



bhpbilliton

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

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1 INTRODUCTION

BHP Billiton Petroleum Pty Ltd (BHP Billiton), acting as operator on behalf of a joint venture comprising BHP Billiton Petroleum (Australia) Pty Ltd and Woodside Energy Limited, is proposing to drill the Rydal-1 exploration well. The well will be drilled in Exploration Permit Area WA-255-P, approximately 74 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

Rydal-1 is planned as a vertical exploration well to a planned maximum depth of 2430 m below the seabed targeting a formation approximately 12 km north of the Stybarrow FPSO that is predicted to contain crude oil of similar qualities to the nearby Eskdale field. The proposed well location lies within BHP Billiton Permit Area WA-255-P (Figure 2-1) and is encompassed within the Stybarrow Notional Development Area.

The proposed well location is in deep water, about 750 m deep, on the outer edge of the continental slope approximately 74 km north-west of Exmouth, 59 km north-west of the closest point of the Ningaloo Marine Park and approximately 60 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: Rydal-1 exploration well location (GDA94)

Well Name	Latitude	Longitude	Water Depth (m LAT)
Rydal-1	21° 19' 22.4"	113° 52' 04.8"	755

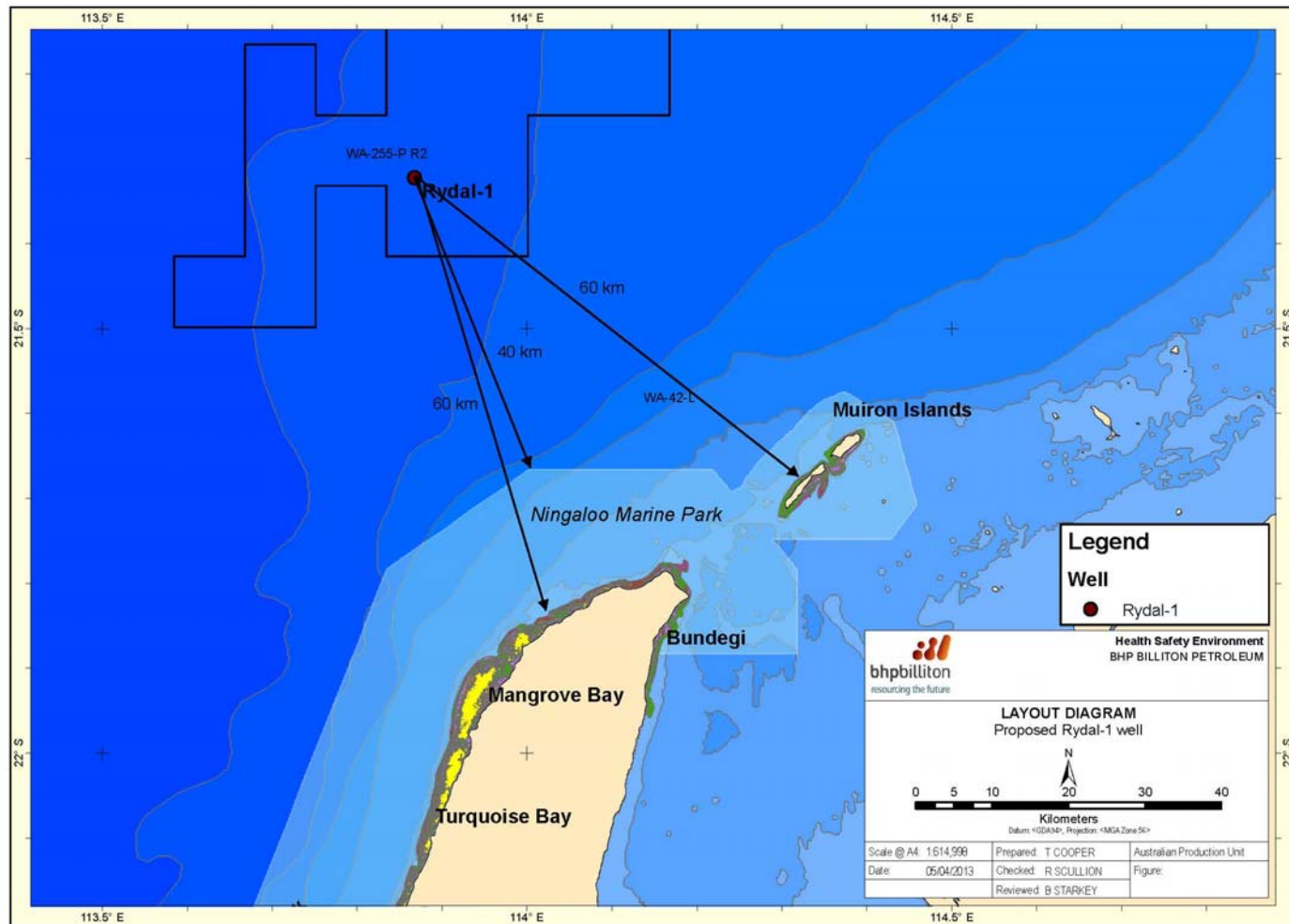


Figure 2-1: Location diagram showing Rydal-1

3 DESCRIPTION OF THE ACTION

A semi-submersible drilling rig similar to the ones used by BHP Billiton previously to drill the Stybarrow production wells and other exploration wells in the region will be used to drill the Rydal-1 well. A semi-submersible drilling rig of this size normally has a complement of about 100 to 130 personnel and is supported by minimum of two Anchor Handling and Supply Vessels (AHSVs).

Prior to the rig arriving in the permit area a 'Rig Move and Positioning Plan' will be prepared, detailing the exact configuration of the anchors necessary to keep the rig securely on location; typically eight drag embedment anchors are used. The anchors will be carried by the AHSVs to the pre-identified deployment spot and lowered to the seabed. The rig will then winch in the slack from the mooring lines to the required tension. Removal of anchors is reverse of the deployment procedures described above.

A summary of activities to be undertaken for the well is listed below:

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

3.1 Timing

The well is expected to be drilled in between July 2013 and December 2013 inclusive. 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 weather stand-down.

4 DESCRIPTION OF RECEIVING ENVIRONMENT

4.1 Natural Environment

The Rydal-1 well is located on outer edge of the Continental Slope geomorphic feature, in water of 750 m deep approximately 65 km northwest of North West Cape. The seabed within the near vicinity of the well location is even with a slight downward slope of about 2° from east to west. The seabed at the Rydal-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

Seabed communities on the continental slope are relative 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.

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.

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

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.

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.

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, which is an endangered species, may be sighted in the vicinity of the Rydal-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 to the drilling location are the Muiron Islands Marine Management Area and the Ningaloo Marine Park (Commonwealth boundary) located 60 km and 40 km respectively from the well location.

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 and West Coast Deep Sea Crustacean (Interim) Managed Fishery.

There are not any shipwrecks in the area of the Rydal-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).

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 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 Environment and Biodiversity Act (EPBC) Regulations; Briefing/induction on cetacean/turtle interaction guidelines
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
Light	Disorientation of marine fauna Visual impact	Illumination of working areas on the Mobile Offshore Drilling Unit (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 cuttings	Localised reduction in water quality (turbidity); potential toxicity to marine fauna; localised displacement and smothering of seafloor biota	Using Chemical Hazard and Risk Management (CHARM) and Offshore Chemical Notification Scheme (OCNS) rating as a selection criteria; using shakers and centrifuges for maximum fluid re-use; no discharge of whole synthetic based muds (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 the International Convention for the Prevention of Pollution from Ships (MARPOL); food wastes macerated to less than 25 mm prior to discharge Bunding; plugging or closing drains; current Ship Oil Pollution Emergency Plan (SOPEP); clean up equipment on board; operation and maintenance procedures; chemical selection process for least environmental harm BOP control fluid Material Safety Data Sheet (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 garbage to sea; wastes identified, segregated and stored according to type; inductions of personnel in waste management procedures
Introduction of non-indigenous or invasive	Displacement of native species by marine	Adherence to AQIS Australia Ballast Water Management

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marine species	pests from ballast water and biofouling	Requirements; Introduced Marine Species risk assessment
Marine spills of stored chemicals or refined oil	Contamination or pollution of the water column; visual pollution and potential toxicity	Bunding; 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; Rydal-1 Oil Spill Contingency Plan
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 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 Rydal-1 exploration drilling activities will be managed in compliance with the Rydal-1 Exploration Drilling 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, 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

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 Rydal-1 exploration well drilling operations, 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.

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 drilling 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.