Gumbo Exploration Well
Environment Plan Summary

Drilling and Completions

Date: January 2013

Status: Draft

Controlled Ref No: Revision:0 Native file DRIMS No: 8533873

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Background and Purpose

Woodside Energy Ltd (Woodside), as operator, will be drilling the Gumbo exploration well located in Commonwealth waters in Exploration Permit Area WA-430-P.

The Gumbo Exploration Well Environment Plan (EP) has been prepared in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Environment Regulations). The EP has been reviewed and accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

This EP summary has been prepared as per the requirements of Regulations 11(7) and (8) of the Environment Regulations.

2. LOCATION OF THE ACTIVITY

The Gumbo exploration well location is in Commonwealth waters in Exploration Permit Area WA-430-P (Figure 2-1) in approximately 1,200 m (lowest Astronomical Tide) water depth. This exploration licence is approximately 90 km north-west of Exmouth. Table 2-1 summarises the well details including surface coordinates, water depth and permit area.

Table 2-1: Gumbo Exploration Well Coordinates, Water Depth and Timing

Well	Water Depth (m LAT)	Longitude	Latitude	Permit Area
Gumbo	1,200 m	113^{o} 31’ 57.20” E	21^{o} 21’ 06.89” S	WA-430-P

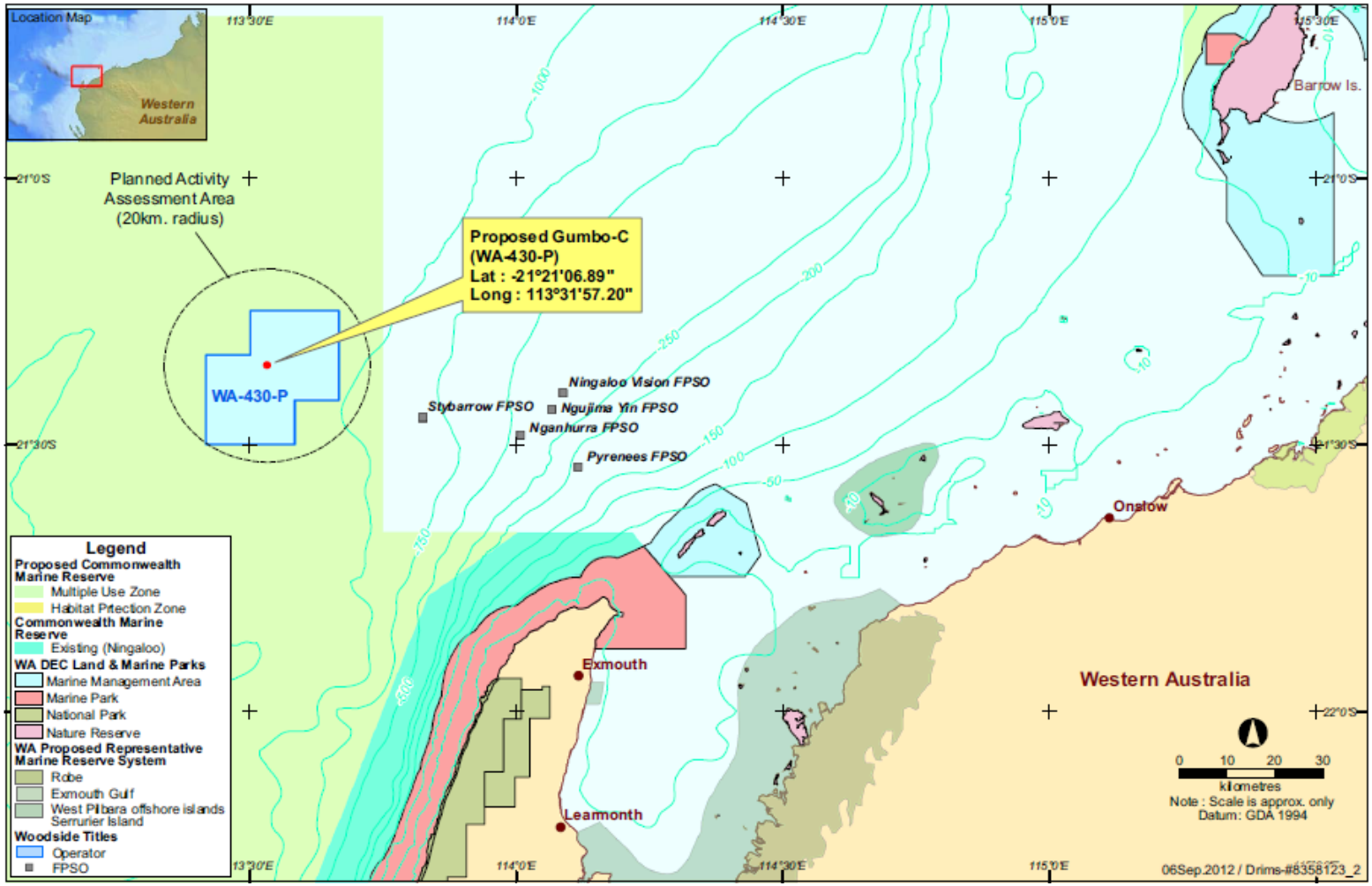

Figure 2-1: Drilling Location Map for Gumbo Exploration Well

3. DESCRIPTION OF THE ENVIRONMENT

3.1 Physical Environment

The Gumbo exploration well will be located within the North West Marine Bioregion (NWMR) on the outer continental slope region in approximately 1,200 m water depth. The Indonesian Throughflow is the dominant current through the majority of the NWMR, while the Leeuwin Current is dominant in the south of the NWMR.

3.2 Biological Environment

Regional studies on the North West Shelf indicate that the seabed material is likely to be predominantly flat and featureless and comprises thick, unconsolidated fine grained sands. The sediments support soft sediment benthic communities dominated by infauna (mobile burrowing species including molluscs, crustaceans and worms) and isolated larger fauna (free swimming cnidarian, demersal fish and benthic crustaceans). With consideration of the depth of the Gumbo drilling site (approximately 1,200 m), general lack of hard substrate, reduced light and nutrient loading the soft sediment communities are considered of a relatively low environmental sensitivity.

The Commonwealth Protected Matters database lists ten marine species as 'threatened' and 16 species as 'migratory' under Commonwealth legislation that may occur in low abundance within, or pass through the Gumbo exploration well area. The area does not provide critical habitat for feeding, breeding or resting, or have constricted migratory pathways, for these species.

The Gumbo exploration well operational area is located on the outer north-western edge of the humpback whale migration route and on the outer edge of the blue whale migration pathway, which follows the 500 m – 1,000 m depth contour. The timing of the Gumbo exploration well may overlap with the beginning of the blue whale northern migration and the end of the southern migration, but is not expected to overlap with the humpback whale north- or south-bound migration.

The abundance of threatened and migratory animals is expected to be low, and the presence of the operating MODU may result in localised behavioural avoidance but this is not considered significant and will not impact the population of these whales or other species.

3.3 Socioeconomic Environment

The Gumbo exploration well operational area is located within four Commonwealth fisheries management areas that cover the area beyond the 200 m isobath; however, none have significant catches at the proposed location.

The region supports significant commercial shipping activity, with the Gumbo exploration well location being within a shipping fairway.

The Gumbo exploration well area is located approximately 90 km north-west of Exmouth and is rarely visited for tourism activities (recreational fishing and boating and charter boats operations) which tend to be centred around nearshore waters, islands and coastal areas.

There are a number of producing oil and gas fields in the North West Shelf region, with facilities including the Nganhurra FPSO (51 km), Ngujima-Yin FPSO (56 km), Stybarrow Venture FPSO (33 km), Pyrenees FPSO (>60 km) and Ningaloo Vision FPSO (56 km). These facilities are accessed regularly by tankers and support vessels that may be anchored or moving through the fields.

The Gumbo exploration well operational area is located within the multiple use zone of the Gascoyne Commonwealth Marine reserve and approximately 60 km north-east from the boundary of Ningaloo Marine Park (Commonwealth Waters). There are no known areas of cultural heritage significance in this area.

4. DESCRIPTION OF THE ACTION

The Gumbo exploration well will be drilled with a mobile offshore drilling unit (MODU) using a water-based mud to a target depth of approximately 4 km below the seabed. Once the drilling is completed the well will be plugged and abandoned.

Two supply vessels will be supporting the MODU during the drilling operations. At least one vessel will be on standby in the vicinity of the MODU at all times. A third vessel may be called to assist during specific operational periods.

The Gumbo exploration well will take approximately 66 days and is planned to be undertaken between January and April 2013.

Drilling of the Gumbo exploration well includes the following steps:

1. Drilling of the top-hole sections using seawater and pre-hydrated bentonite sweeps
2. Installation and cementing of the drill casing string
3. Testing and installation of the blow out protector on the wellhead
4. Installation of the marine riser
5. Displacement of the top-hole section with water based mud
6. Drilling of the intermediate-hole sections using water based mud
7. Installation and cementing of the drill casing string
8. Drilling of the bottom-hole section using water-based mud to the target depth of the well
9. Plugging and abandoning the well.

5. MAJOR ENVIRONMENTAL HAZARDS AND CONTROLS

Woodside undertook an environmental risk assessment to understand the potential environmental risks associated with the Gumbo exploration well (planned and unplanned activities) to ensure they are reduced to As Low As Reasonably Practicable (ALARP) and will be of an acceptable level using a method consistent with Woodside standards.

The key environmental hazards and control measures to be applied to the Gumbo exploration well activities are shown in **Appendix A**. These are consistent with Woodside corporate and project-specific objectives, standards and criteria. All control measures associated with the hazards will be implemented to reduce environmental risk to ALARP and will be of an acceptable level.

6. MANAGEMENT APPROACH

The Gumbo exploration well drilling activities will be managed in compliance with the EP accepted by NOPSEMA under the Environment Regulations, other relevant environmental legislation and Woodside's Management System (e.g. Woodside Environment Policy).

The objective of the EP is to ensure that potential adverse impacts on the environment associated with the Gumbo exploration well drilling activities, during both planned and unplanned activities, are identified, are reduced to ALARP and are of an acceptable level.

The EP details specific objectives and standards for each environmental aspect that was identified and assessed in the Environmental Risk Assessment (Section 5 of the EP). For each environmental aspect the range of controls to be implemented (consistent with the standards) to achieve the performance objectives are detailed. The EP then establishes the specific measurement criteria that will be used to demonstrate that the performance objectives have been achieved.

The implementation strategy detailed in the EP identifies the roles/responsibilities and training/competency requirements for all personnel (Woodside and its contractors) in relation to implementing controls, managing non-compliance, emergency response (oil spills) and meeting monitoring, auditing, and reporting

requirements during the activities. The EP details the types of monitoring and auditing that will be undertaken and the reporting requirements for environmental incidents and reporting on overall compliance of the activities with the EP.

7. CONSULTATION

Woodside conducted a stakeholder assessment for the proposed activity to identify relevant and interested stakeholders based on the well location, proposed activities and timing.

A consultation fact sheet was sent electronically to all identified stakeholders prior to lodgement of the EP with NOPSEMA for assessment and acceptance. This advice was supported by engagement with potentially affected stakeholders.

Woodside received feedback on the proposed activity from a range of stakeholders, including government agencies, recreational fishing organisations and conservation groups. Issues of interest or concern included the location of the proposed well in a shipping fairway and Defence Practice Area, as well as potential impacts on marine mammals.

Woodside considered this feedback in its development of management measures specific to the proposed exploration well.

Woodside will continue to accept feedback from stakeholders during the drilling program.

8. CONTACT DETAILS

Further information about the Gumbo exploration well activity can be obtained from:

Tony Johnson
Senior Corporate Affairs Advisor
Woodside Energy Ltd
Woodside Plaza, 240 St Georges Terrace, Perth WA 6000
T: +61 8 9348 4000
E: tony.johnson@woodside.com.au

Toll free: 1800 442 977

APPENDIX A: Summary of Key Environmental Hazards and Control Measures to be applied to the Gumbo Exploration Well Drilling Activities

Source of Risk (Hazard)	Potential Environmental Impact	Control/Mitigation Measures
Planned (Routine and Non Routine) Activities		
Proximity to other vessels	Interference with fishing and shipping operations	Compliance with Australian Maritime Safety Authority administered marine safety regulations and marine notification requirements.
		Pre-drilling notification/consultation with stakeholders.
Generation of noise from drilling activities	Potential disturbance to threatened or migratory whale species listed under the *Environment Protection and Biodiversity Conservation Act 2000* (Cth) (EPBC Act)	The interaction of the support vessels with cetaceans will be consistent with Part 8 of the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth).
Generation of acoustic signals during vertical seismic profiling (VSP) of the well	Potential disturbance to threatened or migratory whale species listed under the EPBC Act	VSP operations will be consistent with the intent of the EPBC Act Policy Statement 2.1.
Well site and MODU anchoring	Disturbance to benthic habitat	Compliance with Woodside procedures to identify well specific hazards. Anchoring analysis undertaken and implemented to minimise the potential for accidental anchor drag or the MODU dragging off location.
Atmospheric emissions from fuel combustion	Temporary reduced localised air quality from atmospheric emissions	Compliance with *International Convention for the Prevention of Pollution from Ships 1973* as modified by the protocol of 1978 *(MARPOL 73/78) Annex VI* (as implemented in Commonwealth waters by the *Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983*) (Cth)) requirements for emissions.
Routine discharge of sewage, grey water and putrescible wastes to the marine	Localised eutrophication of the water column; and localised adverse effect to marine biota	Compliance with MARPOL 73/78 - as applied in Australia under *Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983*; AMSA Marine Orders - Part 96: Marine Pollution Prevention – Sewage, - as required by vessel class.

Source of Risk (Hazard)	Potential Environmental Impact	Control/Mitigation Measures
environment		
Routine discharge of water (deck and bilge) to marine environment	Localised decrease in water quality and toxic effects to marine biota	Compliance with MARPOL 73/78 - as applied in Australia under *Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983*; AMSA Marine Orders - Part 91 Marine Pollution Prevention – Oil, where applicable.
Routine discharge of drilling fluids, cementing fluids and sub-sea fluids to the marine environment from the MODU	Toxic effects to marine biota Localised reduction in water quality	All potentially hazardous materials and chemicals will be reviewed and approved through relevant Woodside procedures.
Routine discharge of drill cuttings to the marine environment	Localised burial or smothering of benthic habitats	The management of drill cuttings will be consistent with applicable Woodside engineering standards.
Unplanned Activities (Accidents/ Incidents)		
Collision between support vessels and threatened and migratory whale species	Potential injury or mortality to threatened and migratory whale species listed under the EPBC Act	The interaction of the support vessels with cetaceans will be consistent with Part 8 of the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth).
Dropped objects to the marine environment	Localised damage/ smothering of benthic habitats due to contact with equipment and materials	Equipment and material dropped to the marine environment will be recovered where practicable.
Accidental loss of solid waste to the marine environment	Pollution and contamination of the environment and secondary impacts on marine fauna	Compliance with MARPOL 73/78 - as applied in Australia under *Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983*; AMSA Marine Orders - Part 95 Marine Pollution Prevention – Garbage, where applicable.
Deck spill to the marine environment	Reduction in water quality Toxic effects to marine biota	Compliance with MARPOL 73/78 - as applied in Australia under *Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983*; AMSA Marine Orders - Part 91 Marine Pollution Prevention – Oil, where applicable. The management of chemical storage, hoses and deck drainage will be consistent with applicable Woodside engineering standards.

Source of Risk (Hazard)	Potential Environmental Impact	Control/Mitigation Measures
Hydrocarbon spill during bunkering activities to the marine environment	Impacts to offshore/ open water receptors such as marine mammals, marine reptiles and seabirds	Compliance with MARPOL 73/78 - as applied in Australia under *Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983*; AMSA Marine Orders - Part 91 Marine Pollution Prevention – Oil, where applicable. The management of transfer hoses and deck drainage will be consistent with applicable Woodside engineering standards.
Hydrocarbon release to the marine environment due to loss of vessel structural integrity	Impacts to offshore/ open water receptors such as marine mammals, marine reptiles and seabirds	Establishment and enforcement of a 500 m safety zone around the MODU. Compliance with relevant Marine Orders for navigation and prevention of collisions.
Hydrocarbon release to the marine environment due to a loss of well integrity	Impacts to offshore/ open water and nearshore receptors , and to commercial fisheries and tourism	*Preventative* • Use of a range of industry standard well barrier equipment, materials and procedures as part of the well design, construction and abandonment. • Barriers and testing requirements will be consistent with applicable Woodside engineering standards and procedures. *Spill Response* • Spills to sea will be managed as per Woodside's Corporate Oil Spill Response Plan and the Gumbo Exploration Well Oil Spill Action Plan. • Monitoring/observation of the spill to guide the spill response. • Recovery and containment undertaken to minimise potential environmental impact.