

WA-28-L Conductor Installation Environment Plan Bridging Document Summary (Revision 1)

This summary of the WA-28-L Conductor Installation Environment Plan Bridging Document has been submitted to comply with Regulation 11(7)(8) of the *Petroleum (Submerged Lands)(Management of Environment) Regulations 1999*.

1. Introduction

Woodside Energy Ltd. (Woodside) proposes to install conductor strings (i.e. the first casing string in a well) at four well locations in the WA-28-L Permit Area, using the Havila Harmony dynamically positioned intervention vessel, operated by TSMarine. Installation of the conductor strings will be undertaken using a hydraulic hammer. This type of hammering is a common worldwide industry practice in subsea construction scopes of work. The work is planned to be undertaken during Q4 2009 depending on availability of the vessel and the WA-28-L drilling schedule.

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.

The 'WA-28-L Environment Plan Bridging Document' (bridging EP) bridges to the 'WA-28-L Drilling Campaign 2009-2010 Environment Plan - Revision 4' (WA-28-L EP), approved by the Western Australian Department of Mines and Petroleum (DMP) and the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) in July 2009. The scope of this bridging EP is to cover additional operational activities and environmental aspects specifically associated with the conductor string installation by the Havila Harmony, not already covered in the WA-28-L EP.

2. Description of the Action

The four well locations are within the Vincent and Enfield Development Areas, in Permit Area WA-28-L. The exact locations for the two Enfield wells have not yet been finalised, however both wells will be within a 50 m radius of the Enfield ENE drill centre. Note that the well applications to drill the ENE-02 and ENE-03 wells are yet to be submitted to the DMP.

Table 2-1 details the well names, surface co-ordinates and water depth for the installation activities. The coordinates of the Enfield ENE drill centre have been provided for the locations of the two Enfield wells. The order of the installations to be undertaken is not fixed and is subject to operating and weather conditions. The activity is expected to be undertaken within a two week time period within Q4, 2009.

Table 2-1: Well Names, Co-ordinates and Water Depths (GDA 94, MGA zone 51)

Well	Water Depth (m LAT)	Easting (Longitude)	Northing (Latitude)
VNA-H5	362	114° 02' 49" E	21° 26' 22" S
VNA-H6	362.5	114° 01' 47" E	21° 26' 23" S
ENE-02	522.1	113° 59' 18" E	21° 28' 53" S
ENE-03	522.1	113° 59' 18" E	21° 28' 53" S

3. 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 approximately 350 to 550 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:

Very low numbers of whales are expected to occur in the area of the proposed activity. To assess the likelihood of encountering whales during this short program of work, the Vincent Environmental Impact Statement (EIS) summarises the findings of extensive whale monitoring in the region at various times of the year. Humpback whales were observed to be seasonally abundant in the region, with a peak abundance of individuals recorded in late August. This time of the year is described as the transition period, where the northern and southern whale migrations overlap, and is considered to be the time of the year when peak overall numbers of whales have been observed. A summary report of whale migration patterns in the North West Cape Region, 2000 – 2005 also confirmed this to be the peak for overall humpback whale numbers.

The southern migration, during which the activities are planned to be undertaken, was generally found to be split, with some whales remaining inside Exmouth Gulf for 2-4 weeks while other whales were observed to continue past the Gulf and down the coast in depths of 100 m and 200 m.

However, it was noted that some animals remain offshore but the majority tended to stay close with the coastline.

The EIS also acknowledges that blue and sperm whales have been observed in the region at this time of the year during the survey periods. No whale observations for the time frame in which the proposed scope of work is to be undertaken have been recorded from the nearby floating Woodside production facilities. The Nan Hai VI drill rig was drilling in the Vincent field at the equivalent time in 2007 and 2008. Whale, whale shark and dolphin sightings, as provided to the Commonwealth government show no whale sightings recorded in October and November despite a number of sightings recorded from July through to September in both years. These sightings appear to align with the whale migration study findings summarised above.

Whale sharks are found to aggregate off Ningaloo Reef, generally between April and June each year. Most sightings occur close to the reef front and within three nautical miles (nm) of the shoreline. The proposed activities are planned to be undertaken outside of the main timeframe of the whale shark aggregation activities.

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 km² 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.

4. Environmental Hazards

A risk assessment was undertaken for the Conductor Installation activities in the WA-28-L licence area. The main potential impacts identified were noise emissions from hammering the conductors in to the seabed, production of greenhouse gases and particulate matter from the shipboard incinerator and accidental hydrocarbon spillage from the vessel losing position and foundering, or loss of hydraulic fluid from equipment.

The risk assessment process indicated that the potential impacts arising from the conductor installation activities can be categorised as either having a low or medium residual risk level. There were no impacts identified above a medium risk level.

Significant impact to, or displacement of marine fauna is unlikely during this activity due to the noise levels. Excessive noise above background levels has the potential to affect pelagic fish, marine mammals and marine turtles. However, the hammering activities are proposed to be of a very short duration on each location - up to two hours at each location, not undertaken in critical fauna habitat, include a soft start process for the hammering, undertaken in relatively deep water and on one location at a time. Noise associated with the proposed hammering activities is unlikely to cause significant impacts to marine fauna approaching or in the vicinity of the vessel. The requirements of EPBC Policy Statement 2.1 will also be followed during the proposed activities.

The Havila Harmony is fitted with a MARPOL certified incinerator and is operated in accordance with an established operating procedure. Only approved wastes are incinerated in the unit to manage the emission of greenhouse gases (NO_x, SO_x, VOCs and particulate matter). Atmospheric emissions generated during operations are likely to result in a localised, temporary reduction in air quality.

The Havila Harmony is a dynamically positioned (DP) intervention vessel, which allows it to remain in position via the use of seabed placed transponders and satellite communications. This is a highly successful method of positioning such vessels, however, in the highly unlikely event that the positioning system fails, the potential risk is that the Havila Harmony could lose positioning and collide with another structure or vessel in the area. If collision were to occur, the main potential risks to the environment would be hydrocarbon and chemical loss to the surrounding sea, as well emissions to atmosphere from ignition that could generate from such a collision.

During the installation activities, it is not likely that the Havila Harmony will operate close enough to other established infrastructure such as other vessels, rigs or production facilities to introduce significant risk of collision in the event of loss of positioning.

Risk and management of spill events that may occur in the WA-28-L Permit Area are discussed in the WA-28-L EP. Any spills will be managed according to the arrangements and procedures outlined in the approved Carnarvon Basin (WA) Oil and other Noxious and Hazardous Substances Spill Contingency Plan (ERP-3250).

A series of comprehensive environmental management controls will be maintained by Woodside and TSMarine to ensure that no significant environmental effects are realised from the activities.

5. Summary of Management Approach

Woodside's environmental management strategies and procedures to be used during the conductor installation activities include responsibilities, training, reporting frameworks, mitigation and response activities and monitoring and auditing procedures. Commitments associated with these will be used to reduce environmental risk to As Low As Reasonably Practicable (ALARP).

The key management objectives and commitments to be applied during the program are summarised in Table 5-1 below. Note that this is not a comprehensive list of all commitments outlined in the WA-28-L Environment Plan and WA-28-L Conductor Installation Environment Plan Bridging Document.

Table 5-1: Management Objectives and Criteria for the Conductor Installation Activities

Objectives	Criteria
No significant impact to seabed and benthic habitats	<ul style="list-style-type: none"> • Transponders small and light. • Small area impacted and no environmentally sensitive areas nearby.
No introduction of exotic marine species	<ul style="list-style-type: none"> • Rig and vessel adhere to AQIS Australian Ballast Water Management Requirements and quarantine requirements.
No significant impact to marine fauna	<ul style="list-style-type: none"> • Duration of hammering on each location is short. • EPBC Act Policy Statement 2.1 to be followed during the conductor installation activities. • Soft start used for hammering - commencing at 20% power, gradually increasing up to a maximum of 60% power. • Vessel stationary during hammering.
No significant impact on marine environment from routine discharges and wastes	<ul style="list-style-type: none"> • Putrescible waste macerated to < 25 mm diameter before discharge. • Sewage treated via a MARPOL approved system prior to discharge. • Incinerators meet MARPOL requirements. • Adherence to incinerator operating procedure. • Recording of volumes incinerated. • Hazardous wastes documented and tracked according to requirements. • Waste log maintained and quantities of wastes transported ashore recorded.
No hydrocarbon or chemical spills to the marine environment.	<ul style="list-style-type: none"> • Certified DP2 positioning system. • DP test prior to entering field and DP operator in the control room at all times. • Class damage stability requirements. • Approved OSCP in place.
Minimise interference with recreational vessels, commercial fishing, and shipping.	<ul style="list-style-type: none"> • Functional rig navigational lighting in place and in use. • Consultation with stakeholders. • Marine notices broadcast according to Standard Maritime Safety Procedures (AMSA), via the Rescue Co-ordination Centre (RCC).

6. Consultation

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 is undertaking an ongoing consultation program commensurate with the activities covered in the WA-28-L EP.

Following submission of Revision 0 of this EP bridging document to the government for assessment, Woodside provided stakeholders with a copy of the EP bridging document and invited comment on the document and proposed activity.

Comments were sought from a range of stakeholders including NGO's, local government agencies, community members and fishing associations. Detailed feedback was received from stakeholders and Woodside has provided a response to each. Key themes in the feedback were:

- Impact of the proposed activity on marine mammals;
- The use of Exmouth Gulf by support vessels;
- Incorporation of lessons learned from the recent Montara incident, and
- The performance of the Havila Harmony.

Consultation with the identified stakeholders, individual fisheries and other groups will continue prior to, and during the Program, as required.

7. Contact Details

For further information about the Conductor Installation activities, please contact:

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