

**EXECUTIVE SUMMARY
CATALINA 3D SEISMIC SURVEY
WA-368-P**

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WA-368-P 'Catalina' 3D Seismic Environment Plan: Executive Summary

Description of the Action

Nexus Energy Limited (Nexus) plans to acquire three dimensional (3D) seismic data in petroleum permit area WA-368-P during mid July to mid September 2006 to identify and evaluate sub-surface geological structures that may contain oil and gas. The survey operations will involve a specialised vessel operating 24 hours per day, towing conventional seismic data acquisition equipment along a predetermined grid. The permit area is located in Commonwealth waters approximately 16.5km from the mainland west of Perth, Western Australian bounded by the following approximate coordinates (Table 1) and illustrated in Figure 1.

Table 1: Coordinates of Approximate Seismic Survey Area

Latitude	Longitude
31°40'44.3''	115°22'31.2''
31°53'10.6''	115°22'18.2''
31°53'16.2''	115°29'54.8''
31°40'49.5''	115°30'06.8''

Summary of Nexus Occupational Health, Safety and Environment Policy

All Nexus operations are conducted within a comprehensive corporate management framework supporting the Occupational Health, Safety and Environment (OHSE) Policy. The key features of this policy include; consideration of the environment when reviewing exploration and production operations, ensuring compliance with legislative requirements and industry standards, implementation of a comprehensive safety and environment management system and continual improvement to environmental performance by setting objectives and targets, and commitment by management to provide resources to enable the company to meet its health, safety and environmental commitment.

Description of the Receiving Environment

Water depth in the permit area ranges from less than 20 m near the eastern boundary to approximately 200 m near the western boundary, with depths in the survey area of between approximately 35 m to 40 m. The survey area is offshore of metropolitan Perth, the capital of Western Australia. The waters support significant vessel traffic, including commercial shipping movements associated with the Port of Fremantle, commercial ferry services associated with Rottnest Island, commercial fishing, as well as marine charter and recreational pursuits (e.g. fishing, boating, diving and whale watching).

Seabed types in the permit area include low profile limestone pavement, low profile reefs with the most extensive seabed types expected to be sand and silt substrates. Benthic assemblages are expected to be comprised of macroalgae, coralline algae, sponges, ascidians and other filter feeding invertebrates, burrowing organisms and bare substrates. The distribution and composition of the benthic communities will be influenced by a variety of factors including depth (and light attenuation), substrate type and wave / swell energy.

A number of crustaceans and molluscs are known to occur in the region, however the diversity of these phyla within the survey area are expected to be much lower than in shallower and intertidal areas. Culturally and economically important crustacean known to occur in the proposed survey area include the western rock lobster *Panulirus cygnus*, blue manna crab *Portunus pelagicus* and several species of panaeid prawns.

Both resident and transient macrofauna, including fish, sharks, sea turtles and cetaceans, will occur in the proposed survey area. Up to 20 species listed as threatened and 20 species listed as migratory under the EPBC Act 1999 may potentially be present or transit the proposed survey

area at certain periods. However, the majority of these are known only from sporadic occurrences or for limited periods during seasonal migrations. Planning for the survey, particularly in relation to survey timing, has avoided or reduced the likelihood of operations coinciding with the key periods for important biological and social activity in the waters surrounding the survey area (Table 2).

The environment of the proposed survey area is typical of wide expanses of the continental shelf and does not represent a critical habitat to any threatened or migratory fish, sharks, sea turtles, cetaceans or seabirds of the region.

Table 2
Key Periods for Important Biological and Social Activity in Waters
Surrounding the Survey Area

Event	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Proposed seismic survey												
Blue Whale aggregations in Perth Canyon												
Humpback Whales Nth migration ¹												
Humpback Whales Sth migration ¹												
Rock Lobster Fishing												
Commercial Whale Watching												

¹Peak migration period in the Geographe Bay to Shark Bay region (DEH, 2005b)

Details of Major Hazards and Controls and Summary of Management Approach

The overall approach to the management of environmental aspects involved careful planning in order to avoid the key periods for important biological and social activity occurring in the waters surrounding the survey area (Table 2). Nexus has chosen to undertake the seismic survey at the time of the year when other users of the area are limited and environmental sensitivities are at their lowest.

Risk analysis has been undertaken for all aspects of the proposed seismic acquisition program, in accordance with the procedures outlined in the Australian and New Zealand Standard AS/NZS 4360:1999 (Risk Management). The analysis indicates that, with the management measures that will be implemented, the risk of significant environmental impact is low. Further detail of key environmental aspects of the survey are provided in Table 3. This table also summarises the management approaches and applicable standards for each aspect of operation.

Consultation Process

Consultations have been initiated with government, commercial, conservation and recreational stakeholders regarding the proposed seismic survey. In the period leading up to, and during, the survey Nexus will continue to consult with all identified stakeholders and interested parties. Stakeholder consultations will include the following groups:

Federal government agencies:

- Commonwealth Department of Environment and Heritage (DEH)
- Australian Maritime Safety Authority (AMSA), Canberra
- Australian Fisheries Management Authority (AFMA)
- Department of Defence – HMAS Stirling

State government agencies:

- WA Department of Fisheries (DoF)
- WA Department of Conservation and Land Management (CALM)
- WA Department of Environment (DoE)
- Department of Industry and Resources (DoIR)
- Rottnest Island Authority
- Fremantle Port Authority
- WA Department of Planning and Infrastructure (DPI)
- Australian Maritime Safety Authority (AMSA), Perth

Commercial and recreational fishing bodies, clubs, tourism operators, and other public organisations:

- Western Australian Fishing Industry Council (WAFIC)
 - Demersal gillnet and longline operators
 - Wetline Fishers
 - South West Trawl Fishers
- Western Australian Game Fishing Association (WAGFA)
- Australian National Sportfishing Association (ANSA)
- Recfishwest
- Charter Boat Operators Association
- Yachting WA
- Fremantle Sailing Club
- Licensed Whale Watching Tour Operators
- Rottnest Island Ferry Services
- Dive Clubs
 - Underwater Explorers Club of WA
 - Perth Diving Academy
 - Australian Underwater Federation

Conservation and Research Organisations:

- Centre for Marine Science and Technology – Curtin University
- Centre for Whale Research
- Western Whale Research
- Marine and Coastal Community Network
- Whale and Dolphin Conservation Society of Australasia
- Australian Marine Conservation Society
- WA Conservation Council

All interested relevant parties will be kept up to date during the survey through a range of communications. Nexus will provide periodic updates of the progress of its consultations to the DoIR.

Contact Details

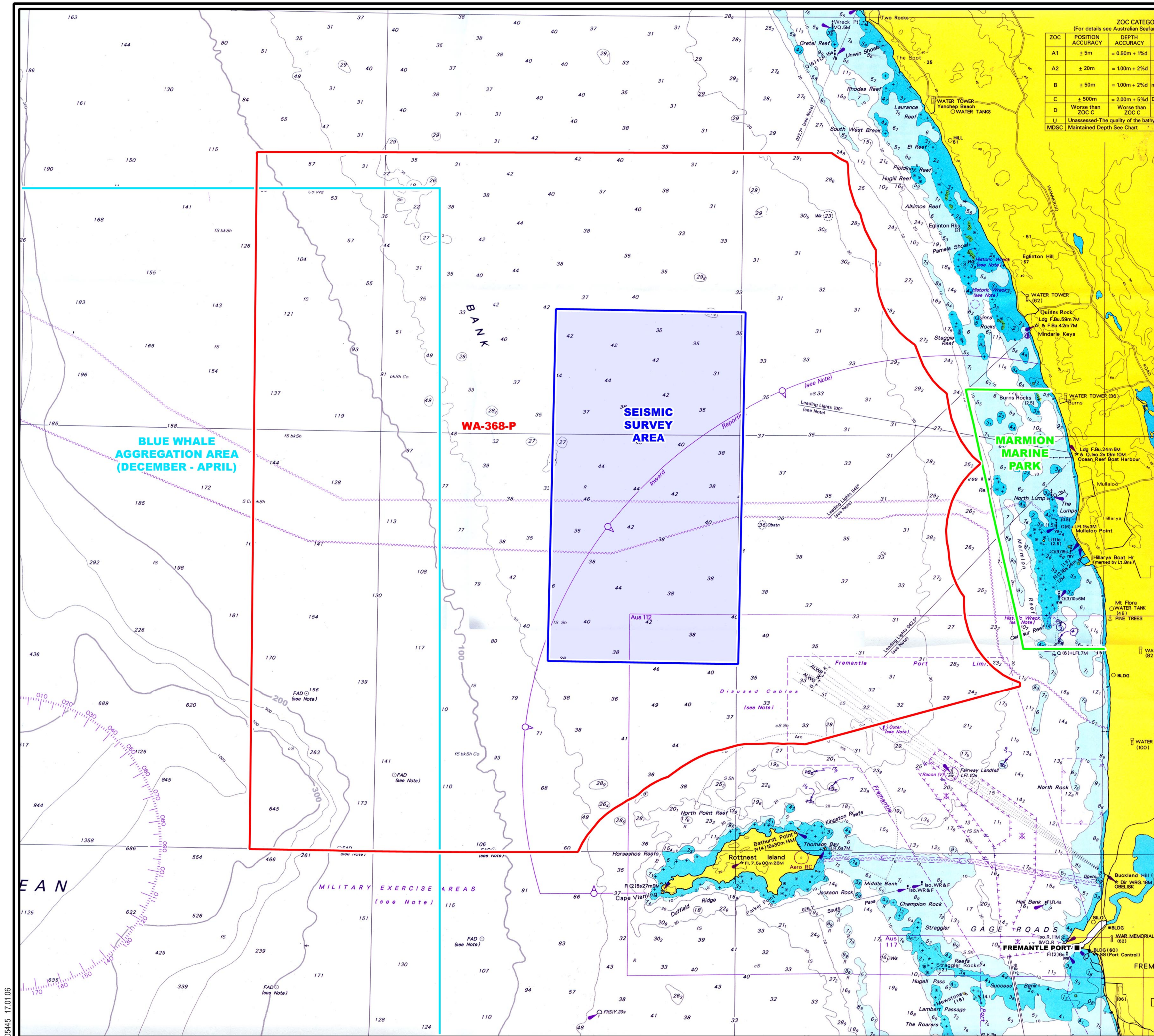
Further information may be obtained from Nexus by writing to:

Michelle Zaunbrecher - HSEC Advisor
Nexus Energy
17 Bennetts Lane
Melbourne VIC 3000

Table 3
Summary of Environmental Aspects, Potential Effects and Management

Environmental Aspect/ Incident and Potential Environmental Effect	Environmental Objective	Management Approach	Management Standards	Risk
Acoustic pulse from air-guns. Potential physiological effects to fauna. Potential disruption of behaviour patterns of sensitive marine fauna.	Minimise risk of adverse effect to physiology or behaviour of marine fauna.	Scheduling to avoid peak whale migration and aggregation periods. Implementation of DEH guidelines for minimising possible disturbance to cetaceans by maintaining at least 3km between whales and active array. Soft start procedures to deter marine fauna from the survey area.	DEH Guidelines (2001).	Low risk.
Grey water discharge. Potential localised reduction in water quality - nutrient enrichment.	Maintain marine water quality.	No discharge <12nm from landfall	P(SL)A Schedule Clause 222. MARPOL 73/78.	Low risk.
Discharge of oily water from bilges. Potential localised and temporary acute toxic effects.	Maintain marine water quality.	In the event discharge required, all bilge water passed through an oil/water separator to reduce hydrocarbons <15ppm prior to discharge >12nm from landfall. Discharge quality automatically monitored with alarm.	MARPOL 73/78 standard for oily water discharge.	Low risk.
Putrescible galley wastes discharge. Potential localised reduction in water quality - nutrient enrichment.	Maintain marine water quality.	Discharge within 12nm of landfall not permitted under P(SL)A Schedule Clause 222.	P(SL)A Schedule Clause 222. MARPOL 73/78.	Low risk.
Solid wastes discharge. Potential environmental degradation from incorrect disposal.	Minimise environmental effects from waste disposal.	Correct onshore disposal of solid wastes in accordance with EP.	MARPOL 73/78.	Low risk.
Waste oil disposal. Potential localised chronic/acute toxic effects.	Minimise risk of adverse effect to environment from hydrocarbon loss.	All waste oils collected and returned to shore for recycling/disposal.	MARPOL 73/78.	Low risk.
Atmospheric emissions. Potential reduction in local air quality.	Maintain air quality.	Engines maintained to operate at optimum efficiency to minimise emissions.	Manufacturers specifications.	Low risk.

Environmental Aspect/ Incident and Potential Environmental Effect	Environmental Objective	Management Approach	Management Standards	Risk
Artificial lighting. Potential attractant/ disturbance to marine life.	Minimise risk of adverse effect to marine fauna.	Lighting minimum required for navigation and safety requirements.	APPEA, 1996.	Low risk.
Anchoring activity. Potential localised disturbance to benthos.	Maintain abundance and diversity of benthic flora and fauna.	No anchoring.	The EP	Low risk.
Loss of streamer buoyancy fluid. Potential acute toxic effect on marine organisms.	Maintain abundance and diversity of benthic flora and fauna.	Strict adherence to streamer handling procedures. OSCP in place. Absorbent materials kept on board vessel for immediate spill response.	Streamer handling procedures.	Low risk.
Rupture of fuel tanks in collision. Potential acute toxic effect on marine organisms.	Minimise risk for impact to environment from vessel collision.	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. Forward scout vessel to advise position of seismic vessel and clear path of other users. Scout boat to communicate with other vessels.	Seagoing movements of vessel will comply with maritime standards.	Low risk.
Displacement of other users of marine environment. Potential disruption to commercial recreational fishing/shipping in the area.	Minimise disturbance to other users.	Selection of time of survey to avoid/minimise overlap with other users of area. Liaise with fishermen and other commercial mariners to minimise conflict. Constant radio contact with other vessels and Fremantle Port. Scout boat to communicate seismic vessel's movements. Scout boat contact details to be widely communicated for other users to contact regarding seismic vessel location.	APPEA, 1996. AMSA	Low Risk.



ZOC CATEGORIE		
(For details see Australian Seafarers)		
ZOC	POSITION ACCURACY	DEPTH ACCURACY
A1	± 5m	= 0.50m + 1% d
A2	± 20m	= 1.00m + 2% d
B	± 50m	= 1.00m + 2% d
C	± 500m	= 2.00m + 5% d
D	Worse than ZOC C	Worse than ZOC C
U	Unassessed	The quality of the bathymetry
MDSG Maintained Depth See Chart		



LEGEND

- WA-368-P Permit Area
- Seismic Survey Area
- Marmion Marine Park Boundary
- Blue Whale Aggregation Area (Dec- April)

0 4 12 20km
Scale Bar (approx.)

Sources: Department of Conservation and Land Management and the Australian Hydrographic Service.
Environment Australia (2001) Guidelines on the application of the Environment Protection and Biodiversity Conservation Act to interactions between offshore seismic operations and larger cetaceans.

Note: Permit Area, Seismic Survey Area, Marmion Marine Park boundary and Blue Whale Aggregations Area is approximate only.

Figure 1
Location

MO5445 17.01.06