

ENVIRONMENT PLAN SUMMARY 2013–2016 EXMOUTH PLATEAU/GREATER GORGON DEEPWATER DRILLING PROGRAM

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1.0 INTRODUCTION

This document summarises the Environment Plan: 2013 – 2016 Exmouth Plateau / Greater Gorgon Deepwater Drilling Program (Doc Id: ABU130300957). This plan was accepted by the National Offshore Petroleum Safety Environment Management Authority (NOPSEMA) on 10 October 2013.

1.1 Overview

Chevron Australia Pty Ltd (Chevron) has been conducting the Exmouth Plateau / Greater Gorgon Deepwater Drilling Program (drilling program) since April 2008. Chevron has extended the current drilling program for a three year period to enable Exploration and Appraisal wells to be drilled within the Exmouth Plateau, Greater Gorgon Permit Areas (Figure 1.1). Chevron has identified up to 29 wells proposed to be drilled within these permit areas.

The program covers the drilling activities undertaken by a semi-submersible drill rig and support vessels within the permit areas detailed in Table 1.1.

Permits				
WA-15-R	WA-268-P	WA-374-P		
WA-19-R	WA-364-P	WA-383-P		
WA-20-R	WA-365-P	WA-392-P		
WA-22-R	WA-366-P	WA-39-L		
WA-24-R	WA-367-P	WA-40-L		
WA-253-P	WA-36-L	WA-439-P		
WA-14-R				

Table 1.1: Permits Within Scope of the EP

1.2 Location

Table 1.2 details the approximate locations of the proposed wells.

Table 1.2: Well Locations

Well	Easting's (Zone 50)	Northing (Zone 50)	Water Depth	
Friesland 1	696373	7667470	1350 m	
Royal Oak 1	710416	7730710	1000 m	
Lympstone 1	697310	7777320	950 m	
Groningen 1	694103	7672780	1350 m	
Dortrecht 1	621210	7776760	1350 m	
Scarborough West 1	717548	7800130	918m	
Galileo - 1	718356	7849940	1185m	
Orestes 1	265505	7781330	1206 m	
Semele 1	287395	7789708	1140 m	
Orthrus South 1	253606	7761800	1136 m	
Cloverhill 1	171946	7795909	1033 m	
Isosceles 1	238000	7733500	900 m	
Thalia 1	217827	7723524	980m	
Daggerwing-1	180015	7887460	1377m	
Utrecht-1	237710	7724160	1300m	
Sappho-2	237935	7722620	812 m	

Well	Easting's (Zone 50)	Northing (Zone 50)	Water Depth
Satyr 5	224829	774448	1100 m
Acme 2	270907	7761769	880 m
Dino North 1	234097	7749426	1050 m
Euclid 1	209300	7730700	1100 m
Silenus-1	190540	7721912	1085 m
Gyro-1	241217	7743148	970 m
Dino Central-1	231677	7740663	1025 m
Dino South-1	230634	7733600	1000 m
Syrinx-1	174311	7726529	1125 m
Leafwing 1	146190	7826415	1045 m
Seahorse 1	170650	7839635	1045 m
Blake 1	738160	7773870	950 m
Pinhoe-2	725877	7738356	950 m

1.3 Timeframe

The drilling program is scheduled to commence in late 2013 and run for a period up to three years (until end 2016). It is anticipated that each well will take from 35 to 65 days to complete, including relocation of the drill rig between sites, drilling to total depth, wireline logging and plug and abandonment. To take into account project delays and changes to project priorities this EP covers the full year period from October 2013 to December 2016. Drilling operations are to be conducted on a 24-hr basis.

1.4 Operator Details

Chevron Australia Pty Ltd is the proponent for the 2013-2016 Exmouth Plateau/Greater Gorgon Deepwater Drilling Program.

Figure 1.1: Permit Areas and Well Locations



2.0 ACTIVITY DESCRIPTION

2.1 Planned Activity Summary

The following activities are associated with this drilling program:

- Rig Positioning
- Drilling
- Drilling fluid and Cuttings Handling and Disposal
- Cleaning of Drilling Fluid Holding Tanks
- Cementing Operations
- Function Testing and Hydrate Management
- Logging
- Well Testing and Clean-Up
- Well Abandonment
- Support Operations

2.2 Emergency Condition Summary

Credible hydrocarbon spill scenarios were identified and assessed; with the credible worst case scenarios identified and modelled. The credible worst case spill scenarios (or emergency conditions) for this program were identified to be:

- Diesel spill resulting from a vessel collision, and
- Gas condensate spill resulting from a loss of well control.

Modelling of these scenarios determined the environment that may be affected in the event of an unplanned emergency condition.

2.3 Emergency Response Arrangements Summary

Response strategies were assessed for both credible worst-case spill scenarios and categorised as either 'Recommended' or 'Not Recommended'. The response strategies recommended for this program in the event of an emergency condition include:

- Source Control
- Monitor and Evaluate
- Natural Recovery
- Shoreline Clean-up
- Oiled Wildlife Response

3.0 DESCRIPTION OF ENVIRONMENT

The environment that may be affected by the petroleum activity (including in the event of an emergency) is described below.

3.1 Physical Environment

The region is generally characterised by two seasons; winter (May–August) and summer (September–April). The seasons include a transitional period where the climate can be a mixture of both seasons. The winter climate is dominated by intense anti-cyclonic belts (high pressure systems) which generate strong winds (predominantly from the east and south-east) and infrequent rain. Summer conditions are more variable, with shifting wind directions although south-westerly winds are the most common.

Salinity and temperature varies spatially and temporally within the waters across the North West Shelf. Near-surface water temperatures of the North-west Province range from 31°C maximum in summer to 22°C minimum in winter, whilst the mean temperature for depths between 200 and 250 m is approximately 10 °C.

The major surface currents in the North-west Shelf region, flow towards the poles away from the equator. The major surface currents influencing the region include the Indonesian Throughflow, the Leeuwin Current, the South Equatorial Current, and the Eastern Gyral Current. Below these surface currents, there are a number of subsurface currents the most important of which are the Leeuwin Undercurrent and the West Australian Current. These subsurface currents flow towards the equator, in the opposite direction to the surface currents. The Leeuwin Undercurrent and the West Australian Currents in the seas to the south of Australia, known as the Subantarctic Mode Water Body.

3.2 Ecological and Socio-economic Environment

A search for matters of National Environmental Significance under the *Environmental Protection and Biodiversity Conservation Act 1999* was undertaken for the entire environment that may be affected to identify any matters of national environmental significance (both marine and terrestrial). The search identified 65 threatened species and 76 migratory species as having the potential to occur within the environment that may be affected.

The protected matters search also identified 155 marine species listed under the *EPBC Act 1999*, including pipefish, sea snakes marine avifauna and cetaceans. No 'critical habitats' for listed marine species were identified within the environment that may be affected or other areas which have the potential to be affected by the drilling program. Due to the large extent of the environment that may be affected, it was divided into 'areas' of similar values and sensitivities to enable a systematic description of ecological, socio-economic, cultural and heritage values and sensitivities. For the purposes of this document, regionally important ecological, socio-economic / heritage features within the environment that may be affected (including important aggregations or habitat areas for marine fauna) have been described and detailed within Table 3.1.

Value	Description	Location
Marine Values		•
Migratory Route for Marine Mammals	The migration route of the humpback whale and pygmy blue whales occurs along the eastern permits.	 Offshore Permit Areas and Surrounding offshore area Shark Bay Area Barrow and Montebello Island Area Ningaloo Marine Park Area Abrolhos Area
Gascoyne Commonwealth marine reserve	Provides foraging area for threatened and / or migratory marine fauna including seabirds, marine turtles and whale sharks Overlaps three key ecological features (Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula, Continental slope demersal fish communities and Exmouth Plateau) those are thought to enhance the diversity and productivity of the region.	 Offshore Permit Areas and Surrounding offshore area
Dugong Aggregation / populations	Shark Bay is a nationally and internationally significant dugong habitat that supports higher densities of dugongs then have been recorded elsewhere	Shark Bay AreaNingaloo Marine Park Area
Whale Shark Aggregation	A known foraging overlaps the offshore area to the east of the permit areas; foraging activity for this species is expected to occur in low densities in this area	 Offshore Permit Areas and Surrounding offshore area Ningaloo Marine Park Area
Shoreline Values		
Soft-plumaged petrel has the potential to breed on oceanic islands (within the offshore area) occupying steep slopes with tussock grass or ferns, usually along coast but occasionally inland.		 Offshore Permit Areas and Surrounding offshore area Shark Bay Area Barrow and Montebello Island Area Ningaloo Marine Park Area Abrolhos Area
Sea Lion aggregation / populations	A colony of Australian sea lions live and breed on the Abrolhos's shorelines	Abrolhos Area
Reptile nesting	Significant nesting habitat for marine reptiles is generally associated with islands, shorelines and near shore in the region. Although the islands within the offshore area do not present as significant habitat as other areas identified, they still have important values.	 Offshore Permit Areas and Surrounding offshore area Shark Bay Area Barrow and Montebello Island Area Ningaloo Marine Park Area
Mangrove habitats No mangal communities are expected within the smaller islands of the offshore area, however small stands of individual mangroves do occur.		 Offshore Permit Areas and Surrounding offshore area Shark Bay Area Barrow and Montebello Island Area Ningaloo Marine Park Area Abrolhos Area
Sea Bed Values		1
Key Ecological Features	Several key ecological features occur within the permit areas. Specifically continental slope demersal fish communities are unique as they have a high species	 Offshore Permit Areas and Surrounding offshore area

Value	Description	Location		
	diversity and endemism.			
Coral Reefs	All the Islands in the vicinity of Thevenard Island are at least partially and sometimes almost completely encircled		Offshore Permit Areas and Surrounding offshore area Shark Bay Area Barrow and Montebello Island Area Ningaloo Marine Park Area	
Seagrass meadows	These are the largest reported in the world and provide important habitat and nursery areas for fish and invertebrates. Dugongs and green turtles also feed on certain species of seagrass	•	Shark Bay Area	
Air Values				
Air Quality Air quality within the region is considered to be pristine due to the lack of industry.		•	Offshore Permit Areas and Surrounding offshore area	
Socioeconomic va	ues	<u> </u>		
Commonwealth Fisheries	Several important fisheries occur within the permit areas and adjacent offshore areas.	•	Offshore Permit Areas and Surrounding offshore area	
World Heritage / Tourism / Recreation	The marine environment is the major focus of tourism in Shark Bay with around 100,000 people visit the area each year. Tourism is a major component of the local economy and the area is classed as a world heritage area predominately for its ecological values.		Shark Bay Area	
	Ningaloo Reef and the Murion islands offer a wide variety of wildlife in a very natural setting of land and seascapes that presents a major drawcard for the region's nature- based tourism. It is estimated that approximately \$127 million is spent per year by visitors to the Ningaloo Marine Park and Cape Range National Park.	•	Ningaloo Marine Park Area	
	Charter vessels operating at the Abrolhos operate either as fishing charter vessels or eco tourism charters for diving and snorkelling. Highest recreational fishing value is the north-eastern end of Trimouille Island and in the waters south of the Montebello group	•	Abrolhos Area	
Recreational Fishing	The majority of these visits centre on the Montebello Islands, with activities around Barrow Island being rare. Highest recreational fishing value is the north-eastern end of Trimouille Island and in the waters south of the Montebello group.	•	Barrow and Montebello Island Area	

4.0 MAJOR ENVIRONMENTAL HAZARDS AND CONTROLS

All aspects of the drilling program have been subjected to a comprehensive impact and risk assessment. The main environmental values, impacts and potential risks are detailed in Table 4.1. To ensure the potential environmental risks identified through the risk assessment are managed appropriately, Chevron has developed a range of performance standards (controls) that will be implemented throughout the course of the program. A summary of the main strategies is detailed in Table 4.1.

Aspect	Hazards	Potential Impact	Controls
	Physical Presence	Introduction of an invasive marine pest	 Preventative The rig and support vessels will have Department of Agriculture Fisheries and Forestry clearance to operate in Australian waters
	Noise	 Changes to behaviour of species sensitive to noise. 	 Preventative Helicopter must not fly lower than 500 m or within a 500 m radius of a cetacean or whale shark, if safety is not compromised, in accordance with EPBC Regulations 2000 Division 8.1. Mitigation
Marine Values	Planned Discharge	Reduction in water quality through: Potential increased toxicity Potential increased turbidity	 Mitigation The following will be assessed prior to use in accordance with Chevron's Chemical Environmental Risk Assessment Process: All drilling fluid products All function testing and hydrate management fluids All cementing products Water based drill fluids will be utilised exclusively during riserless drilling operations. Upon installation of riser, cuttings will be treated with solids control equipment to minimise residual fluids prior to discharge. Dispersion / dilution will be maximised by discharging treated cuttings from surface waters. Function testing of the blow out preventer will be undertaken on a 7 day frequency whenever the blow out preventer is installed and operations allow. All produced fluid discharge to sea will have hydrocarbon concentrations less than 15 ppm. Putrescibles waste will be macerated prior to discharge dwhen > 12 nm from land. Oily water will either be contained onboard and disposed at a licensed facility; or discharged to marine environment only when concentration <15 ppm. Sewage will be treated by a treatment plant prior to discharge as per in accordance with MARPOL 73/78.

Table 4.1: Summary of the major Hazards, potential impacts and controls for the program

Aspect	Hazards	Potential Impact	Controls
	Unplanned Discharge	Reduction in water quality through: • Potential increased toxicity	 Preventative Hazardous materials will be stored within contained areas to prevent discharge to sea. Spill kits will be maintained onboard and kept fully stocked. A rig hydraulic hose register will be maintained for the duration of the program. Bulk hydrocarbon transfers will be undertaken in accordance with contractor's bulk transfer procedures including: Drilling fluid transfers limited to daylight hours commencement where possible Dry-break couplings, safety breakaway fittings and floating hoses utilised
Sea Bed Values	Physical Presence	 Localised physical damage to sensitive subsea habitat 	 Preventative Analysis and documentation will be developed and implemented for the program to minimise potential for anchor drag Riser to be installed in accordance with individual well designs. No more than 29 wells to be drilled under this plan Well design approved by NOPSEMA prior to drilling
	Planned Discharge	 Localised physical damage to sensitive subsea habitat Localised damage to sensitive subsea habitat through reduction in water quality 	 Mitigation Upon installation of riser, cuttings will be treated with solids control equipment to minimise residual fluid prior to discharge. Dispersion / dilution will be maximised by discharging treated cuttings from surface waters.
	Unplanned discharge	 Localised physical damage to sensitive subsea habitat Localised damage to sensitive subsea habitat through reduction in water quality 	 Preventative An inspection and if required servicing of the slip joint packer will be undertaken at the end of every well.

Aspect	Hazards	Potential Impact	Controls
Air Values	Planned Discharge	 Temporary reduction in local air quality Contribution to global atmospheric concentrations of greenhouse gases 	 Mitigation Well test design will be developed prior to flaring to maximise efficiency and minimise test durations Maintenance schedule for electricity generators will be included within the rig maintenance system.
Socioeconomic values	Physical Presence	Interference with other users	 Preventative Prior to rig move the Australian Maritime Safety Authority will be notified of the rig move. A 500 m radius exclusion zone will be established around the drilling rig at well location.
(sho	Physical Presence (should a loss of well control occur)	 Injury to marine fauna Changes to behaviour of species 	 Mitigation Daily inspection of exclusion barriers to ensure no fauna entanglement, and integrity. Daily inspection of continuous hazing or deterrent activities to ensure no direct injury to fauna. All personnel handling oiled fauna will have fauna handling training or will be supervised by a trained fauna hander with guidance from oiled wildlife trained personnel. Fauna will be transported using appropriate equipment
Shoreline Values Unplanned discharge Injury to fauna Changes to habitat Specific relief well plan commencing the drilling p Should a loss of well cont The drilling implemente Preventative Installation of a Blow out Wells to be designed to in A shallow formation evaluation Specific relief well plan Should a loss of well cont The drilling Intervented 			 Installation of a Blow out Preventer (minimum 5 ram stack) Wells to be designed to include a minimum 'two-barrier' design A shallow formation evaluation will be undertaken for each location prior to commencing the drilling program Specific relief well plans and well control procedures developed an in place prior to commencing the drilling program

5.0 MANAGEMENT APPROACH

Chevron has developed a tiered series of Systems, Plans, Procedures and Work Instructions to ensure that appropriate management measures are implemented as required to minimise the risk of environmental disturbance from operations.

- Operational Excellence Management System; and
- Australian Business Unit Emergency Management Process

The Implementation Strategy is to be enacted in accordance with Chevron Australia's Operational Excellence Management System. Chevron's Operational Excellence Management System is aligned to ISO 14001:2004 and key components of the management system are described in the subsections below.

5.1 Roles and Responsibilities

Accountabilities and responsibilities are defined for personnel involved in the projects implementation for both planned activities and unplanned events.

5.2 Training and Competency

Training is required for the drilling program to ensure petroleum activities are implemented in accordance with this plan. As the plan covers a period of three years, training has been assigned frequencies. Assigning frequencies will ensure that new personnel are captured, and old personnel are refreshed of their responsibilities under the plan. Records of these training events will be maintained, and will include training required, training conducted, and copies of certificates and attendance sheets.

5.3 Monitoring and Reporting

Routine reporting to external agencies are detailed within the EP. The Chevron Drilling Superintendent is for responsible for ensuring these reports are submitted to the regulators within defined timeframes. Routine reporting includes:

- Monthly Reporting
- Annual Reporting
- Close-Out Report

5.4 Compliance Assurance

Routine audits and inspections will be undertaken of the drilling rig to determine compliance with the approved EP. The audits and inspections are to be undertaken in accordance with Chevron's Compliance Assurance Process OE-12.01.01.

Audits and inspections will be scheduled and tracked in the Drilling and Completions Audit Schedule. Where non-conformances are identified, corrective actions are to be developed and assigned to a responsible person with a due date and tracked to closure.

Implementing the audit and inspection program helps ensure that risks and impacts associated with the program are continually reduced to as low as reasonably practicable.

5.5 Documentation and Records

Chevron's system for recording information associated with the petroleum activity is a program called Well View. Well View is a complete corporate well file that tracks all changes and

operations from well planning to well abandonment. All the discharges and emissions associated with the program are recorded within this system.

Records will be kept for all discharges to air and the marine environment during planned operations and for compliance against management criteria as outlined within the EP.

5.6 Environment Plan Review

Chevron will review the approved EP including the spill response arrangements within one year of the commencement of drilling activities and then approximately annually thereafter until completion of the drilling program. The results of the review and any recommended improvements, including feedback from NOPSEMA, is to be incorporated into the EP. This ensures that there is continual improvement and that environmental impacts and risks associated with the activity are continually reduced to as low as reasonably practicable.

6.0 CONSULTATION PROCESS

Chevron has prepared a Stakeholder Consultation Plan specific for this program. The Stakeholder Consultation Plan describes:

- stakeholder identification and analysis
- communication engagement plan, comprising the level and trigger of engagement, type of engagement, and frequency
- stakeholder engagement log, including any issues raised and Chevron responses
- full text of consultation.

6.1 Stakeholder Identification and Analysis

Relevant stakeholders have been identified through a stakeholder analysis process to ensure persons or organisations that may be affected by the drilling program activities (planned and unplanned) have been consulted. Stakeholders that may be potentially affected were identified by reviewing:

- social receptors within the environment that may be affected
- previous consultation undertaken for the Gorgon Project
- applicable legislation to identify regulatory agencies
- correspondence received from writing to all commercial fishing license holders in State and Commonwealth fisheries which overlap the Chevron active permit areas.
- relevant agencies or organisations who may be involved in the event of a spill.

6.2 Communication Engagement Plan

Once the stakeholder analysis was completed, a Communication Engagement Plan was developed to determine the following, for each stakeholder:

- the level of engagement required;
- the type of engagement required;
- when engagement would be undertaken; and
- the frequency of communication.

The Communication Engagement Plan covers both initial and ongoing stakeholder engagement and covers both planned activities and unplanned events. Chevron is to maintain communications with identified stakeholders as required, ensuring that they are informed of any aspects of the drilling program that may affect their respective activities within the area.

7.0 CONTACT DETAILS

Further information associated with the proposed activities may be obtained from: Marilyn (Mannie) Shea External Affairs Advisor - Policy, Government and Public Affairs Chevron Australia Pty Ltd 250 St Georges Terrace Perth WA 6000 Tel: Tel: +61 8 6224 1715 Email: Marilyn.Shea@chevron.com