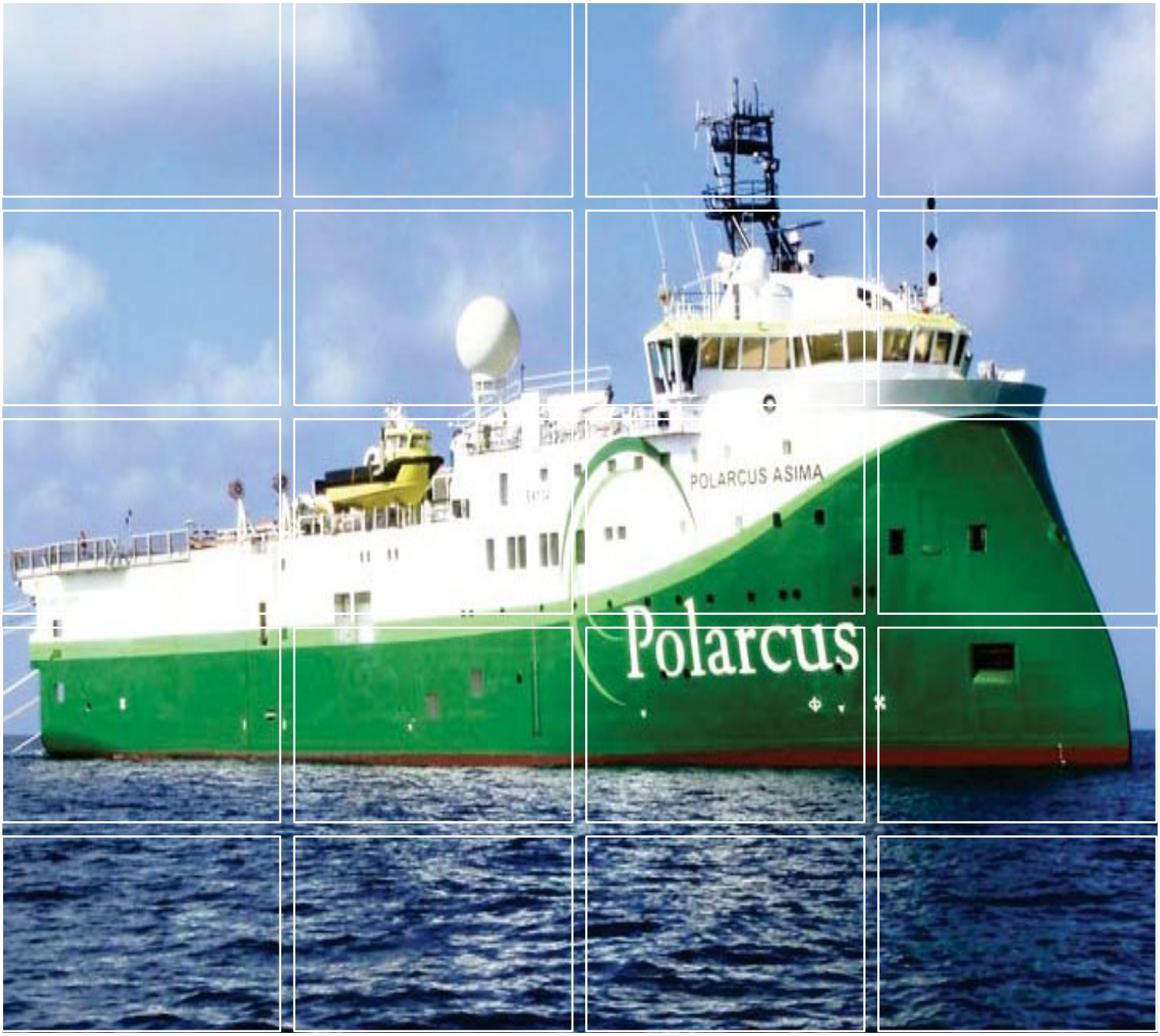

Capreolus 3D Multi-client Marine Seismic Survey 2015:
Environment Plan Summary

Polarcus®

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Rev 4

July 2015

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Capreolus 3D Multi-client Marine Seismic Survey 2015: *Environment Plan Summary*

July 2015

Reference: 0278584-P

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1 INTRODUCTION

Polarcus Seismic Limited (Polarcus) proposes to undertake a three-dimensional marine seismic survey (Capreolus 3D MSS) in Commonwealth waters of the Offshore Roebuck Basin, in Western Australia. The Capreolus 3D MSS commenced in January 2015 following acceptance on 8 January 2015 of an Environment Plan (EP) for the proposed activities (Capreolus 3D Multi-Client Marine Seismic Survey 2014-2015 Environment Plan Document No. 0267070-P, Revision 0, dated 1 November 2014, NOPSEMA reference A400021 ID2970). The survey, originally scheduled to be completed by end of June 2015, has been extended to November 2015.

A revised EP was prepared to meet the requirements of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act)* and the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS (E) Regulations). The EP was submitted to NOPSEMA on 07 May 2015 and accepted on 22 June 2015.

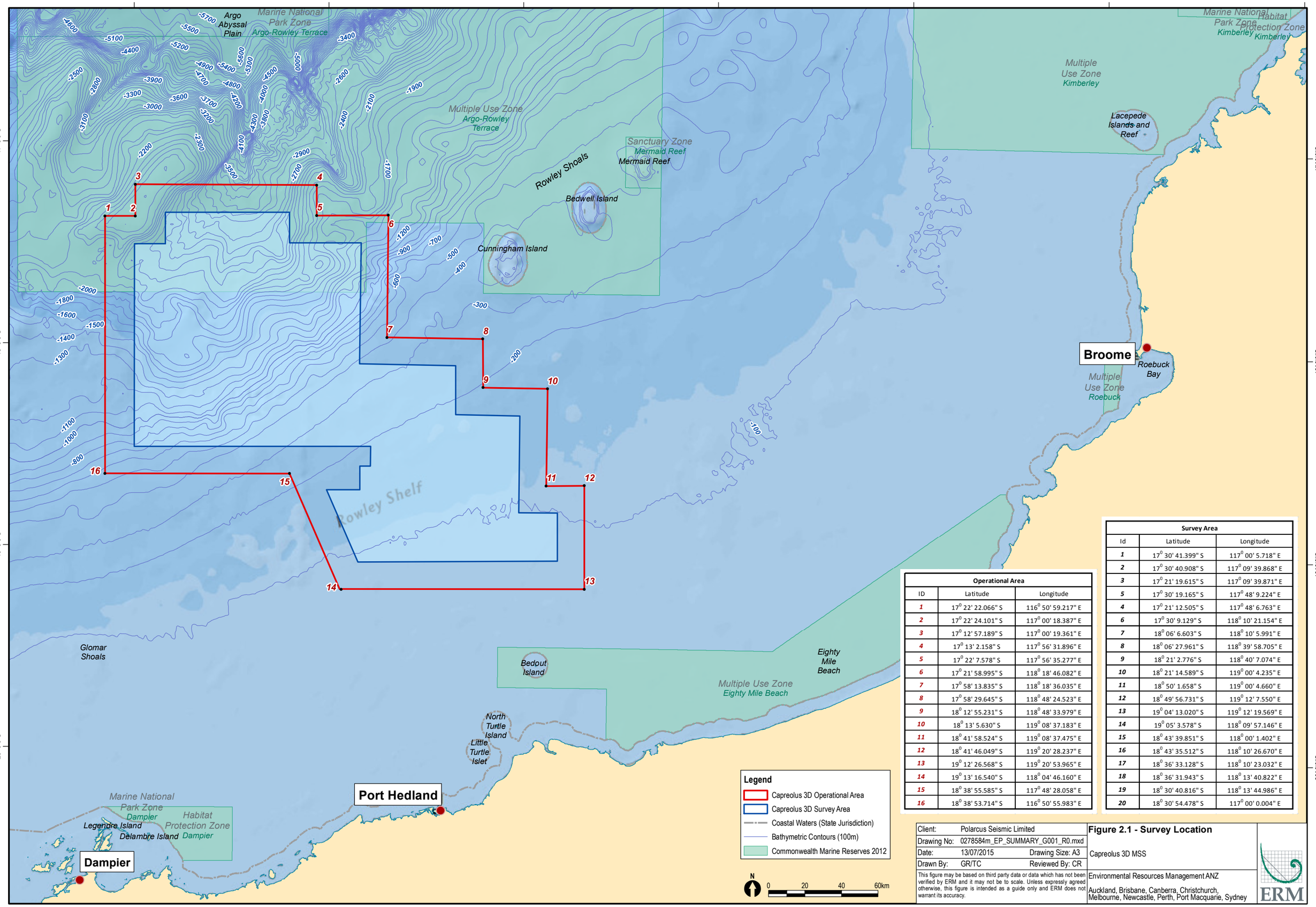
This EP Summary has been prepared in accordance with the OPGGS (E) Regulations to summarise Polarcus' commitment to undertake the Capreolus 3D MSS in a manner consistent with the principles of ecologically sustainable development and that environmental impacts and risks will be reduced to as low as reasonably practicable (ALARP) and acceptable levels.

2 ACTIVITY DESCRIPTION

2.1 LOCATION

The area (including boundary coordinates) within which the Capreolus 3D MSS will be undertaken is shown in *Figure 2.1*.

The survey area, which covers approximately 25,000 square kilometres (km^2), comprises the area within which Polarcus currently anticipate the 3D seismic acquisition will be undertaken. At its closest, the survey area is approximately 135 km north of Port Hedland and approximately 340 km west of Broome. The wider operational area of approximately 38,000 km^2 incorporates the necessary space for vessel manoeuvring, line run-outs and turns, source testing and soft starts. At its closest, the operational area is approximately 120 km north of Port Hedland and approximately 320 km west of Broome.



Operational Area		
ID	Latitude	Longitude
1	17° 22' 22.066" S	116° 50' 59.217" E
2	17° 22' 24.101" S	117° 00' 18.387" E
3	17° 12' 57.189" S	117° 00' 19.361" E
4	17° 13' 2.158" S	117° 56' 31.896" E
5	17° 22' 7.578" S	117° 56' 35.277" E
6	17° 21' 58.995" S	118° 18' 46.082" E
7	17° 58' 13.835" S	118° 18' 36.035" E
8	17° 58' 29.645" S	118° 48' 24.523" E
9	18° 12' 55.231" S	118° 48' 33.979" E
10	18° 13' 5.630" S	119° 08' 37.183" E
11	18° 41' 58.524" S	119° 08' 37.475" E
12	18° 41' 46.049" S	119° 20' 28.237" E
13	19° 12' 26.568" S	119° 20' 53.965" E
14	19° 13' 16.540" S	118° 04' 46.160" E
15	18° 38' 55.585" S	117° 48' 28.058" E
16	18° 38' 53.714" S	116° 50' 55.983" E

Survey Area		
Id	Latitude	Longitude
1	17° 30' 41.399" S	117° 00' 5.718" E
2	17° 30' 40.908" S	117° 09' 39.868" E
3	17° 21' 19.615" S	117° 09' 39.871" E
5	17° 30' 19.165" S	117° 48' 9.224" E
4	17° 21' 12.505" S	117° 48' 6.763" E
6	17° 30' 9.129" S	118° 10' 21.154" E
7	18° 06' 6.603" S	118° 10' 5.991" E
8	18° 06' 27.961" S	118° 39' 58.705" E
9	18° 21' 2.776" S	118° 40' 7.074" E
10	18° 21' 14.589" S	119° 00' 4.235" E
11	18° 50' 1.658" S	119° 00' 4.660" E
12	18° 49' 56.731" S	119° 12' 7.550" E
13	19° 04' 13.020" S	119° 12' 19.569" E
14	19° 05' 3.578" S	118° 09' 57.146" E
15	18° 43' 39.851" S	118° 00' 1.402" E
16	18° 43' 35.512" S	118° 10' 26.670" E
17	18° 36' 33.128" S	118° 10' 23.032" E
18	18° 36' 31.943" S	118° 13' 40.822" E
19	18° 30' 40.816" S	118° 13' 44.986" E
20	18° 30' 54.478" S	117° 00' 0.004" E

Client:	Polarcus Seismic Limited		**Figure 2.1 - Survey Location**
Drawing No:	0278584m_EP_SUMMARY_G001_R0.mxd		
Date:	13/07/2015	Drawing Size: A3	Capreolus 3D MSS
Drawn By:	GR/TC	Reviewed By: CR	

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2.2 *ACTIVITY DETAILS*

Seismic data acquisition for the survey will be undertaken by up to two purpose-built, state of the art Polarcus-owned and operated survey vessels; however for the July to November 2015 acquisition period only one vessel will be used. The seismic survey vessels are expected to be selected out of the *Polarcus Naila*, *Polarcus Alima* and *Polarcus Asima* (or vessels of comparable specifications). Final confirmation of the exact survey vessels has yet to be made. The *Polarcus Naila, Polarcus Alima* and *Polarcus Asima* were built between 2010 and 2012 with near identical specifications. These vessels are fuelled using marine gas oil and are considered to be amongst the most environmentally sound seismic survey vessels in the market with diesel-electric propulsion, high specification catalytic convertors, double hull and advanced ballast water treatment/bilge water cleaning systems.

At any one time, up to two survey vessels (with only a single vessel being used over the July to November extension) will work independently of each other across the operational area, maintaining a separation distance of at least 40 km. Each survey vessel will tow an underwater seismic source immediately behind it, plus 12 cables or 'streamers' containing 'hydrophones'.

The seismic source consists of an array of 'airguns' that discharge downward-propagating pressure waves at approximately 5 second intervals as the survey vessel travels at a speed of approximately 4.5 knots along pre-determined survey lines. The total volume of the planned airgun seismic energy source for the survey is 3,480 in^3 with an operating pressure of approximately 2,000 psi. This is the minimum source size considered sufficient to achieve the required output to meet the geophysical objectives of the survey. The resulting sound exposure level from the airguns, as measured according to established units for underwater sound, is approximately 238.2 dB re 1μPa^2.s at a frequency of 0-500 hertz.

The pressure wave generated by the airguns penetrates the seafloor and is reflected from subsurface features back to the hydrophones in the towed streamers. When analysed, these data establish a broad picture of the subsurface geology. Each towed streamer will be approximately 8 - 9 km in length. Tail buoys will be used to maintain position and clearly indicate the streamer ends. Depth monitor and control devices ('birds') positioned along the streamers are used to maintain the preferred tow depth.

In addition to the survey vessel(s), three to four support vessels will be engaged:

- A chase vessel accompanying each survey vessel to assist with managing potential interactions with other users of the area; and
- At least one, and potentially two, supply vessels for resupply, refuelling and other support functions.

The survey and chase vessels will be refuelled at sea approximately every 35 days. Crew changes will also occur approximately every 35 days supported by helicopter.

2.3 SCHEDULE

The Capreolus 3D MSS commenced in January 2015, in accordance with its accepted EP (Capreolus 3D Multi-Client Marine Seismic Survey 2014-2015 Environment Plan Document No. 0267070-P, Revision 0, dated 1 November 2014, NOPSEMA reference A400021 ID2970). Since commencement in January, seismic acquisition has been conducted in the central area of the operational area. It is planned for activities to then continue in the southern area, ending in the northern area.

Survey timing and phasing has been planned to avoid as far as possible the most sensitive time periods and areas of biological activity in the wider area (refer to *Section 5*). Actual start and finish dates are dependent on regulatory approvals, vessel availability, weather conditions and scope completion, but the Capreolus 3D MSS is not planned to extend past the end of November 2015.

3 EXISTING ENVIRONMENT

The operational area lies within the Northwest Shelf Province and the Northwest Transition bioregions of the North-west Marine Region (the region) (SEWPaC 2012 and DEWHA 2008). The Northwest Shelf Province is located primarily on the continental shelf between North West Cape and Cape Bougainville and includes important sites for migrating humpback whales and breeding seabirds such as Eighty Mile Beach and the Lacepede Islands, as well as for the petroleum industry and commercial fishing operations (DEWHA 2008). The Northwest Transition includes shelf break, continental slope and the majority of the region's Argo Abyssal Plain. A key feature for the Northwest Transition is the Rowley Shoals (approximately 37 km to the north-east of the operational area), which comprises the Mermaid, Clerke and Imperieuse Reefs marine reserves (DEWHA 2008).

3.1 PHYSICAL ENVIRONMENT

3.1.1 Meteorology and Oceanography

The operational area is characterised by an arid, subtropical climate that experiences monsoonal patterns characterised by a wet season during the summer months of October to March and a dry season during the winter months of May to August (DEWHA 2008).

The wet season is characterised by winds, primarily from the south-west, that can generate thunderstorm activity, high rainfall and pronounced cyclones. During the dry season, winds are predominantly from the east and rainfall is sparse.

On average, about five cyclones occur each year, of which two typically make landfall and one is typically severe (category 3 or higher having wind gusts of at least 170 km/h) (BOM 2014; DEWHA 2008). The chance of a severe cyclone occurring is highest in March and April (BOM 2014).

Swell heights in the operational area typically range up to 2 m (but are primarily below 1.2 m) with periods of six to eight seconds (Pearce *et al.* 2003; Margvelashvili *et al.* 2006).

Apart from cyclonic events, sea states tend to be heaviest (i.e. >1 m wave heights) in winter and lightest in the summer (Pearce *et al.* 2003).

The operational area is dominated by surface currents heavily influenced by both tidal motions, the Indonesian Throughflow and the Holloway Current. Mean speeds for surface currents in the Northwest Shelf Province range from 0.033 m/s in January to 0.06 m/s in July (Brewer *et al.* 2007). In the Northwest Transition, surface current mean speeds range from 0.046 m/s (January) to 0.057 m/s (October) (Brewer *et al.* 2007).

The waters of the operational area are generally low in nutrient levels. Exceptions within or near the operational area include:

- potentially localised upwelling at the Rowley Shoals and at the canyons in the north-western portion of the operational area; and
- sporadic and short-lived upwellings as a result of internal wave, cyclonic or tidal activity (DEWHA 2008).

3.1.2 Bathymetry, Geomorphology and Sedimentology

The south-eastern half of the operational area that lies on the continental shelf consists of water depths that gradually increase from approximately 50 to 200 m. Minimum water depths in the survey area are approximately 70 m. The northern portions of the operational area lie within the continental slope and the transition into the Argo Abyssal Plain. Thus, water depths in these portions abruptly increase from approximately 200 to 3,500 m towards the north-west.

Seafloor features of the south-eastern half of the operational area within the continental shelf include banks, shoals, valleys, terraces and steps (Baker *et al.* 2008). The most prominent terraces and steps occur at approximately 125 m depth and are believed to be an important migratory pathway for cetaceans and whale sharks (DEWHA 2008). The northern portion of the operational

area includes rises, ridges and canyons of the continental slope, as well as aprons/fans of the Argo Abyssal Plain.

Sediments in the operational area are dominated by sands with the exception of the most north-western portion near the Argo Abyssal Plain, which is dominated by mud (DEWHA 2008).

3.2 ECOLOGICAL ENVIRONMENT

3.2.1 Plankton Communities

In the operational area, higher plankton concentrations generally occur during the winter months (dry season), from June to August (Hayes et al. 2005). Spatial distribution of plankton is irregular, both vertically and horizontally.

Aggregations can result from temperature and salinity gradients, water motion, light intensity or organic matter in the water column (Omori and Hamner 1982). Sporadic/short-lived and potentially localised episodes of nutrient upwelling that occur in the operational area will influence higher plankton concentrations.

3.2.2 Benthic Assemblages

The sandy substrates of the Northwest Shelf Province that cover the majority of the operational area are considered to support low density benthic communities of bryozoans, molluscs and echinoids (DEWHA 2008). Other benthic species abundant in the Northwest Shelf Province include sea cucumbers, prawns and squid. Mobile benthic species (deepwater sea cucumbers, crabs and polychaetes) are presumed to be associated with the Northwest Transition sandy and muddy seafloor and sparse populations of bentho-pelagic fish and cephalopods are supported in low densities (DEWHA 2008).

3.2.3 Macrofauna

A search of the Protected Matters database was undertaken for the operational area (including a 10 km buffer) to identify the likelihood of fauna listed under the EPBC Act occurring within the operational area. The search, which is not restricted by time/season, identified 22 migratory species, of which 9 are listed as threatened (*Table 3.1*). No Threatened Ecological Communities were identified.

Table 3-1 Threatened and Migratory Species that May Occur within the Operational Area (including 10 km Buffer)

Type	Scientific Name	Common Name	Status
Birds	*Fregata ariel*	Lesser frigatebird	Migratory
	Phaethon lepturus	White-tailed tropicbird	Migratory
	Sterna albifrons	Little tern	Migratory
	Sterna dougallii	Roseate tern	Migratory
	Sula leucogaster	Brown booby	Migratory
Reptiles	*Caretta caretta*	Loggerhead turtle	Endangered, Migratory
	Chelonia mydas	Green turtle	Vulnerable, Migratory
	Dermochelys coriacea	Leatherback turtle	Endangered, Migratory
	Eretmochelys imbricata	Hawksbill turtle	Vulnerable, Migratory
	Natator depressus	Flatback turtle	Vulnerable, Migratory
Mammals	*Balaenoptera musculus*	Blue whale	Endangered, Migratory
	Megaptera novaeangliae	Humpback whale	Vulnerable, Migratory
	Balaenoptera bonaerensis	Antarctic minke whale	Migratory
	Balaenoptera edeni	Bryde's whale	Migratory
	Orcinus orca	Killer whale	Migratory
	Physeter macrocephalus	Sperm whale	Migratory
	Tursiops aduncus	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	Migratory
Sharks and Rays	*Carcharodon carcharias*	Great white shark	Vulnerable, Migratory
	Rhincodon typus	Whale shark	Vulnerable, Migratory
	Isurus oxyrinchus	Shortfin mako	Migratory
	Isurus paucus	Longfin mako	Migratory
	Manta birostris	Giant manta ray	Migratory

Birds

Many shorebird (including those frequenting offshore islands), migratory bird and seabird species are known to occur in the region. The majority of migratory bird species forage and rest in the region on their way between Northern Hemisphere breeding grounds and Northern Australian feeding grounds (i.e. East Asian–Australasian Flyway).

Important areas for birds in proximity to the operational area include:

- Bedout Island (approximately 40 km away);
- Roebuck Bay and Eighty Mile Beach (approximately 310 and 110 km away, respectively); and
- Rowley Shoals (approximately 35 km away) (DEWHA 2008).

Most bird species in the region north of 20 °S (which includes the operational area) breed in autumn (March – May), which coincides with the survey period (DEWHA 2008). Generally summer is the period when most birds occur in the region and near the operational area, especially due to the large populations of migratory birds at Eighty Mile Beach during that time (DOE 2014a).

Due to the wide distribution and range of regional bird species, many can be expected to occur in the operational area during the survey. However, due to the water depths over the majority of the operational area, and the lack of seabed features with which prey aggregations may be associated, numbers are not expected to be significant.

Reptiles

Turtle nesting occurs along the north-west coast of WA between November and February, with some nesting occurring on the coastal islands (DOE 2014b). The operational area is at least 80 km from the coast and the closest island (Bedout Island) is approximately 40 km to the south.

While Bedout Island may support some turtle nesting it is not recognised as a significant rookery. Nearshore coastal waters are also likely to provide foraging grounds for turtles. However, due to the distance from shore and deeper waters of the operational area (>50 m), only occasional turtles are likely to pass through the area. Furthermore, the survey programme has been planned to avoid the more southerly shallower waters (<100 m) between December and March, the time when internesting flatback turtles may be present (DOE 2014b).

In addition to listed reptile species, other reptile species could also potentially occur within the operational area. At least 20 species of sea snake occur within the region, some of which are endemic (DEWHA 2008). However, most sea snake species tend to be found in the shallower parts of the region (DEWHA 2008) and are therefore not expected to be common in the operational area.

Mammals

Marine mammals have wide distributions and may be present in the operational area. However, they are likely to occur in low numbers relative to their overall populations.

Humpback whales pass through the area with some predictability during the annual migration to and from breeding grounds in Camden Sound. Seismic survey activities will be conducted at least 50 km away from key migration routes during the peak humpback whale migration periods (late July to early August, late August to early September and late September to early October).

Blue whales migrate along the WA coast with some predictability from southern feeding grounds to breeding grounds in Indonesian waters. The survey timeframe will coincide with both the blue whale northerly (April to May) and southerly migration (October to December) (McCauley 2011). Over these periods low numbers of blue whales may be encountered in the deep waters in the north of the operational area (Double et al. 2014; McCauley 2011). Passive acoustic monitoring of the blue whale migration at various locations along the coast of Western Australia has typically recorded solitary whales transiting rather than larger groups (McCauley 2011), with individuals thought to pass predominantly outside of the operational area to the north (e.g. Double et al. 2014). Both the northerly and southerly migration pathway for blue whales occurs north of the operational area, through the blue whale biologically important area (BIA) for migration. The Capreolus 3D MSS has been planned to minimise data acquisition in the northernmost and deepest waters of the operational area during the northerly blue whale migration period (April to May).

Other whale and dolphin species (including seven threatened and/or migratory species protected under the EBPC Act) may also pass through the operational area at the time of the survey but are not expected in significant numbers due to the absence of critical habitats (feeding, breeding, calving, resting or constricted migratory pathways).

Sharks and Rays

Five species of shark and ray listed as threatened and/or migratory under the EPBC Act may occur in the operational area. Given that the great white shark, longfin mako shark and shortfin mako shark are wide-ranging in offshore waters and occasionally frequent coastal areas, they are not expected to be commonly encountered during the survey (DOE 2014b). Whale sharks and manta rays may also occur in low numbers in the operational area, but the area does not contain critical habitat for these species (DOE 2014b). Whale sharks are known to aggregate in the waters around Ningaloo Reef to the south of the operational area between March and June and are therefore more likely to migrate through the region around this period (DOE 2014b).

Commercial Fish and Shellfish Species

A number of fish species are targeted by commercial fisheries within or near the operational area including the blacktip shark, goldband snapper, rankin cod, red emperor, pink snapper, sandbar shark, spanish mackerel, pearl oyster, and southern bluefin tuna.

The planned marine seismic survey will coincide with the spawning periods of some of the above species.

However, the preferred spawning habitats for the majority of those species include hard/rocky substrates, reefs, and/or shallow coastal waters, which are not commonly found within the operational area. Water depths over the majority of the survey area are anticipated to preclude the presence of spawning adults. Pearl oyster primary spawning occurs between mid-October and December, with a smaller secondary spawning occurring in February and March (DOF 2006 and 2014). Seismic survey activities are planned to avoid southern, shallower areas (<100 m) during pearl oyster spawning periods (mid-October-December and February-March).

3.3 SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

The operational area is located approximately 390 km to the north-east of the nearest World Heritage and National Heritage Site, namely the Ningaloo Coast.

The operational area is located approximately 130 km to the south-west of the nearest historic shipwreck (the *Lively*), as listed on the Australian National Shipwreck Database (DOE 2014c). A search of the National Native Tribunal Register did not identify any Native Title areas within the operational area.

A number of Commonwealth and State managed fisheries intersect the operational area. However, based on seasonality, effort, the distribution and habitat of target species and water depths in the operational area, the Capreolus 3D MSS has the potential to interact with only four fisheries. Two of these fisheries are trawl fisheries with wide operational areas (the North West Slope and Pilbara Fish Trawl Fisheries). One fishery uses line methods (Pilbara Line Fishery). The fourth potentially affected fishery is the Pearl Oyster Managed Fishery, for which the only interaction is with the distribution of the oyster brood stock landwards of the 100 m isobath.

The region currently supports a number of industries including petroleum exploration and production, as well as minerals extraction. Eleven active petroleum exploration permits are wholly or partially in the operational area. The closest active production licences to the operational area are located north of the Dampier Archipelago approximately 55 km south and 110 km south-west of the operational area, respectively, and are operated by Santos Limited.

Polarcus is aware that Searcher Seismic Limited (Searcher) has been granted a Special Prospecting Authority (SPA) and Access Authority (AA) to acquire approximately 14,000 line kilometres of two-dimensional (2D) data (Bilby 2D MSS) within an indicative operational area that encompasses the entire operational area of the Capreolus 3D MSS between March and June 2015.

Given their overlapping and concurrent activities, Polarcus and Searcher have coordinated their survey planning including undertaking joint stakeholder consultation, running a combined environmental risk assessment workshop and planning their respective activities to reduce any potential cumulative effects to ALARP and acceptable levels. Polarcus is also aware that other seismic survey companies have obtained approval under the *OPGGS Act* to conduct multi-client seismic surveys across a similar area and timeframe as the Capreolus 3D MSS. The business model for multi-client surveys relies on companies such as Polarcus 'selling' the acquired data to multiple petroleum titleholders.

PGS Australia Pty Ltd (PGS) and Dolphin Geophysical have also both submitted EPs to NOPSEMA to undertake seismic surveys in the vicinity of the operational area. Both companies were contacted during the stakeholder engagement process to find out whether there would be any interaction between their surveys and the Capreolus 3D MSS. Through the stakeholder engagement PGS confirmed that seismic acquisition would be not conducted during this calendar year. In addition, consultation with Apache (now Quadrant Energy), indicated that access to these permits by Dolphin Geophysical would not possible until completion of the Capreolus 3D MSS. Consultation with PGS and Dolphin Geophysical companies is ongoing.

Consultation undertaken to date indicates that the operational area is used mainly for commercial shipping operations, transiting to and/or from the Port of Dampier and Port of Port Hedland.

Interactions between tourism and recreational activities in the operational area are considered unlikely as the majority of activities are carried out within WA State waters. The peak season for recreational fishing at Rowley Shoals (between September and December) (DPAW 2013) overlaps with the timing of the Capreolus 3D MSS. As a result, relevant charter companies have been consulted with as part of the stakeholder engagement process, where it was advised that interactions with recreational vessels travelling to the Rowley Shoals are considered to be unlikely (refer to *Section 4*).

3.4 KEY REGIONAL RECEPTORS

Protected areas and coastal receptors in the vicinity of the operational area are listed in *Table 3.2*.

Table 3-2 Key Regional Sensitive Receptors

Receptor	Approximate Distance
Eighty Mile Beach Commonwealth Marine Reserve	30 km
Eighty Mile Beach Ramsar Site	100 km
Rowley Shoals Marine Park	25 km
Mermaid Reef Commonwealth Marine Reserve	115 km
Argo-Rowley Terrace Commonwealth Marine Reserve*	Overlaps
Roebuck Commonwealth Marine Reserve	300 km
Kimberley Commonwealth Marine Reserve	245 km
Montebello Commonwealth Marine Reserve	180 km
Dampier Commonwealth Marine Reserve	130 km
Bedout Island	40 km
North Turtle Islet	75 km
Little Turtle Islet	90 km
Glomar Shoals	100 km
Lacepede Islands and Reef	350 km
Dampier Archipelago and surrounding islands (including Legendre and Delambre)	180 km
Kimberley Coast	315 km
Broome Coast	240 km
Port Hedland Coast	80 km
Dampier Coast	165 km

**Note: The Argo-Rowley Terrace Commonwealth Marine Reserve includes a Multiple Use Zone (rated IUCN Category VI) to the south and a Marine National Park Zone (rated IUCN Category II) to the north. The operational and survey area overlap with part of the Multiple Use Zone. At present, there is no statutory management plan in place for the Argo-Rowley Terrace Commonwealth Marine Reserve. The Director of National Parks has issued a general approval for mining operations (including exploration activities, like marine seismic surveys) throughout the reserve while a statutory management plan is prepared.*

4 STAKEHOLDER CONSULTATION

Relevant stakeholders were identified by considering the interests and activities that occur within or around the operational area, taking into account the survey activities, timing, and potential environmental impacts and risks (of both planned activities and potential unplanned events) (*Table 4.1*).

Table 4-1 Relevant Stakeholders Consulted

Commonwealth Government	
• Australian Customs and Border Protection Service • Australian Hydrographic Office • Australian Maritime Safety Authority • Australian Fisheries Management Authority	• Department of Agriculture • Department of Communications • Department of Defence • Department of Industry • Native Title Tribunal • Federal Member for Durack
State Government	
• Department of Mines and Petroleum • Office of the Environmental Protection Authority • Department of Environmental Regulation • Department of Transport	• Department of Fisheries • Department of Parks and Wildlife • Member for Pilbara • Member for Kimberly • Shire of Broome • Town of Port Hedland
Commercial Fisheries & Associations	
• North West Slope Trawl Fishery • Western Tuna and Billfish Fishery • Western Skipjack Fishery • Southern Bluefin Tuna Fishery • Nichol Bay Prawn • Specimen Shell Managed Fishery • Pilbara Line Fishery • Pilbara Fish Trawl • Mackerel Managed Fishery • Marine Aquarium Fish • Pearl Oyster Managed Fishery • Beche-De-Mer Fishery • Pilbara Developing Crab Fishery	• West Coast Deep Sea Crustacean Managed Fishery • Commonwealth Fisheries Association • Western Australian Fishing Industry Council • Australian Southern Bluefin Tuna Industry Association • Australian Council of Prawn Fisheries • Australian Fishing Trade Association • Pearl Producers Association • Western Australian Northern Trawl Owners Association
Recreational Fishing, Charters, Marine Tourism Operators	
• Kimberly Marine Tourism Association • Australia's North West Tourism • RecfishWest	• Relevant Recreational Fishing, Whale Watching and Marine Charter Operators • Western Australian Game Fishing Association
Environmental Non-Governmental Organisations	
• Australian Marine Conservation Society • Australian Conservation Foundation • Wilderness Society	• Conservation Council of WA • World Wildlife Fund • International Fund for Animal Welfare (IFAW)
Ports and Shipping	
• Dampier Port Authority • Pilbara Ports Authority	• Broome Port Authority
Industry	
• APPEA • Broome Chamber of Commerce and Industry • Dolphin Geophysical • PGS Australia Pty Ltd	• Searcher Seismic Limited • Port Hedland Chamber of Commerce • Telstra • Nextgen

Oil Spill Response
• Australian Marine Oil Spill Centre (AMOSC)

An information fact sheet, including a map showing the survey area, was prepared and distributed by email to each relevant stakeholder on the 4 October 2014. For the July to November 2015 Capreolus 3D MSS extension, an updated information sheet was prepared and distributed by email on 16 April 2015 to stakeholders involved in the 2014 consultation process as well as additional stakeholders identified to be relevant to the proposed timeframe extension. Where no response was received, a follow up request was made. Where feedback was received, this was acknowledged in writing, information was provided (where requested) or subsequent engagement arranged to seek a resolution to valid concerns.

A summary of key issues and concerns raised by stakeholders during consultation for the EP, and how Polarcus has addressed these, is provided in *Table 4-2*.

Table 4-2 Summary of Stakeholder Key Issues Raised

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
Commonwealth Government				
Australian Customs and Border Protection Service	Email with Information Fact Sheet and Map sent on 4th October 2014	Responded on 14th October that no comments or concerns at this time but requested to be kept informed of future developments.	Fair consultation completed and closed.	Update prior to survey mobilisation
	Email with second Information Fact Sheet and Map sent on 16th April 2015	Responded on 20th April stating no comments or concerns at this time but requested to be kept informed of future developments.	Polarcus acknowledged the response and agreed to keep them informed. Fair consultation completed and closed.	Keep informed of future developments.
Australian Fisheries Management Authority	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October	No response received to the original or follow up email.	Fair consultation completed and closed.	No further action required
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 29th April.	Responded on 29th April stating no additional feedback than that provided previously. Recommended continued consultation directly with fishers and the fishing industry.	Polarcus acknowledged AFMA's response and informed them of continued consultation directly with fishers and the fishing industry.	No further action required
Australian Hydrographic Office (AHO)	Email with Information Fact Sheet and Map sent on 4th October 2014	No response received from the AHO. However, AMSA advised that the Hydrographic Office must be contacted no less than two working weeks before operations commence for the promulgation of related Notice to Mariners.	Fair consultation completed and closed.	Requirement to contact AHO prior to survey commencement has been included as an Environmental Performance Standard in *Table 7.3* of this EP.
	Email with second Information Fact Sheet and Map sent on 16th April 2015	Responded on 17th April stating AHO will update their notice to mariners for the new vessel and the revised completion date.	Polarcus acknowledged AHO's response on 4th May.	No further action required
AMSA - Marine Operations Division	Email with Information Fact Sheet and Map sent on 4th October 2014 Further correspondence took place on the 10th, 13th and 19th of October	AMSA responded by email on 10 October and provided vessel track data, requesting these be provided to Searcher and Polarcus Vessel Masters, noting the shipping fairways. AMSA requested Pilbara Ports Harbour Master to be kept informed so that Pilots/MPX, Agents and Shipping can be advised of activities well in advance. AMSA requested exceptional communications be maintained with commercial shipping encountered during survey activities, noting the speed difference between commercial shipping and the survey vessel. AMSA requires the survey vessels to maintain continuous visual and radar watch and display appropriate signage and lights to indicate when manoeuvrability is restricted and to tow reflective tailbouys at the end of the streamers. AMSA requires Searcher and Polarcus to inform the AMSA's Rescue Coordination Centre (RCC) before operations commence and on completion. AMSA advised that the AHO must also be contacted for issue of Notices To Mariners (refer to AHO). AMSA requested that Searcher and Polarcus share any observations / lessons learned regarding interactions with commercial shipping on conclusion of the survey. AMSA informed that they were aware of another seismic survey being undertaken in the same area over the same period.	Searcher and Polarcus acknowledged AMSA's advice in a response on 13 October advising that the points raised in AMSA's email were noted. Searcher and Polarcus will engage with the Pilbara Ports Harbour Master, AHO and AMSA RCC as advised, and provide AMSA with any lessons learned after the survey. AMSA were advised that Vessel Masters would receive a project induction and would be briefed on other ship traffic that may be encountered in the survey area. Visual and radar watches will be conducted at all times and the vessels will display the appropriate day shapes and navigation lights for vessels limited in their ability to maneuver. In addition the tail of each towed seismic cable will be clearly marked with a tallboy with flashing lights and radar reflectors. On 13 October AMSA were advised by email that Searcher and Polarcus are aware that PGS has submitted an Environment Plan to NOPSEMA and would engage with them if there are likely to be simultaneous operations in the vicinity.	Polarcus will provide Pilbara Ports Harbour Master, AHO and AMSA RCC survey pre-mobilisation and completion notification. Vessel Masters to be advised of shipping fairways in the operational area and given copies of the vessel track charts provided by AMSA. Interaction with other vessels to be included and discussed during project inductions Further updates to be provided to AMSA during the conduct of the surveys and feedback/lessons learned to be provided after the surveys are complete.
	Email with second Information Fact Sheet and Map sent on 16th April 2015	Responded on 17th April stating AMSA's previous comments on the Capreolus 3D MSS in October 2014 still stand and made similar requests of Polarcus for the timeframe extension.	Polarcus acknowledged AMSA's advice in a response on 4th May advising that the points raised in AMSA's email were noted. AMSA's requests will be addressed as detailed above.	As above.

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
Department of Agriculture-ABARES	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October	ABARES responded on 31th October doubting that they would comment on the proposal but asking for the information sheet and map to be resent.	Fair consultation completed and closed.	The information sheet and map was resent on 31 October and there has been no further response. No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 29th April.	ABARES responded on 1st May stating they generally do not routinely receive, or respond to requests relating to seismic testing and directed submissions to AFMA for requests.	Polarcus acknowledged ABARES response on 4th May.	No further action required.
Department of Communications	Email with Information Fact Sheet and Map sent on 4th October 2014 with further email correspondence on the 16th October	Advised that operational areas are not in the vicinity of existing protection zones, but suggested that Telstra and Nextgen be contacted as both operate / plan to operate telecommunications cables with landing points in Port Hedland.	Responded by email on 17th October that Telstra and Nextgen would be included on an updated distribution list. Fair consultation completed and closed.	Telstra and Nextgen sent Information Fact sheet and map on 17th October.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 29th April.	Email response received on 4th May stating that Polarcus should undoubtedly be aware of the need to take account of extant submarine cable operators in this area. If Polarcus has any doubts about the location of such cables, DoC encourages Polarcus to contact the relevant submarine cable operator(s) to ensure that telecommunications cables are not inadvertently damaged by this activity.	Polarcus acknowledged the Department of Communications response on 5th May.	Polarcus to take account of extant submarine cable operators in the area and contact them to ensure that telecommunications cables are not damaged by the survey.
Department of Defence	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October	Response received by email on 10 November. Defence has no issues with the survey.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up email on 29th April.	Response received by email on 4th May. Defence has no issues with the survey.	Polarcus acknowledged the Department of Defence's response on 5th May.	No further action required.
Department of Industry	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October.	No response	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up email sent on 29th April and 4th May.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Federal Member for Durack	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October	No response other than an automated reply on 7 and 30 October.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015 and re-sent on 29th April.	No response other than an automated reply on 16th April and no response received to the second email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
	Follow up call on 10th June.	Response received 10th June 2015, stating that further information will not be provided.	Fair consultation completed and closed.	No further action required.
State Government				
Department of Environmental Regulation	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October	Response received by email on 31 October advising that the request had been forwarded to the Department of Parks and Wildlife for further assistance.	Fair consultation completed and closed.	No further action required. The DER was not sent the second Information Fact Sheet in April 2015 since they previously indicated that no further communication was required. Information sheet has been sent to DPaW.

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
Department of Mines and Petroleum	Email with Information Fact Sheet and Map sent on 4th October 2014.	Response received by email on 15th October. Noting the location of the Capreolus 3D and Bilby 2D MSSs in Commonwealth jurisdiction, the Department of Mines and Petroleum does not require any further information at this time. However, should the surveys change significantly in size or duration DMP request to be advised. DMP recommended that key periods of biological significance be considered when planning the timing of acquisition, and where possible plan the timing to minimise environmental impacts. DMP requested to be provided pre-start and cessation notifications confirming the start and completion dates for the surveys.	Advised DMP by email on 19th October that their feedback had been noted and that DMP will be informed prior to the start, and on completion of the surveys. DMP were also advised that the surveys had been planned avoid as far as possible key periods of biological activity.	Provide DMP pre-start and cessation notices. Engage again with DMP if the scope of the surveys change significantly in size or duration. The ways in which the surveys have been planned to minimise their potential to affect key periods of biological productivity are described in *Sections 7.1, 7.3* and *8.1.*
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 1st May and email on 4th May.	No responses received to the emails and follow up call at the time of EP revision submission. Email received on 8th May 2015 stating that the DMP does not require any further information at this time. DMP recommended that Polarcus consult with the Department of Parks and Wildlife (WA) and the Department of Fisheries (WA), if they have not already been identified as interested stakeholders.	DMP were notified on 11th May 2015 that Polarcus will provide DMP with a pre-start notification to confirm the start date of the survey prior to the extension commencement and will provide a cessation notification to inform DMP upon completion of acquisition. DMP were also notified that Polarcus have also consulted with and have received feedback from the Department of Parks and Wildlife and the Department of Fisheries. Fair consultation completed and closed.	No further action required.
Department of Fisheries	Email with Information Fact Sheet and Map sent on 6th October 2014. Further correspondence by email on the 14h, 16th, 23rd and 31st October	DoF responded by email followed by a copy letter on 23rd October. DOF noted the potential for the surveys to affect fish populations and the operations of fishers who harvest these resources and requested feasible mitigation strategies be implemented, including using the minimum acoustic capacity (currently 4,240 cubic inches) to achieve survey objectives. DOF provided a list of State commercial fishing interests in the bioregion and requested that license holders in these fisheries, and Recfishwest and WAFIC be consulted. DOF advised that Eighty Mile Beach is of concern to the pearling industry and as such the Pearl Producers Association should be engaged. DoF noted seismic surveys may alter fish behaviour during spawning and pre-spawning periods and provided information on spawning / aggregation times. DOF requested consideration be given to minimise the impacts on fish spawning, including soft starts, sound and exposure time minimisation or avoidance of spawning periods. DOF expressed concerns about biosecurity and requested that vessel operators minimise the risk of translocation marine pests and organisms to WA water.	Responded by email 31st October and 3rd November, advising that: • Energy source to be used for the surveys has been reduced to 3,480 cubic inches, which is deemed to be the minimum volume that will meet the surveys objectives. • License holders of fisheries that intersect the operational area, or may be affected by survey activities would be engaged, including the PPA, Recfishwest and WAFIC (see under Fisheries below). • Consideration will be given to fish spawning locations and time periods when designing the mitigation measures for the survey. • Biosecurity will be managed in accordance with current regulatory requirements and industry guidelines.	Potential impacts on fish associated with noise generated by the surveys are assessed in *Section 7.3*, on the fishing industry in *Section 7.1*, and regarding biosecurity in *Section 7.6*. The impacts and risks to commercial fisheries associated with both surveys have been determined to low, reduced to ALARP and acceptable. No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up email sent on 4th May and call received from DOF on 4th May.	DOF responded by email with a letter on 5th May. DOF provided a list of State commercial fishing interests in the bioregion and requested that license holders in these fisheries as well as WAFIC, Recfishwest and the PPA be consulted. DOF noted seismic surveys may alter fish behaviour during spawning and pre-spawning periods and provided	Responded by email 6th May advising that: • License holders of fisheries that intersect the operational area, or may be affected by survey activities would be engaged, including the WAFIC, Recfishwest and the PPA (see under Fisheries below). • Consideration will be given to fish spawning	Ongoing consultation required if DoF respond with any concerns or comments to survey extension.

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
		information on spawning/aggregation times. DOF requested consideration be given to minimise the impacts on fish spawning, including soft starts, and sound and exposure time minimisation or avoidance of spawning periods. DOF expressed concerns about biosecurity and requested that vessel operators minimise the risk of translocation of marine pests and diseases into or within WA waters. DOF requested that vessel hulls, sea chests and niche areas must be 'clean' before each voyage.	locations and time periods when designing the mitigation measures for the survey. • Biosecurity will be managed in accordance with current regulatory requirements and industry guidelines. Emailed the DOF on 7th June to provide further details regarding the fair consultation completed with the PPA. The email described the PPA's expressed concerns for the original EP (Revision 0) and Polarcus' response actions including how subsequently the Capreolus 3D MSS was planned to avoid areas in less than 100 m water depth during the pearl oyster spawning periods (December, and February-March). No concerns have been raised to Polarcus from the PPA for the revised EP regarding the proposed timeframe extension.	
Department of Transport	Email with Information Fact Sheet and Map sent on 7th October 2014. Further correspondence by email on the 7th, 30th and 31st October	Information sheet and map forwarded internally to Maritime Environmental Emergency Response, Department of Transport on 7th October. In response to the follow up email on 30th October the Manager, Environmental Emergency Response sent a link to Consultation Guideline notes.	Ongoing consultation required with MEER (Maritime Environmental Emergency Response).	Update prior to survey mobilisation.
	Email with second Information Fact Sheet and Map sent on 16th April and follow up call on 29th April.	Conversed with DoT officer on 29th April. Officer stated that because the survey is significantly offshore and in Commonwealth waters, the DoT does not have any issue with it. Follow up email sent on 4th May to MEER. Received email on 2nd June 2015 from MEER requesting meeting.	Polarcus is currently coordinating a meeting with MEER. Follow up email sent on 4th June 2015 requesting a meeting agenda. Follow up calls on 8th, 9th and 11th June. No response received at the time of EP revision submission.	Ongoing consultation required if MEER raises any concerns or comments to survey extension during the upcoming meeting.
Department of Parks and Wildlife (DPaW)	Email with Information Fact Sheet and Map sent on 4th October 2014. Further communication by email on the 7th, 20th 22nd, 29th, 31st October, and 6th November , phone calls on the 20th and 22nd October and 6thNovember with DPaW, Senior Environmental Officer-Marine.	DPaW requested by phone on 22 October for the information sheet and map to be resent. Information sheet and map resent on by email 22 October. Additional information requested by email on 29 October with regards to proximity of data acquisition to Bedout Island and the intensity of noise emissions (generally provided as sound exposure levels). DPaW provided a copy of the standard advice note, which explains the department's interests and expectations. DPaW recommend in addition to considering the management of impacts on marine mammals that potential impacts on sea turtles be addressed during the assessment process; e.g. locations of turtle rookeries on offshore islands; survey timing relative to nesting; and the distribution of high noise levels (SELs >160dB re 1µPa².s (at 1m) in relation to inter-nesting habitats used by turtles nesting on offshore islands. DPaW assumes that personnel will not be landing on island nature reserves.	Responded to DPaW by email on 31 October advising that the closest point the Bilby 2D MSS lines are approximately 15 km from Bedout Island, which is equivalent to 10 km from State waters. DPaW were provided with the source signature for the proposed 3,480 cubic inch array, which will be used on the Bilby 2D MSS. The Bilby 2D MSS is the survey with lines closest to Bedout Island. The 3,480 cubic inch array is considered to be the lowest volume source that will meet the surveys geophysical objectives Additional response to DPaW on 6 November. Searcher and Polarcus confirm the potential impacts on sea turtles has been considered in the preparation of the EPs and measures to mitigate the potential impacts will be included in the EPs. Searcher and Polarcus confirm that no personnel will be landing on island nature reserves during the conduct of the surveys.	Ongoing consultation required to ensure DPaW has all the information they need to comment further.
	Email with second Information Fact Sheet and Map sent on 16th April 2015 and follow up call on 29th April.	Responded on 30th April stating that the Officers have reviewed the information provided and do not wish to make any further comments.	Fair consultation completed and closed.	No further action required
Office of the Environmental Protection Authority	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October	Response received by email on 31 October: As the surveys are to be undertaken in Commonwealth waters, the Office of the EPA has no comment and requires no further information.	Fair consultation completed and closed.	No further action required

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
	The OEPA were not sent the second Information Fact Sheet in April 2015 since the survey is to be undertaken in Commonwealth waters and they indicated in October 2014 that they require no further information.			
Member for Pilbara	Email with Information Fact Sheet and Map sent on 4 October 2014 with follow up email on the 30 October	No response	Fair consultation completed and closed.	No further action required
	Email with second Information Fact Sheet and Map sent on 16th April and with follow up email and call on the 29th April.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required
	Follow up call on 10th June	Response given states that information has been reviewed and they do not wish to make any further comments as they have no concerns.	Fair consultation completed and closed.	No further action required
Member for Kimberley	Email with Information Fact Sheet and Map sent on 7 October 2014 with follow up email on the 30 October	No response	Fair consultation completed and closed.	No further action required
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call and email on 29th April.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required
	Follow up call and email on 10th June.	No response received at the time of EP revision submission.	Fair consultation completed and closed.	No further action required
Shire of Broome	Email with Information Fact Sheet and Map sent on 7 October 2014 with follow up email on the 30th October.	No response	Fair consultation completed and closed.	No further action required
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on the 29th April.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required
	Follow up call on 10th June.	Response over phone was there were no issues, however waiting for response in writing. No response received at the time of EP revision submission.	Fair consultation completed and closed.	No further action required
Town of Port Hedland	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October	No response	Fair consultation completed and closed.	No further action required
	Email with second Information Fact Sheet and Map sent on 16 April 2015. Follow up call on the 29th April.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required
	Follow up call on 10th June.	Response over email is that the email has been forwarded to the Environmental and Health Officers. No response received at the time of EP revision submission.	Fair consultation completed and closed.	No further action required
Fisheries				
Commonwealth Fisheries: • North West Slope Trawl Fishery (NWSTF); • Western Tuna and Billfish Fishery (WTBF); • Western Skipjack Fishery (WSF); • Southern Bluefin Tuna Fishery (SBTF).	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October	No response	Stakeholders of the potentially affected fisheries have been provided sufficient information and provided fair time to raise any concerns. Consultation has been undertaken with potentially affected stakeholders in line with AFMA guidance. Based on the information in *Table 4.9,* only 2 of the fisheries may have effort in the operational area during the time of the survey (North West Slope and Western Tuna and Billfish). However fishing effort is reportedly low.	Assess any responses received, provide response and maintain record of communications.
	Email with second Information Fact Sheet and	No response received to the April email at the time of EP	As above	As above

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
	Map sent on 16th April 2015. Follow up email and call on the 29th April. Another follow up email sent on 4th May.	revision submission.		
	Follow up call on 10th June.	Response over phone that they will get in touch with further information. No response received at the time of EP revision submission.	As above	As above
State Fisheries: • Broome Prawn Fishery* • Nikol Bay Prawn Fishery • Northern Demersal Scalefish Fishery* • Specimen Shell Managed Fishery • Pilbara Fish Trawl • Pilbara Demersal Trap* • Pilbara Line Fishery • Mackerel Managed Fishery • Marine Aquarium Fish • Pearl Oyster Fishery • Beche-De-Mer Fishery • Pilbara Developing Crab Fishery • West Coast Deep Sea Crustacean Managed Fishery	Letter with Information Fact Sheet and Map Posted to Licence Holders on 3rd November as advised by Department of Fisheries.	No response received from license holders at the time of EP submission.	Any responses received from stakeholders will be assessed for their merit, a response provided and records maintained. Consultation has been undertaken in accordance with the Department of Fisheries Guidance. Note: those fisheries marked with an asterix (*) are not relevant to the Capreolus 3D MSS operational area.	Assess any responses received, provide response and maintain record of communications.
	Email with second Information Fact Sheet and Map sent on 16thApril 2015 and follow up email on 29th April to DOF. Letters posted to State fisheries on 22nd April 2015; with the exception of Marine Aquarium Fish, Pilbara Developing Crab and West Coast Deep Sea Crustacean, to which letters were sent on 23rd April.	No response received to the April email at the time of EP revision submission.	As above	As above
Commonwealth Fisheries Association	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 29th April and online contact form also filled out.	Responded on 29th April stating Polarcus will need to speak directly to the fishing operators in the area of the proposed works.	Responded to CFA stating Polarcus have been consulting with fishers and the fishing industry since October 2014 regarding the Capreolus 3D MSS and ongoing consultation has included updating them regarding the survey timeframe extension. An updated description of the stakeholder consultation process will be included in the EP revision for submission to NOPSEMA. Consultation has been undertaken with potentially affected stakeholders in line with AFMA guidance.	No further action required.
Western Australian Fishing Industry Council	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015 and follow up email and call on 29th April.	Responded on 29th April stating WAFIC has no specific concerns with the proposed extension of timeframes but recommended that the specific fishermen active in the area of interest be consulted as to any individual concerns.	Responded to WAFIC stating Polarcus has been consulting with fishers and the fishing industry since October 2014 regarding the Capreolus 3D MSS and ongoing consultation has included updating them regarding the survey timeframe extension. Consultation has been undertaken with potentially affected stakeholders in line with AFMA guidance and an updated description of the stakeholder consultation process will be included in the EP revision for submission to NOPSEMA. Fair consultation completed and closed.	No further action required.
Australian Southern Bluefin Tuna Industry	Email with Information Fact Sheet and Map sent	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
Association	on 7 October 2014 with follow up email on the 30th October			
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up email and call on 29th April.	Responded on 17th April stating the proposed area is outside of the currently known core spawning area for Southern Bluefin Tuna and are thus not concerned with the extension.	Fair consultation completed and closed.	No further action required.
Australian Council of Prawn Fisheries	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October.	Received email response 30th October "No response because proposed areas do not transect prawn trawling areas."	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015	Responded on 17th April requesting information in latitude and longitude with reference to the Australian geodesic datum.	Responded with information as requested.	No further action required.
	Follow up call on 11th June.	Response over phone was there were no issues or concerns. We were advised that the Information Fact Sheet was passed on to people/boats that may be affected. No response received at the time of EP revision submission.	Fair consultation completed and closed.	No further action required
Australian Fishing Trade Association	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 29th April and follow up email sent on 4th May.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Pearl Producers Association	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October Resent Information Fact Sheet and Map at request of PPA on the 30th October A meeting was held on 3rd December 2014 with representatives from Polarcus, Searcher, the PPA and WAFIC attending. Emails containing further information and discussion from 15th December 2014 following the meeting on 3rd December 2014.	Responded on 3rd November by email with a letter attached. PPA expressed concerns about the potential impacts of seismic survey activity on pearl oyster stocks, especially the larvae phase, recruitment to the fishery and the quality of the pearl oysters post seismic activity. PPA claim that pearl oyster stocks that feed the fishery may exist out to the 100m depth contour and possibly beyond. The PPA indicated a lack of rigorous research and has been requesting industry to improve this situation. Given the lack of scientific research, PPA considers the risk level to the industry remains 'high' and unacceptable. PPA state they cannot support this seismic survey proposal at this time. During the meeting (3rd December 2014), the PPA were advised that as the survey area of the Capreolus 3D MSS is located further offshore, in water depths > 70 m, and because Polarcus has committed to schedule the survey to avoid data acquisition in water depths < 100 m during the pearl oyster spawning season (December, February – March), the potential for the Capreolus 3D MSS to impact the pearl oyster fishery is less than that of Searcher's Bilby 2D MSS. As such it was agreed to focus discussions on Searcher's proposed Bilby 2D MSS, a large part of which is proposed to be undertaken in waters < 100 m depth. In follow-up correspondence to this meeting, PPA acknowledged that the Capreolus 3D MSS poses different environmental effects due to its location in deeper water (> 70 m) and the fact that the survey is a 3D survey. However, the PPA disagreed with the position that the Capreolus 3D MSS is of less or little concern	Fair consultation is ongoing between the PPA and Polarcus.	Following fair consultation with the PPA the Capreolus 3D MSS has been planned to avoid areas in less than 100 m water depth during the pearl oyster spawning periods (December, and February-March). As part of the ongoing engagement with the PPA, documented in Annex C, Polarcus intend to share this assessment with the PPA along with further elaboration on the assessment of impacts and risks to pearl oysters, in their various lifecycle stages described in this EP. Polarcus is committed to working proactively with the PPA and helping where practicable, to allay their concerns about seismic exploration. The correspondence with the PPA, and merits of claims made by the PPA have been assessed by Polarcus and are included as part of *Annex C*.
	Email with second Information Fact Sheet and Map, taking into consideration concerns raised	No response received to consultation at the time of EP revision submission.	Due to previous concerns raised, Polarcus to continue conducting fair consultation with the	Polarcus to work proactively with the PPA as required.

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
	during first round of consultation, sent on 16th April 2015. Follow up call on 29th and 30th April.		PPA.	
Western Australian Northern Trawl Owners Association	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up email on 29th April and second follow up email sent on 4th May.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
	Follow up call and email sent on 10th June.	No response received at the time of EP revision submission.	Fair consultation completed and closed.	No further action required
Tourism and Recreation				
RecfishWest	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015	Response received with no comments.	Fair consultation completed and closed.	No further action required.
Western Australian Game Fishing Association	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up email and call on 29th April.	Phone conversation with President noted that the location of the survey is very far off from where their fishing operations will be. No concern was mentioned.	Fair consultation completed and closed.	No further action required.
North Star Cruises Australia	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 30th April.	Response received on 1st May highlighting concerns about • Noise pollution for divers and snorkelers while they are in the water on North Star cruises. • Requested Polarcus to provide outline for the sort of effect the survey will have on the flora and fauna within certain proximity. • Requested information on the closest point of approach for Swath 4 and Swath 5 in comparison to Clerk and Mermaid Reef as well.	Polarcus responded on 6th May advising that: • At its closest point, the Rowley Shoals will be approximately 25 km away from the operational area and impacts at that distance to divers and snorkelers are not expected • Polarcus confirmed the potential impacts on flora and fauna have been considered in the preparation and revision of the EP and measures to mitigate the potential impacts will be included. North Star Cruises Australia replied on 7th May 2015 indicating their appreciation for Polarcus addressing their concerns. Fair consultation completed and closed.	No further action required.
Kimberley Marine Tourism Association	Email with Information Fact Sheet and Map sent on 10th October 2014	Responded by email on 11th October asking to be kept informed closer to the start of the surveys.	Fair consultation completed and closed. Provide update prior to surveys commencing.	Update prior to survey mobilisation.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up email on 29th April.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up phone call was made 10th June 2015.	Response received 10th June highlighting concerns about: • Safety issues that will arise for visitors travelling from Broome to Rowley Shoals during Sept-November period in terms of interaction between their boats and the seismic vessel. • Visual impacts of the seismic vessel at the Rowley Shoals during Sept-November period. Additional information on impacts from the Survey was	Polarcus responded on 10th June, advising that, considering the distance of the survey area from the Rowley Shoals Marine Reserve (75 km during periods of increased tourism activity (Sep-Oct)), and the management measures put in place in the unlikely event of interactions w between seismic vessel and recreational charter vessels, visual and physical impacts to tourism activity are highly unlikely.	

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
		requested.		
Australia's North West Tourism	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up email and call on 29th April.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
	Follow up call on 10th June.	Response received 10th June highlighting concerns about: Visual impacts of the seismic vessel at the Rowley Shoals during Sept-November period.	Polarcus responded on 10th June, advising that: • a link to the previously accepted EP summary is available online (link provided) • considering the distance of the survey area from the Rowley Shoals Marine Reserve (75 km during periods of increased tourism activity (Sep-Oct)), and the management measures put in place in the unlikely event of interactions w between seismic vessel and recreational charter vessels, visual and physical impacts to tourism activity are highly unlikely.	
Arrow Pearl Co. and vessel provider	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 29th April and follow up email sent on 4th May.	No response received to consultation at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
	Follow up call on 10th June.	Response received over the phone was that there were no issues. However the Information Fact Sheet has been forwarded to the relevant people. No response received to consultation at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Broome Billfish Charters	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 30th April.	No response received to consultation at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
	Follow up phone call was made 10th June 2015.	Response received 10th June highlighting concerns about: • Safety issues that will arise for visitors travelling from Broome to Rowley Shoals during Sept-November period in terms of interaction between their boats and the seismic vessel. • Visual impacts of the seismic vessel at the Rowley Shoals during Sept-November period. Additional information on impacts from the Survey was requested.	• Polarcus responded on 10th June, advising that considering the distance of the survey area from the Rowley Shoals Marine Reserve (75 km during periods of increased tourism activity (Sep-Oct)), and the management measures put in place in the unlikely event of interactions w between seismic vessel and recreational charter vessels, visual and physical impacts to tourism activity are highly unlikely.	No further action required.
The Great Escape Charter Company	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up phone call was made 10th June 2015.	Response received 10th June highlighting concerns about: • Safety issues that will arise for visitors travelling from Broome to Rowley Shoals during Sept-November period in terms of interaction between their boats and the seismic vessel. • Visual impacts of the seismic vessel at the Rowley Shoals during Sept-November period. Additional information on impacts from the Survey was requested.	• Polarcus responded on 10th June, advising that considering the distance of the survey area from the Rowley Shoals Marine Reserve (75 km during periods of increased tourism activity (Sep-Oct)), and the management measures put in place in the unlikely event of interactions w between seismic vessel and recreational charter vessels, visual and physical impacts to tourism activity are highly unlikely.	No further action required.
Broome Whale Watching (Sentosa Charters)	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 30th April and email sent on 4th May.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
	Follow up call on 10th June.	Email was acknowledged however, no response received to the June email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Reel Teaser Charters	Email with Information Fact Sheet and Map sent on 10th October 2014 with follow up email on the	Reel Teaser Charters- asked to be kept informed both by email on 31st October.	Provide update to Reel Teaser Charters prior to surveys commencing	Update prior to survey mobilisation

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
	30th October			
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 30th April and email sent on 4th May.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
Absolute Ocean Charters	Email with Information Fact Sheet and Map sent on 10th October 2014 with follow up email on the 30th October	Absolute Ocean Charters -no concerns	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 30th April and email sent on 4th May.	No responses received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Odyssey Expeditions	Email with Information Fact Sheet and Map sent on 10th October 2014 with follow up email on the 30th October	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 30th April and email sent on 4th May.	Odyssey Expeditions replied on 8th May 2015 indicating they had no concerns to raise.	Fair consultation completed and closed.	No further action required.
Recreational and Professional Fishing and Marine Charter Operators: • Kimberley Whale Watching • Kimberley Professional Fishermen's Association • Broome Fishing Club • Unreel Adventure Safaris • Diversity Charter Company	Email with Information Fact Sheet and Map sent on 10th October 2014 with follow up email on the 30th October	No response received at the time of EP submission	Fair consultation completed and closed.	Update prior to survey mobilisation.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 30th April and email sent on 4th May.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
Environmental Non-Governmental Organisations				
Australian Marine Conservation Society	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 30th April.	AMCS employee stated that the information was forwarded to the General Manager for comment. No response received to the April email and call at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Australian Conservation Foundation	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October.	Responded by email 31st October asking for the Information Fact Sheet and Map to be re-sent. Fact Sheet and Map resent on 31st October. No response since then.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 29th April and email sent on 4th May.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Conservation Council of WA (CCWA)	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on 30th October.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call and email on 29th April.	It was agreed over the phone on 29th April and via an email from the CCWA on 30th April that the CCWA will contact Polarcus if any feedback is available. No feedback has been received to date.	Fair consultation completed and closed.	No further action required.
	Follow up call on 11th June.	Received a response to the email stating that the council is opposed to all fossil fuel development in line with the need to keep over 90% of known fossil fuel reserves in the	Fair consultation completed and closed.	No further action required.

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
		ground to avoid dangerous climate change (IPCC, World Bank, etc.) Aside from that they do not have the resources to examine individual proposals, and can only provide feedback on a cost-recovery basis (i.e. we would bill you for time), the email will be circulated to members for further comment. Email was acknowledged on 11.06.2015 and response given that NOPSEMA is undertaking assessment of the proposal.		
World Wildlife Fund	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on 30th October.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 29th April and email and call on 1st May.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Wilderness Society	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 29th April and 1st May. Email also sent on 4th May.	No response received to the April email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
IFAW	Email with second Information Fact Sheet and Map sent on 16th April and follow up calls on 29th April and 1st May.	Response received 1st May stating concerns for the • Overlap of this time period with the presence of both blue whales and humpback whales as it's likely to impact IFAW's interest of seeing marine life protected from noise pollution. • IFAW requested information as to what consideration has been given for the presence of a number of other protected cetacean species known to occur within the area. • FAW also requested for further detail on the mitigation measures that will be employed during this survey e.g. number of MMOs and PAM operators. Requested Polarcus to reconsider the extension of the survey.	Polarcus responded on 6th May advising that: • Potential impacts on marine fauna with the potential to occur in the operational area have been considered in the preparation and revision of the EP and measures to mitigate the potential impacts will be included. • There are five other threatened and/or migratory cetaceans occurring in the operational area. As described in *Section 4.3.3*, due to the timing of the survey and the preferred or typical species habitat, these species are not expected to be common in the operational area. • Key mitigation measures (including survey programme adjustments) for potential impacts on marine fauna were outlined.	Assess any responses received, provide response and maintain record of communications.
Ports and Shipping				
Dampier Port Authority	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October	No response received at the time of EP submission.	Fair consultation completed. Given that the operational areas encompass shipping routes to the Port, an update will be provided prior to the surveys commencing, as requested by AMSA.	Update prior to survey mobilisation
	Email with second Information Fact Sheet and Map sent on 16th April 2015.	Response received on 17th April stating that the area is outside Dampier Ports jurisdiction and therefore they have no comment to make.	As above.	No further action required.
Pilbara Ports Authority	Email with Information Fact Sheet and Map sent on 7th October 2014 and copied on communication with AMSA	No response received at the time of EP submission.	Fair consultation completed. Given that the operational areas encompass shipping routes to the Port, an update will be provided prior to the surveys commencing, as requested by AMSA.	Update prior to survey mobilisation
	Email with second Information Fact Sheet and	Response received on 17th April stating that the area is outside the Pilbara Ports jurisdiction and therefore they	As above.	No further action required.

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
	Map sent on 16th April 2015.	have no comment to make.		
Broome Port Authority	Email with Information Fact Sheet and Map sent on 7th October 2014.	No response received at the time of EP submission.	Fair consultation completed. Given that the operational areas encompass shipping routes to the Port, an update will be provided prior to the surveys commencing, as requested by AMSA.	Update prior to survey mobilisation
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 29th April and email sent on 4th May.	No response received to the April email and call at the time of EP revision submission.	As above.	No further action required.
	Follow up call on 11th June.	Email has been acknowledged and forwarded on to Harbour Master. No response received to the June email and call at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Industry				
APPEA	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October.	Responded on 6 November to confirm receipt and to advise that APPEA has no specific response or feedback on the survey at present.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 30th April.	Conversed with receptionist and receipt of email acknowledged and forwarded on to the Policy Department. Polarcus advised that if no response has been received to date, therefore APPEA has no specific response or feedback.	Fair consultation completed and closed.	No further action required.
Broome Chamber of Commerce and Industry	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 30th April.	No response received to the April email and call at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
	Follow up call on 10th June.	Response received on 10th June, there were no concerns.	Fair consultation completed and closed.	No further action required.
Port Hedland Chamber of Commerce	Email with Information Fact Sheet and Map sent on 7th October 2014 with follow up email on the 30th October	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015.	No response received to the April email and call at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Telstra	Email with Information Fact Sheet and Map sent on 17th October 2014 with follow up email on the 30th October.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up call on 1st May and email sent 4th May.	No response received to the April email and call at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
	Follow up call and email sent on 11th June.	No response received to the June email and call at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
Nextgen	Email with Information Fact Sheet and Map sent on 17th October 2014 with follow up email on the 30th October.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April. Follow up call on 30th April and email sent 4th May.	No response received to the April email and call at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
	Follow up call on 10th June.	Email has been acknowledged and forwarded on to	Fair consultation completed and closed.	No further action required.

Stakeholder	Consultation Undertaken	Stakeholder Response	Status Assessment	How Issue / Concern Addressed
		relevant people. No response received to the June email and call at the time of EP revision submission.		
Dolphin Geophysical	Email with information regarding map and coordinates of the survey sent on 26th May 2015. Information regarding a map or coordinates of the Greater Pina Colada MC MSS survey and operational area currently being undertaken by Dolphin Geophysical was requested by Polarcus.	Response received on 26th May 2015 requesting shape files of survey area and direction of acquisition. Email regarding this information was sent to Dolphin Geophysical on 26th May 2015. No response received to the May email at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.
PGS Australia Pty Ltd	Requested for response by 11th May. No response received to date. Response received on 11th May.	Email received on 5th June that PGS does not currently intend to acquire data within the Titan EP area this calendar year, and commits to notifying and working with Polarcus to ensure a minimum separation of 40kms will be maintained between our respective vessels should our plans change.	Fair consultation completed and closed.	No further action required.
Searcher Seismic Limited	*Due to concurrent operations, Polarcus and Searcher have liaised very closely throughout the survey – refer to Section 4.3.10*			
Oil Spill Response Organisations				
Australian Marine Oil Spill Centre	Email with Information Fact Sheet and Map sent on 4th October 2014 with follow up email on the 30th October.	No response received at the time of EP submission.	Fair consultation completed and closed.	No further action required.
	Email with second Information Fact Sheet and Map sent on 16th April 2015. Follow up email sent on 4th May.	No response received to the April email and call at the time of EP revision submission.	Fair consultation completed and closed.	No further action required.

Polarcus will continue to engage with the relevant stakeholders prior to and during the Capreolus 3D MSS as appropriate. This includes ongoing engagement to inform stakeholders about key milestones and activities and any other relevant information. *Table 4.3* summarises the ongoing key consultation.

Table 4-3 Schedule for Ongoing Key Consultation

Stakeholder	Ongoing communication schedule
Commonwealth Government	
Australian Customs and Border Protection Service	Provide advance notice of survey mobilisation in the operational area, including final survey location and timing. Provide advance notice of future developments Provide advice of survey completion
AFMA	Conduct continued consultation directly with fishers and the fishing industry
AHO	Provide final survey location, vessel details and timing 2 weeks prior to survey commencement for issue of Notice to Mariners. Provide update should any details of area or timing change Provide notice of survey completion
AMSA	Advise AMSA RCC of survey commencement. Provide daily reports to RCC during data acquisition *or* ensure daily position information is provided via an operational Automatic Identification System on board the survey vessels. Provide notice of survey completion
Department of Communications	Take account of extant submarine cable operators in the area. Contact relevant submarine cable operator(s) to ensure that telecommunications cables are not inadvertently damaged by the survey.
NOPSEMA	Provide notice of start and end of the Capreolus 3D MSS. Provide monthly and incident reports during the survey and Environmental Performance Report following completion.
WA Government	
Department of Mines and Petroleum	Provide advance notice of survey commencement, including final survey location and timing. Engage again if the scope of the survey changes significantly Ongoing engagement if DMP respond with any concerns or comments to survey extension. Provide advice of survey completion
Department of Fisheries	Provide an update prior to survey commencing Ongoing engagement with DOF regarding comments on survey extension.
Department of Transport (Maritime Environmental Emergency Response)	Provide advance notice of survey commencement, including final survey location and timing. Provide advice of survey completion Ongoing engagement if MEER responds with any concerns or comments to survey extension.

Stakeholder	Ongoing communication schedule
Department of Parks and Wildlife	Send courtesy follow up advising them of the final survey location and timing prior to survey commencement.
Fisheries	
Individual fisheries licence holders	Any responses received to the information mailed to them on 3rd November 2014 will be assessed for their merit, a response provided and records maintained. For licence holders in fisheries relevant to the operational area, send a courtesy follow up advising them of the final survey location and timing prior to survey commencement, advising them of the limited manoeuvrability of the survey vessels and therefore seeking confirmation on whether arrangements to minimise the risk of disrupting fishing efforts while seismic data is being acquired need to be agreed with them. Depending on the responses received, further information will be provided to licence holders during the survey, such as survey location reports, progress status and activity look ahead reports.
Commonwealth Fisheries Association	Ongoing consultation with fishing operators in the area of the proposed works.
WAFIC	Ongoing consultation with fishermen active in the area of interest for any individual concerns
Pearl Producers Association	Provided response to the PPA's written comments on the Minutes of Meeting of 3 December 2014 to include: • Responses to each of their claims, relevant to the Capreolus 3D MSS • Details of the assessment of impacts and risks on pearl oysters and the pearl oyster fishery contained in this EP. Sent a courtesy follow up advising them of the final survey location and timing prior to survey commencement. Further consultation issued to PPA regarding the survey timeframe extension took into consideration concerns raised during the first round of consultation. No further comments have been received to date, and ongoing consultation will be conducted if PPA responds with any concerns or comments to survey timeframe extension.
Tourism and Recreation	
Kimberly Marine Tourism Association	Advise of survey commencement including final survey location and timing. Provide advice of survey completion following completion.
Recreational Fishing and Marine Charter Operators	
Ports and Shipping	
Dampier Port Authority	Provide advance notice of survey commencement, including final survey location and timing. Provide update should any details of area or timing change during the course of the survey. Provide advice of survey completion following completion.
Pilbara Ports Authority	
Broome Port Authority	

Stakeholder	Ongoing communication schedule
Industry	
PGS Australia Pty Ltd (PGS)	Ongoing consultations to ensure stakeholder has all the information they require. Email from PGS received on 5 June 2015 confirming that PGS does not currently intend to acquire data within the Titan EP area this calendar year, and commits to notifying and working with Polarcus to ensure a minimum separation of 40 km will be maintained between respective vessels should PGS' plans change.
Dolphin Geophysical	Email from Polarcus to Dolphin Geophysical requesting map or coordinates of the Greater Pina Colada MC MSS survey and operational area currently being undertaken. Dolphin responded to this email on 26th May 2015 requesting shape files of survey area and direction of acquisition. This information was provided by Polarcus. Ongoing consultation to ensure stakeholder has all the information they require.
Searcher Seismic Limited	Ongoing consultation to ensure stakeholder has all the information they require.

Additional stakeholders may be identified throughout the course of the survey, in which case these new stakeholders will be contacted and given the opportunity to provide feedback as relevant.

5 ENVIRONMENTAL IMPACTS, RISKS AND CONTROLS

5.1 ASSESSMENT APPROACH AND METHOD

To identify and evaluate the environmental impacts and risks of the Capreolus 3D MSS, a comprehensive risk assessment was undertaken for all planned activities and potential unplanned events. The risk assessment was undertaken in accordance with Polarcus Risk Assessment and Risk Management procedures; and in alignment with the approaches of the *Australian Standard/New Zealand Standard (AS/NZS) ISO 31000:2009 Risk Management and Handbook 203:2012 Managing Environment-Related Risk*.

The identification and evaluation of potential adverse impacts and risks was informed by:

- experienced environmental and social practitioners, and subject-matter experts (e.g. in the effects of underwater noise on marine fauna, oil spill modelling and emergency response);
- experienced seismic operations personnel;
- experienced specialist environmental consultants (e.g. for oil spill modelling);

- knowledge of the existing environment, its values, sensitivities, and regional importance;
- predictive modelling (e.g. for oil spills);
- published scientific and research literature;
- industry experience; and
- results of stakeholder consultation (*Section 4*).

An initial risk assessment was undertaken for the survey scheduled to be completed by end of June 2015 by way of an environmental risk assessment workshop, conducted on 2nd October 2014 to identify and assess the risks associated with the survey. On decision to extend the survey timeframes from July to November 2015, the initial risk assessment was reviewed and updated in accordance with the Polarcus Risk Assessment Procedure to ensure risk rankings reflected the proposed survey schedule extension to November 2015. The review was conducted in March 2015 by similar qualified personnel as those participating in the initial workshop.

The review followed the same risk assessment steps, including determination of the 'inherent' risk associated with the schedule change and incorporating the stakeholder consultation results. The original controls were reviewed with consideration of concerns raised by relevant stakeholders regarding the survey schedule extension. The controls were assessed to still be suitable for the survey schedule extension. The review identified that the residual risks of the original risk assessment did not change.

Each risk was evaluated using the Polarcus Risk Matrix (*Figure 5.1*).

Interpretation of Risk

Risk Conclusion	Interpretation	Explanation
LOW RISK	Acceptable	No additional controls are required. Consideration may be given to effective solutions or improvements that impose no significant cost burden. Monitoring is required to ensure that the controls are maintained.
MEDIUM RISK	Acceptable if ALARP	Efforts should be made to reduce the risk, but the cost of prevention should be measured and limited. Risk reduction methods should be implemented within a defined time period.
HIGH RISK	Not acceptable / intolerable	Work should not be started or continued until the risk has been reduced to an acceptable level. If it is not possible to reduce the risk even with unlimited resources, work has to remain prohibited.

CONSEQUENCE			LIKELIHOOD				
			Occurs all the time	Regularly occurs	Occasionally occurs	Rarely occurs	Never heard of
			An event which occurs each time or almost every time we carry out the task.	An event which may occur 2 or 3 times a month	An event which may occur once a month.	An event which may occur once or twice a year.	An event occurs which has never been heard of in our business or the business the persons carrying out the assessment have previously been involved in.
			E	D	C	B	A
	Massive	Persistent severe environmental damage. Loss of commercial use, recreational use or nature conservancy resulting in major financial consequences for the company. Ongoing breaches well above statutory or prescribed limits.	5				
	Major	Severe environmental damage. The company is required to take extensive measures to restore the damaged environment. Widespread nuisance or extended breaches of statutory or prescribed limits.	4				
	Extensive	Limited discharges affecting the immediate area and damaging the environment. External resources required to assist in clean-up. Many complaints or repeated breaches of statutory or prescribed limits.	3				
	Minor	Sufficiently large contamination or discharge and damage to the environment, but with no lasting effects, may evaporate, dissipate or may be cleaned internally. Single complaint or breach of statutory or prescribed limit.	2				
	Slight	Slight environmental damage, causing slight sheen to water surface or land.	1				

Figure 5.1 Polarcus Risk Matrix

Controls were developed to reduce the likelihood of the impact occurring (i.e. preventative) and/or reduce the consequence of the impact (i.e. mitigation) to in turn reduce the risk to ALARP. In accordance with the Polarcus Risk Management Procedure, the following hierarchy of controls was applied:

- **Eliminate:** Redesign the activity or substitute a substance so the hazard is removed or eliminated;
- **Reduce:** Replace the material or process with a less hazardous one and one which does not introduce another hazard;
- **Isolate:** Measures to prevent the hazard escalating;
- **Control:** identifying and implementing procedures, administrative controls, competency and training; and
- **Respond:** ensuring the mechanisms are in place to respond to an unplanned event.

To determine whether impacts and risks were reduced to levels that are ALARP, consideration was given to trade-offs of implementing alternatives / substitutes to the activity, or of implementing additional controls in terms of cost, technical, environmental, safety and logistical implications. An impact and risk was then determined to be acceptable if it was evaluated to be 'low' or 'medium' risk on the risk matrix, demonstrably ALARP and compliant / consistent with regulatory requirements, industry standards and guidelines.

The resulting impacts and risks and committed controls have been translated into environmental performance outcomes to be achieved and standards to be implemented throughout the Capreolus 3D MSS.

A summary of the environmental hazards, impacts and controls determined through the risk assessment is provided in *Table 5.1*. In order to demonstrate the range of issues considered and provide additional detail on those aspects of the seismic survey considered to be of greatest interest to stakeholders, further detail on impacts associated with physical presence and noise emissions has been provided thereafter.

Table 5-1 Environmental Impacts, Risks and Controls

Activity / Environmental Hazard	Environmental Impact	Controls	Residual Risk		
			Cons	Like	Risk
Survey and support vessels in operational area	Collision/entanglement with large marine fauna resulting in injury/death	• Seismic survey activities will be conducted at least 50 km away from key migration routes during the peak humpback whale migration periods (late July to early August, late August to early September and late September to early October). • Survey programme planned to avoid shallower areas where internesting flatback turtles may be present between December and March. • Survey planned to minimise data acquisition in the northernmost and deepest waters of the operational area during the northerly blue whale migration period, with acquisition sequenced to be undertaken from south to north in the northern section of the survey area, resulting in data acquisition being focused on a small area of the BIA at any one time during known migration periods specific to the operational area. • Application of the requirements of EPBC Act Policy Statement 2.1 seismic interaction with whale guidelines for both cetaceans and whale sharks will serve to reduce the risk physical interaction. • Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans. • Use of soft start procedures in accordance with regulations will encourage gradual avoidance by marine mammals. • Turtle guards installed on tail buoys. • Seismic vessels operate at low speeds (approximately 4.5 knots). • Marine Fauna Observers (MFOs) on board. • Any entangled fauna will be returned to sea, with subsequent required reporting.	Extensive (3)	Rarely occurs (B)	Low
	Disruption / interference with other users in the area	• Stakeholders who may be present in the operational area (as determined during consultation for the EP) are consulted prior to the survey commencing and on survey completion. • Ongoing consultation between Polarcus and fisheries licence holders relevant to the operational area. • Notice to Mariners issued prior to commencement of survey activities and prior to July to November survey extension.	Minor (2)	Rarely occurs (B)	Low

Activity / Environmental Hazard	Environmental Impact	Controls	Residual Risk		
			Cons	Like	Risk
		• Daily reporting to AMSA RCC. • Adherence with requirements of the International Regulations for Preventing Collisions as Sea 1972 (COLREGS) and Chapter 5 of Safety of Life at Sea as implemented in Commonwealth Waters through the *Navigation Act 2012* and associated Marine Orders Parts 21, 30, 59 - navigation, collision, support vessels, including: o Appropriate lighting, navigation and communication to inform other users. o Use of radar and 24/7 watch. • Support vessel with survey vessel at all times. • Separation distance during data acquisition of minimum 40 km agreed with operator of Bilby 2D MSS. • Streamer ends marked with tail buoys.			
Routine discharge of domestic wastes (treated sewage, grey water, putrescible waste)	Temporary and localised reduction in water quality (increase in nutrient levels) resulting in impacts on marine biota	• Discharges in accordance with MARPOL Annex IV and *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* - Section 26D. • Approved sewage treatment plant, sewage comminuting and disinfecting system or a sewage holding tank, where applicable depending on vessel gross tonnage or people capacity. Offshore discharge only (no discharge within 12 Nm from coastline). • Vessel Waste Management Plan. • Marine Orders – Part 95 (Marine pollution prevention — garbage); and Part 96 (Marine pollution prevention — sewage).	Slight (1)	Rarely occurs (B)	Low
Deck drainage and oily wastes	Temporary and localised reduction in water quality resulting in impacts on marine biota	• Approved oil water separator used prior to discharge (hydrocarbons less than 15 ppm). • Preventative/Planned Maintenance System. • Offshore discharge only (no discharge within 12 Nm from coastline). • Current International Oil Pollution Prevention (IOPP) Certificate. • Log books.	Slight (1)	Occasionally occurs (C)	Low
Routine management of solid hazardous and non-hazardous waste	Incorrect disposal leading to onshore impacts	• Waste segregation on board. • Use of appropriate waste transfer, management and disposal companies. • Log books.	Minor (2)	Rarely occurs (B)	Low

Activity / Environmental Hazard	Environmental Impact	Controls	Residual Risk		
			Cons	Like	Risk
Noise generated by seismic acoustic source in operation	Physiological damage to marine fauna Disruption to behaviour patterns of marine fauna	• Seismic survey activities will be conducted at least 50 km away from key migration routes during the peak humpback whale migration periods (late July to early August, late August to early September and late September to early October). • Survey programme planned to avoid southern, shallower areas where internesting flatback turtles may be present between December and March. • Survey programme planned to avoid southern, shallower areas (<100 m) over pearl oyster spawning periods (mid-October-December and February-March). • Survey planned to minimise data acquisition in the northernmost and deepest waters of the operational area during the northerly blue whale migration period, with acquisition sequenced to be undertaken from south to north in the northern section of the survey area, resulting in data acquisition being focused on a small area of the BIA at any one time during known migration periods specific to the operational area (April to May; October to December). • Requirements of Part A of EPBC Policy Statement 2.1 (defined precaution zones, trained crew and crew briefing, pre-start observations, soft-start, start-up delay, power-down, stop-work and night-time/low visibility procedures and record maintenance) to be implemented. • Implementation of the extended precaution and buffer zones outlined in Part B of the EPBC Policy Statement 2.1. • EPBC Regulations 2000 – Part 8 Division 8.1 regarding vessel speed and maintaining physical separation with a sighted cetacean. • Two MFOs will be on board each survey vessel during all activities. • Crew briefing will include whale observation, separation distance estimation, controls and reporting. • PAM to be used to assist MFOs with visual observations for marine mammals. • Shut down if three whale-instigated shut-downs in 24 hours occur and move to another line away from pods of whales. • Minimum operating water depth of 30 m. • Soft-start procedures. • Extended visual observations for fauna undertaken in the 3 km "observation zone" by the MFOs for at least 30 minutes before the commencement of soft-start procedures.	Extensive (3)	Rarely Occurs (B)	Low

Activity / Environmental Hazard	Environmental Impact	Controls	Residual Risk		
			Cons	Like	Risk
		• Soft-start procedures may only commence if no whales have been sighted within the low power or shutdown zone during the pre-start-up visual observations. Soft-start procedures will be used each time the acoustic source is initiated, gradually increasing power over a 30-minute period. • Visual observation by the MFOs will be maintained during soft starts. • If a whale is sighted within the observation zone an additional trained crew members will be brought to the bridge to monitor. If the whale enters the 'low-power zone' (<2 km), the source should be powered down to the lowest possible setting and in the 'shutdown zone' (<500 m) the acoustic source shut-down completely. • Start-up can only resume after the whale has moved outside the low power zone or when 30 minutes have elapsed since the last whale sighting. • Minimum 40 km separation between operating seismic vessels (including with the seismic vessel for the Bilby 2D MSS). • Size of the seismic source (airgun array) reduced to the minimum operating requirements to achieve survey requirements (3,480 in^3). • No seismic acquisition will be undertaken in the immediate proximity to the main pearl oyster fishing grounds and the oyster holding sites.			
Noise generated by vessel thrusters/engine operation	Disruption to behaviour patterns of marine fauna	• Seismic survey activities will be conducted at least 50 km away from key migration routes during the peak humpback whale migration periods (late July to early August, late August to early September and late September to early October). • Survey planned to minimise data acquisition in the northernmost and deepest waters of the operational area during the northerly blue whale migration period, with acquisition sequenced to be undertaken from south to north in the northern section of the survey area, resulting in data acquisition being focused on a small area of the BIA at any one time during known migration periods specific to the operational area (April to May; October to December). • Vessel activities will be undertaken in accordance with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans. • Two MFOs will be on board each survey vessel during all activities. • Crew induction will include whale observation, separation distance estimation, controls and reporting.	Slight (1)	Regularly Occurs (D)	Low

Activity / Environmental Hazard	Environmental Impact	Controls	Residual Risk		
			Cons	Like	Risk
		• Propulsion systems to be maintained in good working order (manufacturer's specifications). • 3D seismic survey high specification catalytic converters reduce exhaust vent noise.			
Noise generated by helicopters transferring crew	Disruption to behaviour patterns of marine fauna	• Seismic survey activities will be conducted at least 50 km away from key migration routes during the peak humpback whale migration periods (late July to early August, late August to early September and late September to early October). • Survey planned to minimise data acquisition in the northernmost and deepest waters of the operational area during the northerly blue whale migration period, with acquisition sequenced to be undertaken from south to north in the northern section of the survey area, resulting in data acquisition being focused on a small area of the BIA at any one time during known migration periods specific to the operational area (April to May; October to December). • Helicopter movements will be undertaken in accordance with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans. • Helicopters to avoid identified sensitive areas for birds and maintain minimum altitudes where practicable.	Minor (2)	Rarely Occurs (B)	Low
Navigational and safety lighting for survey/support vessels	Disruption to behaviour patterns of marine fauna	• Reduce lighting as far as practicable, whilst not jeopardising safety (e.g. non-essential lighting to be turned off when not in use). • Identify opportunities to further reduce lighting during pre-survey environmental checklist.	Minor (2)	Rarely occurs (B)	Low
Air emissions associated with power generation for vessel and equipment operation	Temporary and localised reduction in air quality	• Vessel engines and incinerator to be maintained and operated in accordance with manufacturer specification. • Vessel has valid International Air Pollution Prevention (IAPP) certificate. • Survey vessel will use low sulphur marine gas oil (MGO). • Marine Orders – Part 97 (Marine pollution prevention - air pollution).	Slight (1)	Occurs all the time (E)	Low
	Increased greenhouse gases in atmosphere	• Limited emissions volumes and survey duration - volumes from surveys not expected to contribute significantly to global greenhouse gas load. • Marine Orders – Part 97 (Marine pollution prevention - air pollution).	Slight (1)	Occurs all the time (E)	Low

Activity / Environmental Hazard	Environmental Impact	Controls	Residual Risk		
			Cons	Like	Risk
		• Survey high specification catalytic converters reduce NOx emissions.			
Air emissions from on board waste incinerator	Temporary and localised reduction in air quality	• Incinerator MARPOL Annex VI requirements. Vessel has valid IAPP certificate.	Slight (1)	Regularly occurs (D)	Low
Biofouling of vessel hull	Introduction of IMS resulting in alterations to local ecosystems	• IMS risk assessment prior to mobilisation into Australian waters and with vessel confirmed to meet the requirements for entry into Australian waters. • Compliance with the National Biofouling Management Guidance for the Petroleum Production and Exploration Industry guidelines. • Valid hull anti-fouling certificate that meet the requirements of Annex 1 of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships and the requirements of the *Protection of the Sea (Harmful Antifouling Systems) Act 2006.*	Extensive (3)	Rarely occurs (B)	Low
Biofouling of in-water survey equipment		• Inspection, maintenance and cleaning of equipment during retrieval.	Minor (2)	Rarely occurs (B)	Low
Ballast water exchange		• No planned ballast water exchange during the survey. • Compliance with Australian Ballast Water Management Requirements. • Advanced ballast water treatment systems will be on board which eliminate any organisms in ballast water prior to discharge.	Extensive (3)	Rarely occurs (B)	Low
Fuel tank rupture from vessel collision leading to release of MGO	Acute and chronic toxic effects to marine biota from exposure to surface, entrained and shoreline hydrocarbons Oiling of marine mammals, reptiles and seabirds Oiling of islands and emergent coral reefs/submerged shoals	Prevention Controls • Controls in place to avoid disrupting other marine users in Table 7.1 also serve to reduce the potential for a collision; • Fuel stored in multiple segregated tanks on-board the survey vessel; • Survey vessel double hulled. • Adherence with requirements of the International Regulations for Preventing Collisions as Sea 1972 (COLREGS) and Chapter 5 of Safety of Life at Sea as implemented in Commonwealth Waters through the *Navigation Act 2012* and associated Marine Orders Parts 21, 30, 59 - navigation, collision, support vessels, including: o Appropriate lighting, navigation and communication to inform other users o Use of radar and 24/7 watch.	Extensive (3)	Rarely Occurs (B)	Low

Activity / Environmental Hazard	Environmental Impact	Controls	Residual Risk		
			Cons	Like	Risk
	Disruption to commercial and coastal fishing and shipping activities	Response Measures • Source control measures in accordance with the vessel SOPEP. • Implement response procedures in accordance with OPEP. • Support vessel within 10 Nm of the survey vessel at all times.			
Refuelling spill leading to release of MGO	Toxic effects to marine biota	Prevention Controls • Use of dry-break couplings for refuelling; • No refuelling at sea within 25 km of land, shoals or islands • At sea refuelling during daylight hours and in suitable weather conditions; • Adherence with the Polarcus Bunkering Procedure, including completion of the Permit to Work Refuelling At Sea Checklist and Bunkering Checklist ensuring that anti-pollution equipment is ready and scuppers plugged before bunkering commences and maintaining good communication. • Fuel transfer equipment maintained and checked prior to use. Response Measures • Source control measures in accordance with the vessel SOPEP. • Implement response procedures in accordance with OPEP (see *Section* ***Error! Reference source not found.***).	Minor (2)	Rarely Occurs (B)	Low
Single point failure resulting in the release of < 1 m^3 of hydraulic fluid or 20 m^3 of urea into the marine environment	Reduction in water quality and toxic effects on marine biota	Prevention Controls • Storage, handling and use of chemicals in accordance with MSDS; • Spill kits and scupper plugs available on board; • Bunded areas, spill kits and drains maintained and monitored; • Transfer of urea only during daylight hours and in suitable weather conditions; • Hydraulic fluids and chemicals used will be selected to have the lowest environmental toxicity possible whilst meeting operational performance requirements. Response Measures • Implement source control measures in accordance with the vessel SOPEP. • Spills cleaned up as soon as practicable with contaminated material managed in accordance with vessel Waste Management Procedure.	Minor (2)	Rarely Occurs (B)	Low

Activity / Environmental Hazard	Environmental Impact	Controls	Residual Risk		
			Cons	Like	Risk
Accidental loss of equipment (streamer or array) during deployment or towing	Potential hazard to navigation, disruption to other users of the area	• Procedures for lifting activities and streamer deployment/retrieval. • Equipment deployments carried out during appropriate weather conditions. • Appropriate storage of equipment on board. • Streamers are fitted with additional (redundant) retainers to prevent equipment loss, and have tail buoys fitted with relative GPS to aid recovery. • Streamers are fitted with automatic recovery devices. • Solid streamers (rather than oil filled) – such that if lost, there is no risk of oil loss. • All lifting gear to be load rated as appropriate for the working load. • Supply/chase vessels available to assist. • AMSA notified in the event of equipment loss to provide a warning to shipping.	Minor (2)	Occasionally occurs (C)	Low
	Seabed disturbance		Slight (1)	Rarely occurs (B)	Low
Accidental loss of solid non-hazardous and hazardous waste	Temporary and localised reduction in water quality resulting in impacts on marine biota Physiological damage to marine fauna	• No overboard disposal. • Waste will be stored, handled and transferred on board in accordance with the vessel Waste Management Plan / Garbage Management Plan which also require compliance with regulatory requirements (i.e. *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and Marine Orders – Part 94 (Marine pollution prevention - packaged harmful substances)). • If safe to do so, recovery of lost overboard material will be carried out.	Slight (1)	Rarely occurs (B)	Low
Unplanned anchoring	Seabed disturbance	• No anchoring planned. • Propulsion redundancy. • Support/chase vessels available to assist. • No anchoring within state protected areas.	Slight (1)	Rarely occurs (B)	Low

Cons = Consequence; Like = Likelihood

5.2 PHYSICAL PRESENCE

5.2.1 Potential Impacts to Marine Fauna

Large marine fauna (i.e. cetaceans, turtles, whale sharks) occurring in the operational area have the potential to become entangled in seismic equipment or collide with survey or support vessels, which can lead to injury or death. However, the survey has been scheduled and planned such that none of these marine megafauna are expected to be present in the operational area in large numbers at the time of the survey (*Section 3.2.3*). In particular:

- The survey is proposed to be conducted at least 50 km away from key migration routes during peak migration periods for humpback whales.
- The survey will coincide with the southerly migration (October to December) and northerly migration for blue whales (April to May). Over these periods low numbers of blue whales may be encountered in the deep waters in the north of the operational area (*Section 3.2.3 / Mammals*).
- While the far south of the operational area (but not the survey area) intersects with biologically important areas for internesting turtles around Bedout Island, given the distance from the closest nesting beach (42 km) and the deeper waters of the operational area (>50 m), only occasional turtles are likely be encountered during the survey.
- As the operational area does not contain habitats that support significant aggregations of large marine fauna during the survey period, encounters with large marine fauna, including other cetacean species are expected to be limited to individuals transiting through the area.

It is noted that the Capreolus 3D MSS MFO sighting logs to date (January to April 2015) have indicated a total of 87 occurrences of marine fauna sightings for mostly dolphin or porpoise species, while no humpback whales, no whale sharks, only two sea turtles and only one blue whale have been recorded. The sighting data anecdotally confirms the expected low levels of marine fauna within the acquisition area.

The risk of causing impact to large marine fauna as a result of collision or entanglement was therefore determined to be low given that only individuals are likely to be affected with no population-wide impacts. Polarcus has adopted a number of controls to reduce risks to levels that are demonstrably ALARP (refer to *Table 5.1*), including (but not limited to):

- Planning the survey to avoid as far as possible key periods and areas of biological significance (i.e. humpback whale migration, flatback turtle interesting, pearl oyster spawning and blue whale migration) through corresponding sequencing of the survey as detailed in the first row of *Table 5.1*;

- Compliance with EPBC Policy Statement 2.1 and EPBC Regulations 2000 – Part 8 Division 8.1;
- Turtle guards on tail buoys;
- Operating the seismic vessels at low speeds (approximately 4.5 knots); and
- Two MFOs on board each survey vessel.

Given the circumstances within which the survey will be undertaken and the controls that will be implemented by Polarcus, impacts and risks to marine fauna from the physical presence of vessels and equipment were determined to be low and reduced to levels that are ALARP and acceptable.

5.2.2 Potential Impacts to Other Users of the Operational Area

A range of other activities, including commercial fishing and commercial shipping take place in the operational area and therefore have the potential to interact with the survey (refer to *Section 3.3*).

Based on seasonality, effort, the distribution and habitat of target species and water depths in the operational area, the Capreolus 3D MSS has the potential to physically interact with only three fisheries; namely the North West Slope Trawl Fishery, the Pilbara Fish Trawl Fishery and the Pilbara Line Fishery[1]. However, no significant disruption to fishing operations is anticipated for the following reasons:

- The majority of fishing techniques used in the operational area are unlikely to be affected by the seismic operations, based on water depths targeted and current survey design (line spacing and speed of acquisition).
- The fisheries cover wide spatial areas with only a portion of the fishing area falling within the operational area of the Capreolus 3D MSS.
- Based on current survey design, data acquisition will be limited to approximately 25,000 km^2 and only a small fraction of this survey area (less than approximately 0.4%) will be surveyed in any 24 hour period[2], which will thus minimise the time that an area is temporarily unavailable to fishing operations.

[1] Water depths of > 50 m in the operational area preclude any potential for physical interaction with the dive activities of the Pearl Oyster Managed Fishery.

[2] The seismic acquisition will be conducted in lines, with each line being on average approximately 130 km in length. At a planned acquisition speed of 4.5 knots, each line will take approximately 16 hours to complete. A line turn is then estimated to take approximately 5 hours. This would result in seismic operations over any 24 hour period being undertaken over an area of approximately 97 km^2, representing < 0.4% of the Capreolus 3D MSS survey area.

- The transient nature of both the fishing vessels and the seismic survey vessels means that an area is only temporarily unavailable to fishing.

- Ongoing consultation with licence holders will enable them to plan fishing activities to avoid disruption.

Given these conditions, any inconvenience to fishing licence holders is expected to be temporary and localised.

Considering the distance of the Capreolus 3D MSS survey area from the Rowley Shoals Marine Reserve (75 km during periods of increased tourism activity (September -October)), and the management measures put in place in the unlikely event of interactions between seismic vessel and recreational charter vessels (*Table 5.1*), impacts to tourism activity are highly unlikely.

Commercial shipping traffic is known to transit through the operational area to and from the ports of Dampier and Port Hedland. However, a notice to mariners will be in place throughout the survey notifying other vessels of the presence (and limited manoeuvrability) of the survey vessels and Polarcus have committed to provide updates to relevant port and maritime authorities (see *Table 5.1).* Other controls such as a permanent chase vessel supporting each survey vessel and the display of appropriate lighting and signage will also warn shipping of survey activities. As for commercial fishing, because survey activities are transient, any disruption to shipping is anticipated to be localised and temporary.

5.3 NOISE EMISSIONS

Underwater noise is associated with the operation of the seismic source, general vessel activities (including engine noise and operation of thrusters) and helicopter movements. The seismic source, being the most significant noise contributor of the proposed activity, has been calculated to have a sound exposure level (SEL) of 238.2 dB re 1µPa^2.s at 1 m, with a frequency of less than 500 Hz (SVT 2014).

The assessment of noise emissions presented in the EP also considered the potential cumulative effects of exposure to multiple seismic sources over a similar area and timeframe, namely from the two Capreolus 3D MSS vessels, and concurrently with any other 2D or 3D marine seismic survey occurring in the same area over a similar timeframe.

Impacts and risks associated with noise on key environmental and social receptors as a result of the Capreolus 3D MSS are summarised below.

5.3.1 Potential Impacts on Marine Mammals

Marine mammals, in particular cetaceans, are the receptor most susceptible to impacts from seismic activity. Evidence from McCauley 1994, Southall et al 2007, DEWHA 2008a, McCauley et al 1998 and Richardson et al 1995 has been used to inform the assessment of impacts and risks.

Underwater noise levels from the seismic source are anticipated to drop below sound pressure levels that may result in damage to hearing (as determined by Southall et al 2007) within 500 m of the source, which is consistent with the shut-down zone control proposed for the Capreolus 3D MSS (see *Table 5.1*). Implementation of the low power zone at 2 km from the source will further protect individuals from hearing damage as a result of cumulative exposure to multiple pulses from the seismic source.

Noise levels at which behavioural disturbance could occur may extend over a much larger area (tens of km). Behavioural changes as a result of noise can include cessation of normal activities such as regular diving patterns and commencement of avoidance or 'startle' behaviour, particularly when the noise source is intermittent. Startle behaviour as a result of noise from the Capreolus 3D MSS is unlikely given the implementation of precaution zones, pre-survey visual observations and soft-start procedures (see *Table 5.1*).

Avoidance of the survey vessel and/or other behavioural responses by marine mammals may be expected over a wide area (up to tens of kilometres). However, as described in Sections 3.2.3 and 5.2.1, marine mammals are not expected to be encountered frequently in the operational area given the location and timing of the survey programme (refer to *Table 5.1* for details on survey planning around humpback and blue whales migration periods).

Due to the use of only one seismic vessel in the northern operational area during blue whale migration periods, the avoidance area will be further reduced. As the sound sources are expected to be inshore of the migration route, any avoidance would likely result in whales passing slightly further offshore, but still within the broader area of the BIA. The migratory route is therefore not considered to be constricted and should some minor displacement of individuals due to seismic source discharge occur from the seismic vessel, it would be limited to a minor shift in the path of some individuals to the west/ north-west, although still within the broader BIA. As a result any adjustment in blue whale movements is not expected to have significant ecological implications at an individual or population level as the area of avoidance (a few tens of kilometres from the acoustic source) is small compared to the broad extent of the BIA, with the operational area overlapping approximately 7% of the total area of the BIA.

Given that a minimum separation distance of 40 km will be maintained between the Capreolus survey vessels and between these and any third party seismic vessel, a worst case situation of an animal being positioned equidistant from multiple seismic vessels was assessed in the EP.

Drawing on the work of Salgado-Kent and McCauley 2014 (unpublished) and Sujatha 2010, the worst case cumulative received level for an animal exposed to multiple seismic sources was well below the level at which impacts to hearing in marine mammals and other fauna are known to occur.

The main effect would be that individuals passing through the region may exhibit a wider area of avoidance as a result of the concurrent activities. This area of avoidance could potentially extend to a few tens of kilometres around each seismic source vessel and would not be significantly increased by the proximity of more than one source vessel at a minimum distance of 40 km. Given the absence of critical habitats such as feeding, breeding or resting areas in proximity to the operational area, such avoidance is not expected have long-term implications for either individuals or populations.

Despite the evaluated low likelihood of encountering significant marine mammals during the survey, Polarcus will implement a number of controls consistent with regulatory requirements and industry good practice to reduce impacts and risks to marine mammals to levels that are low, ALARP and acceptable. These controls are summarised previously in *Table 5.1*.

5.3.2 Potential Impacts on Marine Turtles

Marine turtles are generally considered to be less sensitive to noise than marine mammals as they do not have an external hearing organ. Nevertheless, marine turtles can detect sound through bone-conducted vibration in the skull and by using their shell as a receiving surface (Lenhardt et al. 1985). The assessment of noise impacts on marine turtles has drawn on the work of Bartol and Musick (2003), Moein et al. (1994), Moein et al. (1995) and McCauley et al. (2000) to understand the extent to which marine turtles may be influenced by the Capreolus 3D MSS and other concurrent seismic surveys in the area. Based on the available evidence, potential avoidance and behavioural responses by marine turtles to the Capreolus 3D MSS are determined to be possible up to approximately 20 km from the survey vessels.

The survey programme has been planned to avoid southern, shallower areas where internesting flatback turtles may be present between December and March.

Given the location of the operational area and the distance to critical nesting and foraging habitats for turtles (see *Section 3.2.3*), the risk of significant impacts from seismic noise disturbance to turtles as a result of the Capreolus 3D MSS has been assessed to be low. There is also not expected to be a cumulative impact on turtles as a result of concurrent surveys for the Capreolus 3D MSS and Bilby 2D Survey given the separation distance between vessels and the limited spatial extent of impact to turtles from each vessel.

5.3.3 Potential Impacts on Fish, Sharks and Rays

The assessment of noise impacts on fish, sharks and rays considered impacts on all life-stages, including eggs, larvae, juveniles and adults. The assessment made reference to the work of Popper et al. (2014), McCauley and Cato (2000), Ladich (2000), Finneran and Hastings (2000), Hastings et al. (2008), McCauley et al. (2000), Wardle et al. (2001), Simmonds and MacLennan (2005), Pearson et al (1992), McCauley (1994), DNV Energy (2007), Payne et al (2004) and Myberg (2001).

A comprehensive review of scientific studies into the impact of seismic activity on fish and the fisheries industry concluded that physical damage to fish caused by sound emitted by seismic sources would only occur within less than a few metres of the source (DNV Energy, 2007). Adult fish would typically move away from the sound, but eggs and larvae, which are not actively mobile, may be affected by the signals within a similar distance. Research by Payne el al (2004) suggests a range of 5 – 6 m as the maximum range for potential injury, and hence longer term effects to fish eggs, larvae and fry in response to peak pressure.

The assessment determined that mainly pelagic species are likely to be found in the open waters of the operational area, which are highly mobile, and are likely to move away from the source if the received sound levels become uncomfortable, particularly with the implementation of the agreed soft-start procedures (McCauley et al. 2000). Therefore, physiological impacts to pelagic species are unlikely to occur, but temporary changes to behaviour may arise.

Behavioural effects of noise on fish may include changes to schooling behaviour and avoidance of the noise source (Simmonds and MacLennan 2005). However, once acoustic disturbances are removed, fish are expected to return to normal behaviour within as little as an hour (Wardle et al. 2001; Pearson et al. 1992). Because the seismic lines are widely dispersed (11 km apart) and the vessel and equipment will only travel along any seismic line once (under normal conditions), in one direction, at a rate of approximately 4.5 knots when the source is at full power, any behavioural changes would be localised and temporary, with displacement of pelagic fish unlikely to have significant effects at a population level (McCauley 1994).

Whale sharks may show avoidance behaviour to the seismic source and are unlikely to remain close enough to the source to suffer physiological trauma. Given the protected status of the whale shark and the tendency of individuals to be present in surface waters where they may be detected through visual observation, the precaution zones in EPBC Policy Statement 2.1 that will be implemented for whales in the Capreolus 3D MSS will also be applied for whale sharks, thereby reducing the risk of potential impact to this species.

5.3.4 *Potential Impacts on Commercial Fisheries (excluding Pearl Oyster Fishery)*

Increased noise levels associated with seismic acquisition may impact on target fish species for several commercial fisheries identified to overlap the operational area (*Section 3.3*). While there is the potential for fish to modify their behaviour in proximity of the seismic source, which may also have the potential to affect catch in the affected area, due to the relative area of increased sound associated with the seismic survey and the transient nature of the data acquisition operations, it is thought that changes in behaviour will be localised and short term. Once acoustic disturbances are removed fish are expected return to normal behaviour, which may occur in as little as an hour (Wardle et al. 2001; Pearson et al. 1992).

Fisheries employing trawling techniques such as the North West Slope Trawl Fishery and the Pilbara Fish Trawl Fishery are unlikely to be significantly affected by the seismic survey because the fisheries target pelagic species which, as described above, are likely to move away from the source if the received sound levels become uncomfortable. Because of the transient nature of both the trawl and the seismic survey vessel, and the expectation that fish behaviour would return to normal soon after noise disturbance had returned to background levels, the spatial extent covered by trawling is large enough to accommodate any limited behavioural changes exhibited by target species. No concerns were raised by the trawl fisheries engaged by Polarcus during the preparation of this EP.

For fisheries using line methods, such as the Pilbara Line Fishery, increased noise generated by the survey will be limited to areas covered by the seismic survey that are also targeted by line fishers. Because seismic activities are transient, and fishing lines used by the Pilbara Line Fishery are understood to be deployed for periods of time varying from 2 hours to overnight (Newman et al 2008), it is expected that overall catch would not be significantly affected by any temporary and localised changes in behaviour. Furthermore, neither prior to nor since submission of the EP, have any concerns been raised about the seismic survey by licence holders of the Pilbara Line Fishery engaged by Polarcus.

5.3.5 *Potential Impacts on Invertebrates*

Generally, marine invertebrates are considered to have poorly developed mechano-sensory systems and are considered little affected by noise generated by seismic surveys. The assessment examined evidence from a variety of invertebrate species including crayfish (Tautz and Sandeman 1980); clams (La Bella et al. 1996); shrimp (Heinisch and Wiese 1987; and Andriguetto-Filho et al. 2005); prawns (Steffe and Murphy 1992); commercial scallops (Harrington et al. 2010); rock lobsters (Parry and Gason 2006); and squid (Fewtrell and McCauley 2012). Overall, research indicates that the majority of marine benthic invertebrates will only respond to seismic sources at extremely close range (McCauley 1994) and more sensitive pelagic species, such as squid, may demonstrate avoidance of the source.

The risk of significant impacts from seismic noise disturbance to invertebrates as a result of the Capreolus 3D MSS has therefore been assessed as low; however in response to stakeholder concerns a more detailed assessment of the potential impacts to pearl oysters in the context of the pearl oyster fishery off Eighty Mile Beach is provided below.

5.3.6 Potential Impacts on the Pearl Oyster Fishery

Pearl oysters are reported to occur off the Western Australian coast in water depths up to approximately 50 m, with fishing occurring in areas where the pearl oysters are at appropriate depths to accommodate safe diving and concentrations sufficient for harvesting to occur at economically viable levels (Fletcher et al 2006).

Given that the operational area is primarily located in water depths greater than 50 m, and data acquisition will occur in water depths > 70 m, the seismic source will operate some distance from the fished pearl oyster beds. As discussed for invertebrates, evidence indicates that oysters are only likely to respond to seismic sources at extremely close ranges and as such, the Capreolus 3D MSS is unlikely to affect oysters settled in the fished areas.

There will be some overlap between the timing of the Capreolus 3D MSS and seasonal spawning for pearl oysters (*Section 3.2.3*). The survey programme has been planned to avoid southern, shallower areas (<100 m) over pearl oyster spawning periods (mid-October-December and February-March). As identified in relation to fish larvae (*Section 5.3.3*), impacts to pearl oyster spawn and larvae are understood to be restricted to very close proximity of the seismic source. Impacts to pearl oyster larvae are therefore not expected.

Although approximately 5,000 km^2 (or 13 %) of the wider Capreolus 3D MSS operational area lies within the 100 m isobath (the area within which there are claims pearl oyster stocks that support the fishery may occur), seismic data acquisition will only be undertaken over an area of approximately 2,377 km^2 within the 100 m isobath. Furthermore, data acquisition in this area will only take approximately 25 days to complete. This area represents a small fraction of the area landward of the 100 m isobath within which pearl oyster larvae or brood stock may be present. Impacts of the Capreolus 3D MSS on the pearl oyster fishery are therefore anticipated to be negligible.

To support this conclusion, Polarcus notes that seismic activity has been occurring in the vicinity of the Eighty Mile Beach Pearl Oyster fishery for decades. Based on data reported by the Western Australian Department of Fisheries (Fletcher et al 2006) the total catch from the main fishing grounds of the Pearl Oyster Fishery (i.e. Zone 2/3) reported over a 10 year period preceding the report remained stable, varying by less than 10%. Over the same time period as the reported catch data, 7,900 line kilometres of seismic data has been acquired within water depths of less than 100 m in the area off the Eighty Mile Beach Fishery (from Port Hedland to Cape Leveque).

Therefore, based on historic evidence and consistent with available scientific research, it is thought that seismic acquisition has not had any significant negative impacts on pearl oyster settlement and growth due to increased noise emissions, thereby not affecting the long term productivity of the fishery.

6 *RESPONSE ARRANGEMENTS IN THE EVENT OF AN OIL SPILL*

The EP includes an Oil Pollution Emergency Plan (OPEP) appropriate to the nature and scale of the activity and the credible spill scenarios identified (as identified in *Table 5.1*). In the unlikely event of an oil spill to the marine environment occurring during the Capreolus 3D MSS, the OPEP will be implemented with the response strategy adopted being commensurate to the level of emergency and nature of the spill and receiving environment.

The planning and response capability detailed in the OPEP aligns with applicable statutory oil spill contingency plans. The overall survey OPEP is therefore represented by various levels of emergency plan, which comprise:

- Vessel(s) SOPEP – for spills contained on the vessel or spills overboard which can be managed by the vessel. Vessel SOPEPs have been prepared in accordance with the IMO guidelines for the development of shipboard oil pollution emergency plans. The Vessel Master is responsible for activating and implementing the vessel SOPEP and the shipboard Oil Pollution Prevention Team is responsible for both prevention and response activities.

- The National Plan for Maritime Environmental Emergencies (National Plan) (AMSA, 2014) - AMSA is the jurisdictional authority and control agency for spills from vessels which affect Commonwealth waters i.e. outside of 3 nm from the coast. For Commonwealth waters initial response actions will be undertaken by the vessel with subsequent actions determined in consultation with the regulatory authorities (AMSA) under the National Plan, having regard to the potential impacts posed by the spill. Upon notification of an incident, AMSA will assume control and will respond in accordance with its Marine Pollution Response Plan as approved by the AMSA Executive.

- The Western Australian State Emergency Management Plan for Marine Oil Pollution (WestPlan-MOP; DOT, 2010a) and associated Marine Oil Spill Contingency Plan (MOSCP) (DOT, 2010b) – for spills from vessels which affect WA State waters. If surface slicks appear likely to enter WA State waters (which modelling results shows to be highly unlikely to occur), subsequent actions will be determined in consultation with the DOT under WestPlan–MOP and the MOSCP. The DOT is the designated Combat Agency for oil spills from vessels in WA State jurisdiction.

Notification arrangements have been documented to activate any required involvement from relevant combat agencies.

Given the offshore location of the operational area and the credible spill scenarios identified which involve marine gas oil (*Table 5.1*), the preferred response strategy that is expected to deliver a net environmental benefit is to allow small spills to disperse and evaporate naturally, and monitor the position and trajectory of any surface slicks.

Physical break up by repeated transits through the slick may be considered for larger spills (following consultation with the Combat Agency – AMSA).

7 *MANAGEMENT FRAMEWORK AND IMPLEMENTATION STRATEGY*

The Capreolus 3D MSS will be undertaken in accordance with the NOPSEMA-accepted EP, applicable legislation and the Polarcus Management System. The Polarcus Management System is an integrated system addressing environment, safety and quality management which is based on the International Association of Oil and Gas Producers (OGP)-IPIECA's Report No. 510 (OGP-IPIECA 2014).

The Polarcus Management System incorporates a number of documented manuals, plans and procedures, registers and tools that will be implemented for the Capreolus 3D MSS such that identified environmental impacts and risks are continually reduced to ALARP and that monitoring of Polarcus' environmental performance is ongoing. The Polarcus Environmental Management Procedure, amongst other procedures, provides for the implementation of the commitments in the EP. Ongoing monitoring to track environmental performance during the MSS includes pre-survey and in-survey environmental inspections, record collection and various scheduled meetings during which any environmental issues that arise are tabled for discussion. Records will be produced for each of these activities that will feed into the Polarcus compliance register ensuring ongoing compliance with the EP. The compliance register will serve as an audit tool during the MSS to establish that environmental performance outcomes and standards are being met in accordance with the EP.

The implementation strategy presented in the Capreolus 3D MSS EP describes the organisational structure, roles/responsibilities and competency/training requirements for all personnel involved in the survey relevant to the controls described in *Table 5.1*. It also further describes the processes in place to meet the monitoring, auditing and reporting requirements defined in the EP and to manage non-conformance, incidents and emergency situations, including oil spills. These processes are underpinned by the Polarcus Management System. The reporting requirements for environmental incidents and reporting on overall compliance of the Capreolus 3D MSS with the EP are also detailed.

7.1 AUDITS

Polarcus will maintain a Compliance Register that will serve as an audit tool during the Capreolus 3D MSS. The register includes detail on environmental performance outcomes and environmental performance standards relevant to the survey, measurement criteria and the person/party responsible for implementing the performance standard. In accordance with the Polarcus Environmental Management Procedure, Polarcus will complete the following audits during the conduct of the Capreolus 3D MSS:

- a pre-survey environmental checklist addressing pre-survey planning, preparedness for compliance with regulatory requirements, operational considerations and on board preparedness;
- an audit of the on-board spill response capability against Vessel SOPEPs to verify spill preparedness prior to mobilisation; and
- a compliance audit against the EP during the survey.

Any required actions will be followed up and a copy of the environmental audit will be forwarded to NOPSEMA on request, with any lessons learnt included in the Environmental Performance Report.

7.2 MONITORING

The following aspects will be monitored and recorded during the conduct of Capreolus 3D MSS:

- emission to air (based on fuel consumption figures);
- discharges to water (including oily water discharges, macerated food waste and sewage and grey water discharges);
- waste types and quantities transferred to shore for reuse, recycling or disposal;
- marine fauna sightings; and
- interactions with any third party vessels.

The corresponding parameters, records and responsibilities of such monitoring are detailed in the EP.

7.3 *REVIEW OF ENVIRONMENTAL PERFORMANCE*

On completion of the survey Polarcus will undertake an internal review of the environmental performance of the Capreolus 3D MSS. The review will consider:

- an evaluation of conformance with the compliance register;
- improvements to the implementation strategy included within the EP;
- compliance with Polarcus' policies, manuals and procedures;
- the management of non-conformances identified during the survey, including reportable and recordable incidents; and
- concerns identified by stakeholders during and after the completion of the survey, followed by appropriate liaison as required.

The outcomes of the review will be used to inform future Polarcus activities. Polarcus will also report to NOPSEMA on its environmental performance following completion of the survey.

In addition, any new impacts or risks that may arise during the survey from monitoring of environmental performance will be managed through the Polarcus Management of Change Procedure. This Procedure ensures the approval for any change must be given by the right level of authority and only after a systematic process to examine the impact and management of any associated risks.

8 *TITLEHOLDER'S NOMINATED LIAISON PERSON*

The titleholders nominated liaison person, who can be contacted for further information about the Capreolus 3D MSS, is:

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