

Calthorpe-1 Exploration Well Environmental Plan Summary

This summary of the Calthorpe-1 Exploration Well Environment Plan has been submitted to comply with Regulation 11(7)(8) of the *Petroleum (Submerged Lands) (Management of Environment) Regulations 1999*.

Introduction

Woodside Energy Ltd (Woodside) proposes to undertake drilling of the Calthorpe-1 exploration well in two parts within Permit Area WA-271-P. The proposal is to use the Chikyu drill ship, operated by Seadrill, and the Jack Bates semi-submersible drill rig, operated by Transocean. The well is located within the Permit Area WA-271-P, 50 km north-west of Exmouth and 19 km from the Ningaloo Marine Park.

Project Description

It is planned that the well will be drilled using seawater with hi-vis sweeps in the upper sections for the first part of the drilling programme (June 2007) using the Chikyu. The second part of the drilling programme by the Jack Bates (August 2007) will use a water based mud (WBM) in the lower section of the well.

Vertical Seismic Profiling (VSP) will be conducted if the exploration well encounters a hydrocarbon formation. Any VSP would be carried out in a separate wireline run using the Jack Bates, following drilling of the bottom hole section.

No well testing, and hence no flaring, is required.

Coordinates of Activity

The surface location coordinates are: UTM (GDA94 50S):

Easting: 172 462 mE	Long. 113° 50' 15.18" E
Northing: 7 611 931 mN	Lat. 021° 33' 56.10" S

Description of the Receiving Environment

The Calthorpe-1 exploration well is located approximately 38 km from North West Cape, 19 km from the boundary of the Ningaloo Marine Park, which is a nominated world heritage site, and 44.5 km from the Muiron Island Marine Management Area where the Muiron Islands are a known nesting site for Green and Loggerhead turtles.

Physical Environment

The North West Cape exists in an arid (mainly summer rain), subtropical environment with a tropical cyclone period from November to April. Winds in the area blow predominantly from the south-west and south-east quarters.

Tides are semi-diurnal (four current reversals a day). The Leeuwin Current, which originates in the region, runs southward along the edge of the continental shelf and is primarily a surface flow (up to 150 m deep) which is strongest during winter. The Ningaloo Current flows in the opposite direction to the Leeuwin Current, running northward along the outside of Ningaloo Reef and across the inner shelf from September to mid-April.

Regional sea surface temperatures in summer range from 26 – 31°C and in winter from 19 – 24°C. Water temperatures decrease with depth, with temperatures near the seabed in the

adjacent Vincent Development Area (230 – 460 m water depth) ranging seasonally from 8 – 10°C.

Biological Environment

The most significant regional coastal habitat is Ningaloo Reef, which extends 260 km southward of North West Cape. The reef is considered to be in generally pristine condition and supports diverse biological communities including corals, other invertebrates and fish. Small mangrove communities are present on the west coast of the Exmouth Peninsula and are more extensively developed on the eastern shore of Exmouth Gulf. Various sandy beaches on the coastal areas and islands in this region support significant turtle nesting areas.

The habitats and species associated with the fringing Ningaloo Reef and shallow coastal waters are relatively accessible and better understood than the deeper water shelf environments off North West Cape. As part of Woodside's environmental assessment of the Enfield and Vincent Developments, in the adjacent WA-28-L permit area, an extensive programme of investigation and studies has been conducted on deepwater marine environments. This has included:

- Seabed habitat surveys: a series of vessel and drilling rig-based video surveys and fauna sampling surveys of the seabed in water depths up to 900 m;
- Physical and biological oceanographic surveys: vessel-based recording of a range of physical parameters and zooplankton abundance and distribution in nearshore and offshore areas;
- Aerial surveys of larger marine animals: a two-year programme of regular flights over the region to record the presence of large marine fauna including whales, dolphins, whale sharks, manta rays and turtles;
- Vessel surveys of larger marine animals: a two year programme of vessel surveys funded by both Woodside and BHP Billiton, to record the presence of large marine fauna, focussing on Humpback whales; and
- Whale shark studies: satellite and acoustic tagging to determine short and long-term movements and nearshore feeding behaviour.

A variety of cetaceans (whale and dolphin species) have been recorded during surveys of offshore waters in the vicinity of the permit area including several large whales, notably Humpback, Blue, Sperm, Minke, Pilot and False Killer Whales.

Survey information indicates that Humpback Whales are the most abundant whale species recorded, these being present between June and November. Individuals were recorded up to 80 km offshore and showed differences in distribution patterns during the northern, southern and transition periods. A peak in average numbers was recorded during the year over a three-week transition period, commencing in late August, when the northern and southern migrations overlap.

Overall, the highest concentrations of pods were observed in water depths of around 200 m during the northern migration, 200 – 300 m during the transition period and in waters shallower than 200 m during the southern migration.

Whale sharks are found to aggregate off Ningaloo Reef, generally between April and June each year. Observations indicate most encounters in the northern area of Ningaloo Marine Park have occurred between Jurabi Point and Ned's Camp, with relatively fewer sightings to the north and south. Whale Sharks are also regularly observed in the area between Point Maud and Point Cloates, generally in May. Most sightings occur close to the reef front and within three nautical miles (nm) of the shoreline. The local population is estimated to be 200–300 individuals.

Four marine turtle species occur in the region: Hawksbill, Flatback, Green and Loggerhead. Individuals of any of the above may pass through the permit area on their way to and from

nesting beaches on the mainland and adjacent islands. At sea, the concentration of these animals is low.

Socio-Economic Environment

The nearest town to the well location is Exmouth. The Exmouth Shire covers an area of approximately 5,700 km² in the North West Cape region of Western Australia, and is located about 1,200 km north of Perth. The two nearest towns to Exmouth are Carnarvon, approximately 370 km to the south-east and Onslow, approximately 410 km to the north-east. The resident population in the Shire of Exmouth is approximately 2,300 people, though there are large short-term fluctuations in population due to the high number of tourists that visit the area. The main commercial activities associated with Exmouth include prawn fisheries, tourism and defence-related activities. Limited commercial fishing takes place in deepwater offshore regions, the most notable being a developing longline fishery.

Tourism is one of the major industries of the town and contributes significantly to the local economy in terms of both income and employment. Around 104,000 tourists (about 70% domestic and 30% international) stay overnight in Exmouth each year. Traditional tourist activities have centred around recreational fishing and boating, but more recently nature-based tourism has become popular, based around Ningaloo Reef, Cape Range National Park, and seasonal attractions such as the humpback whales, whale sharks and turtle nesting. The main marine nature-based tourist activities are snorkelling and scuba diving, whale shark encounters, whale watching and tours of turtle hatching beaches.

The region is very prospective for oil and gas, with ongoing exploration drilling for petroleum, oil and natural gas both onshore and offshore in the vicinity of Exmouth. A number of oil and gas production facilities are already located in the region.

While there are no defined shipping lanes in the North West Cape region, there are general shipping routes running in a north-south direction along the coast which become north to easterly to the north of Exmouth. Approximately 1,200 vessels per year pass through the area off North West Cape, with approximately 550 ships passing through the permit area.

Major Environmental Hazards and Controls

A risk assessment for the drilling of the Calthorpe-1 exploration well identified the major impacts from drilling activities to be discharge of drill cuttings and fluids, and potential spill of hydrocarbons.

The results of modelling from the adjacent Enfield project area (Permit WA-28-L), approximately the same distance from regional sensitive areas, showed a low potential for the exposure of the Ningaloo Marine Park or coastal areas to spilt hydrocarbons.

A series of comprehensive environmental management controls such as well control and refuelling procedures, permit to work system and Job Hazard Analysis will be maintained by Woodside, Seadrill and Transocean to ensure that no significant environmental effects are realised from the drilling operation. Potential spills will be managed according to the oil spill arrangements and procedures outlined in the approved Carnarvon Basin (WA) Oil and other Noxious and Hazardous Substances Spill Contingency Plan (ERP-3250).

Summary of Management Approach

The following tables identify the key management objectives, standard and criteria to achieve these objectives.

General Performance Objectives, Standards and Criteria for Calthorpe-1 Drilling Activities

Objectives	Standards	Criteria
No introduction of exotic marine species	<ul style="list-style-type: none"> • AQIS Australian Ballast Water Management Requirements • <i>Quarantine Act 1980</i> 	<ul style="list-style-type: none"> • Chikyu, Jack Bates and support vessels adhere to AQIS Australian Ballast Water Management Requirements and quarantine requirements.
No significant impact to marine fauna	<ul style="list-style-type: none"> • Woodside Environmental Standards and Aspirations • EBPC Amendment Regulations 2006 • DEW Guidelines for Minimising Disturbances to Whales 	<ul style="list-style-type: none"> • Guidelines to minimise whale disturbance followed. • Required safe distance of 300 m from cetaceans maintained by standby vessels. • VSP Survey Procedures followed.
No significant impact on marine environment from drilling fluids and cuttings	<ul style="list-style-type: none"> • Woodside Environmental Standards and Aspirations • Woodside's Well Engineering Drilling Fluid Selection Procedure (TP03) 	<ul style="list-style-type: none"> • Use of approved, low toxicity WBM. • Fluid and cuttings control equipment inspected and operating correctly prior to commencement of operations.
No significant impact on marine environment from routine discharges	<ul style="list-style-type: none"> • Woodside Environmental Standards and Aspirations • MARPOL 73/78 Annex IV 	<ul style="list-style-type: none"> • Sewage and putrescible waste systems are fully operational prior to commencement of drilling operations and includes maceration to less than 25 mm diameter. • Check for marine mammals within the vicinity of the drill unit undertaken before discharge of residual water based mud or cement. • Deck drainage contaminated by hydrocarbons or chemicals is contained and disposed onshore unless monitored and oil in water content below 15 mg/L.
No significant environmental impact from solid and hazardous wastes	<ul style="list-style-type: none"> • Woodside Environmental Standards and Aspirations • Waste Management Plan - Dampier • MARPOL 73/78 Annex IV 	<ul style="list-style-type: none"> • Waste Management Plan is in place and adhered to. • Hazardous wastes documented and tracked according to requirements. • MSDS sheets readily available. • Waste log maintained and quantities of wastes transported ashore recorded. • Recording and reporting of all items lost overboard.

Objectives	Standards	Criteria
Minimise interference with recreational vessels, commercial fishing, and shipping.	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations Jack Bates Emergency Response Plan AMSA requirements. 	<ul style="list-style-type: none"> Functional navigational lighting in place and in use. Consultation with local fishermen, fishing industry groups and management agencies as needed. Operations carried out in a manner that does not interfere with navigation and fishing to a greater extent than is necessary. Marine notices broadcast according to Standard Maritime Safety Procedures (AMSA), via the Rescue Co-ordination Centre (RCC).

Chikyu Specific Performance Objectives, Standards and Criteria for Calthorpe-1 Drilling Activities

Objectives	Standards	Criteria
No significant disturbance to seabed and benthic habitats	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations Supply Vessel Marine Operations Procedures 	<ul style="list-style-type: none"> Use of dynamically position drill ship. Use of ROV to position transponders. Recording and reporting of all items lost overboard.
No hydrocarbon or chemical spills to the marine environment.	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations Chikyu SOPEP Chikyu Emergency Response Plan Carnarvon Basin (WA) Oil and other Noxious and Hazardous Substances Spill Contingency Plan (ERP-3250) 	<ul style="list-style-type: none"> Approved OSCP in place. Chikyu crew induction covers spill response procedures and spill response exercise conducted. Re-fuelling procedures are in place and followed for Chikyu and standby vessels. JHA for bulk transfer of diesel and drilling fluids reviewed before each transfer. Dry break couplings used on transfer hoses. At sea refuelling supervised by Vessel Master or nominated Officer. DP Operator in the control room at all times. Records kept of inspections and preventative maintenance. All valves, couplings and the transfer hose checked for integrity prior to use. Approval is sought and provided prior to all dispersant applications.

Objectives	Standards	Criteria
Minimise emissions to atmosphere from incineration of wastes.	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations MARPOL 73/78 Annex IV MEPC.76(40) Standard Specification for Shipboard Incinerators Incinerator Operating Manual 	<ul style="list-style-type: none"> Incinerator certified to meet MARPOL requirements. Incinerator operated as per Incinerator Operating Manual. Only combustible non-hazardous waste, with the exception of oil and oily material, to be incinerated. Ash to be contained and transported onshore for disposal. Flue gas outlet temperature monitored together with fed / start up controls.

Jack Bates Specific Performance Objectives, Standards and Criteria for Calthorpe-1 Drilling Activities

Objectives	Standards	Criteria
No significant disturbance to seabed and benthic habitats	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations Site specific mooring plan Jack Bates Specific Procedures Support Vessel Marine Operations Procedures 	<ul style="list-style-type: none"> Anchor deployment and retrieval is done according to anchoring procedures and anchoring plan. Recording and reporting of all items lost overboard.
No hydrocarbon or chemical spills to the marine environment.	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations Jack Bates SOPEP Jack Bates Emergency Response Plan Carnarvon Basin (WA) Oil and other Noxious and Hazardous Substances Spill Contingency Plan (ERP-3250) 	<ul style="list-style-type: none"> BOP in place. Approved OSCP in place. Jack Bates crew induction covers spill response procedures and spill response exercise conducted. Re-fuelling procedures are in place and followed for Jack Bates and standby vessels. JHA for bulk transfer of diesel and drilling fluids reviewed before each transfer. Dry break couplings used on transfer hoses. At sea refuelling supervised by Vessel Master or nominated Officer. Records kept of inspections and preventative maintenance. All valves, couplings and the transfer hose checked for integrity prior to use. No anchors to be located over live production lines. Adherence to agreed concurrent activities document. Approval is sought and provided prior to all dispersant applications.

Consultation

Woodside is committed to ensuring stakeholders are consulted on activities undertaken within WA-271-P area. A community consultation programme has been in place since 1997 to inform and update stakeholders on WA-271-P exploration and development activities. This programme was formalised in 2001 with the establishment by Woodside of community reference groups in Perth and Exmouth to support the development of the then Vincent-Enfield development.

Stakeholders of both the Perth and Exmouth Community Reference Group will be provided information regarding the Calthorpe-1 exploration well and Woodside will make this Environment Plan available to those stakeholders who request a copy.

Contact Details

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