


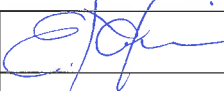


CONTROLLED DOCUMENT Title: DALIA SOUTH-1 EXPLORATION WELL DRILLING PROGRAM ENVIRONMENT PLAN BRIDGING DOCUMENT SUMMARY	 woodside
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Concurrence (Agreement that must be obtained if an item is prepared external to, but impacts, a department or division. If concurrence is required, it must be noted within the body of the item).

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Woodside Management System Sub-processes MUST obtain concurrence endorsement from BopCom. The date of the BopCom meeting where endorsement is granted should be indicated below.

<input type="checkbox"/>	BopCom Endorsement	Meeting date when endorsement granted:	
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REVISION HISTORY

Revision	Description	Date	Prepared by	Approved by
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Dalia South-1 Exploration Well Environment Plan Bridging Document Summary

This summary of the Dalia South-1 Exploration Well Drilling Program Environment Plan Bridging Document has been submitted to comply with Regulation 11(7)(8) of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009*.

1. Introduction

Woodside Energy Ltd (Woodside) proposes to undertake drilling activities on the North West Shelf (NWS) using the Maersk Discoverer semi-submersible, dynamically positioned (DP) drill rig, operated by Maersk Drilling Australia. Drilling activities are planned to commence in March 2010 and to continue through until April 2010. The well is located in Permit Area, WA-348-P.

The well is part of the drilling activities on the NWS and as such, the environmental risks and management thereof, are described in the NWS Drilling Environment Plan, Revision 5 (NWS EP), approved by the Department of Mines and Petroleum (DMP) in August 2009. The Dalia South-1 Exploration Well Drilling Program Environment Plan serves as a bridging Environment Plan to the NWS EP, and describes the well specific details such as well location, rig to be used, fluid systems, cuttings volumes and cuttings disposal methods.

2. Description of the Action

The Dalia South-1 exploration well is situated in permit area WA-348-P. Dalia South-1 is located approximately 343 km north-west of Mardie, 385 km north-west of Karratha, 242 km north-west of the Montebello Conservation Park and 275 km north-west of Barrow Island. Table 1 summarises the well details including surface coordinates, water depth, permit area and timing for the proposed well. This schedule is subject to change due to operational requirements and external influences such as cyclones.

Table 1: Well Co-ordinates, Water Depth and Timing (GDA 94, MGA zone 50).

Well	Water Depth (m LAT)	Easting (Longitude)	Northing (Latitude)	Permit Area	Timing
Dalia South-1	1282m	150 771 mE (113° 41' 03.002" E)	7 900 303 mN (018° 57' 136.310" S)	WA-348-P	Q1-Q2 2010

3. Description of the Receiving Environment

Physical Environment

The water depth on the continental shelf of the NWS area ranges between 50 and 1,500 m, although most of the area lies between 50 and 500 m water depth. Two significant banks are present on the gently inclined shelf, the Rankin Bank and the Glomar Shoal. The seabed is generally characterised by deep (>5 m) soft, silty sediments which become softer and finer with increasing depth.

General wind patterns in the region are monsoonal, with a marked seasonal pattern. Wind direction is predominantly from the south-east and north-east during April to September with an average wind speed of 5 – 6 knots. During October to March the prevailing wind direction is from the south-west, west and north-west and the average wind speeds are less than 10 knots. Tropical cyclones

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occur in the area, typically three to four times per year, most commonly between December and April. Swells of up to 2 m can be expected year round, with April being the calmest month, and January and June the roughest. Wave direction predominantly follows wind direction (east south-east in winter, west south-west in summer), except during cyclone or storm conditions.

Biological Environment

Sampling of the benthic zone has consistently shown that the soft sediments of the NWS support a low abundance, high diversity invertebrate fauna population, largely comprising burrowing polychaete worms (Phylum Annelida) and crustaceans (Subphylum Crustacea). Echinoderms, bivalves and molluscs also contribute significantly to the faunal composition of the area.

Five species of turtle listed under the Environment Protection and Biodiversity Conservation Act 1999 (*EPBC Act*) are known to occur in the region; Flatback, Leatherly, Green, Hawksbill and Loggerhead. Individuals of all five species may be expected to pass through the region on their way to and from nesting beaches on the mainland and adjacent islands, however, while at sea the density (concentration) of animals is low.

A number of whale species may be encountered in the region including pygmy blue, sperm and humpback whales. The humpback whale is listed as Vulnerable under the *EPBC Act* and the population migrates across the North West Marine Region (NWMR) during the annual migration. During June, July and early August the whales follow a northward route across the NWMR, that appears to follow the edge of the continental shelf to the calving grounds off the Kimberley Coast. Cow-calf pairings tend to occur in the area from September to October. Research undertaken by the Centre for Whale Research indicates that cow-calf pairings generally remain in close proximity to the shore during the southern migration following a relatively narrow route that passes close to the Dampier Archipelago and Montebello Islands.

Dwarf minke whales and pygmy blue whales have been recorded in open water sites in the Scott Reef region. This indicates that these whales would also be occurring within the broader NWMR. In addition it is likely that sperm, blue and beaked whales may occur in the region at certain times of the year.

Surveys off the NWS indicate that seabird distribution is generally very patchy except near islands where shelter and anomalies in surface water concentrate food seasonally. Most of the birds encountered offshore forage in flocks of 20 to more than 200 individuals, often of different species and are commonly associated with schools of pelagic fish, such as tuna. Foraging groups typically comprise Sooty Terns, Wedge-tailed Shearwaters and the occasional Frigatebird.

Socio-Economic Environment

The WA-348-P permit area is beyond the range of nearshore fisheries (eg. prawn fisheries) that operate between the North West Cape and Port Hedland. Given the distance from shore, there are no known recreational fisheries in the vicinity of the permit area. Several commercial fisheries do, however, occur in the permit area, including the NWS Slope Trawl Fishery and the Southern Bluefin Tuna Fishery. The NWS Slope Trawl Fishery typically operates in water depths of 200 to 500 m, much shallower than the >1,000 m water depth of the drilling activities. Fishing effort in the Southern Bluefin Tuna Fishery is focused in the Great Australian Bight and little effort occurs on the NWS.

There are no tourism activities in the vicinity of the permit area.

4. Environmental Hazards

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An overarching environmental risk assessment was conducted for general drilling activities in the NWS EP. Furthermore, a risk assessment was undertaken to identify potential environmental risks for this project. The risk assessment process indicated that the potential impacts arising from Program related activities can be categorised as either having a low or medium risk level. There were no impacts identified above a medium risk level.

A number of whale species may be encountered in the region, including pygmy, blue, sperm and humpback whales. To ensure minimal impact on whales in the area, support vessels will maintain a 300 m separation distance, where safe to do so, from any whales sighted, as per Part 8 of the *EPBC Regulations 2000*. Vertical Seismic Profiling (VSP) survey procedures (in accordance with *EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales*) will be in place and adhered to for the short duration that profiling activities are undertaken.

The risk of a major hydrocarbon spill during routine drilling activities is low. The NWS EP outlines a number of worst case spill scenarios relevant to the Program related activities that may be undertaken. Considering the mitigation measures in place during all activities to prevent spills from occurring, the magnitude of the spill scenarios modelled, distance from offshore sensitive environments (e.g. coral reefs) and the probabilities of hydrocarbons contacting shorelines for expected offshore activities, it can be concluded that a significant hydrocarbon spill to the ocean during Program related activities and impact to sensitive environmental receptors is unlikely.

A series of comprehensive environmental management controls will be maintained by Woodside and the relevant contractors 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 Western Australia and Dampier Sub-Basin Oil Spill Contingency Plan (ERP-3210).

5. Summary of Management Approach

Woodside's environmental management strategies and procedures to be used during Program related 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 Program related activities are summarised in Table 5-1 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 NWS EP.

Table 5-1: Management Objectives and Commitments for NWS Program Related Activities

Objectives	Commitments
Seabed Disturbance	
Minimise disturbance to benthic habitat community	<ul style="list-style-type: none"> The Maersk Discoverer is a dynamically positioned rig and therefore will not be required to deploy anchors.
Drill Mud and Cuttings	
Minimise localised reduction in water quality, smothering of benthic fauna, and decreased light attenuation due to increased turbidity.	<ul style="list-style-type: none"> Non-toxic to slightly toxic water based fluids used. Procedures for vessel to rig bulk transfers, including visual observations and mud system transfers. Use of dry-break couplings on the rig and
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Objectives	Commitments
	supply vessel(s) for non water based mud (NWBM) and base oil transfers. <ul style="list-style-type: none"> • Selection of activity locations a suitable distance from sensitive environments.
Marine Pollution from Routine Discharges	
Minimise potential acute and chronic toxicity effect on marine organisms, effects to water quality and indirect effects to marine fauna both in the water column and on the seabed.	<ul style="list-style-type: none"> • Waste water discharges to meet legislative requirements. • All fluids required to complete the activity and are proposed to be discharged to the ocean shall be assessed regarding potential for environmental impact. • Non-toxic to slightly toxic water based fluids used. • Non-toxic to slightly toxic cementing fluids and fluorescein dyes used. • Deck drainage that is contaminated with hydrocarbons or chemicals will be contained and disposed of onshore or discharged if the Oil in Water content is <15 mg/L. • Bulk fuel hoses stored on retractable reels. • Dedicated day and night hydraulic mechanic on the rig. • Hydraulic systems part of planned daily and weekly equipment inspection and maintenance schedule.
Waste Management	
Minimise impact on the marine environment from waste disposal.	<ul style="list-style-type: none"> • D&C Waste Management Plan in place, detailing wastes generated and disposal requirements. • All sewage and putrescible wastes to be managed and disposed of in accordance with MARPOL 73/78. • All solid, liquid and hazardous wastes (other than sewage, grey water and putrescible wastes) will be incinerated (where an approved incinerator is in place) or compacted (if possible) and stored in designated areas and sent ashore for recycling, disposal or treatment at a licensed waste treatment facility. • Waste logs maintained to record waste management practices, including

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Objectives	Commitments
	volumes of wastes incinerated.
Invasive Marine Species Management	
<p>Minimise the risk of introduction and establishment of Invasive Marine Species (IMS) in sensitive and shallow water environments.</p>	<ul style="list-style-type: none"> Adherence to the Australian Quarantine and Inspection Service's (AQIS) Australian Ballast Water Management Requirements. IMS Risk Assessments completed and documented, for vessels, rigs and immersible equipment planning to enter and operate within nearshore waters around Australia.
Disturbance to Marine Fauna	
<p><i>Noise:</i> Minimise potential physiological effects or disruption to behaviour patterns of marine fauna due to sound energy associated with the rig, support vessel and helicopter operations.</p>	<ul style="list-style-type: none"> The interaction of the support vessels and helicopters with cetaceans will be consistent with Part 8 of the <i>EPBC Regulations 2000</i> which requires vessels to maintain a 300 m stand off distance to cetaceans and helicopters shall not operate lower than 1650 ft or within the horizontal radius of 500 m of a known cetacean. Characterise the underwater noise produced by the Maersk Discoverer, prior to the peak northward humpback whale migration period in 2010.
<p><i>Vertical Seismic Profiling (VSP):</i> Minimise potential physiological effects or disruption to behaviour patterns of marine fauna due to sound energy associated with discharge of compressed air chambers.</p>	<ul style="list-style-type: none"> VSP operations will be carried out in accordance with <i>EPBC Act Policy Statement 2.1</i>.
<p><i>Recording of Marine Mammals:</i> Add to the data on marine mammals in the North West Shelf area</p>	<ul style="list-style-type: none"> Sightings of marine mammals will be recorded and reports sent to the Department of the Environment Water heritage and the Arts (DEWHA) periodically.
<p><i>Artificial Lighting:</i> Minimise potential attraction / disturbance to marine life.</p>	<ul style="list-style-type: none"> Impacts from artificial lighting will be minimal due to the Program activities being temporary in nature and remote from light sensitive receptors, in particular turtle nesting sites.
Atmospheric Emissions	
<p>Minimise atmospheric emissions.</p>	<ul style="list-style-type: none"> Engines will be maintained to operate at optimum efficiency to minimise emissions. Use of low sulphur fuel, where it is available, to minimise emissions from

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Objectives	Commitments
	combustible sources. <ul style="list-style-type: none"> Compliance with MARPOL 73/78 Annex VI requirements.
Marine Pollution from Non-Routine Discharges	
Minimise potential chronic / acute toxicity effect on marine organisms.	<ul style="list-style-type: none"> The rig and support vessels will comply with MARPOL 73/78 and have a Shipboard Oil Pollution Emergency Plan (SOPEP) in place for managing spills onboard the rig or vessel. For spills to the ocean, spill response will be undertaken as per the Woodside WA and Dampier Sub-Basin Oil Spill Contingency Plan (ERP-3210). Adherence to well integrity standards and blow-out preventer in place. Adherence to bulk transfer procedures. Fuel and NWBM transfer hoses to have dry-break couplings and floats. Continuous visual monitoring of hoses, couplings, flow gauges and the sea surface as well as radio contact during transfers on both the support vessels and rigs/vessels. Transfers of fuel only undertaken during daylight hours, except with the WSM's approval, and when sea conditions are appropriate. Fuels, oil and chemicals will be stored with secondary containment. Spill kits will be well stocked and readily available with personnel trained in their use.
Cyclone Response	
Minimise the impact on benthic habitats and reduced potential occurrence of hydrocarbon spills.	<ul style="list-style-type: none"> Implement all measures in Woodside's Cyclone Response Procedures and the drilling contractor's Cyclone Emergency Response Plan. Secure the well by isolating any significant hydrocarbon zones and disconnecting from the well, preventing communication of any hydrocarbon fluids in the well to the surface.
Socio-Economic	
Minimise potential impact on socio-economic values	<ul style="list-style-type: none"> Adherence to standard maritime safety procedures (Auscoast Warnings via AMSA where appropriate).

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Objectives	Commitments
	<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. • Notification of activity details as required to relevant stakeholders prior to commencement of each survey. • Adherence with Rig Quality and Safety Management procedures.
Environmental Management Plan	
Woodside and contractor personnel understand and comply with the environmental objectives, standards and commitments within the Program EP.	<ul style="list-style-type: none"> • All Woodside and contractor personnel undertake an environmental induction. • Copy of EP on board rigs.
HSE Management system covers applicable requirements of the Program EP.	<ul style="list-style-type: none"> • Review of HSE management system undertaken.
Environmental inspections to be carried out according to the requirements of the Program EP.	<ul style="list-style-type: none"> • Environmental Commitments Summary provided to the rig(s). • Audits to ensure compliance with commitments in this EP are to be undertaken as per the D&C Audit Schedule.
All environmental incidents are reported in accordance with the requirements of the program EP, Woodside and legislative requirements.	<ul style="list-style-type: none"> • Environmental incidents recorded and reported according to the requirements of the EP, Woodside Standard Event Reporting and Investigation and legislative requirements.
A review of the operation conducted at the end of the program.	<ul style="list-style-type: none"> • Review of the environmental performance of the operation conducted at the end of Program activities.

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6. Consultation

Woodside has an extensive history undertaking drilling and completions activities on the North West Shelf. 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 NWS 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 a fact sheet to a broader stakeholder group prior to the commencement of the activity.

7. Contact Details

For further information about the NWS Program related activities, please contact:

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