

CHARON 3D MARINE SEISMIC SURVEY ENVIRONMENT PLAN: PUBLIC SUMMARY

Coordinates of the petroleum activity

Chevron Australia Pty Ltd has approval from the Department of Industry and Resources (DoIR) to conduct a 3D marine seismic survey over Exploration Permit WA-392-P in Commonwealth marine waters of north-western Australia. The survey area is located 85 km north-west of Barrow-Montebello Island Complex and 90 km north of North West Cape. Acquisition of seismic data will take place over approximately 50 days between early July and mid-November 2007.

Table 1. Coordinates of Survey Area

| location point | Latitude (S) | | | Longitude (E) | | |
|----------------|--------------|---------|---------|---------------|---------|---------|
| | degrees | minutes | seconds | degrees | minutes | seconds |
| A | 20 | 54 | 55.49 | 113 | 45 | 5.09 |
| B | 20 | 24 | 55.48 | 113 | 45 | 5.07 |
| C | 20 | 24 | 55.45 | 114 | 30 | 5.06 |
| D | 20 | 54 | 55.47 | 114 | 10 | 5.10 |
| E | 20 | 39 | 55.47 | 114 | 10 | 5.09 |
| F | 20 | 39 | 55.46 | 114 | 30 | 5.07 |
| G | 20 | 54 | 55.49 | 113 | 45 | 5.09 |

Datum, GDA94

Description of the receiving environment

Physical

The survey area is on the continental slope in deep (1000 to 1100 m) waters approximately 85 km offshore, in an area devoid of significant or shallow bathymetric features. The seabed is expected to comprise loose, silty carbonate sands with occasional exposed hard substrate.

Biological

There is limited information concerning the benthic communities of the survey area but the seafloor is expected to comprise predominantly unconsolidated soft sediments supporting a diverse burrowing infauna and sparse epifauna, mainly sea pens. Benthic communities are expected to be generally sparse with low densities of molluscs, crustaceans and worms. Any areas of exposed hard substrate are likely to be colonised by deep water filter-feeding organisms, such as hydroids and sponges.

Marine species with broad distributions such as cetaceans, fish, sharks, sea turtles and seabirds may traverse the survey area, at least on occasion. 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 low numbers within the survey area. The deep offshore environment is typical of the wide expanse of continental slope found on the North West Shelf and is not expected to represent an important or critical habitat of any fish species.

The Whale Shark is listed as a Vulnerable and Migratory species under the EPBC Act and is generally found between latitudes 30°N and 35°S in both oceanic and coastal waters. The movements of whale sharks are not well known, however they are known to seasonally aggregate (March / April) in shallow tropical waters off the North West Cape at Ningaloo Reef in Western Australia. The waters of the survey area are approximately 90 km north of Ningaloo Reef so it is possible that whale sharks may pass through the survey area. The survey will take place between early July and mid-November, after the recognised annual whale shark aggregation at Ningaloo Reef has ended, so it is unlikely that significant numbers of whale sharks will be present in the survey area.

Three species of marine turtles may occur in the survey area; Green, Leatherback and Flatback turtle, all of which are listed as Vulnerable under the EPBC Act. Sea turtles, particularly Green turtles, undertake extensive migrations and low numbers of individuals may transit the area. The survey area does not contain any emergent land or shallow subtidal features and the nearest areas of known turtle breeding or feeding importance are more than 85 km to the south-east in the Barrow-Montebello Island Complex. Given the distance from emergent land, the likelihood of encountering significant numbers of turtles during the survey is low.

Several species of whale and dolphin are known to frequent the waters of the North West Shelf. The Humpback, which is the most common whale species in the region, migrates between Antarctic waters and the Kimberley each winter to mate and breed. The northbound migration passes Barrow Island and Montebello Islands (85 km to the south-east) around the end of July and the southbound peak occurs between late August and early September, though the exact time may vary by up to three weeks. While northbound whales mostly stay on or within the 200 m depth contour, southbound whales are more dispersed. The nearest known humpback resting area is in the Exmouth Gulf, some 90 km to the south.

The Permit Area is outside (seaward) of the main Humpback migration routes and distant from known feeding, breeding and resting areas. Therefore, although the survey will potentially overlap with migration periods, the likelihood of encountering significant numbers of Humpback whales during the survey is low.

Blue whale migration patterns are similar to the Humpback, with the species feeding in mid-high latitudes (south of Australia) during the summer months and temperate/tropical waters along the southern Australian coast in the winter for mating and breeding. However, the Blue whale tends to be more widely dispersed and rarely present in large numbers outside recognised aggregation areas. The survey area does not intersect any recognised Blue whale migratory routes or aggregation areas, hence the likelihood of encountering significant numbers of Blue whales during the survey is low.

The distribution and abundance of other cetaceans that may occur in the region is not well established. Whales that have widespread or tropical deep water distributions and may occur in the area include; Minke, Bryde's, Killer, Sperm, Fin, Sei and False Killer whales. Given the widespread distribution and known migration routes of these species, the likelihood of encountering significant numbers of whales during the survey is low. The survey area is outside of the known range of the southern right whale.

Deep water dolphin species likely to occur in the area include; Spinner, Striped, Risso's, Spotted and Rough Toothed dolphins. None of these species are considered threatened and significant numbers are not expected to be found within the area.

The survey area is outside the normal range of the endangered Southern Giant Petrel, however individuals may occasionally be present. Other seabirds may be encountered, however there are no important feeding grounds known from the survey area and given its location, foraging activity is likely to be very low.

Socio-economic

The North West Shelf region supports petroleum exploration and production, commercial shipping and low levels of commercial fishing. The nearest land based petroleum production facility is situated on Barrow Island, 85 km south-east of the survey area.

The survey area overlaps fishing zones for Commonwealth managed Western Tuna and Billfish Fishery, North-west Slope Trawl Fishery, Southern Bluefin Tuna Fishery, Western Deepwater Trawl Fishery and Western Skipjack Fishery. In addition the survey area overlaps State managed Deep Water Wet Line Fishery, WA North Coast Shark Fishery and West Coast Deep Sea Crab Fishery.

Description of the action

The survey will image the sub-surface geology of the survey area via the acquisition of three dimensional (3D) seismic data. The survey will involve a specialised vessel (M/V Western Trident), towing seismic equipment along a predetermined grid within the survey area.

Seismic operations will occur 24 hours per day, taking approximately 50 days to complete and is anticipated to occur between early July and mid – November 2007.

Major environmental hazards and controls

There are no particular environmental issues or areas of environmental sensitivity within the vicinity of the seismic acquisition programme. The survey area does not represent important or critical habitat to any marine fauna and is located outside recognised migration routes.

Risk analysis has been undertaken for all aspects of the seismic acquisition programme, in accordance with the procedures outlined in the Australian and New Zealand Standards AS/NZS 4360:1999 (Risk Management). The risk analysis has been used to characterise risk likelihood and severity and to evaluate the environmental risks and effects, as summarised in Table 2.

Given the water depth and absence of shallow bathymetric features, distance from shore, separation from recognised migratory routes, and the management requirements for all environmental aspects of operations, the risk of significant adverse environmental effects from the seismic survey is low.

Summary of management approach

The Charon seismic programme will be conducted in accordance with all legislative and regulatory requirements, to the satisfaction of the DoIR. The environmental objectives relevant to each aspect of the seismic acquisition programme are summarised in Table 2.

Chevron's overall environmental objective for the Charon seismic programme is to conduct the survey with as-low-as-reasonably-practicable effect on the environment. Chevron aims for incident and injury free (IFF) operations and manages routine operations to minimise environmental impacts, to minimise the risk of accidents and to limit any impacts to the environment from such incidents should they occur.

Chevron's operations on the North West Shelf are conducted within a comprehensive corporate HES management framework, supporting the corporate commitment to 'Protecting People and the Environment' (Operational Excellence, 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

RPS Bowman Bishaw Gorham (RPS), on behalf of Chevron, has consulted with government and industry groups regarding the seismic survey, including:

- Department of Fisheries, Western Australia (DoF)
- Australian Fisheries Management Authority (AFMA)
- Western Australian Fishing Industry Council (WAFIC)
- Tunawest
- Commonwealth Fisheries Association (CFA)
- Western Tuna and Billfish Fishery

These consultations have indicated that: the seismic program will not conflict with commercial or recreational fishing as few operators are active in the offshore waters of the survey area; no tourism or game fishing operators utilise the area of the survey; there are no significant environmental sensitivities known for the area at the time of the survey.

Contact details

Further information may be obtained by writing to:

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Table 2. Summary of Environmental Hazards, Potential Effects and Management Approach

| Environmental Aspect / Incident | Potential Environmental Effect | Management Approach |
|--|---|---|
| Acoustic impulse from air-guns | Potential physiological effects or disruption to behaviour patterns of sensitive marine fauna | Implementation of EA guidelines for minimising possible disturbance to cetaceans. |
| Grey water/ sewage disposal | Potential localised reduction in water quality - nutrient enrichment | No discharge of untreated sewage. No discharge of treated sewage < 12 nm from shore. Biodegradable detergents only. Treat in accordance with <i>P(SL)A</i> Schedule Clause 222 and MARPOL 73/78. |
| Discharge of oily water from bilges | Potential localised and temporary acute toxic effects | All bilge water passes through an oil/water separator prior to discharge at <15ppm hydrocarbons. Discharge quality automatically monitored with alarm. MARPOL 73/78 standard for oily water discharge. |
| Putrescible galley wastes disposal | Potential localised reduction in water quality - nutrient enrichment | No unmacerated putrescibles discharged. Maceration to <25mm prior to discharge or incineration. No discharge <12nm from shore. Discharges in accordance with <i>P(SL)A</i> Schedule Clause 222 and MARPOL 73/78. |
| Solid wastes disposal | Potential environmental degradation from incorrect disposal | No disposal of solid waste at sea. Incineration or correct onshore disposal of solid wastes in accordance with approved EP, Waste Management Plan and MARPOL 73/78. |
| Waste oil disposal at sea | Potential localised chronic/acute toxic effects | No waste oil disposed at sea. All waste oils collected and returned to shore for recycling/disposal in accordance with approved EP, Waste Management Plan and MARPOL 73/78 |
| Atmospheric emissions | Potential increase in greenhouse gas emissions | Engines maintained to operate at optimum efficiency to minimise emissions. Compliance with MARPOL 73/78. |
| Artificial lighting | Potential attractant or disturbance to marine life | Lighting minimum required for navigation and safety requirements. |
| Anchoring activity | Potential localised disturbance to benthos | No anchoring during survey unless required by an emergency. |
| Fuel loss during transfer | Potential acute toxic effect on marine organisms | No spills to ocean. Strict adherence to Contractor's standard refuelling procedures. OSCP in place. |
| Rupture of fuel tanks in collision | Potential acute toxic effect on marine organisms | No collisions or near misses with other vessels. Specialist vessel manned by fully qualified crew maintaining 24 hour visual, radio and radar watch for other vessels. Notice to Mariners posted to notify other vessels of the program. Other vessels made aware of seismic vessel's restricted ability to manoeuvre. Survey vessel carries navigation lighting. Approved OSCP in place. |

| Environmental Aspect / Incident | Potential Environmental Effect | Management Approach |
|---|---|--|
| Chemical spill runoff to sea | Potential acute toxic effect on marine organisms | No chemical spill runoff to sea. Trained authorised personnel only to access store. <i>P(SL)A</i> Schedule Clause 222. |
| Ballast water introduction of exotic marine species | Potential competition with indigenous species | No introduction of exotic marine organisms. Ballast exchanges conducted outside the Australian 12 nm limit. Comply with AQIS Australian Ballast Water Management Requirements. |
| Displacement of other users of marine environment | Potential disruption to commercial fishing/shipping in the area | No complaints about seismic vessel from other users. Notice to mariners posted. Liaise with fishermen and other commercial mariners to minimise conflict. |