ENVIRONMENT PLAN SUMMARY

WA-506-P Geophysical and Geochemical Survey 2015

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1.0 INTRODUCTION

1.1 Overview

Statoil Australia Theta BV (Statoil) proposes to undertake a geophysical and geochemical survey (GGS) in Commonwealth waters of the Northern Carnarvon Basin in permit area WA-506-P. Multi-beam echo-sounder (MBES) and sub-bottom profiling (SBP) data will be collected during the first phase, and seabed samples using a gravity piston-corer and heat flow measurements in surface sediments using a heat flow probe will be collected during the second phase.

The GGS activities will be undertaken during the period June to September 2015. The GGS activities are expected to take approximately 25 days.

1.2 Location

All of the survey activities will occur within WA-506-P. The bounding coordinates are listed in Table 1-1 and shown in Figure 1-1. The permit lies at the outer limits of the Australian Exclusive Economic Zone (EEZ) and covers approximately 13,730 km^2 in water depths between approximately 1,500 m and 2,500 m. The closest landfall is the Montebello Islands, approximately 250 km to the SSE.

Table 1-1: Bounding Coordinates of WA-506-P (Decimal Degrees; WGS84)

Boundary Point	Latitude	Longitude
A	-17.582	113.085
B	-17.582	114.501
C	-18.082	114.335
D	-18.082	114.251
E	-18.4987	114.251
F	-18.4987	113.085
G	-17.9153	114.335
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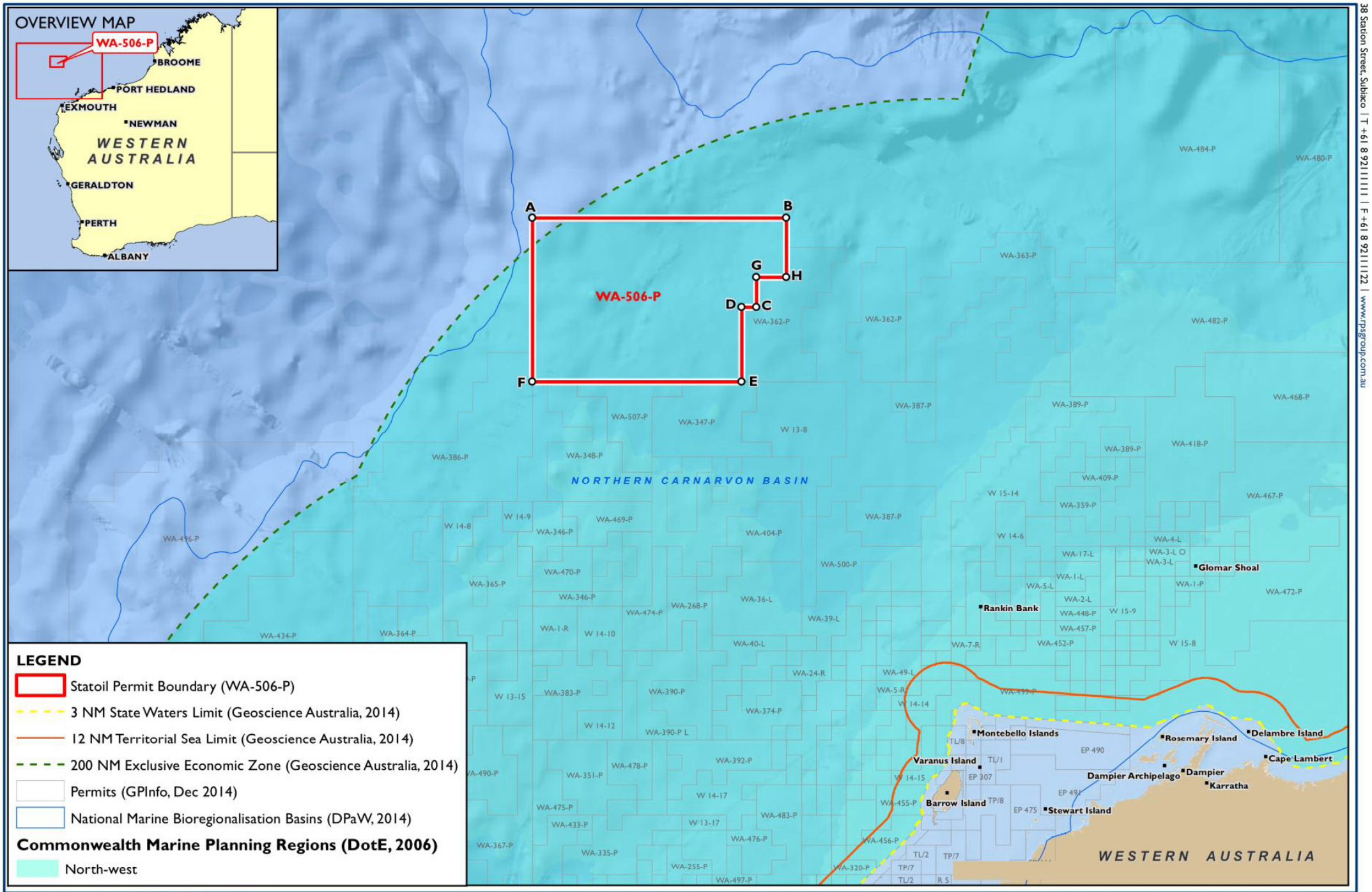

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Scale: 1:3,000,000 @ A4
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Source: Basemap - ESRI Online

GCS GDA 1994

0 12.5 25 50 75 100 km

Figure 1-1

Location of WA–506-P

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2.0 RECEIVING ENVIRONMENT

The extent of the existing environment described herein was determined by considering the nature, timing and scale of the proposed activity and the potential for environmental impacts. A hydrocarbon spill was identified as having the largest spatial extent of all credible environmental hazards and the extent of potential oil spill impacts from modelling conducted for this EP was used to define the geographic extent of the area described. There was no shoreline contact predicted from the highly conservative oil spill modelling and hence the database search was limited to offshore waters in the vicinity of the operational area.

The survey is scheduled to occur between June and September 2015, and as such environmental sensitivities during this period are considered.

2.1 Regional Overview

The activities will take place in deep Commonwealth waters off the north-west coast of Western Australia. At its closest point, the Statoil permit is approximately 250 km north-west of the nearest emergent land at the Montebello Islands. It lies within the North-west Marine Region (NWMR) in water depths of approximately 1,500 to 2,500 m. There are no shallow seabed features or emergent islands within, or in close proximity to, the area.

2.2 Climate and Meteorology

The region has a tropical climate with a hot wet season in summer and a warm dry season in winter. The region exhibits monsoonal climatic patterns characterised by a pronounced cyclone season. The median annual rainfall is 532 mm, of which, over 75% falls during the January to March period. The rainfall is generally associated with tropical lows, which occasionally form cyclones.

Tropical cyclones typically occur between November and May, but are more common between December and March. Cyclones tend to originate offshore and move south, rarely crossing the coast until they reach the Pilbara region. Since 1910, there have been 48 cyclones, which have caused damaging wind gusts in excess of 90 km/h in the Karratha, Dampier and Roebourne region. On average, this equates to about one severe cyclone every two years.

2.3 Oceanography

The oceanography of the North-west Marine Region and associated meso-scale bioregions is dominated by the circulation of the Indonesian Throughflow via the South Equatorial Current and Eastern Gyral Current. The Holloway Current is a relatively warm, low salinity current that flows south west across the North West Shelf during

May and June, where it consolidates with the South Java Current off North West Cape. The Leeuwin Current is created in the North-west Province by the narrowing of the continental shelf at the North West Cape and the convergence of water from the Eastern Gyral Current.

Seasonal variation also affects the strengths of the currents in the region, due to changes in pressure gradients. Currents are generally weaker when the pressure gradient between the Pacific and Indian oceans is reduced during the North-west Monsoon (December to March), and under El Niño/Southern Oscillation conditions. The currents are strengthened during the South-east Monsoon (April to September) as the pressure gradients between the Pacific Ocean and Indian Ocean are more intense. The currents are also stronger under La Niña conditions, but are influenced by tropical cyclones, which are more frequent during La Niña events.

Tidal range varies across the region with 6 m semi-diurnal tides of up to 1 m/s occurring on the Pilbara coast. These large tides and strong stratification combine to create large internal tides over the upper continental slope, which can create internal waves of up to 100 m in amplitude near the shelf break.

2.4 Bathymetry and Geomorphology

The seabed in the WA-506-P permit area slopes gently from approximately 1,500 m water depth in the south-east to approximately 2,500 m water depth in the north-west. There are no major bathymetric features such as canyons or seamounts in the area. The operational area lies on the outer continental slope and mainly comprises basin, terrace, plateau and slope geomorphologies. There is an area identified as 'ridge, sill' in the deep waters in the north-west of the operational area and an area of deep, escarpment in the north.

These geomorphological units are widespread in the region; over 60% of the sea floor in the bioregion is continental slope with extensive terraces and plateaux. The seabed types in these deep-water areas of the slope are predominantly muddy sediments.

2.5 Biological Environment

2.5.1 Benthic Communities

There is limited information available on the benthic communities of the operational area, primarily due to the remoteness and depth of the area. Within the deeper waters of the operational area, the sea floor habitats are expected to comprise sandy and muddy sediments. Regionally, these habitats support broadly distributed benthic communities of epifauna and infauna and epibenthic organisms. The greater water depths and lack of light penetration to the seabed preclude the formation of coral, seagrass or macroalgal assemblages.

No marine pest species are known from the deep offshore waters of the operational area.

2.5.2 Bony Fish

The deep waters and seabed of the outer continental slope support benthic and demersal fish species and pelagic fish assemblages in the water column. There are no seabed features in the operational area which would have particular value to fish and no known fish "hot spots" were identified by the fishers consulted during the development of this EP.

2.5.3 Sharks and Rays

Four threatened and/or migratory species protected under the EPBC Act were identified to potentially occur in the operational area (Table 2-1).

Table 2-1: EPBC Act Listed Sharks and Rays

Scientific Name	Common Name	EPBC Act Status
Carcharodon carcharias	Great white shark	Vulnerable, Migratory
Isurus oxyrinchus	Shortfin mako	Migratory
Isurus paucus	Longfin mako	Migratory
Manta birostris	Giant manta ray	Migratory

The great white shark is widely but sparsely distributed through all seas including cold temperate waters in both hemispheres. It is most frequently observed and captured in coastal temperate and subtropical regions. In Australian waters observations are more frequent in and around fur seal and sea lion colonies. Juveniles appear to aggregate seasonally in certain key areas including the Ninety Mile Beach area off eastern Victoria and the coastal region between Newcastle and Forster in New South Wales. It is possible, although unlikely, that great white sharks could be present in the operational area. As the operational area is towards the northern limit of the known distribution of this species, they are likely to be present only as transients. The *Recovery Plan for the White Shark* identifies high density foraging sites, mostly around seal and sea lion colonies, and juvenile aggregation sites. There are no identified biologically important areas for this species within or in the vicinity of the operational area.

The shortfin mako is an oceanic species and is known to occur in both tropical and temperate waters. It is normally oceanic and cosmopolitan in its distribution and is widespread in Australian waters, occurring from the surface to water depths of at least 500 m. It is occasionally found close inshore where the continental shelf is narrow. It is not normally found in waters below 16 °C. The longfin mako is a widely distributed but rarely encountered oceanic tropical shark. This species is a deep-dwelling shark and appears to be cosmopolitan in tropical and warm temperate waters; however its distribution remains unclear within Australia and it is often confused with the more

common shortfin mako. Whilst both species may transit the operational area and surrounding waters, the area is unlikely to represent critical habitat (key feeding, breeding, pupping areas) for the species.

The giant manta ray is usually found in offshore waters, often around tropical oceanic islands, but it may occur coastally. Manta rays aggregate around Ningaloo Reef during autumn and winter. Whilst they may transit through the operational area and surrounding waters, en route to the aggregation area at the Ningaloo Reef, they are unlikely to be encountered except as occasional and transient visitors to the operational area.

The whale shark (*Rhyncodon typus*) was not identified as potentially occurring in the operational area. However, as there is a possibility of them being encountered, some further information is provided below. The whale shark is listed as Vulnerable and Migratory under the EPBC Act. It is broadly distributed in tropical and temperate seas worldwide, feeding on phytoplankton, macroalgae, zooplankton, krill and small squid or vertebrates. Whale sharks aggregate annually off the Western Australian coast at Ningaloo Reef between March and July. The *Whale Shark Recovery Plan* identifies this aggregation site as critical habitat. Following this period, observers have recorded whales migrating north-west to the Indian Ocean, or directly north to Sumatra and Java, or northeast travelling along the 200 m contour. Although unlikely, it is considered possible that low numbers of whale sharks transiting to Sumatra and Java may occasionally be present in the operational area.

2.5.4 Marine Reptiles

Five threatened and migratory species protected under the EPBC Act were identified to potentially occur in the operational area (Table 2-2).

Table 2-2: EPBC Act Listed Marine Reptiles

Scientific Name	Common Name	EPBC Act Status
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

The loggerhead turtle is distributed throughout tropical, subtropical and temperate waters globally. The species nests on sandy beaches, with most nesting in Australia occurring in Queensland and Western Australia. In the NWMR, loggerhead turtles breed principally from Dirk Hartog Island in Shark Bay, along the Gnaraloo and Ningaloo coast to North-west Cape and the Muiron Islands region in the north, although there have been occasional nesting records from the southern Montebello islands, and from

Varanus and Rosemary Islands in the Pilbara. Shark Bay is known to contain critical feeding habitat for loggerhead turtles.

The green turtle is a widely distributed turtle species that nests, forages and migrates throughout northern Australia. Nesting occurs on sandy beaches throughout northern Australia, with Western Australia supporting one of the largest green turtle populations in the world, estimated at tens of thousands of individuals. Green turtles breed extensively throughout the region, and along the coastal (state) areas adjacent to it. Principal near-coastal rookeries include the Lacepede Islands, some islands of the Dampier Archipelago, Barrow Island, the Montebello Islands, North-west Cape and the Muiron Islands. Green turtles have also been recorded during tagging studies on Rosemary Island, approximately 350 km south-east of the operational area. Peak nesting season is thought to be in mid-summer, although nesting may occur in the region year round. During nesting, female green turtles are thought to stay within 5 to10 km of their nesting beach between laying clutches. Outside nesting season, green turtles may forage widely up to 2,600 km. Green turtles feed primarily on seagrasses and algae, and are likely to be found foraging in any seagrass habitat and much of the coral reef habitat that occurs along the Western Australian coast from at least Shark Bay to the northern extent of the NWMR.

The leatherback turtle is the largest of all turtle species, reaching up to 1.6 m carapace length. The species can utilise colder waters than other species due to physiological adaptations and is regularly observed in temperate as well as tropical waters around Australia. Nesting has rarely been observed in Australia (only within the Northern Territory and Queensland), with no mating or major documented nesting sites known.

The hawksbill turtle has a widespread tropical distribution and in Australia utilises a number of significant nesting beaches. Key nesting and inter-nesting areas are the Dampier Archipelago, Barrow Island Nature Reserves, Lowendal and Thevenard islands and the North-west Cape north of Exmouth, and occurs primarily during October to January, although may occur year round at some locations. Rosemary Island in the Dampier Archipelago supports globally significant hawksbill turtle nesting beaches.

The flatback turtle is only found in tropical waters of northern Australia, Papua New Guinea and West Papua (Indonesia), with nesting confined to Australia. Flatback turtles eat jellyfish and soft-bodied benthic invertebrates such as sea pens, sea cucumbers, crustaceans, molluscs and soft corals in habitats with unconsolidated substrates. There are two stocks of flatback turtles in the North-west Marine Region. Most of the flatback turtles in the region are part of the North West Shelf breeding stock. The North West Shelf stock nests from approximately Exmouth Gulf to the Lacepede Islands and has significant rookeries on Thevenard Island, Barrow Island, the Montebello Islands, Varanus Island, the Lowendal Islands, islands of the Dampier Archipelago, coastal areas around Port Hedland, along much of Eighty Mile Beach, and inshore islands of the Kimberley region where suitable beaches occur. The flatback rookery on Barrow Island is considered one of the largest in Western Australia. Flatback turtles have also been

recorded during tagging studies on Rosemary Island, approximately 350 km south-east of the operational area.

The *Marine Turtles Recovery Plan* has an overall objective "to reduce detrimental impacts on Australian populations of marine turtles and hence promote their recovery in the wild". Specific objectives include to:

- Reduce the mortality of marine turtles and, where appropriate, increase natural survivorship.
- Manage factors that affect marine turtle nesting.
- Identify and protect habitats critical for the survival of marine turtles.

The key areas of concern for turtles are disturbance to nesting, artificial light (only near nesting beaches), vessel collision and underwater noise. Nesting areas are known to occur around the Lowendal and Montebello islands, Barrow Island, and the Dampier Archipelago. The inter-nesting area represents areas where females live between laying successive clutches in the same season and is restricted to less than 100 km from nesting beaches. No nesting beaches are within 100 km of the operational area.

The operational area is approximately 250 km from the nearest nesting location at the Montebello Islands and well away from any biologically important areas (BIAs) for marine turtles. The survey will take place outside the nesting periods for all turtle species within the vicinity. Given the absence of important areas for feeding or nesting, it is unlikely that turtles will be present in any significant numbers within the vicinity of the operational area. Migratory turtles travel thousands of kilometres and may pass through the operational area on occasion.

2.5.5 Marine Mammals

A number of EPBC Act listed cetaceans may occur within the vicinity of the operational area (Table 2-3). Of these, two species (the blue and the humpback whale) are listed as Threatened and Migratory. Six species in total are listed as Migratory.

Table 2-3: EPBC Act Listed Marine Mammals

Scientific Name	Common Name	EPBC Act Status
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

The blue whale is the largest baleen whale, growing to longer than 30 m. The blue whale is considered to be subdivided into two distinct subspecies in the Southern Hemisphere:

- pygmy blue whale (*B. musculus brevicauda*)
- southern blue whale (*B. musculus intermedia*).

Only the pygmy blue whale is potentially expected to occur within the operational area, as the southern blue whale is generally restricted to waters south of 60°S. Pygmy blue whales are known to migrate between warm water breeding grounds and cold water feeding grounds. During the northern migration, pygmy blue whales aggregate in the Perth Canyon to feed from January to May and then move up the coast passing Exmouth in the period April to August, to their northern destinations in the Banda and Molucca Seas (Indonesia). Their southern migration down the Western Australian coast is from October to late December. They tend to pass along the shelf edge at depths of 500 m out to 1,000 m, moving faster on the southern migration and coming in close to the coast in the Exmouth to Montebello Islands area.

The *Blue, Fin and Sei Whale Recovery Plan 2005–2010* considers feeding aggregation areas as critical habitat. There are no known feeding aggregations near the operational area. The key threats identified relevant to the activities include acoustic pollution, entanglement, vessel strike, and impacts on water quality. These potential threats are all addressed in this EP.

The BIA for pygmy blue whales does not overlap the operational area. The BIA encompasses the area used for northward and southward migrations, which covers the period between April and December. However, as tagged whales have been identified by within approximately 50 km of the operational area in the area it is considered possible that pygmy blue whales may be encountered.

The humpback whale has a cosmopolitan distribution in temperate waters, with whales off Western Australia undertaking an annual migration between feeding grounds in the Southern Ocean and calving and breeding areas off of northern Western Australia. Humpback whales commence their northerly migration from Antarctic waters in May, migrating north along the WA coast reaching the NWMR waters in June. The northern migration commences in April, peaks in July and tapers off by August. The period of peak northern migration into the calving grounds is late July. Movement is northwards to the continental shelf edge, generally out to the 200 m depth contour.

In the southern migration, humpback whales migrate south to Antarctic feeding grounds from late August to October (cow and calf migration can occur for up to four weeks before and after these migration periods). The peak of southern migration out of the calving grounds is early September. Sightings of humpback whales moving southwards in this region are generally concentrated in water depths below 50 m, with high concentrations around the Buccaneer Archipelago and Camden Sound. Aerial surveys conducted for Woodside south of Broome at James Price Point recorded fewer whales

travelling southwards than northwards, suggesting a wider migratory pathway on the southern migration.

Feeding occurs primarily in summer in Antarctic waters south of about 55°S, with krill forming the major part of the diet. Some feeding has been observed in Australia's coastal waters but this is thought to be primarily opportunistic and forms only a small portion of their nutritional requirements.

The *Humpback Whale Recovery Plan 2005–2010* identifies important (and potentially critical) habitat as "those areas known to seasonally support significant aggregations of whales, and those ecosystem processes on which humpback whales rely – in particular known calving, resting and feeding areas, and certain sections of the migratory pathways". There are no known calving, resting and feeding areas in the vicinity of the operational area. The key threats identified relevant to the survey include acoustic pollution, entanglement, vessel strike, and impacts on water quality. These potential threats are all addressed in this EP.

2.5.6 Seabirds and Migratory Shorebirds

The islands and coasts of the wider region support significant breeding populations of several seabird species including wedge-tailed shearwaters, crested, bridled and sooty terns, brown boobies and lesser frigatebirds. The closest important seabird breeding sites are located on the Montebello Islands, approximately 250 km away.

No seabirds or migratory shorebirds protected under the EPBC Act were identified as potentially occurring in the operational area. It is expected that some seabirds will be encountered in small numbers during the activities.

2.6 Socio-economic Environment

2.6.1 Native Title

Consultation with the National Native Title Tribunal has indicated that they do not have any concerns with the activity.

2.6.2 Heritage

2.6.2.1 Historic Shipwrecks

The *Historic Shipwrecks Act 1976* protects historic wrecks and associated relics that are more than 75 years old, and those declared by the Minister, and in Commonwealth waters. A search of the Australian Historic Shipwrecks Database found no historic shipwrecks documented within the vicinity of the operational area.

If any other shipwrecks (or relics) are discovered during the course of the survey, the Statoil proponent will notify the Western Australian Museum Maritime Archaeology Department as soon as possible in accordance with the *Historic Shipwrecks Act 1976*.

2.6.2.2 National Heritage Properties

The EPBC Act search recorded no areas that are a "nominated place" on the National Heritage List.

2.6.2.3 Register of the National Estate

The EPBC Act search recorded no areas that are listed on the Register of the National Estate.

2.6.3 Commercial Fishing

There are five Commonwealth and seven Western Australian fisheries that overlap the operational area:

- Commonwealth
  - Western Tuna and Billfish Fishery
  - North-west Slope Trawl Fishery
  - Western Skipjack Fishery
  - Southern Bluefin Tuna Fishery
  - Western Deepwater Trawl Fishery

- Western Australian
  - Pilbara Trap, Trawl and Line Fisheries
  - Onslow Prawn Managed Fishery (part of North Coast Prawn Managed Fisheries)
  - Mackerel Managed Fishery
  - Beche-de-mer Fishery
  - Pearl Oyster Managed Fishery
  - West Coast Deep Sea Crustacean Managed Fishery
  - Northern Shark Managed Fishery.

2.6.3.1 Commonwealth – Western Tuna and Billfish Fishery

The Western Tuna and Billfish Fishery extends westward from Cape York Peninsula off Queensland around the west coast of Western Australia and from there extends eastward across the Great Australian Bight to the South Australian–Victorian border. Between 2003 and 2007, the areas that were most commonly fished were on the West Australian coast stretching from Port Hedland to Albany. Since 2007, less than five vessels have operated in the fishery. Effort data shows fishing effort is concentrated offshore of the 200 m isobath. As such, vessels within this fishery are very unlikely to be encountered within the operational area.

2.6.3.2 Commonwealth – North-west Slope Trawl Fishery

The North-west Slope Trawl Fishery extends from 114°E to about 125°E off the Western Australian coast between the 200 m isobath and the outer limit of the Australian Fishing Zone. The number of boats in the fishery has been declining since 2001 from a high of 13 vessels to two vessels in 2008, with only two active vessels in operation. The fishery primarily targets scampi, which are found on soft, muddy substrates at depth of between 250 and 500 m, which generally equates to the upper continental slope. As such, vessels within this fishery are very unlikely to be encountered within the operational area.

2.6.3.3 Commonwealth – Western Skipjack Fishery

The Western Skipjack Fishery targets only skipjack tuna (*Katsuwonus pelamis*). While the area of the proposed activity lies within the boundary of the fishery, effort within this fishery is mainly confined to the southern coast of Australia, several thousand kilometres away. As such, vessels active in this fishery are unlikely to be encountered within the operational area.

2.6.3.4 Commonwealth – Southern Bluefin Tuna Fishery

The Southern Bluefin Tuna Fishery targets southern bluefin tuna (*Thunnus maccoyii*) inside the Australian Fishing Zone from the coastline and on the high seas. Around 96% of southern bluefin tuna is taken in the Great Australian Bight, with the remainder from the Eastern Tuna and Billfish fishery and a very small amount from the Western Tuna and Billfish fishery. Vessels participating in this fishery are unlikely to be encountered within the operational area.

2.6.3.5 Commonwealth – Western Deepwater Trawl Fishery

The Western Deepwater Trawl Fishery is located in waters from the 200 m isobath to the outer limit of the Australian Fishing Zone between Exmouth and Augusta. It is a bottom trawl fishery operating year round with 11 permit holders. In the 2009 to 2010 fishing season, only three vessels operated in the fishery. Due to the low fishing effort in the operational area and the short period of the survey, vessels in this fishery are unlikely to be encountered.

2.6.3.6 Western Australian – Pilbara Trap, Trawl and Line Fisheries

The Pilbara Demersal Scalefish Fisheries include the Pilbara Fish Trawl Managed Fishery, the Pilbara Trap Managed Fishery and the Pilbara Line Fishery. The Pilbara Trawl Interim Managed Fishery is situated north of latitude 21°35'S and between longitudes 114°9'36"E and 120°E and between the 50 and 200 m isobaths. The operational area overlaps with zone 1 of the trawl fishery, which has been closed to trawling since 1998. The Pilbara Trap Managed Fishery is situated north of 21°44'S and between 114°9.6'E and 120°E and between the 30 and 200 m isobaths. There are six licences in the fishery consolidated onto three active vessels. The Pilbara Line Managed Fishery encompasses all Pilbara

waters with nine fishing boat licences active for any five-month blocks in the year. Due to the relatively low fishing effort in the operational area, vessels within this fishery are very unlikely to be encountered.

2.6.3.7 Western Australian – Onslow Prawn Managed Fishery

The Onslow Prawn Managed Fishery is part of the regional North Coast Prawn Managed Fishery. The boundary of the Onslow Managed Prawn Fishery (Area 3) lies inshore from operational area. The gear used consists of otter trawls and are typically restricted to depths less than 60 m. Vessels active in these fisheries are concentrated in inshore areas and will not be encountered.

2.6.3.8 Western Australian – Mackerel Managed Fishery

The Mackerel Managed Fishery targets Spanish mackerel (*Scomberomorus commerson*), with smaller landings of other species such as grey mackerel (*S. semifasciatus*). The fishery extends from Cape Leeuwin on the southern west coast of Australia to the Western Australian–Northern Territory border, with most of the catch landed in the Pilbara and Kimberley regions. The operational area overlaps with Area 2 of the fishery. There are currently 49 licences in the fishery, of which 15 licences are in Area 2. Fourteen vessels reported as being active in the fishery during 2012 to 2013. Given the small number of vessels and the large area over which the fishery extends, encounters between fishing vessels and the survey vessel are considered unlikely.

2.6.3.9 Western Australian – Northern Shark Managed Fishery

The Northern Shark Fisheries comprises the State-managed Western Australian North Coast Shark Fishery in the Pilbara and Western Kimberley, and the Joint Authority Northern Shark Fishery in the eastern Kimberley, with the two regions considered as a single fishery. The boundary of the fishery extends from North West Cape to the Western Australia / Northern Territory border. There has been no fishing activity in the Northern Shark Fisheries since 2008/09, with a large portion (west of 120°E) of the Western Australian North Coast Shark Fishery closed to fishing.

2.6.3.10 Western Australian – Beche-de-mer Fishery

The main area of the beche-de-mer fishery extends north from Exmouth Gulf to the Northern Territory border with catches also taken from the Shark Bay area and the south coast of Western Australia. The harvesting of beche-de-mer is only allowed by diving or direct collection by hand. Only one of the six licensed vessels operated in the 2012 season. Due to the low effort in the fishery and the depths of water, it is considered unlikely that the survey vessels would encounter vessels participating in this fishery.

2.6.3.11 Western Australian – West Coast Deep Sea Crustacean Managed Fishery

This fishery encompasses all waters north of Cape Leeuwin and west of the Northern Territory border and between the 150 m isobath and the Australian Fishing Zone boundary. It targets crystal (snow), giant (king) and champagne (spiny) crabs using baited pots operated in a longline formation, generally at depths of 500-800 m. Due to the depth of the operational area, it is unlikely that vessels from this fishery will be encountered during the survey activities. In consultation with fishers, concerns were initially raised about the possibility of the survey vessel becoming entangled with set pots during transit to and from the survey area. Following further consultation, the fishers no longer have any concerns.

2.6.4 Recreational Fishing and Tourism Activities

The distance offshore and deep water are likely to preclude recreational fishing and charter vessel activity in the operational area. Recreational fishing tends to be concentrated in state waters adjacent to population centres. The closest known recreational fishing destination is the Montebello Islands; approximately 250 km from the operational area. Recreational fishing is mostly restricted to charter vessels.

The operational area is distant from areas of tourism activity, as most marine tourism activities (with the exception of offshore charter fishing) occur in state waters. Nature-based tourism around the Montebello Island and Barrow Island Marine Reserves is limited to a small seasonal charter vessel industry. Charter vessels usually visit the reserves between April and November. The majority of these visits centre on the Montebello islands, with activities around Barrow Island being rare. Due to the distance offshore, lack of facilities and landing restrictions in some areas, the use of the area for tourism activities is low.

Cruising yachts typically occur seasonally in the region, though these vessels are expected to be present in very low numbers and are more likely to occur closer to land.

2.6.5 Shipping

The operational area lies at the approaches/departure point to the shipping fairway between Western Australia and the Lombok Strait, and blue water cargo and other commercial vessels traverse the waters of the area.

2.6.6 Petroleum Activities

There is very little petroleum activity in the vicinity of WA-506-P. The nearest field (approximately 90 km to the south-west) is the Thebe gas field, discovered by BHP Billiton in 2007 and is yet to be developed. The operators of adjoining permits are listed in Table 2-4. No activities will occur in any of these adjoining permits.

Table 2-4: Adjoining Permits

Operator	Permit
Shell Development (Australia)	WA-386-P
Eni Australia Ltd	WA-362-P
NWS OandG P/L	WA-507-P
Woodside Burrup P/L	WA-348-P

2.6.7 Defence

Several offshore training areas including the North-west Exercise Area, North Australia Exercise Area and Learmonth Air Weapons Range occur in the vicinity of the operational area. The Department of Defence was consulted as a relevant stakeholder and has no objections to the proposed activity.

2.7 Particular Values and Sensitivities

2.7.1 Marine Protected Areas

There are no Commonwealth or Western Australian State marine protected areas in the vicinity of the operational area. A brief description of the closest marine protected areas, some of which lie within the maximum geographic extent of an oil spill plume, are described below.

The Argo-Rowley Terrace Commonwealth Marine Reserve (CMR) covers a large area from the Rowley Shoals to the EEZ, in depths of 220 to 6,000 m. The operational area lies over 200 km to the south-west of the reserve.

The Dampier CMR covers an area of 1,252 km^2 with depths ranging from approximately 15 to 70 m. The nearest point of the reserve is approximately 350 km from the operational area.

The Montebello CMR covers an area of 3,413 km^2, adjoining the Western Australian Montebello Islands Marine Park, the Barrow Island Marine Park and the Barrow Island Marine Management Area. The operational area is over 200 km to the north-west.

The Gascoyne CMR is approximately 240 km south of the operational area, extending between North West Cape and Exmouth Plateau, covering an area of 81,762 km^2. The reserve also encompasses Commonwealth waters adjacent to Ningaloo Reef.

The Ningaloo CMR and Marine Park is located over 350 km south of the operational area at its closest point, and covers an area of 243,600 ha. The Ningaloo Marine Park was also declared a World Heritage site in June 2011.

The Montebello Islands Marine Park includes the sublittoral parts of the shorelines of the Montebello Islands and adjacent marine areas including beach slopes, limestone platforms, reefs and shoals, covering an area of over 58,000 ha. The nearest point of the operational area is approximately 250 km to the north-west.

Barrow Island itself is a Class "A" Nature Reserve, supporting a unique, diverse and rich array of natural values. The island has large and significant green turtle and flatback turtle rookeries. Barrow Island is over 250 km south-east of the operational area.

The *Management Plan for the Montebello/Barrow Islands Marine Conservation Reserves 2007–2017* describes the ecological and social values. It defines management objectives, strategies and targets (including key performance indicators (KPIs)) to help conserve the marine flora and fauna, habitats and water quality of the Montebello–Barrow islands area, and support commercial and recreational activities, which are compatible with the maintenance of environmental quality and be valued as an important ecological, economic and social asset by the community.

2.7.2 Key Ecological Features (KEFs)

Key ecological features (KEFs) are elements deemed regionally important for preserving biodiversity or ecosystem function and integrity. The southern boundary of the operational area lies adjacent to the Exmouth Plateau KEF. Five other KEFs occur within approximately 400 km of the operational area:

- ancient coastline at 125 m depth contour
- canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula
- Commonwealth waters adjacent to Ningaloo Reef
- continental slope demersal fish communities
- Glomar Shoals.

The Exmouth Plateau covers 49,310 km^2 in water depths of 800 to 4,000 m. This KEF is recognised for its biodiversity values as a unique sea floor feature with ecological properties of regional significance. The plateau surface is relatively rough and undulating, lying in 900 to 1,000 m water depth. The northern margin is steep and intersected by large canyons (e.g. Montebello Canyon, Swan Canyon) with relief of >500 m and spurs. The western margin is moderately steep and relatively smooth; the southern margin is gently sloping and virtually free of canyons.

The Exmouth Plateau is generally an area of low habitat heterogeneity; however, it is likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of around 1,000 m. Sediments on the plateau suggest that biological communities include scavengers, benthic filter feeders and epifauna. Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton.

2.7.3 Biologically Important Areas (BIAs)

Biologically Important Areas (BIAs) in the Marine Bioregional Plan for the North-west Marine Region are mapped on the National Conservation Values Atlas. BIAs are not protected under the EPBC Act in the same way critical habitats for MNES are; they are areas in which potential impacts require more careful consideration.

The BIAs for migratory pygmy blue whales and humpback whales lie inshore of the operational area. The blue whale BIA is approximately 100 km inshore of the operational area at its closest point. The humpback whale BIA is approximately 180 km inshore of the operational area. No BIAs for turtles, whales, sharks and migratory birds occur within or near the operational area.

3.0 DESCRIPTION OF THE ACTIVITY

Statoil proposes to undertake a geophysical and geochemical survey (GGS) in petroleum exploration permit WA-506-P which lies in deep offshore waters of the Northern Carnarvon Basin. Data will be collected using the dedicated geophysical survey vessel, the *MV Fugro Supporter*. Mobilisation and demobilisation of the vessel, equipment and personnel is to be conducted from Dampier, Western Australia.

The GGS will be completed in two phases; geophysical survey, and geochemical survey, as described below, with the final design of the second survey phase dependent on the results from the first survey phase.

3.1 Phase 1 Geophysical Survey

The first phase of the activities will comprise geophysical surveys; a bathymetric survey using a multi-beam echo sounder (MBES) and sub-bottom profiling (SBP) to characterise shallow sub-seabed geology and geohazards. The survey will be undertaken over an area of 10,000 km^2. All of the equipment will be keel mounted (i.e. no trailing equipment). This phase is expected to take approximately 15 days.

The Kongsberg EM 122 deep water MBES proposed for the survey has 12 kHz frequency and an estimated sound pressure level at source of 242 db re 1 µPa rms at 1 m. The Kongsberg EM 122 is capable of achieving full bathymetry coverage in excess of the water depths likely to be encountered on this project and will be tuned to suit the depths in the operational area.

Sound velocity profiles will be collected using a Valeport MIDAS SVX2 Combined SVP/CTD (Sound Velocity Profile/Conductivity, Temperature and Density) Profiler, or similar, during the calibration of the MBES, daily during the MBES survey and on an opportunistic basis, when the vessel is already stopped.

SBP data for the purpose of selecting coring and heat flow target locations will be acquired using the Fugro Supporter's hull mounted Edgetech 3300 chirp system. Being hull mounted as opposed to towed will result in an increase in overall survey speed and a decrease in line turn times, thus increasing overall efficiency.

3.2 Phase 2 Geochemical / Geophysical Survey

The second phase of the activities will comprise geochemical surveys; collecting seabed samples using a gravity piston-corer and measuring heat flow in surface sediments using a heatflow probe. The exact locations of geochemical sampling will be determined following on-board analysis of the geophysical data collected during the first phase of work. Approximately 50 locations will be sampled using the piston-corer. At six of these

locations, heat flow will also be measured. This phase is expected to take approximately 10 days.

Seabed coring will use a 6 m long gravity piston-corer lowered from the A-frame of the survey vessel to within 6 m of the seabed and then allowed to free fall the remaining distance to the seabed. Cores up to 6 m long will be collected and returned to the vessel for sampling and storage. During coring, the survey vessel will use dynamic positioning to remain on site for up to three hours.

The heat flow probe is approximately 6 m long and will be allowed to free fall into the seabed penetrating the soft sediments up to 6 m. After a period of equilibration, a heat pulse (equivalent to about 20 °C in air) is fired and it heats up the sensor tube and the surrounding sediment. The probe remains in the sediment for 20 minutes to measure the thermal decay of the heat, which allows the depth-dependent determination of the sediment´s thermal conductivity and thermal diffusivity. The probe is then recovered to the vessel.

3.3 Survey Vessel

Fugro has been contracted by Statoil to undertake the GGS using the *MV Fugro Supporter*. The *MV Fugro Supporter* has a Shipboard Oil Pollution Emergency Plan (SOPEP).

Vessel specifications for the *MV Fugro Supporter* are summarised in Table 3-1.

Table 3-1: MV *Fugro Supporter* Summary Specifications

Length	75.4 m
Beam	12.5 m
Maximum Draft	5.3 m
Gross Tonnage	2,065 t
Built	1994
Classification Type	Lloyd's Register 100A1 Ice Class 1A+LMC Special Purpose SPS 2008 / MLC 2006
Fuel Type	Marine diesel
Total Fuel Capacity (Maximum)	475 m^3
Largest Fuel Tank	40 m^3
Cruising Speed	10 knots
Maximum Speed	12 knots

The relatively short period of the survey (approximately 25 days) excludes the need for helicopter transfers of crew and vessel refuelling at sea.

The GGS vessel will use a low sulphur marine diesel fuel and does not use heavy fuel oil. No support vessel will be employed during the relatively short and remotely located survey, but a small ancillary craft will be deployed from deck as required.

3.4 Time Frame

The proposed survey is scheduled to occur between June and September 2015, with total survey duration of approximately 25 days. Phase 1 is expected to take 15 days and Phase 2 to take 10 days, weather downtime may extend the survey period. Survey timing is dependent on vessel availability, weather conditions and receiving the necessary statutory approvals.

4.0 ENVIRONMENTAL IMPACTS AND RISKS

4.1 Methodology

Statoil's risk management process, is based on the principles, framework and processes defined by the International Standards Organization (ISO) 31000:2009 *Risk Management – Principles and Guidelines* and guided by Standards Australia *Handbook 203:2012 – Managing environment-related risk*. The environmental risks associated were assessed using the following steps:

- defining the activity and associated environmental aspects
- identifying the environmental values at risk within and adjacent to the operational area the environmental context of the activity
- determining the inherent risk of each identified environmental hazard associated with the proposed survey using the worst-case environmental impact of the hazard
- with controls implemented, establish if the risk is as low as reasonably practicable (ALARP) and acceptable
- review the activity and consider additional control measures until the residual risk is ALARP and acceptable.
- Communication and consultation with external stakeholders takes place during all stages of the risk management process.

Within this context a listing of relevant environmental aspects, hazards and possible impacts have been identified which could affect the environment from the survey program. Each environmental risk has been assessed as a combination of the likelihood of the impact occurring (Table 4-1), and the consequence on the environment if it does (Table 4-2).

Table 4-1: Definition of Likelihood

Category	Definition	Experience (History of Occurrence)	Probability Guide
Rare	Almost impossible	Unheard of in the industry	Event occurs once in 10 years
Unlikely	Could occur but would not be expected	Has occurred once or twice in the industry	Event occurs once in five years
Possible	Might occur at some point	Has occurred many times in the industry but not within the company	Event occurs once a year
Likely	Will probably occur in most circumstances	Has occurred frequently within the company	Event occurs monthly
Almost Certain	Expected to occur in most circumstances	Has occurred frequently at the location	Event occurs weekly

Table 4-2: Definition of Consequence

Category	Definition	
	Environment	**Socio-economic**
Negligible	No or very limited effect on ecosystems, species or habitats Full recovery expected	No or very limited effect on commercial and/or recreational users
Minor	Minor disruption and temporary effect (days) on individuals within a species and/or critical habitats and/or behavioural processes. No overall threat to populations Localised scale (immediate area) and temporary effect on other habitats/communities No effects on ecosystem function Full recovery expected.	Minor disruption, localised scale (immediate area) and temporary effect (days) on commercial and/or recreational users
Moderate	Moderate disruption and short-term effect (weeks) on a proportion of a species' population and/or critical habitats and/or behavioural processes. No overall threat to populations Localised scale and short-term effect (weeks) on other habitats/communities Injury or death of an individual of a protected species No effects on ecosystem function Recovery <1 year	Moderate disruption, localised scale and short-term effect (weeks) on commercial and/or recreational users
Severe	Moderate disruption and short-term effect (months) on a significant proportion of a species' population and/or critical habitats and/or behavioural processes. No overall threat to populations Localised scale and medium term effect (months) on other habitats/communities Injury or death of several individuals of a protected species No effects on ecosystem function Recovery one to three years	Moderate disruption and short-term effect (months) on commercial and/or recreational users
Major	Major disruption and medium to long-term effect (years) on a species' population and/or critical habitats and/or behavioural processes. No overall threat to populations Medium scale and medium term effect (years) on other habitats/communities Injury or death of enough individuals of a protected species to have a temporary population-level effect Effects are at an ecosystem function level Recovery >3 to 10 years	Major disruption and medium to long-term effect (years) leading to loss of commercial and/or recreational use
Catastrophic	Extensive disruption and long-term effect (decades) on a species' population and/or critical habitats and/or behavioural processes. No overall threat to populations Injury or death of a significant proportion of a protected species population Large scale and long-term effect (decades) on other habitats/communities Effects are at an ecosystem function level Recovery >10 years	Extensive disruption and long-term effect (decades) leading to loss of commercial and/or recreational use

All identified risks associated with the activity were then evaluated in accordance with the Statoil's Risk Matrix (Table 4-3).

Table 4-3: Qualitative Risk Matrix

Consequence	Likelihood				
	Rare	Unlikely	Possible	Likely	Almost Certain
Negligible					
Minor					
Moderate					
Severe					
Major					
Catastrophic					

Term	Definition
Low	No effects, or those that are beneath levels of perception, within normal bounds of variation. Risk is low and acceptable without further reduction measures being required.
Medium	Risk that is acceptable (tolerable), providing that it can be shown that all practicable control measures have been implemented, with continual review of these measures and any potential new ones. The risk is deemed to be "as low as reasonably practical" (ALARP) and acceptable.
High	Risk is undesirable; Upper Management decision required to accept risks and proceed. Additional control measures are required to be considered and implemented, if the cost is not grossly disproportionate to the environmental benefit gained, to prevent or reduce the risk to ALARP and an acceptable residual risk level.
Very High	Risk is unacceptable (intolerable) and may require re-design of project and/or it's parameters; additional control measures are required to be implemented (regardless of cost) to prevent or reduce the risk to ALARP and an acceptable residual risk level

4.2 ALARP Workshop

An ALARP assessment workshop was held which considered each hazard in turn, with the facilitator describing the hazard, the potential consequence/s and likelihood and the identified controls. For each hazard, the discussion asked a number of questions, including:

- Are the identified controls industry best practice?
- Are the controls and risk levels consistent with practices of other operators in the region?
- Are the risks acceptable?
- Are there additional controls that can be implemented to reduce risks further?
- Are there alternative methods, approaches or processes which can be implemented cost effectively without compromising survey objectives and which further reduce the risk?

Statoil considered the implementation of controls and mitigation measures for each hazard to minimise potential environmental harm and stakeholder disruption. Additionally, measures were put in place to ensure that the effectiveness of the implemented controls is maintained, through review and improvement. A number of additional management measures were then adopted for the survey to reduce further the potential risks associated with some hazards.

4.3 Acceptability

The risks of adverse environmental impacts associated with the hazards identified within this EP were reduced to ALARP and to a level where the residual risk levels are considered acceptable, on the basis of a systematic process, as summarised below:

1. The environmental aspects of the survey were identified.
2. The credible, potential "consequence" of each hazard was identified.
3. Acceptable levels of risk were defined for each aspect, incorporating:
    a. principles of ecologically sustainable development (ESD)
    b. other requirements (including laws, policies, standards, conventions)
    c. internal context (e.g. consistency with Statoil's policies, culture and company standards)
    d. external context, including:
        i. the environment
        ii. stakeholder expectations.
4. Industry best practice measures were considered
5. An ALARP workshop was undertaken to consider further measures to reduce risk
6. The assessment was reviewed following the inclusion of the additional measures to determine whether the risks and impacts are ALARP, and to determine whether the risks and impacts are acceptable.

Statoil's senior management reviewed the impacts, risks and management measures described in the EP, in the context of the steps listed above, and are confident that impacts and risks are ALARP and will meet, or be better than, the acceptable levels defined in the EP.

4.4 Risk Assessment and Controls Summary

A summary of the identified risks and their potential environmental impacts is provided in Table 4-4. The controls applied are described in Table 4-5.

Table 4-4: Risk Assessment Summary for Routine and Non-routine Operations

Sources of Risk (Hazards)	Potential Environmental Impacts	Inherent Risk			Residual Risk		
		Likelihood	Consequence	Risk	Likelihood	Consequence	Risk
Routine Operations							
Establishment of Introduced Marine Species (IMS) from fouling or ballast water	Detrimental effects on biodiversity, ecological functions and economic activities	Unlikely	Minor	Low	Rare	Minor	Low
Interference with other marine users	Temporary displacement of other users from the area of the operational area	Possible	Minor	Medium	Unlikely	Minor	Low
Artificial Light Spill	Disruption to behaviour of light sensitive marine fauna	Unlikely	Negligible	Low	Rare	Negligible	Low
Underwater Noise from Vessel Operations	Disruption of behaviour of noise sensitive marine fauna and birds	Unlikely	Minor	Low	Rare	Minor	Low
Underwater Noise from Operation of MBES and SBP	Behavioural disturbance to noise sensitive marine fauna.	Unlikely	Minor	Low	Rare	Minor	Low
Seabed Disturbance from Coring and Heat Flow Measurements	Localised disturbance to benthic habitat, other marine users and/or archaeological resources	Unlikely	Minor	Low	Rare	Minor	Low
Oily Water Discharge	Potential localised and temporary acute toxic effects on marine biota	Unlikely	Minor	Low	Rare	Negligible	Low
Sewage / Grey Water and Putrescibles Discharge	Adverse effects on marine biota due to localised increase in turbidity and nutrient concentrations	Unlikely	Negligible	Low	Rare	Negligible	Low
Atmospheric Emissions	Significantly contributing to global warming or causing pollution impacts	Unlikely	Negligible	Low	Rare	Negligible	Low
Non-routine Operations							
Seabed Disturbance due to Loss of Equipment	Localised disturbance to benthic habitat, other marine users and/or archaeological resources	Unlikely	Negligible	Low	Rare	Negligible	Low
Oil or Chemical Spill Through Deck Drainage	Potential localised and temporary acute toxic effects on marine biota	Unlikely	Minor	Low	Rare	Minor	Low

Sources of Risk (Hazards)	Potential Environmental Impacts	Inherent Risk			Residual Risk		
		Likelihood	Consequence	Risk	Likelihood	Consequence	Risk
Loss of Solid Hazardous / Non-hazardous Waste Overboard	Potential injury to fauna (e.g. ingestion of plastics). Potential navigational hazard and/or damage to other marine users. Potential localised reduction in water quality in the immediate vicinity	Possible	Minor	Medium	Unlikely	Minor	Low
Vessel Collision / Equipment Entanglement with Marine Fauna	Injury or death of marine fauna	Unlikely	Moderate	Medium	Rare	Moderate	Low
Vessel Collision Resulting in Oil Spill (40 m^3) of Marine Diesel Fuel	Acute/chronic toxic effects and/or physical disturbance (e.g. smothering) on marine biota Temporary displacement of other marine users Indirect impacts from spill response	Rare	Severe	Medium	Rare	Moderate	Low

Table 4-5: Summary of Control Measures

Risks (Hazards)	Controls
Establishment of Introduced Marine Species (IMS) from fouling or ballast water	Adherence the Australian Ballast Water Management Requirements - >50 NM from land and >200 m water depth. No planned discharge of ballast water during the survey unless in an emergency. Adherence with National Biofouling Management Guidance for the Petroleum Production and Exploration Industry • Biofouling Record Book kept outlining marine fouling management actions • Biofouling risk assessment shows acceptable risk of IMS presence prior to entry into Australian waters and low risk of introducing IMS which may become established in the operational area • Hull inspection prior to mobilisation (if required by biofouling risk assessment) • Vessel has a certified anti-fouling coating on the hull and coating is in sound condition Any biofouling observed during the survey that could be considered a potential IMS to be reported to AQIS and treated in accordance with AQIS instructions. Routine cleaning and inspection of all wet equipment, consistent with the requirements of the National Biofouling Management Guidance for the Petroleum Production and Exploration Industry
Interference with other marine users	Notice to Mariners issued AMSA RCC is notified of the vessel movements prior to mobilisation, and daily during activity. All relevant stakeholders notified of the survey prior to mobilisation and following demobilisation Vessel to maintain appropriate lighting, navigation and communication at all times to inform other users of the position and intentions of the survey vessel Survey vessel compliant with relevant Marine Orders. AMSA and AHO advised of the loss of large items of buoyant waste (potential navigational hazards). Vessel bridge to be manned at all times during the activity by suitably qualified bridge watch crew.
Artificial Light Spill	Vessel to maintain appropriate lighting at all times. External lights directed onto deck / work areas.
Underwater Noise from Vessel Operations	Interaction between survey vessel and cetaceans (whales and dolphins) within the operational area will be consistent with Part 8 of the EPBC Regulations 2000. Bow and stern thrusters to be used only as required, taking into account vessel requirement to maintain course. Maintenance of vessel propulsion systems to reduce unnecessary noise
Underwater Noise from Operation of MBES and SBP	Interaction between survey vessel and cetaceans (whales and dolphins) within the operational area will be consistent with Part 8 of the EPBC Regulations 2000. Survey to be conducted in deep, offshore waters away from important areas for marine fauna (nesting/breeding, foraging, calving). Cetacean sighting reports will be completed and provided to NOPSEMA / DotE. Vessel crew are inducted in their responsibilities as required regarding vessel / marine fauna interactions.

Risks (Hazards)	Controls
Seabed Disturbance from Coring, Sound Velocity Profiling and Heat Flow Measurements	Fugro deployment and recovery procedure to be implemented. Deployment of wet equipment to be carried out only under suitable weather conditions, as determined by the Vessel Master. All lifting gear to be load rated as appropriate for the working load, and rated for at least double the weight of the heaviest item of equipment. Visual inspection of lifting gear prior to use and annual load testing for wires. Encounters with marine archaeological resources/wrecks are recorded and reported in accordance with the Historic Shipwrecks Act 1976.
Oily Water Discharge	No discharge of oily water (>15 ppm) from the survey vessel during the activity. Compliance with MARPOL 73/78, *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and AMSA Marine Order - Part 91 Marine Pollution Prevention – Oil. Vessel must not be stationary when undertaking discharge and OIW separator shut off value must be maintained and operational. Scupper plugs available and conveniently located for deck drains. Spill response bins/kits available onboard to clean up small spills (<80 L) and are maintained and located in close proximity to hydrocarbon storage areas and deck areas Minor oil/lubricant spills will be mopped up immediately with absorbent materials that will be disposed of onshore as hazardous waste in accordance with the vessel SOPEP.
Sewage / Grey Water and Putrescibles Discharge	Compliance with MARPOL 73/78 Annex IV (sewage) and Annex V (garbage), *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and AMSA Marine Orders, as required by vessel class: • all sewage, grey water and putrescible waste holding tanks are to be fully operational prior to survey commencement • approved and operational onboard sewage treatment plant • treated sewage discharged >3 NM from land or untreated sewage discharge >12 NM from land; and at a speed of greater than 4 knots • food scraps macerated to particle size <25 mm discharged >3 NM from land or unmacerated food scraps discharged >12 NM; and at a speed of >4 knots • a valid International Sewage Pollution Prevention Certificate (ISPP) • Garbage Management Plan and Garbage Record Book. Biodegradable wash down detergents will be used. Induction of survey crew includes waste management and vessel GMP.
Atmospheric Emissions	Compliance with MARPOL 73/78 Annex VI, *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and Marine Order – Part 97 (Part IIID Marine Pollution Prevention – Air Pollution), including: • Survey vessel has valid International Air Pollution Prevention (IAPP) Certificate. • The sulphur content of any fuel shall not exceed 3.5% by mass. The vessel will use marine diesel grade fuel. All engines to be well maintained in accordance with manufacturers specifications

Risks (Hazards)	Controls
Seabed Disturbance due to Loss of Equipment	Fugro equipment deployment and recovery procedure to be implemented. Equipment regularly cleaned. Redundant propulsion to be available during the survey so the vessel and all in-sea equipment positions are known at all times. Any lost equipment will be recovered where safe and practicable to do so. Deployment of wet equipment to be carried out only under suitable weather conditions, as determined by the Vessel Master. All lifting gear to be load rated as appropriate for the working load, and rated for at least double the weight of the heaviest item of equipment. Visual inspection of lifting gear prior to use and annual load testing for wires. Equipment to be operated by suitably qualified and experienced crew members. Ongoing consultation with relevant stakeholders in the event of loss of equipment, including notification to AMSA if presents a navigational hazard. Encounters with marine archaeological resources/wrecks are recorded and reported in accordance with the *Historic Shipwrecks Act 1976*.
Oil or Chemical Spill Through Deck Drainage	Compliance with MARPOL 73/78, *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and AMSA Marine Order - Part 91 Marine Pollution Prevention – Oil). Current SOPEP in place. Survey vessels hold a valid IOPP Certificate. Oil content of any discharged water to be <15 ppm. Any hydrocarbon storage above deck must have at least one barrier (i.e. form of bunding) to contain and prevent deck spills entering the marine environment. This can include containment lips on deck (primary bunding) and/or secondary containment measures (bunding, containment pallet, transport packs, absorbent pad barriers) in place. Equipment located on deck utilising hydrocarbons (e.g. cranes, winches or other hydraulic equipment) will have as a minimum primary bunding (i.e. deck edge lips or up-stands) to prevent loss of hydrocarbons to the marine environment. Deck drains in place with drain scuppers in place and scupper plugs available. Spills from fixed equipment are enclosed and spills captured via bilges that drain via the OIW separator. Vessel crew are inducted in their responsibilities under the SOPEP. Spill response bins/kits available onboard to clean up small spills (<80 L) and are maintained and located in close proximity to hydrocarbon storage areas and deck areas for use to contain and recover deck spills. Minor oil/lubricant spills will be mopped up immediately with absorbent materials that will be disposed of onshore as hazardous waste in accordance with the vessel SOPEP.

Risks (Hazards)	Controls
Loss of Solid Hazardous / Non-hazardous Waste Overboard	Compliance with MARPOL 73/78 Annex V and *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. Waste handling equipment, waste storage containers, and spill response equipment appropriate to the type and volume of waste will be provided at waste storage areas All hazardous wastes will be segregated prior to onshore disposal Vessel's Garbage Management Plan and Garbage Record Book. All non-hazardous and hazardous solid wastes to be returned to shore for disposal by a licensed waste management contractor. Any accidental release of wastes to the marine environment will be recovered where safe and practicable to do so. AMSA and AHO to be advised of the loss of large items of buoyant waste (potential navigational hazards) Induction of survey crew includes waste management and vessel GMP Good housekeeping practices for waste storage/ handling in accordance with vessel GMP Hazardous wastes materials will be handled and stored in accordance with the corresponding MSDS
Vessel Collision / Equipment Entanglement with Marine Fauna	Compliance with Part 8 of the EPBC Regulations 2000. Survey vessel will not travel at greater than 6 knots within 300 m of a cetacean (caution zone) and minimise noise Survey vessel will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception animals' bow riding). Continuous (24 hour) survey operations, with survey team and bridge crew monitoring vessel position and depth at all times during the activity. Vessel crew are inducted in their responsibilities as required regarding vessel / marine fauna interactions. All entangled marine fauna recovered to the vessel will be returned to the sea as quickly as practicable. Cetacean sighting reports will be completed and provided to the NOPSEMA / DotE.

Risks (Hazards)	Controls
Vessel Collision Resulting in Oil Spill (40 m^3) of Marine Diesel Fuel	Compliance with MARPOL 73/78 Annex I, *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and AMSA Marine Order - Part 91 Marine Pollution Prevention – Oil). Current SOPEP in place. Survey vessel holds a valid IOPP Certificate. The SOPEP and the Oil Pollution Emergency Plan (OPEP) are approved, tested and available to relevant persons on the vessel. Survey vessel complies with Marine Orders Part 30: Prevention of Collisions (Issue 8) and Marine Orders Part 21: Safety of navigation and emergency procedures, Issue 8. Use of standard maritime safety procedures (including radio contact, display of navigational beacons and lights). AHO advised of the survey details (survey details, location, timing) at least two weeks prior to mobilisation and following demobilisation for issue of Notice to Mariners The AMSA RCC is notified of the survey vessel movements prior to mobilisation and daily during activities Induction for crew includes responsibilities of survey crew to the OPEP and SOPEP No refuelling at sea during the activity. All fuel tanks can be isolated and contents transferred between them Vessel to maintain appropriate lighting, navigation and communication at all times to inform other users of the position and intentions of the survey vessel, in compliance with the *Navigation Act 2012* and Chapter 5 of the SOLAS Convention Vessel only uses light marine diesel used Vessel bridge manned at all times during the activity by suitably qualified bridge watch crew Radars onboard with collision alarm and maintained in good working order Statoil has adequate forms of financial assurance in place to meet the cost of spill response and rehabilitation. In the event of a spill, Statoil will undertake NEBA in conjunction with AMSA in determining spill response.

5.0 MONITORING OF ENVIRONMENTAL PERFORMANCE

The activity will be managed in compliance with the accepted EP for the activity, all applicable laws and regulations, the Statoil Environment Policy, and the HSE Management System of the vessel contractor.

The objectives of the EP are to ensure that:

- The proposed activity carried out consistent with the principles of ecologically sustainable development
- The receiving environment is adequately described, such that all values and sensitivities are identified
- The sources of potential impacts from both planned and unplanned activities are identified
- Potential impacts and risks are acceptable and are reduced to as low as reasonably practicable (ALARP).

5.1 Ongoing Monitoring

The implementation strategy for the EP, including for during emergencies or potential emergencies, describes in detail the arrangements in place to allow Statoil to continually manage the environmental impacts and risks of their activities to acceptable levels and ALARP. It includes:

- details of when the titleholder will report to the Regulator in relation to the titleholder's environmental performance
- a description of the environmental management system for the activity, including specific measures to ensure that:
  - the environmental impacts and risks of the activity continue to be identified and reduced to a level that is ALARP
  - control measures detailed in the EP are effective in reducing the environmental impacts and risks of the activity to ALARP and an acceptable level
  - environmental performance outcomes and standards set out in the EP are being met
- chain of command, and roles and responsibilities in relation to the implementation, management and review of the EP
- training and competencies, including induction into the EP
- monitoring, recording, audit, management of non-conformance and review of the environmental performance and the implementation strategy, and quantitative records of emissions

Statoil will maintain a record of environmental performance during the GGS, including an assessment of performance in relation to the environmental performance outcomes

and standards detailed within the EP. This record will be documented in the form of a Compliance Register. The register will include:

- the environmental performance outcomes for the GGS
- the environmental performance standards which apply to the GGS
- measurement criteria to enable an auditor to determine if the GGS has complied with the relevant performance standards
- the person/party responsible for implementing management measures to meet the environmental performance objective.

A report on the environmental performance, including the Compliance Register, will be submitted to NOPSEMA for assessment within two months of completion of the activity.

The key measures for ensuring ongoing environmental performance include:

- Pre-survey testing of oil spill response arrangements
- a pre-survey audit
- project kick-of meeting
- post-survey review and report on environmental performance.

5.2 Review of the EP

If ongoing performance monitoring or consultation with stakeholders identifies any significant new environmental impact or risk, or a significant increase in an existing environmental impact or risk that is not provided for in the EP then Statoil will submit a proposed revision of the EP, in accordance with regulation 17 of the OPGGS(E)R.

The EP will be reviewed and a proposed revision submitted to the regulator if:

- the activity is changed, significantly modified, or a new stage added, or
- any significant new environmental impact or risk, or a significant increase in an existing environmental impact is identified, or
- if requested by the regulator.

6.0 OIL POLLUTION EMERGENCY PLAN (OPEP) RESPONSE ARRANGEMENTS

The overall objectives in any marine oil pollution event are to:

- Reduce risk to people, property and the environment.
- Effectively respond to minimise the oil impact area and impacts to protection priorities within that area.
- Remove spill and remediate area to agreed spill termination criteria.

The Oil Pollution Emergency Plan (OPEP) for the EP is based on the MV *Fugro Supporter* Shipboard Oil Pollution Emergency Plan (SOPEP). The OPEP demonstrates:

- provision for the updating of the plan
- adequate arrangements for responding to and monitoring oil pollution
- arrangements for testing the response arrangements in the OPEP
- arrangements for monitoring of impacts to the environment from oil pollution and response activities
- the response arrangements in the OPEP are consistent with the national system for oil pollution preparedness and response.

The OPEP integrates the MV *Fugro Supporter* SOPEP, the National Plan for Maritime Environmental Emergencies (NATPLAN) and Western Australian plans.

The first point of contact in the event of an oil spill is the Australian Maritime Safety Authority (AMSA). In the event that a hydrocarbon spill occurs within port the relevant port authority must be contacted.

Oil spill response arrangements detailed in this section and it's interaction with the MV *Fugro Supporter* will be tested prior to mobilisation to the operational area. Outcomes of this testing will be documented and any corrective actions/improvements implemented prior to mobilisation.

6.1 MV *Fugro Supporter* SOPEP

The MV *Fugro Supporter* SOPEP contains specific actions to contain and mitigate oil spills for identified credible oil spill threats on/from the vessel. This includes the following actions which are assigned to various positions on-board the vessel:

- Operational Spills
  - Bunkering Overflow/Transfer System Leak/Tank Overflow[1]
  - Hull Damage/Leak
  - Equipment in Machinery Space.

[1] No bunkering of oil will occur at sea during the survey.

- Spills resulting from Casualties
  - Ship Grounding
  - Collision
  - Hull Failure (major cracks in shell plating)
  - Fire and Explosion.

On-site response equipment for the prevention/minimisation of loss of oil to sea during the survey is the MV *Fugro Supporter* on-board spill response kit equipment. This equipment is stored in dedicated lockers located on the vessel, and identified as spill equipment. All crew are trained in the use of the vessel equipment and the PPE required to appropriately respond to the spill (as contained in MSDSs).

Regular SOPEP drills and exercises are carried out in accordance with the MV *Fugro Supporter* SOPEP to maintain the crew's currency in response equipment and incident response procedures. This verifies emergency response efficiency, effectiveness of procedures and detects any failure in equipment. These drills include, but are not limited to, spill response, collision and grounding, and fire and explosion. All drills are documented, debriefings held and corrective actions identified (including revisions to SOPEP) and tracked to completion by the Vessel Master.

An audit of the on-board spill response capability of the MV *Fugro Supporter* against its SOPEP will be made prior to survey mobilisation to ensure appropriate preparedness for the GGS.

6.2 NATPLAN

NATPLAN integrates Commonwealth and State Government response frameworks to facilitate effective response to marine pollution incidents through the Australian Emergency Management Arrangements. The Australian Maritime Safety Authority (AMSA) manages NATPLAN, working with State governments (who have equivalent state plans which integrate into NATPLAN).

6.3 Project Specific Plans

Fugro will prepare a Project Execution Plan (PEP), specific to the GGS which includes a number of sub-plans:

- Project Operational Plan – The Operational Plan communicates project specific details to the GGS team for execution of the GGS according to the client's and Fugro's contractually agreed objectives.
- Project Quality Plan – The Quality Plan references and explains how Fugro's quality management systems shall be applied to maintain quality control of the GGS and how these processes will be used as a basis for monitoring and assessing compliance with the GGS specific and Fugro quality requirements.

- Project Health, Safety, Security and Environment Plan (HSSE Plan) – The HSSE Plan provides a clear statement of the methods and procedures Fugro will use to conduct the services in a safe and responsible manner. It details the responsibilities, reporting systems and procedures to be used by Fugro throughout the GGS.
- Project HSSE Interface Document – The Client Interface Document is an interface management plan (bridging document) that identifies the particular requirements and amendments against Fugro's HSSE Plan that are required to conform to the Client's HSSE management procedures.
- Project Emergency Response Plan – The Emergency Response Plan provides project specific information, guidance and procedures for dealing with emergency events. It details response procedures and sequences; together with details of the person(s) responsible for coordinating efforts on behalf of Fugro should they occur.

6.4 Western Australian Plans

If a spill occurs in Western Australian waters, the State Emergency Plan for Marine Oil Pollution (WestPlan MOP) and the Western Australia Oil Spill Contingency Plan (WA OSCP) apply.

The Western Australia Department of Transport (DoT) is responsible for the preparedness for marine oil response in Western Australian territorial waters. The Western Australian DoT is the Control Agency, Jurisdictional Authority and the Hazard Management Agency, except if a spill occurs in port authority waters, in which case the port authority would be the Control Agency and the Hazard Management Agency. AMSA may request that the Western Australian DoT assume the Control Agency role, even though the spill occurred in Commonwealth waters in situations where oil is likely to impact on the Western Australian shoreline.

Deployment of Western Australian resources in Commonwealth waters is coordinated and requested through AMSA.

6.5 Spill Scenarios

Credible spill scenarios identified for the GGS are identified as:

- Level 1 (<80 L): the loss of the contents of 80 L from uncontained deck spills/leaks (Section 5.3.5).

- Level 2 (40 m^3 marine diesel): the loss of the full contents of the largest fuel tank on the survey vessel due to vessel collision.

The Zone of Potential Impact (ZPI) for a small spill (i.e. <80 L) is expected to be limited to within approximately 250 m around the release point.

The ZPI for a marine diesel spill includes the area (including subsurface) over which a surface oil parameter of 0.01 mm thickness or 10 microns (equal to 10 g/m^2) would spread.

The stochastic spill modelling was undertaken prior to the survey vessel being selected and was based on a worst case estimate of 240 m^3 of marine diesel. The selected survey vessel's largest fuel tank is 40 m^3, and as such, the modelling is highly conservative. The modelling of 240 m^3 showed no contact with shorelines or subtidal areas (Figure 6-1).

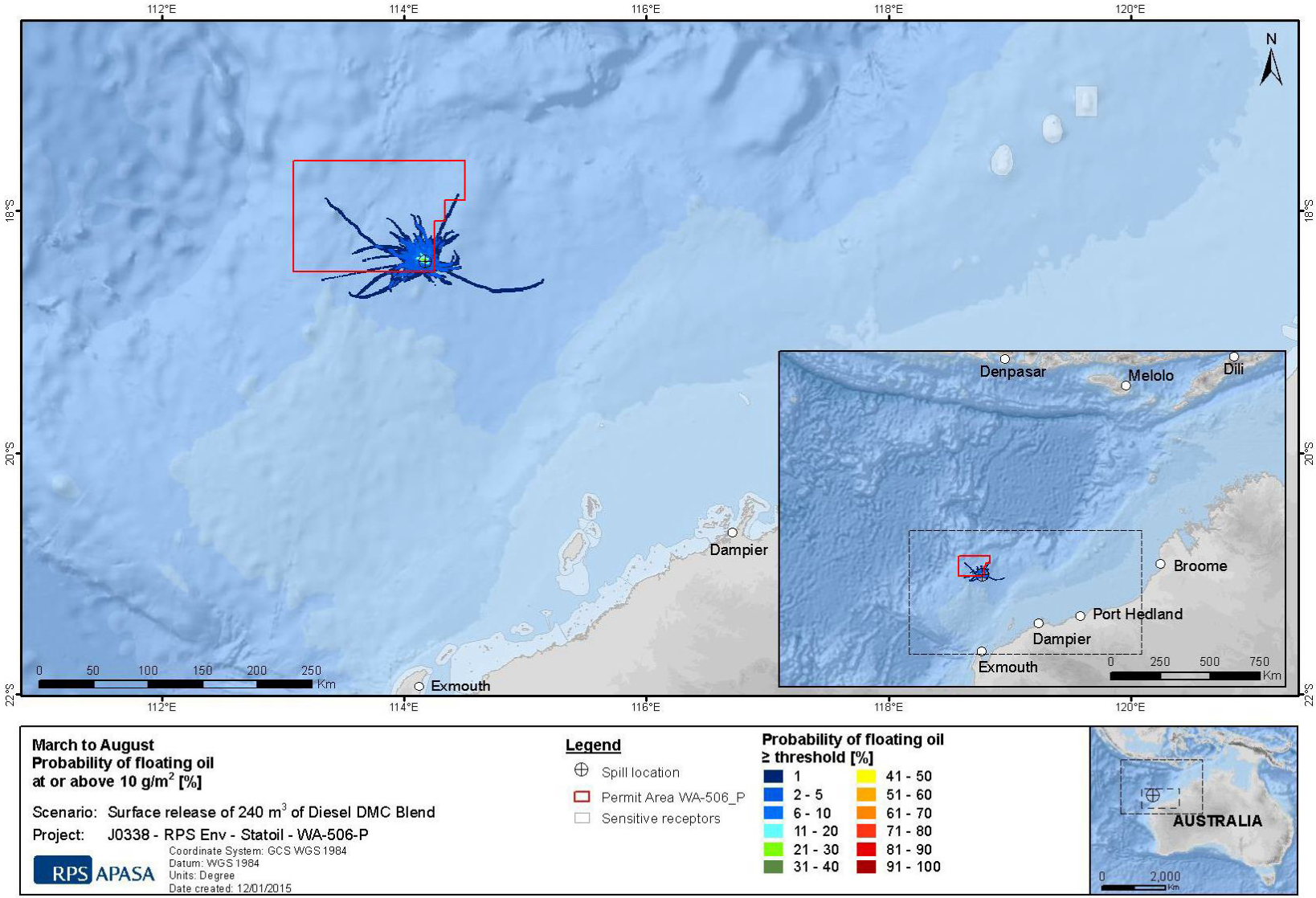

Figure 6-1: Zone of Potential Impact (ZPI)

The fuel used on the *MV Fugro Supporter* is marine diesel. Marine diesel is a common fuel used in vessel engines and is a mixture of both volatile and persistent hydrocarbons. On release, it is expected to undergo a rapid spreading and evaporative loss with the remainder becoming dispersed in the water column.

Marine diesel slicks tend to break up quickly and evaporative weathering leaves higher concentrations of less volatile, higher molecular weight hydrocarbons. The heavier components have a strong tendency to entrain in the upper water column as oil droplets in the presence of wind/waves but can re-float to the surface if these energies abate.

Response options for marine diesel spills are as follows:

- Due to the rapid evaporation and dispersion marine diesel spills are normally monitored and allowed to naturally weather, if no protection priorities are at risk.
- Marine diesel is dispersible, although not recommended because of the high proportion of toxic materials and their persistence and toxicity in the marine environment may increase with dispersant use. Additionally dispersant use on light products which form very thin films of oil or sheens on the water surface, tend to "punch-through" the thin film into the underlying water causing herding of the oil (not to be confused with dispersion). Dispersant may be used in instances where there is an immediate safety hazard, however the rapid spread of this material makes this strategy ineffective.
- Physical agitation by using propeller wash may assist in the evaporation and break up of spilled marine diesel however the potential exists to emulsify the oil which leads to decreased degradation rates. This response strategy is not recommended for these types of spills.
- The rapid spreading rate of these oils presents problems for containment strategies at sea but if contained diesel is easily recovered with sorbent or oleophilic disc skimmers.

6.6 Spill Response Arrangements

The immediate response to any spill is to implement the vessel's SOPEP. The MV *Fugro Supporter* Vessel Master is responsible for notification and reporting (via POLREP contained in SOPEP) all spills to the marine environment to the AMSA RCC. Once the vessel has transmitted an initial report, the vessel master then notifies the Fugro Emergency Response Duty Officer (appointed for the duration of the GGS and first point of contact for the notification of an emergency). They will review current knowledge of the emergency and then decide whether an Incident Management Team (IMT) is required. In general, all notifications of a "major" emergency will require an IMT to be convened. Further reports will be sent at regular intervals to keep relevant parties (AMSA, NOPSEMA, Statoil, Fugro, etc.) informed.

The on-board Statoil Vessel Representative is responsible for advising the Statoil Country Manger – Australia of the spill incident, who is then responsible for notifying NOPSEMA.

6.6.1 Small Spills

A Level 1 (< 80 L) response to a small spill can be managed by the MV *Fugro Supporter*. These are small spills, which will not impact shorelines or other sensitive resources. If a spill occurs from a vessel, the Master will mount the first response to the incident under the vessel's SOPEP using the resources immediately available to the vessel (i.e. ship-board equipment). The Master will immediately notify all spills to the Rescue Coordination Centre (AMSA).

The spill would have a zone of potential impact (ZPI) which is close to the vessel and would be managed and monitored by the Vessel Master until the spill is effectively dispersed or evaporated, with oversight by, and in close cooperation with, AMSA. The Vessel Master is responsible for providing updated reports to AMSA to inform the spill response strategy (at frequencies determined by AMSA).

AMSA, as Control Agency (CA) for spills in Commonwealth Waters will monitor and continue to assess this level of spill. Note that the Statutory Authority (SA – NOPSEMA) can reassess the response at any time and escalate the response as required.

Statoil will implement, assist with, or contribute to (including funding if required) any other requirements as directed by the Control Agency.

6.6.2 Large Spill

A Level 2 (<40 m^3 marine diesel) response is categorised as a medium/significant spill which could have serious impacts on the environment and/or cannot be managed by onsite resources. The Vessel Master will notify AMSA who shall be CA for a Level 2 spill response.

The Vessel Master, after ensuring safety of crew and fire prevention and notification to AMSA, will implement the SOPEP and consider relevant actions such as tank lightering to reduce the oil volume released to the environment.

AMSA will determine the appropriate response strategies depending upon the protection priorities at risk within the zone of potential impact (ZPI). AMSA, depending on the location, prevailing weather conditions, available vessel responses (e.g. tank lightering) and volume spilt, will determine the need for oil spill trajectory modelling to confirm protection priorities within the ZPI and possible sea/aerial surveillance to confirm/inform trajectory predictions. All selected response strategies will be in accordance with NATPLAN and a net environmental benefit assessment (NEBA)

undertaken for the specific spill. This will include an assessment of all available response strategies and their associated risk to protection priorities in the ZPI. Statoil will consult with AMSA during this assessment.

The Vessel Master is responsible for providing situation reports (SITREPs) to AMSA to inform the spill response strategy.

6.7 Operational Monitoring (Type I Monitoring)

Type I, or operational monitoring, is used to collect information about the oil spill and associated response operations to aid decision-making during the response. Operational monitoring typically ceases once all aspects of response implementation have terminated.

In the event of a Level 2 spill the MV *Fugro Supporter* would implement immediate responses under the vessel's SOPEP. The CA (AMSA) would be notified and operational (Type I) monitoring would be implemented. Operational monitoring following a spill may include:

- monitoring and surveillance (e.g. vessel/aerial) of the spill, its weathering and proximity to environmentally sensitive locations
- undertaking oil spill trajectory modelling (as necessary) to predict slick movement
- as required, and after a NEBA assessment, deploy appropriate resources or equipment to protect identified sensitive environmental resources within the zone of potential impact (ZPI).

These Type I monitoring elements would be coordinated by AMSA. The MV *Fugro Supporter* would assist with any on-water surveillance. This allows for information to be gathered, and predictions made, on the distribution and characteristics of the spill (e.g. extent, weathering, persistence, movement, sensitive resources at risk). This will inform what further responses may be required, including scientific (Type II) monitoring.

Onsite resources will continue to provide status updates (SITREPs), at the direction of AMSA, throughout the response activity. AMSA will maintain the response until relevant termination criteria are achieved.[2]

6.8 Scientific Monitoring (Type II Monitoring)

The stochastic spill modelling indicates that no sensitive areas would be impacted by surface slicks and/or entrained oil from a 240 m^3 marine diesel spill.[3] The ZPI is defined

[2] For a Level 2 marine diesel spill in offshore waters it is expected that a criteria of 'no visible sheen' will be adopted by AMSA as the termination criteria.
[3] Noting that the maximum credible spill size is significantly smaller (i.e. 40 m^3)

in Section 6.5. A "worst case" scenario would be a spill of 40 m^3 with potential to impact:

- sharks and fish
- turtles
- cetaceans
- seabirds and migratory shorebirds
- other users.

Scientifically rigorous monitoring plans would be developed and implemented in conjunction with Support Agencies, experts and other stakeholders (e.g. WA DoT, WA EPA, WA Department of Parks and Wildlife (DPaW), the WA Marine Science Institution (WAMSI), Australian Institute of Marine Science (AIMS), oil and gas titleholders and fisheries stakeholders. Scientific monitoring may continue for some time following the termination of the operational response.

Statoil's preparedness to implement Type II monitoring includes an existing contract with RPS which would allow for RPS to undertake Type II monitoring. RPS has previously developed detailed plans for undertaking monitoring activities and has prepared OSMP Implementation Plans for other clients. RPS has existing relationships with a number of vessel and aircraft contractors, analytical laboratories, equipment suppliers and specialist sub-consultants. For each study element, multiple redundancies are built in to ensure that sufficient personnel, equipment and vessels are available at short notice.

Scientific monitoring could include some, or all, of elements described in Table 6-1. For each element in Table 6-1 a detailed Study Template would be developed.

Table 6-1: Scientific Monitoring Tasks and Key Receptors

Description/Objective	Key Receptors
Wildlife Surveys to determine Impact of Oil Spill on Seabirds and Shorebird Populations and Recovery To assess any short-term or longer-term environmental effects on seabird and shorebird populations within the study area, which may have resulted from the hydrocarbon spill (i.e. damage extent and recovery).	Seabird and Shorebird Populations
Surveys of Non-Avian Marine Wildlife to Determine Impacts of Oil Spill and Recovery To assess any short-term or longer-term environmental effects on non-avian marine wildlife which may have resulted from the hydrocarbon spill (i.e. damage extent and recovery).	Marine Turtles, Marine Mammals, Sharks/rays/fish

7.0 DETAILS OF CONSULTATION

Statoil recognises that engagement and consultation with stakeholders is an ongoing process. Statoil developed an ongoing, iterative process in relation to activities carried out under the EP. This process is a tiered system that includes:

- stakeholder mapping to identify relevant persons in relation to the scope of the activity
- initial consultation with identified stakeholders during preparation of the EP, which included an information sheet describing the activity
- an unbiased merit assessment of stakeholder response raised during the initial consultation
- a second round of consultation where a response was not received and/or acknowledged by a stakeholder
- a framework for ongoing consultation.

7.1 Consultation Already Undertaken

Stakeholders were initially contacted in mid-January 2015 by phone, email or letter as appropriate to the nature of the activity. Stakeholders were provided activity-specific fact sheets that contained a description of the proposed activity, timing of the survey, a map describing the location and a variety of ways (email, telephone and written correspondence) stakeholders could provide feedback. Statoil allowed a minimum of four weeks for response. Where stakeholders were not initially identified, but subsequently identified during the consultation process, Statoil engaged the stakeholder and provided similar information packages about the proposed activity.

A number of stakeholders did not reply, or replied only to acknowledge receipt of the initial consultation, with no further comment received. Where no comment was received, Statoil sent (mid-February 2015) follow-up correspondence requesting a response. Consultation continued with a number of stakeholders throughout the preparation of the EP, and also following its submission to NOPSEMA. A summary of key stakeholder concerns and actions undertaken is provided in Table 7-1. Note that the initial consultation included descriptions of a project including seismic surveys in WA-506-P and adjoining titles. This was subsequently removed from the survey plan and stakeholders notified (March 2015). Some of the initial responses from stakeholders were thus related to concerns about seismic activities.

Table 7-1: Summary of Consultation Already Undertaken

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including response to each
Commonwealth Government		
Airservices Australia Civil Aviation Safety Authority (CASA)	Statoil received a telephone call from CASA requesting further detail on whether there are any airborne elements of the survey. CASA forwarded info to military. Advising that survey areas outside of Learmonth restricted area. Suggesting that info should be forwarded on to Navy and Joint Ops Command. Acknowledged receipt of GGS update.	Statoil confirmed that there will be no airborne elements associated with the survey. Statoil confirmed that information was forwarded on to the Navy and Joint Ops Command. No further action required.
Australian Customs and Border Protection Service	Border Protection Command (BPC) has no comment at this point in time; however, we appreciate being kept informed of any further developments particularly when operations begin and conclude.	Statoil will notify the BPC prior to commencement and on completion of the GGS.
Australian Hydrographic Office (AHO)	The AHO sent Statoil's email and flyer onto Defence Property Acquisition, Mining and Native Title. The AHO will issue notices to mariners if details of survey is sent two weeks prior to commencement.	Identified stakeholder to be re-contacted. The AHO to be re-contacted at least two weeks prior to commencement of activity.
Australian Maritime Safety Authority (AMSA) - Shipping	Provided vessel plot and information on shipping movements, noting there is an international fairway through the WA-506-P block. "AMSA has some significant safety concerns regarding this operational area being at the approaches/departure point to the charted shipping fairway." "AMSA advises careful planning of run-lines noting the speed differential between the survey and transiting commercial shipping may be potentially up to a factor of 5 when on the same bearing (approximately 080/280T). Given the length of tow (up to 10,000 m), and the collection of 50 piston cores, three aspects must be noted: 1. Highest risk is during slow speed turning and/or	Statoil advised AMSA of the significantly reduced work scope proposed for Commonwealth waters of the Northern Carnarvon Basin in permit areas WA-386-P and WA-506-P, as per below: ▪ No longer proposing to conduct seismic operations in either permit area (WA-386-P or WA-506-P). ▪ Focus of the survey has shifted to a geophysical and geochemical survey (GGS) ▪ GGS only in Statoil's permit WA-506-P ▪ No work is planned to be conducted in Shell's permit (WA-386-P) ▪ The change in work scope will result in fewer days required to complete the survey. Statoil will notify AMSA's RCC and the AHO before (at least two weeks) operations commence. Statoil will also be in touch post-survey with AMSA to discuss interactions (if any) with commercial shipping and lessons learnt. Statoil has included AMSA shipping traffic data in the EP for the period of the survey between June and September and has addressed in the risk assessment.

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including response to each
	running perpendicular to the normal passage of commercial shipping traffic; 2. The use of guard vessels is highly advised; and 3. Exceptional communications between the survey fleet and any commercial shipping will be paramount. Given the potential density of shipping within this location, including very large bulk ships, please note that any avoiding action by passing shipping that may need to be taken must not increase the navigational risk to any vessel. In some cases, it is envisaged that the survey vessel may have to alter or change, in good time in accordance with COLREGS, to accommodate a developing navigational safety scenario. AMSA also highly recommends that as little time as possible is spent on or crossing the approach alignment to the shipping fairway noting the nominal 3 nautical mile width of the fairway. Please ensure AMSA's RCC is contacted through rccaus@amsa.gov.au for Auscoast warning broadcasts before operations commence and during the conduct of activities. AMSA's RCC will require the vessels details and area of operation and need to be advised when the survey starts and ends. Additionally, the Australian Hydrographic Service must be contacted through hydro.ntm@defence.gov.au well in advance (i.e. no less than two working weeks) for the promulgation of related Notices To Mariners. At the conclusion of the survey, please be in touch to comment on the operations and the interaction with commercial shipping at the time of the survey (ie any lessons learned)."	
Australian Maritime Safety Authority (AMSA) - Oil	Initial verbal advice of survey. Discussion on oil spill arrangements. AMSA advised that NATPLAN arrangements would apply.	Statoil followed-up and provided AMSA with planned activity details via email. No further action required.

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including response to each
Spill Response	Reply stating that AMSA no longer consults on offshore petroleum activities. Provided pdf to that effect, and link to management arrangements.	
Department of Agriculture and ABARES (Fisheries)	*Marine Pest Unit response:* Biofouling - encouraged use of Biofouling Management Guidelines for Non-Trading Vessels. Noted WA requirements. Ballast water - Dept of Agriculture (formerly AQIS) currently developing new legislation to replace the *Quarantine Act 1908* to bring requirements in line with IMO Convention for the Control and Management of Ships' Ballast Water and Sediments (2004) (the BWM Convention). As the BWM Convention is not yet in force, Australia considers that at least 95 per cent volumetric exchange of ballast water or 300 per cent flow through (in accordance with BWM Convention Regulation D-1) as the only appropriate method of ballast water management.	Biofouling and ballast water requirements addressed in the EP No further action required.
Department of Defence (DoD)	Defence has no objections. Noted requirements for Notice to Mariners (NTM). Advise hydro.NTM@defence.gov.au two weeks prior for promulgation of NTM.	No further action required.
DotE - Commonwealth Marine Reserves Branch	Reply indicating that "as the activity is being undertaken outside of Commonwealth marine reserves, Parks Australia Commonwealth Marine Reserves Branch has no concerns. No further information is required at this stage."	No further action required.
National Native Title Tribunal (NNTT)	Reply indicating that there are "no relevant entities in the databases."	No further action required.
Western Australian Government		
Department of Fisheries (DoF)	Initial verbal advice of survey. Discussion on likelihood of interaction. Advised to submit	Online form required information (i.e. permit number WA-506-P) which wasn't available. Instead, sent information by email.

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including response to each
	material using electronic submission at http://www.fish.wa.gov.au/Sustainability-and-Environment/Aquatic-Biodiversity/Pages/Environment-impact-assessment-form-.aspx. Verbal advice (F.R.) now that seismic operations have been removed from the activity geophysical and geochemical don't present much of a concern to WA fishers – formal advice to follow. Formal advice – identified commercial fishing interests (beche der mer, mackerel, pearl oyster, west coast deep sea crustacean and northern shark) exist in, or in close proximity to, the areas associated with the proposed activities. Key fish spawning and pre-spawning periods were also identified along with biosecurity issues and departmental expectations.	Statoil re-contacted stakeholder to notify of a change in scope activity i.e. the removal of seismic activity and the Shell permit area WA-386-P. Geophysical and geochemical activities will now take place within permit area WA-506-P only. Identification of the Northern Shark Fishery (NSF) by DoF as commercial fishing interests in areas associated with the proposed activities. Statoil queried the inclusion of the NSF with the DoF. According to the latest *Status Reports of the Fisheries and Aquatic Resources of WA 2013/14* report the NSF has not been operating since 2009, as such Statoil did not contact individual fishers from the NSF. Statoil are seeking clarification from DoF.
Fisheries		
Beche de Mer Fishery	No response received	All WA licensed fishers were contacted via WA DoF provided contact details.
Mackerel Managed Fishery	No response received	All WA licensed fishers were contacted via WA DoF provided contact details.
Pearl Oyster Managed Fishery	No response received	The PPA discusses proposed activity with all relevant pearl fishers on Proponents behalf.
West Coast deep Sea Crustacean Managed Fishery	Deep Sea Water Services - Concerns over the potential for the survey vessel to encounter set fishing gear while transiting to and from the operational area. Request for survey coordinates.	All WA licensed fishers were contacted via WA DoF provided contact details. Survey coordinates provided to Deep Sea Water Services, and other stakeholders. Following provision of information to the fishers, they have stated that they have no concerns as they will be a significant distance from WA-506-P
Pearl Producers Association	The PPA will discuss proposed activity with all relevant pearl fishers on Statoil's behalf.	No further response received
Recfishwest	No response received	

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including response to each
Western Australian Fishing Industry Council (WAFIC)	Initial verbal advice of survey. Discussion on likelihood of interaction. Considered unlikely.	Statoil forwarded flyer to WAFIC for distribution to members. No further response received
Petroleum Permit Operators		
BHP Billiton Petroleum (North-west Shelf) P/L	Reply stating that BHPB has no acreage which would be impacted and have no objections/claims.	No further action required.
Rampart Energy (Black Swan Resources) (NWS O&G)	Discussion with C.T. No objections.	No further action required.
Woodside Energy Ltd	"Woodside and its co-venturers in WA-347-P have surrendered this permit. An application to surrender WA-348-P is also currently with NOPTA and I suspect it will be gazetted prior to commencement of your planned activity. Therefore, In respect of these permits, we do not require to be consulted regarding the proposed activity in relation to WA-506-P. Please do let me know if there are any other Woodside-equity permits in the area which may be impacted by the WA-506-P planned activity." Noted that Woodside may still require ingress agreement if they are still titleholder at the time of survey.	Follow up thanking Woodside for information. Clarification that WA-347-P is vacant. Statoil re-contacted stakeholder to notify of a change in scope activity i.e. the removal of seismic activity and the Shell permit area WA-386-P. Geophysical and geochemical activities will now take place within permit area WA-506-P only. No further action required.

7.2 Ongoing Consultation

Relevant stakeholders are encouraged to provide comment to Statoil at any time prior to and during the GGS. If at any time, a relevant person presents an objection or claim Statoil will assess the merit of the objection/claim provided and, where deemed necessary, will implement additional control measures to ensure all impacts and risks are managed to ALARP and acceptable.

Where Statoil becomes aware of the potential to affect a relevant person's functions, interests or activities that are identified and control measures introduced within this EP, Statoil will contact those stakeholders with sufficient information and time to address their concerns. If Statoil becomes aware of the potential to affect a relevant person's functions, interests or activities at any time during the GGS that was not identified prior to commencing the activity, Statoil will immediately attempt to contact and consult with the relevant person. Statoil will provide sufficient information to allow the relevant person to make an informed decision as to how the activity may affect them and will address any concerns or claims raised during such consultation. If consultation identifies a new environmental risk not identified in the EP, or an increase in the residual risk of an already identified risk, Statoil will immediately inform NOPSEMA and introduce additional control measures to ensure the risk is managed to ALARP and is acceptable.

If existing stakeholders raise additional concerns then these will be assessed, and a risk assessment undertaken, if necessary, and a response provided.

As part of the consultation process, Statoil will provide notification to those stakeholders that expressed a requirement to be notified, whether prior to, during and or following completion of the activity. Activity specific ongoing consultation requirements and notifications are listed in Table 7-2.

Table 7-2: Activity Specific Consultation Requirements and Notification Summary

Stakeholder	Notification Type	Notification Timing
AHO	Notification of intention to commence activity (for Issue of Notice to Mariners)	At least two weeks prior to commencement of activity (via email)
AMSA RCC	Routine reports of vessel position	Daily reports to be provided to RCC
	Notification of completion of activity	Within 10 days of completing activity (via email)
AMSA (emergency response division)	Notification of intention to commence an activity	At least 10 days prior to commencing the activity
	Notification of completion of activity	Within 10 days of completing activity (via email)
	Notification of Level I or Level II oil spill	Immediately
Border Protection	Notification of intention to commence an activity	Prior to commencement of activity

Stakeholder	Notification Type	Notification Timing
Command (BPC)	Notification of completion of activity	Within approximately 10 days of completing activity (via email)
NOPSEMA	Notification of intention to commence an activity	At least 10 days prior to commencing the activity
	Notification of completion of activity	Within 10 days of completing activity (via email).
	Close-out report at completion of activity	Within two months of completing the activity
	Reportable incident report	Oral notification – as soon as practicable (within two hours of Statoil becoming aware of incident) Written notification – as soon as practicable (within three days of Statoil becoming aware of incident)
	Recordable incident report	No later than 15 days following the end of a calendar month
WA Fisheries	Notification of intention to commence an activity	At least three weeks prior to commencing the activity if any concerns raised

8.0 DETAILS OF THE TITLEHOLDER'S NOMINATED LIAISON PERSON FOR THE ACTIVITY

Statoil is the titleholder of WA-506-P under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act).

The details of the titleholder are:

Statoil Australia Theta BV (ARBN: 165 559 642)

Address:	Level 1, 262 Franklin Street Adelaide, South Australia, 5000
Phone:	+61 (0) 8 8450 0400
Fax:	+61 (0) 8 8231 1415
Email:	asite@statoil.com

The titleholder's nominated liaison person is:

Name:	Vegard Lyngmo
Role:	Leader Safety and Sustainability
Address:	Level 1, 262 Franklin Street Adelaide, South Australia, 5000
Phone:	+61 8 8450 0404
Email:	vly@statoil.com

If there are any changes to the titleholder, the titleholder's nominated liaison person or a change in the contact details for either the titleholder or the liaison person, NOPSEMA and the National Offshore Petroleum Titles Administrator (NOPTA) will be notified in writing, within five days of the change, using the approved form/s.