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DEPARTMENT OF SUPPLY AND SHIPPING.

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS.

REPORT No. 1949/30.
(Geol. Ser. No.13).

CAPE EVERARD HEAVY MINERAL DEPOSITS.

by

N.H. Fisher,
Chief Geologist.

CANBERRA, A.C.T. 9th March, 1949.

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SITUATION AND ACCESS.

A deposit of heavy minerals on a beach near Cape Everard was reported by Mr. H. Smith of Noorinbee, and it was examined by Dr. D.E. Thomas, Chief Geologist, Victorian State Mines Department, and the writer on 5th and 6th January, 1949.

The principal deposit of heavy minerals is situated about one mile northerly from Cape Everard and on the eastern side of the Cape Everard headland, (see Locality Map, Plate V.31-2). Access to Cape Everard is difficult - by main road south from Cann River for about 10 miles and then 10 miles by exceedingly rough bush track suitable only for vehicles with low ratio drive. From the terminus of this road it is necessary to walk about six miles east along a fairly soft beach. An alternative bush road leads to the mouth of the Thurra River about 2 miles east of the deposit, but this could not be used at the time of our visit owing to flooding in the lower reaches of the river.

BEACH SAND DEPOSITS.

The long beach west of Cape Everard, between Clinton Rocks (road terminus) and Cape Everard would appear to be suitable for the accumulation of deposits of heavy minerals. There is a considerable area of granitic rocks in the hinterland and granite is exposed on the beach itself - at Clinton Rocks, half-way to Cape Everard and on the Cape Everard headland. The beach is exposed to continual strong winds from the west-south-west, which give the waves an easterly set, and a prominent headland juts out at the eastern end of the beach. However, no deposits of mineral exist on the beach except for very thin patches on the surface (Sample No. 8). The reason for this appears to be partly that the amount of heavy minerals in the sands compared with those of the east coast is low, but mainly that the westerly winds are so strong and continuous that all heavy mineral is blown up together with the quartz sand on to the wind-blown dunes - which are building upwards from the beach on a bearing of about 80 degrees. The beach is now being actively eroded and semi-consolidated dunes of an earlier period of formation, together with in places carbonaceous and clay deposits, are being exposed. The only places where any observable quantity of heavy mineral has accumulated are in the comparatively protected beach on the eastern side of the Cape Everard headland, and at the protected western end of the next beach to the north-east. This beach begins immediately north of the rocks at the north end of the main mineral-bearing beach represented in Plate V.31-1, and almost immediately swings around to an easterly direction.

The principal beach to which our attention was drawn is approximately 1,000 feet long in a direction 5 degrees east of north (magnetic). The beach has a low gradient and is about 200 feet wide from low tide level to the line of vegetation at the back of the beach. The area behind the beach is for the most part very swampy except near the southern end where a low sand ridge runs parallel to the beach. About 120 feet from the rear of the beach the surface rises sharply to the top of the sand-covered headland, a hundred feet or so above beach level. Prominent outcrops of granite enclose the beach at either end.

The beach and the area behind it were tested by posthole digger at numerous points. High ground water level made it impossible to sink more than 2 or 3 feet on the beach or about 5 feet in the slightly higher ground behind the beach. All samples taken were deceptively dark coloured due to the presence of humus, and this has led to false ideas of the grade of the deposit. The dark colour largely disappears on washing or drying. Of six samples

from boring brought back for analysis, five averaged 1.7 per cent heavy minerals, consisting of zircon 17.6 per cent, rutile 10.7 per cent, ilmenite 61.9 per cent, garnet 1.8 per cent, monazite 2.1 per cent and other minerals 6.0 per cent. This agrees reasonably well with the grain count determined on a sample previously forwarded by Mr. H. Smith viz. zircon 24.6 per cent, rutile 10.0 per cent, ilmenite 56.5 per cent. garnet 2.35 per cent, monazite 2.65 per cent, other minerals 3.9 per cent.

Only one sample, No. 3, from just behind the back of the beach gave a high heavy mineral content and this is probably only a local concentration. Such concentrations were noticed on the present beach where small streams run down the sand.

One sample (No. 7) from near the western end of the beach to the north-east also contained a high heavy mineral content. This deposit is confined to the western end of the beach, where it is about 100 feet wide, but between 200 and 300 feet along the beach it rapidly decreases to sporadic patches.

A sample (No. 8) representing recent small surface accumulations on the beach near Clinton Rocks contained less zircon and more ilmenite than the samples from the beaches north of Cape Everard.

Results of grain counts of all samples are given in Table 1.

TABLE I.

Results of grain counts of samples from Cape Everard, Victoria.

Sample No.	Locality	Percentage heavy mineral by weight	Composition by grain count					
			Zircon	Rutile	Ilmenite	Garnet	Monazite	Other Minerals
1	See Plate V31-1.	2.7	17.8	9.8	56.3	2.6	1.7	11.8
2	"	0.2	17.6	14.2	61.3	1.5	2.9	2.5
3	"	54.6	29.5	5.5	56.8	1.5	5.4	1.3
4	"	2.6	25.1	12.1	55.4	1.0	2.8	3.6
5	"	1.6	12.3	5.2	75.9	1.4	2.4	2.8
6	"	1.4	15.1	12.3	60.4	2.4	0.6	9.2
7	100' from W. end next bush to N.E.	42.8	24.2	5.4	63.9	2.0	3.3	1.2
8	Surface deposit near Clinton Rocks.	7.2	8.4	5.7	79.6	2.6	1.1	2.6
Average Nos. 1,2, 4,5,&6.		1.7	17.6	10.7	61.9	1.8	2.1	6.0

RESERVES.

The general average content of heavy mineral is so low that the deposit could not be considered workable under any circumstances, and particularly when allowance is made for the difficulty of access to the area and its distance from treatment plants and markets. Furthermore the dominance of ilmenite in the heavy minerals, and the low content of zircon and rutile compared with the deposits of the east coast, reduce its value still more. Even allowing maximum dimensions - 1,000 feet long by 200 feet wide - and an average depth of 3 feet, the total quantity of heavy mineral present, ignoring local patches of high concentration, would be only about 750 tons.

The next beach to the north-east was not sampled thoroughly enough to determine the average heavy mineral content of the mineral-bearing section, but even if the average value were as high as that of the sample taken (No. 7) it would contain only about 1,200 tons.

The monazite content of the sands averages between 2 and 3 per cent and is unusually high. A sample has been sent to the Division of Industrial Chemistry, Council for Scientific and Industrial Research for determination of thorium content. However, on account of the low grade and small quantity of heavy minerals and the inaccessibility of the deposit, the occurrence cannot be considered to be of any commercial importance.

CANBERRA, A.C.T.
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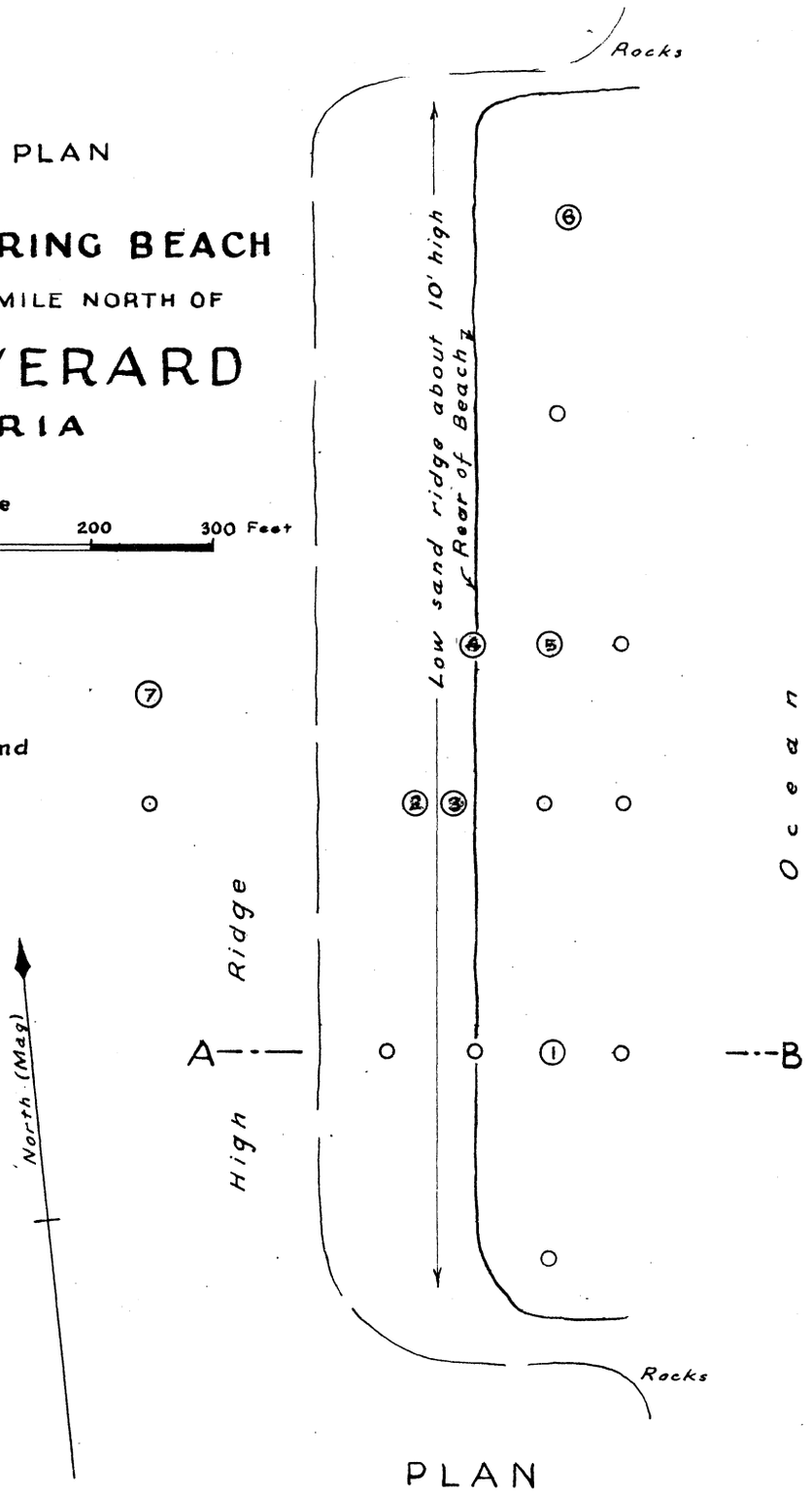
(N.H. Fisher),
Chief Geologist.

SKETCH PLAN
OF
MINERAL - BEARING BEACH
APPROXIMATELY 1 MILE NORTH OF
CAPE EVERARD
VICTORIA

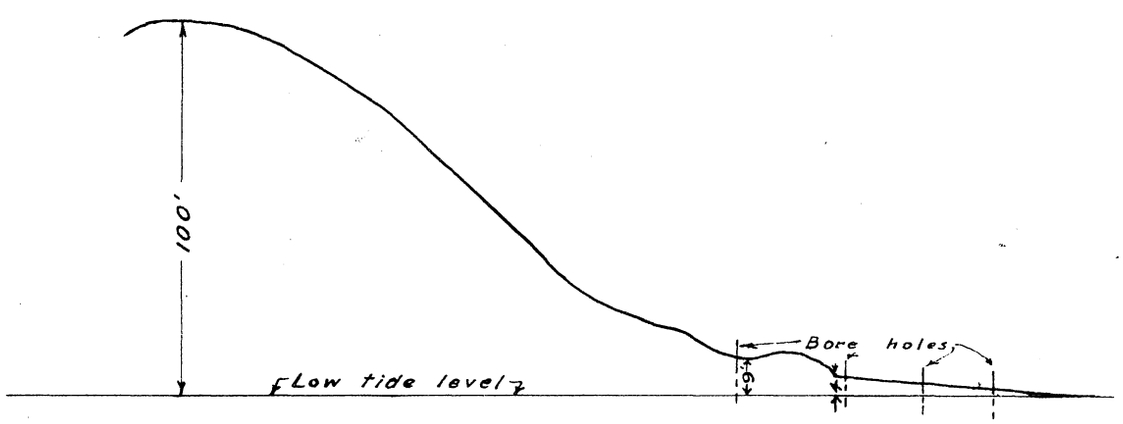
Scale
Feet 100 0 100 200 300 Feet

Sample No. ⑦

Dark coloured sand present but no sample taken ○



PLAN



SECTION ALONG LINE A-B
Vertical Scale (Approx.) 50' to 1"

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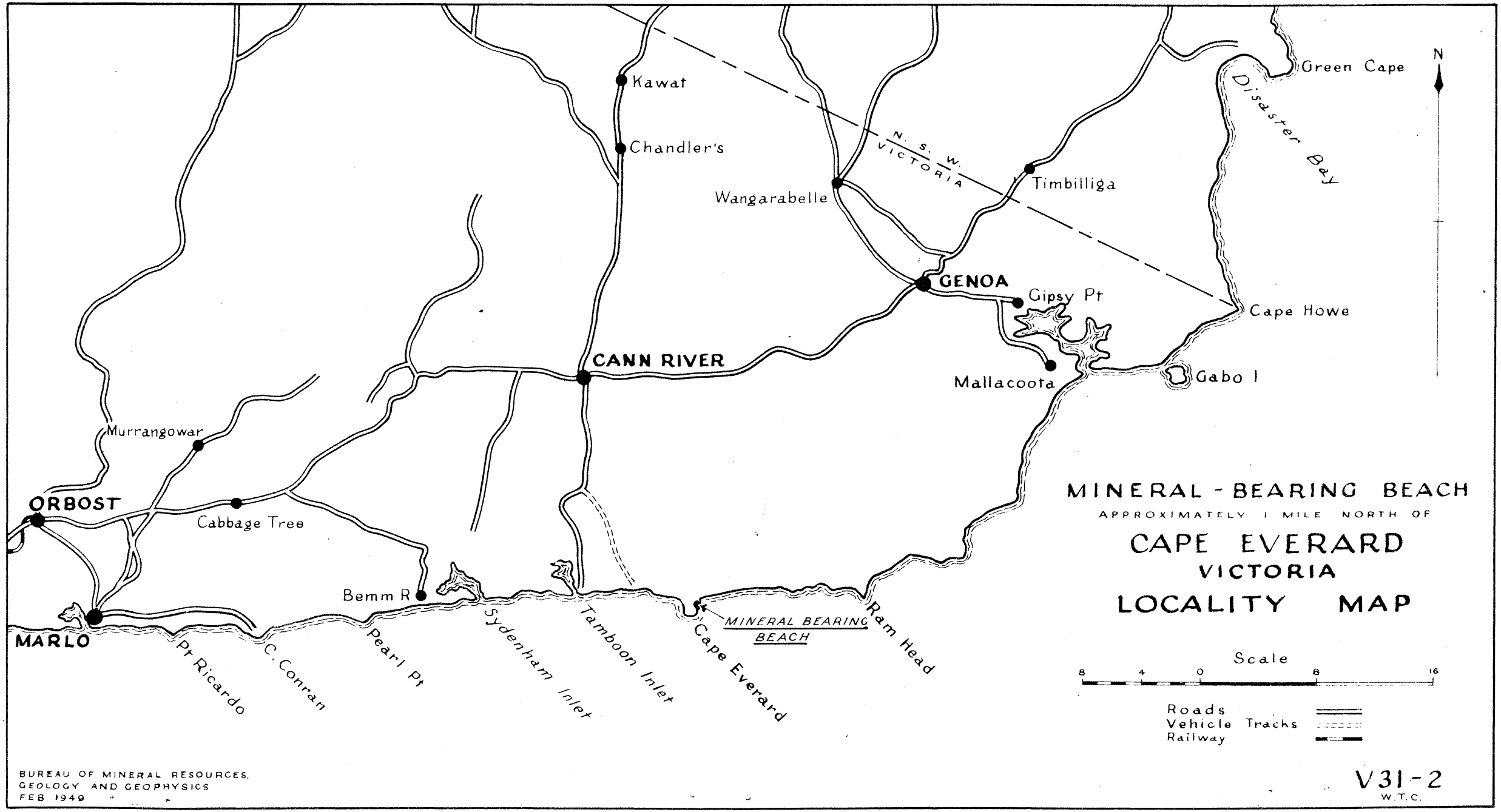
V31-1
W.T.C.


Kawat
Chandler's
Wangarabelle
N. S. W.
VICTORIA
Timbilliga
Green Cape
Disaster Bay
N
GENOA
Gipsy Pt
Cape Howe
CANN RIVER
Mallacoota
Gabo I
Murrangowar
ORBOST
Cabbage Tree
Bemm R
MARLO
Pt Ricardo
C. Conran
Pearl Pt
Sydenham Inlet
Tamboon Inlet
MINERAL BEARING
BEACH
Cape Everard
Ram Head
MINERAL - BEARING BEACH
APPROXIMATELY 1 MILE NORTH OF
CAPE EVERARD
VICTORIA
LOCALITY MAP
Scale
8 4 0 8 16
Roads
Vehicle Tracks
Railway
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