

## ENVIRONMENT PLAN SUMMARY

### Gippsland 2D Infill 2015 Marine Seismic Survey

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## **1.0 INTRODUCTION**

### **1.1 Overview**

The Australian Government, through the Department of Industry (DoI), routinely funds Geoscience Australia (GA) to acquire pre-competitive data to support prospectivity assessments of various offshore basins. As part of the National Carbon Dioxide (CO<sub>2</sub>) Infrastructure Plan, a marine seismic survey (MSS) is proposed for the offshore Gippsland Basin to aid in identifying potential sites suitable for the long term storage of CO<sub>2</sub> in Australia. GA proposes to acquire high-quality, industry-standard pre-competitive two dimensional (2D) seismic data over geologically poorly defined areas within Commonwealth waters of the southern Gippsland Basin, off the Victoria coast. Multi-beam echo-sounder (MBES) and sub-bottom profiling (SBP) data will also be collected.

### **1.2 Location**

The survey lines and the Operational Area are located in the southern part of the offshore Gippsland Basin, south-east Victoria, in Commonwealth waters (Figure 1-1). Approximately 955 line kilometres of 2D seismic data will be acquired along the southern margin of the basin, mainly across the major bounding Foster Fault. MBES and SBP data will also be collected along these survey lines. Additional MBES and SBP data may be acquired, if time permits, within the proposed bathymetry acquisition area.

The area defined as the “Operational Area” covers approximately 3,900 km<sup>2</sup>. It is the physical area used for full power data acquisition, plus additional area for sail line run outs (required to obtain full fold coverage), soft-start procedures and vessel manoeuvring.

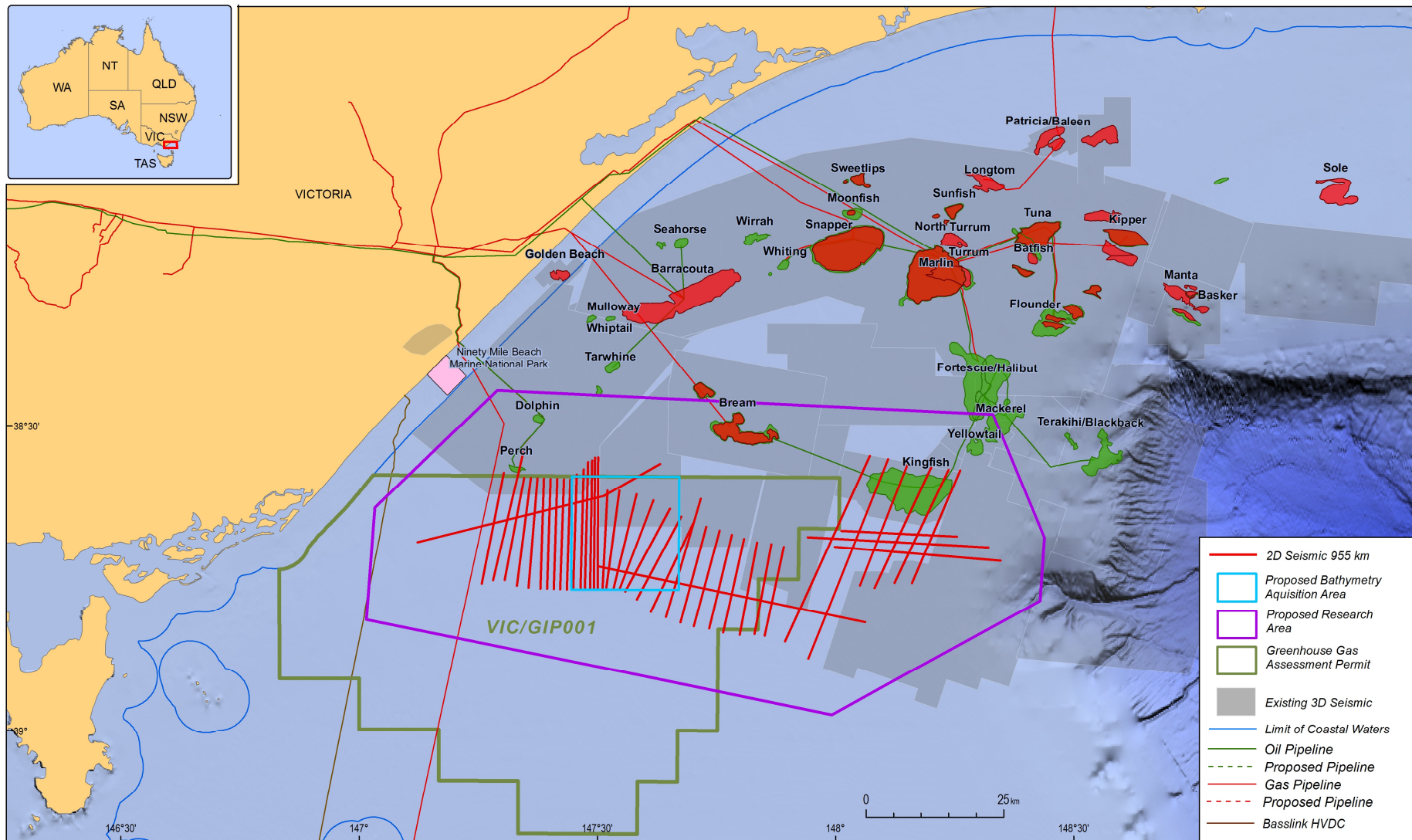


Figure I-1: Gippsland 2D Infill Survey 2015

## 2.0 RECEIVING ENVIRONMENT

The Gippsland 2D Infill MSS is scheduled for April 2015, and as such, the existing environment description considers environmental sensitivities during this period.

### 2.1 Regional Overview

The Operational Area is located in the South-east Shelf Transition bioregion of the South-east Marine Region. The continental shelf is relatively broad and shallow in the southern area of the Gippsland Basin. The area is strongly influenced by a number of different currents that run through and nearby the shelf, bringing both warm and cool currents. Nutrients from cooler upwellings supply rich biota that thrives in the warmer, shallower shelf region. Fauna is characterized by assemblages of fish, echinoderms, gastropods and bivalves.

The coastline consists of long sandy beaches broken by rocky headlands and numerous coastal lagoons. Estuary systems occur along the coastline within the region, with the larger estuaries located at Lakes Entrance (Gippsland Lakes); Sydenham Inlet and Mallacoota Inlet. Most of these estuary systems are normally closed to the marine environment.

### 2.2 Climate and Meteorology

Bass Strait is located on the northern edge of the westerly wind belt known as the Roaring Forties. Wind direction and speed depend on the position and movement of synoptic systems. Wind speeds are typically in the range of 10 to 30 km per hour, with maximum gusts reaching 100 km per hour. The wind direction in central Bass Strait is predominately westerly during winter, westerly and easterly during spring and autumn (when wind speeds are highest) and easterly during summer. Strong south-easterly winds can be generated by low pressure systems known as “east coast lows”. Although these occur relatively infrequently (typically once or twice per year), the longer fetch of these winds increases their potential for generating extreme wave conditions.

Average summer air temperatures in coastal Victoria range from 12 to 26 °C. Average winter temperatures range from 4 to 15 °C. Offshore (on Deal Island in central Bass Strait, approximately 70 km to the SW of the Operational Area), milder conditions occur with an average summer range of 13 to 21 °C and an average winter range of 9 to 14 °C.

Average annual rainfall along the Gippsland coast ranges from approximately 500 mm to greater than 1,000 mm. Offshore (on Deal Island) annual rainfall is comparable (average 714 mm) and shows a similar pattern to the coastal region (Lakes Entrance) with slightly higher winter rainfall.

### 2.3 Oceanography

Currents in eastern Bass Strait are tide and wind driven. Tidal movements in eastern Bass Strait predominantly have a north-east to south-west orientation. Tidal flows in



Bass Strait come from the east and west during a rising (flood) tide, and flow out to the east and west during a falling (ebb) tide. Tides within the Operational Area show seasonal variation with spring tides of approximately 0.9 m and neap tides of 0.6 m. Wind driven currents in the Operational Area can be caused by the direct influence of weather systems passing over Bass Strait (wind and pressure driven currents) and the indirect effects of weather systems passing over the Great Australian Bight.

Temperatures in the subsurface waters of central Bass Strait range from about 13 °C in August/September to 16 °C in February–March. Surface temperatures in the Gippsland Basin can exceed 20 °C at times in late summer due to the warmer waters of the East Australia Current entering the strait.

Bass Strait is a high-energy environment exposed to frequent storms and significant wave heights. High wave conditions are generally associated with strong west to south-west winds caused by the eastward passage of low-pressure systems across Bass Strait. Storms may occur several times a month resulting in wave heights of 3 to 4 m or more. In severe cases, south-west storms can result in significant wave heights of greater than 6 m. The Operational Area is protected from south-westerly swells by Tasmania but is strongly influenced by south-easterly and easterly swell heights of 1–1.5 m with maximum heights varying between 1.9 and 2.7 m.

## 2.4 Bathymetry, Geology and Sediments

The seabed bathymetry across the region is highly variable. A steep inshore profile (0 to 20 m water depth) extends to a less steep inner (20 to 60 m water depth) and moderate profile (60 to 120 m water depth), concluding with a flat outer shelf plain (greater than 120 m water depth) in the western part of the Operational Area, and a steep slope into the Bass Canyon in the east.

The Gippsland Basin is composed of a series of massive sediment flats, interspersed with small patches of reef, bedrock and consolidated sediment. Sandy plains are only occasionally broken by low ribbons of reef, which formed as shorelines or sand dunes during ice ages when the sea level was lower than today. The seabed is characterised by a variety of sediment types that are associated with tidal currents and wave energy. Sediments become progressively finer with distance from the shore.

Sedimentation is generally low due to the small supply from rivers and the relatively low productivity of carbonate. Sedimentation rates are estimated at 50 to 160 mm per 100 years. In the Gippsland Basin, seabed material is predominantly calcium carbonate comprised of calcarenite marls and marine shales. Seaward, the sediments are comprised primarily of sand (92%) and silt/clay (8%).

## 2.5 Matters Protected by the EPBC Act and Biologically Important Areas (BIAs)

The EPBC Act Protected Matters Search report identified 29 threatened and 34 migratory species (note that some species are both threatened and migratory). Biologically Important Areas (BIAs) were identified for a number of species, including:

- White shark (breeding - nursery area)
- Southern right whale (migration and resting on migration)
- Albatrosses (foraging)
  - Antipodean albatross
  - black-browed albatross
  - Buller's albatross
  - Indian yellow-nosed albatross
  - wandering albatross
- Albatrosses, shearwaters and petrels (foraging, breeding)
  - shy albatross
  - wedge-tailed shearwater
  - short-tailed shearwater
  - white-faced storm petrel.
  - common diving petrel
- Little penguin (breeding, foraging).

## 2.6 Biological Environment

### 2.6.1 Habitats

Marine habitats that occur within the region include:

- intertidal rocky shores on steep granite boulders
- subtidal rocky reefs covered in a range of kelp and other seaweeds
- seagrass meadows
- soft sediment areas.

Seaweeds found on Bass Strait's intertidal rocky shores include Neptune's necklace and the large bull kelp, which grows on the lower fringe of more exposed rocky shores. Most animals on the intertidal rocky shores are herbivorous molluscs. Filter feeding organisms abound, including tube building worms, sea squirts (cunjevoi), mussels and barnacles. There are no rocky shores within the Operational Area. The closest are more than 25 km away.

Subtidal reefs occur either as extensions of intertidal rocky shores or as isolated offshore reefs. They are scattered throughout Bass Strait waters from the low-water mark to a depth of 100 m. Typically, the shallow reefs (0 to 20 m) are dominated by kelps or other brown seaweeds. Bubble kelp and leather kelp combine to cover many of

the exposed reefs. *Sargassum* spp. and *Cystophora* spp. are dominant in more sheltered areas. It is possible that some isolated offshore reefs exist within the Operational Area.

Meadows of seagrasses cover the sea floor in many bays and inlets; however, are not expected in the Operational Area. Seven seagrass species occur in Victoria and support a diverse marine community. Large areas of seagrass are known to exist at Mallacoota Inlet, Gippsland Lakes and Corner Inlet. In 1965, it was estimated that there were 11,900 ha of *Posidonia australis* growing in Corner Inlet as well as *Zostera* and *Heterozostera*.

Beaches and soft substrates form a distinctive group of marine habitats with their own biological communities. The soft substrates in deeper, subtidal waters support some of the most diverse marine communities. Soft subtidal sediments commonly support seapens, ascidians, hydroids, bryozoans and large, diverse sponge gardens. The animals within the sediment are predominately marine worms and crustaceans. Subordinate groups include bivalves, brittle stars, holothurians, sea urchins, gastropods, nematodes and nemerteans. Ninety Mile Beach is the closest beach, being approximately 14 km from the Operational Area.

### 2.6.2 Benthic Communities

The Museum of Victoria conducted an extensive survey of benthic invertebrates in Bass Strait from 1979 to 1983. The main findings included:

- high diversity of invertebrate groups in Bass Strait when compared to equivalent areas of the northern hemisphere
- many species are widely distributed across Bass Strait, suggesting heterogeneous sediments and many microhabitats
- crustaceans and polychaetes dominate the infaunal communities, many of which are unknown species.

The sea floor of the Gippsland Basin is predominately sandy. Macroalgal communities are not common on subtidal reefs in east Gippsland, possibly due to exposure, poor light levels and abrasion by moving sand.

### 2.6.3 Marine Pests

Exotic marine species introduced to Bass Strait include the New Zealand screw shell, known to form extensive and dense beds on the sandy sea floor in eastern Bass Strait. The screw shell can tolerate depths from 1 to 130 m and has extended its distribution to the continental shelf, including Bass Strait. In addition, it was found that where this invasive species was most abundant, the diversity of infauna was reduced, suggesting that this exotic species poses a serious threat to much of Bass Strait.

The northern pacific seastar also has the potential to impact Bass Strait. The seastar feeds on a wide range of native animals and can have a major effect on the recruitment of native shellfish populations that form important components of the marine food chain. This species is already common in south-east Tasmanian waters and in Port Phillip Bay in Victoria and has the potential to cause environmental and economic harm in coastal waters from Sydney to Perth. However, this species is more likely to remain confined to coastal habitats rather than oceanic environments.

Abalone viral ganglioneuritis, a highly virulent herpes-like virus, has been recorded in Victoria. The virus affects the nervous tissue of abalone and rapidly causes death. The virus can be spread through direct contact, through the water column without contact and in mucus that infected abalone produce before dying. Originating from aquaculture farms, the virus has spread in wild populations in south-west Victoria since May 2006.

#### 2.6.4 Fish

Twenty-eight fish species (excluding sharks and rays) are listed under the EPBC Act that may occur in the Operational Area (Table 2-1). The majority are listed Syngnathids (pipefishes, seahorses, pipehorses and seadragons), generally associated with macroalgal habitats in sheltered to moderately exposed reef areas at a range of depths from 0 to 50 m, but usually at depths of between 5 and 25 m. It is possible that some Syngnathid species will occur in shallow waters of the Operational Area.

The Australian grayling is listed under the EPBC Act as Vulnerable. Spawning occurs in freshwater from late summer to winter. Newly-hatched larvae drift downstream and out to sea, where they remain for approximately six months. Juveniles then return to the freshwater environment (around November of their first year), where they remain for the remainder of their lives.

The key threats identified in the *National Recovery Plan for the Australian Grayling* include barriers to movement (e.g. weirs, dams), river regulation, poor water quality and siltation in catchments, introduced freshwater fish, climate change, disease and fishing.

**Table 2-1: EPBC Act Listed Fish that May Occur in the Operational Area**

Latin Name	Common Name/s	Status
<i>Prototroctes maraena</i>	Australian grayling	Vulnerable
27 species of Syngnathids	Seahorses, pipefish, pipehorses, seadragon	Listed

#### 2.6.5 Sharks and Rays

There are four shark species that may occur in the Operational Area that are listed under the EPBC Act. These include the white shark, the shortfin mako, the porbeagle shark and the whale shark (Table 2-2). All are listed as Migratory. The great white shark and the whale shark are also listed as Vulnerable.

**Table 2-2: EPBC Act Listed Sharks That May Occur in the Operational Area**

Latin Name	Common Name/s	Status
<i>Carcharodon carcharias</i>	White shark, great white shark	Vulnerable, Migratory
<i>Isurus oxyrinchus</i>	Shortfin mako, mako shark	Migratory
<i>Lamna nasus</i>	Porbeagle, mackerel shark	Migratory
<i>Rhincodon typus</i>	Whale shark	Vulnerable

The white shark is normally found in inshore waters around areas of rocky reefs and seal colonies. Juveniles are found in coastal regions in the Corner Inlet to Ninety Mile Beach area, which is considered a “shark nursery area” and is likely to be frequented between the months of December and June. White sharks are highly vulnerable to overexploitation and increases in natural mortality, particularly given their low fecundity and rates of population increase. The key threats are from fishing (including as bycatch) and shark control activities. The nursery area is considered critical habitat under the *Recovery Plan for the White Shark*. Note that underwater noise is not listed as a threatening process for white sharks. It is possible that the white shark would occur in the Operational Area during the MSS.

Whale sharks are generally found in warmer oceanic waters and mainly occur in waters off the Northern Territory, Queensland and northern Western Australia. However, there have been a few isolated reports of immature male whale sharks from the south-eastern coast of New South Wales through to South Australia and the western fringe of the Great Australian Bight. Critical habitats identified in the *Whale Shark Recovery Plan 2005-2010* are the known seasonal aggregation sites. In Australia, whale sharks are known to aggregate at Ningaloo Reef and in the Coral Sea. No known seasonal whale shark aggregation sites are located within or adjacent to the Operational area. It is considered unlikely that whale sharks would occur in 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 Southern Shark Ecology Group from SARDI Aquatic Sciences in South Australia tagged several shortfin makos offshore from Lakes Entrance. It is possible that they may occur within the Operational Area.

The porbeagle shark occurs primarily in temperate waters, mostly occurring in waters of the outer continental shelf. However, it has been recorded from both coastal areas and in deep water over 1,000 m. It is possible that they may occur within the Operational Area.

The school shark is listed under the EPBC Act as Conservation Dependent. They are widely distributed, primarily between southern New South Wales and southern

Western Australia. It is a demersal species found mainly on continental and insular shelves, and occasionally in deeper offshore areas. They form small groups, often of the same sex, and undertake extensive mating migrations. Popping occurs, after a gestation period of 12 months, between December and January in sheltered bays, including Port Phillip Bay, Western Port Bay and Corner Inlet, and the south-east coast of Tasmania. This preferred birthing habitat makes this species vulnerable to predation, fishing, habitat destruction and pollution. No impacts on the birthing habitat in Corner Inlet is anticipated.

### 2.6.6 Marine Reptiles

There are three marine reptiles that may occur in the Operational Area that are listed under the EPBC Act. These include the loggerhead turtle, green turtle and the leatherback turtle (Table 2-3). All are listed as Threatened and Migratory.

**Table 2-3: EPBC Act Listed Reptiles That May Occur in the Operational Area**

Latin Name	Common Name/s	Status
<i>Caretta caretta</i>	Loggerhead turtle	Endangered, Migratory
<i>Chelonia mydas</i>	Green turtle	Vulnerable, Migratory
<i>Dermochelys coriacea</i>	Leatherback turtle	Endangered, Migratory

Loggerhead turtles are found throughout tropical, subtropical and temperate waters. They feed primarily on benthic invertebrates in habitat ranging from the nearshore zone to 55 m water depth. The loggerhead turtle undertakes well-known reproductive migrations (over 2,600 km) between foraging and nesting areas. In Australia, breeding is centred in the southern Great Barrier Reef and adjacent mainland, on Dirk Hartog Island (Shark Bay), and the Muiron Islands in Western Australia. Major foraging areas for loggerhead turtles are located in the Great Barrier Reef and Moreton Bay regions. It is thought that they migrate down the coast of eastern Australia with the East Australian Current, into the Tasman Front, past Lord Howe Island to the north of New Zealand and across the southern Pacific Ocean to the waters off the coast of Peru and Chile. Due to the distance from known loggerhead turtle nesting beaches and foraging grounds, only low numbers of turtles may be encountered within the Operational Area.

Green turtles are found in tropical and subtropical waters throughout the world. They usually remain within the 20 °C isotherms, although individuals may also stray into temperate waters. They feed in shallow benthic habitats containing seagrass and/or algae, including coral and rocky reefs, and inshore seagrass beds. In Australia, the main breeding areas include the Great Barrier Reef, the north-west shelf of Western Australia, the southern Gulf of Carpentaria and the Northern Territory coast. They may occur occasionally in the Operational Area.

Leatherback turtles can be found throughout the water column from the surface layer to depths of more than 1,250 m in tropical, subtropical and temperate waters throughout the world. Adults feed mainly on pelagic soft-bodied creatures such as jellyfish and tunicates. The regular appearance of leatherback turtles in cool temperate waters is probably due to the seasonal occurrence of large numbers of jellyfish. There are few records of nesting in Australia, and nesting sites in the Northern Territory have only been confirmed on Cobourg Peninsula and Croker Island. It can be found foraging year round in Australian waters over Australian continental shelf waters. It is possible that leatherback turtles may be encountered during the survey.

The *Marine turtles recovery plan* has an overall objective “(t)o reduce detrimental impacts on Australian populations of marine turtles and hence promote their recovery in the wild”. No population level threats are considered credible due to the absence of breeding and significant populations.

### 2.6.7 Marine Mammals

There are 29 species of mammals listed under the EPBC Act that may occur in the Operational Area (Table 2-4). Twenty-seven cetacean and two seal species have been recorded in eastern Bass Strait, with the blue whale, southern right whale, humpback whale, sperm whale, bottle-nosed dolphin and common dolphin most commonly recorded. Three species are listed under the EPBC Act as Threatened (blue whale – endangered; southern right whale – endangered; humpback whale – vulnerable). Nine species (including those threatened) are listed as Migratory.

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 *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 MSS.

The *Conservation Management Plan for the Southern Right Whale* notes that critical habitat under the EPBC Act is undefined for southern right whales; however, BIAs have been identified. These include:

- large established aggregation areas used for calving and nursing
- small and potentially emerging aggregation areas used for calving and nursing (important for recovery in terms of expanding the habitat occupancy)
- coastal connecting habitat, which may also serve a migratory function or encompass locations that will emerge as calving habitat as recovery progresses

- historic high use areas or suitable habitat in parts of the coastal range currently not used or under-used and potentially important to support full spatial recovery.

The key threats identified for cetaceans relevant to the survey include acoustic pollution (vessel noise and seismic noise), entanglement, vessel strike, and impacts on water quality. The *Conservation Management Plan for the Southern Right Whale* identifies seismic surveys as posing a “very high” risk to southern right whales. These potential threats are all addressed in this EP.

**Table 2-4: EPBC Act Listed Mammals That May Occur in the Operational Area**

Latin Name	Common name/s	Status
<i>Balaenoptera bonaerensis</i>	Antarctic minke whale	Migratory
<i>Balaenoptera edeni</i>	Bryde’s whale	Migratory
<i>Balaenoptera musculus</i>	Blue whale	Endangered, Migratory
<i>Caperea marginata</i>	Pygmy right whale	Migratory
<i>Eubalaena australis</i>	Southern right whale	Endangered, Migratory
<i>Lagenorhynchus obscurus</i>	Dusky dolphin	Migratory
<i>Megaptera novaeangliae</i>	Humpback whale	Vulnerable, Migratory
<i>Orcinus orca</i>	Killer whale, orca	Migratory
<i>Physeter macrocephalus</i>	Sperm whale	Migratory

#### 2.6.7.1 Threatened Species

Blue whales have extensive migration patterns that are not known to follow any particular coastlines or oceanographic features. However, they are most likely to be present from November through to December as a result of migration to warmer waters. Blue whales are observed more frequently in western Victoria and south-east South Australia, where they occur along the continental shelf break. While eastern Bass Strait is not known as a feeding or aggregation area for this mammal species, sightings of blue whales have occurred in south-east Victoria from February to March but are reasonably rare in the Gippsland Basin. The Operational Area is not located close to any important blue whale habitat and will occur outside of migration times. The likelihood of encounter is considered low.

Humpback whales migrate annually along the eastern coast of Australia between their summer feeding grounds in Antarctica to their tropical breeding grounds in winter, heading north from about May to August, and south from about September to November. While the main migration route of this species is along the east coast of Australia along the continental shelf to the east of Bass Strait, some animals migrate through Bass Strait within the vicinity of the Operational Area. Humpback whales do not



feed, breed or rest in Bass Strait and the Victorian coastal waters are not a key location for this whale species. As the survey is scheduled outside of migration times, it is considered unlikely that they would be encountered.

Southern right whales travel along the southern coast of Australia in winter and spring. They migrate annually along the eastern coastline from high latitude feeding grounds to lower latitudes for calving between mid-May and September. Winter, in particular, is the peak for southern right whale abundance, especially along the southern coast of Australia. At this time, calving adult females are spotted frequently inshore in shallow, north-east trending bays over sandy bottoms. Although sighted along the Gippsland coast during migration in Victoria, the Operational Area is outside of the nearest known southern right whale calving and nursery zone. It is also outside of the BIA for migration and will occur outside of migration times. Although unlikely, they could possibly be encountered during the survey.

#### 2.6.7.2 Other Cetaceans

Dwarf minke whales are found year round, primarily in tropical and warm temperate coastal waters of the Southern Hemisphere and known to occur as far north as 11°S in the western Pacific off Australia and the southern distribution extends down to approximately 41°S. They could possibly be encountered during the survey.

Antarctic minke whales appear to occupy primarily offshore and pelagic habitats within cold temperate to Antarctic waters between 21°S and 65°S. They are known to occur north to 21°S off the east coast. They could possibly be encountered during the survey.

Bryde's whales occur in temperate to tropical waters, bounded by latitudes 40°N and 40°S, or the 20 °C isotherm. They have been recorded from all Australian states except the Northern Territory. The lack of records for Bryde's whales in the Gippsland region suggests it would be unlikely to occur in the Operational Area.

Pygmy right whales in Australian waters are distributed between 32°S and 47°S, but are not uniformly spread around the coast. Few or no records are available for NSW, eastern Victoria, and the northern part of the Great Australian Bight. Concentrations of stranded animals have occurred at the entrance of the gulfs in South Australia and around Tasmania, but live sightings have predominated in the former region. It is considered unlikely that they would be encountered.

Dusky dolphins predominantly occur in temperate subantarctic zones inshore, but can also be pelagic at times. In Australia, they are known from only 13 reports since 1828, with two sightings in the early 1980s. They occur across southern Australia from Western Australia to Tasmania, with confirmed sightings near Kangaroo Island, South Australia, and off Tasmania, and a recent stranding in the latter state. It is considered unlikely that they would be encountered.

Killer whales are recorded from all states, with concentrations reported around Tasmania. Sightings are also frequent in South Australia and Victoria. No key localities

are known for killer whales within continental Australian waters, however, all populations are considered important for the species' long-term survival. They could possibly be encountered during the survey.

Sperm whales are found in pelagic, offshore, deep waters. They have been recorded offshore from all Australian states. The key localities for the sperm whale are between Cape Leeuwin and Esperance, close to the edge of the continental shelf (averaging 20 to 30 nautical miles offshore); south-west of Kangaroo Island, off the Tasmanian west and south coasts, off New South Wales, including Wollongong and off Stradbroke Island, Queensland. It is considered unlikely that they would be encountered.

Bottle-nosed dolphins and common dolphins are more frequently sighted in near-shore Victorian waters. Common dolphins are also found in pelagic and oceanic habitats in Victorian waters, and they have been associated with high topographical relief of the ocean floor, escarpments and areas of upwelling. They could possibly be encountered during the survey.

Risso's dolphins have been recorded in Victoria, and are found inshore as well as offshore. Risso's dolphins are considered a pelagic and oceanic species, and are frequently seen over the continental slope. It is considered unlikely that they would be encountered.

#### 2.6.7.3 Seals

Two seal species, the Australian fur seal and the New Zealand fur seal occur in Bass Strait. Both species are listed under the EPBC Act. A recovery plan for the Australian fur seal is in final draft and not currently available.

Critical habitat for Australian seals comprises breeding colonies and waters adjacent to breeding colonies on the Australian mainland, favoured feeding places of seals and the vicinity of fishing vessels and fishing nets. Identified threatening processes include direct killing, interaction with fisheries, entanglement, oil spills and chemical contaminants, disturbance by aircraft, vessels and humans, tourism, disease, seismic survey activity and climate change.

The nearest breeding colonies of Australian fur seals are at the Skerries (approximately 130 km to the east-north-east), Kanowna Island (off Wilsons Promontory – approximately 70 km to the west-south-west) and there is a resting site at Cape Conran (approximately 75 km to the north-east). There have been a number of sightings along the coastline of Lakes Entrance near rocky shore islands. Australian fur seals commonly occur in the vicinity of the Operational Area and are frequently seen resting and foraging on the Bass Strait oil and gas platform structures and are likely to be encountered.

The New Zealand fur seal also breeds along the south-eastern coast of Australia. Primarily, the species breeds ashore (generally on remote islands) and feeds at sea, mostly on cephalopods and fish. Despite breeding in south-eastern waters, the largest

populations are found outside Bass Strait on Macquarie Island. They could possibly be encountered during the survey.

### 2.6.8 Birds

There are 21 birds listed under the EPBC Act that may occur in the Operational Area (Table 2-5). Twenty of these are listed as Threatened and 18 are listed as Migratory. Many are protected by international agreements (Bonn Convention, JAMBA, CAMBA and ROKAMBA) and they periodically pass through the Gippsland Basin on their way to or from the Bass Strait islands and mainlands of Victoria and Tasmania. Bass Strait islands are nesting sites for many seabird species, many of which migrate to these islands each year. Colonies of seabirds occur to the west of the Operational Area in Corner Inlet and on the islands around Wilsons Promontory, and to the east at the Skerries, Tullaberga Island and Gabo Island. Species that nest and breed on these islands include the little penguin, white-faced storm petrel, short-tailed shearwater, fairy prion, common diving petrel, black-faced cormorants and the pacific gull. Eastern Bass Strait is also a foraging area for at least 15 species of albatross, three species of petrel and one species of skua.

**Table 2-5: EPBC Act Listed Birds That May Occur in the Operational Area**

Latin Name	Common Name/s	Status
<i>Diomedea epomophora epomophora</i>	Southern royal albatross	Vulnerable, Migratory
<i>Diomedea epomophora sanfordi</i>	Northern royal albatross	Endangered, Migratory
<i>Diomedea exulans antipodensis</i>	Antipodean albatross	Vulnerable, Migratory
<i>Diomedea exulans exulans</i>	Tristan albatross	Endangered, Migratory
<i>Diomedea exulans gibsoni</i>	Gibson's albatross	Vulnerable, Migratory
<i>Diomedea exulans (sensu lato)</i>	Wandering albatross	Vulnerable, Migratory
<i>Fregetta grallaria grallaria</i>	White-bellied storm-petrel (Tasman Sea/Australasian)	Vulnerable
<i>Halobaena caerulea</i>	Blue petrel	Vulnerable
<i>Macronectes giganteus</i>	Southern giant-petrel	Endangered, Migratory
<i>Macronectes halli</i>	Northern giant-petrel)	Vulnerable, Migratory
<i>Phoebastria fusca</i>	Sooty albatross	Vulnerable, Migratory
<i>Puffinus carneipes</i>	Flesh-footed Shearwater	Migratory
<i>Thalassarche bulleri</i>	Buller's albatross	Vulnerable, Migratory
<i>Thalassarche cauta cauta</i>	Shy albatross	Vulnerable, Migratory
<i>Thalassarche cauta salvini</i>	Salvin's albatross	Vulnerable, Migratory
<i>Thalassarche cauta stearnsi</i>	White-capped albatross	Vulnerable, Migratory
<i>Thalassarche chrysostoma</i>	Grey-headed albatross	Endangered, Migratory
<i>Thalassarche eremita</i>	Chatham albatross	Endangered, Migratory
<i>Thalassarche melanophris</i>	Black-browed albatross	Vulnerable, Migratory
<i>Thalassarche melanophris impavida</i>	Campbell albatross	Vulnerable, Migratory

### 2.6.8.1 Albatrosses and Giant Petrels

The *National recovery plan for threatened albatrosses and giant petrels 2011–2016* lists the key critical habitat for the southern giant petrel as breeding and foraging habitats, particularly below 25°S. Due to the absence of nesting habitat and critical foraging habitat within the Operational Area to support this species, it is likely that activity will be restricted to birds transiting through and foraging in the area, and therefore limited interactions are expected.

The key threats to albatrosses and giant petrels are impacts at their breeding sites (including feral animals), marine pollution and debris, impacts from longline fishing and trawling, ingestion of hooks and plastics, intentional shooting/killing, and collisions with gear used on fishing boats. There are 15 species of albatrosses and two species of giant petrel which are listed as Threatened and Migratory. Albatrosses and giant petrels breed at only six localities under Australian jurisdiction. Albatross Island is the closest locations to the Operational Area and is over 260 km away. It is possible that albatrosses and giant petrels will be encountered foraging in the Operational Area.

The southern royal albatross breeds on Campbell Island and in the Auckland Islands (NZ). The southern royal albatross is moderately common throughout the year in offshore waters of southern Australia, mostly off south-eastern NSW, Victoria and Tasmania. It feeds pelagically (in the open ocean) primarily on squid and fish. The northern royal albatross ranges widely over the Southern Ocean, with individuals seen in Australian waters off south-eastern Australia. It feeds regularly in Tasmanian and South Australian waters, and less frequently in NSW waters. Most (99%) breed at the Chatham Islands where there is an estimated breeding population of 6500 to 7000 pairs.

Antipodean albatrosses are endemic to New Zealand, however forages widely in open water in the south-west Pacific Ocean, Southern Ocean and the Tasman Sea, notably off the coast of NSW. The Tristan albatross is very similar in plumage to the wandering albatross. The “at sea” distribution of this species is yet to be defined. There is currently only one definitive record from Australian waters.

Gibson’s albatross has been recorded foraging between Coffs Harbour, NSW, and Wilson’s Promontory, Victoria. There are no breeding colonies in Australian territory. This albatross visits Australian waters while foraging and during the non-breeding season. The wandering albatross breeds on Macquarie Island. It feeds in Australian portions of the Southern Ocean mainly in pelagic, offshore and inshore waters, eating mainly squid and fish, but also crustaceans and carrion.

The sooty albatross has sometimes been observed foraging in inshore waters in southern Australia. It is a rare, but probably regular migrant to Australia, mostly in the autumn to winter months, occurring north to south-east Queensland, NSW, Victoria, Tasmania and South Australia. Buller’s albatross breed in New Zealand, but are regular visitors to Australian waters. They are frequently seen off the coast from Coffs Harbour,

south to Tasmania and west to Eyre Peninsula. Buller's albatross are most common off south-east Tasmania between January–April.

Shy Albatrosses appear to occur over all Australian coastal waters below 25°S. It is most commonly observed over the shelf waters around Tasmania and south-eastern Australia. It appears to be less pelagic than many other albatrosses, ranging well inshore over the continental shelf, even entering bays and harbours. Salvin's albatross breeds south of New Zealand, as well as on Crozet Island in the Indian Ocean. The species forages over most of the southern Pacific Ocean. It is a non-breeding visitor to Australian waters.

The grey-headed albatross breeds on Macquarie Island. Breeding and non-breeding birds disperse widely across the Southern Ocean, at more southerly latitudes in summer than in winter, when they frequent the waters off southern Australia and New Zealand. Most Australian records come from south and west of Tasmania, and occasionally in Victorian waters. Breeding for the Chatham albatross is restricted to Pyramid Rock, Chatham Islands, off the coast of New Zealand. The principal foraging range for this species is in coastal waters off eastern and southern New Zealand, and Tasmania. It is a rare vagrant to south-east Australian waters.

The black-browed albatross breeds within Australian jurisdiction on Heard Island, McDonald Islands, Macquarie Island and Bishop and Clerk Islets. During this time, the species is an uncommon visitor to the continental shelf-break of southern Australia - reaching South Australia, Tasmania and western and eastern Bass Strait in the south-east and Antarctica. The population migrates northward towards the end of the breeding season and the species is common in the non-breeding period at the continental shelf and shelf-break of South Australia, Victoria, Tasmania, western and eastern Bass Strait and NSW.

The Campbell albatross is a non-breeding visitor to Australian waters, most commonly seen foraging over the oceanic continental slopes off Tasmania, Victoria and New South Wales. After breeding, birds move north and may enter Australia's temperate shelf waters.

The southern giant petrel is widespread throughout the Southern Ocean. It breeds on six subantarctic and Antarctic islands in Australian territory. In summer, it predominantly occurs in subantarctic to Antarctic waters. The winter dispersal is circumpolar, extending north from 50° south to the Tropic of Capricorn (23° south) and sometimes beyond these latitudes. The waters off south-eastern Australia may be particularly important wintering grounds. In south-eastern Australia, birds (mostly immatures) were recorded in all months except February, but most were recorded between June and December.

The northern giant petrel breeds in the sub-Antarctic, and visits areas off the Australian mainland mainly during the winter months (May to October). Immature and some adult birds are commonly seen during this period in offshore and inshore waters from around

Fremantle (WA) to around Sydney (NSW). Banded birds from Macquarie Island are frequently observed in Australian waters throughout the colder months, the majority of which (94%) are pre-breeding birds.

#### 2.6.8.2 Other Birds

The little penguin is an EPBC listed and migratory species with a BIA in the wider region. Over 270,000 breeding pairs are estimated for the Furneaux Islands. It may be encountered; however, the Operational Area is outside of the foraging ranges. The short-tailed shearwater has a large breeding population in the Furneaux Islands (approximately 7,000,000 breeding pairs). It is likely to be encountered while foraging.

The great skua as listed is now considered to be the subantarctic skua. Subantarctic skuas have a circumpolar Southern Hemisphere distribution, with their breeding distribution extending from Chatham Islands, New Zealand, to Terre Adélie on the Antarctic continent. Outside the breeding season, the majority of individuals are oceanic and undertake post-breeding migration or dispersion. It is considered unlikely to be encountered during the survey.

The wedge-tailed shearwater was not recorded in the PMST search. It is a pelagic, marine bird known from tropical and subtropical waters, but is most abundant where temperatures are greater than 21 °C and salinity is greater than 34.6%. In tropical zones, the species may feed over cool nutrient-rich waters. The species has been recorded in offshore waters of eastern Victoria and southern NSW, mostly over continental slope with sea-surface temperatures of 13.9–24.4 °C and usually off the continental shelf in north-west Australia. It may be encountered, but is not expected to be present in large numbers.

The white-faced storm petrel is listed as Vulnerable on the Advisory List of Threatened Vertebrate Fauna in Victoria: 2013 list. It has an extremely large range. It breeds on remote islands in the South Atlantic, and is also known to breed at Tullaberga Island and the Furneaux Islands (approximately 60,000 breeding pairs), approximately 170 km to the east-north-east and 140 km to the south, respectively, of the Operational Area. The status of storm petrels at Tullaberga Island is currently unknown. It may be encountered, but is not expected to be present in large numbers.

The common diving petrel is listed as Near Threatened under the Advisory List of Threatened Vertebrate Fauna in Victoria: 2013 list. Common diving petrels nest on coastal plains and slopes on cliff edges and behind stable dunes. They are widely distributed over southern Australian and New Zealand waters. They have been recorded breeding during winter months (June–July) throughout the Seal Islands Group (east of Wilsons Promontory). As the survey is outside of the breeding season, it is expected that only foraging birds may be encountered.

The white-bellied storm petrel (Tasman Sea) breeds on small offshore islets and rocks in the Lord Howe Island group. It has also been recorded over near-shore waters off the coasts of Queensland and Tasmania. It could possibly be encountered during the survey.

The blue petrel has been recorded off the Australian coast between East Gippsland in Victoria and the Perth area of Western Australia. It is recorded regularly in small numbers in Victoria and Tasmania, and occasionally in NSW. It occurs predominantly between July and September in Australia. The Australian breeding population of the Blue Petrel all breed on offshore stacks around Macquarie Island. It could possibly be encountered during the survey.

The flesh-footed shearwater is a locally common visitor to waters of the continental shelf and continental slope off southern Australia. They breed on 41 islands off the coast of south-western Western Australia, on Smith Island off the south-eastern coast of Eyre Peninsula in South Australia and on Lord Howe Island. It could possibly be encountered during the survey.

The white-fronted tern is an EPBC listed species with a BIA (breeding and foraging) in the wider region of Flinders, Cape Barren and Clarke Islands off north-eastern Tasmania. This species is the most common tern of New Zealand with a conservation status of Least Concern under the IUCN. Juvenile birds may winter in south-eastern Australia.

## **2.7 Socio-economic Environment**

The productive areas of east Gippsland have historically supported Aboriginal people, principally the Gunai (and/or Kurnai) people, and Europeans since the late 1890s. At that time, small-scale farming, gold mining, fishing and forestry were the most common livelihoods in small communities.

Currently the communities of east Gippsland are supported by (primary) industries including agriculture, fishing, tourism, and oil and gas. The population of Lakes Entrance is approximately 12,000 residents, who provide services to the coastal industries and surrounding farming communities. Marlo has a population of 300, increasing to around 2,000 during the summer. Smaller communities occur along Ninety Mile Beach at Golden Beach, Paradise Beach and Seaspray.

### **2.7.1 Telecommunications**

The Basslink HVDC Interconnector connects the Tasmanian transmission network with the Victorian Transmission network. It enters the marine environment from McGaurans Beach and traverses the western part of the Operational Area. The original survey plan had a 2D line crossing the Basslink in shallow water. After consultation with Basslink, GA amended the survey to avoid the cable. Basslink now has no concerns with the activity. Consultation was also undertaken with the Department of Broadband Communication and the Digital Economy (DBCDE), the Australian Communications and Media Authority (ACMA) and Telstra. No concerns have been expressed.

### 2.7.2 Oil and Gas

There are a number of facilities and connecting pipelines within the Operational Area. These facilities have a 500 m exclusion zone around them. The facilities include:

- Perch (platform)
- Dolphin (platform)
- Bream (platform)
- Bream B (platform)
- Kingfish A (platform)
- Kingfish West (platform)
- Kingfish B (platform)
- Tarwhine (subsea).

The Operational Area encompasses a number of Greenhouse Gas (GHG) Assessment Permits, GHG Release Areas, Petroleum titles and Petroleum Release Areas, including:

- VIC/L5
- VIC/L6
- VIC/L7
- VIC/L8
- VIC/L16
- VIC/L15
- VIC/L13
- VIC/P70
- VIC-GIP-001
- VIC/L16
- VIC14-GHG-3VIC/L14
- VIC14-GHG-2
- V 15-2

### 2.7.3 Aboriginal Heritage

The National Native Title Tribunal (NNTT) do not have any concerns with the activity. Native Title Services Victoria (NTSV) encouraged GA to contact the Gunaikurnai Land and Waters Aboriginal Corporation (GLWAC). At the time of writing, there had been no response from NTSV, GLWAC or Department of Premier and Cabinet Office of Aboriginal Affairs Victoria (OAAV).

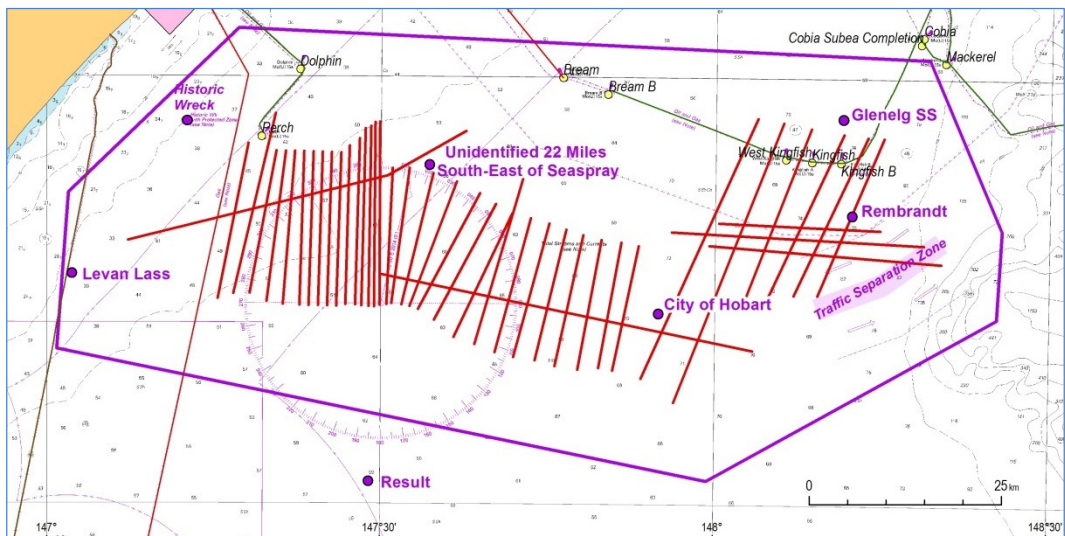
### 2.7.4 Historic Shipwrecks

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 one historic shipwreck, the *Gleneig SS*. The Google Earth plugin revealed an additional five shipwrecks as listed in Table 2-6 and shown in Figure 2-1.



**Table 2-6: Shipwrecks Potentially Occurring in the Area**

Shipwreck ID Number	Vessel Name	Type of Vessel	Sailing Rig Type	Year Wrecked
6550	Leven Lass	Unknown	Unknown	1854
6066	City Of Hobart	Twin screw steamer	Unknown	1877
6700	Unidentified 22 Miles South-East Of Seaspray	Unknown	Unknown	
6550	Result	Sailing vessel	Barque	1880
6547	Rembrandt	Sailing vessel	Barque	1861
6231	Glenelg SS	Single screw steamer	Unknown	1900



**Figure 2-1: Shipwrecks in the Region (Australian National Shipwreck Database and Google Earth)**

**2.7.5 Commercial fishing**

Commercial fishing in south-east Victoria includes inshore coastal waters (mainly state-administered fisheries) and areas along the continental slope (mainly Commonwealth fisheries). The majority of the commercial fishing (volume basis) occurs in Commonwealth waters along the continental shelf and the upper continental slope. The identified fisheries that are licensed to operate in the Operational Area include:

- Commonwealth
  - Southern and Eastern Scalefish and Shark Fishery (SESSF) (includes the Commonwealth Trawl Sector (CTS), Gillnet, Hook and Trap Sectors (GHaT))
  - Small Pelagics Fishery (SPF)
  - Southern Bluefin Tuna Fishery (SBTF)
  - Eastern Tuna and Billfish Fishery (ETBF)
  - Skipjack Tuna Fishery
  - Southern Squid Jig Fishery.

- Victorian
  - Ocean Access Fishery
  - Ocean Purse Seine Fishery
  - Rock Lobster Fishery
  - Giant Crab Fishery
  - Inshore (Ocean) Trawl Fishery
  - Ocean Scallop Fishery
  
- Tasmanian Rock Lobster Fishery.

Most fishing vessels operating in eastern Bass Strait operate from Lakes Entrance. A fleet of approximately 70 offshore commercial fishing vessels operate from Lakes Entrance. This number can be substantially increased during certain seasons. The fleet targets a wide range of species of fish and shark along with scallops, prawns and crayfish for the local, national and international markets.

#### 2.7.5.1 Active Fisheries

The commercial fisheries that may operate within the Operational Area at the times of the proposed survey include:

- Commonwealth
  - Bass Strait Central Zone Scallop Fishery (BSCZSF)
  - Southern and Eastern Scalefish and Shark Fishery, including: the Trawl Sector & Scalefish Hook Sector and the Hook and Trap Sector
  - Southern Squid Jig Fishery
  
- Victorian
  - Ocean Access Fishery
  - Ocean Scallop Fishery
  - Ocean Purse Seine Fishery
  - Inshore (Ocean) Trawl Fishery.

#### 2.7.5.2 Commonwealth Bass Strait Central Zone Scallop Fishery (BSCZSF)

The Bass Strait Central Zone Scallop Fishery (BSCZSF) is predominantly a single-species fishery targeting aggregations (“beds”) of commercial scallop using scallop dredges. The fishery operates in the central area of Bass Strait between the Victorian and Tasmanian scallop fisheries. The Victorian scallop fleet operates mainly from Lakes Entrance. The main Bass Strait grounds are to the east and west of Lakes Entrance, around the eastern and western islands of Bass Strait (principally the Furneaux island group and King Island). The fishery has a history of boom and bust, with the peaks (1982–83, 1994, 2003) becoming progressively smaller, interspersed with fishery-wide closures. In the 2011 fishing season only 484 t of the 2,000 t total allowable catch (TAC) was landed, with a real value of \$1 million. In 2012, only 244 t of the 2,000 t TAC was landed.

The default fishing season is from 1 April until 31 December. The Harvest Strategy in combination with the Management Plan and the Regulations prescribe a detailed closed area spatial management regime, where the majority of the fishery is closed to commercial fishing and only discrete areas are open to harvesting. There were 73 fishing permits issued for the 2011 season and there were 12 active vessels operating in the fishery. It is possible that some fishers may be encountered.

#### 2.7.5.3 Commonwealth Small Pelagic Fishery

The Small Pelagic Fishery extends from southern Queensland to southern Western Australia. There was no catch reported within the eastern stock (which includes the Operational Area) in 2011 or 2012. No interactions are expected with this fishery.

#### 2.7.5.4 Commonwealth Southern and Eastern Scalefish and Shark Fishery (SESS)

The Southern and Eastern Scalefish and Shark Fishery (SESSF) is a multi-sector, multi-gear and multi-species fishery, targeting a variety of fish and shark stocks. The SESSF was established in 2003 through the amalgamation of four fisheries – the South East Trawl, Great Australian Bight Trawl, Southern Shark Non-trawl and South East Non-trawl fisheries – under a common set of management objectives.

The sectors of the fishery operating in the Operational Area include the Commonwealth Trawl Sector (CTS) and the Gillnet, Hook and Trap Sector (GHaTS), which also includes the Scalefish Hook Sector (ScHS), the Shark Gillnet and Shark Hook Sectors (SGSHS) and the Trap Sector. Fishing effort in the Gippsland region is mostly through trawling and Danish purse seine. A relatively low level of effort occurs in the Scalefish sector.

The CTS and ScHS include over 100 species that are captured, but 16 species provide the bulk of trawl landings. These species include the orange roughy, gemfish, flathead, blue grenadier, redfish, school whiting, warehou and jackass morwong. Fishing is year round. Otter trawlers use larger boats, generally greater than 20 m long, while Danish seiners use smaller boats and operate in inshore shelf areas often in more restricted areas unavailable to otter trawlers.

Sharks are fished using predominantly demersal gillnets, with a small percentage caught by demersal longlines. The shark fishing predominantly targets gummy sharks, saw sharks and school sharks, with gummy sharks accounting for more than 78% of the total catch from the fishery in 2012. The school shark is considered overfished. The shark gillnet sector is concentrated around the Operational Area.

It is possible that fishers in the SESSF will be encountered during the survey.

#### 2.7.5.5 Commonwealth Southern Squid Jig Fishery

The southern squid jig fishery operates in waters ranging from 60 to 120 m depth with the arrow squid comprising the bulk of the catch. The SSJF is managed by the Australian Government, although jigging operations within coastal waters (inside the 3 nm limit) are managed by the adjacent state government. Vessels from a range of ports in Victoria and Tasmania fish for squid in the central region of Bass Strait. The period from February to June is the main squid fishing season and there is usually a peak catch during May. The main squid grounds are off the central and western Victorian coast, with significant effort in the Gippsland region. It is possible that fishers will be encountered during the survey.

#### 2.7.5.6 Commonwealth Eastern Tuna and Billfish Fishery

The Eastern Tuna and Billfish Fishery (ETBF) extends from Cape York to the Victoria and South Australia border, including waters around Tasmania. Only minor effort was recorded in the fishery in the eastern Gippsland region in 2012. No interactions are expected with this fishery.

#### 2.7.5.7 Commonwealth Skipjack Tuna Fisheries (STF)

Skipjack tuna is a small, oceanic tuna species that is found in nearly all tropical and subtropical waters. It is a highly migratory, schooling species, often associated with other tuna of similar size, such as juveniles of bigeye, and yellowfin tuna. Skipjack tuna's distribution is heavily influenced by interannual variability in environmental conditions. Variability in the availability of skipjack tuna and the prices received for product influence participation levels in the STF. There has been no catch or effort in the STF since the 2008–2009 fishing season. No interactions are expected with this fishery.

#### 2.7.5.8 Commonwealth Southern Bluefin Tuna Fishery

Southern bluefin tuna constitutes a single, highly migratory stock that spawns in the north-east Indian Ocean (off north-western Australia, south of Indonesia and migrates throughout the temperate, southern oceans. Juvenile southern bluefin tuna (2–3 years) are targeted in the Great Australian Bight by Australian fishers. Throughout the rest of its range, southern bluefin tuna is targeted by pelagic longliners from other fishing nations. Australian domestic longliners operating along the east coast also catch a small amount of southern bluefin tuna as byproduct. No interactions are expected with this fishery.

#### 2.7.5.9 Victorian Rock Lobster Fishery (Eastern Zone)

This fishery targets the Southern Rock Lobster utilising baited pots. Southern rock lobsters are found to depths of 150 m with most of the catch coming from inshore waters less than 100 m deep. There are 46 active licences in the Eastern Zone however given the generally sandy substrates in the Operational Area, rock lobster fishermen do not actively fish the area.

#### 2.7.5.10 Victorian Giant Crab Fishery

No commercial fishery is present in the Eastern Zone of the fishery which lies from Apollo Bay to the NSW/Victorian border, although giant crab are known to occur in small numbers. This fishery is not present in the Operational Area.

#### 2.7.5.11 Victorian Scallop Fishery

This fishery targets Scallops using a dredge harvester up to 4.5 m long. The fishery extends 20 NM from the coast with the majority of the fishery being conducted from the ports of Lakes Entrance and Welshpool. There are 91 commercial licences in the fishery, however generally only 12 to 20 vessels are active in the fishery at any one time. Fishing usually occurs from May to the end of November. The Scallop Fishery closed in 2009 to allow stocks to replenish. In response to falling catch rates, the stock abundance in the fishery was surveyed in 2009 and 2012. Both surveys revealed very low densities of scallops throughout the traditionally fished areas of the fishery. Consequently, no quota was made available between 2010 and 2013. A small and conservative amount of quota was granted for the 2013–2014 season to allow limited exploratory fishing to take place to determine if there had been any recovery in the stocks. Minimal, if any, interactions are expected with the survey.

#### 2.7.5.12 Victorian Ocean Access Fishery

This fishery targets a range of fish, mainly scalefish, shark and bait fish. This fishery utilises haul seine nets, mesh nets, but mostly longlines. There are currently 190 Ocean Access Licences in Victoria however many of the licences are not utilised and activity in the Operational Area is recorded as low.

#### 2.7.5.13 Victorian Ocean Purse Seine Fishery

The Ocean Purse Seine fishery targets anchovy, pilchards and whitebait. One Ocean Purse Seine Licence is active in Victorian waters. This fishery is not present in the Operational Area.

#### 2.7.5.14 Victorian Inshore (Ocean) Trawl Fishery

This fishery is based in a small area off Lakes Entrance. Prawns are the target species, and to a lesser extent bugs, crabs and limited fin-fish are a by-product. There are currently 60 trawl licences within the fishery and activity within the Operational Area is expected to be low.

#### 2.7.5.15 Tasmanian Rock Lobster Fishery

The Tasmanian Rock Lobster Fishery operates in state and Commonwealth waters surrounding Tasmania. The fishery is divided into 11 regions. Area 4 surrounds the Furneaux Islands and is approximately 50 km south of the Operational Area. The fishery

in Area 4 is concentrated within 10 km of the coastline. Although it is possible that fishers will be encountered, it is considered unlikely.

### 2.7.6 Recreational Activities

The Gippsland region (including Phillip Island) is estimated to attract more than seven million visitors annually. There are more than 1,300 specialised tourism businesses in Gippsland that derive most of their income from tourists and more than 12,300 people estimated to be employed as a direct result of tourism in Gippsland.

Recreational fishing remains a key attraction to the region with a wide variety of species and locations. The Gippsland Lakes are Australia's largest inland waterway and attract a large number of boating enthusiasts and recreational anglers. In addition, recreational fishing is a common activity in the nearshore area along Ninety Mile Beach, comprising both beach based fishing and boat based fishing. Boat based fishing includes charter operations and private craft launched from boat ramps in the region. Rocky reefs near Marlo, Cape Conran and Lakes Entrance are the main sites for boat based fishing and recreational diving.

It is estimated that there are between 13,500 and 21,500 visitors per year to the Port Welshpool, Port Albert and McLoughlins Beach areas for boat based fishing. A smaller number (between 2,500 and 3,700 visitors per year) are attracted to the area between Reeves Beach and McGaurans Beach. A number of sites, such as Beware Reef, are popular locations for recreational divers as there are numerous shipwrecks.

Most recreational activities are expected to occur in the nearshore areas outside of the Operational Area. Limited interactions are expected.

### 2.7.7 Shipping

Bass Strait is one of the busiest shipping routes in Australia with more than 3,000 vessels making the east-west passage each year. Shipping includes passengers and freight between the Australian mainland and Tasmania and other through traffic operating between Australian Ports and to/from New Zealand. An IMO designated "Area to be Avoided" which excludes, without permission, entry of all ships over 200 t (gross) and restricts commercial vessel traffic to shipping channels to the east and south of the area (Figure 2-2). The MSS area overlaps both the "Area to be Avoided" and IMO designated traffic separation zone (TSZ).

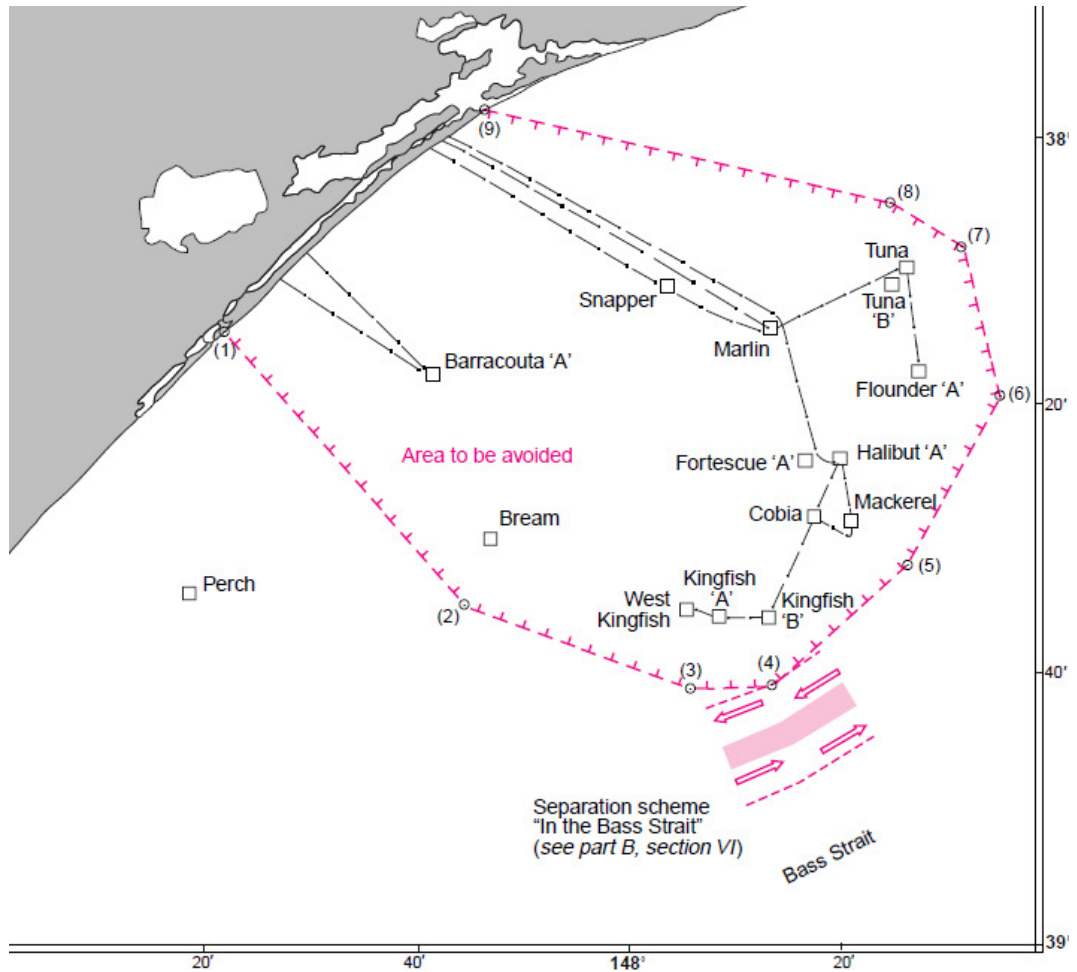


Figure 2-2: IMO Designated 'Area to be Avoided' and Traffic Separation Zone (TSZ)

**2.7.8 Defence**

The Operational Area lies underneath a Defence restricted airspace (R258D), administered by the Joint Airspace Control Cell (JACC), Department of Defence. Consultation has indicated that the Department of Defence (Defence Support Group) has no concerns about the proposed survey.

**2.8 Particular Values and Sensitivities**

**2.8.1 Ramsar Sites**

No Wetlands of International Importance (Ramsar) were recorded in the Operational Area during the EPBC Protected Matters Search. Corner Inlet and Gippsland Lakes Ramsar Sites are described below.

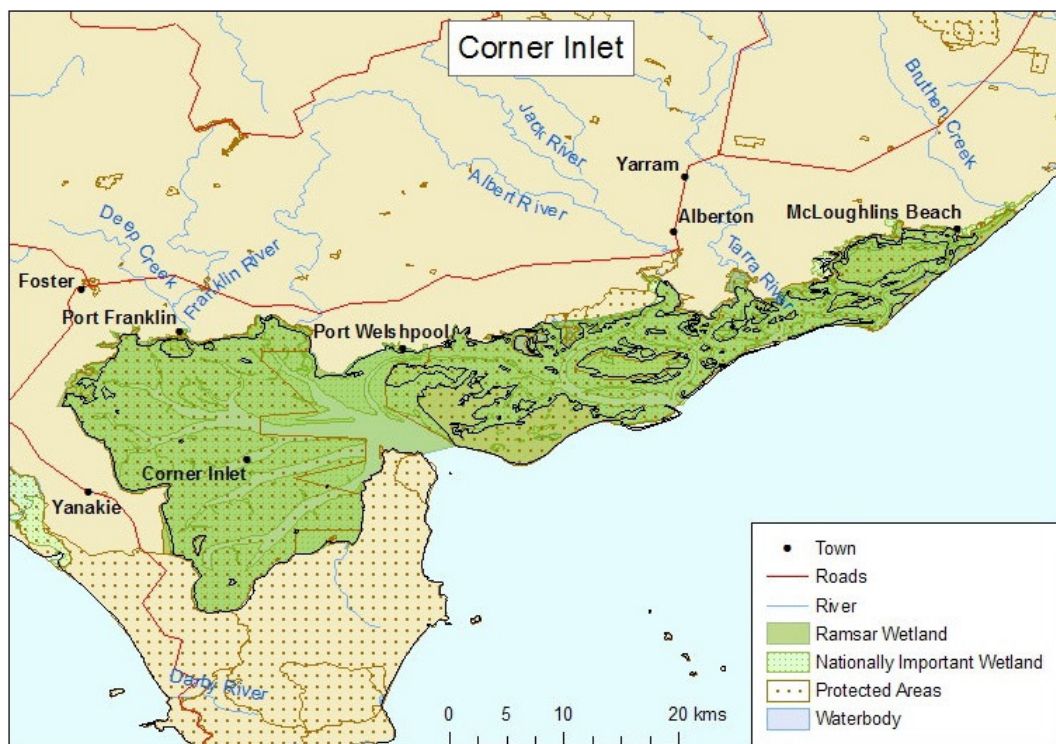
The Corner Inlet Ramsar Site is located on the south-east coast of Victoria (Figure 2-3). It is bounded to the west and north by the South Gippsland coastline, in the south-east by a series of barrier islands and sandy spits lying end to end and separated by narrow

entrances, and to the south by the hills of Wilsons Promontory. Corner Inlet includes the chain of barrier islands, multiple beach ridges, lagoons and swamps, tidal creeks, tidal deltas, and tidal washovers. The western part of the Operational Area is approximately 14 km from the north-eastern part of the Corner Inlet Ramsar site.

The key environmental values of the Corner Inlet Ramsar Site as described in the *Corner Inlet Ramsar Site Strategic Management Plan* include:

- Wetland representativeness: It includes three wetland types as defined under the Victorian classification scheme, including the state's most depleted wetlands.
- Flora and fauna: More than 160 species of native fauna and 390 species of native flora.
- Vegetation communities: Fifteen communities ranging from woodland to fringing saltmarsh and intertidal mangroves, including rare and restricted distribution communities.
- Islands: Supporting significant saltmarsh and mangrove communities.
- Seagrass meadows: Extensive meadows with high faunal diversity
- Soft sediment habitats: From fine mud and silt to sandy bottoms in both intertidal and subtidal areas.
- Birds: Internationally important feeding, resting and breeding habitat for 57 species of waterbirds. More than 25 species protected under international conventions.
- Natural function: Provides a range of important functions supporting the maintenance of the wetland and surrounding ecosystems.
- Cultural heritage: Many Aboriginal sites and existing connections to the land. Early European settlements and numerous shipwrecks.
- Scenic: Spectacular landscapes and significant geological and geomorphological features.
- Socioeconomic: Supports commercial (directly and indirectly) and recreational fisheries. Important coastal ports (Barry Beach, Port Welshpool, Port Franklin, Port Albert).
- Education and interpretation: Signage throughout site used by University of Melbourne for floristic composition and fire ecology studies.
- Recreation and tourism: Estimated 150,000 visitor days annually. Main activities include fishing, boating, swimming, kayaking, camping and horse riding. A number of commercial tourism operations.
- Scientific: Numerous studies and ongoing monitoring on flora, fauna and marine habitats, communities and species.
- Condition: Native vegetation communities are in relatively good condition and show little sign of disturbance. The broad leaf seagrass communities are in a "medium" condition. Nutrient input and catchment conditions are of concern.





**Figure 2-3: Corner Inlet Ramsar Site**

The Gippsland Lakes Ramsar site is located approximately 300 km east of Melbourne on the low-lying South East Coastal Plain bioregion. The lakes are a series of large, shallow, coastal lagoons approximately 70 km in length and 10 km wide, separated from the sea by sand dunes. The surface area of the lakes is approximately 364 km<sup>2</sup> and the three main water bodies are Lakes Wellington, Victoria, and King. The Gippsland Lakes together form the largest navigable inland waterway in Australia, and create a distinctive regional landscape of wetlands and flat coastal plains of considerable environmental significance.

The Ramsar site contains 11 Ramsar wetland habitat types including most notably, coastal lagoons, subtidal seagrass and algal beds, and a range of saline, brackish and freshwater marsh environments. The site supports a broad range of ecosystem services including nationally and internationally threatened wetland species, waterbird breeding and fish spawning sites. Cultural and socio-economic values are equally diverse, noting the particular importance of the site in a regional context in terms of recreational activities such as boating, recreational fishing and holiday tourism.

The Gippsland Lakes supports a number of nationally listed species. The bird diversity of the Ramsar wetland is high with 86 species of waterbirds being recorded including large numbers of the red-necked stint, black swan, sharp-tailed sandpiper, chestnut teal, musk duck, fairy tern and little tern.

The Gippsland Lakes are currently managed under the Victorian Government's *Gippsland Lakes Environmental Strategy*. The environmental strategy details broad strategic directions to manage the current and future health of the lakes and wetlands of the

system. The Gippsland Lakes open to the ocean near Lakes Entrance, which is over 60 km from the Operational Area.



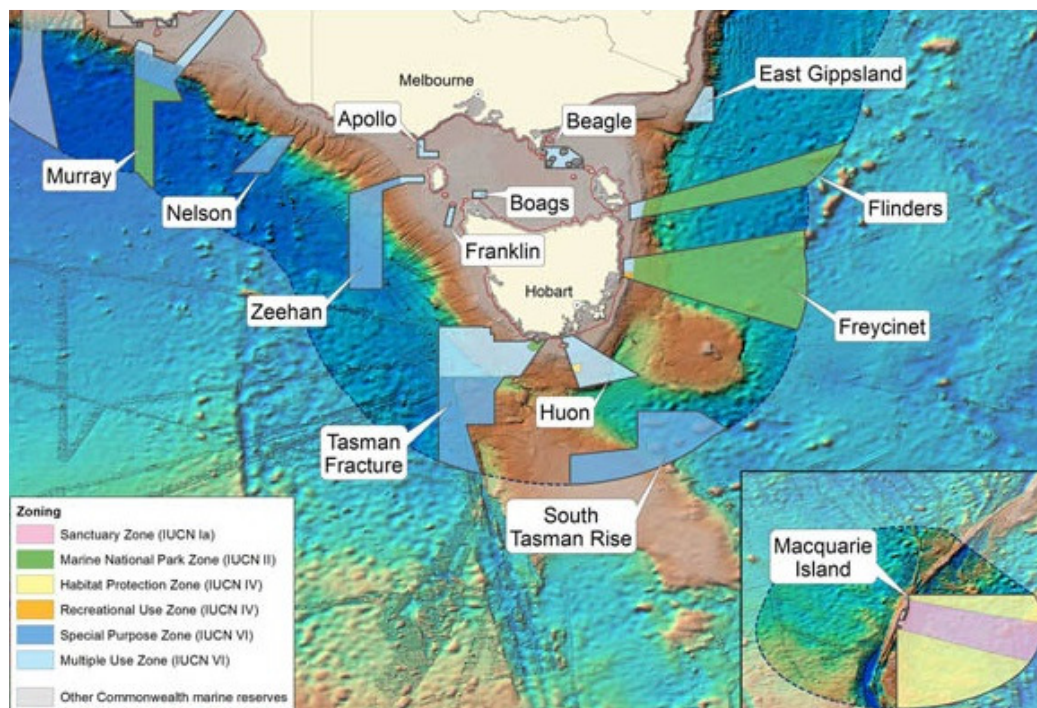
**Figure 2-4: Gippsland Lakes Ramsar Site**

**2.8.2 Commonwealth Marine Reserves**

Australia’s South-east Commonwealth Marine Reserves Network stretches from the far south coast of New South Wales, around Tasmania and Victoria and west to Kangaroo Island off South Australia. The *South-east Commonwealth Marine Reserves Network Management Plan 2013-23* describes their key values and threats. The marine reserves relevant to the proposed activity include (Figure 2-5):

- Beagle Commonwealth Marine Reserve (approximately 30 km to the south-west of the Operational Area)
- East Gippsland Commonwealth Marine Reserve (approximately 127 km to the east-north-east of the Operational Area)
- Flinders Commonwealth Marine Reserve (approximately 169 km to the south of the Operational Area).

Note that no EP activities will occur in any Commonwealth Marine Reserve.



**Figure 2-5: South-east Commonwealth Marine Reserves Network**

The Beagle Commonwealth Marine Reserve represents an area of shallow continental shelf ecosystems in depths of about 50-70 m that extends around south-eastern Australia to the east of Tasmania. Islands encompassed by the reserve and nearby islands support important breeding colonies for many seabirds and for the Australian fur seal. The rich marine life also attracts top predators, such as the great white shark and killer whales. The reserve's major conservation values include:

- ecosystems, habitats and communities associated with the South-east Shelf Transition and associated with the sea-floor features: basin, plateau, shelf and sill
- Important migration and resting on migration area for: southern right whale
- important foraging area for: Australian fur seal, killer whale, white shark, shy albatross, Australasian gannet, short-tailed shearwater, Pacific and silver gulls, crested tern, common diving petrel, fairy prion, black-faced cormorant and little penguin.

The East Gippsland Commonwealth Marine Reserve contains representative samples of an extensive network of canyons, continental slope and escarpment at depths from 600 m to more than 4,000 m. The reserve includes both warm and temperate waters, which create habitat for free-floating aquatic plants or microscopic plants (i.e. phytoplankton) communities. The reserve's major conservation values include:

- examples of ecosystems, habitats and communities associated with: the South-east Transition and associated with the sea-floor features: abyssal plain/deep ocean floor, canyon, escarpment and knoll/abyssal hillslope
- features with high biodiversity and productivity: Bass Cascade upwelling east of Eden

- important foraging area for: wandering, black-browed, yellow-nosed and shy albatrosses great-winged petrel wedge-tailed shearwater and cape petrel
- important migration area for: humpback whale

The Flinders Commonwealth Marine Reserve covers a depth range from about 40 m on the shallow continental shelf to abyssal depths of 3,000 m or more. The biodiversity of the reserve is influenced by summer incursions of the warm East Australian Current and associated large-scale eddies. The reserve's major conservation values include:

- examples of ecosystems, habitats and communities associated with the Tasmania Province, the Tasmanian Shelf Province, the South-east Transition and the South-east Shelf Transition and associated with the sea-floor features: abyssal plain/deep ocean floor, canyon, plateau, seamount/guyot, shelf and slope
- features with high biodiversity and productivity: east Tasmania subtropical convergence zone
- important foraging area for: wandering, black-browed, yellow-nosed and shy albatrosses, northern giant petrel, Gould's petrel and cape petrel, killer whale, white shark and Harrison's dogfish
- important migration area for: humpback whale.

### 2.8.3 Victorian Protected Areas

In 2002, the Victorian Government enacted the *National Parks (Marine National Parks and Marine Sanctuaries) Act 2002*, which amended the *National Parks Act 1975* and established 13 highly protected marine national parks and 11 smaller but also highly protected marine sanctuaries. These are "no take" areas that form the major component of the marine protected areas system. The marine national parks and sanctuaries are complemented by a number of special management areas, where different levels of use are permitted. Parks Victoria manages the marine protected area system. The *Parks Victoria Marine Protected Areas Program Plan 2012–2014* covers all marine protected areas managed on behalf of the Victorian Government by Parks Victoria.

Marine parks and sanctuaries along the Gippsland coast relevant to the proposed activity include (Figure 2-6):

- Gippsland Lakes Coastal Park (approximately 14 km from Operational Area)
- Wilsons Promontory Marine National Park (approximately 45 km from Operational Area)
- Corner Inlet Marine National Park (approximately 49 km from Operational Area)
- Ninety Mile Beach Marine National Park (approximately 9 km from Operational Area)
- Cape Howe Marine National Park (approximately 175 km from Operational Area)
- Cape Conran Coastal Park (approximately 80 km to the north-east of the Operational Area)
- Nooramunga Marine and Coastal Park (approximately 14 km from Operational Area)

- Beware Reef (Cape Conran) Marine Sanctuary (approximately 77 km from Operational Area).
- Point Hicks Marine National Park (approximately 105 km from Operational Area)

Further information and key values of the Gippsland Lakes Coastal Park can be found in the description of the Gippsland Lake Ramsar site (Section 2.8).

#### 2.8.3.1 Wilsons Promontory Marine National Park

Wilsons Promontory Marine National Park covers 15,580 ha and surrounds the southernmost tip of Wilsons Promontory National Park. The main habitats protected by the park include intertidal and subtidal soft sediment, intertidal and subtidal reefs. A number of invertebrates are found in the rocky intertidal zone. The subtidal soft sediments are predominantly inhabited by infauna and bottom-dwelling skates and rays. Seagrass beds of *Halophila australis* and *Heterozostera nigricaulis* are restricted to sheltered waters, in particular Waterloo and Oberon Bays. A variety of fish have been recorded on seagrass and associated soft substrates including the southern goatfish *Upeneichthys vlamingii*, silverbelly *Parequula melbournensis*, wide-bodied pipefish *Stigmatopora nigra*, spotted pipefish *S. argus*, slender weed whiting *Siphonognathus attenuatus*, blue-throated wrasse *Notolabrus tetricus*, gobies *Nesogobius* spp., weedfish *Heteroclinus* spp. and *Cristiceps* spp. and toothbrush leatherjackets *Acanthaluteres vittiger*. The *Wilsons Promontory Marine National Park and Wilsons Promontory Marine Park Management Plan May 2006* identifies important values for the park.

#### 2.8.3.2 Corner Inlet Marine National Park

Corner Inlet Marine National Park adjoins the Corner Inlet Ramsar Site (see Section 2.8). The *Corner Inlet Marine National Park Management Plan* identifies the environmental values and notes that spills of oil or other chemicals could have devastating effects on park values, particularly on seabirds, seagrass and intertidal areas.

#### 2.8.3.3 Ninety Mile Beach Marine National Park

Ninety Mile Beach Marine National Park (2,750 ha) protects an example of an internationally significant sandy environment, recognised for its exceptionally high diversity of marine invertebrates. Low calcarenite reefs offshore support a unique invertebrate biota, including colourful sponge gardens. The long sandy beach provides extensive habitat for shore birds, including international migratory waders. The *Ninety Mile Beach Marine National Park Management Plan* identifies important values for the park.

#### 2.8.3.4 Cape Howe Marine National Park

Cape Howe Marine National Park is Victoria's most easterly and remote Marine National Park, adjoining the Cape Howe Wilderness Zone of Croajingolong National Park. The warmer waters from the East Australian Current mix with up-wellings of cooler southern waters, creating an environment rich in nutrients and high in productivity. Many species from warmer northern waters reach their southern limit in

the park. A range of habitats, including sandy beaches, subtidal reefs, intertidal reefs and open waters, provide for a diverse array of species, including fish, algae and transient whales. The *Cape Howe Marine National Park Management Plan July 2006* identifies the important values.

#### 2.8.3.5 Cape Conran Coastal Park

Cape Conran Coastal Park (11 700 ha) includes extensive heathlands, wetlands, riparian and forest vegetation communities, and is home to several significant species of orchids and other threatened flora. Numerous species of threatened fauna find refuge in the park, including the Little Tern, Smoky Mouse, Ground Parrot, White-bellied Sea-Eagle and Australian Grayling. The *Cape Conran Coastal Park Management Plan October 2005* identifies the important values.

#### 2.8.3.6 Nooramunga Marine and Coastal Park

The Nooramunga Marine and Coastal Park (30,170 ha) includes the coastal area from the north-east side of Corner Inlet through to McLoughlins Beach. There is no management plan available for the park however as it is located within the Corner Inlet Ramsar Site, and has similar features to both the Corner Inlet and Ninety Mile Beach Marine National Parks, the values identified for those could be applied.

#### 2.8.3.7 Beware Reef Marine Sanctuary

Beware Reef Marine Sanctuary makes an important contribution to Victoria's system of Marine National Parks and Marine Sanctuaries, renowned for its offshore granite reef, historic shipwrecks and diversity of marine life. The *Beware Reef Marine Sanctuary Management Plan July 2006* identifies important values for the Sanctuary.

#### 2.8.3.8 Point Hicks Marine National Park

The reefs of Point Hicks Marine National Park are among Victoria's most interesting and beautiful. The majestic Point Hicks Lighthouse dominates the cliff tops above the park, providing an ideal viewing area. The park is immersed in a rich Indigenous and maritime heritage and is renowned for its colourful variety of species. The *Point Hicks Marine National Park Management Plan July 2006* identifies important values.

### 2.8.4 **Bass Strait Islands**

The Kent Group Marine Reserve is located approximately 60 km to the south-west of the Operational Area, wholly within the Beagle CMR. It is managed by the Parks and Wildlife Service of Tasmania. The *Kent Group National Park (Terrestrial Portion) Management Plan 2005* specifically excludes the marine portion of the park declared in September 2004. As such, the values identified for the Beagle CMR are considered relevant.

The *Small Bass Strait Island Reserves Draft Management Plan October 2000* identifies a number of environmental values for the islands of the Furneaux Group, including:

- Low Islets, Foster Islands and Penguin Island Nature Reserves are significant as Tasmania's only Australian pelican breeding colonies and apart from one New Zealand breeding site, are the most southerly in the world.
- Moriarty Rocks, Tenth Island, Judgement Rocks, West Moncoeur and Reid Rocks Nature Reserves are significant as Tasmania's only Australian fur seal breeding colonies, which provide approximately half the global habitat for the species.
- Cat Island Conservation Area is significant as once being the world's largest gannet colony with an estimated 20,000 birds in 1908 before the population was systematically destroyed by fishers and then fire. It is also important as a site for the potential recolonisation of the Australasian gannet.
- Rodondo Island Nature Reserve is significant, because due to the absence of fire, it supports climax *Eucalyptus globulus* and *Melaleuca armillaris* communities, which are considered extremely rare.



[http://www.ozcoasts.gov.au/geom\\_geol/case\\_studies/parksvic.jsp](http://www.ozcoasts.gov.au/geom_geol/case_studies/parksvic.jsp)

Figure 2-6: Victorian Protected Areas



### 3.0 DESCRIPTION OF THE ACTIVITY

#### 3.1 Survey Vessel

The survey will be undertaken using the MV *Duke*, a purpose built geophysical survey vessel operated by Gardline CGG Pte Ltd (Gardline). No refuelling will occur during the survey. A summary of relevant details of the MV *Duke* is provided in Table 3-1.

**Table 3-1: Survey Vessel Specifications**

<b>Owner</b>	Gardline CGGV Pte Ltd
<b>Flag/Port Of Registry</b>	Bahamas/ Nassau
<b>Built/Rebuilt</b>	1983, A/S Vaagen Verft, Norway/1998
<b>Class</b>	DNV 1A1-E0-Sealer (for max. draught 5.30 m) pwdk
<b>Class ID N°</b>	DNV 13520
<b>IMO Number/ MMSI</b>	8200838/257455000
<b>Call Sign</b>	C6YT7
<b>Length</b>	66.8 m
<b>Beam</b>	13.00 m
<b>Maximum Draft</b>	6.20 m
<b>Gross Tonnage</b>	2031 GRT
<b>Net Tonnage</b>	610
<b>Cruising Speed</b>	10 kts
<b>Endurance</b>	28-40 days in survey mode
<b>Engines</b>	2 MAK 6M 453aK 1640 kW /2250 bhp each at 600 RPM
<b>Fuel Capacity</b>	765.4 m <sup>3</sup> maximum (660 m <sup>3</sup> at 90% without helifuel tanks (not used)). Maximum single tank volume is 130 m <sup>3</sup> ; however it would only be filled to 90% capacity (i.e. 117 m <sup>3</sup> ).
<b>Fuel Type:</b>	Marine Gas Oil (MGO)

#### 3.2 Support/Chase Vessel

GA will engage a support/chase vessel for the duration of the survey. It will accompany the survey vessel at all times, to maintain a safe distance between the survey array and other vessels, and to manage potential interactions with shipping and fishing activities. The crew on this vessel will be inducted into the EP and they will comply with all requirements (including having an approved SOPEP if over 400 gross registered tonnage).

#### 3.3 Seismic Acquisition

Approximately 955 km of 2D seismic data will be collected. While acquiring data, the vessel will move at a speed of approximately five knots. The survey is planned such that each survey line will only need to be travelled once; in the unlikely event that data gaps are identified, portions of a survey line may be reacquired.

The seismic energy source will be provided by Bolt LL and LLX array elements, with four sub-arrays with an approximate capacity of 2,530 cubic inches and an operating

pressure of 2,000 psi (nominal). Gardline's modelling has shown that this is likely to generate a maximum pressure amplitude of approximately 238 dB re 1  $\mu$ Pa at 1 m (SPL) and most energy is expected to be within the 10–200 Hz frequency range.

The arrays will be separated by approximately 37.5–50 m and will be towed astern of the survey vessel at a depth of approximately 5 m. The seismic sources will be discharged at an interval of 18.75 m, dependent on the selection of other parameters.

A single streamer of approximately 5,000 m will be used. Seismic reflections will be detected by a series of hydrophones in group intervals of 12.5 m. The streamer will operate at a depth of 8 ( $\pm$  1.5) m. The Sercel Solid Guardian streamer will be fitted with tail buoys fitted with relative GPS. The streamer has a series of solid core hydrophones inside a single solid streamer. The vessel will operate at between 4.5 and 6.0 knots when towing the streamer.

### 3.4 Multibeam Bathymetry and Sub-bottom Profiling

The Kongsberg EM 2040 multi-beam echo sounder (MBES) operates in the 200 to 400 kHz frequency bandwidth with a ping rate of 50 Hz and with a source level of approximately 210 dB re 1  $\mu$ Pa at 1 m (SPL). The frequency used will be an operational decision based on water depth, seabed characteristics and the required bathymetry resolution.

The Kongsberg EM 302 MBES is typically used in deeper water than the EM 2040 and can operate in depths to 7,000 m. The system operates at a frequency of 30 kHz. In addition to bathymetry, the multi-beam sounders may be used to acquire backscatter information to assist in the detection of hydrocarbon seeps or plumes from the seabed.

The Kongsberg SBP 300 sub-bottom profiler is an extension to the EM 302 MBES. It operates at frequencies between 2.5 to 6.5 kHz, with a maximum ping rate of 5 kHz and a manufacturer specified source level of approximately 225 dB re 1  $\mu$ Pa at 1 m (SPL). The sound energy is projected downwards from the hull in a maximum 15° cone. Field measurements of similar instruments have resulted in much lower actual source levels (range 161–186 dB re 1  $\mu$ Pa at 1 m) than specified by the manufacturers (i.e. the manufacturer source level of one instrument was reported as 214 dB re 1  $\mu$ Pa at 1 m, and field measurements resulted in a source level estimate of 186.2 dB re 1  $\mu$ Pa at 1 m) (Reiser et al. 2010). The frequency used will be an operational decision based on water depth and seabed characteristics.

Both transducers and receivers for the multi-beam sonar systems and sub-bottom profiler are fixed to the hull of the MV *Duke*, with no requirement for a towed array to collect multi-beam bathymetry data.

### **3.5 Time Frame**

The proposed survey is scheduled to occur in April 2015, with a total duration of approximately 14 days. Survey timing is dependent on vessel availability, weather conditions and receiving the necessary statutory approvals.

## 4.0 ENVIRONMENTAL IMPACTS AND RISKS

### 4.1 Methodology

The environmental risks associated with the Gippsland 2D Infill 2015 MSS have been 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.

The risks for each potential impact were determined using a qualitative assessment process in accordance with the methodology and principles described by the International Organization for Standardization (ISO) *31000:2009 – Risk management – Principles and guidelines*, and *Standards Australia Handbook 203:2012—Managing environment-related risk*.

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. For each hazard, the environmental consequence and the likelihood of occurrence have been assessed.

The Environmental Risk Assessment process identified, assessed and ranked the risks associated with each environmental hazard in accordance with the Qualitative Risk Matrix (Table 4-1), using the definitions for Likelihood and Consequence contained in Table 4-2 and Table 4-3.

**Table 4-1: Qualitative Risk Matrix**

		Likelihood				
		A: Very Unlikely	B: Unlikely	C: Possible	D: Likely	E: Very likely
Consequence	5. Very Serious					
	4. Serious					
	3. Moderate					
	2. Minor					
	1. Negligible					

Category	Description and Response
High	Intolerable. Work cannot proceed as currently planned. Urgent remedy and resources required for immediate risk reduction.
Significant	Undesirable. Upper management decision to accept or reject risk for the operation to continue.
Medium	Risk reduction measures need to be considered to further reduce risks if practicable. Generally acceptable level of risk where further risk reduction is shown not to be practicable.
Low	Risks are sufficiently low to be acceptable. Manage for continuous improvement and seek ways of further reducing risk level.

**Table 4-2: Definition of Likelihood**

Likelihood	Description
E. Very likely	Common occurrence in this type of business
D. Likely	May occur in our business
C. Possible	Possibility of occurring. Has happened in similar businesses
B. Unlikely	Unlikely to occur. A rare event by standards of industry
A. Very Unlikely	Unlikely to happen here or elsewhere. Conceivable under extreme circumstances

**Table 4-3: Definition of Consequence (Severity)**

Consequence		Description
Very Serious (5)	S: E: R:	Multiple Fatalities or significant irreversible effects to one or more people Very serious long-term environmental impairment of the ecosystem significant recovery work over years/decades, Level 3 Oil Spill. Injury or death of significant part of the population of a protected species. Extreme adverse public, political or media outcry resulting in international media coverage critical impact on reputation
Serious (4)	S: E: R:	Single Fatality and/or severe irreversible disability to one or more people Serious medium term environmental effects, recovery work over a few months, Level 2 oil spill. Injury or death of protected species. Significant impact on reputation and/or national media exposure local community complaint
Moderate (3)	S: E: R:	Moderate irreversible disability or impairment to one or more persons. Significant Injury (Lost Time Injury (LTI) or Restricted Work Day Case (RWDC)) Moderate environmental impact with recovery work over a few days/weeks, Level 1 oil spill, Impact/damage to item of National Environmental Significance (NES). Behavioural impact on protected species affecting natural processes, e.g. breeding. Serious local adverse public media attention or complaints local user concern moderate to small impact on reputation
Minor (2)	S: E: R:	Reversible disability requiring hospitalisation or Medical Treatment Injury Minor impact on biological (behavioural) or physical environment. Negligible remedial/recovery work required. Public awareness but no public concern beyond local users Minor impact on reputation
Negligible (1)	S: E: R:	Slight Injury (First Aid Treatment) Negligible Impact, Effect contained locally Negligible Impact on Reputation no public or regulator interest

Legend: S: Safety, E: Environment, R: Reputation Impacts

## 4.2 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 GA’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 assessment 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.

GA's senior management reviewed the impacts, risks and management measures described in this 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.

### **4.3 Risk Assessment and Controls Summary**

A summary of the identified risks, their potential environmental impact and the controls applied is provided in Table 4-4.

**Table 4-4: Summary of environmental risks, potential impacts and controls**

Sources of Risk (Hazards)	Potential Environmental Impacts	Controls
<b>Routine Operations</b>		
Marine Organisms on Vessel Hull Marine Organisms in Ballast Water	Loss of biodiversity, or commercial nuisance impacts due to Introduced Marine Species (IMS)	<p>Hull anti-fouling coating to be current and in sound condition</p> <p>Adherence with National Biofouling Management Guidance for the Petroleum Production and Exploration Industry</p> <p>Biofouling Record Book kept outlining marine fouling management actions</p> <p>Biofouling risk assessment shows low risk of IMS presence prior to entry into Australian waters</p> <p>Submersible equipment free of marine fouling organisms prior to use in the survey area</p> <p>Survey and support/chase vessels will have all necessary AQIS approvals</p> <p>Support/chase vessel risk assessed as posing low risk of introducing marine species</p> <p>Streamer cleaned prior to survey and during survey whenever the streamer is retrieved</p> <p>Adherence with the Australian Ballast Water Management Requirements</p> <p>No planned ballast water exchanges to take place during the activity</p> <p>If required, ballast water exchange will not occur within 12 nautical miles (NM) of land, or within any protected areas</p>
Presence of Vessel	Interference with or displacement of recreational or commercial fishing, commercial shipping, or oil and gas operators	<p>AMSA and AHO to be advised of the survey prior to mobilisation and following demobilisation for issue of Notice to Mariners</p> <p>Pre-survey consultation with relevant stakeholders</p> <p>All relevant stakeholders notified of the survey prior to mobilisation and following demobilisation</p> <p>SIMOPS Plan agreed with Esso prior to mobilisation</p> <p>Streamer fitted with reflective tail buoy</p> <p>Regular updates provided to fisheries stakeholders on seismic vessels planned movements</p> <p>Ongoing consultation with all stakeholders</p> <p>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</p> <p>Daily reports to be provided to the AMSA RCC</p> <p>Maintain at least 50 km separation between MV Duke and any other seismic vessel during seismic data acquisition</p> <p>Support/chase vessel present at all times.</p>



Sources of Risk (Hazards)	Potential Environmental Impacts	Controls
Artificial Lighting	Disruption to behaviour of light sensitive marine fauna.	No unnecessary external lighting during the activity (note that lighting for the purpose of safety, navigation or operational purposes is necessary). Pre-mobilisation audit to identify opportunities to reduce deck light spill to the marine environment.
Vessel Noise	Disruption of behaviour of noise sensitive fauna	Survey vessel to comply with relevant sections of Part 8 of the EPBC Regulations, when there is no trailing equipment deployed, including: <ul style="list-style-type: none"> <li>take action to avoid approaching closer to a cetacean than 50 m for a dolphin and 100 m for a whale</li> <li>do not exceed a speed of 6 knots within the 300 m caution zone</li> </ul> Vessel propulsion systems are maintained in working order
Oily Water Discharge	Potential localised and temporary acute toxic effects on marine biota	Oil content of any discharged water to be <15 ppm requirement of <i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i> –Section 9 Prohibition of discharge of oil or oily mixtures into the sea (4) (b) (iii) Oil water separator to be in good working order Oil Detection Monitoring Equipment (ODME) is regularly calibrated Current IOPP certification No discharge within 12 nm of land or within boundaries of a marine reserve
Grey Water / Sewage Discharge	Adverse effects on marine biota due to localised increase in turbidity and nutrient concentrations	Sewage treatment plant (STP) to be operational and certified All sewage treated prior to discharge Sewage to be handled, stored and discharged in accordance with <i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i> –Section 26D Prohibition of discharge of sewage into the sea, including: <ul style="list-style-type: none"> <li>all discharges further than 12 nm from land and at a speed of greater than 4 knots</li> </ul> No discharge within the boundaries of a marine reserve
Putrescible Waste (Food Scraps) Discharge	Adverse effects on marine biota due to localised increase in turbidity and nutrient concentrations	All putrescible wastes to be handled, stored and disposed of in accordance with the MV <i>Duke</i> Garbage Management Plan, which is consistent with the requirements of <i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i> – Section 26F Prohibition of disposal of garbage into the sea (all sub-sections) No discharge within marine park boundaries or within 12 nm from land. Macerator maintained in good condition
Atmospheric Emissions	Greenhouse gas emissions to the atmosphere from engines and incinerator	No ozone depleting substances (ODS) used in refrigeration systems MGO used during the survey to comply with standards outlined in MARPOL 73/78 Annex VI with regards to sulphur content, namely MGO will contain a concentration of sulphur not exceeding 3.5% by mass Vessel to have a valid IAPP Incinerator compliant with IMO/MARPOL

Sources of Risk (Hazards)	Potential Environmental Impacts	Controls
		<p>Propulsion system to be well maintained and in good working order</p> <p>Proactive management of fuel usage</p>
Underwater Noise From Seismic Source	Temporary or Permanent Threshold Shift (TTS/PTS), or behavioural changes in noise sensitive marine fauna.	<p>Survey will be conducted outside of the southern right whale migration period (between mid-May and Sep) and outside of the humpback migrations (heading north from about May to Aug, and south from about Sep to Nov).</p> <p>Two trained Marine Fauna Observers (MFOs) will be present during all activities</p> <p>The seismic vessel will shut down if three whale-instigated shutdowns in 24 hours occur and will move to another seismic line away from pods of whales (EPBC Act Policy Statement 2.1 Part B)</p> <p>Whale sharks to be managed under EPBC Policy Statement 2.1</p> <p>Detailed reports of all cetacean sightings will be recorded using the DotE Cetacean Sightings Application (database)</p> <p>No seismic in less than 30 m water</p> <p>Extended visual observations for fauna undertaken in the 3 km "observation zone" by MFO for at least 35 minutes before the commencement of soft-start procedures</p> <p>Soft-start procedures may only commence if no whales or whale sharks have been sighted within the low power or shutdown zone during the pre-startup visual observations. Soft-start procedures will be used each time the acoustic source is initiated gradually increasing power over a 30 minute period (EPBC Act Policy Statement 2.1)</p> <p>If the whale enters the "low-power zone" (&lt;2 km), the source will be powered down to the lowest possible setting and in the 'shutdown zone" (&lt;500 m) the acoustic source shut-down completely (EPBC Act Policy Statement 2.1 Part B).</p> <p>Start-up can only resume after the whale has moved outside the low power zone or when 35 minutes have elapsed since the last whale sighting.</p> <p>Maintain at least 50 km separation between MV <i>Duke</i> and any other seismic vessel</p> <p>Vessel crew will be inducted in their environmental management responsibilities and in implementation of EPBC Act Policy Statement 2.1.</p>
Underwater Noise From MBES and SBP	Temporary or Permanent Threshold Shift (TTS/PTS), or behavioural changes in noise sensitive marine fauna.	<p>MBES and SBP systems well maintained</p> <p>Two MFOs on board</p> <p>Survey vessel to comply with relevant sections of Part 8 of the EPBC Regulations, when there is no trailing equipment deployed, including:</p> <ul style="list-style-type: none"> <li>▪ take action to avoid approaching closer to a cetacean than 50 m for a dolphin and 100 m for a whale</li> <li>▪ do not exceed a speed of 6 knots within the 300 m caution zone</li> </ul>

Sources of Risk (Hazards)	Potential Environmental Impacts	Controls
<b>Routine Operations</b>		
Vessel Collision or Grounding Resulting in Fuel Tank Rupture and MGO Spill (< 117 m <sup>3</sup> )	Acute/chronic toxic effects on marine life from surface, dissolved and entrained hydrocarbons	<p>Vessel maintained in good condition</p> <p>Notice to Mariners to be circulated to avoid unexpected encounters at sea</p> <p>Vessel will maintain appropriate lighting, navigation and communication to inform other uses of the position and intentions of the survey vessel</p> <p>The MV <i>Duke</i> maintains a 24/7 watch with multiple trained crew (STCW95/Elements of Shipboard Safety) and appropriate navigation safety equipment (e.g. Radar) to ensure early detection of third party vessels to allow for vessel diversion (as necessary)</p> <p>Low speed of vessel (&lt;12 knots when transiting &lt;6.5 knots on survey).</p> <p>Adherence to COLREGS in every regard, including adequate lookout/watch, navigational shapes and lights reflecting operations at all times</p> <p>Vessel to provide daily reports to AMSA Rescue Coordination Centre (RCC)</p> <p>Radar onboard (Automatic Radar Plotting Aid) with collision alarm</p> <p>Vessel uses MGO fuel which is less persistent in the environment</p> <p>Largest single fuel tank is 117 m<sup>3</sup>. All fuel tanks can be isolated and contents transferred between them</p> <p>Ongoing consultation with AMSA, O&amp;G and fishing stakeholders</p> <p>Oil Spill Response arrangements, as described in the EP, are tested prior to survey</p> <p>Approved and tested SOPEP on board</p> <p>All relevant crew trained in implementation of SOPEP</p> <p>No activities in less than 30 m water depth or within 14 km of land</p> <p>SIMOPS plans prepared in consultation with Esso</p> <p>Support/chase vessel available to intercept other vessels and support seismic vessel</p>
Loss of Solid / Hazardous Waste Overboard	Contamination of marine environment with localised effects	<p>All personnel to comply with requirements of MV <i>Duke</i> Garbage Management Plan.</p> <p>All equipment on deck is secured when not in use</p> <p>All solid and hazard wastes are segregated and disposed of onshore at licenced waste management facility</p> <p>All personnel to comply with the requirements of the <i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i></p> <p>EP induction to contain information on waste management responsibilities</p> <p>No disposal overboard.</p>

Sources of Risk (Hazards)	Potential Environmental Impacts	Controls
Oil or Chemical Spill Through Deck Drainage	Contamination of the marine environment with localised acute toxic effects	<p>MARPOL 73/78 Annex I – Regulations for the Prevention of Pollution by Oil <i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i> –Section 9 Prohibition of discharge of oil or oily mixtures into the sea</p> <p>Chemicals and oils are stored in suitable containers in bunded areas isolated from the deck drainage system</p> <p>Personnel trained in oil/chemical handling</p> <p>Hydraulic equipment checked for leaks prior to being subjected to a load</p> <p>Drip trays will be maintained under any machinery or engines that may leak oil</p> <p>Weekly inspection of bunded areas and spill kits is undertaken on all vessels</p> <p>MSDS available to all POB</p> <p>Spill kits available</p> <p>Drains maintained and monitored.</p> <p>Approved and tested SOPEP, with crew to be trained in implementation of the SOPEP and use of clean up equipment</p> <p>Scupper plugs available on board</p> <p>Spills are cleaned up immediately, reported through the incident reporting system and contaminated material contained on-board for on-shore disposal.</p>
Entanglement of / Collision with Marine Fauna	Injury or death of marine fauna	<p>Many of the EPS” listed above for “Underwater Noise” reduce the likelihood of encounters with marine fauna</p> <p>Survey will be conducted outside of the southern right whale migration period (between mid-May and Sep) and outside of the humpback migrations (heading north from about May to Aug, and south from about Sep to Nov).</p> <p>Shorter streamer used (5 km rather than 8.1 km)</p> <p>Watch maintained for marine fauna prior to deployment of wet equipment, with deployment delayed if entanglement risk is considered high (e.g. marine fauna observed along planned survey line).</p> <p>Support/chase vessels (and seismic vessel when not restricted in its ability to manoeuvre) to comply with Part 8 of the EPBC Regulations, including:</p> <ul style="list-style-type: none"> <li>▪ ensure the vessel does not drift or approach closer to the cetacean than 50 m for a dolphin and 100 m for a whale.</li> <li>▪ immediately withdraw from the caution zone (300 m) around the cetacean if it shows signs of being disturbed.</li> <li>▪ do not exceed a speed of 6 knots within the 300 m caution zone</li> </ul> <p>Report death or injury of a listed species to the Secretary of DotE within seven days.</p> <p>Two trained Marine Fauna Observers (MFOs) will be present during all activities, with at least one MFO observing during seismic data acquisition.</p> <p>Whale sharks to be managed under EPBC Policy Statement 2.1 and Section 8 of EPBC Regulations.</p> <p>Any entangled marine life recovered with wet equipment to be returned to the ocean immediately.</p>

Sources of Risk (Hazards)	Potential Environmental Impacts	Controls
Loss of Equipment, including streamer	Localised disturbance to benthic habitat Disturbance to other users	<p>Gardline streamer deployment and recovery procedure to be implemented.</p> <p>Buoy (including GPS transponder) and automatic recovery device attached to streamer to facilitate recovery in the event of loss.</p> <p>Independent secondary (i.e. redundant) attachment device connected to streamer to prevent loss in the event of primary attachment failure.</p> <p>Deployment of wet equipment to be carried out only under suitable weather conditions, as determined by the Vessel Master.</p> <p>Sercel Sentinel® solid streamer used for the survey.</p> <p>Ongoing consultation with relevant stakeholders in the event of loss of a streamer, including notification to AMSA.</p> <p>Comply with ERP procedure steps including:</p> <ul style="list-style-type: none"> <li>monitoring and avoidance of conditions that may increase risk of streamer loss</li> <li>retrieve in-water seismic equipment in the event adverse weather conditions are forecast</li> </ul> <p>Support/Chase vessel available to assist recovery in the event of streamer loss.</p> <p>All lifting gear to be load rated as appropriate for the working load.</p> <p>Visual inspection of lifting gear every six months and annual load testing for wires.</p>
Anchoring	Localised disturbance to benthic habitat	<p>No anchoring of survey or support vessels during the activity.</p> <p>Support/Chase vessel available to assist MV Duke.</p>
Responding to an Oil Spill	Significant impacts upon fauna and/or habitats due to activities associated with spill response, or discharges such as dispersants	<p>Approved and tested SOPEP on board – implemented in the event of a spill</p> <p>Gardline Emergency Response Plan</p> <p>AMSA to be notified immediately (&lt;1 hr) when a spill is detected.</p> <p>Vessel SOPEP to be implemented immediately in the event of a spill.</p> <p>Insurance is in place to cover the costs of response.</p> <p>NEBA undertaken in consultation with JA</p> <p>Wastes managed under Garbage Management Plan, in accordance with NATPLAN Management and Disposal of Oil Spill Debris.</p> <p>Stakeholders notified</p> <p>Appropriate Operational and Scientific Monitoring response arrangements</p>

## 5.0 MONITORING OF ENVIRONMENTAL PERFORMANCE

### 5.1 Ongoing Monitoring

The Gippsland 2D Infill MSS will be managed in compliance with the accepted EP for the activity, all applicable laws and regulations, the Geoscience Australia 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).

The implementation strategy for the EP, including for during emergencies or potential emergencies, describes in detail the arrangements in place to allow Geoscience Australia 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

GA will maintain a record of environmental performance during the Gippsland 2D Infill MSS, 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. A report on the environmental performance, including the Compliance Register, will be submitted to NOPSEMA for assessment within two months of completion of the Gippsland 2D Infill MSS.

The key measures for ensuring ongoing environmental performance include:

- Pre-survey testing of oil spill response arrangements
- a pre-survey audit
- project kick-off meeting
- an audit during the survey
- 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 GA 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 Duke 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 Duke SOPEP, the National Plan for Maritime Environmental Emergencies (NATPLAN) and Victorian 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 its interaction with the MV Duke 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 Duke SOPEP

The MV Duke's 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<sup>1</sup>
  - Hull Damage/Leak
  - Equipment in Machinery Space.
- Spills resulting from Casualties

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<sup>1</sup> No bunkering of oil will occur at sea during the survey.



- 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 Duke's 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 listed above 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 Duke's 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 Duke against its SOPEP will be made prior to survey mobilisation to ensure appropriate preparedness for the Gippsland 2D Infill MSS.

## 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

Plans specific to the Gippsland 2D Infill 2015 MSS activities which are integrated through the vessel's SOPEP include:

- Gardline Gippsland 2D Infill 2015 MSS Project Specific HSE Plan
- Gardline Gippsland 2D Infill 2015 MSS Project Specific Emergency Response Plan

## 6.4 Victorian Plans

If a spill occurs in Victorian waters, the *Victorian Plan for Maritime Environmental Emergencies* (VicPlan) applies.<sup>2</sup> The Emergency Risk and Resilience division of the Department of Transport, Planning and Local Infrastructure (DTPLI) is the Control

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<sup>2</sup> VicPlan is currently being rewritten to align with the new NATPLAN arrangements. An interim version (2014) of the plan has been created.

Agency for Level 2 spills. The Regional Control Agency (RCA) is the Control Agency for Level 1 spills, and for Gippsland is the Gippsland Ports Committee of Management Incorporated. Subordinate plans (e.g. *Wildlife Response Plan for Marine Pollution Emergencies*) may also be activated. VicPlan includes specific information on the Gippsland region.

AMSA may request that the Victorian DTPLI assume the Control Agency role, even though the spill occurred in Commonwealth waters in situations where oil is likely to impact on the Victorian shoreline. Deployment of Victorian resources in Commonwealth waters is coordinated and requested through AMSA.

## 6.5 Spill Scenarios

Credible spill scenarios identified for the Gippsland 2D Infill 2015 MSS activity are broadly divided into two categories:

- Level 1 (< 160 L): the loss of the contents of 160 L barrel from uncontained deck spills/leaks.
- Level 2 (117 m<sup>3</sup> MGO): the loss of the full contents of the largest fuel tank on the *MV Duke* due to vessel grounding or collision.

The fuel used on the *MV Duke* is Marine Gas Oil (MGO). MGO is a common marine fuel used in vessel engines and is a mixture of both volatile and persistent hydrocarbons. On release, MGO is expected to undergo a rapid spreading and evaporative loss with the remainder becoming dispersed in the water column.

MGO 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 MGO spills are as follows:

- Due to the rapid evaporation and dispersion MGO spills are normally monitored and allowed to naturally weather, if no protection priorities are at risk.
- MGO 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 MGO 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 *Duke* 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 Gardline Emergency Response Team (ERT). Further reports will be sent at regular intervals to keep relevant parties (AMSA, NOPSEMA, DLPTI, GA, Gardline, etc.) informed.

The on-board GA Survey Leader is responsible for advising the GA Project Manager of the spill incident. The GA CEO is then responsible for notifying NOPSEMA.

The MV *Duke* Incident Management Team (IMT) is responsible for initiating the Incident Action Plan and emergency procedures as detailed in the vessel's SOPEP.

### 6.6.1 Small Spills

A Level I (< 160 L) response to a small spill can be managed by on-site or local resources, including those of the MV *Duke*, and the support / chase vessel. 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.

GA 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 (<117 m<sup>3</sup> MGO) response is 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 Tier 2 spill response. The Survey Leader will notify the GA Project Manager who will provide notification to the GA CEO who will notify NOPSEMA.

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 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. GA will consult with AMSA during this assessment.

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

### 6.7 Operational Monitoring (Type I Monitoring)

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).

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.<sup>3</sup>

### 6.8 Scientific Monitoring (Type II Monitoring)

In the event of a Level 2 spill the MV *Duke* would implement immediate responses under the vessel's SOPEP. The CA (AMSA) would be notified and operational (Type I)

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<sup>3</sup> For a Level 2 MGO spill in marine waters it is expected that a criteria of 'no visible sheen' will be adopted by AMSA as the termination criteria.

monitoring would be implemented. This would include oil spill trajectory modelling and spill surveillance (using either on-water or aerial surveillance, or both). These Type I monitoring elements would be coordinated by AMSA. The MV *Duke* (and support/chase vessel) 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.

Scientifically rigorous monitoring plans would be developed and implemented by Geoscience Australia in conjunction with AMSA, Support Agencies, experts and other stakeholders (e.g. DTPLI, Victorian EPA, Parks Victoria, the Victorian Department of Environment and Primary Industries, research agencies (e.g. Australian Institute of Marine Science (AIMS)), O&G operators, and fisheries. Scientific monitoring may continue for some time following the termination of the operational response.

GA'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 the experience and capacity to respond in the event of a spill. Scientific monitoring could include some, or all, of elements described in Table 6-1.

**Table 6-1: Scientific Monitoring Tasks and Key Receptors**

Description/Objective	Key Receptors
<p><b>Monitoring for Oil Hydrocarbons in Benthic Sediments</b></p> <p>To understand the behaviour, persistence and fate of oil hydrocarbons in sediments to provide data to assist in assessing and verifying predicted impacts on key habitats and sensitive receptors.</p>	Subtidal and Intertidal Benthos
<p><b>Surveys of Shoreline and Intertidal Benthos to Determine Impacts of Oil Spill and Recovery</b></p> <p>To determine and monitor the impact of the spill, dispersants or response activities and potential subsequent recovery for intertidal benthos at both individual (species) and community (habitat) levels. This involves the monitoring of the spill and spill management operations on intertidal marine coastal habitats (like tidal seagrass, tidal mud flats, mangroves, intertidal saltmarsh and salt pans) and associated organisms (like fishes, crustaceans, arboreal mangrove biota, microphytobenthos, macroalgae, mangrove/saltmarsh plants, seagrass) both to establish necessary responses, and ultimately quantify the biological and ecological effects of the spill and response activities.</p>	Invertebrates, Intertidal habitats, Seagrasses, Mangroves, Shorelines
<p><b>Monitoring of Marine Benthos to Determine Impacts of Oil Spill and Recovery</b></p> <p>To enable assessment of impacts and subsequent recovery of benthic marine habitats (soft and hard substrate habitats) and associated macro epibenthic organisms (e.g. macroalgae, seagrass, sponges and other filter feeders, motile invertebrates and associated fishes) in response to a spill event and associated response activities.</p>	Seagrass, Filter-feeders, Invertebrates, Macroalgae, Demersal fishes

Description/Objective	Key Receptors
<p><b>Wildlife Surveys to determine Impact of Oil Spill on Seabirds and Shorebird Populations and Recovery</b></p> <p>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).</p>	<p>Seabird and Shorebird Populations</p>
<p><b>Surveys of Non-Avian Marine Wildlife to Determine Impacts of Oil Spill and Recovery</b></p> <p>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).</p>	<p>Marine Turtles, Marine Mammals, Sharks/rays, Seals</p>

## 7.0 CONSULTATION

### 7.1 Background

Consultation includes that undertaken for a previously planned survey which did not proceed. GA had planned to collect 2D and 3D seismic data over a larger area in April 2014 (Gippsland 2D/3D Infill 2014 MSS). Consultation for that survey during 2013 revealed a number of objections and claims from fishers with the key issues identified as:

- Potential impacts on fish and catch rates from 3D seismic over potentially sensitive hard ground areas/reefs and shallow areas
- Potential impacts on larvae and development of fish and, in particular, scallops due to seismic activities.

In response to the fishers concerns GA deferred the project for one year to allow for further assessment of these issues. During that time, additional consultation was undertaken with fishers, researchers and research agencies. Significant changes were made to the survey program and detailed assessments of potential underwater noise impacts were undertaken, including:

- The current survey (the Gippsland 2D Infill 2015 MSS) removed the hard ground areas/reefs and shallow areas from the survey plan.
- No 3D seismic acquisition will occur in the current survey.
- The planned seismic lines are now further offshore.
- GA commissioned a desktop study in conjunction with CSIRO, AFMA, Fisheries Research and Development Corporation (FRDC) and the Commonwealth Fisheries Association, to investigate potential underwater noise impacts on fish and scallops.

As the current survey (the Gippsland 2D Infill 2015 MSS) is based on those changes, the consultation undertaken during 2013 is also reported in this section.

### 7.2 Consultation Already Undertaken

Consultation with the majority of following stakeholders was undertaken between March 2013 and November 2014. Stakeholders were contacted by phone, email or letter, or at public meetings. An information package was sent to stakeholders, detailing the survey characteristics, locations, duration and proposed activities. Relevant stakeholders, including those potentially involved in oil spill response, were invited to provide comments on the survey. A number of stakeholders did not reply or replied only to acknowledge receipt of the invitation with no further comment.

The consultation undertaken during 2013 for the Gippsland 2D/3D Infill 2014 MSS is presented in Table 7-1. The consultation undertaken since that time, and specifically for the Gippsland 2D Infill 2015 MSS, is presented in Table 7-2. Extensive consultation was undertaken with the scallop fishing industry and is summarised in Table 7-3.

**Table 7-1: Consultation undertaken for the Gippsland 2D/3D Infill 2014 MSS (up till November 2013)**

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator Response to each Objection/Claim
National Offshore Petroleum Titles Authority (NOPTA)	Email response (31/10/2013): Recommendation that GA should apply for a Greenhouse Gas Research Consent for proposed survey.	GA was granted a Greenhouse Gas Research Consent
The Department of the Environment	Meeting (17/08/2013) DoE anticipated no significant EPBC issue with the proposed survey. Recommendation on submission of EPBC referral	No action required due to latest amendments to OPGGSR (Environment) 2009
	Email response (11/09/2013) DoE advised that GA would require a shipwreck permit for zone entry.	GA submitted application for shipwreck permit on 11/11/2013. Approval pending
Commonwealth Marine Reserve Science and Information Management (CMRSIM)	Email Response (4/10/2013): CMRSIM advised that a permit would be required to conduct research activities in Beagle Reserve in the South-east Commonwealth Marine Reserves Network.	GA to switch off multi-beam sonar within the marine reserve boundaries Information to be incorporated into EP.
Australian Fisheries Management Authority (AFMA)	Email Response (4/11/2013): AFMA advised that the Southern and Eastern Scalefish and Shark Fishery remains highly active in waters of the proposed seismic survey, with the South East Management Advisory Committee previously expressing concerns regarding any offshore exploration within the waters of the Fishery. AFMA encouraged thorough consultation with fishing industry in relation to this issue.	GA amended survey plan to avoid acquisition over potentially sensitive hard ground areas/reefs and to reduce the amount of acquisition occurring in shallow parts of the study area. Consultation activities with fishing industry were undertaken (refer Records below).
Australian Marine Safety Authority (AMSA)	Email Response (6/09/2013): Provision of a chart indicating the level of vessel traffic which might be encountered in the survey area. AMSA recommend reducing survey area to avoid traffic separation zone.	GA confirmed that a few of sparse single-pass tie lines will extend into the TSZ so time spent there will be minimal.
	Email Response (1/11/2013) Seeking confirmation from GA that the time spent in the TSZ that would in fact be minimal.	No further action applicable
Department of Defence – Defence Support Group	Response (6/11/2013): Confirmation of no objection to the survey.	Not Applicable
Department of Broadband Communication and the Digital Economy (DBCDE)	Email Response (23/09/2013): Confirmation that no conflict of interest within survey area DBCDE recommended contacting Basslink and Telstra regarding domestic cables.	Consultation activities with nominated parties were undertaken (refer Records below).



Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator Response to each Objection/Claim
Basslink Pty Ltd	Email Response (4/09/2013): Concerns regarding shallow water acquisition over cable.	GA revised the survey area which no longer intersects cables. No concern.
Telstra	Response pending	
Australian Hydrographic Service (AHO)	Email Response (09/09/2013): AHO requesting notification 2-3 weeks prior to survey with accurate details of the final acquisition plan to issue a notice to mariners.	Information to be incorporated into EP.
National Native Title Tribunal (NNTT)	Email Response (6/09/2013): NNTT request GA to contact the Gunaikurnai Land and Waters Aboriginal Corporation and the Native Title Service Victoria.	Consultation activities with nominated parties were undertaken (refer Records below).
Gunaikurnai Land and Waters Aboriginal Corporation	No response	
Native Title Services Victoria	Email response (24/09/2012) acknowledging the receipt of information and notifying GA that the information has been forwarded to the lawyer	Not Applicable
Australian Customs and Border Protection Service	Email response (4/11/2012) acknowledging the receipt of information and request that information to be sent to Shippingvicatcustoms.gov.au.	Information forwarded as requested
Australian Communications and Media Authority	Email response (3/9/2013) acknowledging the receipt of information.	Not Applicable
Esso Australia	Meeting (23/09/2013): Esso requested ongoing communication regarding detailed survey plans, final digital line locations and a follow up meeting in mid-late November to confirm timing of acquisition, vessel-platform and emergency communication procedures.	Ongoing communication with Esso
3D Oil Ltd / Carnarvon Hibiscus joint venture	Meeting Outcome (23/09/2013): 3D Oil Ltd confirmed that survey timing does not conflict their operation and request GA to coordinate the stakeholder engagement with their representative to ensure no conflicts occur in timing of meetings or approach.	Ongoing communication with 3D Oil
Bass Strait Oil Company Ltd	Email response (6/9/2013) noting no concern with survey	Not Applicable
Larus Energy	Response pending	

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator Response to each Objection/Claim
CarbonNet	Email response received (10/10/2013): Recommendation that GA should defer survey to combine with CarbonNet survey in 2015.	Recommendation not supported. GA will continue to provide CarbonNet with information on its process of engaging stakeholders.
Parks Victoria	Phone response (22/08/2013): Confirmation that no permit is required. Park Victoria requested survey details so they can be distributed to rangers.	Information provided on 3 September 2013
Tourism Victoria	Email Response (18/9/2013): Acknowledging the receipt of the information	Not applicable
Victorian Department of Environment and Primary Industries – Fisheries Management	Email response (23/07/2013): Provision of stakeholder information. Recommendation on consultation with Seafood Industry Victoria Email response ( 7/8/2013): Provision of historical fishing activities information	Not applicable
Department of Environment and Primary Industries	Response pending	Not applicable.
	Email response (18/12/2012) No objection to the survey	
Victorian Environmental Protection Authority	Email Response (20/9/2013): Acknowledge of the receipt of information.	Not Applicable
Wellington Shire Council	Letter Response (11/09/2013): Providing advice on dissemination of information via local papers close to survey time and recommending GA to consult a list of stakeholders: <ul style="list-style-type: none"> <li>▪ Esso’s public affairs manager (as part of Esso consultation)</li> <li>▪ Dolphin Research Institute</li> <li>▪ Gippsland Coastal Board</li> <li>▪ Victorian Department of Environment and Primary Industries (refer to Record above)</li> <li>▪ West Gippsland Catchment Management Authority.</li> </ul>	Information of the survey will be disseminated by GA via local papers close to survey time. Consultation activities with nominated parties were undertaken (refer Records below).
The Dolphin Research Institute	Response pending	
Gippsland Coastal Board	Response pending	
West Gippsland Catchment Management Authority	Email Response (23/09/2013): Acknowledging the receipt of the information and requesting GA to keep provide updated information close to the survey	Ongoing communication undertook by GA

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator Response to each Objection/Claim
East Gippsland Shire Council	Email Response (9/9/2013): Recommendation that GA consult LEFCOL - Lakes Entrance Fishermen's Co-Operative Society Limited	Consultation activities with nominated parties were undertaken (refer Records below).
Commonwealth Fisheries Association(CFA)	Meeting Outcome (7/08/2013).Recommendation to access fishers through the larger associations including: <ul style="list-style-type: none"> <li>▪ Seafood Industry Victoria (SIV)</li> <li>▪ SETFIA</li> <li>▪ South-east Trawl fishery</li> </ul>	Consultation activities with nominated parties were undertaken (refer Records above and below).
Seafood Industry Victoria (SIV)	Meeting (14/8/13): Recommendations on direct contact with LEFCOL to coordinate meetings and to distribute information to members. Email response (23/08/13): Provision of state fisheries contacts: <ul style="list-style-type: none"> <li>▪ Scallop Fisherman's Association</li> <li>▪ Lakes Entrance Fisherman's Cooperative</li> <li>▪ Purse Seine fisher</li> </ul> Email response (9/10/2013): Noting dissatisfaction of members who were not invited to initial consultation meetings in Lakes Entrance 25 October 2013 – consultation held in Lakes Entrance to VSFA, SSF, LEFCOL Considerable changes to survey design implemented including limiting survey to 2D (instead of 3D), changing survey line paths, altering scheduled survey date, undertaking desktop study to identify potential fishery impacts in this area.	Consultation activities with nominated parties were undertaken (refer Records below). Ongoing liaison with SIV

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator Response to each Objection/Claim
Lakes Entrance Fishing Cooperative (LEFCOL)	<p>Email Response (12/9/2013): Concern about seismic activities impact on fish and Scallops</p> <p>17 September 2013 – discussion on additional contacts regarding effective engagement and options for gaining trust and information from fishing industry representatives.</p> <p>Email Response (9/10/2013): Providing recent scientific paper regarding seismic effects of larvae.</p> <p>Meeting (25/10/2013): Major concerns regarding seismic activities over shallow water areas and known reef areas.</p> <p>LEFCOL and members approve of amendment of 2D lines to avoid crossing reef areas in shallow water depths and the amendment of the southern 3D area to avoid acquisition in shallow water depths.</p> <p>Feedback from XXXX and members was that, in the absence of information regarding potential impacts, they want the survey stopped until environmental information is collected and assessed for commercial species in the area. They noted particular concern regarding seismic over shallow water areas and known reef areas and noted these on maps provided by GA. Discussion of who is responsible for furthering research to understand spatial patterns and habitats of commercial species highlighted that this knowledge gap is not being addressed.</p> <p>December 2013 – notification of postponement to Scallop industry representatives. Request for LEFCOL to distribute postponement to associated members.</p> <p>XXXX indicated he was pleased with the outcome and indicated that the information would assist in providing information that would allow the two groups to work together with reduced impact.</p>	<p>GA has collected all existing scientific and anecdotal spatial information to identify potentially sensitive habitats/areas for commercial species.</p> <p>GA has made significant amendments to its survey program to avoid these areas.</p> <p>GA will submit the modified plan to the fishing industry for further comment in the near future.</p> <p>Considerable changes to survey design implemented including limiting survey to 2D (instead of 3D), changing survey line paths, altering scheduled survey date, undertaking desktop study to identify potential fishery impacts in this area.</p>

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator Response to each Objection/Claim
South East Trawl Fishing Industry Association (SETFIA)	<p>Email Response (22/08/2013): Agreeing to arrangements for meeting in Lakes Entrance to engage with representatives of relevant fisheries on</p> <p>Meeting (2/10/2013) Major concerns about the short and long-term effects of seismic acquisition on fish stocks. Objection to northern 3D seismic area. Concern over vessel movement and hazard to fishers.</p> <p>Considerable changes to survey design implemented including limiting survey to 2D (instead of 3D), changing survey line paths, altering scheduled survey date, undertaking desktop study to identify potential fishery impacts in this area. SETFIA was pleased that GA was deferring the survey, stating that it showed that GA did listen to the fishing industries concerns and was prepared to do something about getting more information. XXXX asked how they/he can assist in the process.</p>	<p>GA has collected all existing scientific and anecdotal spatial information to identify potentially sensitive habitats/areas for commercial species.</p> <p>GA has made significant amendments to its survey program to avoid these areas.</p> <p>GA will submit the modified plan to the fishing industry for further comment in the near future.</p> <p>Supporting vessel would be present during the survey to ensure safety</p>
VR Fish Victoria	Response pending	
Sustainable Shark Fishing Inc.	<p>Meeting (25/10/2013): Major concerns about the short and long-term effects of seismic acquisition on fish stocks. Objection to northern 3D seismic area. Concern over vessel movement and hazard to fishers.</p> <p>Request for survey deferred until environmental information is collected and assessed for commercial species in the area.</p> <p>XXXX response noting he was available and also requesting information about the dates of previous seismic. Anna response showing complexity of line acquisition in the area for which he expressed interest and noting that a file of seismic vs date and properties was being developed to allow this type of comparison. David response querying information available about cumulative impacts. Anna response noting that unless fisheries or fisheries management departments had undertaken this work, it was unlikely to exist, also noting the difficulty in getting certain and useful results from such a study.</p>	<p>GA has collected all existing scientific and anecdotal spatial information to identify potentially sensitive habitats/areas for commercial species.</p> <p>GA has made significant amendments to its survey program to avoid these areas.</p> <p>GA will submit the modified plan to the fishing industry for further comment in the near future.</p> <p>Supporting vessel would be present during the survey to ensure safety</p>
Tasmanian Seafood Industry Council	<p>Response pending.</p> <p>Considerable changes to survey design implemented including limiting survey to 2D (instead of 3D), changing survey line paths, altering scheduled survey date, undertaking desktop study to identify potential fishery impacts in this area.</p>	
Purse Seine fisherman	Response pending	

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator Response to each Objection/Claim
Scallop Fisherman's Association	<p>Meeting (25/10/2013): Major concern regarding seismic survey over shallow water areas and known reef areas.</p> <p>Approval for GA amendment of 2D lines to avoid crossing reef areas in shallow water depths and the amendment of the southern 3D area to avoid acquisition in shallow water depths.</p> <p>Request for survey deferred until environmental information is collected and assessed for commercial species in the area.</p>	<p>GA has collected all existing scientific and anecdotal spatial information to identify potentially sensitive habitats/areas for commercial species.</p> <p>GA has made significant amendments to its survey program to avoid these areas.</p> <p>GA will submit the modified plan to the fishing industry for further comment in the near future.</p>
<p>Bass Strait Fisheries: Tasmanian Scallop Fishermen's association (Bass Strait central scallop fishery) Southern Square Jig fishery (squid)</p>	<p>Email Response (17/09/2013): Major concerns about the short and long term impact of seismic activities on scallops.</p> <p>Meeting (21/10/2013): Major concerns about the strip of water from coast to about 6 nm offshore as it a reef environment and major spawning area. Major concerns about the 3D activity. Concerns about edge of slope near Kingfisher for shark.</p> <p>Considerable changes to survey design implemented including limiting survey to 2D (instead of 3D), changing survey line paths, altering scheduled survey date, undertaking desktop study to identify potential fishery impacts in this area. Bob was pleased with the outcome, stating that this is good.</p>	<p>GA has collected all existing scientific and anecdotal spatial information to identify potentially sensitive habitats/areas for commercial species.</p> <p>GA has made significant amendments to its survey program to avoid these areas.</p> <p>GA will submit the modified plan to the fishing industry for further comment in the near future.</p>
Tasmanian Rock Lobster Fisherman's Association	Email response (17/10/2013) Advice that no concern should the survey area not be extended further south	Not Applicable
OSD Services (Tasmanian Gas Pipeline)	Response pending	
Deakin University – Multibeam Sonar Mapping Program	Email Response (18/9/13) stating no conflict of interest for survey plan.	Not applicable

**Table 7-2: Consultation undertaken for the Gippsland 2D Infill 2015 MSS (from November 2013)**

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator response to each Objection/Claim
The Department of the Environment	No response – see previous 2013 response	GA will not acquire data during transit through Beagle MPA. GA will submit an EP
The Department of the Environment – Heritage Branch	No response – see previous response	GA will apply for a shipwreck permit if final line locations enter shipwreck exclusion zone. GA to apply for shipwreck permit closer to survey date GA to address risk of damaging Shipwreck sites in EP
Australian Fisheries Management Authority (AFMA)	AFMA recommend thorough consultation with fisheries in area and request updates on any changes to acquisition plans as new information becomes available	Consultation activities with relevant sectors of the commercial fishing industry were undertaken (refer Records below). GA will advise AFMA of any amendments to acquisition plans.
Australian Maritime Safety Authority (AMSA)	AMSA notes areas of high vessel traffic and major shipping lanes in proposed acquisition area. GA to amend vessel movements and not impede passage of any vessel using Traffic Separation Scheme GA provided AMSA with spatial data of survey coverage	GA will work with AMSA to amend acquisition plans or implement procedures to manage risk while operating in high traffic areas. GA to maintain exceptional and active communications with all commercial shipping vessels noting speed differences between survey vessel and commercial shipping GA to comment on operations and interactions with commercial shipping vessel at survey conclusion (e.g. lessons learnt). GA will inform AHS and AMSA RCC of final survey details 2 weeks prior to commencing acquisition. GA to ensure risks identified and all treatments suggested are included in the Environmental Plan
Department of Defence	No response – see previous response No concerns (3/11/14)	GA will provide final survey details 2 weeks prior to acquisition AHO to be notified of final survey details 2 weeks prior to acquisition.

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator response to each Objection/Claim
Department of Broadband Communication and the Digital Economy (DBCDE)/ Australian Communications and Media Authority (ACMA)	Receipt of information and request for spatial data. Data provided by GA (1/10/2014). Response pending.	As per previous engagement, GA will engage Telstra and Basslink to ensure safe operation over seabed cables. No international cables are present in the survey area (refer to Records below)
Australian Hydrographic Service (AHO)	No concerns	See previous 2013 engagement. GA will submit notice to Mariners 2 weeks prior to start of activity.
National Native Title Tribunal (NNTT)	No concerns and to exclude their organisation from future correspondence	Not Applicable
Border Protection Command	No comment but require updated information prior to acquisition	GA will provide final survey details 2 weeks prior to acquisition
Esso	(23/10/14) GA to negotiate operational agreement with Esso for acquisition in Esso titles. Esso request this agreement is in place by December 2014. Response pending (to discuss issues regarding previous meeting in Melbourne / 16-17 September 2014)	GA will follow agreed communication procedures and exclusion zones while operating around Esso infrastructure and vessel traffic. GA to provide operational agreement following guidelines set by ESSO (as detailed in the EP)
CarbonNet	CarbonNet have no activities planned in their lease area but request regular updates on GA permitting process and final acquisition plan to manage adverse publicity/media resulting from GA survey. No concerns with public release of seismic data within boundaries of VIC-GIP-001 Permit	GA will maintain regular contact with CarbonNet and provide updates at agreed intervals/triggers leading up to survey.
Carnarvon Hibiscus (3d Oil)	Not Applicable	Not Applicable
Ion	Ion acquisition will not conflict with GA planned acquisition but permitting and stakeholder engagement will run concurrently. Feedback provided regarding stakeholder interaction	GA and Ion will communicate to ensure stakeholder engagement activities do not conflict.
APPEA	No response	Not Applicable



Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator response to each Objection/Claim
Parks Victoria	Email response with preference for survey during April – May to minimise interaction with juvenile white sharks. Survey likely to have low impacts on juvenile white sharks.	None required – GA survey will not enter or survey within the marine reserve area. GA survey plans are scheduled in time periods preferable to Parks Victoria (April-May)
Tourism Victoria (Victorian Department of State Development, Business and Innovation)	No response Email response acknowledging receipt of information and email forwarded onto XXXX (23/10/14) to confirm no concerns about planned activities Response pending	Not Applicable
Clean Coal Victoria (Victorian Department of State Development, Business and Innovation)	Feedback on consultation information and approach regarding local residents and commercial fishing industry.	Detailed response pending. GA will provide final survey details 2 weeks prior to acquisition
Victorian Department of Environment and Primary Industries – Fisheries Management	No response	TBA
Department of Environment and Primary Industries -Minerals and Petroleum Regulation Branch.	No response	N/A
Geological Survey of Victoria – Department of Environment and Primary Industries	No formal response – engaged in scientific collaboration as part of broader GA project	GA will provide updated information as this becomes available
Department of Premier and Cabinet - Aboriginal Affairs Victoria + local land owners	No response	N/A
Native Title Services Victoria	NTSV have forwarded this information to relevant traditional owner groups	N/A

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator response to each Objection/Claim
Victorian Environmental Protection Authority	Response noting no concerns	GA will provide updated information as this becomes available
Local councils: Wellington Shire Council East Gippsland Shire Council Council boards/committees: Victorian Coastal Council Environmental Sustainability Advisory Board	No response – see previous engagement	GA will publish survey notification in local newspapers immediately prior to acquisition.
Local State and Federal Members for Parliament (Darren Chester MP and Tim Bull MP)	Noted concerns on possible impact on fishing grounds for Lakes Entrance commercial fishing fleet	GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment
Commonwealth Fisheries Association (CFA)	Noted general concern over impacts of seismic on fish stocks. Recommended GA undertake face to face engagement with commercial fishermen to identify any concerns not covered during 2013 engagement. CFA will distribute survey information to members and pass on any feedback received.	GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment  Considerable changes to survey design implemented including limiting survey to 2D (instead of 3D), changing survey line paths, altering scheduled survey date, undertaking desktop study to identify potential fishery impacts in this area.

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator response to each Objection/Claim
Seafood Industry Victoria(SIV)	<p>Noted members strong opposition to seismic, particularly Scallop fishermen. Recommended GA undertake face to face engagement with commercial fishermen in small groups or individually to identify any concerns not covered during 2013 engagement. SIV will distribute survey information to members and pass on any feedback received.</p> <p>SIV experiencing increased engagement burden as a result of NOPSEMA's processes and considering cost recovery model and likely to be forced to be more selective in projects they actively oppose. SIV happy to distribute GA information through regular communication and receive and pass on feedback.</p> <p>20 November 2014 – SIV concerns with impact of seismic activities on marine resources actively targeted by fishing operation and the large number of requests for consultation noted slightly absurd.</p>	<p>GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment.</p> <p>No additional information has been provided since 2013 from stakeholders</p>
Lakes Entrance Fishing Cooperative (LEFCOL)	<p>LEFCOL raise concerns regarding the impact of seismic acquisition on a range of commercial species fished within the proposed survey area and reference 2013 engagement comments and outcome.</p>	<p>GA has collected all existing scientific and anecdotal spatial information to identify potentially sensitive habitats/areas for commercial species.</p> <p>GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment.</p> <p>No additional information has been provided since 2013 from stakeholders</p>
South East Trawl Fishing Industry Association (SETFIA)	<p>No response – see 2013 engagement</p>	<p>GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment.</p> <p>No additional information has been provided since 2013 from stakeholders</p>

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator response to each Objection/Claim
VRFish Victoria	No response	GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment.  No additional information has been provided since 2013 from stakeholders
Sustainable Shark Fishing Inc.(SSF)	No response – see 2013 engagement	GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment.  No additional information has been provided since 2013 from stakeholders
Tasmanian Seafood Industry Council	No response – see 2013 engagement No concern on Tasmanian managed fisheries (23/10/14)	N/A

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator response to each Objection/Claim
<p>Victorian Scallop Fishermen's Association (VSFA)</p>	<p>Email/letter noting concerns regarding impacts of activity on scallops and requesting additional information regarding impacts and equipment to be used.</p> <p>Email (25 Sep 14): "The VSFA represent scallop fishermen operating within the Victorian Scallop Fishery, the Bass Strait Central Zone Scallop Fishery and the Tasmanian Scallop Fishery and we write to inform you that the proposed 2D marine seismic survey overlaps important traditional fishing grounds for scallop fishermen operating within these zones. After preliminary discussions with our members based on the information supplied to members on the 9th September 2014, we write to officially inform you that the activity proposed will have a long lasting negative impact on our functions, interests and activities within these scalloping waters. For this reason, i) our members raise formal objection to your proposed activities as it has the potential to impact valuable scallop stocks, and fishing activity within these areas and ii) we hereby formally request further and detailed information on all activities that have the potential to impact scallop species and fishing effort within the area and surrounds. The VSFA request further detail regarding the following:</p> <ul style="list-style-type: none"> <li>▪ Greater detail on the survey area maps, exact location etc.</li> <li>▪ Proposed schedule of works for the activity.</li> <li>▪ Full verified description of the acoustic source/s to be used within the survey (including make and model detailing sound source level and frequency of the unit, number of pulses etc.</li> <li>▪ Information pertaining to the technical methods and procedures including a schematic of the apparatus to be used.</li> <li>▪ Identification of any potential impacts to the south east Australian scallop fishery, functions, interests and activities as documented within the Environment Plan.</li> <li>▪ Identification of potential impacts to scallops, <i>Pecten fumatus</i>, within the area and surrounds as documented within the Environment Plan.</li> <li>▪ Clear identification of the mitigation controls to be used to avoid behavioural and physiological disturbance to the valuable scallop stocks within the area and surrounds.</li> <li>▪ Identification of references used to determine risks to scallop species and the scallop fishery within your Environment Plan and provision of these references.</li> </ul>	<p>GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment.</p> <p>No additional information has been provided since 2013 from stakeholders</p> <p>GA has provided additional detailed information regarding follow up request and continue to engage with VSFA</p> <p>Assessed all available information and could find no credible impacts.</p> <p>Committed to ongoing consultation</p> <p>Survey area maps have been provided</p> <p>Detailed response to specific questions</p> <p>Proposed schedule of works for the activity</p> <p>Provided detail on seismic, MBES and SBP noise</p> <p>"Our Environment Plan is currently being drafted and your concerns will be recorded accurately and completely. Without evidence of impacts or detailed information regarding the specific location of key scallop beds or habitats, Geoscience Australia is unable to identify or implement further controls. We strongly urge the VSFA to provide us with any available information to inform survey planning."</p>

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator response to each Objection/Claim
Victorian Scallop Fishermen's Association (VSFA) (continued)	<p>Following the provision of the requested information and our association undertaking a full assessment of possible impacts, iii) the VSFA will submit a formal written response detailing the nature and extent of the impacts to our functions, interests and activities from the proposed activity. Geoscience proposed survey overlaps and abuts identified scallop areas that have been earmarked as keystone areas for the long-term success of scalloping in south east Australian waters. These scallop beds need to be carefully protected in order to achieve a long-term sustainable industry and we fiercely object to any activity that will disrupt, in any way, the spawning, settlement and/or growing cycle of scallops in these waters and surrounds in both the short and long-term.</p> <p>The current and future viability of the south east Australian scalloping industry weighs heavily on a number of these locations. Stock losses and restricted access not only have the ability to significantly impact operators in the Victorian zone during a crucial rebuilding phase but will likely have significant impacts to scallop stocks and fishing activity in the Bass Strait Central and Tasmanian Zones.</p> <p>Following the provision of detailed information for our members to undertake a full assessment of the possible impacts to our functions, interests and activities within the area, as stated above, our members will be submitting a formal written response to both Geosciences Australia and to NOPSEMA for consideration. Our association will require 28-days to complete this response pending the provision of sufficient information from Geosciences Australia, which is considered sufficient time for our purposes given the nature of our group, our work schedule and our lack of resources to expedite this work.”</p> <p>3 November 2014 – VSFA second request for additional information on issues raised</p>	<p>We have requested detailed information from the VSFA regarding potential impacts relevant to the proposed activity but to date this has not been received.</p> <p>no evidence has been presented to suggest that our proposed activity will impact commercial scallops</p> <p>“Despite the lack of clear evidence linking seismic operations with negative impacts on scallops, Geoscience Australia is adopting a precautionary approach with the proposed survey, including the following mitigation controls:</p> <ul style="list-style-type: none"> <li>o The survey has been changed from an original 2D/3D proposal in 2014 to a 2D seismic acquisition plan in 2015, thus reducing exposure to seismic sound at a given location.</li> <li>o The survey is planned for March-April, well outside peak scallop spawning season (Aug – Dec, Young et al 1999) or larval development (6 weeks after spawning, Edgar 2000).             <ul style="list-style-type: none"> <li>▪ Identification of references used to determine risks to scallop species and fishery within the EP and provision of these references</li> </ul> </li> </ul> <p>A list of references used to determine risks to scallop species and the scallop fishery are available in Appendix 3. All of these references have been published and are available online via institutional subscriptions.”</p>
Bass Strait Fisheries: Tasmanian Scallop Fishermen's association (Bass Strait central scallop fishery) Southern Square Jig fishery (squid)	No response – see 2013 engagement	<p>GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment.</p> <p>No additional information has been provided since 2013 from stakeholders</p>

Stakeholder	Summary of Response	Assessment of Merits of Adverse Claim/Objection including operator response to each Objection/Claim
Individuals		GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment.  No additional information has been provided since 2013 from stakeholders
Tasmanian Rock Lobster Fisherman's Association	No response – see 2013 engagement	Not Applicable. Amended survey plans by GA do not intersect with TRLFA's area of concern
NOPTA	Email response (31/10/2013): Recommendation that GA should apply for a Greenhouse Gas Research Consent for proposed survey.	GA will submit an application for a Greenhouse Gas Research Consent
Basslink	Email and phone call confirming outcome of 2013 engagement and application to 2014 survey.  Request for further information regarding boundaries of survey (10/9/14)	GA will follow previously agreed protocols and accept risk associated with operating over and near cable. GA to notify Basslink via email prior to transit included estimated start and stop time of the transit and any significant changes to the schedule, with final notification that the survey vessel is clear of the cable. GA to notify Basslink if any work that may result in objects being discharged overboard be suspended for the period of the transit.
OSD Services (Tasmanian Gas Pipeline)	Email requesting meeting to discuss potential impact of activity on Tasmanian Gas Pipeline and/or planned activities in area.  OSD to set up alternative phone hook up or face-to-face meeting to discuss survey arrangements (07/10/14)  Receipt of email with additional information and reviewing response (05/11/14)	GA to meet with OSD services to work through concerns.
Telstra	No concerns as survey area does not contain any submarine cables	Not Applicable
Deakin University	No concerns	Not applicable. However, GA to share data acquired.
Public/coastal residents, businesses operating in adjacent coastal area and individual recreational users	Not Applicable	GA to place advertisement in relevant local media providing survey operational details for 2 weeks prior to and during survey

<b>Stakeholder</b>	<b>Summary of Response</b>	<b>Assessment of Merits of Adverse Claim/Objection including operator response to each Objection/Claim</b>
The Dolphin Research Institute	Preference for survey within March-April 2015 with MMO and shut down provisions when marine mammals are sighted.	GA survey times within acceptable windows, MMO's employed with protocols in place as defined in the EP. GA to provide DRI with MMO data once survey is completed
West Gippsland Catchment Management Authority	Response pending – see 2013 engagement	GA to provide updated information closer to the survey date
Gippsland Coastal Board	Response pending – see 2013 engagement	
Gunaikurnai Land and Waters Aboriginal Corporation	Response pending – see 2013 engagement	



**Table 7-3: Consultation undertaken with the scallop fishing industry**

<p><b>Correspondence:</b></p> <p>13 February 2014 – Follow up requests from VSFA to inform GA on research regarding seismic impacts  May 2014 - phone conversations held with individual Lakes Entrance scallop fishermen associated with the VSFA  Email (09/09/2014) providing revised survey information and noting previous interest and seeking feedback.  Email from VSFA requesting response to their issues raised (3/11/14)  17 November 2014 – GA response to specific concerns regarding impacts of seismic surveys on fish stocks.</p>
<p><b>Concerns:</b></p> <p>Email/letter noting concerns regarding impacts of activity on scallops and requesting additional information regarding impacts and equipment to be used.  Email (25 Sep 14): “The VSFA represent scallop fishermen operating within the Victorian Scallop Fishery, the Bass Strait Central Zone Scallop Fishery and the Tasmanian Scallop Fishery and we write to inform you that the proposed 2D marine seismic survey overlaps important traditional fishing grounds for scallop fishermen operating within these zones. After preliminary discussions with our members based on the information supplied to members on the 9th September 2014, we write to officially inform you that the activity proposed will have a long lasting negative impact on our functions, interests and activities within these scalloping waters. For this reason, i) our members raise formal objection to your proposed activities as it has the potential to impact valuable scallop stocks, and fishing activity within these areas and ii) we hereby formally request further and detailed information on all activities that have the potential to impact scallop species and fishing effort within the area and surrounds. The VSFA request further detail regarding the following:</p> <ul style="list-style-type: none"> <li>▪ Greater detail on the survey area maps, exact location etc.</li> <li>▪ Proposed schedule of works for the activity.</li> <li>▪ Full verified description of the acoustic source/s to be used within the survey (including make and model detailing sound source level and frequency of the unit, number of pulses etc.</li> <li>▪ Information pertaining to the technical methods and procedures including a schematic of the apparatus to be used.</li> <li>▪ Identification of any potential impacts to the south east Australian scallop fishery, functions, interests and activities as documented within the Environment Plan.</li> <li>▪ Identification of potential impacts to scallops, <i>Pecten fumatus</i>, within the area and surrounds as documented within the Environment Plan.</li> <li>▪ Clear identification of the mitigation controls to be used to avoid behavioural and physiological disturbance to the valuable scallop stocks within the area and surrounds.</li> <li>▪ Identification of references used to determine risks to scallop species and the scallop fishery within your Environment Plan and provision of these references.</li> </ul> <p>Following the provision of the requested information and our association undertaking a full assessment of possible impacts, iii) the VSFA will submit a formal written response detailing the nature and extent of the impacts to our functions, interests and activities from the proposed activity. Geoscience proposed survey overlaps and abuts identified scallop areas that have been earmarked as keystone areas for the long-term success of scalloping in south east Australian waters. These scallop beds need to be carefully protected in order to achieve a long-term sustainable industry and we fiercely object to any activity that will disrupt, in any way, the spawning, settlement and/or growing cycle of scallops in these waters and surrounds in both the short and long-term.</p> <p>The current and future viability of the south east Australian scalloping industry weighs heavily on a number of these locations. Stock losses and restricted access not only have the ability to significantly impact operators in the Victorian zone during a crucial rebuilding phase but will likely have significant impacts to scallop stocks and fishing</p>

activity in the Bass Strait Central and Tasmanian Zones.

Following the provision of detailed information for our members to undertake a full assessment of the possible impacts to our functions, interests and activities within the area, as stated above, our members will be submitting a formal written response to both Geosciences Australia and to NOPSEMA for consideration. Our association will require 28-days to complete this response pending the provision of sufficient information from Geosciences Australia, which is considered sufficient time for our purposes given the nature of our group, our work schedule and our lack of resources to expedite this work.”

3 November 2014 – VSFA second request for additional information on issues raised

**Summary of Response:**

GA has made significant amendments to its survey program based on consultation in 2013 and has submitted the modified plan to the fishing industry for further comment.

No additional information has been provided since 2013 from stakeholders

GA has provided additional detailed information regarding follow up request and continue to engage with VSFA (Response below)

“Thank you for your letter dated 25 September 2014 requesting further details of the Geoscience Australia 2D Marine Seismic Acquisition survey in the Gippsland Basin scheduled for April 2015.

As part of our ongoing engagement with you regarding concerns about our planned activities, we are happy to provide the following response to your request for additional information on the survey. (Responses addressing your specific questions are detailed in question and answer format below).

Throughout the duration of project planning and design Geoscience Australia has engaged, and will continue to engage with you to ensure transparency and a resultant survey that incorporates requested alterations where possible. In response to detailed information provided by licence holders from other commercial fisheries we have made considerable changes to our survey design including limiting the survey to 2D; changing survey line paths; altering the scheduled survey date; and undertaking a desktop study to identify potential fishery impacts in this area.

We understand your concerns in relation to the overall intended survey plan, and once again we invite you to share any detailed spatial information which would allow us to, where possible, avoid specific sensitive habitats and key fishing locations for commercial scallops (referred to in your recent correspondence). At present, the information provided does not specifically address current activities or provide detail relevant to the Gippsland Basin setting. Critically, this lack of detailed spatial information regarding your operations in the basin hinders negotiation of a mutually acceptable arrangement to share the offshore area during the proposed survey timeframe.

This Gippsland seismic survey will be undertaken with minimum disruption to the activities of other users of the area, and is expected to deliver benefits to the local and broader Australian community. Since July 2013 Geoscience Australia has committed significant time and resources into furthering our understanding of the concerns raised by the commercial fishing industry, and has been committed in investigating these concerns. The effectiveness of this process has been limited by a paucity of detailed information regarding ecology and distribution of key habitats for commercial species fished in the survey area. The high resolution bathymetric data acquired during the survey will be released publicly, and will form an information base to build an understanding of seabed habitats in area. This will result in a greater understanding for all interested parties involved in commercial activities, and will provide a basis to more effectively negotiate future sharing of the offshore area.”

Following the provision of the requested information and our association undertaking a full assessment of possible impacts, iii) the VSFA will submit a formal written response detailing the nature and extent of the impacts to our functions, interests and activities from the proposed activity. Geoscience proposed survey overlaps and abuts identified scallop areas that have been earmarked as keystone areas for the long-term success of scalloping in south east Australian waters. These scallop beds need to be carefully protected in order to achieve a long-term sustainable industry and we fiercely object to any activity that will disrupt, in any way, the spawning, settlement and/or growing cycle of scallops in these waters and surrounds in both the short and long-term.

The current and future viability of the south east Australian scalloping industry weighs heavily on a number of these locations. Stock losses and restricted access not only have the ability to significantly impact operators in the Victorian zone during a crucial rebuilding phase but will likely have significant impacts to scallop stocks and fishing

activity in the Bass Strait Central and Tasmanian Zones.

Following the provision of detailed information for our members to undertake a full assessment of the possible impacts to our functions, interests and activities within the area, as stated above, our members will be submitting a formal written response to both Geosciences Australia and to NOPSEMA for consideration. Our association will require 28-days to complete this response pending the provision of sufficient information from Geosciences Australia, which is considered sufficient time for our purposes given the nature of our group, our work schedule and our lack of resources to expedite this work.”

3 November 2014 – VSFA second request for additional information on issues raised

“As stated above, our Environment Plan is currently being drafted and your concerns will be recorded accurately and completely. This response will include an account of our requests for detailed information from the VSFA (detailed in previous question) regarding fishing activity of your members for commercial scallops, as well as information on scallop ecology and habitat locations. This information would allow evidence-based decisions to be made that would enable multiple commercial activities to operate in the specific proposed survey area (Katsanevakis et al. 2011). It is disappointing that to date no such information has been made available to us.

At present our response within the EP will note that no evidence has been presented to suggest that our proposed activity will impact commercial scallops within the survey area (Harrington et al. 2010, Parry et al. 2002).

We will continue to provide you with detailed feedback on how we propose to address your concerns and will also continue our ongoing engagement during, and following the survey to confirm compliance with the proposed controls.

There have been two major studies examining the effects of seismic activity on scallops in the Bass Strait, and neither identified any significant lethal or sub-lethal effects: Harrington et al. (2010) concluded that seismic activity had no short-term impacts on adult *Pecten fumatus*. Parry et al. (2002) found no evidence that seismic testing affected the survival or health of adult scallops or bivalve larvae in the Bass Strait; the authors state that molluscs are at risk of damage only when they are within 1-2 m of the seismic airgun. Indeed, this was evident in a recent study in which scallop larvae exposed to repeated (3-second shot intervals for 96 hours) shots at 1-2 m from the sound source exhibited slower developmental rates and higher abnormality rates (Aguillar de Soto et al 2013). However, such exposures would never be experienced by larvae during routine 2D seismic survey operations (Christian et al. 2003). Field-based studies using more realistic sound exposures (up to 22 m from shots undertaken during seismic survey) revealed no evidence of delayed development, increased mortality, or reduced abundance in bivalve or decapod larvae (Pearson et al. 1994, Parry et al. 2002).

The impacts of seismic operations on spatial patterns of scallop recruitment have not yet been tested, and any results would be very challenging to clearly link to seismic operations due to data quality issues, as well as highly variable nature of scallop recruitment (Young et al 1999). Many other natural and anthropogenic factors instead of seismic sound have been shown to negatively affect scallops and associated fisheries harvests. Many of these factors vary over time and space, including temperature, salinity, pH, harmful algal blooms, predation, oceanographic cycles, overfishing, and incidental fishing mortality (Christophersen and Strand 2003; Guerra et al 2012; Medina et al 2007; Stokesbury et al 2011; Talmage and Gobler 2012; Wolff and Mendo 2000). In addition, southeastern Australia has been identified as a climate change hotspot in which oceans are warming at more than three times the global average (Wu et al 2012). Elevated temperatures have been linked to reduced survival (Guerra et al 2012) and reduced reproductive success in scallops (Martinez and Perez 2003).”

- “Clear identification of the mitigation controls to be used to avoid behavioural and physiological disturbance to the valuable scallop stocks within the area and surrounds

Despite the lack of clear evidence linking seismic operations with negative impacts on scallops, Geoscience Australia is adopting a precautionary approach with the proposed survey, including the following mitigation controls:

- o The survey has been changed from an original 2D/3D proposal in 2014 to a 2D seismic acquisition plan in 2015, thus reducing exposure to seismic sound at a given location.
- o The survey is planned for March-April, well outside peak scallop spawning season (Aug – Dec, Young et al 1999) or larval development (6 weeks after spawning, Edgar 2000).
- Identification of references used to determine risks to scallop species and fishery within the EP and provision of these references

A list of references used to determine risks to scallop species and the scallop fishery are available in Appendix 3. All of these references have been published and are available online via institutional subscriptions.”

## 7.3 Key Issues from Consultation

### 7.3.1 Consultation for the Gippsland 2D/3D Infill 2014 MSS (2013)

The key issues, and GA's assessment and response, elicited from the consultation for the Gippsland 2D/3D Infill 2014 MSS are described below.

Consultation with the GHG and oil & gas industry included:

- **Esso Australia:** Esso requested ongoing communication regarding detailed survey plans, final digital line locations and a follow up meeting in mid-late November to confirm timing of acquisition, vessel-platform and emergency communication procedures. GA is continuing coordination and communication.

Esso expressed concern about how close some of the survey lines were to various facilities, particularly the Perch, Bream and Kingfish platforms (one seismic line enters the 500 m exclusion zone).

Esso requested a range of information from GA to allow them to assess whether they were satisfied with the risk and allow them to plan operations and communication during the survey. Information required included equipment specs and vessel information (to be provided by the vessel contractor), full paths of vessel (to be provided by the vessel contractor or GA prior to survey), all contact information and protocols for communicating with GA and the vessel during the survey (to be provided by GA and Vessel contractor).

GA and Esso agreed that a clear communication plan needs to be developed prior to the survey. Liaison for this should include HSE and Logistics managers at Esso, GA and the vessel contractor. GA noted that Anne Fleming would be the operational contact at GA during the survey. Esso requested that GA provide daily updates of proposed activities to allow planning for Esso vessels and seismic vessel to share the acquisition area. GA confirmed that detailed planning could begin as soon as a vessel contract was signed.

GA raised the issue of oil spill modelling and emergency procedures relating to interaction of the vessel with Esso infrastructure. Esso accepted responsibility for oil spill modelling and response plans relating to any spills from their infrastructure. They noted that the vessel would need to know the process for communicating with Esso if an incident occurred. Esso noted that GA should have a plan for emergencies relating to injuries to crew on the vessel.

- **3D Oil Ltd (Carnarvon Hibiscus joint venture):** 3D Oil Ltd confirmed that survey timing does not conflict their operation and request GA to coordinate the

stakeholder engagement with their representative to ensure no conflicts occur in timing of meetings or approach. GA is continuing coordination and communication.

- Bass Strait Oil Company Ltd: No concern with survey.
- Larus Energy: No response.
- OSD Services (Tasmanian Gas Pipeline): Response pending.
- CarbonNet: Recommendation that GA should defer survey to combine with CarbonNet survey in 2015. GA noted their recommendation, but is required to complete the survey prior to the release of GHG acreage data in 2014.

Consultation was undertaken with the National Native Title Tribunal (NNTT), Native Title Services Victoria (NTSV) and the Gunaikurnai Land and Waters Aboriginal Corporation (GLWAC). Responses from NNTT and NTSV encouraged GA to contact the GLWAC. At the time of writing there had been no response.

Following consultation with the DotE, GA submitted an application (11 November 2013) for a permit for Entry into a Zone or Disturbance of a Historic Shipwreck or Relic to conduct the survey in the region of the *Glenelg*. The permit was granted on 13 November 2013.

Consultation was undertaken with a number of fisheries stakeholders (see section 0), including:

- Australian Fisheries Management Authority (AFMA): AFMA advised that the Southern and Eastern Scalefish and Shark Fishery remains highly active in waters of the proposed seismic survey, with the South East Management Advisory Committee previously expressing concerns regarding any offshore exploration within the waters of the Fishery. AFMA encouraged thorough consultation with fishing industry in relation to this issue.
- Commonwealth Fisheries Association (CFA): Recommendation to access fishers through the larger associations including: Seafood Industry Victoria (SIV); South East Trawl Fishing Industry Association (SETFIA); and Southeast Trawl fishery.
- Victorian Department of Environment and Primary Industries (DEPI) – Fisheries Management: DEPI advised that that from 2001, four Victorian fisheries have been active in the Operational Area – the Scallop Fishery, the Trawl Fishery, the Ocean Fishery and the Purse Seine Fishery. They recommended consultation with SIV.
- Seafood Industry Victoria (SIV): Recommended direct contact with Lakes Entrance Fishing Cooperative (LEFCOL) to coordinate meetings and to distribute information to members. Provided state fisheries contacts: Scallop Fisherman's

Association; Lakes Entrance Fishing Cooperative (LEFCOL); and Purse Seine fishers. They noted that there was dissatisfaction of members who were not invited to initial consultation meetings in Lakes Entrance.

- South East Trawl Fishing Industry Association (SETFIA): Major concerns about the short and long-term effects of seismic acquisition on fish stocks. Objection to northern 3D seismic area. Concern over vessel movement and hazard to fishers.
- Lakes Entrance Fishing Cooperative (LEFCOL), including Scallop Fisher's Association and Sustainable Shark Fishing Inc.: Expressed concern about potential seismic activities impact on fish and scallops. They provided a recent scientific paper regarding seismic effects of larvae (Aguilar de Soto et al. 2013). Expressed major concerns regarding seismic activities over shallow water areas and known reef areas in original survey plan. LEFCOL and members approved of amendment of 2D lines to avoid crossing reef areas in shallow water depths and the amendment of the southern 3D area to avoid acquisition in shallow water depths.
  - Concern expressed over potential for interruption to migration of fisheries species, particularly sharks on their way to the pupping grounds. Also concerns about their dispersal for long periods following seismic surveys
  - Expressed concerns over “last Geo survey”. Expressed concerns about “known impacts on squid”.
  - Advised that preferred times best for shark fishers who use the 2D seismic area would be January-February. Times best for everyone was august when weather keeps most fishers in port for long periods.
  - LEFCOL requested the survey be deferred until further environmental information is collected and assessed for commercial species in the area.
- Bass Strait Fisheries, including Tasmanian Scallop Fisher's Association (Bass Strait Central Scallop Fishery) and Southern Square Jig Fishery (squid): Major concerns about the short and long term impact of seismic activities on scallops. Major concerns about the strip of water from coast to about 6 nm offshore as it is a reef environment and major spawning area. Major concerns about the 3D activity. Concerns about edge of slope near Kingfisher for shark.
- Tasmanian Rock Lobster Fisher's Association: Advice that no concern should the Operational Area not be extended further south.
- A number of other stakeholders were contacted, but have provided no feedback t the time of writing. These include:
  - Tasmanian Seafood Industry Council
  - Purse Seine Fisher's Association.

- Victorian Recreational Fishing Peak Body.

In response to the consultation, GA did the following:

- Provided follow-up contact to those stakeholders who had not responded.
- Additional meeting held in Lakes Entrance.
- Amended survey plan to avoid acquisition over potentially sensitive hard ground areas/reefs and to reduce the amount of acquisition occurring in shallow parts of the study area.
- Deferred survey for one year
- Removed 3D acquisition from survey
- Amended survey to be further offshore.
- Commissioned CSIRO, AFMA, FRDC to do desktop study on potential impacts from acoustic surveys
- Met with Esso to discuss planned acquisition and to better understand the collaborative programs they have undertaken with the fishing industry.
- A review of Aguilar de Soto et al. (2013) was undertaken. It is not considered a credible risk for the survey activities.

Consultation was undertaken with a number of shipping stakeholders, including:

- Australian Marine Safety Authority (AMSA): Provided information indicating the level of vessel traffic which might be encountered in the survey area. AMSA recommend reducing survey area to avoid the TSZ. Requested confirmation from GA that the time spent in the TSZ that would in fact be minimal. GA confirmed that a few of sparse single-pass tie lines will extend into the TSZ so time spent there will be minimal. GA queried whether procedures exist to allow safe operation in this area and provide further information and figures about the survey.
- Australian Hydrographic Service (AHO): AHO requested notification 2-3 weeks prior to survey with accurate details of the final acquisition plan to issue a Notice to Mariners.
- Australian Customs and Border Protection Service: Acknowledged the receipt of information and requested information is sent to shippingvic@customs.gov.au. GA has forwarded the information.
- Esso Australia: See above.

The survey area lies underneath a Defence restricted airspace (R258D), administered by the Joint Airspace Control Cell (JACC), Department of Defence. Consultation has indicated that the Department of Defence (Defence Support Group) has no concerns about the proposed survey.



Consultation was undertaken with a number of stakeholders representing recreational activities, including:

- Parks Victoria: Requested survey details so they can be distributed to rangers. Information provided on 3 September 2013.
- Tourism Victoria: Acknowledged the receipt of the information.
- Wellington Shire Council: Providing advice on dissemination of information via local papers close to survey time and recommending GA to consult a list of stakeholders:
  - Esso's public affairs manager:
  - Dolphin Research Institute: Response pending.
  - Gippsland Coastal Board: Response pending.
  - DEPI: Acknowledged the receipt of the information.
  - West Gippsland Catchment Management Authority: Acknowledging the receipt of the information and requesting GA to keep provide updated information close to the survey.
- East Gippsland Shire Council: Recommendation that GA consults LEFCOL.

### **7.3.2 Consultation for the Gippsland 2D Infill 2015 MSS (2014)**

The key issues identified through the consultation process to date are summarised in Table 7-4. For each objection or claim, GA has assessed its merits and provided (or will provide) a response to the stakeholders concerned.

**Table 7-4: Objections/claims, assessment of merits and titleholder’s response**

Objection/Claim	Assessment of Merits	Response
Potential noise impacts on target species	<p>The information provided indicates:</p> <ul style="list-style-type: none"> <li>that larger mobile fishes will avoid the seismic source and will not be exposed to noise levels high enough to cause physiological impacts, and</li> <li>site-attached fish in shallow reef habitats will not be exposed to noise levels high enough to be expected to cause physiological damage.</li> <li>Scallops are unlikely to be affected.</li> </ul>	<p>GA has commissioned an independent analysis of fishing catch/effort data and seismic survey operations through the CSIRO in the Gippsland Basin for evidence-based decision making. This report will be available for public consumption in late December 2014.</p> <p>GA is on the steering committee for Fisheries and Seismic desktop study (agencies involved include: Fisheries Research and Development Corporation, Australian Fisheries Management Authority, CSIRO, GA, Commonwealth Fisheries Association).</p> <p>In addition, GA is has prepared a detailed response to the VSFA outlining the evidence for the conclusion that the survey will not adversely affect the scallop stocks. Seismic impacts are not likely to expose any single location on the seabed to the same seismic energy or for any prolonged period. 2D lines will be conducted as aa single pass over an area and the source levels we are using are targeting shallow geological layers and therefore will not result in as high energy levels at the seabed. Further discussion on the issue has been invited.</p>
Potential impacts on spawning aggregations, breeding and migration	<p>The information provided indicates that there are unlikely to be any significant impacts on spawning or breeding fish.</p> <p>Additionally, no information is available on the locations of spawning fish, so it is not possible to consider exclusion zones.</p>	<p>GA has responded to concerned fishers to explain that spawning times for the range of commercially fished species cover the entire 12 months and therefore cannot be avoided. No information is available to indicate the spatial extent of individual species’ spawning areas during the proposed March to May period. Therefore, it is not possible to avoid all spawning areas. However, the risk to eggs, spawn and pelagic fish larvae from underwater noise pulses is considered low due to the short range (few metres) of physiological effects predicted and the very low proportion of the total reproductive output that could be affected in any area. Consultation with fishermen and industry has indicated that this period is acceptable. Seismic impacts would be negligible in comparison with natural mortality rates and are not expected to compound natural mortality. Seismic impacts are not likely to expose any single location on the seabed to the same seismic energy or for any prolonged period. 2D lines will be conducted as aa single pass over an area and the source levels we are using are targeting shallow geological layers and therefore will not result in as high energy levels at the seabed. Additionally, GA had requested information by fishermen and organisations to provide specific areas to avoid (e.g. sensitive scallop beds), but have not received any spatial data to date.</p> <p>GA has commissioned an independent analysis of fishing catch/effort data and seismic survey operations in the Gippsland Basin for evidence-based decision making. This report will be available for public consumption in late December 2014.</p>
Displacement from fishing grounds	<p>Temporary displacement of fishers is considered credible, but any particular location will be affected for a short time while the MSS vessel traverses the ground.</p>	<p>GA will notify all identified fisheries stakeholders (including management agencies, industry bodies and licence holders) prior to the commencement of seismic acquisition. A detailed description of the areas and times when seismic acquisition will occur will be provided. GA will request that fishers do not lay traps or set fishing gear within these areas at these times. GA will request contact details for fishers operating in the area, so that they can be advised of detailed timings and</p>

Objection/Claim	Assessment of Merits	Response
		<p>locations of the seismic survey.</p> <p>A support vessel and chase vessel will be available to mitigate interactions with commercial and recreational fishers.</p> <p>Seismic survey planning has been adapted where possible to avoid specific locations and times identified by fishers. GA will consider a safe navigation distance around the seismic vessels and advise the fishers as part of the activity notification.</p>
Large number of consultation requests	GA agrees that this does have the potential to unduly impact stakeholders.	As consultation is required under the OPGGS(E)R, adding to this burden on stakeholders is unavoidable. GA will endeavour to provide information in the most useful format for the fishers and welcome their inputs and suggestions as to how to improve the process. GA has also maintained an approach of providing sufficient information to the stakeholders and responding to their concerns as evident from other EPs/Referrals, without pushing for responses; this will help to reduce frustration amongst stakeholders.
Consultation should be more targeted	GA agrees that this would make it easier for fishery stakeholders to respond	The data available on fishery activities does not identify the timing or locations of individual fisher's activities. This is due to privacy issues. The only way to identify the timing or locations of individual fisher's activities is to ask the fishers to provide that information. As part of GA's ongoing consultation, this information has been requested. GA also recognises that fishers have to maintain a level of flexibility in fishing areas and times in order to respond to weather and site conditions and catch rates in particular areas. Consultation during the survey will be more targeted as it will relate to particular days and locations and the fishers will have a better idea of their fishing areas at that time.
Safety issues for fishers	It is considered highly unlikely that the seismic survey would pose safety issues for fishers. The vessel will be supported by a chase and support vessel and has state of the art navigation and communications equipment. The end of the streamer is clearly marked to show their position to other vessels at night.	GA considers that the existing controls are sufficient to maintain safe operations. The length and width of the steamer array and details of navigation warnings will be included in the Notification to Mariners prior to the survey commencing.
Impacts on prey species	The information provided indicates that prey species are only likely to be affected within metres of the seismic source. No significant effects are expected.	GA will prepare a detailed response to the stakeholder/s outlining the evidence for this conclusion. Some impacts on prey species are detailed in the EP. GA commissioned an independent analysis of fishing catch/effort data and seismic survey operations in the Gippsland Basin for evidence-based decision making.
Compensation	The stakeholder has not provided evidence of financial loss, or potential financial loss, or evidence that the survey has directly impacted	GA will engage directly with the stakeholder to assess whether compensation is warranted. However, as GA is a Federal Government agency, are obviously not able to pay large compensation out of funds from taxpayers moneys, this

## 7.4 Ongoing Consultation

Consultation with all of the stakeholders listed in Table 7-1 will be ongoing before, during and following the Gippsland 2D Infill 2015 MSS. GA is committed to ongoing consultation with all relevant stakeholders, including fishers prior to, during and following the survey. GA has attempted to directly contact stakeholders by telephone, prior to sending out the detailed information on the survey.

GA will notify all identified fisheries stakeholders (including management agencies, industry bodies and licence holders) prior to the commencement of seismic acquisition. A detailed description of the areas and times when seismic acquisition will occur and details of the seismic array, navigational aids (lights and shapes), safe stand-off distances and contact details, will be provided. A support vessel and chase vessel will be available to mitigate interactions with commercial fishers. Any feedback or complaints received during the survey will be recorded by the Vessel Master and such feedback and responses will be reported in the Survey Close-out Report.

GA will request vessel contact details for fishers operating in the area (email, satellite phone, marine radio and facsimile), so that they can be advised of detailed timings and locations of the seismic survey. GA will issue fortnightly updates on vessel movements to fishery stakeholders. While email is the preferred means of transmitting figures and detailed information on the survey plans, fishers may not have reliable access to internet notices at sea. Fishers will be contacted by radio or facsimile if contact cannot be established via email.

If ongoing consultation 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 GA will submit a proposed revision of the EP, in accordance with regulation 17 of the OPGGS(E)R.

If at any time, additional stakeholders are identified, GA will contact the new stakeholders and ask for their feedback. If existing stakeholders raise additional concerns then these will be assessed, and a risk assessment undertaken, if necessary, and a response provided. Specific ongoing consultation requirements are listed in Table 7-5.

**Table 7-5: Ongoing Consultation**

Stakeholder	Areas of concern	Ongoing communication schedule
NOPSEMA	GA to manage environmental risk	GA will submit an Environmental Plan
The Department of the Environment	Potential environmental impacts to Matters of National Significance (Beagle Marine Protected Area)	GA will not acquire data during transit through Beagle MPA. GA to also submit an EP with this information as a result of streamlining the process
	Potential impacts to shipwreck sites without exclusion zones, depending on final acquisition locations.	Acoustic information for wreck sites will be provided to DoE following bathymetry processing and QC.
Australian Fisheries Management Authority (AFMA)	Safe operations when sharing the area with fishing licence holders	None required – see commercial fishing stakeholder communication schedule.
Australian Marine Safety Authority (AMSA)	GA effective communication of vessel movements to others operating in the area.	GA will provide final survey location and timing to AMSA Rescue Coordination Centre (RCC) 2 weeks prior to commencing acquisition (email).
Department of Defence	None	GA will provide final survey location and timing to Defence 2 weeks prior to acquisition (email).
Australian Hydrographic Service (AHO)	GA effective communication of vessel movements to others operating in the area.	GA will provide final survey location and timing to AHO 2 weeks prior to acquisition (email).
Australian Customs and Border Protection Service	None	GA to provide final survey location, timing and vessel communication information to Customs and Border Protection contacts 2 weeks prior to acquisition (email) and agree on communication requirements during acquisition.
Department of Broadband Communication and the Digital Economy (DBCDE)/ Australian Communications and Media Authority (ACMA)	Potential impact to submarine communications in survey area. Advice to engage with Telstra and Basslink to ensure safe operation over seabed cables.	GA will provide final survey location, timing and vessel communication information 1 month prior to acquisition (email).

Stakeholder	Areas of concern	Ongoing communication schedule
Esso	Esso infrastructure and potential operational issues	<p>If acquisition is in permit area, GA will provide data to the permit holder following processing and QC (email)</p> <p>GA will follow agreed communication procedures and exclusion zones while operating around Esso infrastructure and vessel traffic.</p> <p>GA to provide operational agreement following guidelines set by ESSO (as detailed in the EP)</p> <p>GA and ESSO will agree to a communication schedule to share information on relevant activities during GA acquisition (email + phone conference).</p>
CarbonNet	<p>Potential conflict with planned activities</p> <p>However, acquisition may coincide with activities or vessel traffic in permit area.</p>	<p>GA will maintain regular contact with CarbonNet and provide updates at agreed intervals/triggers leading up to survey. GA will provide final survey location, timing and vessel communication information to permit holder 1 month prior to acquisition (email).</p> <p>If acquisition is in permit area, GA will provide data to the permit holder following processing and QC (email)</p>
Ion	Concurrent development project engaging with similar stakeholders	GA and Ion will communicate to ensure stakeholder engagement activities do not conflict.
Tourism Victoria (Victorian Department of State Development, Business and Innovation)	No response	GA will provide final survey location, timing and vessel communication information 2 weeks prior to acquisition (email).
Clean Coal Victoria (Victorian Department of State Development, Business and Innovation)	<p>GA to be aware of political sensitivities and ongoing pressures on the community.</p> <p>However, acquisition may coincide with activities or vessel traffic in permit area.</p>	<p>GA to maintain close contact with DSDBI regarding survey and prior notice of EP submissions/public meetings that may attract media attention</p> <p>GA will provide final survey location, timing and vessel communication information 2 weeks prior to acquisition (email).</p>
Victorian Department of Environment and Primary Industries – Fisheries Management	<p>No response</p> <p>However, acquisition may coincide with activities or vessel traffic in permit area.</p>	GA will provide final survey location, timing and vessel communication information to 2 weeks prior to acquisition (email).

<b>Stakeholder</b>	<b>Areas of concern</b>	<b>Ongoing communication schedule</b>
Department of Environment and Primary Industries - Minerals and Petroleum Regulation Branch.	No response	GA will provide final survey location, timing and vessel communication information 2 weeks prior to acquisition (email).
Geological Survey of Victoria – Department of Environment and Primary Industries	No concerns	GA will provide final survey location, timing and vessel communication information to 2 weeks prior to acquisition (email).
Department of Premier and Cabinet - Aboriginal Affairs Victoria + local land owners	No response	GA will provide final survey location, timing and vessel communication information 2 weeks prior to acquisition (email).
Victorian Environmental Protection Authority	No concerns	GA will provide final survey location, timing and vessel communication information to 2 weeks prior to acquisition (email).
Commonwealth Fisheries Association	General concerns over impacts of seismic on fish stocks and recommend GA conduct face-to-face engagement with commercial fishermen	Final survey location and time will be provided to the Commonwealth Fisheries Association 1 month prior to survey for distribution to members.
Seafood Industry Victoria (SIV)	Strong opposition to seismic surveys Information regarding survey location and timing and communication with the vessel will be available to members to ensure safe operations.	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 2 weeks prior to acquisition (email) GA will engage with commercial fishermen to seek feedback on revised acquisition plan
Lakes Entrance Fishing Cooperative (LEFCOL)	Concerns regarding impact of seismic acquisition on a range of commercial species fished within the proposed survey area	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email) GA will also provide above information to State and Commonwealth commercial fishing industry associations for distribution to members 1 month prior to acquisition (email)

Stakeholder	Areas of concern	Ongoing communication schedule
South East Trawl Fishing Industry Association (SETFIA)	Concerns regarding impact of seismic acquisition on a range of commercial species fished within the proposed survey area However, may encounter survey vessel during regular fishing activity.	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email) GA will also provide above information to State and Commonwealth commercial fishing industry associations for distribution to members 1 month prior to acquisition (email) Final survey information and contact details will be posted at Gippsland Port during acquisition (flyer) and notice to mariners will be issued by AHO.
VRFish Victoria	May encounter survey vessel during regular fishing activity.	GA will provide above information to State and Commonwealth commercial fishing industry associations for distribution to members 1 month prior to acquisition (email) GA will also provide above information to State and Commonwealth commercial fishing industry associations for distribution to members 1 month prior to acquisition (email) Final survey information and contact details will be posted at Gippsland Port during acquisition (flyer) and notice to mariners will be issued by AHO.
Sustainable Shark Fishing Inc.(SSF)	Members may encounter survey vessel while fishing.	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email) GA will also provide above information to State and Commonwealth commercial fishing industry associations for distribution to members 1 month prior to acquisition (email) Final survey information and contact details will be posted at Gippsland Port during acquisition (flyer) and notice to mariners will be issued by AHO.
Tasmanian Seafood Industry Council	No concerns However, may encounter survey vessel during regular fishing activity.	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email) GA will also provide above information to State and Commonwealth commercial fishing industry associations for distribution to members 1 month prior to acquisition (email) Final survey information and contact details will be posted at Gippsland Port during acquisition (flyer) and notice to mariners will be issued by AHO.
Victorian Scallop Fishermen's Association (VSFA)	No response Concerns regarding impacts of activity on scallops and request further information on research completed	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email) GA will also provide above information to State and Commonwealth commercial fishing industry associations for distribution to members 1 month prior to acquisition (email) Final survey information and contact details will be posted at Gippsland Port during acquisition (flyer) and notice to mariners will be issued by AHO.



<b>Stakeholder</b>	<b>Areas of concern</b>	<b>Ongoing communication schedule</b>
Bass Strait Fisheries: Tasmanian Scallop Fishermen's association (Bass Strait central scallop fishery) Southern Square Jig fishery (squid)	No response However, may encounter survey vessel during regular fishing activity.	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email) GA will also provide above information to State and Commonwealth commercial fishing industry associations for distribution to members 1 month prior to acquisition (email) Final survey information and contact details will be posted at Gippsland Port during acquisition (flyer) and notice to mariners will be issued by AHO.
Tasmanian Rock Lobster Fisherman's Association	May encounter survey vessel during regular fishing activity.	GA will provide above information to State and Commonwealth commercial fishing industry associations for distribution to members 1 month prior to acquisition (email)
Basslink	Potential impact to seabed cabling	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email) GA will follow previously agreed protocols and accept risk associated with operating over and near cable
OSD Services (Tasmanian Gas Pipeline)	Potential impact to seabed cabling	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email) GA to meet with OSD services to work through concerns (TBC)
Telstra	No concerns Potential impact to seabed cabling	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email)
Deakin University	No concerns	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email)
The Dolphin Research Institute	May encounter survey vessel during regular fishing activity.	GA will provide final survey location, timing, vessel communication and GA 24 hour contact information for the survey timeframe 1 month prior to acquisition (email) GA will also provide above information to State and Commonwealth commercial fishing industry associations for distribution to members 1 month prior to acquisition (email) Final survey information and contact details will be posted as a notice to mariners which will be issued by AHO. GA to provide MMO data to the Dolphin Research Institute once activity has been completed
Public/coastal residents, businesses operating in adjacent coastal area and individual users	No significant concern regarding activity but seeking explanation of visible signs of activity	GA to place advertisement in relevant local media providing survey operational details for 2 weeks prior to and during survey

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

Geoscience Australia is the titleholder of a Greenhouse Gas Research Consent under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGs Act).

The details of the titleholder are:

Geoscience Australia (Org. No.: 158 585 221)  
Cnr Jerrabomberra Avenue and Hindmarsh Drive, Symonston, ACT  
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CANBERRA ACT 2601

Phone: +61 2 6249 9111  
Fax: +61 2 6249 9999  
Email: [clientservices@tga.gov.au](mailto:clientservices@tga.gov.au)

The titleholder's nominated liaison person is:

Name: Robert Langford  
Address: as above  
Phone: +61 2 6249 9852  
Fax: +61 2 6249 9999  
Email: [Robert.Langford@ga.gov.au](mailto:Robert.Langford@ga.gov.au)

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 30 days of the change, using the approved form/s.