



# **WA-408-P Exploration Drilling Campaign - Environment Plan**

## **Summary**

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## 1. Introduction

Total Exploration & Production Australia (TOTAL) is a subsidiary of TOTAL S.A., the world's fifth-largest international integrated oil and gas company that is involved in all aspects of the petroleum industry including upstream, refining and chemicals, and supply and marketing.

In Australia, TOTAL is proposing to drill three exploration wells off the northwest coast of Australia, located in permit area WA-408-P in the Browse Basin. An Environment Plan (EP) has been prepared for the drilling campaign in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Environment Regulations). The EP has been reviewed and accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). This EP summary has been prepared as per the requirements of Regulations 11 (7) and (8) of the Environment Regulations.

## 2. Activity Description

TOTAL intends to drill three exploration wells in permit area WA-408-P, located approximately 475 km north-northeast of Broome in the Browse Basin, Western Australia. TOTAL is Operator of the permit area with a 50% share, with joint venture participants Santos Ltd (30%) and Murphy Oil Corporation (20%). The drilling campaign will be targeting gas (with associated condensate) and is expected to take approximately 90 days per well to complete, with potentially an additional 15 days for testing of each zone if hydrocarbons are discovered. Drilling is expected to commence during December of 2012 and continue for a period of approximately eight to 14 months. The drilling rig will be a conventionally moored semisubmersible Mobile Offshore Drilling Unit (MODU); the Transocean Jack Bates. The Jack Bates has been working in Australian waters for approximately five years.

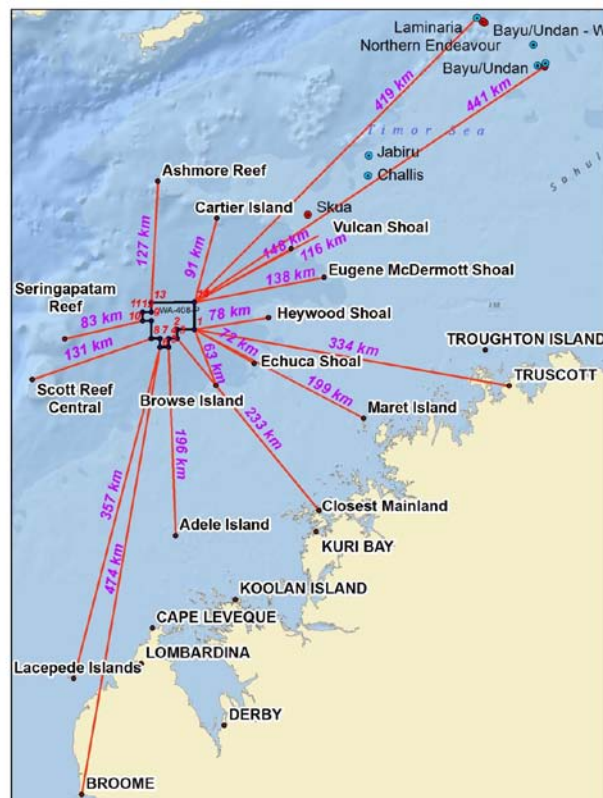


Figure 1 Location of WA-408-P relative to key features

The drilling activities are typical, in terms of technical methods and procedures, of standard exploration and development campaigns conducted in Australian waters. No unique or unusual equipment or operations are proposed.

The top section of the well (914 mm diameter hole section) will be drilled using seawater with pre-hydrated gel (PHG) ‘sweeps’ to circulate drilled cuttings from the hole. The cuttings and drilling fluids will be discharged at seabed level in an open system. After drilling the upper section, steel casing (762 mm diameter) will be cemented into place within the hole. After the setting of the 762 mm surface casing, a Riser-less Mud Recovery (RMR) system will be installed for the drilling of the 445 mm diameter section. From this point the capture and recirculation of drilling fluids and drilled cuttings from the bore back to the rig will be conducted via a closed system. A 340 mm diameter casing will be cemented into place within the hole at the completion of the 445 mm section. A Blow-Out Preventer (BOP) and a riser will then be installed on the wellhead. This occurs during the subsequent drilling of deeper remaining bore sections (375 mm, 311 mm, 216 mm and if required the 152mm contingency section). The respective casing sizes for these sections are 298 mm, 251 mm, 178 mm and if required 114 mm for the contingency section. The 445 mm section will be drilled with Water Based Mud (WBM) and all other lower sections will be drilled using Synthetic Based Mud (SBM).

Production testing may be conducted if the wells intersect potentially economic reserves of hydrocarbons. The proposed exploration wells will be drilled in a water depth of approximately 300 to 400 m. Total drilled depths will be approximately 5,500 m below Mean Sea Level.

The coordinates for the permit area are provided in Figure 2 with the corresponding boundary points.

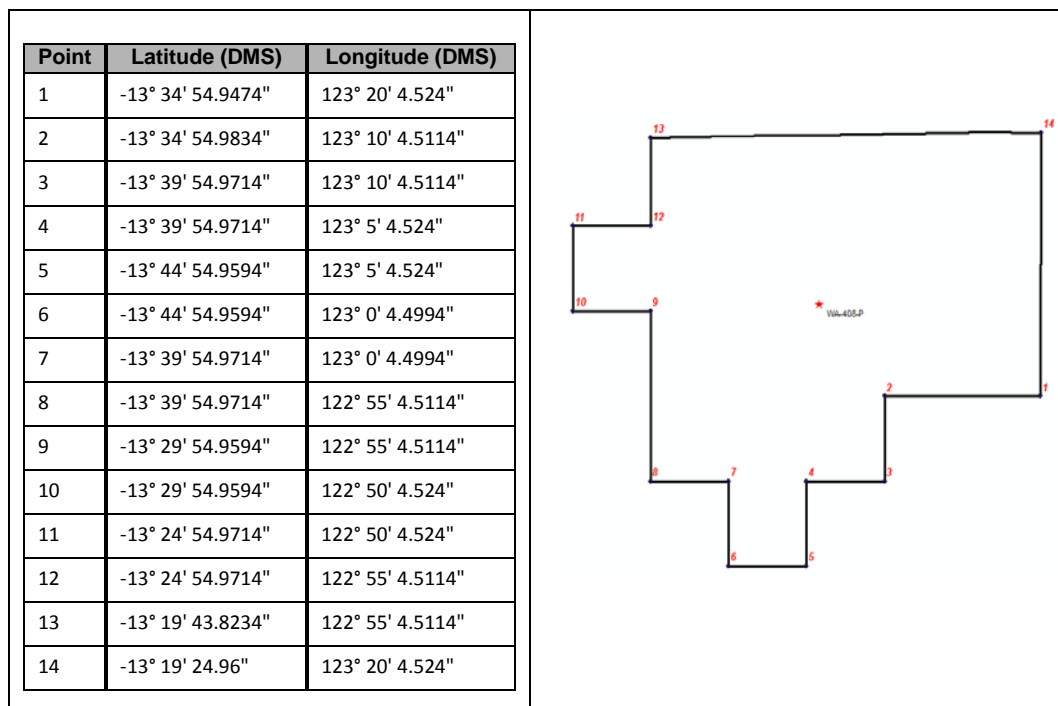


Figure 2 Boundary points & coordinates

### 3. Receiving Environment

#### Physical Environment

Given the areas adjacent to WA-408-P have had offshore oil and gas activities over a 40-year period, there is a substantial amount of relevant data regarding the existing environment.

### ***Seafloor Profile***

The permit area lies roughly on the upper part of the continental slope which is a primary feature of the North West Marine Region (NWMR), in water depth ranging from approximately 300 to 400 m. A slope is defined as an incline seaward from the shelf edge to the upper edge of a continental rise or the point where there is a general reduction in slope.

### ***Climate***

The climate of the region is tropical monsoonal, with two distinct seasons. The wet season (over summer) occurs between October and March. This is characterised by regular thunderstorm activity, particularly over coastal areas and intense depressions over the ocean, which can develop into tropical cyclones. The cyclone season begins in November, typically finishing in March.

The dry season (over winter) occurs between April and September. This is characterised by a weakening of the Indonesian Through Flow (ITF) and Leeuwin Current and a reversal in wind direction (now from the east) linked to high pressure systems.

The permit area is within the monsoon belt, which generates north-westerly rain bearing winds from November to March, followed by dry south-easterly trade winds from May to September. Water temperatures range from minima of approximately 29°C in August to approximately 31°C, and sometimes higher, from January to April.

Air temperatures in the northwest Kimberley region can be very hot. On average the hottest month is November, with mean average daily temperatures ranging from 27.2°C to 39.5°C at Wyndham. The coolest month is generally July with mean average daily temperatures ranging from 17.0°C to 31.2°C.

## **Biological Environment**

### ***Pelagic (open ocean and water column) Communities***

The lack of nutrients in the warm ITF generally limits primary production of phytoplankton though the reversal of monsoonal currents lead to enhanced upwellings of cooler nutrient rich waters. Most of the pelagic habitat relies on this type of primary productivity and while studies of the open ocean surface are limited copepods are expected to be the dominant primary consumers. The pelagic system is depauperate but widespread and it is expected there will be a range of other primary and secondary consumers such as herring, sardines, anchovies, jack mackerel, cephalopods and larger pelagic fish, sharks and mammals feeding on them.

Island and reef habitats in the sub-region are biodiversity hotspots due to the interaction of warm waters mixing with high nutrient upwelling from below the thermocline (at about 100m depth) and the diverse range of habitats provided by the physical structure of the islands and coral reefs. These hotspots have a range of unique pelagic and benthic ecological characteristics and could be considered 'important trophic systems'. The areas of biological significance are the intertidal coral reefs and islands. The closest of these, Browse Island is located approximately 60 km to the southeast of the permit area. Seringapatam Reef is located approximately 85 km west-southwest of the permit area, and Cartier Island is located approximately 90 km north-northeast of the permit area. The remaining areas of importance are located greater than 100 km away from the permit area.

### ***Benthic (seafloor) Communities***

The sub-region is characterised by complex bathymetry giving rise to a wide range of trophic systems and benthic habitats. The main communities that are likely to exist in the permit area are those demersal communities associated with terraces characterised by muddy substrates such as on the Ashmore and Rowley Terraces and Scott Plateau.

Demersal (close to the seabed) communities are reliant on the detritus, and the bacteria found within, that support infauna (within the substrate/mud) and epifauna (on the substrate/mud) such as nematodes,

polychaete worms, shelled molluscs and a variety of crustaceans. These species then become prey for a range of secondary consumers such as teleost fish, larger molluscs and crustaceans. Tertiary consumer species may include carnivorous fish, deep water sharks, large squids and toothed whales.

### **Marine Mammals**

Six migratory mammals are known to occasionally pass through the region:

- Blue whale (*Balaenoptera musculus*);
- Humpback whale (*Megaptera novaeangliae*);
- Bryde's whale (*Balaenoptera edeni*);
- Killer whale (*Orcinus orca*);
- Antarctic Minke whale (*Balaenoptera bonaerensis*); and
- Sperm Whale (*Physeter macrocephalus*).

From this group of mammals, there are two listed threatened species. The Blue Whale is classified as endangered and the Humpback Whale is classified as vulnerable. Whales are not expected to be common inhabitants within the permit area, although they could occasionally pass through the area. There are no known breeding, calving or feeding grounds for any listed threatened or migratory whale species within or in the vicinity of the proposed drilling area.

### **Sharks**

Three species of shark are listed as migratory species which may occasionally pass through the permit area:

- Whale Shark (*Rhincodon typus*);
- Shortfin Mako (*Isurus oxyrinchus*); and
- Longfin Mako (*Isurus paucus*).

The Whale Shark is the only species given a threatened species status which is also listed as vulnerable. The whale shark is a highly migratory fish and only visits Australian waters seasonally. Whale sharks, and other migratory sharks, are not known to feed or breed in the permit area.

### **Reptiles**

Six species of migratory marine turtles are listed as vulnerable or endangered under the Environment Protection and Biodiversity Conservation (EPBC) Act which may occur within the permit area:

- Loggerhead turtle (*Caretta caretta*);
- Green turtle (*Chelonia mydas*);
- Leatherback turtle (*Dermochelys coriacea*);
- Hawksbill turtle (*Eretmochelys imbricate*);
- Olive Ridley turtle (*Lepidochelys olivacea*); and
- Flatback turtle (*Natator depressus*).

Sea turtles, especially green turtles, undertake extensive migrations and low numbers of individuals may transit the permit area. The permit area does not contain any emergent land, shallow subtidal features or other habitats frequented by turtles.

The nearest known turtle breeding/nesting grounds are located at Browse Island, about 60km to the south-east of the drilling activity. This is a known breeding ground of the Green and Flatback turtles.

The six listed turtle species may occasionally pass through the permit area. However, no known turtle nesting areas are located within close proximity to the proposed drilling campaign. The likelihood of encountering significant numbers of turtles within the permit area is considered to be extremely low.

### **Birds**

Although the search of the EPBC database revealed two bird species that could occur in the permit area, these are synonyms for the same species. *Calonectris leucomelas* is the currently accepted scientific name for the

species. The Streaked Shearwater is listed on the China-Australia Migratory Bird Agreement (CAMBA) as *Puffinus leucomelas*, and the Japan-Australia Migratory Bird Agreement (JAMBA) as *Calonectris leucomelas*.

It is possible that this species may overfly the drilling campaign area however, given the isolation to known breeding and aggregation areas, it is unlikely that the Streaked Shearwater will be found in significant numbers.

### **Fish**

The Protected Matters database search identified 31 species of ray-finned fishes that may occur within the permit areas. These species are listed marine species under the EPBC Act; however none are listed as threatened.

## **Socio-economic Environment**

### **Commercial Fishing**

Notification to the fishing and shipping industries will be given at the commencement of the drilling activity and all navigation legislation and regulations will be adhered to.

General commercial fisheries currently operating in the offshore waters near the permit area are:

- The Northern Demersal Scalefish Fishery;
- The Northern Prawn Fishery; and
- The North West Slope Trawl Fishery.

The proposed drilling campaign is unlikely to have any significant impact on fishing activities, which are normally of low intensity in this area.

### **Tourism**

The proposed drilling campaign is unlikely to impose on tourism activities due to their distance from the coastline where most of the tourism activities usually occur and any offshore reefs (such as Ashmore reef located 130 km north of the permit area). Supply vessel operations for the campaign will be run out of Broome, which is a well established commercial port facility and these operations are unlikely to impact on tourism.

### **Petroleum Activities**

Petroleum exploration of the Browse Basin commenced in 1967. Due to the petroleum activities in the region, there is the potential for other petroleum activities to be occurring at the same time as the proposed drilling campaign. However, no other works are proposed inside WA-408-P and no impacts to other petroleum activities are expected.

### **Shipping**

TOTAL have obtained and reviewed AMSA's "Ship Rep" records that plot the daily position of reporting ships. These maps are used to identify regularly used shipping routes. There are no known recognised shipping routes through permit area WA-408-P. However, vessels may pass through the general permit area.

Notification to the fishing and shipping industries will be given at the commencement of the proposed drilling campaign and all navigation legislation and regulations will be adhered to.

Shipping traffic is unlikely to be affected as the proposed drilling campaign will be located in open waters with no restrictions on shipping movements.

## **4. Environmental Hazards & Controls**

A comprehensive risk assessment has been carried out for all aspects of operations, in accordance with the TOTAL General Specification *Environmental Impact Assessment for E&P activities* and in line with the principles outlined in the Australian Standard AS/NZS ISO 31000:2009 Risk Management.

The key environmental hazards and control measures to be applied to the WA-408-P drilling campaign are illustrated in the table below. All control measures associated with the hazards will be used to reduce environmental risk to As Low As Reasonably Practicable (ALARP) and will be of an acceptable level.

**Table 1 Environmental Hazards and Control Overview**

<b>Hazard &amp; Aspect</b>	<b>Potential Effect</b>	<b>Risk Controls and Mitigation Measures</b>
Physical presence of rig and support vessels		
Rig positioning, anchor deployment and retrieval	<ul style="list-style-type: none"> <li>• Damage to seabed features</li> <li>• Anchor scarring on the seabed</li> </ul>	<ul style="list-style-type: none"> <li>• Permit bathymetry suggests well locations are relatively featureless and undulating with no sensitive habitats surrounding the anchor spread.</li> <li>• Anchoring procedure</li> <li>• Continuous monitoring of anchor strains.</li> </ul>
Collision of support vessel or rig with other vessels	<ul style="list-style-type: none"> <li>• Release of vessel fuel resulting in mortality of marine fauna and pollution to the sea</li> </ul>	<ul style="list-style-type: none"> <li>• Radar watch maintained at all times.</li> <li>• Shipping lanes mapping</li> <li>• AMSA notice to shipping.</li> <li>• Oil spill contingency plan.</li> </ul>
Collision of support vessel or rig with marine fauna	<ul style="list-style-type: none"> <li>• Disturbance to marine fauna</li> <li>• Injury or mortality of marine fauna due to physical impact</li> </ul>	<ul style="list-style-type: none"> <li>• Recording and observation of nearby cetaceans.</li> <li>• Watch maintained during vessel movement.</li> <li>• Identify areas significant to protected marine species.</li> <li>• Marine fauna able to move away from slow moving rig and support vessels.</li> </ul>
Atmospheric Emissions		
Fuel consumption by drilling rig and supply/support vessels	<ul style="list-style-type: none"> <li>• Exhaust gas emissions impacting local air quality</li> <li>• Contribute to global warming and climate change</li> </ul>	<ul style="list-style-type: none"> <li>• Rig maintenance policies and procedures.</li> <li>• Monitoring of fuel consumption.</li> <li>• Maximum fuel efficiency through equipment inspection and maintenance schedules.</li> <li>• Four engine supply vessels, more redundancy, less fuel consumption (engine rotation efficiency)</li> </ul>
Well flow testing	<ul style="list-style-type: none"> <li>• GHG and ecotoxic gas emissions (NO<sub>x</sub>, SO<sub>x</sub>, VOCs, H<sub>2</sub>S &amp; CO) impacting local air quality</li> <li>• Contribute to global warming and climate change</li> </ul>	<ul style="list-style-type: none"> <li>• Use of green burn-type burner heads.</li> <li>• Constant monitoring during flaring operations.</li> <li>• Scheduled burner equipment inspection and maintenance.</li> <li>• Volumes of flared gas will be minimised during well testing.</li> </ul>
Shallow gas blowout	<ul style="list-style-type: none"> <li>• Potential for protracted release of hydrocarbon gas impacting local air quality</li> </ul>	<ul style="list-style-type: none"> <li>• Shallow gas assessment performed, no feature identified</li> <li>• Procedures are in place for management of shallow gas events.</li> </ul>
Loss of well control whilst drilling	<ul style="list-style-type: none"> <li>• Loss of raw gas to atmosphere and marine environment impacting local air quality</li> <li>• Contribute to global warming and climate change</li> </ul>	<ul style="list-style-type: none"> <li>• Crew competence to avoid well control incidents. Training, review of competency matrix, supervision.</li> <li>• Crew competence in emergency well control and Oil Spill Contingency Plan (OSCP) procedures.</li> <li>• TOTAL double barrier policy adhered to; includes formal approval of all barriers installed prior to abandonment or suspension.</li> <li>• Continuously monitor for abnormal pressure parameters</li> </ul>



Hazard & Aspect	Potential Effect	Risk Controls and Mitigation Measures
		<p>and volume changes during drilling.</p> <ul style="list-style-type: none"> <li>• Test the BOP prior to commencement of operations and regularly during operations.</li> <li>• Pressure test casing strings</li> </ul>
Liquid Effluent		
Deck drainage discharge	<ul style="list-style-type: none"> <li>• Pollution of local water column with hydrocarbons</li> </ul>	<ul style="list-style-type: none"> <li>• Contaminated water will be recovered to a containment tank or similar.</li> <li>• Absorbent materials and containers available onboard to clean up small amounts of oil and grease accumulation on deck and work areas.</li> <li>• Inspection of deck drains and bunds prior to program commencement.</li> </ul> <p>MARPOL 73/78 Annex I:</p> <ul style="list-style-type: none"> <li>• Machinery bilge water is routed to an oily water separator before discharge overboard.</li> <li>• Discharged drainage water is to contain &lt;15ppm. Hydrocarbons, &gt;15ppm will trigger an alarm system.</li> <li>• Discharge levels recorded in the oil record logbook.</li> </ul>
Waste oil and chemicals	<ul style="list-style-type: none"> <li>• Pollution of local water column with hydrocarbons/chemicals</li> </ul>	<ul style="list-style-type: none"> <li>• Waste oil and chemicals will be transferred to the mainland for disposal.</li> </ul>
General Waste		
Handling and disposal of sewage, grey water and putrescibles wastes	<ul style="list-style-type: none"> <li>• Marine pollution from raw sewage waste and increased biological oxygen demand as a result of organic material</li> <li>• Modification to feeding habits of marine life</li> </ul>	<ul style="list-style-type: none"> <li>• All sewage waste to be treated in the vessel's sewage treatment facility and macerated to ≤25mm prior to discharge, as per MARPOL Annex IV.</li> <li>• In accordance with MARPOL 73/78 Annex V:</li> <li>• Food scraps to be macerated to a diameter of &lt;25mm prior to disposal.</li> <li>• Garbage Record Book will be maintained.</li> </ul>
Handling and disposal of solid waste	<ul style="list-style-type: none"> <li>• Solid Waste loss overboard causing localised marine pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Garbage Record Book will be maintained.</li> <li>• Waste Management Procedure.</li> <li>• Inspection and house-keeping practices</li> </ul>
Drilling Fluids and Cuttings		
WBM discharge	<ul style="list-style-type: none"> <li>• Temporary and transient increase in turbidity in water column causing significant impact to water quality</li> <li>• Ecotoxic effects on marine biota and bioaccumulation in the ecosystem</li> </ul>	<ul style="list-style-type: none"> <li>• Low toxicity drilling fluids, comprising seawater and PHG sweeps for the top sections of the hole and KCl polymer water based gel for the middle section, are to be used.</li> <li>• Drilling fluids are reviewed and selected based on technical suitability and minimum environmental effect (including ecotoxicity and dosing requirement characteristics).</li> </ul>
SBM discharge	<ul style="list-style-type: none"> <li>• Pollution of local water column with</li> </ul>	<ul style="list-style-type: none"> <li>• SBMs will not be discharged overboard and will be recovered to a containment tank for future reuse.</li> </ul>

Hazard & Aspect	Potential Effect	Risk Controls and Mitigation Measures
	<p>hydrocarbons</p> <ul style="list-style-type: none"> <li>• Ecotoxic effects on marine biota and bioaccumulation in the ecosystem</li> </ul>	<ul style="list-style-type: none"> <li>• SBM section drilled using a riser system.</li> <li>• Compliance with SBM Checklist verified prior to use.</li> </ul>
Drill cuttings discharge	<ul style="list-style-type: none"> <li>• Localised smothering of benthic communities and anoxic conditions due to natural degradation</li> </ul>	<ul style="list-style-type: none"> <li>• Use of low toxicity WBM for majority of drilling will ensure more than 70% of total well cuttings will be generated in these sections.</li> <li>• High dispersion and dilution potential for cuttings disposed at surface in deep water.</li> <li>• Drill cuttings will be recolonised in relatively short time periods (within year or two).</li> <li>• Target of less than 8% SBM by dry weight of base fluid on cuttings (TOTAL company rule).</li> <li>• Small area of impact. Limited volumes of drill cuttings from SBM section of hole.</li> </ul>
Cement discharges	<ul style="list-style-type: none"> <li>• Turbid plume, sediment contamination with cement and additives</li> </ul>	<ul style="list-style-type: none"> <li>• Cement and additives (e.g. inorganic salts, lignins, bentonite, barite, defoamers and surfactants) are risk assessed and have minimal impact to marine environment</li> </ul>
Chemicals		
Inadequate handling and storage of hazardous materials, allowing chemical to enter marine environment	<ul style="list-style-type: none"> <li>• Pollution of local water column with chemicals, or hazardous materials</li> <li>• Potential toxicity to marine fauna and flora, and subsequent impacts through bioaccumulation</li> </ul>	<ul style="list-style-type: none"> <li>• All dangerous goods and hazardous substances delivered to the MODU must be accompanied by MSDS and, where relevant, Dangerous Goods Declaration (DGD).</li> <li>• Hazardous materials storage and handling must be conducted in accordance with MSDS.</li> <li>• The Offshore Logistics Coordinator is responsible for ensuring that MSDS are available on board the MODU. The Shore Base Supervisor is responsible for ensuring that MSDS and, where relevant, DGD forms are attached to manifests where dangerous goods and hazardous substances are back loaded.</li> <li>• MSDS, Jack Bates Marine Operations Manuals</li> <li>• Induction &amp; Training (proper use, transfer procedures)</li> </ul>
Chemicals from antifouling system leaching into the marine environment	<ul style="list-style-type: none"> <li>• Biocides introduced to environment</li> <li>• Potential toxicity to marine fauna and flora, and subsequent impacts through bioaccumulation</li> </ul>	<ul style="list-style-type: none"> <li>• ANZECC 'Code of Practice for Antifouling and In-water Hull Cleaning and Maintenance'</li> <li>• No organotin or mercury based anti-fouling systems to be used.</li> </ul>
Hydrocarbons		
Spill or release of hydrocarbons	<ul style="list-style-type: none"> <li>• Marine pollution if spill reaches sea. Pollution of local water column with hydrocarbons</li> </ul>	<ul style="list-style-type: none"> <li>• Absorbent materials and containers available onboard to clean up small amounts of oil and grease accumulation on deck and work areas.</li> <li>• Inspection of deck drains and bunds prior to program commencement.</li> <li>• Fuels, oils and chemicals to be stored within contained</li> </ul>

Hazard & Aspect	Potential Effect	Risk Controls and Mitigation Measures
		and banded areas and in accordance with manufacturer specifications.
Spill during bunkering operations	<ul style="list-style-type: none"> <li>• Pollution of surface water and water column with hydrocarbons</li> <li>• Potential toxicity to marine fauna and flora, and subsequent impacts through bioaccumulation</li> </ul>	<ul style="list-style-type: none"> <li>• Vessel design (double hulled, double bottom) and location of fuel storage tanks (no fuel storage at bow or stern) of vessel, where collision is most likely to occur.</li> <li>• Approach speed limit for vessels, any collision is likely to be of low speed.</li> <li>• Ability to transfer fuel to alternate tanks if leak from one tank is identified.</li> <li>• Refuelling will be undertaken only during periods of calm weather and in daylight hours, except in the case of an emergency.</li> <li>• Transfer hoses will be fitted with dry break couplings.</li> <li>• Annual replacement of hoses used for fuel oil bunkering.</li> <li>• Strict adherence to rig specific transfer procedures including full time watcher in place with radio contact to vessel.</li> <li>• Regular spill response drills.</li> <li>• Oil spill equipment in place prior to activity.</li> </ul>
Loss of well control and blowout during drilling, releasing hydrocarbons	<ul style="list-style-type: none"> <li>• Pollution of surface water and water column with hydrocarbons</li> <li>• Potential toxicity to marine fauna and flora, and subsequent impacts through bioaccumulation.</li> </ul>	<ul style="list-style-type: none"> <li>• TOTAL double barrier policy adhered to; includes formal approval of all barriers installed prior to abandonment or suspension.</li> <li>• Crew competence to avoid well control incidents. Training, review of competency matrix, supervision.</li> <li>• Crew competence in emergency well control and OSCP procedures.</li> <li>• Continuously monitor for abnormal pressure parameters and volume changes during drilling.</li> <li>• Test the BOP prior to commencement of operations and regularly during operations.</li> <li>• Pressure test casing strings</li> <li>• AMSA aware of the rig location.</li> <li>• 500 m radius exclusion zone around rig.</li> <li>• Spill equipment stockpile available.</li> <li>• Design standards for hose and flowlines.</li> <li>• Surface welltest package design.</li> <li>• Well control equipment.</li> </ul>
Noise		
Vessel activity generating noise	<ul style="list-style-type: none"> <li>• Physiological or behavioural effects on marine fauna due to sound source</li> </ul>	<ul style="list-style-type: none"> <li>• Sounds produced during operations are not expected to significantly impact on marine species, with the minor exception of avoidance reactions.</li> </ul>
Vertical Seismic Profiling (VSP) activity	<ul style="list-style-type: none"> <li>• Physiological or behavioural effects on marine fauna (e.g. cetaceans and turtles) due to seismic sound</li> </ul>	<ul style="list-style-type: none"> <li>• Short duration, approximately 8hrs per well.</li> <li>• Soft-start procedure to be followed during VSP.</li> <li>• Cetaceans in the area will be observed and recorded.</li> <li>• Conformance with EPBC Act and Policy Statement.</li> <li>• Marine Fauna Observer</li> </ul>

Hazard & Aspect	Potential Effect	Risk Controls and Mitigation Measures
	source	
Lighting		
Rig and vessel activity at night	<ul style="list-style-type: none"> <li>Temporary physiological or behavioural effects on marine fauna due to artificial light emission</li> </ul>	<ul style="list-style-type: none"> <li>Any marine fauna attracted to the light are expected to disperse during daylight hours and permanently when rig and support vessels have vacated the area.</li> <li>Drilling of each well will be undertaken in a short duration and any impacts will be temporary and transient.</li> <li>Well locations are distant from known turtle nesting sites so presents a negligible likelihood of impact upon nesting turtles or hatchlings.</li> </ul>

## 5. Management Approach

The WA-408-P Environment Plan contains a systematic assessment of the environmental risks associated with the proposed drilling activities in WA-408-P, and it further details the measures that will be put in place to avoid or reduce impacts from the activities on the environment and links these to performance objectives to be measured during and after the campaign. The plan also details the routine and incident reporting arrangements for the duration of the activity. Key components of the implementation strategy for the EP are illustrated in the table below.

**Table 2 Implementation Strategy Overview**

Implementation Strategy	Strategy overview
Systems, Practices and Procedures	<p>TOTAL is responsible for assuring that the proposed drilling program is managed in accordance with the Implementation Strategy and its HSE Policy and Objectives.</p> <p>Transocean will operate under its own rig-specific management systems and procedures including, but not limited to:</p> <ul style="list-style-type: none"> <li>Management Systems (including HSE requirements and management plans);</li> <li>Jack Bates Marine Operations Manual;</li> <li>Rig Management System; and</li> <li>Jack Bates Emergency Response Plan.</li> </ul>
Roles and Responsibilities	<p>Key roles and responsibilities of TOTAL and the rig offshore personnel with respect to meeting environmental management and performance objectives are described below.</p>
Training and Awareness	<p>All TOTAL personnel working on the drilling campaign will be made aware of and trained in accordance with TOTAL's HSE Management System, the Company's policies and this EP's requirements and commitments. TOTAL maintain a training matrix to define and to record the training requirements for their personnel. The training matrix reflects the requirements of TOTAL's company rules, as well as locally defined requirements.</p> <p>Transocean, the drilling contractor, have an environmental management system (EMS) in place, which has been reviewed by TOTAL and found to be fit-for-purpose. The EMS along with Transocean general HSE management system</p>

	<p>and training matrix ensures that personnel with critical roles (fuel transfers, pit management) are properly trained and supervised.</p> <p>Third party contractors and marine contractors who could have an impact on environmental matters are assessed as part of the contractor selection process, and personnel onboard the Jack Bates, no matter who they work for, are required to work with and within Transocean's systems</p>
<p>Emergency Preparedness and Response</p>	<p>TOTAL have a local Emergency Management Plan (EMP) that defines roles and procedures for the Emergency Management Team (EMT) and the Crisis Management Team (CMT). These teams' function is to cover the emergency aspects of all incidents.</p> <p>In the event of an emergency offshore the OIM of the rig will have overall charge of local emergency response. The TOTAL Senior Drilling Supervisor will act as a contact point with TOTAL headquarters in Perth. The drilling rig will maintain a satellite telephone on board at all times to ensure communication with the drilling contractor's emergency response team, TOTAL's organisation and/or other emergency services during the emergency.</p> <p>TOTAL have developed the Oil Spill Contingency (OSCP) to specifically address the circumstances of the WA-408-P drilling campaign.</p> <p>The objectives of the OSCP are to:</p> <ul style="list-style-type: none"> <li>• Ensure that in the event of a spill, TOTAL has access to the right people, the right equipment and the right processes to respond rapidly and effectively;</li> <li>• To demonstrate to the regulatory authorities that TOTAL has adequate resources and made adequate arrangements to ensure the proper and timely response; and</li> <li>• To guide an effective response, taking into account the stated priorities of People, Environment, Assets, Reputation and Liability.</li> </ul>
<p>Monitoring, Management of Non-Conformance and Review</p>	<p>Monitoring of the EP and the OSCP will be carried out through a number of routine internal and external reporting activities.</p> <p>TOTAL will carry out rig visits according to a schedule defined in the campaign HSE plan. This schedule includes, at least, monthly visits by members of TOTAL's senior management team, and fortnightly visits by members of the drilling team.</p> <p>HSE performance is reviewed at affiliate level by the HSE Management Board which meets on a quarterly basis to review performance and development of the HSE management system.</p>
<p>Audit and Inspection</p>	<p>TOTAL has already conducted two rig visits to the Jack Bates to review the rig's suitability and condition. These visits will be supplemented by an HSE management system audit prior to the campaign, as well as a rig visit to carry out an audit of the SBM handling system when the rig is handling SBM for another client.</p> <p>TOTAL will conduct an Environmental audit, with the objective of establishing compliance with this plan, during the course of the first well. The audit report will be provided to the Managing Director and the Operations Manager for review, and actions tracked to closure</p>

## 6. Consultation

Stakeholder engagement is an integral part of a successful oil and gas development to ensure relevant authorities and other interested individuals and organisations are aware of the proposed activities and have an opportunity to engage and discuss any concerns. TOTAL is committed to fostering constructive and transparent relationships with relevant stakeholders around its activities, and this starts from the early phases of each development, such as exploration.

Given its remote location, the permit area where the exploration activity will take place is not regularly accessed or utilized by stakeholders. However, the stakeholders listed in Table 3 were consulted or advised of the activity, either by face-to-face meetings, telephone conversations or emails. Given the limited duration of the activity, and the fact no major concerns were raised by stakeholders that requires ongoing management, TOTAL will not proactively engage further with the majority of stakeholders on this specific exploration activity, unless there are material unforeseen changes in how the activity will be executed. Should stakeholders have a question as the activity proceeds, all have contact details of a TOTAL representative through whom this could be raised.

**Table 3 Stakeholders**

Australian Maritime Safety Authority (AMSA)
Australian Fisheries Management Authority (AFMA)
Northern Prawn Fishery Industry Pty Ltd
North West Slope Trawl Fishery
WA Department of Fisheries (DoF)
WA Department of Environment & Conservation (DEC)
WA Department of Transport (DoT)
WA's Environmental and Scientific Coordinator in the Office of the Environmental Protection Authority
Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC)
Commonwealth Department of Resources, Energy & Tourism (DRET)
Geoscience Australia
Commonwealth Fisheries Association
WA Fishing Industry Council (WAFIC)
Kimberley Professional Fishermans' Association
A Raptis & Sons
Westmore Seafoods
Northern Territory Seafood Council
Northern Territory Trawler Owners Association
Northern Fishing Companies Association
Northern Prawn Fishery (Qld) Trawl Association
WA Northern Trawl Owners Association
WA Department of Mines & Petroleum (DMP)
Shire of Broome
Petroleum Operators in surrounding permits including Shell, INPEX and Woodside
World Wild Fund for Nature – Australia (WWF)
Australian Conservation Foundation (ACF)

## 7. Contact Details

Further information about TOTAL's WA-408-P drilling campaign activity can be obtained from:

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