

**EXOIL LIMITED  
2D MARINE SEISMIC  
SURVEY: EPP34**

ENVIRONMENT PLAN SUMMARY

April 2008

## 1 INTRODUCTION

Exoil Limited proposes to undertake a two dimensional (2D) marine seismic survey in Commonwealth waters offshore from the south east coastline of South Australia. The proposed survey is centred approximately 35 km from the South Australian coastline and at its closest point approaches to within approximately 5.5 km of the coastline. The survey will be conducted over approximately 15 days within the period mid to late April to early May 2008. The actual commencement date and duration of survey is dependant on vessel availability and weather conditions.

## 2 DESCRIPTION OF SURVEY ACTIVITIES

The marine seismic survey will be conducted from a specialised vessel, the *Pacific Titan*. The signal source will be from a single airgun array towed behind the vessel at a depth of approximately seven to eight metres and fired at intervals of 25 m (approximately 10 seconds). Details of the seismic array for the survey are provided in Table 1.

**Table 1: Seismic Array Details**

	Value
No of streamers	1
Streamer length	6000 m
Number of Airgun Arrays	1
Airgun array total volume	3000 cui
Operating pressure	2000 psi
Streamer depth	8 m
Airgun depth	5 m
Shotpoint interval	25 m
Peak source sound pulse	220-240 dB re 1 $\mu$ Pa-m
Frequency range	10 to 110 Hz

## 3 LOCATION

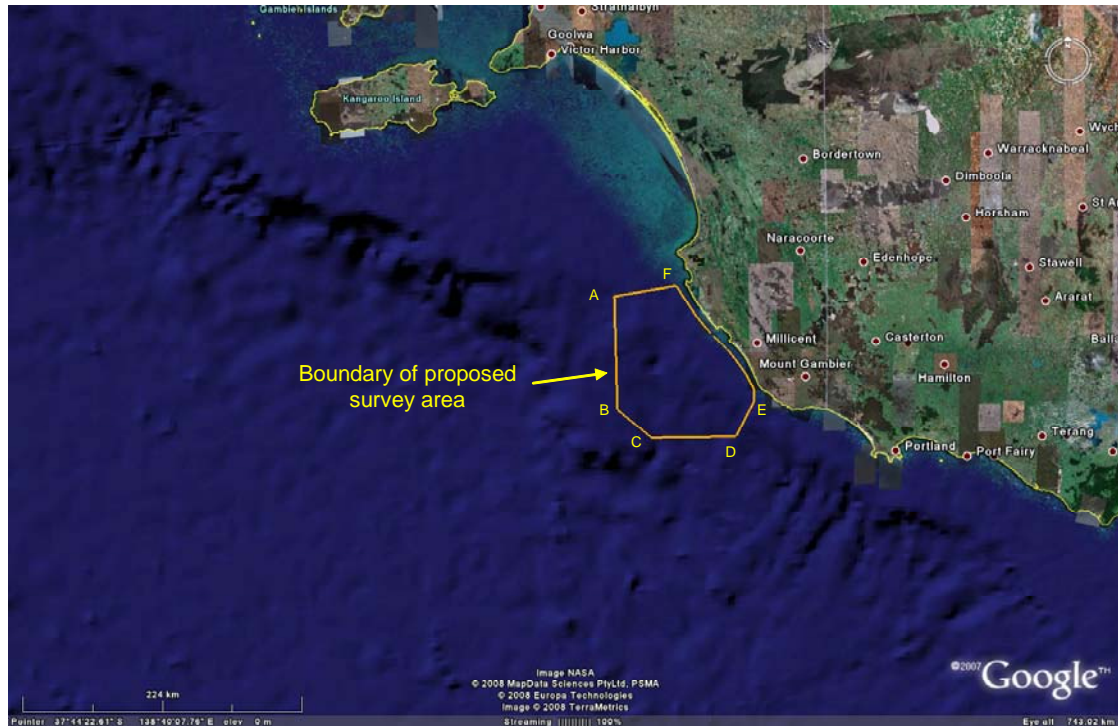
The proposed survey will occur in an area that, at its closest point, is approximately 5.5 km from the coastline (refer to Figure 1). The water depth across the survey area varies from 30 m to approximately 150 m. The bounding coordinates of the survey area are given in Table 2. The vessel will traverse a series of pre-determined survey lines within the nominated area at a speed of approximately 9 km/hr.

**Table 2: Bounding Coordinates of Exoil 2D MSS**

location point				Latitude		
	degrees	minutes	seconds	degrees	minutes	seconds
A	37°	15'	31.40"	139°	07' 0	8.90"
B	38°	02'	58.40"	139°	06'	56.70"
C	38°	14'	59.90"	139°	24'	59.60"
D	38°	14'	59.70"	140°	09'	59.40"
E	37°	59'	40.10"	140°	19'	41.40"
Then north along line of Commonwealth waters/State waters jurisdictional boundary to						
F	37°	11'	31.40"	139°	41'	54.90"

AGD 84

**Figure 1: Location Diagram**



## 4 SURROUNDING ENVIRONMENT

### 4.1 BATHYMETRY AND METOCEAN

The dominant feature of the bathymetry and seabed in the area is the narrow width of the Australian Continental Shelf. The shelf break commences approximately 50 km offshore. The water depths over the area of proposed seismic acquisition range from approximately 50 m in the east of the permit to approximately 1000 m in the south west corner, generally trending deeper towards the west.

Coastal waters in the Otway region are transitional warm to cold temperate, with mean sea surface temperatures varying from 14°C in winter to 19°C in summer decreasing to 11 to 12°C under the influence of the localised, nutrient rich, coastal upwellings that are known to occur in mid to late summer.

### 4.2 FAUNA

There are no listed threatened communities or recorded sensitive environments within the survey areas.

The EPBC Act lists a range of threatened species and communities. Review of online databases held by Department of the Environment, Water, Heritage and the Arts (DEWHA) indicates that there is a total of 80 Marine Listed Species, under the EPBC Act as Endangered, Vulnerable, Migratory or Cetacean, including birds, that may occur, or the species habitat may occur, within or near to the entire survey area (refer to Table 3).

**Table 3 EPBC Act Protected Species Potentially Occurring in the Survey Area**

				Listed Marine species
<b>Whales</b>				
<i>Balaenoptera bonaerensis</i>	Antarctic Minke Whale		✓	Cetacean
<i>Balaenoptera acutorostrata</i>	Minke Whale			Cetacean
<i>Balaenoptera borealis</i>	Sei Whale	Vulnerable	✓	Cetacean
<i>Balaenoptera edeni</i>	Bryde's Whale		✓	Cetacean
<i>Balaenoptera musculus</i>	Blue Whale	Endangered	✓	Cetacean
<i>Balaenoptera musculus bevicauda</i>	Pygmy Blue Whale	Endangered	✓	Cetacean
<i>Balaenoptera physalus</i>	Fin Whale	Vulnerable	✓	Cetacean
<i>Berardius arnuxii</i>	Arnoux's Beaked Whale			Cetacean
<i>Eubalaena australis</i>	Southern Right Whale	Endangered	✓	Cetacean
<i>Feresa attenuata</i>	Pygmy Killer Whale		✓	Cetacean
<i>Globicephala macrorhynchus</i>	Short-finned Pilot Whale			Cetacean
<i>Kogia breviceps</i>	Pygmy Sperm Whale			Cetacean
<i>Kogia simus</i>	Dwarf Sperm Whale			Cetacean
<i>Megaptera novaeangliae</i>	Humpback Whale	Vulnerable	✓	Cetacean
<i>Mesoplodon densirostris</i>	Blainville's Beaked Whale			Cetacean
<i>Orcinus orca</i>	Killer Whale		✓	Cetacean
<i>Physeter macrocephalus</i>	Sperm Whale		✓	Cetacean
<i>Pseudorca crassidens</i>	False Killer Whale			Cetacean
<i>Ziphius cavirostris</i>	Cuvier's Beaked Whale			Cetacean
<i>Globicephala melas</i>	Long-finned Pilot Whale			Cetacean
<i>Mesoplodon bowdoini</i>	Andrew's Beaked Whale			Cetacean
<i>Mesoplodon grayi</i>	Gray's Beaked Whale			Cetacean
<i>Mesoplodon hectori</i>	Hector's Beaked Whale			Cetacean
<i>Mesoplodon layardii</i>	Strap-toothed d Whale			Cetacean
<i>Mesoplodon mirus</i>	True's Beaked Whale			Cetacean
<b>Dolphin</b>				
<i>Delphinus delphis</i>	Common Dolphin			Cetacean
<i>Grampus griseus</i>	Risso's Dolphin			Cetacean
<i>Lagenorhynchus obscurus</i>	Dusky Dolphin		✓	Cetacean
<i>Tursiops truncatus s. str.</i>	Bottlenose Dolphin			Cetacean
<b>Other Marine Mammals</b>				
<i>Arctocephalus forsteri</i>	New Zealand Fur-seal			Listed
<i>Arctocephalus pusillus</i>	Australian Fur-seal			Listed
<b>Shark</b>				
<i>Carcharodon carcharias</i>	Great White Shark	Vulnerable	✓	
<b>Fish</b>				
<i>Syngnathid (26 species)</i>	Pipefish, Seahorse and Seadragon			Listed
<b>Birds</b>				
<i>Catharacta skua</i>	Great Skua			Listed
<i>Diomedea amsterdamensis</i>	Amsterdam Albatross	Endangered	✓	Listed
<i>Diomedea antipodensis</i>	Antipodean Albatross	Vulnerable	✓	Listed
<i>Diomedea dabbenena</i>	Tristan Albatross	Endangered	✓	Listed
<i>Diomedea epomophora</i>	Southern Royal Albatross	Vulnerable	✓	Listed
<i>Diomedea exulans</i>	Wandering Albatross	Vulnerable	✓	Listed
<i>Diomedea gibsoni</i>	Gibson's Albatross	Vulnerable	✓	Listed
<i>Diomedea sanfordi</i>	Northern Royal Albatross	Endangered	✓	Listed

				Listed Marine species
<i>Halobaena caerulea</i>	Blue Petrel	Vulnerable		Listed
<i>Macronectes giganteus</i>	Southern Giant-Petrel	Endangered	✓	Listed
<i>Macronectes halli</i>	Northern Giant-Petrel	Vulnerable	✓	Listed
<i>Neophema chrysogaster</i>	Orange-bellied Parrot	Critically Endangered	✓	Listed
<i>Prototroctes maraena</i>	Australian Grayling	Vulnerable		
<i>Pterodroma mollis</i>	Soft-plumaged Petrel	Vulnerable		Listed
<i>Thalassarche bulleri</i>	Buller's Albatross	Vulnerable	✓	Listed
<i>Thalassarche cauta</i>	Shy Albatross	Vulnerable	✓	Listed
<i>Thalassarche chlororhynchos</i>	Yellow-nosed Albatross			Listed
<i>Thalassarche chrysostoma</i>	Grey-headed Albatross	Vulnerable	✓	Listed
<i>Thalassarche impavida</i>	Campbell Albatross	Vulnerable	✓	Listed
<i>Thalassarche melanophris</i>	Black-browed Albatross	Vulnerable	✓	Listed
<i>Thalassarche salvini</i>	Salvin's Albatross	Vulnerable	✓	Listed

### 4.3 SOCIO-ECONOMIC ENVIRONMENT

There are no marine reserves, World Heritage properties, areas listed or nominated on the Register of the National Estate, or listed Ramsar wetlands within the survey area. The survey area does not impinge on any existing or proposed marine parks or nature reserves.

Commercial fisheries are an important component of the regional economy. The rock lobster fishery is the most valuable single species fishery in south-east Australia. The South Australian Rock Lobster Fishery has been separated into two discrete fishing zones for the purposes of management since 1968. This geographic separation recognises key differences in the physical and ecological characteristics that exist between the eastern and western borders of South Australia. The survey area lies within the Southern Zone which has an open season from 1<sup>st</sup> October to 31 May.

Other commercial fisheries operating in the area include:

- Abalone Fishery
- Gillnet, Hook and Trap Fishery
- Southern Tuna and Billfish Fishery
- Southern Squid Jig Fishery.

The permit area lays within one of the main shipping routes connecting eastern Australia and ports in the Gulf of St Vincent and Spencer Gulf. Approximately 500 to 1000 vessels pass by, or through, the outer parts of the permit area each year.

The region is known and promoted as the Shipwreck Coast because of the large number of shipwrecks in the region, a smaller number are believed to be in the survey area. There are five known shipwrecks believed to be in or near to the survey area three of these are protected under the [Historic Shipwrecks Act 1976](#) , the *Nora Creina*, the *Emu* and the *George Home* however their locations have not been confirmed.

## 5 RISK ASSESSMENT

The principal environmental risks and potential environmental effects of seismic activity have been determined on the basis of previous seismic experience, the generic environmental risks outlined in Swan *et al.* 1994 and review of specific literature related to acoustic disturbance. Ongoing identification of potential hazards will occur through Job Hazard Analysis and toolbox meetings.

The environmental risks associated with the proposed seismic operations have been assessed by a methodology that:

1. Identifies the activity and the environmental aspects associated with it
2. Defines the potential environmental effects of the activity
3. Identifies the likelihood of occurrence
4. Identifies the consequences of potential environmental

Table 4 summarises the key environmental aspects and the survey related activities that may lead to these aspects being adversely affected. It is important to note that in identifying the hazards, pathways and disturbances; consideration was given to exposure to normal and extreme conditions.

**Table 4 Survey activity and potential environmental aspects interactions**

	Aspect							
								Solid Waste Disposal
Routine Events								
Survey vessel movement	X	X						
Support vessel	X	X						
Seismic energy source		X						
Power generation		X					X	
Sewage and greywater				X				
Discharge of foodscraps				X				
Deck drainage					X			
Waste								X
Non-Routine or Accidental Events								
Anchoring (and retrieving anchors)	X		X					
Hydrocarbon spill			X	X	X	X		X
Chemical spill				X	X			X
Introduced species						X		
Loss of equipment			X					

The assessed risks have been ranked using a likelihood and consequence matrix that is consistent with that described within AS/NZS 4360. Table 5 shows the Exoil Limited risk matrix that associates the probability of an event occurring and the consequences to derive a characterisation of environmental risk.

**Table 5 HSE Risk Matrix**

CONSEQUENCE	LIKELIHOOD				
	Virtually Impossible ( $<10^{-6}$ /year)	Rare ( $10^{-6}$ - $10^{-4}$ /year)	Unlikely ( $10^{-4}$ - $10^{-2}$ /year)	Likely ( $10^{-2}$ - $10^{-1}$ /year)	Virtually Certain ( $>10^{-1}$ /year)
Negligible					NEGLIGIBLE
Minor		NEGLIGIBLE			MODERATE
Major					MODERATE
Severe			MODERATE		INTOLERABLE
Disastrous					INTOLERABLE

## 6 MANAGEMENT OF ENVIRONMENTAL RISK

To either eliminate potential environmental risks and effects for Exoil Limited's seismic survey programme, or to reduce them to as low as reasonably practicable (ALARP), a number of key control and mitigation measures must be implemented. The management actions and strategies for control of the significant environmental risks associated with the proposed survey are described in the following sections.

	Physical presence of survey vessel and equipment
Source	Survey vessel, support vessel, scout boat, streamers
Environmental Objectives	No significant impact to seabed habitat Minimise adverse effects to marine biota No significant impact on fishing or shipping activities in the region No collisions or near misses
Legislative Controls	<i>EPBC Act, 1999</i> <i>EPBC Act Regulations</i> <i>P(SL)A, 1967</i> <i>P(SL)(MoE) Regulations, 2000</i> <i>Australian Maritime Safety Authority Act, 1990</i> <i>Navigation Act, 1912</i>
Standards	<i>P(SL)A 1967, s.124</i> <i>P(SL)(MoE) Regulations 2000, r.13 and 14</i> APPEA Code of Environmental Practise EXOIL Environment Policy
Measurement Criteria	Avoidance Measures: Temporal avoidance of southern right whale migrations by timing of survey to occur outside of main migratory period is to be implemented Information on survey vessel location and activities are to be forwarded to AMSA for inclusion into Marine Notices Information on survey vessel location and activities to be provided to local fishermen association representatives at Carpenter Rocks, Southend, and Port MacDonnell. Radio advisory of daily survey vessel position will be provided to fishermen Programme of line sequence to be developed in consultation with local fishermen association representative(s)

<b>Physical presence of survey vessel and equipment</b>	
	<p>Much of the survey location is offshore in deep water, away from areas commonly used by fishing or recreational vessels</p> <p>Navigation lights and markers are to be in place</p> <p>Standard marine communications systems will be in place</p> <p>Seabed habitat type has been reviewed and no sensitive habit or rock outcrops will be affected</p> <p>Vessel-Whale interaction procedures are to be implemented to avoid interference with whales</p> <p>Mitigation Measures:</p> <p>Ongoing consultation with local users</p> <p>Scout vessel to scout in front of survey vessel to locate any potential fishing gear hazards.</p>
Predicted Outcome and Monitoring	<p>Environmental impact is expected to be possible and low, considering:</p> <p>Temporal avoidance of whale migrations</p> <p>Small area affected compared to area of habitat available</p> <p>Wide distribution of similar community types in the region</p> <p>Exclusion of relatively small area from shipping and commercial fisheries</p> <p>Monitoring</p> <p>Whale interactions to be recorded and reports forwarded to DEWHA using <a href="#">DEWHA spreadsheet</a></p> <p>Vessel interactions requiring avoidance manoeuvres to be recorded</p>

<b>The introduction of noise to the marine environment</b>	
Sources	Seismic source, survey vessel, support vessel
Environmental Objectives	<p>No significant adverse effect on marine biota</p> <p>No significant impact on coastal or island communities</p>
Legislative Controls	<p><i>EPBC Act, 1999</i></p> <p><i>P(SL)(MoE) Regulations, 2000</i></p>
Standards	<p><i>EPBC Act Regulations Pt 8</i></p> <p><i>P(SL)(MoE) Regulations 2000, r.13 and 14</i></p> <p>APPEA Code of Environmental Practise</p> <p>EXOIL Environment Policy</p> <p>EXOIL HSE Management System</p> <p><i>EPBC Act Regulations 2000 (Part 8)</i></p> <p>DEWHA 'manner prescribed' conditions</p> <p>EPBC Act Policy Statement 2.1</p> <p>Survey Vessel Contracting Company Environmental Management Procedures</p>
Measurement Criteria	<p>Avoidance Measures:</p> <p>Temporal avoidance of whale migrations by timing of survey to be implemented</p> <p>DEWHA Guidelines (EPBC Act Policy Statement 2.1) to be in place and adhered to during survey, including;</p> <p>'Soft start' procedures</p> <p>Power down procedure if whale within 3km</p> <p>Shutdown procedure if whale within 1km</p> <p>If the survey vessel is diverted from any line due to the presence of whales in the survey path then re-acquisition of that missed section of line can not be undertaken until a spotter vessel confirms, through inspection during daylight hours that no whales are present within 3 km of that missed section.</p> <p>At night-time or at other times of low-visibility, start up will only be commenced provided that there have not been two or more whale instigated power down or shutdown situations during the preceding 24 hour period</p> <p>Mitigation Measures:</p> <p>Three dedicated Marine Mammal Observers will be engaged, two onboard the survey vessel and one onboard the support vessel</p> <p>Responsibilities for monitoring, responding to and recording whale sightings clearly identified</p>



<b>The introduction of noise to the marine environment</b>	
	and conveyed to vessel personnel
Predicted Outcome and Monitoring	<p>Environmental impact is expected to be, almost certain and minor with low consequence and medium risk, considering:</p> <p>The short-term of survey at any location exposed to noise</p> <p>Avoidance and mitigation measures in place</p> <p>Monitoring</p> <p>Three dedicated Marine Mammal Observer to be present, two on survey vessel supported by trained crew members and one on the support vessel</p> <p>Whale sightings will be recorded and forwarded to DEWHA using <a href="#">DEWHA spreadsheet</a></p> <p>EXOIL Site Representative to monitor 'soft start' to verify that procedures are appropriate to meet EP requirements</p>

<b>Disturbance to the seabed</b>	
Source	Vessel anchoring;
Environmental Objectives	<p>No significant impact to seabed habitat</p> <p>No significant impact to seabed biological communities</p> <p>No adverse effects to marine biota</p>
Legislative Controls	<p><i>EPBC Act 1999</i></p> <p><i>P(SL)A, 1967</i></p> <p><i>P(SL)(MoE) Regulations, 2000</i></p>
Standards	<p><i>P(SL)A 1967, s.124</i></p> <p><i>P(SL)(MoE) Regulations 2000, r.13 and 14</i></p> <p>APPEA Code of Environmental Practise</p> <p>EXOIL Environment Policy</p> <p>EXOIL HSE Management System</p>
Measurement Criteria	<p>Avoidance Measures:</p> <p>No anchoring except in event of emergency</p> <p>Mitigation Measures:</p> <p>Relatively short duration of disturbance</p> <p>Treatment Measures:</p> <p>Any lost equipment will be recovered wherever practicable</p>
Predicted Outcome and Monitoring	<p>Environmental impact is expected to be possible and micro-effect consequence, considering:</p> <p>Small area affected compared to area of habitat available</p> <p>Wide distribution of similar community types in the region</p> <p>Monitoring</p> <p>Any lost equipment that is not able to be recovered will be recorded, including a description of the equipment and coordinates where lost.</p>

<b>Sewage and greywater discharged to ocean</b>	
Sources	Laundry; Showers; Hand basins; Toilets
Environmental Objectives	<p>No reduction in ambient water quality</p> <p>No adverse effects on marine biota</p> <p>No adverse aesthetic effects.</p>
Legislative Controls	<p><i>EPBC Act 1999</i></p> <p><i>P(SL)A, 1967</i></p> <p><i>P(SL)(MoE) Regulations, 2000</i></p> <p><i>Protection of the Sea (Prevention of Pollution From Ships) Act, 1993</i></p>

<b>Sewage and greywater discharged to ocean</b>	
Standards	<p><i>P(SL)A 1967</i>, Schedule c. 222 (4)  <i>P(SL)(MoE) Regulations 2000</i>, r.29 (1)  <i>Protection of the Sea (Prevention of Pollution From Ships) Act 1993</i>, Division 2            APPEA Code of Environmental Practise            ANZECC Guideline for Fresh and Marine Water Quality            EXOIL Environment Policy</p>
Measurement Criteria	<p>Avoidance Measures:            Sewage treatment plant on survey vessel is to with MARPOL requirements            Untreated sewage and putrescible wastes will not be discharged within 12 nautical miles of land</p> <p>Mitigation Measures:            Sewage and greywater will be disposed of in accordance with MARPOL 73/78 Annex IV and Clauses 222 and 616 of the Schedule of the P(SL)A</p>
Predicted Outcome and Monitoring	<p>Environmental risk of damage to sensitive resource from discharge of sewage and greywater is expected to be rare with micro-effect consequences, considering:</p> <ul style="list-style-type: none"> <li>Small volumes and nutrient loads</li> <li>Strong ambient currents</li> <li>Rapid dilution and dispersion</li> </ul> <p>Monitoring:            No monitoring proposed</p>

<b>General non-hazardous wastes produced during survey</b>	
Sources	Packing materials, empty containers, scrap materials
Environmental Objectives	<p>Minimise incremental increase to environmental impact associated with onshore disposal as far as possible</p> <p>Maximise efficient resource utilisation</p>
Legislative Controls	<p><i>EPBC Act 1999</i>  <i>P(SL)(MoE) Regulations 2000</i>  <i>Environmental Protection Act 1986 (WA)</i>  <i>Protection of the Sea (Prevention of Pollution From Ships) Act 1983</i></p>
Standards	<p>APPEA Code of Environmental Practise            Protection of the Sea (Prevention of Pollution From Ships) Act 1983' (Cth); 'MARPOL 73/78 Annex IV            Survey Vessel Contracting Company Environmental Management Procedures            Survey Vessel Garbage Management Plan            EXOIL Environment Policy</p>
Measurement Criteria	<p>Avoidance Measures:            No solid wastes to be discharged overboard            Limit waste creation at site by application of the waste management heirarchy            Survey and support vessels to have waste management plan in place that has been reviewed by EXOIL HSE Advisor and found to, at least, meet all of MARPOL requirements for waste management (including recording of amounts)            Waste containers are to have covers to prevent material being blown overboard or placed in areas where material cannot be blown overboard</p> <p>Mitigation Measures:            Segregation of all waste at site, onshore disposal, recycling where practicable (note 'practicable' in this context includes a consideration of the net benefit of recycling compared to disposal for the particular waste stream in question)            Waste disposed of to licensed receival facilities</p>
Predicted Outcome and Monitoring	<p>Environmental impact is expected to be short-term and low, considering:</p> <ul style="list-style-type: none"> <li>Segregation of wastes</li> <li>Only disposal to appropriate waste management facilities</li> </ul>

<b>General non-hazardous wastes produced during survey</b>	
	Relatively small volumes Monitoring Vessel garbage log maintained as required by MARPOL

<b>Management of hazardous wastes produced during survey</b>	
Sources	Waste hazardous materials, empty containers
Environmental Objectives	Minimise incremental increase to environmental impact associated with onshore disposal as far as possible Maximise efficient resource utilisation
Legislative Controls	<i>EPBC Act 1999</i> <i>P(SL)(MoE) Regulations 2000</i> <i>Environmental Protection Act 1986 (WA)</i> <i>Protection of the Sea (Prevention of Pollution From Ships) Act 1983</i>
Standards	APPEA Code of Environmental Practise Protection of the Sea (Prevention of Pollution From Ships) Act 1983' (Cth); 'MARPOL 73/78 Annex IV Survey Vessel Contracting Company Environmental Management Procedures Survey Vessel Garbage Management Plan EXOIL Environment Policy
Measurement Criteria	Avoidance Measures: No hazardous wastes to be discharged overboard Limit waste creation at site by application of the waste management heirarchy Survey and support vessels to have waste management plan in place that has been reviewed by EXOIL HSE Advisor and found to, at least, meet all of MARPOL requirements for waste management (including recording of amounts) Hazardous waste to be segregated and stored in dedicated, appropriately labelled, waste containers Waste containers are to have covers to prevent material being blown overboard or placed in areas where material cannot be blown overboard Mitigation Measures: Segregation of all waste at site, onshore disposal, recycling where practicable (note 'practicable' in this context includes a consideration of the net benefit of recycling compared to disposal for the particular waste stream in question) Waste disposed of to licensed receival facilities
Predicted Outcome and Monitoring	Environmental impact is expected to be short-term and low, considering: Segregation of wastes Only disposal to appropriate waste management facilities Relatively small volumes Monitoring Vessel garbage log maintained as required by MARPOL

<b>Management of marine pest species</b>	
Sources	Ballast water, marine fouling
Environmental Objectives	No introduction of marine pest species
Legislative Controls	<i>EPBC Act 1999</i> <i>P(SL)(MoE) Regulations 2000</i> <i>Quarantine Act 1908</i> <i>Navigation Act 1912</i>

<b>Management of marine pest species</b>	
Standards	APPEA Code of Environmental Practise Australian Ballast Water Management Requirements EXOIL Environment Policy
Measurement Criteria	Avoidance Measures: No ballast water maybe discharged from internationally trading vessels in Australian water without express <u>written</u> permission from AQIS
Predicted Outcome and Monitoring	Environmental risk is expected to be low, considering: The 'rare' probability of introduction and establishment with controls in place through AQIS Monitoring If vessel is mobilising from international port copy of Ballast Water Log to be forwarded to AQIS If vessel is mobilising from international port copy of QPAR and any subsequent approvals (or otherwise) from AQIS for discharge of ballast water is to be maintained.

<b>Management of potential fuel and oil spill</b>	
Sources	Damage to or loss of streamer resulting in loss of fluid, Leak from survey vessels fuel tanks
Environmental Objectives	Minimise occurrence of fuel and oil spills
Legislative Controls	<i>EPBC Act 1999</i> <i>P(SL)(MoE) Regulations 2000</i> <i>Environmental Protection Act 1986 (WA)</i> <i>Protection of the Sea (Prevention of Pollution From Ships) Act 1983</i>
Standards	APPEA Code of Environmental Practise Protection of the Sea (Prevention of Pollution From Ships) Act 1983' (Cth); 'MARPOL 73/78 Annex IV <i>AMSA Marine Notice 36/2002</i> P(SL)A Schedule 1995, Clause 220 P(SL)A Schedule 1995, Clause 285 Survey Vessel SOPEP ( <i>Shipboard Oil Pollution Emergency Plan</i> ) EXOIL Environment Policy Survey Vessel contractor company environmental management procedures
Measurement Criteria	Avoidance Measures: Selection of Contractor includes as priority consideration of ability of vessel to conduct activities in safe manner Implementation of good navigation practises at all times Communications will be constantly maintained with other vessels operating in the area to advise of the location of the survey vessel and avoid collision. The vessel will cease operating and seek safe harbour (or deep water) where extreme conditions make it unsafe, in the view of the Vessel Master, to continue survey operations. Exoil will employ a scout vessel as a precaution to assist the survey vessel No refuelling at sea except in emergency situation as determined by the Vessel Master Designated containment areas onboard the vessel for storage of oils, greases and streamer fluid Streamers are segmented to limit potential spill volume Stocks of absorbent materials onboard the survey vessel must be checked for their adequacy and replenished as necessary prior to the commencement of activities Mitigation Measures: SOPEP Procedures comply with MARPOL 73/78 requirements Fuel spill contingency procedures are in place and operational All personnel will be made aware of the existence location of the above-listed documents Personnel responsibilities are clearly identified and senior personnel on vessels are familiar with the contents of the Emergency Response Manual and SOPEP such that the initial response to an oil spill is carried out efficiently

<b>Management of potential fuel and oil spill</b>	
	<p>Sufficient spill response equipment on board to respond to foreseeable spill events and this will be functional and accessible</p> <p>Any recovered wastes will be disposed of to licensed reception facilities</p> <p>Dispersants must not be used without approval of the Statutory Authority.</p> <p>Any spill clean-up will be undertaken in consultation with the relevant regulatory authorities.</p>
Predicted Outcome and Monitoring	<p>Environmental risk is expected to be low, for spills &lt;80L and medium for spills &gt;80L</p> <p>Monitoring</p> <p>MARPOL <i>Oil Record Book</i> kept up to date</p> <p>SOPEP exercises carried out to be recorded</p> <p>Any spills to be reported as described in Section 6.3</p>

## **7 FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT**

Exoil Limited is committed to safeguarding the environment and minimising health and safety risks to our employees, contractors and the communities in which we work. Exoil Limited has a written corporate Health Safety and Environmental Policy (that provides a public statement of the corporate commitment to protecting the environment during operations).

All activities conducted during Exoil Limited's seismic survey programme will comply with legislative requirements established under Commonwealth and state government regulatory frameworks.

### **7.1 AUDIT REVIEW AND IMPROVEMENT**

Activities are monitored locally against HSE objectives, standards and measurement criteria defined within this EP. Two types of audit and review are conducted.

*1. Compliance Audits* An audit of the seismic survey vessel will be carried out by relevant Exoil Limited team members or independent assessors prior to the start of operations to ensure that procedures and equipment are in place to enable compliance with the accepted EP.

*2. Site Inspections.* The Exoil Limited Site Representative is responsible for conducting periodic. The frequency of inspection is to be once prior to commencement, once within 48 hours of commencement and thereafter as required based on professional judgement of the Site Representative

All environmental incidents, including near misses and community complaints, are to be reported, investigated, analysed and documented.

Information gathered from incident investigations is to be analysed to identify and monitor trends and develop prevention programmes. Corrective or preventative action taken to eliminate the causes of potential incidents will be commensurate with the environmental or business risk. Any regulatory violations are to be reported to the Exoil Limited HSE Advisor who, in addition to reporting to appropriate regulatory authorities, will report through to the company's board of directors

A review will be conducted of the environmental management at completion of Exoil Limited's seismic survey programme to assess its suitability, adequacy and effectiveness. This will include:

1. Results of audits and inspections
2. Any incident reports and any associated corrective action requirements
3. Extent to which environmental objectives and targets were met
4. Any recommendations for improvement.

## **8 CONSULTATION**

Exoil Limited has consulted with with interested stakeholders, including professional fishermen or associates who are active in the survey region in developing an effective programme for further consultation during the survey.

The seismic survey was referred to the DEWHA on 4<sup>th</sup> March as part of the assessment process a description of the proposed activity and proposed management measures was made publicly available for a two week period on the DEWHA notifications web site.

Other shipping users in the area will be advised on f the survey presence byway of normal navigation practises which includes notification to AMSA of the survey activities and subsequent AMSA maritime notices to mariners (a process managed by AMSA).

## **9 CONTACT DETAILS OF NOMINATED LIAISON**

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