilling activity/ physical presence	Interference with fishing, shipping and/or other users	Maintaining 500m safety zone; Maritime Safety Information Notice; Notice to Mariners; Consultation Plan
Anchoring and seabed contact	Damage to seabed habitat Displacement of benthic biota	Anchors carried by support vessels directly to deployment location; Anchor Analysis Plan; Rig Move and Positioning Plan identify areas of potential highly sensitive habitat to be avoided.
Interference to fauna	Interference with fauna migratory patterns Displacement or attraction of fauna Physical impact from collisions	Adherence to EPBC Regulations; Briefing/induction on cetacean/turtle interaction guidelines
Noise	Acoustic disturbance to marine fauna Noise annoyance to residents/ tourists	Procedures developed based on EPBC Act Policy Statement – <i>Interaction Between Offshore Seismic Exploration and Whales</i> ; Adherence to EPBC Regulations; Briefing/ induction of personnel on cetacean, whale sharks and turtle interaction regulations/ guidelines
Light	Disorientation of marine fauna Visual impact	Illumination of working areas on the MODU and support vessels for safe working practices only.
Atmospheric emissions	Emission of greenhouse gases	Low sulphur diesel; preventative maintenance system; compliance with Marine Orders 97 (Marine Pollution Prevention, Air Pollution); Rig and support vessels have current International Air Pollution Prevention Certificates; annual inspection of machinery
Drilling fluids and	Localised reduction in water quality	Using CHARM and OCNS rating as a selection criteria;

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cuttings	(turbidity); potential toxicity to marine fauna; localised displacement and smothering of seafloor biota	using shakers and centrifuges for maximum fluid re-use; no discharge of whole SBM fluids (returned to shore)
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 Toxicity to marine biota from BOP control fluid	Compliance with MARPOL; food wastes macerated to less than 25 mm prior to discharge Bundling; plugging or closing drains; current SOPEP; clean up equipment on board; operation and maintenance procedures; chemical selection process for least environmental harm BOP control fluid MSDS on board
Cementing fluids	Localised reduction in water quality, deposition of cement on seabed	Cementing operations will be continuously monitored; MSDS's on board
Solid wastes	Impact on the marine environment from waste disposal	No disposal of harmful substances or garbage to sea; wastes identified, segregated and stored according to type; inductions of personnel in waste management procedures
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
Marine spills of stored chemicals or refined oil	Contamination or pollution of the water column; visual pollution and potential toxicity	Bundling; preventative maintenance system; compliant SOPEP; clean up equipment on board; chemical selection process
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	Navigation aids; competent crew; petroleum safety zone; support vessel on standby to maintain exclusion zone; SOPEP; spill kits on board and personnel trained; WA Oil Spill Contingency Plan; Bunyip-1 Oil Spill Contingency Plan
Spill of diesel or SBM during transfer operations	Contamination or pollution of the water column; visual pollution	Transfers only under acceptable sea state and daylight hours; Certified transfer hoses; venting system; dry breakaway couplings; oil recovery system in drainage; tank alarms; hoses replaced 6-monthly; clean up kit in proximity; SOPEP
Loss of well containment	Contamination or pollution of the water column, impact to fauna, interference with fishing, shipping and/or other users from well blow out or sinking of MODU	Drilling Management System in place; Well Operations Management Plan; Oil Spill Contingency Plan

6 MANAGEMENT APPROACH

The Bunyip-1 exploration drilling activities will be managed in compliance with the Bunyip-1 Exploration Drilling Environment Plan which will be submitted to NOPSEMA for approval under the regulations and will comply with 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, and will be reduced to ALARP and will be of 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

Since August 2012 BHP Billiton has been engaged in a process to identify and consult all relevant stakeholders who may have an interest or be affected by BHPs exploration activities in the Exmouth sub-basin.

BHP Billiton undertook an assessment of the proposed activities and potential environmental, social and economic impacts from the proposed exploration well drilling described in the EP. The following impacts were considered most relevant to stakeholders:

- potential disruption to marine animals;
- potential risk of sea pollution (which is assessed as very low) due to loss of containment of chemicals and hydrocarbons; and,
- potential impact of temporary disruption of commercial and recreational vessels.

BHP Billiton then undertook a stakeholder engagement program with 38 direct stakeholders in support of the Bunyip-1 Environment Plan submission. This included departments or agencies of the Commonwealth; departments or agencies of a State; the department of the responsible State Minister and/or persons or organisations whose functions, interests or activities may be affected by the Bunyip-1 exploration well drilling activity and/or any associated potential risks.

An Environment Plan Fact Sheet was prepared and distributed to key stakeholders in August 2012. It contained a summary of key project information including: 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.

BHP Billiton met with stakeholders face to face and provided:

- a presentation of information on the activity via the Exmouth Community Reference Group meetings;
- 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.

This activity is conducted in addition to the comprehensive and extensive engagement already complete for BHP Billiton activities in the Exmouth area for a rolling schedule of offshore seismic and exploration activities in 2012 and 2013.

BHP Billiton will continue to engage with stakeholders in the lead up to the commencement of activities through regular Community Reference Group (CRG) meetings.

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.