



ESSO AUSTRALIA PTY LTD

**SUMMARY
ENVIRONMENT PLAN**

FOR

**TURRUM PHASE 2 DEVELOPMENT
GEOTECHNICAL INVESTIGATION**



Turrum Phase 2 Project
Environment Plan Summary

1. EXECUTIVE SUMMARY

As part of the Turrum 2 Development Project, Esso Australia Pty Ltd (EAPL) will be doing a Geotechnical Investigation near the site of the existing Marlin A platform. The main purpose of the investigation is to provide detailed information for the design of the foundations of a new platform (Marlin B) to be constructed next to Marlin A.

The sampling will be done using a Portable Remotely Operated Drill (PROD), which operates on the sea floor, and is controlled remotely, via umbilical, from the host vessel. The host vessel for this work will be the MV NOR Sea.

This summary provides details on the scope of work, the environmental risk management process and relevant stakeholders. Contact details are also provided.



Turrum Phase 2 Project
Environment Plan Summary

TABLE OF CONTENTS

1. Executive Summary	2
2. Proponent Details	2
3. Proposal Details (Scope of Works)	2
3.1 Project Overview and location	2
3.2 Scope of the Environment Plan Summary	2
3.3 Scope of work and activities	2
4. Stakeholder Consultation	2
5. Environmental Impacts, Assessment and Control	2
5.1 Existing Environment	2
5.1.1 Physical	2
5.1.2 Biological Environment	2
5.1.3 Other users	2
5.2 Environmental Risk Management	2
5.2.1 Overview of project environmental risks	2
5.2.2 Implementation Strategy	2
6. Contact Details	2



Turrum Phase 2 Project
Environment Plan Summary

2. PROPONENT DETAILS

The hydrocarbon production facilities pertaining to the Turrum Phase 2 Project are owned by Esso Australia Resources Pty Ltd and BHP Billiton Petroleum Pty Ltd in a 50:50 joint venture.

Esso Australia Pty Ltd, a wholly owned subsidiary of Esso Australia Resources Pty Ltd, provides services and has responsibility for the day to day management and operation of these production facilities.



3. PROPOSAL DETAILS (SCOPE OF WORKS)

3.1 Project Overview and location

EAPL is planning to install a new platform to accommodate the proposed Turrum Phase 2 development.

This platform, to be known as Marlin B (MLB), will be located within waters approximately 58m deep, at Latitude 38 deg, 13 min, 54 sec south and Longitude 148 deg, 13 min, 9 sec east in permit Vic/L02 which lies within Commonwealth waters of Bass Strait in Eastern Victoria (see Figure 1). The proposed site for the new platform is between 40 m and 80 m to the north of the existing Marlin A platform (MLA). MLA is located 42km offshore from Ninety Mile Beach, 20km inside of the shipping exclusion zone.

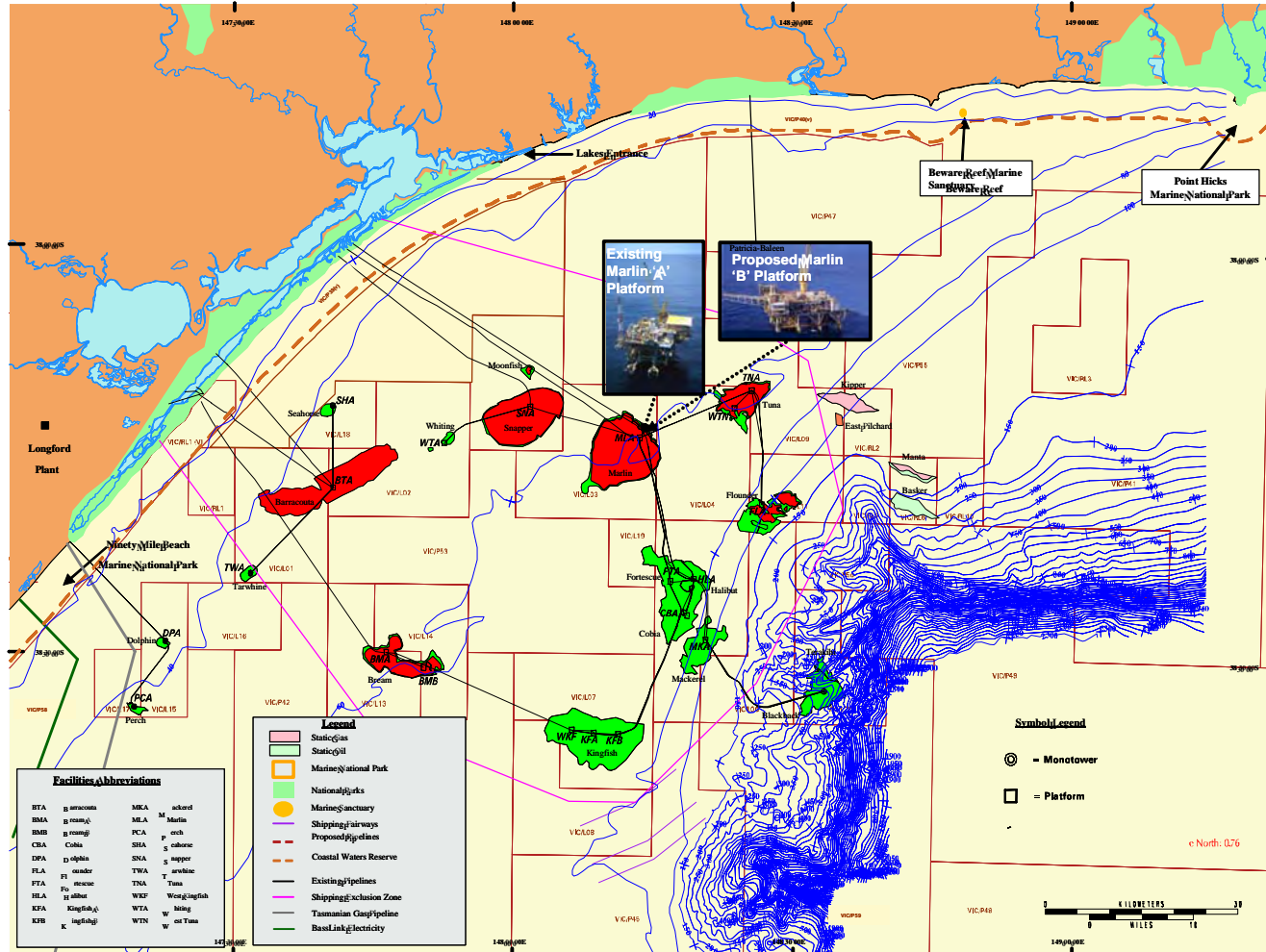
The MLB structure will be a steel piled jacket similar to EAPL's existing platforms in Bass Strait.

A Geotechnical Investigation is required to provide sufficient geotechnical data to enable the detailed design of the foundations for the steel platform (i.e. MLB) with drill and grouted piles. The investigation is designed to also provide data for the re-assessment of the MLA foundations and for the assessment of the spudcan penetration of a future jackup drilling rig located adjacent to MLB. It is envisaged that the MLA / MLB geotechnical survey program will be of approximately 30 days duration.



Turrum Phase 2 Project Environment Plan Summary

Figure 1 Location of Marlin Platform, Bass Strait





3.2 Scope of the Environment Plan Summary

EAPL operates under an approved Bass Strait Environment Plan (BSEP), which covers all of its production activities in Bass Strait.

The BSEP does not cover geotechnical survey works. As such, an Environmental Plan Supplement (EPS) has been prepared to address the Geotechnical Investigation activities proposed within the 500 m zone of the MLA Platform in Bass Strait.

3.3 Scope of work and activities

The vessel planned for the geotechnical operations at the MLA site is the 'MV NOR Sea'. This vessel is a Dynamic Positioning Class 2 (DP2) multipurpose vessel used for offshore inspection and construction support.

The Geotechnical Investigation will be carried out using a Portable Remotely Operated Drill (PROD), which operates on the seabed and will be powered and controlled from the MV NOR Sea via an umbilical. The PROD's functions are controlled by a specialist operator on the vessel. Drilling actions such as advancing casing, make up of drill string, wash boring, rotary drilling, piston sediment sampling and testing are precisely controlled by robotic actuators.

The PROD which weighs approximately 10 tonnes in air and approximately 6 tonnes in water will be deployed from the MV NOR Sea using PROD's own dedicated launch and recovery system (LARS) which will be fitted to the MV NOR Sea.

The MV NOR Sea will be mobilised from Singapore to the Port of Melbourne for installation of the PROD and the survey equipment prior to commencing work in Bass Strait. Testing / calibration of the PROD will be done at the Port, or en-route to the Bass Strait gas fields.

The Geotechnical Investigation involves sampling / coring, to recover seabed samples and in-situ testing, using the piezocone penetrometer (PCPT) and ball penetrometers. The survey will include:

- determination of water depth and speed of sound in sea water;
- seabed coring;
- push and piston samples;
- cone penetration testing; and
- ball penetrometer testing.

The programme is to comprise:

- 4 shallow boreholes for in-situ testing using a seabed PCPT apparatus to a maximum depth of 30m;
- Pore pressure dissipation tests in the shallow PCPT boreholes;
- 4 shallow boreholes, for recovery of samples to a depth of up to 30m.;



Turrum Phase 2 Project
Environment Plan Summary

- 1 shallow borehole to a maximum depth of 30m, for ball penetrometer testing of fine grain layers;
- 3 deep boreholes for in-situ testing using the PCPT apparatus to a maximum depth of 85 m; and
- 3 deep boreholes to a maximum depth of 85 m for recovery of samples using either the push tube method or coring.

The scope of work may be increased or decreased, depending on the consistency in stratigraphy across the site.

The diameter of the drilled holes will be approximately 60mm.



Turrum Phase 2 Project
Environment Plan Summary

4. STAKEHOLDER CONSULTATION

EAPL maintains an active community consultation program that includes regular contact with regulators, businesses, community leaders and interest groups. EAPL has consulted the following stakeholders about the geotechnical investigation:

- Environment Protection Authority (EPA), Gippsland (Traralgon Office);
- Victorian Department of Primary Industries (DPI), Minerals and Petroleum Division (Melbourne);
- Victorian Department of Primary Industries (DPI), Fisheries;
- Lakes Entrance Fisherman's Cooperative (LEFCOL);
- Commonwealth Fisheries Association;
- South-east Trawl Fishing Industry Association;
- South-east Non-Trawl Fishing Industry Association;
- Australian Fisheries Management Authority; and
- Seafood Industries Victoria.

No outstanding issues have been identified through this consultation process.



5. ENVIRONMENTAL IMPACTS, ASSESSMENT AND CONTROL

5.1 Existing Environment

5.1.1 Physical

The water depth at the proposed survey site is approximately 59m, and the seabed is essentially flat. The near surface geology is believed to comprise 8m of variably cemented sand, over 3m of soft clay, over 2.5m of stiff clay, over variably cemented sand to at least 90m.

5.1.2 Biological Environment

A search of the Department of Environment, Water, Heritage and the Arts (DEWHA) online search tool for EPBC Act Protected Matters (DEWHA, 2008) undertaken in March 2008 revealed that 22 threatened and 26 migratory species of fauna, described below, may occur within a 5km radius of the project site. Additionally, 48 listed marine species and 11 whales and other cetaceans may occur within this search area.

Numerous marine and migratory bird species, some of which are protected by international agreements (Bonn Convention, JAMBA and CAMBA) may pass near the platform locations on their way to the islands in Bass Strait and Tasmania. Foraging groups of seabirds are also sporadically sighted in the general eastern Bass Strait area.

Fish species listed as threatened under the EPBC Act which may occur within the development area are the great white shark (*Carcharodon carcharias*) and the whale shark (*Rhincodon typus*), both listed as vulnerable and migratory.

Other fish species listed under the EPBC Act which may occur within the development area comprise pipefish, pipehorse, seahorse and seadragon.

Cetacean species listed under the EPBC Act may migrate or move through the proposed development area, however, none of the species listed is dependent upon the project area for food or reproduction.

Two non-cetacean marine mammals, the New Zealand fur seal (*Arctocephalus forsteri*) and the Australian fur seal (*Arctocephalus pusillus*) are listed in the area.

In addition to these threatened and migratory species, Bass Strait also provides suitable habitat for other marine fauna including many types of fish, crustaceans, cetaceans and birds.

A highly diverse array of benthic invertebrate groups has been recorded, with several polychaete families, pycnogonids, pericarid crustaceans, opisthobranch molluscs, bryozoans and brachiopods being the most species rich.

There are no World Heritage or National heritage sites within close proximity to the proposed survey site. The nearest marine reserves are the Beware Reef Marine Sanctuary approximately 70 km north east, Point Hicks Marine National Park, approximately 120km north east, and the Ninety Mile Beach Marine National Park approximately 80 km to the west of the proposed survey site.



5.1.3 Other users

As well as being intensely developed with petroleum facilities, Bass Strait is used by commercial fisheries including Southern and Eastern Scalefish and Shark Fishery (SESSF), Bass Strait Central Zone Scallop Fishery, Small Pelagic Fishery, Tuna and Billfish Fisheries, and Rock Lobster and Giant Crab fishery.

Most marine recreational fishing is closer to shore along Ninety Mile Beach and includes coastal, surf, inland lakes and estuary fishing.

5.2 Environmental Risk Management

5.2.1 Overview of project environmental risks

The key environmental risks associated with the Geotechnical Investigation have been identified as:

- collision with other vessel, platform or structure resulting in oil spill;
- loss of oil, fuel or chemical associated with routine activities;
- management of sewage, grey water and food wastes;
- seabed disturbance and discharges associated with the use of PROD; and
- shallow gas – encounter with entrapped gas.

The environmental risks were all assessed in the “lower” category as hazards either have existing controls in place that will manage risks to As Low As Reasonably Practicable (ALARP), or will have additional controls put in place.

The activities associated with the proposed investigation are considered unlikely to have a significant effect on the environment for the following reasons:

- Threatened species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and other marine species may pass through the project area but the Geotechnical Investigation will not give rise to impacts on habitat, migratory patterns or routes that are known to be critical for their survival.
- The physical footprint of the survey area is small (approximately 12 m x 12 m for each site) and any disturbance that occurs around this footprint is likely to be temporary and localised.
- The duration of the survey activities is expected to be approximately 30 days.



Turrum Phase 2 Project
Environment Plan Summary

5.2.2 Implementation Strategy

Risk management measures outlined in the EPS include allocation of roles and responsibilities, employee training, auditing, emergency response planning, communications planning and consultation. The following environmental management controls have also been specifically identified for the project:

- no vessel anchoring;
- no refuelling at sea during the geotechnical investigation;
- no items are to be thrown overboard under any circumstances;
- any oil, fuel or chemical spills must be reported to the Vessel Master and NOR Sea EAPL representative immediately;
- the MV NOR Sea EAPL representative shall report any oil, fuel or chemical spills to the MLA platform supervisor; and
- the MV NOR Sea EAPL representative shall report any non-compliance with the EPS to the MLA platform supervisor.

The implementation strategy to address the key environmental risks associated with the Geotechnical Investigation activities is outlined in Table 1.



Turrum Phase 2 Project
Environment Plan Summary

Table 1 Implementation strategy to address key environmental risks associated with the Geotechnical investigation activities

ID	Activity	Management Action	Responsibility	Evidence of Action
3.0	Fitting of the PROD (and associated ancillaries) to the MV NOR Sea	<p>Provide segregated bins for wastes. Comply with the specific rules for waste disposal at Port of Melbourne or Barry Beach Marine Terminal (BBMT).</p> <p>Vessel to have Material Safety Data Sheets (MSDSs), appropriate storage, spill kits etc for all chemicals. All oil stored on board for PROD to be stored in drums on pallets. Pallets will be in containers to avoid rainwater in bunds.</p> <p>Vessel crew to conduct refuelling of the PROD in accordance with on board procedures. Coordinate timing to minimise interaction with other activities.</p> <p>Develop communications plan.</p>	Benthic Geotech Project Manager	Audit Bridging HSE documentation. Communications plan.
5.0	MV NOR Sea operations including mobilisation of the vessel and PROD from Port of Melbourne to MLA platform, survey activities within the MLA platform 500 m safety zone, and vessel demobilisation.	<p>Ensure that vessel operations are conducted in compliance with the AMSA code / legislated exclusion zones / radar surveillance.</p> <p>Provide appropriate notifications to other maritime operators.</p> <p>Develop bridging documentation and provide training to ensure clear understanding of BSEP, the supplementary EP, and roles and responsibilities in the event of emergency.</p> <p>Ensure that the EAPL and vessel oil spill response plans are up to date and that all staff are appropriately trained.</p> <p>Ensure that all necessary emergency and oil-recovery plant and equipment is functional and accessible.</p> <p>Ensure that all works within the exclusion zone are conducted in accordance with the Platform Permit to Work System and Production Plan addressing simultaneous operations.</p> <p>Ensure vessel personnel understand and are in compliance with communications plan.</p>	<p>MV NOR Sea Master</p> <p>Benthic Geotech Project Manager</p> <p>EAPL Project Manager</p> <p>Marlin A Platform Supervisor</p>	Audit
		<p>Ballast water to be managed in accordance with Australian Quarantine Inspection Service (AQIS) requirements (No discharge anticipated within Australian waters).</p> <p>Maintain hull anti-fouling records.</p> <p>Dynamic Positioning trial outside 500m safety zone and at every re-entry into the 500m safety zone.</p>	MV NOR Sea Master	Audit



Turrum Phase 2 Project
Environment Plan Summary

ID	Activity	Management Action	Responsibility	Evidence of Action
9.0	Operating PROD on sea floor - Coring / sampling or in-situ testing	Precise positioning of survey equipment, i.e. PROD on sea floor. Avoid dragging equipment across the seabed.	Benthic Geotech Project Manager	Audit
		No evidence of any gas leakage detected in 40 years. PROD fitted with a sensing capability at the seabed. Gas detector on board. Contingency plan for gas encounter.	Benthic Geotech Project Manager	Audit
		Use water-based and biodegradable drilling fluids where practicable (mainly seawater). Small volumes of synthetic fluid concentrate used (<60L) at 1 part concentrate to 100 - 200 parts water, mixed in the drill water system, introduced downhole, then expelled to the seabed. Total volume of cuttings <1m ³ per hole. Minimise use of drilling mud to an 'as needs' basis. Records to be retained of daily monitoring of mud concentrations and volumes.	Benthic Geotech Project Manager	Audit Review of MSDSs Records of activities
10.0	Recovering PROD / Moving to next sample location	Deployment/recovery /transition procedures including separate procedures for north and south side of platform based on pipeline location. PROD to be recovered on to vessel when vessel is required to cross over any pipeline.	Benthic Geotech Project Manager EAPL Project Manager	Audit



Turrum Phase 2 Project
Environment Plan Summary

6. CONTACT DETAILS

All enquiries or requests for further information regarding the Geotechnical Investigation should be directed to:

Rob Young
Esso Australia Pty Ltd
12 Riverside Quay
Southbank VIC 3006
Telephone : (03) 9270 3333
e-mail : rob.b.young@exxonmobil.com