

**Chevron Australia Pty Ltd 2006 Deepwater Drilling Campaign  
Environmental Plan Summary Document**

**Introduction**

Chevron Australia Pty Ltd (Chevron) has approval to undertake a drilling program within the Greater Gorgon Gas Fields on the North West Shelf of Western Australia. The program involves the drilling of up to three exploration wells within Chevron's exploration Permits WA-205-P, WA-286-P and WA-26-R. An Environmental Plan (EP) was submitted to the Department of Industry and Resources (DoIR) and was approved in April 2006. The program is scheduled to occur from mid-April to approximately mid-September 2006.

**Project Description**

The proposed details for the three exploration wells are outlined in Table 1.

**Table 1 – Exploration well details**

	<b>Io-2</b>	<b>Clio-1</b>	<b>Chandon-1</b>
<b>Permit</b>	WA-26-R	WA-268-P	WA-205-P
<b>Location</b>			
Latitude	19° 55' 5.78"S	20° 16' 04.220"S	19° 34' 32.23"S
Longitude	114° 25' 42.65"E	114° 44' 21.699"E	114° 07' 41.33"E
Spheroid datum	GDA94	GDA94	GDA94
Northing	7795503.7 m North	7757265.0 m North	7832948 m North
Easting	230800.7m East	263881.0 m East	198963.8 m East
<b>Water Depth</b>	1303 m	956 m	1201m
<b>Type of well</b>	Appraisal	Exploration	Exploration
<b>Direction of well</b>	Vertical	Deviated	Vertical

The wells will be drilled by the Jack Bates semi-submersible MODU drilling rig using low toxicity water based drilling mud in the top hole sections and synthetic based mud (SBM) drilling mud will be used for the lower sections. The majority of the SBM will be recovered for recycling. Multiple blow out preventer systems in accordance with DoIR regulations and suitable for all conditions will be used on all three wells.

**Description of the receiving environment**

The proposed exploration wells are located off the western side of the Continental Slope to the Nor-northwest of Barrow Island in water depths ranging from 958m to 1330m. The seabed at each drill site is expected to be soft carbonate mud.

Based on the results of several deepwater surveys of the North West Shelf, the seafloor communities at the drilling locates are expected to be depauperate with low densities of diverse benthic infauna dominated by mobile burrowing species, including mollusks, crustaceans and worms. The diversity and abundance of large encrusting species in the region is generally low.

Marine species with broad distributions such as sharks, turtles and seabirds are likely to transverse the continental slope whilst migrating to feeding or breeding areas. However the deep offshore environment of the proposed well sites is typical of broad expanses of the continental slope and is not expected to represent habitat of particular significance to sharks, turtles or seabirds.

A number of whales species, in particular the humpback, occur in the region. The humpback whale migrates between the Antarctic water and the Kimberley Region. The northern migration peak occurs between June and August and the route lies primarily along and inshore of the 200m depth contour. The southern migration peak occurs during early September. The southbound route tends to be more dispersed, with whales sighted as far offshore as the 1000m bathymetry. The drilling program coincides with the northern migration of humpback whales however, the main migration route lies inshore of the proposed well site. Given the short duration of the drilling program and the stationary noise disturbance, the whale migration is expected to circumvent the drilling location with no significant impact to the species.

The permit area is within the fishing zones for the State Managed Onslow Prawn Managed Fishery, Pilbara Trap Fishery, Open Access Line Fishery, Mackerel Fishery and Pearl Oyster Fishery, and the Commonwealth managed Western Tuna and Billfish, Northwest Slope Trawl and Southern Bluefin Tuna fisheries. However, due to its remote location there are low levels of fishing activity in the area. The EP was developed in consultation with the Department of Fisheries to ensure the drilling program will not conflict with any commercial or recreational fishing.

### **Summary of Risks and effects**

A risk analysis, in accordance with the procedures outlined in the Australian Standard AS/NZS 4360:1999 (Risk Management), has been undertaken for all aspects of proposed operations. The risk analysis indicates that, with appropriate management, the residual environmental risks associated with drilling the proposed wells are low.

The short term nature of the drilling program, the low volumes of discharges and the high dilution and dispersion rates expected, suggest that routine drilling activities are unlikely to have any discernible effect on the environment beyond a small area immediately beneath and adjacent to the drilling rig. With the localised nature of the potential impact and the uniformity of the seafloor and associated biota over broad expanses in the region, any impacts associated with the drilling program will be negligible on a regional scale.

Analysis of the risks associated with possible contingency incidents shows that even a substantial hydrocarbon spill (80,000L of diesel) poses minimal risk of significant environmental effect due to the program's remote location and deep waters. Trajectory modeling of a large diesel spill shows that at any time of year, prevailing weather conditions would move a spill offshore and away from sensitive environmental resources.

The potential effects and management approach for each aspect of operations are summarised in Table 2.

### **Further Details**

For further information about the drilling program please contact:

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**Table 2 – Summary of Environmental Risks and Management Approach**

Aspect/ Incident	Likelihood	Potential Environmental Effect	Potential Consequence (Magnitude)	Risk Management Approach	Residual Risk	Standards	Criteria
Anchoring	Frequent	Potential localised disturbance to habitat.	Minor Small area involved. Sparse seafloor biota. Rapid recovery expected.	Adherence to anchoring procedures will prevent anchor drag.	I	Anchoring procedures	Adherence to anchoring procedures and no excessive dragging of any anchor before resetting.
Artificial lighting	Frequent	Potential attractant to marine life.	Negligible Short duration of program. Remote location.	No mgmt required.	I	Not applicable	Not Applicable
Drilling Noise	Frequent	Potential for disturbance to whale migration behaviour.	Minor Location is outside main migration paths. Short duration of drilling.	Monitor whale movements in accordance with whale watch procedures.	I	DEH Guidelines	Not Applicable
Flight Noise	Frequent	Potential for short term disturbance to birds along flight paths.	Negligible Flight paths mostly over water. Short duration of program. Remote location.	Negligible risk Flight paths selected to minimise potential for disturbance: minimal low flying; no flying over nesting areas; shortest route taken over Barrow Island.	I	Not Applicable	Not Applicable
Discharge of drilling fluid	Frequent	Potential localised and temporary effects.	Minor Low volumes. Low toxicity SBM's used. No sensitive resources near drilling location.	WBM to be used for upper-hole systems. During SBM sections – adherence to SBM Management Procedures. Retention and reuse of base drilling fluid for duration of the well. Adherence to this EP.	I	DoIR guidelines	Not Applicable

Aspect/ Incident	Likelihood	Potential Environmental Effect	Potential Consequence (Magnitude)	Risk Management Approach	Residual Risk	Standards	Criteria
Discharge of cuttings	Frequent	Potential localised burial/smothering of benthos within zone of effect.	Minor Limited volume and high rates dispersion due to water depths. Possible effects minimised by water depths and sparse seafloor biota.	Discharge at surface to maximise dispersion. Pyramid shakers and cuttings dryer to be used to recover drilling fluid.	I	DoIR guidelines	Not Applicable
Grey water/ sewage disposal	Frequent	Potential localised nutrient enrichment or reduction of water quality.	Negligible Low volumes/high dispersion-dilution factor. Grey water/ sewage only.	Biodegradable detergents only. Adherence to Clause 222 of P(SL)A	I	<ul style="list-style-type: none"> <li>P(SL)A. Schedule Clause 222.</li> <li>MARPOL 73/78</li> </ul>	Adherence to Clause 222/ MARPOL 73/78
Putrescible galley waste disposal	Frequent	Potential localised nutrient enrichment.	Negligible Low volumes/high dispersion-dilution factor. Putrescibles only.	Maceration to <25mm prior to discharge. Adherence to Clause 222 P(SL)A	I	<ul style="list-style-type: none"> <li>P(SL)A. Schedule Clause 222.</li> <li>MARPOL 73/78</li> </ul>	Adherence to Clause 222/ MARPOL 73/78
Solid wastes discharge	Very Remote	Potential localised disturbance to habitat/water quality.	Minor	Correct onsite combustion or mainland disposal of solid wastes in accordance with Waste Management Plan. Vessel specific Waste Management Plan	I	Waste Management Plan.	Adherence to WMP. Zero debris found during ROV survey at program completion
Cooling water discharge	Frequent	Potential localised elevation in water temperature.	Negligible Discharge water temperature only slightly (15-20°C) above ambient and cools on descent to sea surface. No sensitive resources. Small volumes. Rapid dispersion.	No mgmt required.	I	Not Applicable.	Not Applicable.

Aspect/ Incident	Likelihood	Potential Environmental Effect	Potential Consequence (Magnitude)	Risk Management Approach	Residual Risk	Standards	Criteria
Discharge of oily water	Very Remote All potentially contaminated drainage to be collected via closed drainage network and treated using alarmed separation equipment.	Potential localised and temporary acute toxic effects.	Minor Discharge treated to less than 15ppm hydrocarbons. Low volumes - short duration program. High dispersion /evaporation factor.	Discharge quality automatically monitored with alarm.	I	MARPOL 73/78 standard for oily water discharge.	Oily water separators maintained to manufacturers specifications.
Waste oil discharge	Very Remote All waste oils collected for recycling and stored in bunded areas with closed drainage network.	Potential localised chronic/acute toxic effects.	Negligible Small volumes.	All waste oils collected, stored in bunded areas and returned to shore for recycling/disposal.	I	Waste Management Plan.	No loss of waste oils to marine environment.
Drilling material discharge	Remote	Potential contamination of marine environment	Minor Potential loss volume limited to individual container volumes	All substances transported and stored in accordance with relevant legislation and Aust. Standards.	I	AMSA Standing Orders. OSCP consistent with MARPOL/AMSA	Zero incidents.
Flaring of hydrocarbons	Occasional	Potential for hydrocarbon loss to sea surface with localised and temporary acute toxic effects.	Minor Small volumes	Follow procedures to ensure efficient flare operations	I	Not Applicable.	Not Applicable.

Aspect/ Incident	Likelihood	Potential Environmental Effect	Potential Consequence (Magnitude)	Risk Management Approach	Residual Risk	Standards	Criteria
Atmospheric emissions	Frequent – use of diesel fuelled machinery and onboard incineration of solid combustible wastes.	Potential increase in greenhouse effect.	Negligible. Small volumes.	Engines tuned to operate at optimum efficiency to minimise emissions.	I	Not Applicable.	Not Applicable.
Navigation hazard	Very Remote Outside shipping routes. Rig well lit for operations. Seagoing movements will comply with maritime standards	Potential for hydrocarbon or debris discharge to environment following collision.	Moderate Small vessels only through area of well location. Modelling indicates no contact with sensitive resources from oil spill.	500m exclusion zone. Rig carries navigation lighting. Notification of rig presence via notice to mariners. Radar and radio monitoring and warnings.	I	Maritime standards requiring notification of rig presence via notice to mariners.	Mariners notice broadcast; radar and radio monitoring undertaken.
Drilling blow out	Very Remote (1 X 10 <sup>-5</sup> )* P(SL)A requirement for multiple BOP's reduce risk.	If gas blow out, little effect to marine environment. Potential acute/chronic toxic effects on marine organisms from liquid hydrocarbons.	Minor If gas blow out, little effect to marine environment. Condensate has high dispersion/ evaporation rates- oil spill modelling indicates no contact with sensitive resources.	Approved well application. Adherence to well integrity standards /best practice. Blow Out Preventors (BOP) as per DoIR requirements. Approved OSCP.	I	<ul style="list-style-type: none"> <li>• OSCP consistent with MARPOL and AMSA.</li> <li>• Well integrity standards /best practice.</li> <li>• DoIR/P(SL)A requirement for Blow Out Preventors (BOP).</li> </ul>	<ul style="list-style-type: none"> <li>• Approved OSCP in place and supplemented by OSORP.</li> <li>• BOP's in place when required.</li> </ul>
Drilling fluid loss during transfer	Very Remote	Potential localised and temporary effects.	Negligible Transferred dry and in relatively small, discreet quantities.	Negligible risk. Adhere to bulk transfer procedure.	I	Not applicable	Not applicable

Aspect/ Incident	Likelihood	Potential Environmental Effect	Potential Consequence (Magnitude)	Risk Management Approach	Residual Risk	Standards	Criteria
Diesel fuel loss during transfer	Very Remote – moderate risk	Potential localised and temporary acute toxic effects.	Minor Potential loss volume limited; <2 500 L most likely. Rapid evaporation of toxic components - Oil spill modelling indicates no contact with shorelines.	Adhere to refuelling procedure. Approved OSCP supplemented by OSORP.	I	<ul style="list-style-type: none"> <li>OSCP consistent with MARPOL and AMSA.</li> <li>Rig refuelling guidelines and procedures.</li> </ul>	<ul style="list-style-type: none"> <li>Approved OSCP in place and supplemented by OSORP</li> <li>No loss of hydrocarbons during refuelling</li> </ul>

\* based on International/Domestic Petroleum Industry risk information, well engineering integrity information, geological setting, WA DoIR incident database.