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## 1. DESCRIPTION OF THE ACTION

Woodside Energy Ltd (Woodside) proposes to continue its Drilling and Completion (D&C) related activities in the Exmouth Sub-Basin region of Western Australia, in permit areas where Woodside is the operator of the permit (Table 1-1).

This Environment Plan (EP) describes the D&C activities, which will involve numerous activities occurring at different locations, different times and using various rigs and vessels. Information specific to each related activity will be submitted to the DMP, as the Designated Authority, in the activity specific Environment Plan Bridging Document (EPBD). Within this EP, the environmental impact assessment and identified preventative and management measures of the Exmouth Sub-Basin D&C activities have been assessed and presented. This environmental impact assessment process is designed to ensure that potential environmental impacts associated with the activities, during both routine and non-routine operations, are identified and appropriately assessed. In doing so, relevant preventative and management measures can be developed and implemented to ensure that adverse environmental impacts are avoided or minimised.

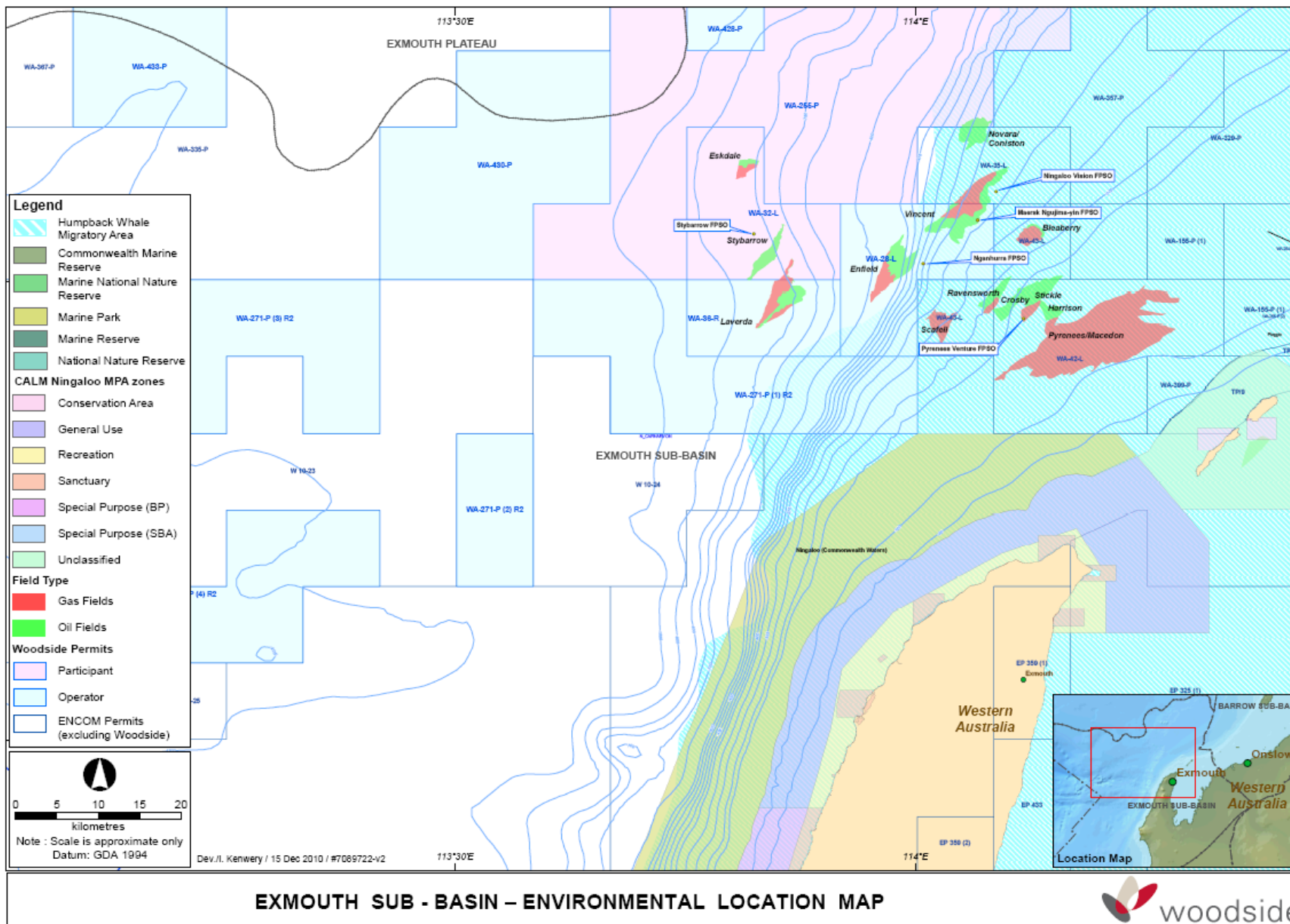
Activity specific Environment Plan Bridging Documents will be prepared, as required, to provide additional detail specific to proposed activities and will include information such as the well locations, fluids to be used, rig to be used, as well as information on any additional identified risks, management strategies, objectives, standards and performance criteria that have not been addressed within this EP.

**Table 1-1 : Woodside Operated Permit Areas in the Exmouth Sub-Basin**

WA-271-P (1) R2	WA-271-P (4) R2	WA-428-P
WA-271-P (2) R2	WA-28-L	WA-430-P
WA-271-P (3) R2	WA-36-R	WA-433-P

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Figure 1: Map of Exmouth Sub-Basin including the Operated and Participant Woodside Permit Areas



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## 2. DESCRIPTION OF THE RECEIVING ENVIRONMENT

### 2.1 Physical Environment

The North West Cape exists in an arid, subtropical environment with a tropical cyclone period from November to April. Winds in the area are predominantly from the south-west and south-east.

Tides are semi-diurnal. 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.

While there is complex bathymetry in some deeper water areas (greater than 500 m) where scarp and deep channel features are present, the majority of the seabed for current and ongoing operations is generally featureless and consists of fine to medium sediment. A general gradient to finer sediment with increasing depth is apparent. The region is interspersed with smaller areas of more consolidated coarser sediment and limited patches of rocky outcrops associated with steeper slope areas and an east-west channel.

### 2.2 Biological Environment

Woodside's activities are approximately 50 km north-west of Exmouth and are approximately 22 km north of the Commonwealth boundary of the Ningaloo Marine Park. The Muiron Islands Marine Management Area is located approximately 27 km from Woodside's nearest area of activity.

#### ***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***

Woodside's activities in the Exmouth Sub-Basin are predominantly located on the continental slope in deep water, ranging from 230 to 900 m. Soft sediment tends to dominate the area, 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 500 m. These hard, rocky surfaces support a locally diverse accumulation of species. Species that typically inhabit the seafloor and burrow in seafloor sediments are generally found to be widespread and well represented along the continental shelf and upper slopes in this region.

### 2.3 Socio-Economic Environment

The nearest town to Woodside's activities within the Exmouth Sub-Basin is Exmouth. The Exmouth Shire covers an area of approximately 5,700 km<sup>2</sup> 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

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people, though there are large short-term fluctuations in population due to the high number of tourists that visit the area.

### **3. 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 Exmouth Sub-Basin 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.

The mitigation and management measures that will be implemented to ensure that the potential adverse environmental impacts are managed to an acceptable level are outlined in Section 4.

### **4. SUMMARY OF MANAGEMENT APPROACH**

The key management objectives and controls to be applied to the Exmouth Sub-Basin D&C activities are shown in Table 4-1. These are consistent with Woodside Corporate and project specific objectives, standards and criteria. This is not a comprehensive list of all commitments, however all commitments associated with these will be used to reduce environmental risk to As Low As Reasonably Practicable (ALARP).

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**Table 4-1. Management Objectives and Commitments for Exmouth Sub-Basin Drilling and Completions Related Activities.**

Objective	Commitment
Minimise disturbance to marine habitat from anchoring.	<ul style="list-style-type: none"> <li>• Pre-spud survey undertaken to assess the presence of sensitive features in the immediate area.</li> <li>• Sensitive seabed features will be avoided when anchoring</li> <li>• Anchoring analyses undertaken and implemented to minimise the potential for accidental anchor drag or a rig dragging off location.</li> </ul>
Minimise disturbance to marine fauna from acoustic disturbance.	<ul style="list-style-type: none"> <li>• A vessel will not travel greater than 6 knots within 300 m of a whale (caution zone) and not allow the vessel to approach closer than 100m of a whale.</li> <li>• Sightings of marine mammals and whale sharks will be recorded and reported at 6 monthly intervals to SEWPC at cet.sightings@environment.gov.au.</li> </ul>
Minimise disturbance to marine fauna from vertical seismic profiling.	<ul style="list-style-type: none"> <li>• Visual check for marine mammals within 3 km (observation zone) of the rig or vessel for 30 minutes prior to commencing VSP operations.</li> <li>• Soft start: build up power for VSP slowly to give adequate time for marine mammals to leave the area.</li> <li>• Shut down the acoustic source if marine mammals are sighted within 1 km.</li> </ul>
Minimised reduction in air quality from atmospheric emissions from combustion of hydrocarbons (engines and well testing)	<ul style="list-style-type: none"> <li>• Compliance with MARPOL 73/78 Annex VI (Prevention of Air Pollution from Ships) requirements.</li> </ul>
Minimise the risk of the introduction of invasive marine species from biofouling	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
Minimise marine pollution from routine discharge of sewage and putrescible wastes	<ul style="list-style-type: none"> <li>• 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>).</li> </ul>
Minimise marine pollution from routine discharge of deck drainage	<ul style="list-style-type: none"> <li>• Fuels, oils and hazardous chemicals will be stored with secondary containment.</li> <li>• 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.</li> </ul>
Minimise marine pollution from routine discharge of drill fluids and cuttings	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Use of solids control equipment to reduce the Oil on Cuttings levels to &lt;10% during NWBM drilling.</li> </ul>
Minimise marine pollution from routine discharge of wellbore cleanout and completions fluids	<ul style="list-style-type: none"> <li>• 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.</li> <li>• All potentially hazardous materials and chemicals will be reviewed and approved through Woodside's Chemical Selection, Assessment and Approval Process.</li> <li>• Fuels, oils and chemicals will be stored with secondary containment.</li> </ul>

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Objective	Commitment
Minimise marine pollution from routine discharge of cementing fluids	<ul style="list-style-type: none"> <li>• 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.</li> <li>• All potentially hazardous materials and chemicals will be reviewed and approved through Woodside's Chemical Selection, Assessment and Approval Process.</li> <li>• Record of cement volumes discharged maintained for each well</li> </ul>
Minimise the impact on the marine environment from waste disposal	<ul style="list-style-type: none"> <li>• Management of wastes in accordance with Woodside's D&amp;C Waste Management Plan.</li> <li>• Records of waste types and volumes maintained and reviewed on a quarterly basis.</li> </ul>
Minimise marine pollution from accidental discharge of hazardous materials	<ul style="list-style-type: none"> <li>• 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.</li> <li>• All potentially hazardous materials and chemicals will be reviewed and approved through Woodside's Chemical Selection, Assessment and Approval Process.</li> <li>• Fuels, oils and chemicals will be stored with secondary containment.</li> </ul>
Minimise marine pollution from fuel and oil spills – Fluid Transfers	<ul style="list-style-type: none"> <li>• Bulk transfers will commence during daylight hours and when sea conditions are appropriate as determined by the master of the supply vessel.</li> <li>• Bulk transfer hoses for diesel, base oil and NWBM will have adequate flotation and dry-break couplings.</li> </ul>
Minimise marine pollution from fuel and oil spills – Loss of Well Control	<ul style="list-style-type: none"> <li>• All D&amp;C activities will be carried out in accordance with Woodside's Engineering Operating Standards.</li> <li>• Spills to sea will be managed as per the Woodside Oil Spill Contingency Plan.</li> </ul>
Minimise disruption to commercial and recreational fishing activities	<ul style="list-style-type: none"> <li>• Maintain a 500 m safety exclusion zone around the drill rig.</li> </ul>
	<ul style="list-style-type: none"> <li>• Compliance with AMSA administered marine safety regulations and marine notification requirements.</li> </ul>

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## 5. CONSULTATION

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

To ensure Woodside's understanding of potential stakeholder concerns remains current, stakeholder consultation for the related activities, a copy of this EP will be provided to the Exmouth Community Reference Group for comment. Relevant comments will be addressed as appropriate and DMP and SEWPC will be advised if any actions, as a result of comments, translate into material changes to the EP.

A fact sheet/electronic notification will be distributed to a broader stakeholder group prior to the commencement of specific activities. The fact sheet/notification will include a location map, summarise the activity scope and approximate duration, support vessels involved and contact details. The distribution list will be tailored for each activity.

## 6. CONTACT DETAILS

For further information about the Exmouth Sub-Basin Drilling and Completions related activities please contact:

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