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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

WEST COAST DEPARTMENT

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REPORT ON A BEACH SAND INVESTIGATION

AT FRIENDLY BEACHES.

COLES BAY

BY

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Report on a Beach Sand Investigation at Friendly
Beaches, Coles Bay - SPL 39
Electrolytic Zinc Company of Australasia Limited*
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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

West Coast Department

MEMORANDUM

TO :— THE SUPERINTENDENT

DATE :— 11th November, 1968

FROM :— CHIEF GEOLOGIST

SUBJECT :— EXPLORATION - Heavy Minerals at Friendly Beaches, Coles Bay

Appended hereto is a report by D. O'N Hackett on a reconnaissance investigation of a reputed occurrence of heavy detrital minerals at Friendly Beaches, Coles Bay. The area was brought to our attention by Mr. Hank Meerding of Blackmans Bay, who is the holder of a Special Prospectors Licence of $2\frac{1}{4}$ square miles covering the beach and dune area. Mr. Meerding is a keen mineral collector and lapidary.

Hackett's investigation has shown that although there are concentrations of heavy minerals present in the dunes, the indicated tonnage of material that would be available is too small to support a mining venture. From my own brief acquaintance with the area, I would support this conclusion.

Whilst I recommend that no further work should be carried out at Friendly Beaches, I would suggest that the entire north-east and east coasts of the Island might be the subject for a broad reconnaissance programme. This would require aerial inspection to delimit areas of possible sand accumulation, followed by rapid ground investigation. At the present time, the entire coastal section from Noland Bay to Tasman Head is free from occupation.

Q.A. Ripstra

CHIEF GEOLOGIST

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CONTENTS

Covering Memorandum

Summary

Location

History

Geology

Dunes and Beach

- 1 The Tidal Zone**
- 2 The Frontal Strand**
- 3 Dunes**
 - a) Stabilised Dunes**
 - b) Transgressive Dunes**

Heavy Materials

Reserves

Sampling

Conclusions

Enclosure 1 Sketch Plan of Friendly Beach

REPORT ON A BEACH SAND INVESTIGATION

AT FRIENDLY BEACHES

SUMMARY

An area of sand dunes and beach at Friendly Beaches was examined for its potential as a producer of economic heavy minerals. Several test borings were made and samples were taken from some of these. An estimate of the quantity of sand containing economic amounts of heavy minerals was made.

LOCATION

Friendly Beaches lies some eight to ten miles south of Bicheno on the east coast of Tasmania. Access is gained by a track from the Coles Bay Road approximately seven miles after the road leaves the Tasman Highway. This track reaches the Beaches about three-quarters of a mile south of the northern limit of the dunes.

HISTORY

The area was first examined by a Mr. Meering of Blackmans Bay, Tarcoona, who took out an S.P.L. of two square miles over the dunes. He offered this to the Company. This report covers the Company's investigation.

GEOLOGY

The area is underlain for most of its length by flat lying Permian beds, which outcrop sporadically through the sand cover. The rock type most frequently seen is a sandy siltstone containing pebbles and cobbles of granite, quartzite and quartz and has been described by Banks as a tillite. (Banks 1955)

At the northern end of the beach the Permian beds lie against a granite of Devonian age. The granite is a coarse grained pale grey micaceous granite with large orthoclase crystals set in a mass of small quartz, felspar and mica.

DUNES AND BEACH

The sand area of dunes and beach can be divided into three zones -

1. The tidal zone of beach, falling between high and low tides.
2. A wide strand between the high tide mark and the dunes.
3. The dunes.

1. The Tidal Zone

The tidal portion forms a fairly steeply shelving beach. The sand consists of moderately coarse, clean, white, sand. Very little shelly material either fine or coarse was seen and the sand here appears to be devoid of heavy minerals.

2. The Frontal Strand

The wide strand (C.500') lying between the high water mark and the dunes is formed of a clean white sand, the whole surface of which is covered by wind ripple marks. The most obvious feature is the presence of concentrated heavy minerals lying in the nodes of the ripplemarks.

Close examination showed that the top two to three inches contain quite large amounts of heavy mineral but below this surface layer the sand appears to be devoid of dark minerals. The 'cut-off' line between the top and bottom layers is very distinct.

This strand containing heavy mineral starts at or about the granite-Permian contact north of the road. No heavy mineral was seen north of the contact. (See plan.)

3. Dunes

The dunes themselves form a narrow belt lying about 500' wide running parallel to the coast line. They can be divided into two types.

- (a) Previously stabilised dunes.
- (b) Transgressive moving dunes.

(a) Stabilised Dunes

Only remnants of the first series of dunes remain. They stand about 15' high covered with a fairly thick growth of grass and scrub.

The sand is grey to white near the surface becoming increasingly stained brown with depth. These dunes appear to contain 15% - 20% of heavy mineral throughout.

The dunes are underlain by a heavy grey or orange clay - probably of an upper 'B' soil horizon.

(b) Transgressive Dunes

The current moving dunes are formed of material from the break down of the stabilised dunes and of fresh material blown up from the tidal zone. They attain their maximum height of 15' about one mile south of the Friendly Beach track, but between the track and one mile south have an average thickness of about 3'. This area also contains numerous areas of superficial sand overlying clay.

The area to one mile south of the track contains fair quantities of heavy mineral (estimated at 10% - 15%) but south of this the amount of heavy mineral visible drops off rapidly although the dunes are larger. It is postulated that in this southern area the intake of fresh unmineralised sand is probably greater.

Heavy Minerals

(This section is mainly based on a report by the Government Laboratories at Launceston on samples taken by Mr. Meering.)

The predominant heavy minerals in the sands appear to be garnet and ilmenite, with chromite, zircon and rutile present in smaller quantities.

The garnet occurs in a variety of colours from dark red through orange to pale pink, it normally occurs as ragged waterworn grains.

The ilmenite is normal for a transported deposit - well rounded slightly shiny grains.

Chromite is difficult to distinguish from ilmenite, again being dark rounded grains.

Zircon was not identified under the microscope by the writer. Rutile occurs as short red/brown needles.

The analyses of Mr. Meering's sample, showed a head of 6% Zircon, 0.7% Rutile, 3% Ilmenite, 2% Chromite, no figure for garnet was given in the report but calculation suggests that about 16% of this was garnet.

Reserves

The area containing reasonable amounts of visible heavy mineral lies between a point about 2000 feet north of the Friendly Beaches track and about 5000 feet south. This zone is estimated to have an average width of 500' and an average thickness of about 5'. Taking a bulking factor of 16 cu.ft./ton this would yield about 1,100,000 tons of sand.

It should be stressed that the figures given (except for the 7000') are very much estimates, even so it is unlikely that the total weight of sand available would exceed 2,000,000 tons.

Sampling

A number of holes were sunk to test the depth and extent of the dunes. Samples were taken from three of those.

1. Hole 1

In a stabilised dune at the end of the track moderate quantities of heavy mineral seen throughout. The hole bottomed in clay at 14'.

2. Hole 2

Approximately one mile south of Hole 1 in a moving dune. Heavy mineral was only seen in the top 6". The hole went to 15' and was still in sand.

3. Hole 3

Some two and a quarter miles south of Hole 2 in semi stabilised dunes by the lagoon. No heavy mineral seen except near the surface.

The hole was stopped at 9' in caving sand.

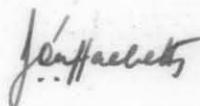
The samples have been sent to the Government Laboratories in Launceston for examination.

CONCLUSIONS

There appears to be up to 1,000,000 tons of sand that could contain enough zircon for profitable extraction, but it is doubtful if 1,000,000 tons is sufficient to justify setting up an extraction industry.

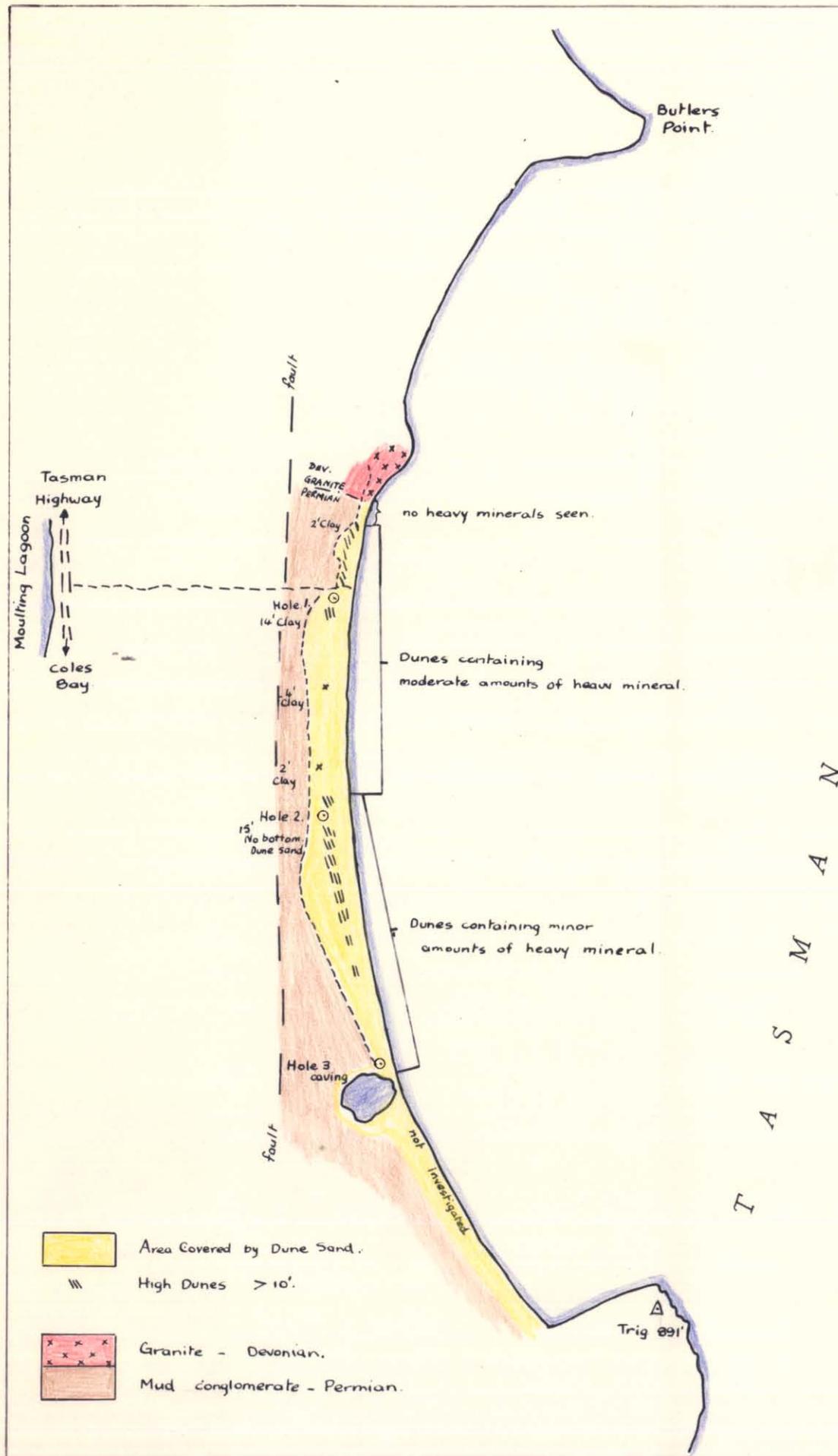
Further work would be required if this amount was to be upgraded and this would depend on the grades to be found south of the one mile point.

Any decision as to whether or not to extend the work will depend on the analyses from Holes 2 and 3.



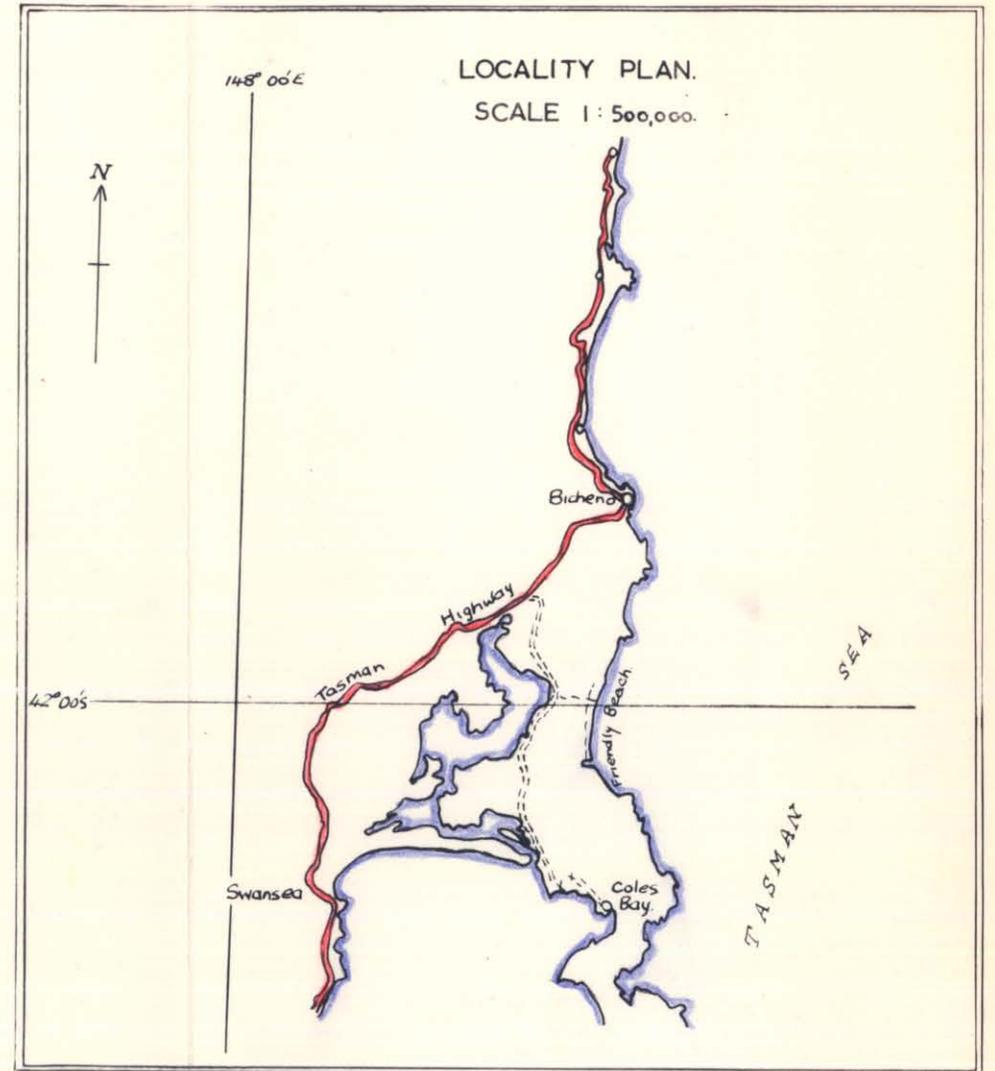
D. O'N. HACKETT

5th November, 1968.



S E A

T A S M A N



SKETCH PLAN OF FRIENDLY BEACH

SCALE 1:5000 APPROX.

