

Duvalia Non Exclusive 2D Seismic Survey Environment Plan – Public Summary

This document is a summary of the Environment Plan (EP) in support of the Duvalia Non Exclusive 2D Seismic Survey submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), as required by sub-regulations 11(7) and 11(8) of the *Offshore Petroleum and Greenhouse Gas Storage Regulations (Environment) 2009*.

Introduction

Searcher Seismic Pty Ltd (Searcher Seismic) proposes to conduct a two dimensional (2D) marine seismic acquisition survey known as the Duvalia Non-Exclusive 2D Seismic Survey located within Commonwealth and International waters, approximately 400 km north-west of Exmouth Western Australia (WA).

Coordinates of the Activity

The survey area is located west of the Pilbara-Kimberley coastline in water depths ranging from 1500 to 3000 metres (m) chart datum (CD) and will cover an area of approximately 3,712,930 hectares. An approximate footprint for the survey area is provided in Table 1 and specific permits are shown in Figure 1.

Table 1 Duvalia 2D Seismic Survey approximate bounding coordinates

location point	Latitude			Longitude		
	degrees	minutes	seconds	degrees	minutes	seconds
1	20°	0	49	110°	30	45
2	18°	49	26	110°	30	45
3	18°	49	26	113°	9	31
4	20°	0	49	113°	9	31

Description of the Activity

The survey is scheduled to commence between May and August 2012 - with the exact date yet to be determined - and will take approximately 35 days to complete using a specialised seismic survey vessel towing an acoustic source array and hydrophone cables. The purpose of the survey is to collect 2D seismic data which will assist in defining subsurface geological structures and identify areas that have hydrocarbon exploration potential.

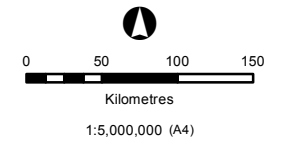
The single source deployed on the Duvalia 2D Seismic Survey will be an airgun array of 4,230 cubic inch volume using compressed air at a pressure of 2,000 pounds per square inch (psi). There will be a single hybrid streamer 8,000 m long to be deployed. The hybrid streamer consisting of 4,000 m of solid streamer sections closest the vessel and 4,000 m of fluid filled streamer sections nearest the tailbouy. The single hybrid streamer is comprised of hydrophones to record sound energy created from the source array. The fluid-filled sections have an outside diameter of 50 mm, one of the smallest diameter streamers available in the seismic industry. This design provides an approximate 40 percent reduction in streamer volume compared to other fluid-filled streamers which in the unlikely event of streamer damage or loss, minimises the impact to the receiving environment.

The Digicourse 5011 depth controller system controls the depth of the streamer while providing the 2D Integration Navigation system with acoustic and compass data. Emergency surface or emergency dive facilities are provided in the Digicourse 5011 depth controller system.

The data will be transmitted down the streamer and recorded onboard ship on magnetic tape. The array will be towed at a depth of 6 m below surface and fired at 25 m pop intervals about every eight seconds whilst recording a seismic line or traverse. Seismic data will be acquired for approximately 75 percent of the time the vessel is at sea, the remaining time being for weather standby.

Duvalia Project Locality

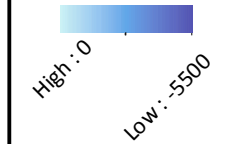
Figure 1



Coordinate System: GCS GDA 1994

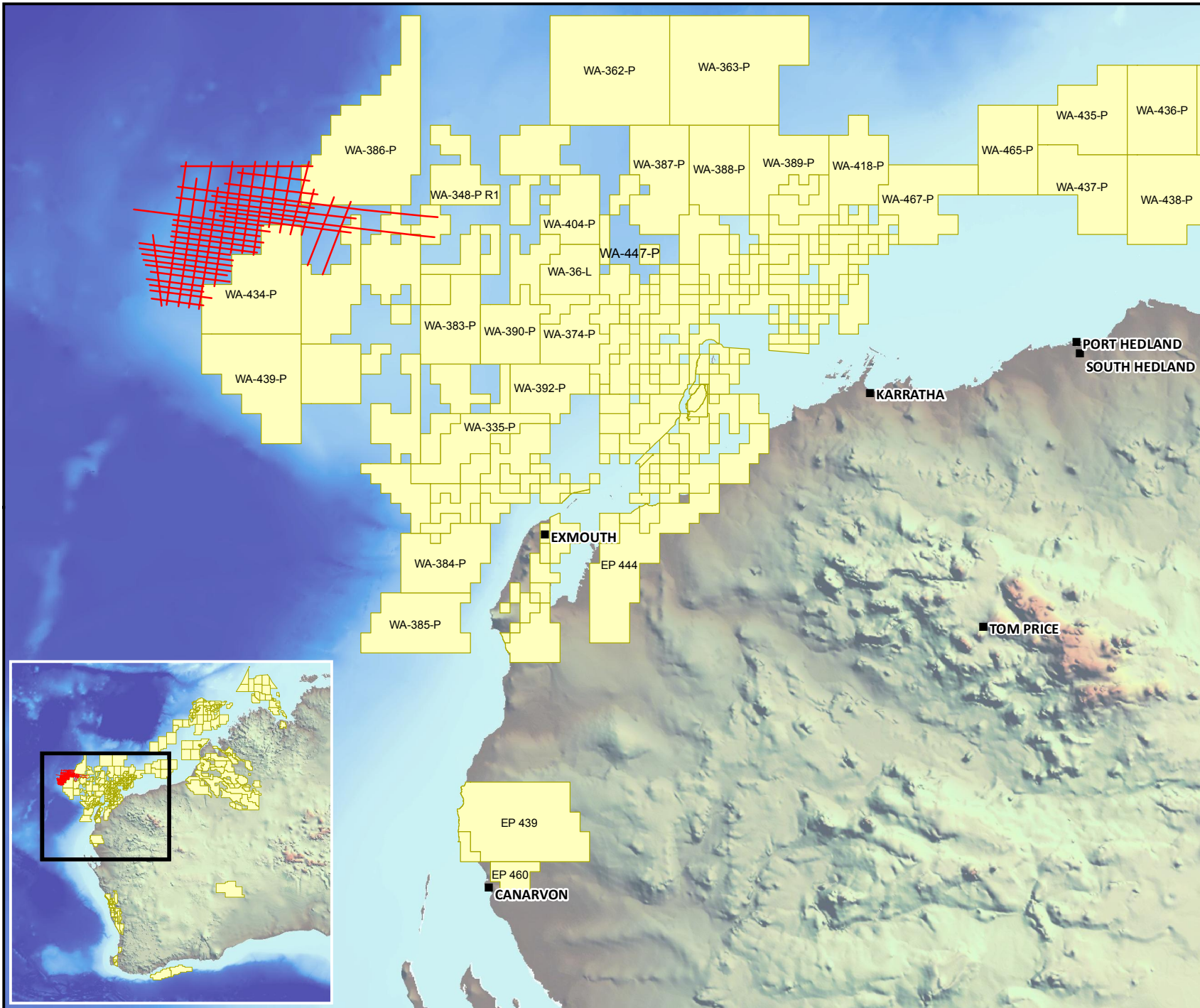
- Proposed Duvalia 2D Seismic Survey Grid
- WA Petroleum Titles (as of 7th Feb 2012)

Depth



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Description of the Receiving Environment

Physical Environment

The part of the survey area is located in Commonwealth marine waters within the Northwest Marine Region (NWMR) which extends from Kalbarri (south of Shark Bay) north to the WA/NT border. This region is characterised by relatively shallow offshore waters, the majority less than 500 m deep. The marine environment is essentially tropical, characterised by nutrient poor saline water. Consequently, the NWMR is considered to have a lower level of primary productivity compared to other regions in Australia. However, there are periodic surges in primary productivity within the region, which are thought to be associated with regional hydrodynamic processes, such as surface currents and nutrient rich upwelling's (DEWHA 2008).

A tropical monsoon climate with two distinct seasons occurs across the region. During the summer, winds from the Indian Ocean and southern Asian waters prevail, resulting in monsoonal troughs and cyclones. During the dry season, a predominantly south easterly airflow from the continent's interior brings warm, dry air.

Part of the survey area falls within the boundary of the Northern Carnarvon Basin. The region is bounded inshore by the outer limit of the WA State water boundary and the offshore edge of the Australian Exclusive Economic Zone generally 200 nm from the low water mark.

The survey area falls within the boundary of the Northern Carnarvon Basin. The Carnarvon Basin supports more than 95% of WA's oil and gas production and is the most heavily explored with almost 80% of the oil and gas wells drilled in WA. The survey area intersects five petroleum exploration permits including WA 434P, WA 364P, WA 365P, WA 386P and WA 346P. Petroleum exploration involves mobile offshore drilling units and related supply vessels which frequent the areas within and surrounding the operational area as specific drilling programmes require. The survey area does not include existing petroleum production infrastructure (DMP 2012). The survey will not impinge on any cautionary area associated with oil and gas production facilities.

The main shipping lane between the northwest WA coast and Lombok Strait passes through the eastern extremity of the survey area (pers. comm. James Bond AMSA Officer). Shipping traffic is expected to be encountered. The survey vessel and towed array represent a potential navigational hazard and vessels will need to avoid the seismic vessel to prevent collisions, entanglement of streamers, and other incidents. There are no bathymetric features or other navigational hazards in the area that will restrict ships avoiding the seismic vessel. Operations of the survey will be in accordance with maritime statutes and standards to ensure limited interaction between shipping and seismic operations. Ports located at Cape Cuvier and Onslow will be consulted prior to the proposed survey.

The survey area does not overlap areas of conservation status.

Biological Environment

The survey occurs in offshore waters which may contain the following sensitive marine organisms.

Infauna

The survey area, located in the deep waters of the Exmouth Plateau, is likely to contain benthic assemblages comprising of predominantly soft-bottom infauna communities. Currently there is poor knowledge of the benthic communities in the deeper waters of the Exmouth Plateau. The Exmouth Plateau receives detritus from the pelagic environment (DEWHA 2008). Therefore soft bottom infauna communities, possibly within the survey area, are likely to contain patchy distributions of deep-water filter feeding organisms, such as soft corals, gorgonians, bryozoans, hydroids and sponges.

Marine Turtles

Worldwide, seven species of marine turtles are recognised, with six of those occurring in Australian waters. One species, the Flatback, is endemic to Australia. Up to five species may occur in waters of the survey area. All five species are listed in Schedule 1 (fauna that is rare or likely to become extinct) under the *Wildlife Conservation Act 1950* and are classified as being of National Environmental Significance under the EPBC Act. Green, Hawksbill, Flatback and Leatherback Turtles are listed as Vulnerable, and the Loggerhead Turtle is listed as Endangered under the EPBC Act. All turtle species are listed as Migratory under the EPBC Act. Marine turtles are also listed under the Convention for the Conservation of Migratory Species of Wild Animals and Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The International Union for Conservation of Nature (IUCN) has assigned Critically Endangered status to Hawksbill and Leatherback Turtles and Endangered

status to Green and Loggerhead Turtles. Flatback turtles are listed as Data Deficient. Loggerhead, Green and Flatback Turtles found at Roebuck Bay are also listed under the Ramsar Wetland Criterion.

The Hawksbill and Flatback Turtles have major rookeries and significant breeding areas on the Montebello Islands, Varanus Island and within the Dampier Archipelago. The survey area does not contain known feeding, nesting or foraging habitats. The Montebello Islands, the closest significant marine turtle habitat is approximately 300 km south east of the survey area. Marine turtles are unlikely to be affected by the seismic activity given the majority of the survey depth range is outside of their typical foraging depths.

Sea Snakes

Sea snakes are air-breathing reptiles, and most have shallow benthic feeding patterns. Observations indicate that most sea snakes are found in depths rarely exceeding 30 m (Cogger 1975). Some species are known to dive deeper than this; however Heatwole and Seymour (1975) concluded that non-pelagic species seldom, if ever, dive deeper than 100 m. The EPBC Act Protected Matters Search Tool identified three sea snake species that may be found within the survey area. The survey area has a depth gradient of 1500 to 3000 m CD and lacks offshore reefs important for sea snakes.

Although the survey vessel will enter and exit ports, it is unlikely sea snakes would be encountered and impacted during the proposed seismic survey.

Marine Mammals

The relevant legislation includes the State *Wildlife Conservation Act 1950* and the Commonwealth EPBC Act. Australia is also a signatory to two relevant international agreements, the Conservation of Migratory Species Agreement and the CITES. Australia's obligations under these agreements are enacted by the EPBC Act. The EPBC Act provides a legislative framework to protect endangered, vulnerable, listed and migratory marine species. The species protected by EPBC Act are described in further detail below.

The EPBC Act and its environmental reporting tool identified 26 cetaceans as potentially occurring in the survey area. Of these species, the Blue Whale (*Balaenoptera musculus*) is listed as Endangered under the EPBC Act, and the Humpback Whale (*Megaptera novaeangliae*) and the Sei Whale (*Balaenoptera borealis*) are listed as Vulnerable.

The Kimberley region is recognised as an important area for Humpback Whale calving and nursing, particularly the northern region between the Lacepede Islands and Camden Sound (Jenner *et al.* 2001). Estimated northern and southern migratory paths between the Dampier Archipelago and the Kimberley calving grounds are located east of the survey area (Jenner *et al.* 2001). Humpback whales annually migrate between their summer feeding grounds in Antarctica to their tropical breeding grounds in winter. The migratory path is within the continental shelf of Australia. The peak migratory periods for Humpback Whales between the North West Cape and Broome are July to August for the northward leg and August and October for the southern leg. The whales tend to migrate in water depths of 20 to 500 m with the majority of whales within the 50 to 200 m isobaths. As the project area occurs within 1500 to 3000 m CD it is not expected that the core migratory whale groups will be encountered.

Avifauna

The EPBC Protected Matters Search identified one listed threatened bird to potentially occur within the survey area, *Macronectes giganteus* (Southern Giant Petrel). The Southern Giant Petrel is also a Listed Marine Species of the EPBC Act. Although these seabirds may forage in the region, they typically breed on the Antarctic coast and sub-Antarctic islands in the southern Indian Ocean, none of which are located within the survey area, so should not be affected by the seismic activity. The Southern Giant Petrel may forage in the survey area however is unlikely to be impacted by the seismic activities given the nature of the activity and its own mobility.

Fishes

In general, the fishes offshore of north-western Australia are typical of the Indo-Pacific region. Seas encompassing northern Australia and the tropics, located immediately northward, are inhabited by the richest fish fauna on earth (Allen 1997). Official counts are lacking, but an estimated 4,000 species occur in the region, or about 30% of the world's total marine fishes (Allen 1997). The dominant groups across this region usually include such families as gobies, wrasses, damselfishes, groupers, moray eels, cardinalfishes, and surgeonfishes (Allen 1997). The major groups of oceanic fishes are located in waters that are much shallower than the majority of the survey area (Kailola *et al.* 1993). Due to mobility of fishes no impacts to fish populations are expected.

Major Environmental Hazards and Controls

All aspects of the survey have been subjected to risk assessment, in order to evaluate the potential environmental risks and effects and characterise risk likelihood and severity of impacts of the proposed activity on the environment.

Major environmental hazards of the survey include:

- Interactions with commercial shipping and fisheries
- Acoustic impulse generation
- Solid, liquid and hazardous waste discharge
- Sewage and putrescible wastes
- Deck drainage and cooling water
- Hydrocarbon spill
- Seismic survey equipment loss
- Generation of greenhouse gas emissions
- Quarantine failure

A summary of the potential environmental risks for the survey include:

- Disturbance or death of marine fauna, benthic habitat
- Localised chronic/acute toxic effects to marine biota
- Interference/disruption on commercial shipping/fishing activities
- Predation of marine fauna from vessel light overspill
- Oiling of shoreline
- Adverse localised effects on water quality
- Marine environment degradation
- Increased nutrient availability increased biochemical oxygen demand
- Localised effect on air quality and global contribution to greenhouse gases
- Introduction of exotic marine pests and/or diseases

Table 2 provides a summary of the risk assessment including hazard and impact descriptions and management measures for individual impacts. The management measures are to be implemented so environmental risks are reduced to as low as reasonable practicable.

All the risks identified in Table 2 have been deemed to be low or very low.

Table 2 Risk Assessment of Potential Impacts and Management Measures for Duvalia 2D Seismic Survey

Aspect	Source of Risk	Impact	Management Measures	Risk Rating
Physical presence	Timing and location	Disturbance of marine fauna migration and breeding patterns	<ul style="list-style-type: none"> - Comply with EPBC Act Policy Statement 2.1, such that: <ul style="list-style-type: none"> • MFO will be engaged for the seismic program • Trained crew in whale observation, distance estimation and reporting - Survey conducted outside main Humpback Whale migration pathways and known breeding/calving areas - Watch keepers in Wheelhouse 24/7 - Adherence to proximity distances set out in the Guidelines for Whale Watching during non-seismic/transit periods 	Very Low
	Vessel and trailing gear (streamer)	Interference on commercial shipping/fishing	<ul style="list-style-type: none"> - Consultation with AMSA - Consultation with fishing industry - Notice to Mariners (via AHS) - Collision avoidance radar - Trained crew in vessel traffic, maritime domain awareness and maritime spatial planning (AMSA 2010) 	Very Low
	Light spill	Predation of marine fauna from vessel light overspill	<ul style="list-style-type: none"> - Lighting will be kept to the minimum required for navigation and safety requirements, except in the case of an emergency 	Very Low
	Vessel strike	Disturbance or death to marine fauna	<ul style="list-style-type: none"> - Comply with EPBC Act Policy Statement 2.1, such that: <ul style="list-style-type: none"> • MFO will be engaged for the seismic program • Trained crew in whale observation, distance estimation and reporting - Survey conducted outside main Humpback Whale migration pathways and known breeding/calving areas - Watch keepers in Wheelhouse 24/7 - Adherence to proximity distances set out in the Guidelines for Whale Watching during non-seismic/transit periods 	Very Low
	Anchoring	Disturbance to benthic habitat	<ul style="list-style-type: none"> - Survey conducted in water depths ranging from 1500 to 3000 m CD - No anchoring unless in response to emergency 	Very Low
Collision/ Grounding	Hydrocarbon spill to marine environment	Localised chronic/acute toxic effects to marine biota	<ul style="list-style-type: none"> - Lighting will be kept to the minimum required for navigation and safety requirements, except in the case of an emergency - Watch keepers in Wheelhouse 24/7 - Notice to Mariners (via AHS) 	Low

Aspect	Source of Risk	Impact	Management Measures	Risk Rating
		Oiling of shoreline	<ul style="list-style-type: none"> - Collision avoidance radar - Use of pilots in ports - Consultation with fishing industry - Comply with Seabird Emergency Response Procedure for Collisions and Groundings including: <ul style="list-style-type: none"> • Assess extent of damage to vessel and surrounds • Determine position, time, course and speed of vessel • Report collision/grounding incident to maritime or coastal authorities 	Very Low
		Damage to benthic fauna and habitat	<ul style="list-style-type: none"> • Assess nature of damage to vessel and surrounds • Determine position, time, course and speed of vessel • Report collision/grounding incident to maritime or coastal authorities - Comply with Seabird M/V Aquila Explorer Shipboard Oil Pollution Emergency Plan (SOPEP) which has been tested and implemented. Measures in the SOPEP include: <ul style="list-style-type: none"> • Assess nature of incident and identify spill source • Alter course/position/speed to minimise threat to marine environment and fauna-vessel-interactions • Assess weather/tide/swell forecasting • Report to maritime or coastal authorities and external clean-up resources as required (i.e. Combat Agencies, AMSA Emergency Response Centre) 	Very Low
		Disruption to commercial fishing/shipping activities	<ul style="list-style-type: none"> • Assess weather/tide/swell forecasting • Report to maritime or coastal authorities and external clean-up resources as required (i.e. Combat Agencies, AMSA Emergency Response Centre) - Comply with National Marine Oil Spill Contingency Plan (AMSA 2011), including: <ul style="list-style-type: none"> • Trained crew to mount a credible and effective response to an oil spill incident • Implement response options in accordance to the conditions prevailing and sensitivity of the environment under threat <ul style="list-style-type: none"> ▪ Surveillance ▪ Control and recovery ▪ Application of dispersant ▪ Shoreline cleanup ▪ Bioremediation - Comply with Australia's National Maritime Emergency Response Arrangement <ul style="list-style-type: none"> • Use of Emergency Towing Vessel • Notify Maritime Emergency Response Commander for intervention 	Very Low

Aspect	Source of Risk	Impact	Management Measures	Risk Rating	
Seismic acquisition	Acoustic impulse generation	Physiological effects or disruption to marine fauna	<ul style="list-style-type: none"> - The survey is outside main Humpback Whale migration pathways and known breeding/calving areas - Comply with EPBC Act Policy Statement 2.1, including: <ul style="list-style-type: none"> • MFO will be engaged for the seismic program • Application of precaution zones (observation zone: 3 km+; low power zone 2 km; and shutdown zone: 500 m) • Application of 30 minute pre-start-up visual observation • Visual observations undertaken whenever the airguns are operating • Use of soft-start procedures • Crew Awareness Training and Induction • Cetacean sightings recorded and reported • All sightings to be treated as whales until confirmed by MFO - Distance of permit from sensitive habitats 	Low	
		Disturbance of migration and breeding patterns		Very Low	
	Loss or damage to streamer	Disturbance of migration and breeding patterns		<ul style="list-style-type: none"> - The survey is outside main Humpback Whale migration pathways and known breeding/calving areas - Comply with Seabird Emergency Response Procedure, procedural steps including: <ul style="list-style-type: none"> • Monitoring and avoidance of conditions that may increase risk of streamer loss • Retrieve in-water seismic equipment in the event adverse conditions is expected • Use of streamer recovery buoys and location devices 	Very Low
			Interference on other users, damage to fishing gear	<ul style="list-style-type: none"> - Consultation with AMSA - Consultation with fishing industry - Notice to Mariners (via AHS) - Comply with Seabird Emergency Response Procedure, procedural steps including: <ul style="list-style-type: none"> • Monitoring and avoidance of conditions that may increase risk of streamer loss • Retrieve in-water seismic equipment in the event adverse conditions is expected • Use of streamer recovery buoys and location devices 	Low
		Damage/disturbance to benthic habitat	<ul style="list-style-type: none"> - Survey conducted in water depths ranging from 1500 to 3000 m CD - Comply with Seabird Emergency Response Procedure, procedural steps including: <ul style="list-style-type: none"> • Monitoring and avoidance of conditions that may increase risk of streamer loss • Retrieve in-water seismic equipment in the event adverse conditions is expected • Use of streamer recovery buoys and location devices 	Very Low	
	Loss of streamer fluid	Toxic effects on marine life including fish, plankton,	<ul style="list-style-type: none"> - Improved hybrid streamer technology including streamer inflation and recovery capability and reduced fluid volumes - Use of low environmental impact streamer fluid 	Very Low	

Aspect	Source of Risk	Impact	Management Measures	Risk Rating
		benthos, marine mammals and marine reptiles	<ul style="list-style-type: none"> - Comply with Seabird Emergency Response Procedure, procedural steps including: <ul style="list-style-type: none"> • Monitoring and avoidance of conditions that may increase risk of streamer loss • Retrieve in-water seismic equipment in the event adverse conditions is expected • Use of streamer recovery buoys and location devices 	
Cyclone event	Loss of hydrocarbon/chemical to the marine environment	Toxic effects on marine life including fish, plankton, benthos, marine mammals and marine reptiles	<ul style="list-style-type: none"> - Comply with Seabird Emergency Response Procedure for Severe Weather including: <ul style="list-style-type: none"> • Weather information to be gathered on a regular basis • Seismic equipment to be recovered and secured onboard • Depart the area for shelter to avoid cyclone • Report to Vessel Shore Supervisor 	Very Low
Vessel refuelling/chemical handling	Loss of hydrocarbon/chemical to the marine environment	Localised chronic/acute toxic effects to marine life including fish, plankton, benthos, marine mammals and marine reptiles	<ul style="list-style-type: none"> - Vessel to vessel refuelling is not planned for this survey and will only occur in an emergency - Use of reinforced hoses, dry-break couplings and fail-safe fittings during refuelling in port - Comply with Seabird M/V Aquila SOPEP for Operational Spill Prevention including: <ul style="list-style-type: none"> • Crew maintain close watch for escape of oil during bunker operations • Prior bunker transfer, oil spill equipment will be mobilised • Prior to bunker handling, deck scuppers and open drains will be plugged. Oil will be removed prior to draining • Bunker tanks will be checked frequently to avoid overflow • Drip tray will be used, unless there are permanent means for leaking oil retention • Removed bunker oil and used clean up material will be retained on proper secure containment units until it is discharged to a reception facility - Comply with Seabird SOPEP for Spills caused by Equipment in Machinery Spaces including: <ul style="list-style-type: none"> • Failed machinery will be stopped immediately • Oily-water separating equipment to be used to de-oil bilge water - Focus on chemical storage as part of Searcher marine audit 	Very Low
		Oiling of sea bird		Very Low
		Disruption of commercial fishing		Very Low
		Adverse localised effects on water quality		Very Low
Bilge/ Drainage	Oil water discharge to marine environment	Localised acute and chronic effects to marine biota	<ul style="list-style-type: none"> - Comply with Seabird SOPEP for Spills caused by Equipment in Machinery Spaces and MARPOL 73/78 including: <ul style="list-style-type: none"> • Oil water separator (OWS) to be used to de-oil bilge water • OWS to treat and monitoring oil -water content to <15ppm, Shut-in if exceeded - Oil water equipment approved and regularly inspected and maintained (Searcher Seismic audit) 	Very Low
		Adverse localised effects on water		Very Low

Aspect	Source of Risk	Impact	Management Measures	Risk Rating
		quality	- Discharge quality automatically monitored with alarm	
	Contaminated deck discharge	Adverse localised effects on water quality	- Comply with Seabird SOPEP for Spills caused by Equipment in Machinery Spaces including: <ul style="list-style-type: none"> • Deck scuppers and open drains will be plugged prior to oil handling. Oil will be removed prior to draining • Prior to oil handling, oil spill equipment will be mobilised • Drip tray will be used, unless there are permanent means for leaking oil retention - Deck bunding (temporary or permanent) provided for areas/activities within increased risk of spill	Very Low
Waste stream	Solid waste pollution to the marine environment	Marine environment degradation and adverse effects to marine fauna	- Comply with Seabird Waste Management Plan and Annex V of MARPOL 73/78 including: <ul style="list-style-type: none"> • The following solid wastes are prohibited to discharge overboard and must be stored onboard and disposed to approved sites onshore <ul style="list-style-type: none"> ▪ Plastics ▪ Non-toxic combustible material ▪ Filters ▪ Pyrotechnics, explosives, batteries, pressurised devices 	Low
		Interference on commercial shipping and fishing	- Wastes will be segregated, labelled and stored in covered receptacles in secure areas prior to removal to the shore for appropriate disposal - No Styrofoam cups on vessels - Crew will be trained to ensure compliance with the waste management requirements - Minimise quantities of waste generated	Very Low
	Sewerage and putrescibles waste discharge	Increased nutrient availability increased Biochemical Oxygen Demand	- Comply with Seabird Waste Management Plan and Annex IV of MARPOL 73/78 including: <ul style="list-style-type: none"> • Effluent must be comminuted and disinfected • Effluent must not produce visible floating solids in, nor cause discolouration of, the surrounding water 	Very Low
		Toxic effects on marine life including fish, plankton, benthos, marine mammals and marine reptiles	<ul style="list-style-type: none"> • Treated effluent can be discharged into sea minimum 3 nm from land (12 nm for untreated effluent) • Sewage treatment system must provide primary settling, chlorination and de-chlorination • Sewage treatment system and holding tank must be approved and routinely inspected/maintained 	Very Low
		Localised impact on water quality	<ul style="list-style-type: none"> • Biodegradable detergents used 	Very Low

Aspect	Source of Risk	Impact	Management Measures	Risk Rating
			<ul style="list-style-type: none"> - Food waste maceration to <25 mm prior to discharge or storage for onshore disposal - Low volume, short duration discharges and rapid dispersal/dilution - Vessel waste log will be maintained to record waste management practices 	
Combustion equipment	Greenhouse gas emissions	Localised effect on air quality and global contribution to greenhouse	<ul style="list-style-type: none"> - Engines maintained to operate at optimum efficiency to minimise emissions <ul style="list-style-type: none"> • Diesel injectors cleaned and aligned for marine diesel engines 	Very Low
Quarantine	Ballast water	Introduction of exotic marine pests and/or diseases	<ul style="list-style-type: none"> - Vessel will obtain all necessary AQIS clearances to operate unrestricted anywhere in Australian waters - Audit vessel prior to immobilisation - Check and maintain ballast water records on vessel 	Low
	Hull biofouling	Introduction of exotic marine pests and/or diseases	<ul style="list-style-type: none"> - Ensure AQIS requirements have been met including anti-fouling certification for previous importation of vessel into Australia - Audit vessel prior to immobilisation - Ensure new equipment has cleared AQIS 	Low
	Vermin weeds and seeds	Introduction of vermin, weeds and pests (topside quarantine)	<ul style="list-style-type: none"> - Vessel will obtain all necessary AQIS clearances to operate unrestricted anywhere in Australian waters - All international vessels have been risk assessed and surface inspection cleaning carried out for identified moderate / high risk 	Very Low

Management Approach

Searcher Seismic is firmly committed to the protection of the natural environment. To support Searcher Seismic's commitment for environmental protection, the following provides a summary of the environmental performance objectives derived for the survey:

- All personnel involved in survey to be aware of the environmental sensitivities and requirements
- No adverse interactions with fisheries during the seismic survey
- No collision with other vessel to occur during seismic survey
- No significant disturbance/impacts to marine fauna during seismic survey
- Procedures to prevent the introduction of exotic pest or weed species for the duration of the survey will be followed
- No uncontrolled discharge of wastes or disposal of untreated sewage to marine environment for the duration of the survey
- Follow procedures to prevent adverse localised impact on water quality during the seismic survey
- Procedures to prevent spills of fuel to the marine environment during the seismic survey will be followed
- Follow procedures to prevent occurrence of vessel collisions (causing hydrocarbon spill) during the survey
- No hydrocarbon spills to the ocean (from seismic equipment) when acquiring seismic data
- Follow procedures to minimise atmospheric emissions of exhaust gasses and CO₂ for the duration of the survey

To ensure survey operations meet the environmental performance objectives, the survey will be conducted in accordance with management protocols presented in the Environment Plan, the combined Searcher Seismic and Seabird's environmental policies and relevant systems, standards and procedures, namely:

- Searcher Seismic Environmental Protection Policy
- Searcher Seismic Occupational Health and Safety Policy
- Searcher Seismic Environmental Compliance Register
- Seabird Shipboard Oil Pollution Emergency Plan
- Seabird Environmental Management Plan
- Seabird Emergency Response Procedures
- AMSA National Marine Oil Spill Contingency Plan
- Australia's National Maritime Emergency Response Arrangement
- MARPOL 73/78
- *Convention on the International Regulations for Preventing Collisions at Sea 1972 - Part B Steering And Sailing Rules*
- *EPBC Act Policy Statement 2.1 -Interaction between offshore seismic exploration and whales*
- Australian National Guidelines for Whale and Dolphin Watching
- AQIS Quarantine Guidelines AQIS Australian Ballast Water Management Requirements
- ANZECC Code of Practice for Antifouling and In-water Hull Cleaning and Maintenance
- National Biofouling Management Guidance requirements

Although it would be unlikely to encounter migratory cetaceans in the survey area, a Marine Fauna Observer (MFO) will be engaged for the survey as part of the conditions set out in the EPBC Act Policy Statement 2.1.

An Environmental Compliance Register will be implemented to assess the environmental performance of the survey. This will ensure continued evaluation against performance objectives, standards and measurement criteria to achieve continuous improvement of environmental management.

Consultation

Searcher Seismic is committed to consulting and communicating with the local communities and other appropriate stakeholders to ensure that concerns are incorporated into the design and implementation of proposed seismic activities.

The following list of stakeholders has been identified and consulted

Government

- National Offshore Petroleum Safety and Environment Authority (NOPSEMA)
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC)
- Australian Maritime Safety Authority (AMSA)
- Australian Hydrographic Service (AHS)
- Department of Fisheries (DoF)

Commercial Fisheries

- Australian Fisheries Management Authority (AFMA)
- Commonwealth Fisheries Association (CFA)
- Northern Fishing Companies Association (NFCA)
- Recfish WA
- Western Australian Fishing Industry Council (WAFIC)
- Western Australian Northern Trawl Owners Association (WANTOA)
- A Raptis and Sons

Petroleum Exploration Permit Holders

- Woodside Pty Ltd (WA-434P)
- BHP Billiton Pty Ltd (WA-346P)
- OMV Australia Ltd (WA-386P)
- Chevron Australia Pty Ltd (WA-364P and WA-365P)

Consultation with the oil spill regulatory authority (AMSA) has been undertaken pursuant to Regulation 11A of the OPGGS (E) R. During the operational period of the survey the vessel has agreed with AMSA to report its movements to AMSA's Rescue Coordination Centre, according to regulatory requirements.

Contact Details

The proponent is Searcher Seismic, an Australian based company which designs, manages and markets non exclusive seismic projects. These projects range from new 2D and 3D survey acquisition, through to large scale 2D and 3D reprocessing projects. For further information, please contact:

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