

CONTROLLED DOCUMENT**Title:** VNB-H5 and VNB-H6 Production Wells Environment Plan Bridging Document Summary

Controlled Reference Number: DC0000AH7188306
Revision: 0
Confidentiality Classification: 1. UNRESTRICTED
Review Date: Refer to document content

Approval Setup Details

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Approval Outcome Details

Approval Outcome:	Date:
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Custodian by: Zheng, Eldric	11/02/2011 11:33:01 AM
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1. INTRODUCTION

Woodside Energy Ltd (Woodside) proposes to drill the VNB-H5 and VNB-H6 production wells in the license area WA-28-L, using the semi-submersible drill rig 'Nan Hai VI' operated by Maersk Drilling Australia. Drilling activities are planned to commence in February 2011 and to continue through until June 2011.

The wells are part of the drilling activities in the Vincent Development area and as such the environmental risks and management thereof are described in the Exmouth Sub-Basin Environment Plan, Revision 1 (ESB EP) approved by the Western Australian Department of Mines and Petroleum (DMP) and Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPC, previously DEWHA).

The VNB-H5 and VNB-H6 Production Wells Environment Plan Bridging Document serves as a bridging Environment Plan to the ESB EP, and describes the well specific details such as well location, rig to be used, drilling fluid systems, cuttings volumes, cuttings disposal methods and well completion details.

2. DESCRIPTION OF THE ACTION

The VNB-H5 and VNB-H6 production wells are situated in permit area WA-28-L (Figure 1) and lie within 50 metres of each other. The wells are located approximately 25.5 km north of the Ningaloo Commonwealth Waters, 33.5 km north of the Ningaloo Marine Park and 35.5 km northwest of the Muiron Islands Marine Management Area.

The wells will be drilled with a water based drilling fluid system, as detailed in the VNB-H5 and VNB-H6 Production Wells Environment Plan Bridging Document and approved by the DMP and SEWPC in February 2011. The wells are anticipated to be brought on to production within one month of being completed. The upper completion strings and casings on the wells will be adequately pressure tested to satisfy Woodside well integrity operating standards.

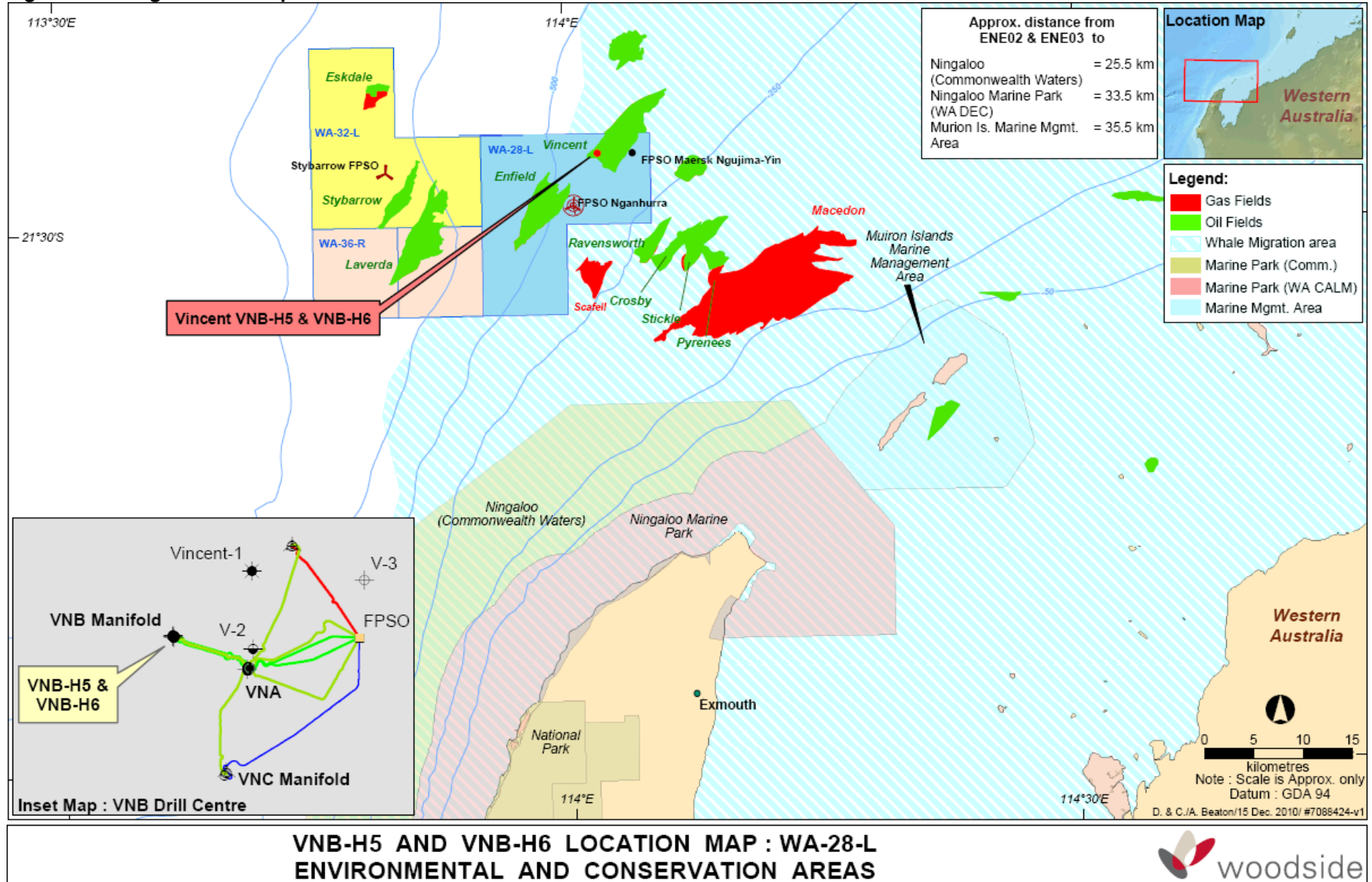
Table 1 summarises the well details including surface coordinates, water depth, permit area and timing for the proposed wells. This schedule is subject to change due to operational requirements and external influences such as cyclones.

Table 1: Well depths, Location and Timing

Well	Water Depth (m LAT)	Latitude	Longitude	Permit Area	Timing
VNB-H5	393	21° 26' 01.320" S	114° 02' 00.215" E	WA-28-L	Q1 – Q2 2011
VNB-H6	393	21° 26' 02.138" S	114° 01' 57.677" E	WA-28-L	Q1 – Q2 2011

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Figure 1: Drilling Location Map for VNB-H5 and VNB-H6 Production Wells



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3. DESCRIPTION OF THE RECEIVING ENVIRONMENT

3.1 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 near the seabed across the Exmouth Sub-Basin range seasonally from 5 - 10°C.

3.2 Biological Environment

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, an extensive program of investigation and studies has been conducted on deepwater marine environments (described in detail in the WA-271-P EIS and the Vincent EIS).

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.

Soft sediment tends to dominate the continental slope in the Exmouth Sub-Basin, and is inhabited by a sparse seabed community. The benthic macrofauna and infauna are well represented throughout the continental shelf and the region. The community members mainly consist of urchins, crustaceans, sea stars and burrowing invertebrates.

Limited patches of outcropping rock are found at a range of depths, although these occur mainly along scarp and canyon features to the south-west portion of Exmouth Sub-Basin in water depths greater than 500m. These hard, rocky surfaces support a locally diverse accumulation of species. While some unusual species were recorded during sampling of the deeper water environments, the collection of species that typically inhabits the seafloor and burrows in seafloor sediments are generally found to be widespread and well represented along the continental shelf and upper slopes in this region.

An EPBC Act Protected Matters Report (PMR) generated in 2010 found 24 cetaceans potentially being present in the area. The list included 3 threatened and 7 migratory species that may pass through Woodside's area of activity, including Blue, Southern Right and Humpback Whales.

Survey information indicates that Humpback Whales are the most abundant whale species recorded, these being present during the year 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.

Whale Sharks (*Rhincodon typus*) are found to aggregate off Ningaloo Reef, generally between April and June each year. Observations indicate most encounters in the northern area of Ningaloo

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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.

Five marine turtle species occur in the region, and are listed as 'Migratory' in the PMR; Hawksbill, Flatback, Green, Loggerhead and Leatherback. Individuals of any of the above may pass through the Woodside's area of activity on their way to and from nesting beaches on the mainland and adjacent islands. At sea, the concentration of these animals is low.

Sea snakes are frequently observed in Exmouth Gulf, around the outer islands and the waters of the shelf. The frequency of occurrence in deeper offshore, Woodside's area of activity, are low.

3.3 Socio-Economic Environment

The nearest town to the Woodside's activities within the Exmouth Sub-Basin 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.

Learmonth Airport is the major airport in the region, servicing both civilian and defence force aircraft. There are also small airstrips in Exmouth and Coral Bay, as well as private airstrips on most pastoral stations in the region.

The main commercial activities associated with Exmouth include prawn fisheries, tourism and Defence-related activities.

A number of offshore oil production facilities are located in the region, these being the Nganhurra FPSO (WA-28-L), Maersk Ngujima-Yin FPSO (WA-28-L), Stybarrow Venture FPSO (WA-32-L), Pyrenees FPSO (WA-42-L) and Ningaloo Vision FPSO (WA-35-L).

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 Woodside's area of activity each year (WA-271-P EIS and Vincent EIS).

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

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4. ENVIRONMENTAL HAZARDS

The environmental risks and potential environmental impacts of the proposed D&C activities have been determined on the basis of Woodside's previous experience in the region and the outcomes of an environmental risk assessment.

The risk assessment indicates that the potential impacts arising for the proposed VNB-H5 and VNB-H6 production wells can be categorised as having Low to High risk levels.

A summary of the key sources of environmental risk (aspects) for the proposed activity include:

- deployment and retrieval of anchors and equipment used for the activity;
- generation of acoustic signals;
- light generation from rigs and vessels;
- emissions to atmosphere from rigs and vessels;
- discharge of ballast water and vessel biological fouling;
- routine discharge of wastewater to ocean from rigs and vessels;
- accidental discharge of hydrocarbons and chemicals to ocean from wells, rigs and vessels;
- interactions with shipping and commercial and recreational fishing activities.

A summary of the potential environmental impacts associated with the above sources of environmental risk include:

- disturbance to marine habitats including seabed and benthic habitats;
- disturbance to marine fauna including marine mammals;
- reduced air quality from atmospheric emissions as a result of operation of machinery and use of internal combustion engines;
- introduction of invasive marine species as a result of ballast water discharge and vessel biological fouling;
- marine pollution from routine discharges including sewage water, drilling cuttings and drilling and completion fluids;
- marine pollution from accidental discharges including hydrocarbon and hazardous material spills;
- disturbance to social and community values due to interactions with commercial and recreational fisheries and shipping vessels;
- disturbance to heritage and conservation values due to operation of vessels within protected areas.

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5. SUMMARY OF MANAGEMENT APPROACH

Woodside's environmental management strategies and procedures to be used during the proposed activities include responsibilities, training and inductions, 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 to all proposed activities are summarised in Table 2 below. These are consistent with Woodside Corporate and Program specific objectives, standards and criteria. Note that this is not a comprehensive list of all commitments outlined in the Exmouth Sub-Basin EP.

Table 2. Management Objectives and Commitments for VNB-H5 and VNB-H6 Production Well Activities.

Objectives	Commitments
Disturbance to Marine Habitats	
Minimise disturbance to benthic habitat community	<ul style="list-style-type: none"> • Sensitive seabed features will be avoided when anchoring. • Anchor analyses undertaken and implemented to minimize the potential for accidental anchor drag or a rig dragging off location. • Transponder clump weights to be retrieved or inert materials to be used for clump weights not retrieved.
Disturbance to Marine Fauna	
Minimise disturbance to marine fauna from acoustic disturbance.	<ul style="list-style-type: none"> • Sightings of marine mammals and whale sharks will be recorded and reported at 6 monthly intervals to SEWPC at cet.sightings@environment.gov.au.
Reduction in Air Quality from Atmospheric Emissions	
Minimised reduction in air quality from atmospheric emissions from combustion of hydrocarbons (engines and well testing)	<ul style="list-style-type: none"> • Compliance with MARPOL 73/78 Annex VI (Prevention of Air Pollution from Ships) requirements.
Introduction of Invasive Marine and Terrestrial Species	
Minimise the risk of the introduction of invasive marine species from ballast water, biofouling, international movements and cargo	<ul style="list-style-type: none"> • Adherence to the AQIS Australian Ballast Water Management Requirements. • Woodside's IMS risk assessment process will be applied to all vessels, rigs and immersible equipment planning to enter and operate within nearshore waters around Australia. Nearshore areas include all waters within 12 nautical miles of land and in all waters less than 50 metres deep at Lowest Astronomical Tide. • Vessels arriving from international locations will be cleared by AQIS prior to commencing activities. • All international cargo will be managed through AQIS inspection and quarantine procedures.

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Objectives	Commitments
Marine Pollution from Routine Discharges	
<p>Minimise marine pollution from routine discharge of sewage and putrescible wastes, deck drainage and produced formation water (PFW)</p>	<ul style="list-style-type: none"> • All sewage and putrescible wastes will be managed and disposed of in accordance with MARPOL 73/78 Annex IV (as implemented in Commonwealth waters by the <i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i>). • Deck drainage that is contaminated with hydrocarbons or chemicals will be discharged if the oil in water content does not exceed 15 mg/L, or contained and disposed of onshore. • Discharged Produced Formation Water will contain \leq 15 mg/L oil in water.
<p>Minimise marine pollution from routine discharge of drill fluids, drill cuttings, wellbore cleanout and completions fluids, cementing fluids and sub-sea control fluids</p>	<ul style="list-style-type: none"> • WBM will be used as first preference. If the use of NWBM is required for technical reasons, the NWBM system will be assessed against DMP's Petroleum Guidelines – Drilling Fluids Management. • Use of solids control equipment to reduce the Oil on Cuttings levels to <10% during NWBM drilling. • All potentially hazardous materials and chemicals will be reviewed and approved through Woodside's Chemical Selection, Assessment and Approval Process. • All hazardous substances (as defined in NOHSC:1008 (2004) – Approved Criteria for Classifying Hazardous Substances) will have an Material Safety Data Sheet (MSDS) available on board.
Waste Management	
<p>Minimise the impact on the marine environment from waste disposal</p>	<ul style="list-style-type: none"> • Management of wastes in accordance with Woodside's D&C Waste Management Plan. • Records of waste types and volumes maintained and reviewed on a quarterly basis.
Marine Pollution from Accidental Discharges	
<p>Minimise marine pollution from accidental discharge of hazardous materials</p>	<ul style="list-style-type: none"> • All hazardous substances (as defined in NOHSC: 1008 (2004) – Approved Criteria for Classifying Hazardous Substances) will have a Material Safety Data Sheet (MSDS) available on board. • All potentially hazardous materials and chemicals will be reviewed and approved through Woodside's Chemical Selection, Assessment and Approval Process.
<p>Minimise marine pollution from fuel and oil spills - Fluid Transfers, Failure of Slip Joint Packer System, Vessel Collision, Damage to Subsea Equipment, Loss of Well Control</p>	<ul style="list-style-type: none"> • Bulk transfers will commence during daylight hours and when sea conditions are appropriate as determined by the master of the supply vessel. • Preventative maintenance system is in place and effective to ensure the integrity of hoses,

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Objectives	Commitments
	<p>dry break couplings and other equipment used for fluid transfers.</p> <ul style="list-style-type: none"> • The rig and vessels will have a Shipboard Oil Pollution Emergency Plan (as per MARPOL 73/78) for managing spills onboard. • The slip joint packer system will have at least two packers, and an automatic activation of the second packer if the primary packer fails. • Maintain a 500 m safety exclusion zone around the drill rig. • Anchoring analyses undertaken and implemented to minimise the potential for accidental anchor drag or a rig dragging off location. • All D&C activities will be carried out in accordance with Woodside's Engineering Operating Standards. • Spills to sea will be managed as per the Woodside Oil Spill Contingency Plan.
Minimise marine pollution from accidental discharge of hazardous materials	<ul style="list-style-type: none"> • Development of, and adherence to, well specific rig operating and well testing guidelines.
Disturbance to Social and Community Values	
Minimise disruption to commercial and recreational fishing activities, shipping and navigation	<ul style="list-style-type: none"> • Compliance with AMSA administered marine safety regulations and marine notification requirements. • Pre-drilling notification/consultation with stakeholders, as required. • Maintain a 500 m safety exclusion zone around the drill rig.
Minimise disruption to heritage and conservation values	<ul style="list-style-type: none"> • Pre-drilling notification/consultation with stakeholders, as required.
Implementation, Reporting and Consultation	
Competence and Training	<ul style="list-style-type: none"> • All new personnel arriving on the rig (or vessel) are required to undertake a site induction before commencing work. This induction covers health, safety and environmental requirements for the rig (or vessel) and environmental information specific to the well location. • Environmental incidents will be reviewed and awareness material presented on a regular basis to ensure ongoing environmental awareness.
Auditing and Assurance	<ul style="list-style-type: none"> • Actions as a result of inspections will be documented and tracked via the Campaign Action Register. The register will be monitored onboard the vessel on a regular basis by the Woodside On-Site Representative.

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Objectives	Commitments
Consultation Plan	<ul style="list-style-type: none"> A fact sheet / electronic notification will be distributed to a broader stakeholder group prior to the commencement of the activity. The fact sheet / notification will include a location map, summarise the activity scope and approximate duration, support vessels involved and contact details.

6. CONSULTATION

Woodside has an extensive history undertaking drilling and completions activities on the Exmouth Sub-Basin. Over this time, Woodside has developed a sound understanding of potential stakeholder concerns that may arise during Program related activities and has implemented appropriate management strategies in the Exmouth Sub-Basin EP to address key environmental aspects.

To ensure Woodside’s understanding of potential stakeholder concerns remains current, stakeholder consultation for Program related activities will include the following:

- Consultation, as appropriate, with key stakeholders during the preparation of the Program specific EP Bridging Document to identify and manage specific environmental issues.
- Distribution of electronic notification to a broader stakeholder group prior to the commencement of the activity.

7. CONTACT DETAILS

For further information about the VNB-H5 and VNB-H6 Production Wells related activities, please contact:

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REVIEW STATUS	
(Check one box only)	
<input type="checkbox"/>	Review on/by (dd/mm/yyyy):
<input checked="" type="checkbox"/>	Review Not Required

DETAILED REVISION INFORMATION				
Revision	Description	Date	Prepared by	Approved by
0	Approved for use	11/02/2011	Eldric Zheng	Doug Robb

DOCUMENT DISTRIBUTION				
Copy No.	Name (Show Username (WOPID) to differentiate between persons with identical names)	Organisation	Hard Copy	Electronic Notification
00	Document Control	Woodside Energy Ltd	<input type="checkbox"/>	<input checked="" type="checkbox"/>
01	Alicia Lim Environmental Assessor Petroleum Environment Branch Environment Division alicia.lim@dmp.wa.gov.au	Department of Mines and Petroleum		<input checked="" type="checkbox"/>

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