

Somerset-1 Exploration Well Drilling Program Environment Plan Summary

This summary of the Somerset-1 Exploration Well Drilling Program Environment Plan 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 and profiling of the Somerset-1 exploration well in offshore Otway using the 'Ocean Patriot' semi-submersible drill rig, operated by Diamond Offshore. Drilling of the well is planned to be undertaken between October and the end of November, 2009. However, depending on rig availability, it is possible that the Program may extend in to early December, with all activities finalised by mid-December. The well is located in permit area T/34P.

2. Description of the Action

The Somerset-1 well location is in Commonwealth waters, Tasmanian jurisdiction, of the Exclusive Economic Zone (EEZ) in offshore Otway. The well location is approximately 83.5 km south south-west of Port Campbell on the Victorian mainland and 114 km north west of Currie, King Island. The Ocean Patriot will be supported by two support vessels.

Table 2-1 summarises the well details including surface coordinates and water depth. This schedule is subject to change due to operational requirements and external influences.

The well is likely to be profiled seismically. Procedures will be in place to minimise the potential for impact on whales during these operations, as outlined in Somerset-1 Drilling Program Environment Plan (Somerset-1 EP). No well testing is planned for this program.

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

Well	Water Depth (m)	Easting (Longitude)	Northing (Latitude)
Somerset-1	485	650 708 mE (142° 44' 55'.96 E)	5 643 638 mN (39° 20' 36'.84 S)

3. Description of the Receiving Environment

The area where the Somerset-1 well is located lies within the South-east Marine Region. Few significant environmental resources are expected to be located in the immediate vicinity of the well location, situated in a water depth of 485 m on the continental slope, however whale species may be in the area during the time at which the drilling program is undertaken.

Climate and Oceanography

The region has a cold temperate climate; however, it can be affected by storms emanating from the polar region at any time of the year. Mean surface seawater temperatures range from approximately 10 to 12°C in winter to around 18 to 20°C in summer. The dominant climatic processes affecting western Bass Strait and offshore Otway are successive high- and low-pressure systems in the zone of the 'Roaring Forties'. The storms resulting from these pressure fronts occur principally during winter, and are associated with predominantly south-westerly swells.

The proposed activities are to be undertaken in an area where the Southern Ocean meets the Australian continental shelf, and frequently experiences periods of rough weather.

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Page 3 of 10

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Physical Environment

The Otway Province region has a steeply sloping offshore gradient, dominated by bio-clastic carbonate sediments. At the location of the proposed well, shallow soils are expected to be soft calcilutite and calcisiltite (a limestone consisting predominantly of small particulate size).

The characteristics of the coastline and marine environment of this region include very steep to moderate offshore gradients, high wave energy and cold temperature waters subject to upwelling events. The Bonney Upwelling event occurs seasonally in Bass Strait and is important, particularly to the Blue Whales, which migrate to the region to feed on the abundant food source of krill when the upwelling is occurring.

Ecological Environment

The Somerset-1 well, located in 485 m water depth, is beyond the phototrophic zone that supports marine vegetation. It is expected that the seabed at the well location will encompass a low density, low abundance benthic community.

A search of the online Department of Environment, Water, Heritage and the Arts (DEWHA) protected matters search tool for the proposed well location revealed 23 listed threatened species and 26 listed migratory species which may occur within, or travel nearby to the area surrounding the Somerset-1 well location. Many of the threatened species are also listed as migratory.

The following table (Table 3-1) summarises the Threatened and Migratory marine mammal activity that may occur in the vicinity of the proposed Somerset-1 activities.

Table 3-1: Summary of Listed Threatened and/or Migratory Mammal Species that May Occur in the Vicinity of the Somerset-1 Well

Species	Potential whale activity near to S-1 Program activities	Month											
		J	F	M	A	M	J	J	A	S	O	N	D
Humpback whale	Feeding						X	X	X	X	X	X	
Killer whale	Migration, feeding						X	X	X	X	X	X	
Southern right whale	Feeding, migration					X	X	X	X	X	X		
Blue whale	Feeding	X	X	X	X	X						X	X
Antarctic minke whale	Feeding	Unknown (limited information available)											
Pygmy right whale	Feeding	Unknown (limited information available, but may occur year round)											
Sperm whale	Feeding	Unknown (limited information available)											
Bryde's whale	Feeding	X	X	X									X
Dusky dolphin	Migration, feeding	X	X	X	X								X

Key:

- X = Denotes known whale activity
- = Denotes the months in which the Program may be undertaken (approx. 40 days and additional time for mobilisation/demob.)

Blue Whales

The blue whales found in the southern Australian region are most likely to be 'pygmy' blue whales, with very occasional occurrences of 'true' blues, which are more likely to migrate past Australian coastlines. Research and sightings show that populations of 'pygmy' blue whales are known to aggregate in summer at two locations along the southern Australian coastline to feed: Portland (Victoria) and Rottneest Island (Western Australia). In Bass Strait off Portland, Victoria, the summer oceanic Bonney upwelling brings cold nutrient rich deep ocean waters to the surface, which dramatically increases the productivity of coastal waters with increases in plant growth

(phytoplankton) and consequent increases in zooplankton (such as krill). The primary prey of blue whales in the Bonney Upwelling has been identified as krill, and the Portland region has been identified as a major aggregation locality for blue whales.

Southern Right Whales

Southern right whales are generally sighted off the Victorian coast from April to October. They tend to remain close to the coastline, in inshore waters during that time and a nursery is known to be located at Logan's beach, near Warrnambool.

Humpback Whales

Humpback whales are known to occur worldwide. The northern and southern hemisphere populations migrate between summer feeding grounds in polar waters and over-winter in breeding grounds near the tropics, but being out of phase by six months the two populations do not intermingle.

Most of the east Australian humpbacks follow a migration route past the east coast of Tasmania and along the NSW and Queensland coasts. The frequency of sightings in Bass Strait appears to be increasing, as might be expected from the continuing recovery of the population, but this trend might be a reflection of increased observer interest. Because of the intermittent and incidental nature of sightings, the heavy bias to reports by observers on shore and the relatively small number of records overall, it is not possible to estimate the number of humpbacks passing through the area in any one year. It is expected however that it is possible for humpback whales to be present in the area from autumn through to early spring, May – September each year.

Other Marine Species

Other marine mammal species such as Antarctic minke whales, Bryde's whales, pygmy right whales, dusky dolphins, killer whales and sperm whales may be found in the region at various times of the year, although limited information is available for some of these species regarding use of the region and distribution.

Fish

Three threatened species of fish listed by the EPBC Act may be found in the region: great white shark, Orange roughy and the School Shark. Of these, the great white shark is also listed as migratory

Birds

Seventeen species of birds, largely albatross and petrel species, listed by the Commonwealth EPBC Act as Threatened may potentially be found in the area. Albatrosses and petrels breed on land and may utilise the offshore Otway region for foraging. The birds feed on fish and squid whilst at sea and may occur in the area according to the distribution of prey.

Seals

The southern elephant seal, leopard seal, sub-Antarctic fur seal and crab eater seal breed far to the south, and although individuals disperse widely northwards during winter, very few reach Victoria's coastal waters.

It is apparent that some marine mammals are irregular seasonal visitors to the study area while others such as the Australian fur seal are resident all year round - particularly in the nearshore waters.

Socio-Economic Environment

Marine Parks and Reserves

The proposed Somerset-1 well location is *not* located within any of the zones in the south-east marine reserve network. The closest Marine Reserve to the well location is 'Zeehan', 58.5 km (31.6 nM) to the south south-east and the 'Apollo' Marine Reserve boundary lies approximately 64.8 km (35 nM) due east of the well location.

Commercial Fisheries

The proposed Somerset-1 well is located in an area encompassed by the following fisheries, confirmed via *personal communication* with the Australian Fisheries Management Authority (AFMA) (July, 2009):

- Commonwealth Trawl Fishery.
- Gillnet, Hook and Trap sectors of the Southern and Eastern Scalefish and Shark Fishery.
- Bass Strait Central Zone Scallop Fishery.

In 2009, the Bass Strait Central Zone Scallop Fishery resumed activity in the broader region, following a three year period of zero Total Allowable Catch.

Commercial fishing activities that may coincide with the timing of the proposed activities are fishing for giant crab, lobster as well as longline and gill net fishing activities.

Recreational Fisheries

High levels of recreational fishing are most likely to occur close to the Victorian, Tasmanian and King Island shorelines during peak tourism seasons. Recreational fishing in the area of the proposed well location is unlikely.

Shipping

A major shipping route passes to the north of the Somerset-1 well location, through Bass Strait, and intersects with the likely route that the support vessels supporting the drilling activities will take when travelling to and from port and the rig.

Sites of Cultural and Heritage Significance

The proposed Somerset-1 well is not located in or adjacent to any World Heritage Areas, National or World Heritage Place. A search of the Australian National Shipwreck Database also lists no protected historic wrecks in the area.

Tourism

Tourism activities are not known to occur within the area of the proposed S-1 well due to the distance from nearest shorelines (> 80 km).

4. Environmental Hazards

A risk assessment was undertaken for the Somerset-1 drilling and profiling activities. The main potential impacts identified were discharge of drill cuttings and fluids, vertical seismic profiling of the well and potential for spillage of hydrocarbons. The risk assessment process indicated that the potential impacts arising from the drilling and profiling activities can be categorised as either having a low or medium residual 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 Somerset-1 well location shows no predicted hydrocarbon impact to any shorelines for all of the scenarios modelled.

A number of whale species may be encountered in the region, as outlined in Section 3 above, however significant impact to any of these species is unlikely. 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 Diamond Offshore to ensure that no significant environmental effects are realised from the drilling activities. Spills will be managed according to the arrangements and procedures outlined in the approved South East Australia Oil Spill Contingency Plan (ERP-3230).

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 Somerset-1 Environment Plan.

Table 5-1: Management Objectives and Criteria for the Somerset-1 Drilling Activity

Objectives	Criteria
Minimise disturbance to benthic habitat community	<ul style="list-style-type: none"> • Pre- and post- site survey of the well site undertaken using the ROV. • Adherence to anchoring procedures and anchor plan.
Minimise localised reduction in water quality, smothering of benthic fauna, and decreased light attenuation due to increased turbidity.	<ul style="list-style-type: none"> • Use of ‘non-toxic’ to ‘slightly toxic’ water-based fluids approved by the Tasmanian Department of Infrastructure, Energy and Resources (DIER). • Cuttings discharged at the well location in deep water on the continental slope, with the significant quantity of cuttings discharged at the seabed to minimise suspended sediment and sediment footprint.

Objectives	Criteria
<p>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.</p>	<ul style="list-style-type: none"> • 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 Environment Plan requirements. • Fuels, oils and chemicals will be stored with secondary containment. • BOP fluid used meets the UK Offshore Chemical Notification Scheme category E product requirements.
<p>Minimise impact on the marine environment from waste disposal.</p>	<ul style="list-style-type: none"> • Drilling & Completions 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.
<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"> • IMS Risk Assessments completed and documented, for vessels, rigs and immersible equipment planning to enter and operate within nearshore waters around Australia, that are not already operating in the region.
<p>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.</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 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.
<p>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.</p>	<ul style="list-style-type: none"> • VSP operations will be carried out in accordance with EPBC Act Policy Statement 2.1.
<p>Recording of Marine Mammals: Add to the data on marine mammals in the offshore Otway area.</p>	<ul style="list-style-type: none"> • Sightings of marine mammals will be recorded and reports sent to the DEWHA periodically.
<p>Artificial Lighting: Minimise potential attraction / disturbance to marine life.</p>	<ul style="list-style-type: none"> • Impacts from artificial lighting will be minimal due to the drilling activities being temporary in nature and remote from light sensitive receptors.

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Objectives	Criteria
Minimise atmospheric emissions.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Oil Spill Contingency Plan in place. • Refuelling procedures and Job Hazard Analyses in place – including spill mitigation measures, where appropriate. • Spill reporting procedures in place. • Spill drill reports.
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, radio contact, display of appropriate navigational beacons and lights). • Compliance with AMSA administered marine safety regulations and marine notification requirements. • Stakeholder Consultation undertaken.
Woodside and contractor personnel understand and comply with the environmental objectives, standards and commitments within this EP.	<ul style="list-style-type: none"> • All Woodside and contractor personnel undertake an environmental induction. • Induction attendance recorded. • Copies of EP on board rig.
HSE Management system covers applicable requirements of this 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 EP.	<ul style="list-style-type: none"> • Completed environmental commitments audits. • Campaign Action Register.
All environmental incidents are reported in accordance with the requirements of this EP, Woodside and legislative requirements.	<ul style="list-style-type: none"> • Environmental incidents recorded and reported.
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.

6. Consultation

Various consultation activities have been undertaken during the preparation of the Somerset-1 drilling program. Woodside has undertaken consultation with a number of relevant stakeholders to identify potential environmental and socio-economic issues and management requirements, covering fisheries groups, whale experts and key government departments. A preliminary fact sheet summarising basic details about the proposed Program was sent to key fishery stakeholder groups in August.

Consultation with the identified stakeholders, individual fisheries and other groups will continue prior to, and during the Program.

7. Contact Details

For further information about the Somerset-1 program related activities, please contact:

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