

Torosa-1 & 2 Appraisal Wells Drilling Environmental Plan Summary

This summary of the Torosa-1 & 2 Appraisal Wells Environment Plan has been submitted to comply with Regulation 11(7)(8) of the Petroleum (Submerged Lands) (Management of Environment) Regulations 1999.

1. Project Description

Woodside Energy Ltd (Woodside) propose to drill the Torosa-1 and Torosa-2 Appraisal wells using the semi-submersible drill rig the Nan Hai VI operated by Maersk Contractors Australia Pty Ltd. The wells are located within Permit Area WA-30-R in approximately 480 m water, 290 km east of Cape Leveque and 10 to 17 km north-east of Scott Reef.

The wells will be drilled using water based muds and will be profiled using vertical seismic profiling. No well testing activities will be undertaken.

2. Coordinates of Activity

The location of Torosa-1 is detailed below. The location of Torosa-2 is to be determined based on the information obtained from Torosa-1, hence, at this stage it is not known if Torosa-2 will be at the B1 or E1 location.

Well	Water Depth (m)	Easting (Longitude)	Northing (Latitude)	Timing
Torosa-1	480	399 434m E 122° 04' 09.6"E	8 466 760m N 013° 52' 02.1"S	Oct 06
Torosa-2 (B1)	475	394 423m E 122° 01' 21.9"E	8 460 926m N 013° 55' 11.3"S	Nov 06
Torosa-2 (E1)	471	397 050m E 122° 02' 48.9"E	8 457 593m N 013° 57' 00.1"S	Nov 06

3. Description of the Receiving Environment

The most sensitive environment in the area is Scott Reef. Scott Reef is not a World Heritage Property, Marine Park or listed as a Ramsar Wetlands. The reef flat of South Scott reef is managed by the Western Australian Department of Environment. Scott reef is listed on the Australian Heritage Register.

The diversity of habitats within the Scott Reef complex, together with its size and location in coral rich province, is reflected in the diversity of corals reported from the area. A total of 258 species of scleractinian corals have been identified, which is similar to that reported for Ashmore Reef (255 species). Benthic habitats at Scott Reef were extensively mapped and described in 2006 by the Australian institute of Marine Science. Ten distinct benthic habitats were described from the lagoon at South Scott Reef and eight from north Scott Reef.

The following species, which may occur within the Torosa-1 & 2 well locations and surrounding waters, are considered to be rare, vulnerable or in need of special protection, and have been listed as being in need of protection under State and/or Commonwealth legislation:

- *Megaptera novaeangliae* (Humpback Whale)
- *Sula dactylatra bedouti* (Masked Booby - eastern Indian Ocean)

- *Chelonia mydas* (Green Turtle)
- *Caretta caretta* (Loggerhead Turtle)

Socio-economic Environment

Commercial fisheries currently operating in the offshore waters of the Browse Basin where the Torosa-1 & 2 wells are located are:

- Northern Demersal Scalefish Fishery;
- North West Slope Trawl Fishery;
- North Coast Shark Fishery; and
- Western Tuna and Billfish Fishery.

Traditional Indonesian fishing activities are permitted within an area covered by a Memorandum of Understanding (MOU) between the Government of Australia and the Government of Indonesia. The MOU area includes Scott Reef.

Scott Reef may receive occasional visits from vessels, but little tourism or recreational activities are expected to occur in the vicinity of the offshore survey locations.

There are no known Australian indigenous sites at Scott Reef. The Yarra, a 482 tonne iron barque lost at Scott Reef in 1884, is listed on the DEH historical shipwreck database.

The Torosa-1 & 2 wells are located in one of the most remote areas of Australia and are far from the main commercial shipping routes off the Australian coastline. The nearest shipping lane is the Port Hedland to Kupang/Banda shipping lane 80 km to the west.

4. Major Environmental Hazards

An environmental risk assessment undertaken identified environmental risks and potential environmental effects of drilling activities associated with rig deployment, well drilling and operation of standby vessels.

The main environmental aspects of the above activities are:

- Physical disturbance associated with anchoring, rig movements and rig operations;
- Sound impacts when undertaking vertical seismic profiling;
- Discharge of drilling fluid, drill cuttings and cementing fluids;
- Discharge of deck drainage;
- Discharge of sewage and putrescible domestic wastes;
- Emissions to atmosphere from operating equipment;
- Accidental hydrocarbon and/or hazardous material spills during routine drilling activities;
- Accidental hydrocarbon spills from failure of mechanical/physical barriers eg blowout preventers or casing strings; and
- Accidental hydrocarbon and/or hazardous material spills during transfer from standby vessels.

5. Summary of Management Approach

The following table identifies the key management objectives, standard and criteria to achieve these objectives.

Objectives	Standards	Criteria
No significant impact to seabed and benthic habitats.	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations Site specific mooring plan Rig Anchoring Procedures Standby Vessel Marine Operations Procedures 	<ul style="list-style-type: none"> Anchoring/deployment and retrieval is done according to procedures to minimise anchor damage and chain drag. Recording and reporting of items lost overboard.
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"> Rig and vessels adhere to AQIS Australian Ballast Water Management Requirements and quarantine requirements.
No significant impact to transient marine life.	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations EBPC Amendment Regulations 2006 DEH 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 drill fluids and cuttings.	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations Rig Preventative Maintenance System (PMS) Woodside's Well Engineering Drilling Fluid Selection Procedure (TP03). 	<ul style="list-style-type: none"> Use of approved, low toxicity water based mud 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 P(SL)A Schedule 2003, Clause 222 	<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 rig 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 meets MARPOL requirement.
No significant environmental impact from solid and hazardous wastes.	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations Woodside Waste Management Plan. 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
No hydrocarbon or chemical spills to the marine environment.	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations Western Australia and Dampier Sub-Basin Oil Spill Contingency Plan (ERP-3210) Rig SOPEP Rig Fuel Transfer Procedure Rig Emergency Response Plan Rig HSE Management System Rig Preventative Maintenance System (PMS) MARPOL 73/78 Annex I 	<ul style="list-style-type: none"> BOP in place. Approved OSCP in place and complies with MARPOL. Rig crew induction covers spill response procedures and spill response exercise conducted. Re-fuelling procedures are in place and followed for rig and standby vessels. JHA for bulk transfer of diesel and drilling fluids reviewed before transfers. At sea refuelling supervised by Vessel Master or nominated Officer. Dry break couplings used on transfer hoses. Records kept of inspections and preventative maintenance. All valves, couplings and transfer hoses checked for integrity prior to use. Approval is sought and provided prior to all dispersant applications.
No significant impact on recreational vessels, commercial fishing, and shipping.	<ul style="list-style-type: none"> Woodside Environmental Standards and Aspirations Rig Emergency Response Plan AMSA requirements 	<ul style="list-style-type: none"> Functional rig 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).

6. Consultation

As part of Woodside’s stakeholder engagement program for the Browse Gas Development, a Stakeholder Engagement Plan has been developed. To date consultation and engagement has been undertaken with key stakeholders to assist with development of environmental plans for scheduled drilling campaigns, as well as geophysical, geotechnical and seismic surveys.

For the Torosa-1 & 2 wells a fact sheet will be sent to the following stakeholders;

- Western Australian Fisheries Industry Council (WAFIC)
- Australian Fisheries Management Authority (AFMA)
- Department of Primary Industries (WA)
- Department of Industry Resources (WA)
- Department of Conservation (WA)
- CSIRO Marine Research
- Australian Institute of Marine Science (WA)
- Australian Marine Safety Authority
- Kimberley Professional Fishing Association
- World Wildlife Fund
- The Wilderness Society
- Conservation Council
- Australian Conservation Foundation
- Marine and Coastal Network

- Coastwatch (WA)
- Department of Fisheries (WA)
- Indonesia Trade Office
- Shire of Broome
- Broome Port Authority
- Broome Customs Service
- Kimberley Development Commission

7. Contact Details

For further information about the project, please contact:

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