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POSSIBLE OFFSHORE MINERAL PROSPECTING AREAS

IN THE VICINITY OF PLANET OFFSHORE MINERAL LEASE

IN NORTHERN TASMANIA

BASED ON STUDIES OF THE
AUSTRALIAN HYDROGRAPHIC OFFICE BATHYMETRIC CHARTS

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For
Planet Mining Company Pty. Ltd.

December, 1966.

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ENCLOSURES

1. Plan showing recommended prospecting area in E.L.3/66.
2. Low Head to Tomahawk Island bathymetric sections showing possible submerged beach deposits.
3. Low Head to Tomahawk Island (western sheet) Interpretation.

GENERAL

Studies of the bathymetric data supplied by the Australian Hydrographic Office in the area between Table Cape eastwards to Weymouth in Northern Tasmania form the basis for interpreting the existence of possible offshore mineral prospecting areas.

The possible offshore prospecting areas are limited to those areas where there could have been accumulation of heavy mineral sands in beaches, beach dunes, river channels, barrier bars, and as part of a buried delta or fan system. The detection of the possible existence of any former beach, or river channel, etc., can be first made by consulting the available bathymetric data and looking for obvious physiographic features.

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Jennings (1959)¹ showed that there was a marked break in slope at 30 - 35 fathoms from Cape Otway to Wilson's Promontory off the south coast of Victoria and that this break in slope also existed around islands in the Bass Strait and off the north coast of Tasmania.

This break in slope can be interpreted as an old shoreline. If the northern coast of Tasmania is accepted as a tectonically stable coastline in recent times, then this may be part of the 28 - 35 fathom coastline reported by Fairbridge (1961)² as a worldwide coastline developed during a sealevel stillstand about 16,000 years ago.

There also appears to be evidence of an 18 - 22 fathom coastline off parts of northern Tasmania, a coastline that Fairbridge (1961) considered to have formed on a worldwide basis about 10,000 to 12,000 years ago.

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1. Jennings, J. N., 1959, The submarine topography of Bass Strait, Proc. Roy. Soc. Victoria, V.27, p.49-72.
 2. Fairbridge, R. W., 1961, Eustatic changes in sea level, Physics and Chemistry of the Earth, V.4, p.99-185.

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POSSIBLE PROSPECTING AREAS IN THE LEASE AREA

It was possible to subdivide the lease area into 4 subareas, each with different coastline and offshore physiography and hence different prospecting potential, as follows:-

AREA A : From Table Cape eastwards to between Ulverstone and Devonport. The important physiographic features of this area can be summarised as follows:

It is characterised by an irregular and rocky coastline with poor development of sandy beach-dune systems and with many offshore rocky islets. Three small rivers, the Emu, Levin and the Forth flow into Bass Strait in this area but they seem to have left no marked impression on the submarine morphology of the area.

Section "EF" taken out from the coastline near Somerset is typical of the area. It contains many irregular changes in slope probably caused by a rocky substratum and a very marked change in slope at 25 - 33 fms. This last change in slope may well be the well known 16,000 yr. B.P. ancient strandline referred to by Fairbridge and others.

Probable strandline deposits may occur associated with

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this strandline and it should be the main target in any offshore mineral exploration.

AREA B : From west of Devonport to Point Sorell, surrounding the outlet of the Mersey River. The Mersey River apparently has built up a delta or sediment fan in this area as evidenced by the relatively shallow plain that forms an arc around the outlet of the Mersey River and which is roughly bounded at depth by the 20 fm contour.

This area was probably a former delta of the Mersey River at some lower stage in sea level (perhaps when the sea level was 8 to 12 fms. deeper). As such, it represents an area of sediment, parts of which may have been sufficiently reworked to form bars, beaches or barrier sands rich in heavy minerals.

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AREA C : From Point Sorell eastwards to Low Head on the eastern side of the Tamar River. This area includes the Port Sorell, River Tamar, Port Dalrymple drowned river systems. No effect of the Tamar, obviously, one of the largest rivers in northern Tasmania, can be seen offshore from Port Dalrymple implying that the former river valley has been filled during the rise in sea level that started from about 18,000 - 20,000 years B.P.

The width of Port Dalrymple attests to the magnitude of the "old" Tamar River and indicates that there must be extensive buried river deposits offshore.

There are no physiographic features that indicate where these deposits lie today, showing that it will be necessary to use shallow seismic reflection sounding to find such deposits. There are no obvious old strandlines and all initial prospecting in this area should be concentrated on finding the old courses of the Tamar River.

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AREA D : From Low Head east to Weymount. This area is notable for its remarkable offshore break-in-slope from 20 - 30 fms that obviously marks a former strandline.

This ancient strandline has the same shape and is offset several miles to the northwest from the present coastline.

There are still depressions offshore that possibly mark the previous course of the Piper River (see figure) as it cut its way through the former coastline higher than the prior low sea level that formed the 20 - 30 fm break-in-slope.

Once again this coastline is noted for its lack of sandy beaches and its rocky character. The rocky nature of the region is probably the reason why the former 20 - 30 fm strandline is so well preserved today. However, with such a well demarked ancient strandline it should be an easy matter to explore possible associated beach and dune sands.

The previous courses of the Piper River that can now be traced out from shore should also be a good prospect for mineral sands. There may also be a small delta

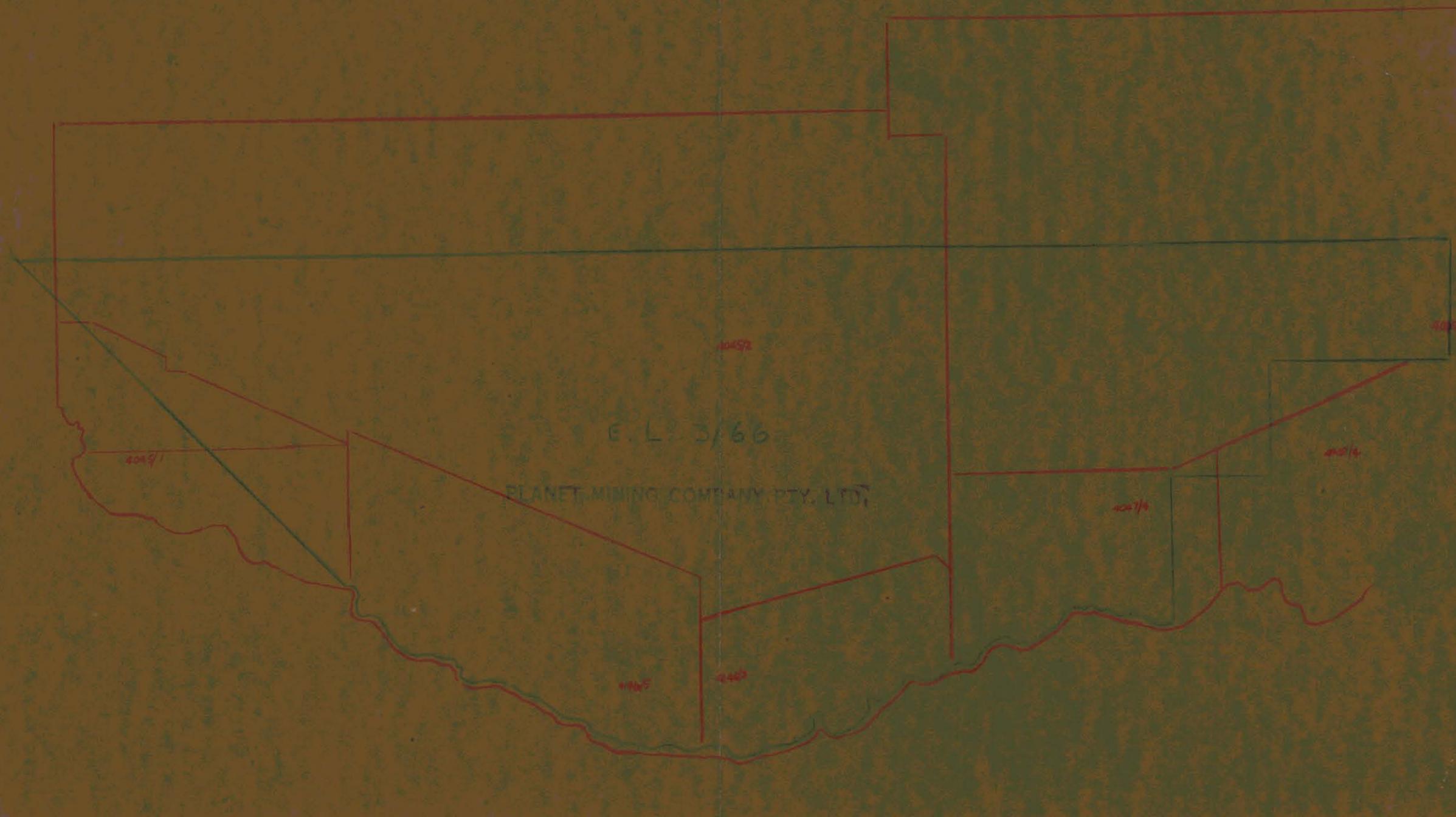
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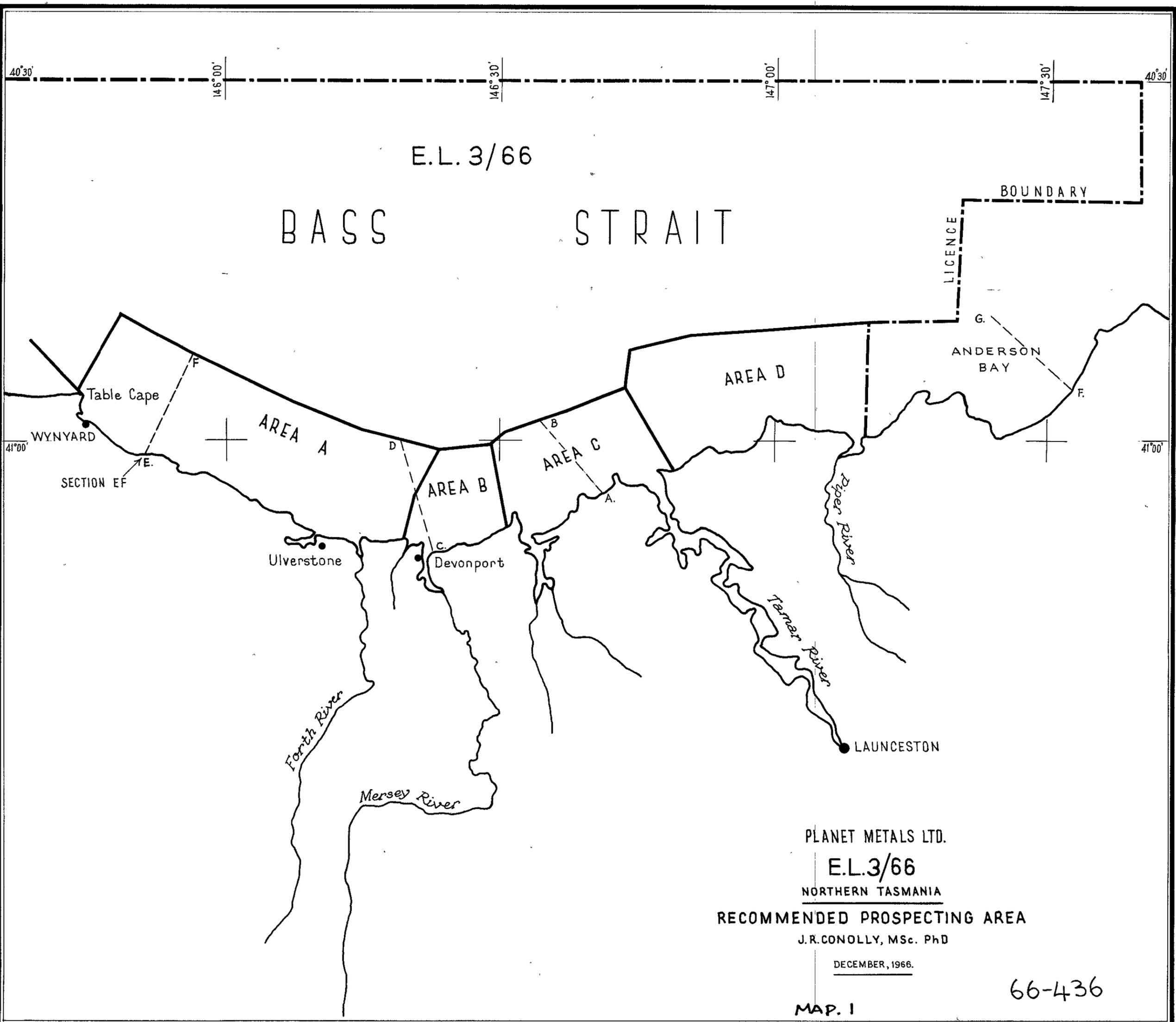
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or sediment fan built up by this ancient stream
which should also be investigated.

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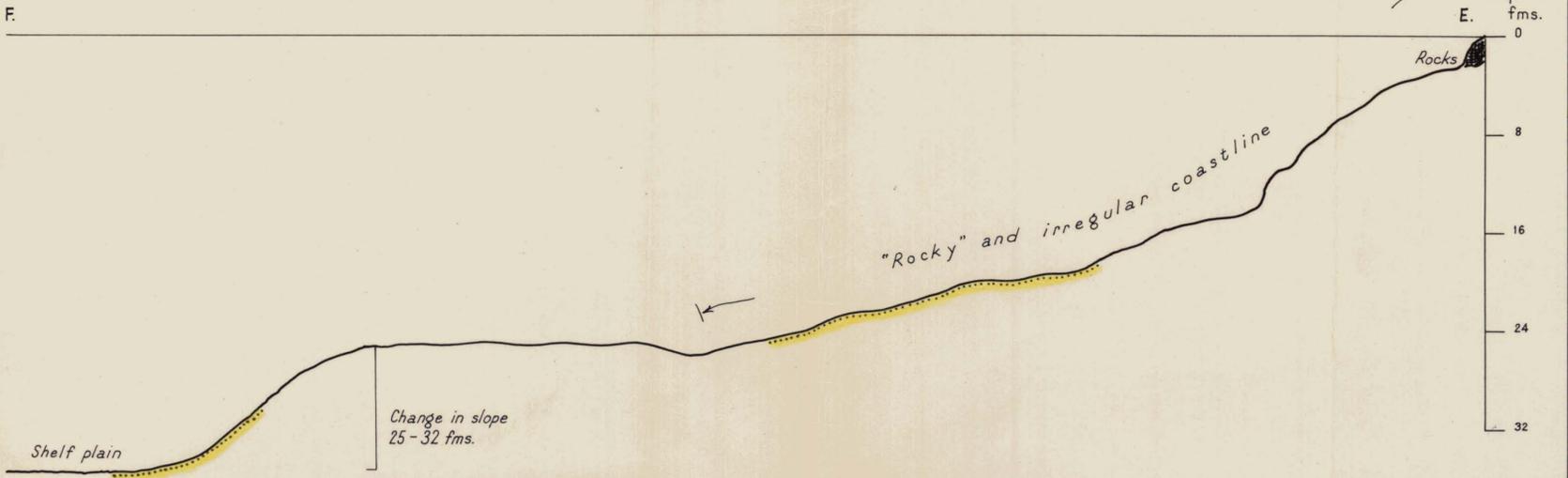
PLANET METALS LTD.
E.L.3/66
 NORTHERN TASMANIA
RECOMMENDED PROSPECTING AREA
 J.R. CONOLLY, MSc. PhD
 DECEMBER, 1966.

MAP. 1

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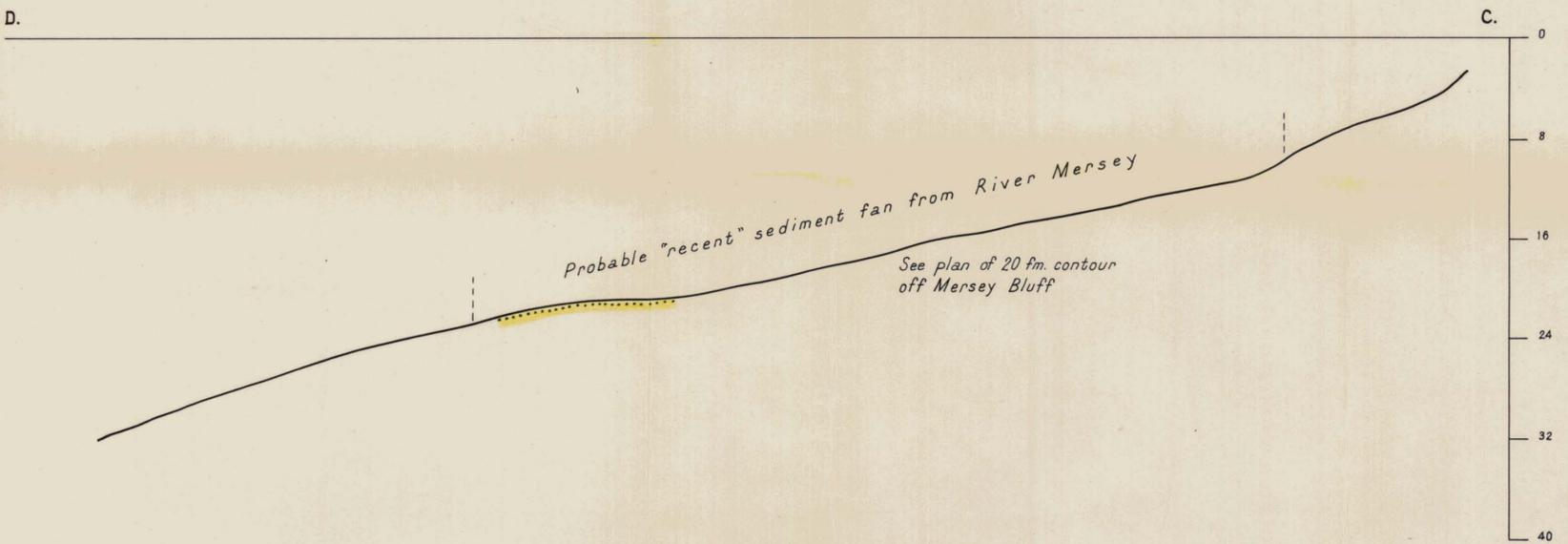
AREA A.

SECTION E-F OFF SOMERSET



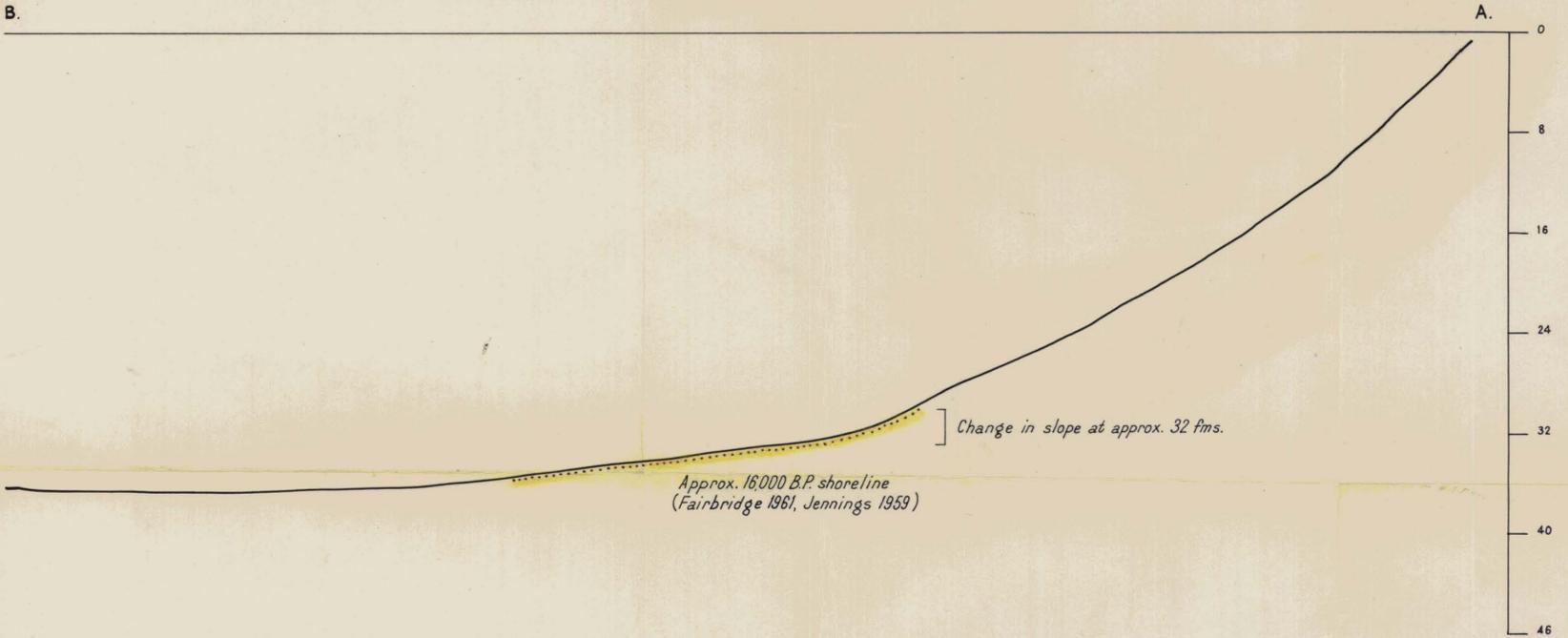
AREA B.

SECTION C-D OFF MERSEY RIVER

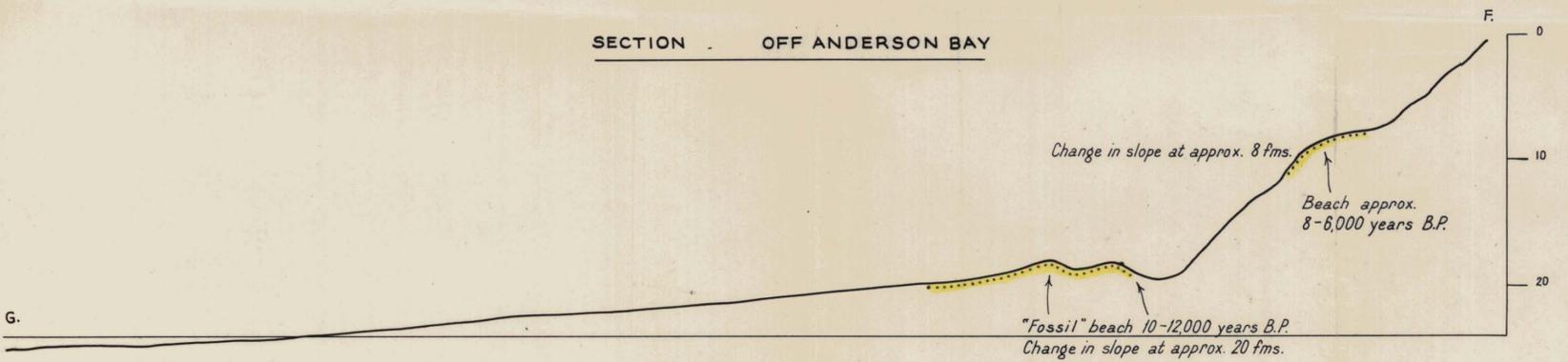


AREA C.

SECTION OFF WEST SIDE OF PORT DALRYMPLE TYPICAL OF COASTLINE FROM PORT DALRYMPLE TO PT. SORELL



SECTION OFF ANDERSON BAY



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LOW HEAD to TOMAHAWK ISLAND

BATHYMETRIC SECTIONS SHOWING POSSIBLE SUBMERGED BEACH DEPOSITS

INTERPRETATION BY DR. J. CONNOLLY - JAN, 1967.

Possible beach deposits... shown thus... 

MAP 2.

AREA D.

NORTHERN TASMANIA
LOW HEAD to TOMAHAWK ISLAND
(WESTERN SHEET)

(INTERPRETATION)
Natural Scale 1:50,000

