



Gippsland Basin Generic Site Survey Activities Environment Plan: Public Summary

July 2008

This summary of the Gippsland Basin Generic Site Survey Activities EP has been submitted to comply with Regulation 11(7)(8) of the Petroleum (Submerged Lands) (Management of Environment) [P(SL)(MoE)] Regulations 1999.

Introduction

Apache Energy Limited (Apache) has prepared a Generic Site Survey Activities Environment Plan (GSSA EP) to cover all activities associated with site surveys undertaken within the Companies petroleum permits in the Gippsland Basin up to and including 2013 (**Figure 1**).

This generic GSSA EP was approved by the Victorian Department of Primary Industries (DPI), in accordance with the *Petroleum (Submerged Lands) (Management of Environment) (PSLMoE) Regulations 1999*.

Project Description

In association with its exploration and development activities, there are a number of offshore site survey activities that occur prior to the finalisation or approval of Environment Plans for drilling and seismic work. This Environment Plan (EP) has been submitted to cover the activities associated with site surveys to ensure they are undertaken in an environmentally responsible manner. The scope of the EP covers all geotechnical and geophysical surveys to be undertaken on all Apache's permits in the Gippsland Basin.

The overall aim of the EP is to demonstrate that Apache has a sound understanding of how GSSA will interact with the environment and that safeguards have been implemented to reduce the risks to As Low As Reasonably Practicable (ALARP).

GSSA can occur anywhere within Apache's Gippsland Basin acreage, however the concentration of work is targeted around the existing and future drilling and exploration programs. The types of surveys that are covered in the EP include:

- Analogue site surveys (side scan sonar, bathymetry and sub-bottom profiling);
- Biological surveys, involving towed videoed devices and spot scuba or snorkelling dives with still underwater cameras;
- Geotechnical surveys to collect further detailed information on the properties of the underlying seabed stratigraphy; and
- ROV surveys.

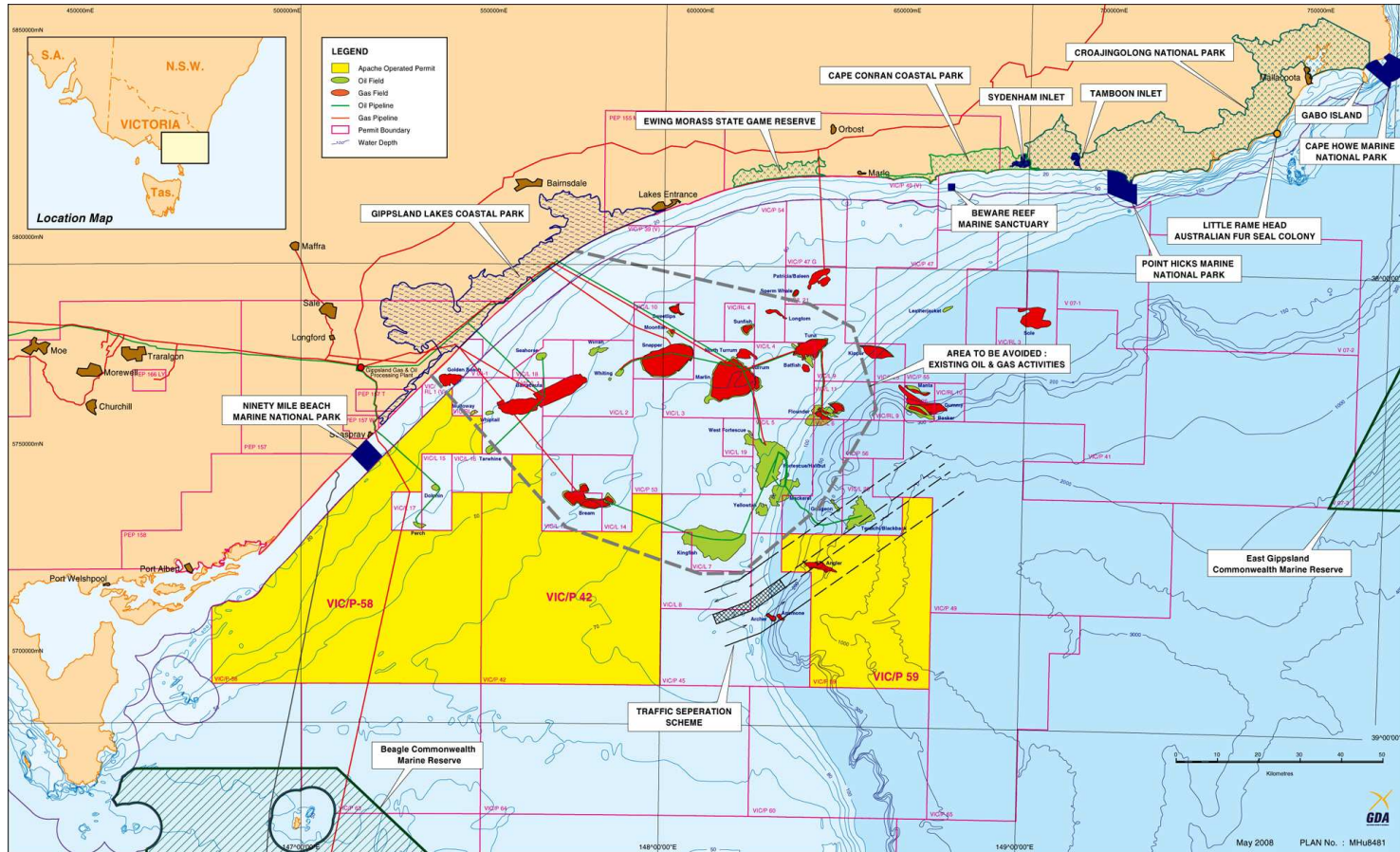


Figure 1: Apache operated permits in the Gippsland Basin

Receiving Environment

Physical Environment

The climate of the Gippsland Basin can be described as moist cool temperatures with warm summers, with a regular winter-spring rainfall. The region of Bass Strait is located on the northern edge of the westerly wind belt known as the Roaring Forties.

Summer air temperatures in coastal Victoria range from 12 to 24°C. Winter temperature ranges are between 6 and 15°C. Average annual rainfall along the coast ranges from approximately 500 to >1,000 mm.

Waters of Bass Strait are generally well mixed but surface warming sometimes causes weak stratification in calm summer conditions. Occasionally, mixing and interaction between varying water masses leads to variations in horizontal water temperature and temperature profiles. Temperatures in the subsurface waters of central Bass Strait range between about 13 and 16°C. Bass Strait is a high-energy environment exposed to frequent storms and significant wave heights. The highest wave conditions are generally associated with strong west to southwest winds caused by the eastward passage of low-pressure systems across Bass Strait.

The bathymetry across Apache's permit areas follows an increase in depth commencing in the shallowest water adjacent to the Victorian coastline in Vic/P58 and gently increasing eastwards (Vic/P42) and into the deep waters associated with permit Vic/P59.

Biological Environment

Bass Strait is an area of high faunal diversity and species endemism, for several reasons:

- It has been isolated in geological time and by climatic barriers, with a history of variable exposure and immersion during sea-level changes in the last few million years.
- It is influenced by water masses from the west, northeast and south.
- It has sediment complexity and a high biogenic component.

Bass Strait also contains a number of species of high commercial and conservation value including:

- More than 170 species of zooplankton, with copepods making up approximately half of the species encountered;
- A high level of benthic invertebrate diversity, dominated by crustaceans and polychaetes;
- Over 500 species of fish, including a number of species of importance to commercial and recreational fisheries;
- Three EPBC-listed shark species may occur in the region: the grey nurse shark (*Carcharias taurus*), the great white shark (*Carcharodon carcharias*) and the whale shark (*Rhincodon typus*);
- Many important coastal and migratory bird species including a number of threatened species, such as albatross, skua and petrel species. There are no islands or seabird colonies in the Gippsland Basin. However, there is the potential for coastal migratory species, protected by international agreements (Bonn Convention, JAMBA and CAMBA), to fly over the area since many of the birds undertake large annual migrations across the south Pacific. The

main species of migratory bird in the area are various albatross species, which use the area as a feeding ground;

- A number of species of whales, dolphins and fur seals occur in Gippsland Basin waters. The humpback whale occurs regularly in the region while migrating to and from the north eastern Australian coast from the sub-Antarctic. However, it does not feed, breed or rest in Bass Strait and the Victorian coastal waters are not a key location for this whale species. Sightings of the other species are less common.

The Gippsland Basin is outside the known southern right whale calving and nursery zone, which is located in the inshore waters of Western Victoria around Warrnambool, a considerable distance from Apache's permit areas.

The fur seal *Arctocephalus pusillus* is distributed throughout Bass Strait. The nearest breeding colonies are at The Skerries (near Rame Head) and Kanowna Island (off Wilsons Promontory). The fur seals also use resting sites at Wilson's Promontory, The Skerries and at Cape Conran.

Colonies of Little or Fairy Penguins (*Eudyptula minor*) occur on islands off the Victorian coast. The nearest colonies are on Seal Islands Wildlife Reserve and Rabbit Island located between Wilsons Promontory National Park and permit area Vic/P-58.

Heritage, Conservation or Culturally Significant Areas

There are no known areas of regional environmental significance within the permit areas. There are, however, areas along the Victorian coastline of environmental significance. These include:

- Corner Inlet Marine National Park;
- Corner Inlet Marine and Coastal Park;
- Nooramunga Marine and Coastal Park;
- Wilsons Promontory Marine National Park;
- Wilsons Promontory Marine Park
- 90 Mile Beach Marine National Park;
- Point Hicks Marine National Park;
- Gippsland Lakes Coastal Park;
- Ewing Morass State Game Reserve;
- Jack Smith Lake State Game Reserve;
- Cape Conran Coastal Park; and
- Croajingolong National Park.

The Commonwealth government has recently established one of the world's largest marine park networks (reserves) in the South-east Marine Region which is subject to the provisions of the EPBC Act and its regulations. Thirteen areas make up the Commonwealth Marine Reserves (CMR) for the South-east Marine Region of which only Beagle CMR lies in the Gippsland Basin (see **Figure 1**). The East Gippsland CMR is in proximity to the eastern portion of the basin. These two areas comprise of 2,982 and 4,137 km² respectively. Both of these areas are currently zoned as Multiple Use Zones (IUCN category VI).

There are two international significant wetlands along the Victorian coast near Apache's operated permit areas on the Gippsland Basin:

- Corner Inlet Ramsar Site; and

- Gippslands Lakes Ramsar site.

There is a current Native Title Application (Native Title Claim VC97/4) that has been lodged by the Gunai/Kumai People and has been accepted by the High Court, covering parts of Apache's permit areas Vic/P58 and Vic/P52.

There are also a number of shipwrecks of historic interest in the area and all shipwrecks older than 75 years are designated under the Commonwealth Historic Shipwrecks Act 1976. In October 1991, an RAAF Boeing 707 crashed off Woodside Beach. The site is not officially a designated grave site, although not all bodies were recovered.

Socio-Economic Environment

There are a number of current socio-economic uses in the Gippsland Basin including commercial fishing, oil and gas production and commercial shipping.

Commercial fishing in the region includes inshore coastal waters (mainly State administered fisheries) and the areas along the continental slope (mainly Commonwealth fisheries). Most of this commercial fishing (volume basis) occurs within Commonwealth waters along the continental shelf and the upper continental slope.

Most fishing vessels operating in eastern Bass Strait operate from Lakes Entrance, although not exclusively; many trawl, shark and scallop vessels may come from other Victorian and interstate ports.

Commercial fisheries of eastern Bass Strait include:

- Southern and Eastern Scalefish and Shark Fishery (SESSF)
- Bass Strait Central Zone Scallop Fishery
- Small Pelagic Fishery
- Tuna and Billfish Fisheries
- Rock Lobster and Giant Crab fishery

Recreational fishing is a significant activity in the nearshore area along Ninety Mile Beach, comprising beach-based fishing and boat-based fishing. Only a small proportion of recreational boating activities venture offshore. Most marine recreational fishing in the area is coastal, surf, inland lakes and estuary fishing.

The Esso and BHP Billiton Joint Venture has been the dominant oil and gas producer in the Gippsland Basin since the early successful discoveries in the mid 60s. All the production fields operated by this JV are joined by a network of pipelines to the eighteen offshore production facilities and transported via pipelines to the Longford gas processing and oil stabilisation plants near Sale.

Other producers in the Basin include Santos with the Patricia – Baleen gas fields in the Vic/L21 production license and Anzon Australia with the Basker/Manta/Gummy (BMG) oil field in Vic/L26.

Seismic and drilling activities are undertaken as a regular occurrence within the Gippsland Basin by, amongst others, the Esso/BHP joint venture, Apache, Santos and Bass Strait Oil Company Ltd (BSOC).

Given the high density of petroleum facilities, the International Maritime Organization (IMO) has designated 'An Area to be Avoided' (see **Figure 1**) surrounding most of the offshore operational area in eastern Bass Strait. Under the Petroleum (Submerged Lands) Act, 1967, unauthorized vessels larger than 200 gross tonnes are not permitted within this area.

Two traffic separation schemes were implemented to enhance safety of navigation by separating shipping into one-direction lanes for vessels heading north eastwards and those heading south westwards. One separation area is located south of Wilson's Promontory, outside the Gippsland Basin, and the other south of Esso/BHP Billiton's Kingfisher B platform.

Standard 'Notice to Mariners' will be issued to alert shipping traffic of the location of any survey vessels and dates for survey activities.

The Australian National Shipwreck Database was searched for any shipwrecks recorded in or in the vicinity of Apache's three permit areas. None were recorded in the database.

Major Environmental Hazards and Controls

The potential environmental impacts resulting from routine activities and accidental discharges associated with GSSA in the Gippsland Basin are outlined in detail in the Generic EP.

Table 1 summarises the potential environmental impacts and management measures of geotechnical and geophysical surveys.

Table 1: Summary of potential environmental impacts and management measures

Potential hazard (Risk)	Potential environmental effects (Consequence)	Mitigating Factors and Measures	Risk
Lack of appropriate environmental awareness or legislative requirements.	Unauthorised discharges and environmental non-compliances	<ul style="list-style-type: none"> • Crew trained/inducted in their environmental responsibilities and legislative commitments. 	Negligible
Deployment and retrieval of anchors and anchor chains.	Localised damage and/or destruction of seafloor habitat.	<ul style="list-style-type: none"> • Adherence to anchoring procedures; • Use site survey data to identify seabed features to be avoided by anchors. 	Negligible
Introduction of exotic species through vessel transfer of personnel and equipment or use of foreign vessels.	Introduction of vermin, weeds and pests. Introduction of marine pests	<ul style="list-style-type: none"> • Process personal baggage and freight strictly in accordance with Apache's Quarantine Procedure • AQIS Australian Ballast Water Management Requirements • ANZECC Code of Practice for Antifouling and In-water Hull Cleaning and Maintenance • Apache audit of vessel prior to commissioning. 	Acceptable
Solid wastes from equipment modification activities such as paper, wood, steel, and drums	Marine pollution	<ul style="list-style-type: none"> • Wastes to be collected in covered skips for appropriate waste disposal on the mainland. 	Negligible
Release of hydrocarbons and chemicals into the marine environment from oil contaminated deck drainage water	Potential for localised impact on water quality.	<ul style="list-style-type: none"> • Prohibition on washing deck • Oil, fuel and chemical storage areas bunded • Deck is cleaned-up with absorbents 	Negligible

Potential hazard (Risk)	Potential environmental effects (Consequence)	Mitigating Factors and Measures	Risk
Release of untreated sewage and putrescible wastes into the marine environment.	Potential for localised impact on water quality.	<ul style="list-style-type: none"> • Food wastes to be bagged and transported back to the mainland for disposal. • Vessels to have MARPOL approved sewage treatment units or holding tanks • Ensure effluents will be treated to P(SL)A standards prior to discharge 	Negligible
Waste oil spillage.	<p>Potential for localised impact on water quality. Small volumes would disperse and weather rapidly.</p> <p>Hydraulic and lubricating oils are required for machinery. Used oil will be contained in drums and returned to mainland for recycling.</p>	<ul style="list-style-type: none"> • Drums containing oil will be stored within a bunded area until transported to the mainland for recycling 	Negligible
Acoustic discharges Vessel movements	Potential for interference with marine fauna	<ul style="list-style-type: none"> • Soft start procedures during whale migration periods 	Negligible
Artificial light attraction to marine life and some birds.	May result in a concentration of some animals attracted to the lights with subsequent predation.	<ul style="list-style-type: none"> • Apache Lighting Management Plan (EA-60-RI-153) • Minimise light overspill from vessels when within 5km of known seabird or penguin nesting beaches 	Negligible

Potential hazard (Risk)	Potential environmental effects (Consequence)	Mitigating Factors and Measures	Risk
Leakage or spillage of diesel from transfer hose (refuelling accident >80 L).	Impact on water quality.	<ul style="list-style-type: none"> • Apache refuelling procedure (Appendix 1) • Refuelling during daylight hours only or when this is not possible, only at times when sea conditions are sufficiently calm for there to be minimal risk from refuelling activities • Dry break couplings to be used • Hose and couplings checked for integrity in line with vessel procedures and prior to refuelling. • Oil spill contingency plan (OSCP) approved by the DPI. 	Negligible
Vessel collision due to weather & sea conditions, unauthorised access by other vessels or from failure of anchors	<p>Diesel spill resulting in localised and temporary acute and chronic toxic effects to sensitive resources. Adverse effects on water quality.</p> <p>Loss of survey equipment</p>	<ul style="list-style-type: none"> • Hydrocarbons (e.g. diesel) likely to have high evaporation and dispersion rates in Vic waters; • Oil spill modelling to be undertaken, if work is to be undertaken in an area with no existing modelling in place; • OSCP approved by the DPI. • Notification to Mariners 	Negligible
Atmospheric emissions of exhaust gasses and CO ₂ from operation of onboard machinery and vessel engines	Localised effect on air quality and global contribution to greenhouse.	<ul style="list-style-type: none"> • Company procedures; • Equipment maintenance. 	Negligible

Environmental Management

Extensive environmental management guidelines have been prepared for Apache activities within the Gippsland Basin. Apache management documents used to guide the implementation of activity-specific environmental management procedures include:

- Environmental Management Policy (April 2006);
- Refuelling Management Plan;
- Incident Reporting Procedure;
- Gippsland Basin Oil Spill Contingency Plan;
- Emergency Response Management Manual;
- Waste Management;
- Quarantine Procedures;
- Whale interaction procedures;
- Anchoring procedures.

Consultation

Due to the fishing interests and activity undertaken in the area of Apache's Victorian Permit Area's, the following fishing interest groups and government authorities will be informed of the any survey programmes in the Gippsland Basin:

- Commonwealth Fisheries Association
- Department of Primary Industries
- South-east Trawl Fishing Industry Association
- Lakes Entrance Fisherman's Co-operative (LEFCOL)
- South-east Non-Trawl Fishing Industry Association
- Australian Fisheries Management Authority
- Seafood Industries Victoria
- Victorian Scallop Industry Association

Additionally Apache uses a fishing liaison officer (FLO) to brief and discuss any site survey activities with the numerous fishing vessel owners and operators that are known to actively fish within the localities of any survey sites. Consultation will continue to be ongoing process due to refinements in dates and locations for any activities proposed.

Further Details

For further information about the Generic Site Survey Activities Environment Plan, please contact:

Myles Hyams
Environmental Manager
Apache Energy Ltd
PO Box 477, West Perth, WA 6872
Phone: 08-9422 7288
Email: myles.hyams@aus.apachecorp.com