

LOCATION

BHP Billiton Petroleum Pty Ltd (BHPB) is the Operator of a number of exploration permits in the Outer Browse Basin, including WA-301-P, WA-302-P, WA-303-P, WA-304-P and WA-305-P. BHPB proposes to drill several exploration (and potentially appraisal) wells within these permits as part of ongoing exploration and appraisal of the Outer Browse Basin.

At this stage, only one exploration target has been determined and is scheduled to be drilled using the Atwood Eagle drilling rig. The first well, Warrabkook-1, is located in permit area WA-303-P and is scheduled to be drilled in late 2007 over a period of approximately 50 days. The approximate surface location of Warrabkook-1 is 14°38'20.24" S and 120°25'00.77" E.

The Warrabkook-1 well will be drilled using water based mud, which will be discharged to the ocean at the completion of drilling. Testing of the Warrabkook-1 well is not proposed. It is possible that future exploration or appraisal targets within the Outer Browse Basin may be drilled using synthetic based mud systems for some hole sections, and that well testing may occur.

RECEIVING ENVIRONMENT

The water depth at the proposed Warrabkook-1 drill site is 1,517m. The seabed in the vicinity of the well site is expected to comprise of thick very soft to soft calcareous clays. Seabed surveys of adjacent permits have identified a relatively low abundance of invertebrate and vertebrate fauna in water depths over 350m.

The closest population centre to the drilling sites is the town of Broome, which is located ~300 km southeast of the Outer Browse Basin permits. Broome is a popular tourist destination and pearl industry centre. Other commercial activities in the area include commercial fishing. These activities are unlikely to be adversely affected by drilling operations given the distance from the drill location to Broome, the relatively small exclusion area and temporary time frame associated with this drilling.

BHPB has previously consulted with regulatory and commercial stakeholders regarding drilling activities in the Outer Browse Basin, including DoIR, CALM (Marine Branch) (now DEC) and the Western Australian Fishing Industry Council. The approach to consultation taken has been around general research of stakeholder activities and the extent of conflict of interest that the drilling activity would cause.

ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT

Drilling will be undertaken as per BHPB's Drilling HSE Management System (WWD Drilling HSE-MS), which is compliant with ISO 14001 Environmental Management System and OHSAS 18001 Safety Management System requirements. A systematic approach is taken to the management of hazards and risk through the identification and assessment of hazards and risk, the establishment of objectives, plans and performance standards, and the development of adequate documentation.

A number of actual and potential environmental impacts have been identified for the Outer Browse Basin drilling program. The risk of these potential impacts has been assessed, and this risk assessment is summarised in Table 1 below. Management measures to minimise these impacts and risks have been identified, and these are also summarised below (Table 2).

Objectives, standards and performance criteria for environmental management have been established based on consideration of:

- Sustainable Development Policy requirements;
- BHPB HSEC Management Standards;
- Legal requirements; and
- Technology options and feasibility.

Table 3 provides a summary of these for each identified activity/event.

All staff and contractors taking part in the Outer Browse Basin drilling program will be advised of their responsibilities prior to commencement of activities. This will occur through meetings with key contractor personnel and an induction and awareness presentation that will be given to all crew.

Further information may be obtained from BHPB's external affairs 1800 036 247 or by writing to:

External Affairs
BHP Billiton Petroleum Pty Ltd
Central Park 152-158 St Georges Terrace
PERTH WA 6000.

Table 1 - Summary of Environmental Risk Assessment – 2007-2009 Outer Browse Basin Drilling Program

Likelihood (Likelihood of the realisation of the potential consequences)	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophe
	CDEU 1.0 - 1.5	CDEU 1.5 - 2.5	CDEU 2.5 - 3.5	CDEU 3.5 - 4.5	CDEU 4.5 - 5.0
	<ul style="list-style-type: none"> No measurable damage Damage area not detectable Damage to ecosystem not detectable 	<ul style="list-style-type: none"> Minor Damage Damage area <200,000m² 0-25% of ecosystem damaged Natural recovery <1yrs acute, <5yrs planned Artificial recovery possible 	<ul style="list-style-type: none"> Localised Damage, sustainability unaffected Damage area <785,000m² 25-50% of ecosystem damaged Natural recovery <5yrs acute, <10yrs planned Artificial recovery difficult 	<ul style="list-style-type: none"> Major Damage sustainability affected Damage area <3,140,00m² 50-75% of ecosystem damaged Potential transmission to other ecosystem components or new generations Natural recovery <10yrs acute, <20yrs planned Artificial recovery very difficult 	<ul style="list-style-type: none"> Massive Damage, sustainability affected Damage area >3,140,00m² 75-100% of ecosystem damaged Transmission to other ecosystem components or new generations Natural recovery >10yrs acute, >20yrs planned Artificial recovery not yet possible
Almost certain					
Likely					
Moderate	9.3 WBM Drilled Cuttings Discharge 9.4 WBM Drilling Fluid Dumping 9.5 SBM Drilled Cuttings Discharge 9.7 Diatomaceous Earth Discharge 9.15 Well testing – Loss of Combustion	9.8 Chemical Spills			
Unlikely	9.1 Physical Presence 9.2 Support Vessel 9.6 Completion Fluid Discharge 9.12 Solid/Special Waste Disposal 9.13 Well testing – Flaring to Atmosphere 9.14 Well testing – Partial Combustion	9.16 Spills of Diesel (2.5m ³)			
Rare	9.9 Deck Washdown 9.10 Stormwater Run off 9.11 Sewage/Food Scrap Discharge		9.17 Spills of Diesel (80 m ³) 9.18 Spills of Oil (600m ³) 9.19 Introduction of Exotic Species		

Risk Level	ALARP Region	Action required	Risk Level	ALARP Region	Action required
High	Unacceptable Risk	Risks cannot be justified under any circumstances	Moderate	Lower ALARP	Cost effective measures for risk reduction should be implemented and hazard analysis considered
Significant	Upper ALARP	Risk reduction measures are strongly recommended or where effective hazard control and emergency preparedness measures are necessary	Low	Negligible Risk	Further risk reduction measures are not generally required in favour of long term risk reduction programs

Table 2 - Summary of Mitigation and Control Practices

Mitigation and Control Practices
General
Comply with all relevant legislation
Record sightings of whales and provide to HSE Team
Sea bed survey of the site will be conducted by the ROV, from the MODU, at the end of the drilling activity
Notice to Mariners issued regarding exclusion zones
Ensure deck is maintained in a clean state
Waste and hazardous substances
All sewage/food scraps to be comminuted or ground such that the material can pass through a screen with opening no greater than 25mm.
All wastes (except cuttings, water based drilling fluids, sewage and comminuted food scraps) will be removed from site for disposal
All wastes are to be stored in suitable containers for return to shore for disposal in accordance with regulations and sound waste management practices.
Waste management procedures in place.
Hazardous and general waste is to be segregated and placed into labelled containers for onshore disposal.
Waste will be disposed of at approved sites onshore
MSDS are to accompany hazardous substance consignments. (M&L to MODU, OIM from MODU)
Personnel to be instructed on the safe handling of hazardous waste
Monitor waste substances that contain NPI listed substances
Use non toxic water based mud, as determined by LC50 96 hour test
Monitor mud to ensure %SBM on cuttings as per DoIR requirements
Use shale shakers/solids control equipment to separate drill fluid from cuttings (recirculate mud)
SBM will be recycled at the completion of drilling operations.
Double barrier on all SBM dump lines, with drain off for the dead space
All valves inspected prior to SBM use
MODU floor drains return to collection tank or flow line
All chemicals and hazardous material will be stored in bunded areas.
Completion fluids and diatomaceous earth tested to ensure hydrocarbon content is <10% by weight prior to discharge overboard
Fuel, chemical and drilling fluid transfers
Personnel involved in transfer operations are to be fully instructed on procedures to be adopted, including specific duties and responsibilities.
All fuel, chemical and drilling fluid transfer operations are to be supervised, controlled and monitored before and during operation
Bulk fuel, chemical and drilling fluid transfers take place only in calm weather and daylight conditions (where possible)
Maintenance, inspection and testing
Ensure sewage and foodscrap treatment systems are maintained and operating effectively
Approved procedures and equipment to prevent/control blowout
Atmospheric emissions
Record quantity of flared products
Use approved equipment/ procedures for flare
Spill response
Instigate incident investigation procedures in the event of a spill.
Personnel trained/ drilled in oil spill response
Notify regulator of reportable and recordable incidents
Spill kits available & maintained on the MODU/vessels for clean up of minor spills. MODU/vessels to demonstrate they have kits that are fit for purpose
Spills are cleaned up ASAP to minimise contamination potential.
Ballast water management
Follow Australian Ballast Water Management Requirements (legislated under the Commonwealth Quarantine Act)

Table 3: Summary of Environmental Objectives, Standards and Performance Criteria

Activity/Event	Objectives	Standards	Performance Criteria
Physical Presence	<ul style="list-style-type: none"> Minimise impact upon marine communities Minimise impact on fisheries, tourism and other users of the region 	<ul style="list-style-type: none"> Section 124 of the Petroleum (Submerged Lands) Act 1967 Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Approved Oil Spill Contingency Plan All personnel to complete induction Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Support Vessel	<ul style="list-style-type: none"> Minimise impact upon marine communities 	<ul style="list-style-type: none"> MARPOL 73/78 Annex IV and V 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR All personnel to complete induction Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
WBM Drilled Cuttings Discharge	<ul style="list-style-type: none"> Dispose of cuttings to minimise the impact upon the environment 	<ul style="list-style-type: none"> Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 	<ul style="list-style-type: none"> Environment Plan accepted by the DoIR Drilling contractor has documented procedures for use of shale shakers/solids control equipment to separate drill fluids from cuttings (recirculate mud) Conduct HSE audit to verify compliance with compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
WBM Drilling Fluid Discharge	<ul style="list-style-type: none"> Minimise impact upon marine communities 	<ul style="list-style-type: none"> Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 Clause 222 (3) issued as a schedule to the Petroleum (Submerged Lands) Act, 2005 consolidation 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Conduct HSE audit to verify compliance with compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
SBM Drill Cuttings Discharge	<ul style="list-style-type: none"> Dispose of cuttings to minimise the impact upon the environment 	<ul style="list-style-type: none"> Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Drilling contractor has documented procedures for use of shale shakers / solids control equipment to separate drill fluids from cuttings (recirculate mud) Conduct HSE audit to verify compliance with compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Completion Fluid Discharge	<ul style="list-style-type: none"> Minimise impact upon marine communities 	<ul style="list-style-type: none"> Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 Clause 222 (3), issued as a schedule to the Petroleum (Submerged Lands) Act, 2005 consolidation 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Conduct HSE audit to verify compliance with compliance with mitigation and control measures. No breaches in applicable Laws, Regulations or conditions of approval
Diatomaceous Earth Discharge	<ul style="list-style-type: none"> Minimise impact upon marine communities 	<ul style="list-style-type: none"> Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Conduct HSE audit to verify compliance with compliance with mitigation and control measures. No breaches in applicable Laws, Regulations or conditions of approval

Activity/Event	Objectives	Standards	Performance Criteria
Chemical Spills	<ul style="list-style-type: none"> Prevent spills of SBM or chemicals to sea 	<ul style="list-style-type: none"> Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 Clause 222 (3), issued as a schedule to the Petroleum (Submerged Lands) Act, 2005 consolidation 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Deck Wash-down	<ul style="list-style-type: none"> Prevent releases of oil or chemical contaminated water to sea Prevent spills of oil or chemicals to sea 	<ul style="list-style-type: none"> Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 Clause 222 (3), issued as a schedule to the Petroleum (Submerged Lands) Act, 2005 consolidation 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Develop spill KPI for the drilling program Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Stormwater Run-off (excluding dirty/bunded areas)	<ul style="list-style-type: none"> Prevent releases of oil or chemical contaminated water to sea 	<ul style="list-style-type: none"> Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 Clause 222 (3), issued as a schedule to the Petroleum (Submerged Lands) Act, 2005 consolidation 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Develop spill KPI for the drilling program Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Sewage / Food Scraps Discharge	<ul style="list-style-type: none"> Prevent releases of untreated sewage/ food-scrap to sea 	<ul style="list-style-type: none"> Protection of the Sea (Prevention of Pollution From Ships) Act 1993 Division 2 MARPOL 73/78 Annexe IV Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 Clause 222 (3) (4), issued as a schedule to the Petroleum (Submerged Lands) Act, 2005 consolidation 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Drilling contractor has a documented maintenance procedure for maintaining the sewage macerator Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Solid / Special Waste Disposal	<ul style="list-style-type: none"> Prevent releases of waste products to sea Ensure proper disposal of waste 	<ul style="list-style-type: none"> Clause 50 and 51 of Environmental Protection Act, 1986 Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Drilling contractor has a documented waste management procedure Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Well Testing - Flaring to Atmosphere	<ul style="list-style-type: none"> Minimise the amount of hydrocarbons flared during well testing 	<ul style="list-style-type: none"> Clause 615, issued as a schedule to the Petroleum (Submerged Lands) Act, 2005 consolidation Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Use of approved equipment and procedures for flaring Quantity of flared products recorded Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Well Testing - Partial Combustion	<ul style="list-style-type: none"> Minimise the amount of oil spilt to the sea 	<ul style="list-style-type: none"> Clause 615, issued as a schedule to the Petroleum (Submerged Lands) Act, 2005 consolidation Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Develop spill KPI for the drilling program Use of approved equipment and procedures for flaring Quantity of flared products recorded Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval

Activity/Event	Objectives	Standards	Performance Criteria
Well Testing - Loss of Combustion	<ul style="list-style-type: none"> Minimise the amount of oil spill to the sea 	<ul style="list-style-type: none"> Clause 615, issued as a schedule to the Petroleum (Submerged Lands) Act, 2005 consolidation Regulations 13 & 14 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Develop spill KPI for the drilling program Use of approved equipment and procedures for flaring Quantity of flared products recorded Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Spills of Diesel (2.5m ³)	<ul style="list-style-type: none"> Prevent loss of fuel to sea 	<ul style="list-style-type: none"> Regulations 13, 14 & 26 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (MARPOL) 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Develop spill KPI for the drilling program Emergency Response Plan, and the Oil Spill Contingency Plan, located on the MODU Drilling contractor has documented procedures for transfer operations Conduct HSE audit to verify compliance with mitigation and control measures. No breaches in applicable Laws, Regulations or conditions of approval
Spills of Diesel (80m ³)	<ul style="list-style-type: none"> Prevent loss of fuels to sea Ensure appropriate preparedness in case of oil spill 	<ul style="list-style-type: none"> Regulations 13, 14 & 26 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (MARPOL) 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Develop spill KPI for the drilling program Emergency Response Plan, and the Oil Spill Contingency Plan, located on the MODU Drilling contractor has documented procedures for transfer operations Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Spills of Oil (600m ³)	<ul style="list-style-type: none"> Reduce risk of blowout through use of effective procedures and safety equipment Ensure appropriate preparedness in case of oil spill 	<ul style="list-style-type: none"> Regulations 13, 14 & 26 of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Develop spill KPI for the drilling program Oil Spill Response Plan and Emergency Response Plan located on the rig Drilling contractor has approved equipment and procedures to prevent/control blowouts Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval
Introduction of Exotic Species	<ul style="list-style-type: none"> Prevent introduction of exotic species from ballast water 	<ul style="list-style-type: none"> Australian Ballast Water Management Requirements, 2001 Quarantine Act 1908 	<ul style="list-style-type: none"> Environment Plan accepted by DoIR Conduct HSE audit to verify compliance with mitigation and control measures No breaches in applicable Laws, Regulations or conditions of approval