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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.

☐	**BopCom Endorsement**	Meeting date when endorsement granted:	

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WA-34-L & WA-350-P Exploration Wells Drilling Program Environment Plan Bridging Document Summary

This summary of the WA-34-L & WA-350-P Exploration Wells Drilling Program Environment Plan Bridging Document has been submitted to comply with Regulation 11(7)(8) of the *Petroleum (Submerged Lands)(Management of Environment) Regulations 1999*.

1. Introduction

Woodside Energy Ltd (Woodside) proposes to undertake drilling activities on the North West Shelf (NWS) using the 'Songa Mercur' semi-submersible drill rig, operated by Songa Offshore. The drilling of up to three exploration wells on the NWS is planned to commence in late-September 2009 and continue through in to January 2010. The wells are located in permit areas WA-34-L and WA-350-P.

The wells are part of the overall drilling activities on the NWS and as such, the environmental risks and management thereof are described in the NWS Drilling Environment Plan. This 'WA-34-L & WA-350-P Exploration Wells Drilling Program Environment Plan' serves as a bridging environment plan to the existing, government approved Woodside Drilling and Completions North West Shelf Environment Plan (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 Pelion-1 well is located in Permit Area WA-34-L and the second and third wells, which will be two of three options – Elatus-1, Eris-1 or Gallifrey-1 – will be located in either WA-34-L or WA-350-P. The well locations are approximately 190 km west north-west of Karratha, 55 km north-west of the Montebello Conservation Park and 90 km north north-west of Barrow Island.

Table 2-1 summarises the well details including surface coordinates, water depth, permit area and timing for all of the well options. This schedule is subject to change due to operational requirements and external influences such as cyclones.

The wells are likely to be profiled seismically and this activity is likely to be conducted within the known whale migration period. Procedures will be in place to minimise the potential for impact on whales during these operations, as outlined in NWS EP. No well testing is planned for this program.

Table 2-1: Well Co-ordinates, Water Depth and Timing (GDA 94, MGA zone 51)

Well	Approx. Water Depth (m LAT)	Easting (Longitude)	Northing (Latitude)	Permit Area	Timing
Pelion-1	238	304 450 mE (115° 07' 51.29 E)	7 788 087 mN (19° 59' 38.5559 S)	WA-34-L	Q3 / Q4 2009
Elatus-1	186	310 555 mE (115° 11' 21.60 E)	7 788 920 mN (19° 59' 13.65 S)	WA-34-L	Q4 2009 / Q1 2010
Eris-1	209	316 709 mE (115° 14' 55.64 E)	7 795 515 mN (19° 55' 41.33 S)	WA-34-L	Q4 2009 / Q1 2010
Gallifrey-1	180	297983 mE (115° 04' 05.21 E)	7 778 879 mN (20° 04' 35.55 S)	WA-350-P	Q4 2009 / Q1 2010

3. Description of the Receiving Environment

Few significant environmental resources are expected to be located in the immediate vicinity of the well locations, situated in a water depth of between approximately 180 and 240 m. The benthic community is expected to be similar to other locations on the NWS which is characterised by low density infauna consisting of mobile burrowing species including molluscs, crustaceans, and polychaete, sipunculid and platyhelminth worms.

A number of whale species may be encountered in the region, including Pygmy Blue, Sperm and Humpback.

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 of speed 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 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 NWS support a low abundance, high diversity invertebrate fauna population, largely comprising burrowing polychaete worms (Phylum *annelida*) and crustaceans (Phylum *crustacean*). 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, Leathery, 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 Woodside permit areas are beyond the range of nearshore fisheries (e.g. prawn fisheries) that operate between the North West Cape and Port Hedland. However, they do occur within the Pilbara commercial finfish area, which extends across the Pilbara from east of Port Hedland as far west as North West Cape. This is a low output but complex fishery which incorporates trawl fishing, trap fishing, line fishing, trolling and shark fishing.

Commercial fishing is the primary activity which occurs within the NWMR. There is also several WA State managed wild-stock commercial fisheries and aquaculture leases which are permitted or exist within the permit areas.

Given the distance from shore, there are no known recreational fisheries in the vicinity of any of the permit areas, however, the trunkline transporting gas to shore from the NWS operations has proven to be an effective artificial reef, and is frequently fished by recreational fishers nearer the coast.

There are no tourism activities in the vicinity of the any of the Woodside permit areas.

4. Environmental Hazards

A risk assessment was undertaken for the WA-34-L and WA-350-P drilling activities. The main potential impacts identified were discharge of drill cuttings and fluids, and potential for spillage of hydrocarbons. The risk assessment process indicated that the potential impacts arising from drilling activities can be categorised as either having a low or medium risk level. There were no impacts identified above a medium risk level.

The risk of a major hydrocarbon spill during routine drilling activities is very low. The results of spill modelling undertaken for the Xena-1 well location (approximately 4 km north east of the Elatus-1 well) shows a very low potential for exposure of the Montebello Islands, Barrow Island or the WA coastline to spilled hydrocarbons from September-February. The findings of this modelling are highly applicable to the outlined drilling activities.

A number of whale species may also be encountered in the region, including pygmy blue, sperm and humpback. The proposed well locations are within the western boundary of the known humpback whale migratory path. Drilling activities are scheduled to commence in the shoulder period of the southward migration. To ensure minimal impact on any whales in the area, support vessels will maintain a 300 m separation distance, where safe to do so, from any whales sighted. Vertical Seismic Profiling survey procedures will be in place and adhered to for the short duration that profiling activities are undertaken.

A series of comprehensive environmental management controls will be maintained by Woodside and Songa Offshore 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 the drilling program include responsibilities, training, 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 during the drilling program 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 EP bridging document and NWS EP.

Table 5-1: Management Objectives and Criteria for the WA-34-L and WA-350-P Drilling Activities

Objectives	Criteria
Minimise disturbance to benthic habitat community	• Anchoring procedures and anchor management plan in place and adhered to. • Incident reports for accidental anchor drag or rig drag off location.
Minimise localised reduction in water quality, smothering of benthic fauna, and decreased light attenuation due to increased turbidity.	• Non-toxic to slightly toxic water based fluids used. • Documented authorisation from DMP on approval of drilling fluids proposed for use.
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.	• Waste water discharges to meet legislative requirements. • Non-toxic to slightly toxic water based fluids used. • Environmental Discharge Report. • Audit of procedures to ensure compliance with legislative and EP requirements.
Minimise impact on the marine environment from waste disposal.	• 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. • Audit of waste log. • Audit of procedures to ensure compliance with legislative and EP requirements.
Minimise the risk of introduction and establishment of Invasive Marine Species (IMS) in sensitive and shallow water environments.	• AQIS clearance documentation. • Ballast exchange recorded in the rigs and vessel logs. • IMS Risk Assessments completed and documented, for vessels, rigs and immersible equipment planning to enter and operate within nearshore waters around Australia.

Objectives	Criteria
Noise: 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.	• The interaction of the support vessels and helicopters with cetaceans will be consistent with Part 8 of the EPBC Regulations 2000 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.
Vertical Seismic Profiling (VSP): Minimise potential physiological effects or disruption to behaviour patterns of marine fauna due to sound energy associated with discharge of compressed air chambers.	• VSP operations will be carried out in accordance with EPBC Act Policy Statement 2.1.
Recording of Marine Mammals: Add to the data on marine mammals in the North West Shelf area	• Sightings of marine mammals will be recorded and reports sent to the DEWHA periodically.
Artificial Lighting: Minimise potential attraction / disturbance to marine life.	• Impacts from artificial lighting will be minimal due to the drilling activities being temporary in nature and remote from light sensitive receptors, in particular turtle nesting sites.
Minimise atmospheric emissions.	• Rig and vessel preventative maintenance system. • Use of low sulphur fuel, where it is available, to minimise emissions from combustible sources. • Compliance with MARPOL 73/78 Annex VI requirements.
Minimise potential chronic / acute toxicity effect on marine organisms.	• Oil Spill Contingency Plans in place. • Refuelling procedures and Job Hazard Analyses in place – including spill mitigation measures, where appropriate. • Spill reporting procedures in place. • Spill drill reports.
Cyclone response: Minimise the impact on benthic habitats and reduced potential occurrence of hydrocarbon spills.	• Compliance with 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.

Objectives	Criteria
Minimise potential impact on socio-economic values	• Adherence to standard maritime safety procedures (Auscoast Warnings via AMSA where appropriate, radio contact, display of appropriate navigational beacons and lights). • Compliance with AMSA administered marine safety regulations and marine notification requirements. • Stakeholder Consultation undertaken, as required.
Woodside and contractor personnel understand and comply with the environmental objectives, standards and commitments within this EP.	• All Woodside and contractor personnel undertake an environmental induction. • Induction attendance recorded. • Copy of EP on board rigs.
HSE Management system covers applicable requirements of this EP.	• Review of HSE management system undertaken.
Environmental inspections to be carried out according to the requirements of the EP.	• Completed environmental commitments audits. • Campaign Action Register.
All environmental incidents are reported in accordance with the requirements of this EP, Woodside and legislative requirements.	• 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.	• Review of the environmental performance of the operation conducted at the end of Program activities.

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 activities undertaken on the NWS 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 activities proposed to be undertaken on the NWS will include the following:

- Consultation, as deemed required, with key stakeholders during the preparation of the activity 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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