AMITY OIL NL

PEP 138

ENVIRONMENTAL REVIEW

by

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FIGURE

PHOTOGRAPHS

1. INTRODUCTION

An environmental review of PEP 138 was carried out to determine how petroleum exploration activities may impact upon the environment of the permit near the Yarram seismic lead prior to any field work being carried out.

The review consisted of the study of past exploration and exploration reports, field inspections and a review of publications relating to the environment of the area. Publications examined included:

- Special investigation and Draft Final Recommendations of the Marine and Coastal by the Land Conservation Council;
- Marine and Coastal Special Investigation Descriptive Report by the Land Conservation Council;
- Wilderness Special Recommendation Final Recommendations by the Land Conservation Council;
- The East Gippsland Area Review by Land Conservation Council;
- Agriculture and Victoria's Environment 1991, State of the Environment Report by the Office of the Commissioner for the Environment;
- Wilson's Promontory National Park, July 1997 Management Plan by Parks Victoria;
- Victorian Coastal Strategy, November 1997 by the Victorian Coastal Council;
- Ground Water Resources of Victoria, Department of Minerals & Energy;
- Minerals of Victoria, Department of Minerals and Energy;
- Industrial Minerals and Rocks of Victoria 1995 by Energy and Minerals Victoria;
- Warragul 1:250,000 Scale Geological Map, Department of Energy and Minerals;
- Local Government of Victoria Local Government Boundary Status at 31 January, 1995 map at 1:1,000,000 Scale, Office of Geographic Data Coordination;
- Land Classification Map 1:100,000 Scale by Information Victoria;
- Topographic Maps 1:25,000, 1:100,000 and 1:250,000 Scales Information Victoria.

Discussions were held with officers of the Department of Natural Resources and Environment and field visits were made to PEP 138 to observe first hand, geology, geomorphology and land use, particularly in the area of the Yarram seismic lead.

2. LOCATION AND ACCESS

PEP 138 is located onshore in the south Gippsland region of Victoria in the restructured local government district of Wellington. The largest town in the permit area is the town of Yarram, population 2,100. Yarram is located on the Gippsland highway which connects Melbourne with Sale via the towns of Korumburra and Leongatha. The main road access to the area from Melbourne is via the Princes Highway to Traralgon, then via the Hyland Highway to Yarram.

3. PHYSIOGRAPHY AND CLIMATE

PEP 138 lies in the southern Victorian Riverine Plain geomorphic unit. The area is dominated by a gently sloping plain extending from the foot of the Strzelecki Ranges towards the sea. The plain is traversed by a number of rivers and creeks, the largest being the Albert and Tarra rivers and Bruthen Creek. Several smaller creeks have been formed into drains, which drain into Corner Inlet. There are numerous low lying swampy areas scattered over the plain, particularly close to the coast.

Much of the permit's southern boundary is also the boundary of the Nooramunga Marine and Coastal Park which covers all of Corner Inlet, the southern tip of the Ninety Mile Beach dune

system and back dune swamp zone. Small portions of the marine park extend for short distances into PEP 138, notably near Tarraville, Manns Beach and west of Port Albert.

Corner Inlet is a large tidal inlet protected from the ocean by a discontinuous dune barrier. It has 5 permanently open entrances to the sea, with associated large sandy tidal deltas. The fringes of Corner Inlet are mangrove salt marshes, descending seawards into mudflats and tidal channels scoured out by tidal currents. There are several large islands in the inlet, including Snake, St. Margaret and Sandy Island. These tend to have mangroves and salt marsh on their eastern shores and are eroding on the western shores where they are exposed to local westerly wind waves.

The Ninety Mile Beach forms the eastern boundary of PEP 138. This is a continuous northeast-southwest orientated beach with heavy surf. The beach is backed by a narrow single barrier dune covered with vegetation. The southern end of the dunes near McLoughlins Beach are suffering long term erosion, with an erosion scarp cut into the dune ridge system which is not quite parallel to the coast. Storm waves have reportedly breached this dune system near McLoughlins Beach in recent times. The dunes are backed by narrow swamps or lakes and some distance inland from the dunes a rise in ground level suggests an earlier shoreline position.

The climate in the area of the permit is warm and dry in the summer and cold and wet in the winter. Average annual rainfall is between 500 and 700 millimetres. Winds in the area are northwest to southwest in the winter and northeast or west in the summer.

4. GEOLOGY

The oldest rocks exposed in or near PEP 138 are the upper Devonian granites of Wilsons Promontory on the south side of Corner Inlet. The oldest rocks exposed in the permit are Strzelecki Group sediments of Cretaceous age. These sediments consist of thick sandstones, siltstones and minor conglomerate of fluvial origin, with some coal and form the rugged uplands to the immediate west of the permit area. The Strzelecki Group is the basal sedimentary sequence in the Gippsland Basin.

PEP 138 lies on the southern margin of the Gippsland Basin adjacent to the Bassian Rise between the Gippsland Basin and the Bass Basin to the south. Wilsons Promontory and the granitic rocks of the Seal Islands occur on the Bassian Rise. Virtually all of PEP 138 is within the Seaspray Depression of the Gippsland Basin between the coast and Strzelecki Group rocks outcropping on the uplifted Balook Block. The extreme southwestern corner of PEP 138, west of Alberton and Port Albert encompasses part of the Alberton Depression.

Paleocene to early Miocene Older Volcanics outcrop immediately west of Alberton and to the west of the permit along the foot of the Strzelecki Ranges.

Much of the northwestern portion of the permit is covered with gravels, sands and clays of the Haunted Hill Formation. These outwash sheet deposits are associated with the base of the Strzelecki Ranges and are characterised by a range of particle sizes, poor sorting, abundant mica, variable bedding, widespread lensing and numerous erosional breaks. Fossil wood from the formation has been dated at late Pliocene, possibly Pleistocene.

The majority of the permit and all of the central part of the permit, is covered with fluviatile and marine terrace deposits consisting of clays, silts, sands and some gravels. Most of the area is flat but some residual dune shapes are evident. Swampy areas contain carbonaceous sands, silts and clays, all of Quaternary age.

5. GROUND WATER

Potable ground water suitable for stock, domestic gardens and industry is available from bores over much of the exposed Quaternary sediments within the permit area. Bore yields are generally greater than 10 litres per second. Aquifers are sands and gravels. Groundwater is also available from the deeper Latrobe Formation where several successful oil exploration wells have been converted for use as water bores.

Sands and gravels in the Haunted Hill Formation also provide good quantities of potable water.

6. LAND USE

The majority of the permit area consists of freehold land devoted mainly to farming. Virtually all of the freehold land has been cleared of trees except for swamps, drainage alignments, road reserves and isolated patches. The land is mainly used for pastoral activity, notably cattle and sheep. Almost all of the freehold land occurs on the Quaternary alluvials. In the northwest and extreme southwest of the permit area the more rugged areas underlain by Haunted Hill Formation are mostly devoted to State Forest and wildlife or flora/fauna reserves.

There is National Park, State Park or Coastal Reserve along all of the Ninety Mile beachfront and adjacent dune and sometimes back-dune swamp area. There is also a substantial wildlife reserve immediately behind the coast between Woodside Beach and the Darriman-4 well, 12 kilometres to the northeast.

Port Albert, Robertsons Beach, Manns Beach, McLoughlins Beach, Reeve Beach and Woodside Beach are all popular seaside areas in the warmer weather. Reeve Beach and Woodside Beach are on the Ninety Mile Beach and neither have any residential development. Of the other seaside areas, Port Albert is the best developed and has substantial facilities for recreational small boats and inshore fishing fleet. McLoughlins Beach, also on Corner Inlet, has a shallow, muddy seafront with a narrow jetty about 150 metres out to deeper water for small boat use. McLoughlins Beach is a small village, used mostly in holiday season.

Mining of bauxite has been carried out in the extreme west of the permit near Gelliondale where some tens of thousands of tonnes of bauxite have been mined from altered Tertiary basalts. Peat has also been mined from swamps in the Gelliondale area.

7. ENVIRONMENTAL IMPACT OF EXPLORATION NEAR THE YARRAM LEAD

The Yarram lead is a structural feature at top Strzelecki Formation and top Latrobe Formation, centred 15 kilometres east of the town of Yarram and 6.5 kilometres south-southwest of the village of Woodside. The peak of the closure is located some 300 metres east of Cascade Road and 1 kilometre north of the Balloong Road-Cascade Road intersection. The area of the seismic closure extends from Balloong Road approximately 2 kilometres to the north and is approximately 1.7 kilometres wide in an east-west direction.

All of the lead is on freehold land, most of which is cleared and fenced for pastoral activity. The centre of the closure is at the junction of two fences, some 250 metres north-northwest of a windmill and dam. Topsoils are grey silty clays.

In a dam exposure on Cascade Road 2 kilometres north of Balloong Road, half a metre of mid-grey clayey silty soils are underlain by half a metre of brownish sandy clays, followed by white and yellow clayey sands, medium to coarse grained, very micaceous, with 10-15% irregular iron

pisolites from 3mm to 20mm in diameter. This unit is iron oxide mottled, white, yellow-brown and reddish. I believe this unit correlates with the Haunted Hill gravels.

Although there is a broad seismic grid in the area, there is no sign of seismic lines in any of the paddocks or any other areas visited in the permit. Clearly, seismic surveys have no lasting environmental impact.

I had discussions with two local farmers including Mr. Neil Walpole of Balloong Road. The old Woodside South-1 well on Mr. Walpole's property had been converted to a water bore and was still in use. Both farmers had lived in the area all their lives and had witnessed several seismic surveys and the drilling of a number of exploration wells, some on their properties. Both farmers were positive about past oil exploration activity and were enthusiastic about the prospects of further work in the area.

8. CONCLUSION

It is apparent from this review that Vibroseis seismic surveying and exploration drilling carried out with due care for the physical and social environment will cause no permanent deleterious impact in the area.

PE802348

This is an enclosure indicator page.
The enclosure PE802348 is enclosed within the container PE802347 at this location in this document.

The enclosure PE802348 has the following characteristics:

ITEM_BARCODE	PE802348
CONTAINER_BARCODE	PE802347
NAME	PEP 138 Land Use Map
BASIN	GIPPSLAND
ONSHORE?	Y
DATA_TYPE	TITLE
DATA_SUB_TYPE	PERMIT_MAP
DESCRIPTION	PEP 138 Land Use Map, (Enclosure from Environmental Review), Amity Oil NL.
REMARKS	
DATE_WRITTEN	
DATE_PROCESSED	
DATE_RECEIVED	
RECEIVED_FROM	Amity Oil NL
WELL_NAME	
CONTRACTOR	
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TOP_DEPTH	
BOTTOM_DEPTH	
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