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Title: WA-28-L Drilling Campaign 2009-2010

Environment Plan Summary

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Signed:   
Gary Jones

Date: 24/3/09

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## **Environment Plan Summary WA-28-L Drilling Campaign 2009-2010**

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This summary of the WA-28-L (Rev 3) Drilling Campaign 2009-2010 Environment Plan has been submitted to comply with Regulation 11(7)(8) of the *Petroleum (Submerged Lands) (Management of Environment) Regulations 1999*.

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### **1. Introduction**

Woodside Energy Ltd (Woodside) proposes to continue development drilling operations within the WA-28-L licence area during 2009 and early 2010. The licence area includes two fields, the Enfield Development area to the south-west and Vincent Development Area to the north-east. The drilling campaign includes wells already approved for the Vincent Development Area (Woodside, 2005), as well as additional development wells at the Enfield Development Area. The programme will consist of four multilateral production wells in the Vincent Development Area and two development wells in the Enfield Development Area.

Licence area WA-28-L is located approximately 50 km north-west of Exmouth and about 22 km north of the Commonwealth boundary of the Ningaloo Marine Park. The Muiron Islands Marine Management Area is located about 27 km to the south-east.

This Revision 3 of the existing approved Environment Plan (EP) in place has been prepared in accordance with State and Commonwealth regulatory requirements and guidelines and also conforms to Woodside's Environmental Policy and Environment Management System. Revision 3 specifically outlines the programme for the six development wells proposed for drilling in 2009 – 2010 and addresses the environmental risks and impacts associated with the proposed drilling campaign. These wells follow on from the drilling programme outlined for completion in Revisions 0, 1 and 2 of the EP.

### **2. Description of the Action**

Woodside proposes to drill the six development wells using the Nan Hai VI semi-submersible rig. The drilling campaign is planned to commence in March 2009 and take approximately 12-14 months to complete.

The well will be drilled using a combination of seawater, bentonite and guar gum sweeps in the upper sections and either water based mud in the lower sections or Synthetic Based Mud (SBM), depending on the well and location within the respective reservoirs as well technical parameters that need to be addressed for each well.

No Vertical Seismic Profiling or well testing are planned to be carried out as part of this drilling campaign. Open Hole Gravel Pack from support vessel to rig is planned to be undertaken for short duration on the ENE-01 well and Coil Tubing activities may be undertaken as necessary during the programme to enhance productivity where issues may arise.

The Nan Hai VI, which can accommodate up to 92 crew, will be supported by two oilfield support vessels.

### 3. Coordinates of Activity

**Table 1: Surface location coordinates for the six development wells proposed in the Vincent and Enfield Development Areas (UTM Zone 51 (GDA94)):**

Well	Easting	Northing	Latitude	Longitude
<i>Development Wells – Enfield Development Area</i>				
ENC-05	186593.61 mE	7620847.53 mN	21° 29' 15.597 "S	113° 58' 31.842 "E
ENE-01	187882.55 mE	7621556.19 mN	21° 28' 53.387 "S	113° 59' 17.048 "E
<i>Development Wells – Vincent Development Area</i>				
VNA-H5	193 911 mE	7 626 323 mN	21° 26' 22 "S	114° 02' 49 "E
VNA-H6	193 847 mE	7 626 293 mN	21° 26' 23 "S	114° 02' 47 "E
VNB-H5	192 472 mE	7 626 905 mN	21° 26' 02 "S	114° 01' 59 "E
VNB-H6	192 418 mE	7 626 949 mN	21° 26' 01 "S	114° 01' 57 "E

## **4. Description of the Receiving Environment**

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

### **Biological Environment**

#### **Regional Coastal Habitats:**

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.

#### **Seabed Habitats:**

The licence area is located on the continental slope in deep water, ranging from 350 to 450 m. The seabed in this area is dominated by a north-south trending scarp and several east-west trending submarine canyons. The scarp has a height of approximately 50 m, while at the base of the scarp a channel of depth 20 m is present. Minor ridges and channels of depth 5 m are also present in the area. The relief in the submarine canyons is 20 – 50 m in depth.

The majority of the seabed within the licence area is generally featureless and consists of fine to medium sediment (silts and sands).

#### **Large Marine Animals:**

A variety of cetaceans (whale and dolphin species) have been recorded during surveys of offshore waters in the vicinity of the licence 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 during the year between June and November.

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 licence 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 licence area is Exmouth. The Exmouth Shire covers an area of approximately 5,700 km<sup>2</sup> in the North West Cape region of Western Australia, and is located about 1,300 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 2,000 people, though there are large short-term fluctuations in population due to the high number of tourists that visit the area.

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 more popular, centred 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 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.

The region is very prospective for oil and gas, with previous and ongoing exploration drilling for petroleum, oil and natural gas both onshore and offshore on the North West Cape. A number of offshore oil production facilities are located in the region, these being the Nganhurra FPSO (WA-28-L), Maersk Ngujima-Yin (WA-28-L) and Stybarrow Venture FPSO (WA-32-L). Other developments currently under construction are at the Pyrenees oil field (WA-12-R) and Van Gogh oil field (WA155-P).

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 Vincent Development Area each year.

Other significant socio-cultural features include the Ningaloo Marine Park (Commonwealth and State Waters), Muiron Islands Marine Management Area and Cape Range National Park.

## 5. Major Environmental Hazards

The main environmental aspects associated with the proposed drilling activities are identified to be:

- Physical disturbance associated with anchoring, rig movements and rig operations;
- Discharge of drilling, completions and sub-sea fluids, drill cuttings and cementing fluids;
- Discharge of deck drainage; bilge water, cooling water, desalination water
- Vessels and rigs providing a vector for the introduction of invasive marine species;
- Discharge of sewage and putrescible domestic wastes;
- Emissions to atmosphere from operating equipment;
- Discharge of waste materials;
- Accidental hydrocarbon and/or hazardous material spills;
- Noise impacts from the rig, vessels and helicopter; and
- Interaction with fisheries and shipping activities.

An environmental risk assessment was undertaken to identify potential environmental risks from activities associated with the development drilling. A series of comprehensive environmental management controls will be maintained by Woodside and Maersk to ensure that no significant environmental effects are realised from the drilling operation and associated potential risks.

## 6. Summary of Management Approach

The key management objectives and controls to be applied to the development well campaign are shown in Table 2. These are consistent with Woodside Corporate and project specific objectives, standards and criteria. This is not a comprehensive list of all commitments, however all commitments associated with these will be used to reduce environmental risk to As Low As Reasonably Practicable (ALARP).

**Table 2: Management Objectives and Commitments for the WA-28-L 2009/2010 Drilling Campaign**

Objectives	Criteria
No significant impact to seabed and benthic habitats	<ul style="list-style-type: none"> <li>• Anchor deployment and retrieval is done according to anchoring procedures and anchoring plan.</li> <li>• Recording and reporting of all items lost overboard.</li> </ul>
No introduction of exotic marine species	<ul style="list-style-type: none"> <li>• Rig and vessel adhere to AQIS Australian Ballast Water Management Requirements and quarantine requirements.</li> </ul>
No significant impact to marine fauna	<ul style="list-style-type: none"> <li>• Guidelines for minimising whale disturbance followed.</li> <li>• Required safe distance of 300 m from cetaceans maintained by standby vessels.</li> <li>• Helicopters shall not operate outside daylight hours, lower than 1650ft or within the horizontal radius of 500m of a known cetacean.</li> </ul>

Objectives	Criteria
No significant impact on marine environment from routine discharge of drill fluids and cuttings	<ul style="list-style-type: none"> <li>• Use of approved, low toxicity Water Based Mud and Non-Water Based Mud.</li> <li>• Fluid and cuttings control equipment inspected and operating correctly prior to, and during commencement of operations.</li> <li>• Drill cuttings mechanically treated using solids control equipment including VSM shale shakers to reduce oil in cuttings to below 10%.</li> </ul>
No significant impact on marine environment from routine discharges	<ul style="list-style-type: none"> <li>• Putrescible waste macerated to &lt; 25 mm diameter before discharge.</li> <li>• Sewage treated via a MARPOL approved system prior to discharge.</li> <li>• Check for marine mammals within the vicinity of the rig undertaken before discharge of residual water based mud or cement.</li> <li>• Deck drainage contaminated by hydrocarbons is contained and disposed onshore.</li> </ul>
No significant environmental impact from solid and hazardous wastes	<ul style="list-style-type: none"> <li>• Open hole gravel pack fluids or slurry will be returned to shore for disposal in accordance with the Drilling and Completions Waste Management Plan (wastes sent onshore via KBSB).</li> <li>• Drilling and Completions Waste Management Plan is in place and adhered to.</li> <li>• Hazardous wastes documented and tracked according to requirements.</li> <li>• MSDS sheets readily available.</li> <li>• Waste log maintained and quantities of wastes transported ashore recorded.</li> </ul>
No hydrocarbon or chemical spills to the marine environment.	<ul style="list-style-type: none"> <li>• BOP in place.</li> <li>• Approved Oil Spill Contingency Plan in place.</li> <li>• Rig crew induction covers spill response procedures and spill response exercises conducted.</li> <li>• Re-fuelling and bulk transfer procedures are in place and followed for rig and standby vessels.</li> <li>• Job Hazard Analysis for bulk transfer of diesel, drilling fluids and gravel pack fluid reviewed before each transfer.</li> <li>• At sea refuelling and bulk transfer supervised by Vessel Master or nominated Officer.</li> <li>• Dry break couplings and floats used on transfer hoses (<i>note that this is not applicable to the fit for purpose OHGP transfer hose</i>).</li> <li>• Records kept of inspections and preventative maintenance.</li> <li>• All valves, couplings and the transfer hose checked for integrity prior to use.</li> <li>• OHGP operational manual, HSE Plan, procedures and task specific hazard assessments.</li> <li>• Hazard identification workshops for OHGP and concurrent activities.</li> <li>• Approval is sought and provided prior to dispersant application.</li> <li>• Adherence to the agreed interface document for concurrent activities in WA-28-L.</li> </ul>
Minimise interference with recreational vessels, commercial fishing, and shipping.	<ul style="list-style-type: none"> <li>• Functional rig navigational lighting in place and in use.</li> <li>• Consultation with local fishermen, fishing industry groups and management agencies as needed.</li> <li>• Marine notices broadcast according to Standard Maritime Safety Procedures (AMSA), via the Rescue Co-ordination Centre (RCC).</li> </ul>

## 7. Consultation

Woodside is undertaking a consultation program commensurate with the proposed activities outlined in this EP, taking into consideration existing approval for the drilling of the wells at Vincent, the proposed environmental management measures for approved and proposed activities, low environmental sensitivity of the offshore drilling location, distance from sensitive coastlines, distance from existing communities and other industries.

Woodside recognises stakeholder interest in the broader region, which is recognised for its high conservation values, as well as local stakeholder interest in the use by industry of Exmouth Gulf.

Woodside has sought comment from stakeholders following the submission of this EP to government, to understand and address stakeholder interest in the proposed activities.

Ongoing communication will be undertaken throughout the drilling program, including:

- A newsletter to stakeholders prior to the start of the campaign.
- Advice to other Operators off North West Cape.
- Provision of a toll free telephone number.

\* An independent conservation NGO liaison officer position ('Conservation Liaison Officer') is supported by Woodside to assist Perth and Exmouth conservation NGOs. This contract position was established in 2002 to act as a resource to these key stakeholders with the aim of enhancing their capacity to participate in Woodside's Community Reference Groups (CRGs) or wider consultation processes (including responding to environmental approval documentation). The CLO was jointly selected in 2002 by representatives of both Woodside and the former Marine Conservation Strategy Group (MCSG), a voluntary forum for discussion and analysis of conservation and ecological sustainable management issues for the marine, estuarine and coastal area, to assist co-operation and co-ordination between and within member groups.

## 8. Contact Details

For further information about the WA-28-L Drilling Campaign, please contact:

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