

WHEATSTONE / IAGO APPRAISAL CAMPAIGN ENVIRONMENT PLAN WITH BRIDGING DOCUMENT FOR 2009-10 DRILLING PROGRAM – ATWOOD EAGLE

PUBLIC SUMMARY

Coordinates of the Petroleum Activity

The drilling area is in Commonwealth marine waters of north-western Australia, approximately 85 km north of Barrow Island and 140 km north-west of the mainland. Drilling will occur within petroleum leases WA-253-P(1), WA-17-R and WA-16-R.

Table 1. Coordinates of Survey Area

Well Name	GDA1994	
	Latitude	Longitude
Iago-5	19°50' 45.53" S	115°19' 41.51"E
Wheatstone-8	TBC	TBC

Description of the Receiving Environment

Physical

The proposed wells are located on the edge of the continental slope in water depths of 100 to 300m. The majority of the seabed dips towards the north-west with an average gradient of less than 1°. Geophysical surveys of the well sites suggest that the majority of the seabed is homogenous in nature, with few significant seabed features. Seafloor habitats predominantly consist of clayey, silty, fine to medium grained sands with shell fragments, areas of irregular sand waves / sand ribbons and regions of occasional to minor seabed depressions.

Biological

As water depths at the well locations are beyond the photic zone, primary producers such as corals and seagrasses will not be present. ROV surveys undertaken at shallower locations on the North West Shelf have indicated that sediments are variously bioturbated, supporting a diverse burrowing infauna and sparse epifauna mainly sea pens. However, benthic communities are generally sparse with low densities of molluscs, crustaceans and worms (polychaete, sipunculid and platyhelminth) encountered. Any areas of exposed substrate are expected to be colonised by deep-water filter feeding organisms such as hydroids and sponges.

A number of sharks and pelagic finfish, including mackerels, tunas and billfishes, occur in the waters of the North West Shelf and would be expected in the vicinity of the project area. The deep offshore environment of the drilling area is typical of broad expanses of the continental slope and is not expected to represent habitat of particular significance to sharks and finfish.

Six species of sea turtle occur in north-western Australian waters including the green, hawksbill, leatherback, flatback, loggerhead and olive ridley turtles. The nearest areas known to support turtle nesting are the beaches of the Barrow-Montebello Islands complex, approximately 60 km south-east of the drilling area at its closest point. The deep waters, distance offshore and lack of emergent land indicate the drilling area is unlikely to represent critical habitat for these species.

Several species of whale and dolphin are known to frequent the waters of the North West Shelf. The humpback is the most common whale species in the Pilbara region.

Humpbacks migrate between Antarctic waters and the Kimberley each winter to mate and breed. The main migration path is centred along the 200 m bathymetric contour although sightings have been made as far offshore as the 1000 m contour. The migration period in the vicinity of the Montebello Islands is between mid-late July (northward) and early-mid September (southward). Drilling of the wells is scheduled to occur between December 2009 and April 2010. Therefore, drilling operations are not expected to interfere with the peak northward migration period for this species.

Blue whale migration patterns are similar to those of humpback whales with northward migrations from the Antarctic occurring during winter. Their migration pathways do not seem to follow coastlines or oceanographic features and the project area does not intersect any known blue whale migratory routes or aggregation areas.

The distribution and abundance of other cetaceans that may occur in the region is not well established. Whales with widespread or tropical deep water distributions that may occur in the region, including Antarctic minke, Bryde's, killer, sperm, fin, sei and false killer whales are not expected to occur in significant numbers in the project area. Deep water dolphin species likely to occur in the area include the spinner, striped, Risso's, spotted and rough toothed. The project area does not represent any recognised breeding, feeding or migratory areas for any cetacean species.

The proposed survey area is outside the usual range of the endangered southern giant petrel, however individuals may occasionally be present. Other seabirds known from the region may be encountered, however there are no important feeding grounds known from the waters of the survey area and, given its distance from land, foraging activity is likely to be low.

Socio-economic

The North-west Shelf region is subject to extensive petroleum exploration and production activities. Other activities in the area include low levels of commercial fishing and shipping.

Description of the Action

Chevron Australia Pty Ltd (Chevron) proposes to drill two appraisal wells in medium depth Commonwealth marine waters. The wells are located within petroleum leases WA-253-P(1), WA-17-R and WA-16-R on the North West Slope, Western Australia. Drilling operations will involve the semi-submersible drill-rig Atwood Eagle and will drill to an approximate depth of 3685 m. The wells will be drilled using a combination of seawater with gel sweeps and water or synthetic based drilling fluids. Upon completion of drilling each well, the well will be logged with a logging suite including vertical seismic profiling.

Drilling of Iago-5 is expected to commence in December 2009 with the drilling of Wheatstone-8 to commence in approximately March 2010. The drilling of these two wells will be in conjunction with wells planned for the Atwood Eagle in the Exmouth Plateau and Greater Gorgon Deepwater areas under a separate Environment Plan.

Details of Major Environmental Hazards and Controls

The nearest locations supporting sensitive environmental resources are at the Barrow, Lowendal and Montebello Island groups, located approximately 60 to 85km from the proposed well sites. Humpback whales on their northward migration are unlikely to be encountered during the drilling program.

Risk analysis has been undertaken for all aspects of the proposed drilling program, in accordance with the procedures outlined in the Australian and New Zealand Standard AS/NZS 4360:1999 (Risk Management). The analysis indicates that the risk of significant adverse environmental effects from the project is low. A summary of the environmental hazards, potential effects and management approaches adopted during the proposed program are indicated in Table 2.

Summary of the Management Approach

The 2009-10 Drilling Program in the Wheatstone / Iago area will be conducted in accordance with industry best practice and all legislative and regulatory requirements. Chevron's overall environmental objective for the drilling program is to conduct the proposed survey with no, or as low as reasonably practicable, effect on the environment.

Chevron's operations are conducted within a comprehensive corporate HES management framework, supporting the corporate commitment to 'Protecting People and the Environment' (Policy 530). This framework ensures a systematic approach to environmental management, with the environmental aspects of each project addressed from project conception, throughout project planning and as an integral component of implementation. All Chevron operations are managed in accordance with the Chevron Operational Excellence Management System (OEMS), which describes performance standards for each element of operations.

Consultation Details

Consultations with government and industry groups regarding petroleum activities at the proposed location have included:

- Department of Fisheries Western Australia
- Recfishwest
- Western Australian Fishing Industry Council (WAFIC)
- Western Australian Game Fishing Association (WAGFA)
- Northwest Game Fishing Association (NWGFA)
- Onslow Professional Fisherman's Association
- Montebello Safaris
- Australian Fisheries Management Authority (AFMA)
- Northern Fishing Companies Association
- Western Australian Northern Trawl Owners Association (WANTOA)
- Commonwealth Fisheries Association
- A Raptis and Sons

These consultations have indicated that:

- Fishing activity, both commercial and recreational, are unlikely within the proposed drilling area due to distance offshore and depth of water
- Respondents asked to be kept informed of progress of the drilling program and any changes in the future.

Contact Details

Further information may be obtained by writing to:

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Table 2. Summary of Environmental Risks, Potential Effects and Management

Environmental Aspect/ Incident	Likelihood of Occurrence	Potential Environmental Effect	Environmental Objective	Potential Consequence (Magnitude)	Risk and Risk Management Approach	Standards	Criteria
ROUTINE OPERATIONS							
Anchoring	Certain Routine operation of drill rig.	Potential localised disturbance to benthic habitat.	Maintain abundance and diversity of benthic fauna.	Minor Small area involved. Sparse seafloor biota. Rapid recovery expected.	Moderate risk Adherence to anchoring procedures will prevent anchor drag.	Anchoring procedures	Adherence to anchoring procedures and no excessive dragging of any anchor before resetting.
Artificial lighting	Certain Required for routine operations.	Potential attractant to marine life.	Minimise risk of adverse effect to fauna.	Negligible Short duration of program. Remote location.	Low risk No management required.	Not applicable	Not applicable
Drilling Noise	Certain	Potential for disturbance to whale migration behaviour.	Minimise risk of adverse effect to marine ecology.	Minor Timing is outside peak migration period. Short duration of drilling.	Moderate risk	Not applicable	Not applicable

Environmental Aspect/ Incident	Likelihood of Occurrence	Potential Environmental Effect	Environmental Objective	Potential Consequence (Magnitude)	Risk and Risk Management Approach	Standards	Criteria
Acoustic impulse from air-guns	Certain Routine operation of well logging (vertical seismic profiling).	Potential physiological effects or disruption to behaviour patterns of sensitive marine fauna.	Minimise risk of adverse effect to physiology or behaviour of marine fauna.	Minor Very limited use/short duration of air-guns. Sensitive fauna tend to avoid noise and physiological impacts unlikely. Area does not contain any known aggregation areas or narrow channels/ other features that would constrain animals avoiding the seismic vessel.	Moderate risk Implementation of management measures to minimise possible disturbance to cetaceans by not firing seismic source if whales within 3km of drill rig. Management measures based upon DEWHA (2001) guidelines Soft start procedures to deter marine fauna from the survey area.	DEWHA requirements	No seismic operation if cetaceans observed within 3km
Flight Noise (helicopter)	Certain	Potential for short term disturbance to birds along flight paths.	Minimise risk of adverse effect to marine ecology.	Negligible Flight paths mostly over water. Short duration of program. Remote location.	Low risk Flight paths selected to minimise potential for disturbance; minimal low flying; no flying over nesting areas; shortest route taken over Barrow Island.	Not applicable	Not applicable
BYPRODUCTS OF ROUTINE OPERATIONS							
Discharge of drilling fluid	Certain	Potential localised and temporary effects on water quality.	Minimise risk of adverse effect to marine ecology from drilling fluid loss.	Negligible-Minor Low volumes. No sensitive resources near drilling location.	Low-Moderate risk Use of vibrating shale shakers to optimise recovery of fluid. Adherence to EP.	DoIR guidelines	Adherence to the EP

Environmental Aspect/ Incident	Likelihood of Occurrence	Potential Environmental Effect	Environmental Objective	Potential Consequence (Magnitude)	Risk and Risk Management Approach	Standards	Criteria
Discharge of cuttings	Certain	Potential localised burial/smothering of benthos within zone of effect.	Maintain abundance and diversity of benthos.	Minor Limited volume and high rates dispersion due to water depths. Possible effects minimised by water depths and sparse seafloor biota.	Moderate risk Discharge at surface to maximise dispersion.	DoIR guidelines	Adherence to the EP
Grey water/ sewage disposal	Certain Discharge of sewage permitted under P(SL)A Schedule Clause 222	Potential localised nutrient enrichment or reduction of water quality.	Maintain marine water quality.	Negligible Low volumes/high dispersion-dilution factor. Grey water/ sewage only.	Low risk Biodegradable detergents only. Adherence to Clause 222 of P(SL)A	P(SL)A Schedule Clause 222 MARPOL 73/78	Adherence to Clause 222/ MARPOL 73/78
Putrescible galley waste disposal	Certain Discharge of putrescible waste permitted under P(SL)A Schedule Clause 222	Potential localised nutrient enrichment.	Maintain marine water quality.	Negligible Low volumes/high dispersion-dilution factor. Putrescibles only.	Low risk Maceration to <25mm prior to discharge. Adherence to Clause 222 P(SL)A	P(SL)A Schedule Clause 222 MARPOL 73/78	Adherence to Clause 222/ MARPOL 73/78
Solid wastes discharge	Very Low	Potential localised disturbance to habitat/water quality.	Maintain marine water quality.	Minor	Low risk Mainland disposal of solid wastes in accordance with WMP.	Waste Management Plan	Adherence to WMP Zero debris found during ROV survey at program completion

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Cooling water discharge	Certain	Potential localised elevation in water temperature.	Maintain marine water quality.	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.	Low risk No management required.	Not applicable	Not applicable
Discharge of Oily Water	Very Low All potentially contaminated drainage to be collected via closed drainage network and treated to <15ppm oil in water	Potential localised and temporary acute toxic effects.	Maintain marine water quality.	Minor Discharge treated to less than 15ppm hydrocarbons. Low volumes - short duration program. High dispersion /evaporation factor.	Low risk Discharge quality automatically monitored with alarm.	MARPOL 73/78 standard for oily water discharge	Oily water separators maintained to manufacturers specifications
Waste oil discharge	Very Low All waste oils collected for recycling and stored in bunded areas with closed drainage network.	Potential localised chronic/acute toxic effects.	Minimise risk of adverse effect to environment from hydrocarbon loss.	Negligible Small volumes.	Low risk All waste oils collected, stored in bunded areas and returned to shore for recycling/disposal.	Waste Management Plan	No loss of waste oils to marine environment

Environmental Aspect/ Incident	Likelihood of Occurrence	Potential Environmental Effect	Environmental Objective	Potential Consequence (Magnitude)	Risk and Risk Management Approach	Standards	Criteria
Drilling material discharge	Low	Potential contamination of marine environment	Minimise risk of adverse effect to environment from drilling material loss.	Minor Potential volume loss limited to individual container volumes.	Low risk All substances transported and stored in accordance with relevant legislation and Aust. Standards.	AMSA Standing Orders OSCP consistent with MARPOL/AMSA	Zero incidents
Flaring of hydrocarbons	Moderate	Potential for hydrocarbon loss to sea surface with localised and temporary acute toxic effects.	Minimise risk of adverse effect to marine ecology from hydrocarbon loss.	Minor Small volumes.	Low risk Follow procedures to ensure efficient flare operations	Flaring procedures	Adherence to the EP
Atmospheric emissions	Certain Use of diesel fuelled machinery.	Potential increase in greenhouse effect.	Maintain air quality.	Negligible Small volumes.	Low risk Engines tuned to operate at optimum efficiency to minimise emissions.	Not applicable	Not applicable
CONTINGENCY EVENTS							
Navigation hazard - Collision	Very Low Rig well lit for operations. Seagoing movements will comply with maritime standards	Potential for hydrocarbon or debris discharge to environment following collision.	Minimise risk for impact to environment from vessel collision.	Moderate Modelling indicates no contact with sensitive resources from oil spill.	Low risk 500m exclusion zone. Rig and vessels carry navigation lighting and sophisticated equipment. All vessels operated by accredited seamen. Notification of rig presence via notice to mariners. Radar and radio monitoring and warnings.	Maritime standards requiring notification of rig presence via notice to mariners	Mariners notice broadcast; radar and radio monitoring undertaken

Environmental Aspect/ Incident	Likelihood of Occurrence	Potential Environmental Effect	Environmental Objective	Potential Consequence (Magnitude)	Risk and Risk Management Approach	Standards	Criteria
Drilling blow out	Very Low 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.	Minimise risk of adverse effects to marine ecology from hydrocarbon loss.	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.	Low risk Approved well application. Adherence to well integrity standards /best practice. Blow Out Preventers (BOP) as per DoIR requirements. Approved OSCP.	OSCP consistent with MARPOL and AMSA. Well integrity standards /best practice DMP/P(SL)A requirement for Blow Out Preventors (BOP)	Approved OSCP in place and supplemented by OSORP BOP's in place when required BOP stacks tested as per schedule
Drilling fluid loss during transfer	Very Low	Potential localised and temporary effects.	Maintain marine water quality.	Negligible Transferred dry and in relatively small, discreet quantities.	Low risk Adhere to bulk transfer procedure.	Not applicable	Not applicable
Diesel fuel loss during transfer	Moderate	Potential localised and temporary acute toxic effects.	Minimise risk of adverse effect to marine ecology from hydrocarbon loss.	Minor Potential loss volume limited to volume in the hose. Rapid evaporation of toxic components - Oil spill modelling indicates no contact with shorelines.	Low risk Adhere to Atwood refuelling procedure (Appendix F). Approved OSCP supplemented by OSORP. Reinforced hoses with dry break couplings and fail-safe fittings. Absorbent materials kept onboard vessels for immediate spill response.	OSCP consistent with MARPOL and AMSA Rig refuelling guidelines and procedures Contractor refuelling procedures	Approved OSCP in place and supplemented by OSORP No loss of hydrocarbons during refuelling

Environmental Aspect/ Incident	Likelihood of Occurrence	Potential Environmental Effect	Environmental Objective	Potential Consequence (Magnitude)	Risk and Risk Management Approach	Standards	Criteria
Chemical spill runoff to sea	Very Low Chemicals locked in bunded store. Absorbent materials and PPP located near the store.	Potential localised and temporary acute toxic effects.	Minimise risk of adverse effect to marine ecology from chemical loss.	Moderate effect Small volume Remote location and rapid dilution.	Low risk Only trained authorised personnel to access store.	P(SL)A Schedule Clause 222 Vessel specific chemical handling and spill procedures	No spilled chemicals to sea
Ballast water - Introduction of exotic marine species	Very Low Offshore location.	Potential competition with indigenous species.	Maintain indigenous biodiversity.	Minor effect	Low risk Ballast exchanges conducted outside the Australian 12 nm limit.	AQIS Australian Ballast Water Management Requirements, 2001	No introductions of exotic marine organisms
Displacement of other users of marine environment.	Low	Potential disruption to commercial fishing/shipping in the area.	Minimise disturbance to other users.	Negligible effect Limited use of area for fishing. No hindrance to minor deviations by shipping traffic.	Low risk. Liaise with fishermen and other commercial mariners to minimise conflict.	APPEA, 1996	Notice to Mariners posted

