

WesternGeco 3D Marine Seismic Survey Environment Plan: Public Summary

This summary of the WesternGeco 3D Marine Seismic Survey Environment Plan (EP) is been submitted to the Western Australian Department of Industry and Resources (DoIR) to comply with Regulations 11(7) and 11(8) of the *Petroleum (Submerged Lands) (Management of Environment) Regulations 1999* (P[SL]A).

Introduction

WesternGeco Australia Pty Ltd (WesternGeco), a specialist seismic survey company, proposes to conduct a three dimensional (3D) marine seismic survey in deep water within and adjacent to Exploration Permit areas WA-346-P, WA-268-P, WA-390-P, WA-018-R and WA-026-R. The survey area is located on the continental slope of north-west Western Australia in Commonwealth marine waters, approximately 200 km from the Australian mainland.

Coordinates of the Proposed Activity

The seismic survey will occur in Commonwealth marine waters within and adjacent to Exploration Permit areas WA-346-P, WA-268-P, WA-390-P, WA-018-R and WA-026-R (Figure 1). The survey area is bounded by the coordinates listed in Table 1 and will cover a total area of approximately 4729 km².

Table 1 Coordinates of the Proposed Survey Area

GDA 94 Location point	Latitude (South)		Longitude (East)	
	degrees	minutes	degrees	minutes
1	19	19.998	113	19.998
2	19	19.998	113	34.998
3	19	24.774	113	35.076
4	19	24.810	113	55.074
5	19	34.392	113	55.074
6	19	39.084	113	47.574
7	19	41.256	113	49.032
8	19	41.224	114	05.070
9	19	41.225	114	21.132
10	19	46.454	114	12.337
11	19	58.329	114	12.065
12	19	58.332	114	05.118
13	19	58.320	113	35.058
14	19	45.000	113	34.998
15	19	45.000	113	17.466
16	19	41.916	113	18.468
17	19	37.776	113	08.766

Description of the Proposed Activity

The seismic survey will map sub-surface geology via the acquisition of 3D seismic data to ascertain potential sub-surface oil and gas deposits of the survey area.

The survey will be conducted by WesternGeco using its own specialist vessel "M/V Geco Eagle", a purpose built seismic survey vessel. A support/scout vessel operating out of Dampier (280 km to the east) will be employed for logistical, safety and equipment management support.

The seismic energy source will be provided by a dual-airgun array, which will be towed astern of the vessel at a depth of approximately 6 m. The two gun arrays will be used alternately and discharged at intervals of approximately ten seconds. Seismic reflections from subsurface layers will be detected by hydrophones mounted in eight fluid-filled streamers of 5 km length towed behind the vessel.

The seismic survey is scheduled to commence in late March 2008 and take approximately 100 days to complete. Seismic operations will occur 24 hours per day.

Description of the Receiving Environment

Physical Environment

The proposed survey area is located on the continental slope, 200 km north of North West Cape on the continental slope, in water depths of 1000 to 1300 m. The seabed of the proposed survey location shelves gently offshore in a westerly direction, and contains no apparent significant or shallow seabed features.

The climate of the survey area consists of warm humid conditions with variable winds during the summer season (September to April) and cooler temperatures and stronger winds (usually south-easterlies generated by anti-cyclonic belts) during the winter season (May to August). Tropical cyclone activity is common between December and March and unpredictable.

Swell heights tend to be persistent at around 2 m in the winter and less than 1 m during the summer.

Biological Environment

Some marine migratory species with broad distributions such as fish, sharks, marine turtles, seabirds and cetaceans may traverse the survey area, at least on occasion. The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) lists six threatened and migratory species that could occur in the area, including the following:

- Southern giant petrel
- Green, leatherback and flatback turtles
- Blue and humpback whales

The survey area does not contain recognised critical habitat for any of the above threatened or migratory species, and as the open oceanic conditions do not represent feeding or breeding grounds, aggregations of marine turtles or marine mammals (whales, dolphins) are unlikely to occur.

Benthic Assemblages

The substrate over the survey area is likely to consist of soft sediments. The benthic flora and fauna is likely to be limited due to substrate type and water depth. Infaunal communities are likely to be comprised of small burrowing invertebrates. Attached benthic organisms are expected to be sparse and are likely to comprise urchins, sea stars and crustaceans.

The water depths and uniformity of the bathymetry at the survey site preclude photosynthetic activity and benthic flora is unlikely to occur within the survey area.

Socio-Economic Environment

The survey area lies between two gas fields, although no actual petroleum infrastructure exists in or adjacent to the survey area.

Consultation with Commonwealth and State fishing authorities and commercial operators indicate that fishing activity in the survey area is low. Levels of tourism, recreational or game fishing is expected to be very low or absent in the area.

Commercial shipping traverses the survey area, with approximately 1200 vessel movements annually. This equates to an average of three vessels per day. The survey area does not form an approach to any regional ports, nor does it contain any channels or navigation hazards.

The nearest marine protected areas are the Barrow Island Marine Management Area, located approximately 160 km to the south-east of the proposed survey area, and the Ningaloo Marine Park, located approximately 180 km to the south of the proposed survey area.

Major Environmental Hazards and Controls

All aspects of the survey have been subjected to risk analysis, which has been used to characterize risk likelihood and severity and evaluate the potential environmental risks and effects. Table 2 summarises the risk analysis for the key aspects of the survey.

Given the water depth and absence of shallow bathymetric features, distance from shore, separation from recognised cetacean 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.

Table 2 Summary of Potential Major Environmental Risks and Management Approach

Hazard/ Incident	Potential Hazard Consequence	Risk and Management Approach
Acoustic impulse from air-guns during seismic operations.	Physiological damage or disruption to behaviour patterns of sensitive marine fauna.	Low risk. Survey scheduled to avoid peak whale migration periods and lies outside recognised migration routes and aggregation areas. Implementation of DEWR (now DEWHA) <i>Guidelines for Interactions Between Offshore Seismic Exploration and Whales</i> (2007).
Collision with a cetacean or turtle	Injury or death	Low risk. Survey scheduled to avoid peak migration periods and lies outside migration pathways or aggregation areas. Sensitive animals are likely to avoid operating seismic vessel.
Quarantine-Introduction of exotic marine species	Alteration to community composition and function – competition with indigenous species.	Low risk. All vessels will comply with Australian quarantine laws. Ballast exchanges conducted outside the Australian 12 nautical mile limit.
Diesel fuel loss through rupture of vessel fuel tanks or during fuel transfer	Potential acute/chronic toxic effects on marine organisms from hydrocarbon loss.	Low risk. Sophisticated navigation equipment and support vessel to reduce chances of collision. Strict adherence to vessel refuelling guidelines and procedures. Approved SOPEP.

Management Approach

The WesternGeco marine seismic survey will be conducted in accordance with all legislative and regulatory requirements, to the satisfaction of the DoIR. WesternGeco's overall environmental objective for the program is to avoid or minimise environmental risks to as low as reasonably practicable (ALARP). The environmental management approaches relevant to key aspects of the seismic acquisition program are summarised in

Table 2.

Consultations

Consultations regarding exploration activity in and around Exploration Permit areas WA-346-P, WA-268-P, WA-390-P, WA-018-R and WA-026-R have been undertaken with relevant stakeholders, including:

- A. Raptis and Sons (commercial fishers)
- Australian Maritime Safety Authority (AMSA), Canberra
- Australian Fisheries Management Authority (AFMA)
- Commonwealth Fisheries Association
- Northern Fishing Companies Association
- Recfishwest (recreational fishing association)
- Western Australia Department of Fisheries
- Western Australia Fishing Industry Council
- Western Australian Northern Trawl Owners Association.

These consultations have indicated that conflicts with other users of the area are unlikely as commercial and recreational fishing activity in the area is absent or at low levels. No commercial tourism activity occurs in the vicinity of the survey area.

AMSA advised that a shipping route crosses the survey area. Whilst vessel traffic along this route is moderate and averages three vessel movements per day, this level of shipping is routinely encountered by seismic survey operations. Management will include using accredited seamen on a vessel with sophisticated navigation equipment, and by posting a Notice to Mariners in accordance with standard maritime procedures.

Further Details

For further information about the WesternGeco 3D marine seismic survey please, contact:

Ryan Taylor-Walshe
Director
WesternGeco Australia Pty Ltd
Level 5, 256 St Georges Terrace,
Perth
WA, 6000.

Tel: (08) 9420 4801
walshe1@perth.westerngeco.slb.com