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PLANET GOLD

EXPLORATION LICENCE NO. 13/67

PORT SORELL, TASMANIA

FINAL REPORT

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4th March, 1969.

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DRAWINGS

Introduction

Exploration Licence No. 13/67 was originally granted to Planet over an area of 264 square miles on 25th August, 1967. On 15th May, 1968 an additional area of 99 square miles was granted. Both areas are shown on the Location Map (Fig. 1).

Location

Port Sorell itself is situated on the northern coast of Tasmania at approximately lat. 41°10' S, long. 146°30' E. The areas under licence lie to the east and south of Port Sorell.

Access is quite easy by road from either Launceston in the south-east or Devonport in the west, but within the area it is poor due to the rugged terrain.

Regional Geology

The oldest formation in the area is a series of Pre-Cambrian quartzites and phyllites which outcrop over a large area in the western half of the licence. The Asbestos Range forms a prominent ridge through the central part of the area.

A major unconformity exists between the Pre-Cambrian and overlying Cambrian slates, sandstones and keratophyres, with the Cambrian exposed over small areas to both the east and west of the Pre-Cambrian.

Basic and ultra-basic rocks, which outcrop in the Anderson's Creek area three miles west of Beaconsfield, intrude along the eastern contact area of Pre-Cambrian and Cambrian sediments. Present exposure of this igneous complex and its associated serpentinites and other altered rocks is about four miles long and up to one and a half miles wide.

East of the Tamar River the oldest formation is the Mathinna Series of highly folded sandstones, siltstones and slates of Upper Silurian - Lower Devonian age, probably representing the upper part of the Junee Series. At Lefroy and Back Creek, reefs within this series have been worked successfully for gold. No metallic mineral other than gold has been reported from either the Mathinna or Junee Series within the area here considered.

A series of asymetrical anticlines in the Beaconsfield district resulted from the Tabberabberan Orogeny and were accompanied by at least two periods of faulting.

Fold axes are oriented more or less north-west, the first faulting east-north-east and the second north-west. The major quartz reef of the area, the Tasmania, was emplaced along a fissure of the first faulting. A similar, although more intense sequence of events, seems to have occurred in the Lefroy-Back Creek district.

The Tabberabberan Orogeny was followed by erosion throughout the Carboniferous period and sedimentation did not resume until the Lower Permian. The Permian sequence is comprised of dominantly marine beds of sandstone, siltstone and conglomerate, some of which accumulated under glacial conditions. All beds of the sequence are fairly flat-lying in contrast to the pre-Mid-Devonian rocks on which they were deposited.

Jurassic intrusions of dolerite are widespread, and their direction is controlled largely by the Palaeozoic structural trends. Tensional faulting from early in the Tertiary Period has been controlled in a similar manner.

Major outpourings of Tertiary basalt flows are to be found in the Lefroy-Back Creek area and to a lesser extent west of the Tamar. In places these are covered by blanket-like quartz gravel deposits.

Quaternary deposits of sands and gravels are widespread along the north coast, particularly east of Five Mile Bluff.

Mineral Sands Exploration

A scout drilling programme was conducted by Geological Consultants, Kenneth McMahon and Partners Pty. Ltd., and a copy of the report on this, entitled "Mineral Sands Exploration EL 13/67, Northern Tasmania" was forwarded to the Department of Mines on 8th February, 1968.

The object of the programme was to test the hinterland of the bay between West Head and Badger Head to the west of the Tamar River, the middle arm of the Tamar River, and the eastern area of EL 13/67 in the vicinity of Five Mile Bluff and Stony Head, for heavy minerals, notably rutile, zircon and gold.

The initial programme in the West Head-Badger Head area was based on the study of a topographical map and aerial photographs only, and consisted of regular line and hole spacings, but owing to the sparse mineralisation of the area, the programme was altered to one of random scout drilling of the lease area.

A total of 48 holes and 560 feet was drilled for 142 samples in EL 13/67 in Northern Tasmania between Badger Head in the west and Stony Head in the east. The drilling was carried out between 13th November and 26th November, 1967 using standard hand auger equipment.

24% of the samples had assays of 1% or more, while 52% of the samples assayed 0.5% heavy minerals or better. The mineral fractions were mineralogically examined and found to contain only 6-8% rutile, traces of zircon, and 7½ to 16½% ilmenite, with the balance being mainly amphiboles, garnet, topaz-andalusite, tourmaline and iron oxides.

Clay and/or indurated sand were encountered in 25 of the holes, the remainder being drilled to the water table. Twelve holes were sludged below the water table.

On the whole, mineralization was disappointing, particularly west of the Tamar River although eight of the holes exceeded 1% heavy mineral. On the eastern side of the Tamar, 6 of the 11 scout holes contained 1% heavy mineral or more, these being mainly concentrated about the small bays between rocky headlands on the eastern approaches of Port Dairymple (Tamar River). However, the volume represented by these holes is small.

<u>The Lefroy and Back Creek Gold Fields</u>

The following account of these gold fields is taken from the "Report on Mineral Potential of EL 13/67 and adjacent areas in Northern Tasmania", prepared by J.F.A. Taylor, a consultant to the company.

"These goldfields are situated east of the Tamar River 27 and 33 miles north of Launceston from which they are easily accessible by road.

1. Lefroy

First opened in 1869 the Lefroy field produced 172,000 ounces of gold from 169,000 tons of ore, almost all before 1900 since when there has been little activity. Although more than 50 mines were opened on 30 lodes the main producers were the Golden Point, Native Youth, Pinafore and Volunteer Mines. In most of the mines, gold values declined at shallow depths of about 100 feet with the deepest payable gold being found in the Volunteer at the 463 ft. level. Several attempts were made to find values in depth as the reefs continued strongly. Apart from a very small patch of pyrite assaying up to 33 dwt at the 800 ft. level in the New Pinafore, sinking in this mine to 1,200 feet and in the Volunteer to 1,250 feet found nothing worth mining.

The host rocks for the auriferous quartz veins are strongly cleaved coarse siltstone and fine sandstone of the Mathinna series. These beds strike NNW and dip to the west at 30° to 50° with both strike and dip being disturbed close to faults. They are overlain to the SW by coarse sandstone and underlain to the NE by slate and quartzite, suggesting, as at Beaconsfield, that lithology has been an important control to mineralisation.

A small patch of flat-lying Permian conglomerate overlies the Mathinna beds SW of Lefroy and Tertiary silts, gravels and conglomerates overlie the Mathinna beds close to Lefroy. Basalt flows cover this Tertiary sequence and later Tertiary - Quaternary sediments overlie the basalts.

The area is much faulted. The reefs occupy a series of strong sub-parallel fractures with a strike of 80° - 90° and generally dipping steeply to the south.

Between the reefs thin vein quartz stringers are prevalent along small tension fractures and these have been assumed in the past to contain insignificant gold. The reef system occurs in an en echelon pattern over an area 2½ miles long and averaging 2/3 mile wide. Younger fault systems trending NW and NE cut the reefs and are partly filled with "barren" quartz.

The gold was commonly found with pyrite and stibnite; chalcopyrite and arsenopyrite were also present.

Two theories have been advanced to account for the sudden fall-off in values at shallow depths. One ascribes this phenomenon to enrichment during prolonged erosion of a great thickness of sediments and the other suggests the reefs are merely the "roots" remaining after erosion. The latter explanation although not fully proven appears the more likely.

2. Back Creek

Gold was discovered in this area about the same time as at Lefroy. Total production from the field until operations ceased in the 1890's was about 10,000 ounces from both reefs and deep leads. Later attempts to work alluvial and deep lead deposits were abandoned quickly.

Geology of the area is similar to that described for Lefroy except that there are no Permian beds. As the host sediments dip to the east there is at least one anticline between Lefroy and Back Creek. Faulting is less prevalent than at Lefroy.

The greatest depth of mining was at 170 feet in the Franklin mine but many of the very rich reefs became unpayable at depths of 50 feet or less. The alluvial and deep lead deposits also appear to be of less extent than at Lefroy."

Sampling in the Lefroy and Back Creek Gold Fields

In the Lefroy area five costeans were bulldozed. Channel samples 1 foot wide and 3 inches to 6 inches deep and up to 5 feet long were taken, usually at right angles to quarts veins. However, in some places joints or sets of thin veins were sampled by horisontal channels of the above dimensions.

The costeans as shown on the plan (Fig. 2) are briefly described as follows :-

(i) Pinafore Line. The costean is situated apprax. 300' west of the West Pinafore Extended Mine. Mathinna slates were cut in the bottom of the costean but carried no quarts. Four samples were taken but they appear to only cover the gravels and sands and old soil profiles, but do represent a considerable volume of possible gold bearing material. Samples GC1 - GC4.

(ii) Golden Era - North Clarence Lines. The Golden Era was one of the richest lines on the field. Six samples were taken, GC5 - GC10. Most quartz veins are NNW but 3 quartz veins and many joints run more or less E-W which is the lode line direction. Maximum quartz vein width is 6" and most veins are near vertical and run with the slate's strike.

(iii) Reward Line. Seven samples were taken, GC11 - GC17. Quartz veins run approximately with the strike of the slate and are roughly vertical ranging up to 8" in width, but most are about 1"-2". A zone of slightly open joints probably represents the lode line. A few flakes of gold were seen in a fragment of quartz but this was most likely from the soil horizon and was not sampled.

(iv) Land O'Cakes Line. Thirteen samples were taken. GC18 - GC30. The quartz veins, up to 7" wide and most about 2" wide, run approximately with the strike of the slates and sandstone at 340° and dip westwards from near vertical to 45°. About 10% of the veins dip eastwards. The structure is complicated by a strong fault on the cleavage along which material has slipped into the costean. By combinations of horizontal and vertical channels most of the quartz veins were covered. The lode line is probably represented by purple slates in which jointing (near vertical) is obvious; this zone is 23' wide and is faulted on one side where movement of a quartz vein has been about 8". Samples GC29 and GC30 are not true samples as they were scooped from the floor of the costean where quartz was apparent, but should be useful as a guide to gold mineralisation between the walls of the costean where all the other samples were taken. This costean was cleaned out and deepened before sampling.

(v) Volunteer Line. Five samples were taken. GC31 - GC35. Most veins of quartz appear in the east wall of the Costean but not in the west because of the SE dip. Two prominent joints and two quartz veins associated with them show in both walls at the southern end. Massive quartz up to 14" across occurs in one wall but appears to be an isolated lens.

Results of this sampling are detailed in the appendix.

Conclusions

The thirty-five channel samples cut from the five costeans bulldozed across selected reefs in the Lefroy Gold Field yielded no more than a trace of gold and the maximum yield of silver was only 3.0 dwts per short ton from two of the samples.

The investigations on the beach sands did not reveal any deposits of commercial importance. The sands examined contained only 6 to 8% rutile and traces of zircon.

However, within the boundaries of EL 13/67 and west of the Tamar River, the only other mineralization recorded previously was a small occurrence of copper at Badger Head. Field investigations failed to reveal any traces of copper mineralization near the old shaft, or any other base metal occurrences in the Asbestos Range area.

As it was felt that no further useful work could be done on the area, the exploration licence was relinquished.

APPENDIX

LEFROY GOLD FIELD COSTEANS

RESULTS OF CHANNEL SAMPLES

x = Not Detectable (Au)
Trace = Less than 0.2 (Au)
Trace = Less than 2.0 (Ag)
-- = Not Required

Sample No.	Width	Location	Assays (Dwts/short ton) Au	Ag
GC 1	4'0"	Pinafore Costean	trace	--
2	2'8"	" "	x	--
3	2'9"	" "	x	--
4	4'2"	" "	x	--
5	2'9"	Golden Era Costean	x	trace
6	4'7"	" "	x	2.0
7	2'7"	" "	x	trace
8	3'3"	" "	x	trace
9	3'5"	" "	x	trace
10	1'6"	" "	trace	3.0
11	2'4"	Reward Costean	x	--
12	4'5"	" "	x	--
13	3'4"	" "	trace	--
14	2'8"	" "	trace	--
15	3'2"	" "	x	--
16	3'3"	" "	trace	--
17	2'0"	" "	x	--
18	2'9"	Land O'Cakes Costean	x	trace
19	2'8"	" "	trace	2.0
20	3'5"	" "	trace	2.0
21	3'6"	" "	x	2.0
22	4'0"	" "	x	2.0
23	4'2"	" "	x	trace
24	4'5"	" "	x	trace

Sample No.	Width	Location	Assays (Dwts/short ton) Au	Ag
GC 25	5'0"	Land O'Cakes Costean	trace	trace
26	5'0"	" "	x	3.0
27	5'5"	" "	x	2.0
28	5'4"	" "	x	trace
29	3'6"	" "	x	--
30	4'0"	" "	x	--
31	6'0"	Volunteer Costean	x	--
32	3'0"	" "	x	--
33	3'6"	" "	x	--
34	3'2"	" "	x	--
35	3'8"	" "	x	--

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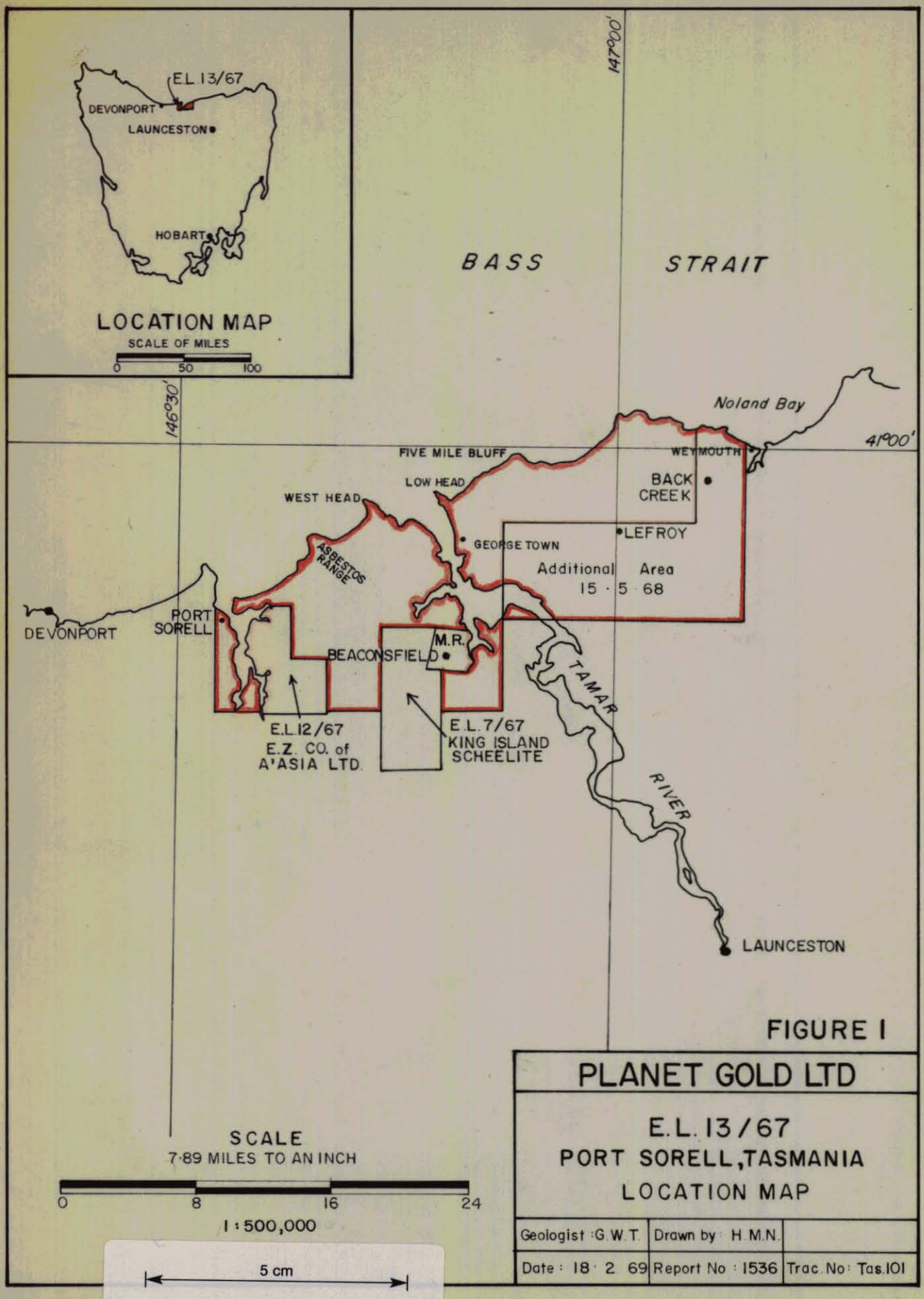

FIGURE 1

PLANET GOLD LTD

E.L. 13/67
PORT SORELL, TASMANIA
LOCATION MAP

Geologist : G.W.T.	Drawn by : H.M.N.	
Date : 18 · 2 · 69	Report No : 1536	Trac. No : Tas.101

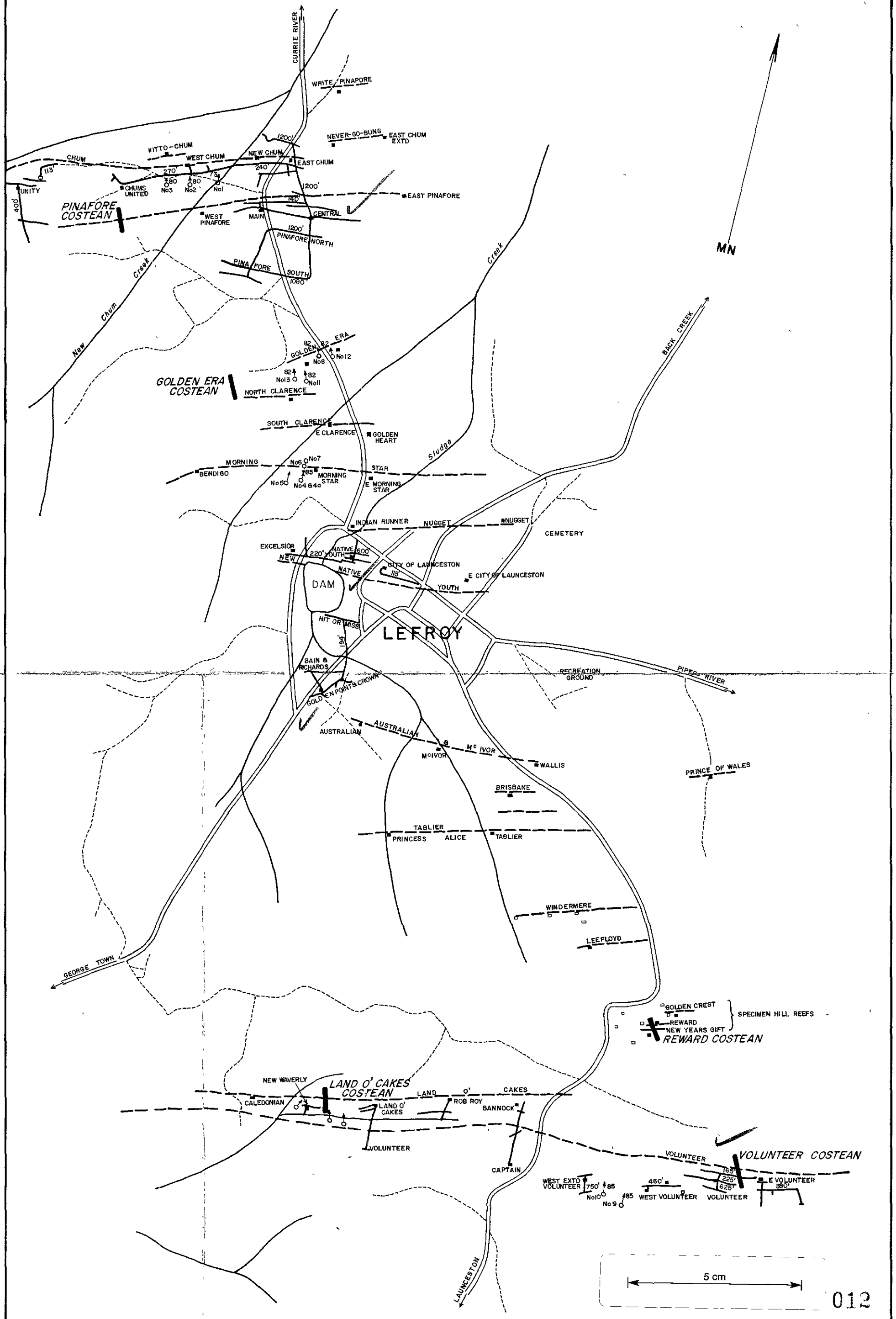

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FIGURE 2

LEGEND

- SURFACE LINE OF REEF
- 100' UNDERGROUND LEVEL
- MAIN SHAFT
- MINOR SHAFT
- 85 / No 1 SURFACE BORE HOLE
- TRACK
- ROAD
- CREEK
- COSTEAN

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ASSAY RESULTS :—
All 35 Samples from costeans less than 0·2dwts. Au/short ton.

REEFS ETC TAKEN FROM D I GROVE'S LEFROY GOLDFIELD PLAN TASMANIAN MINES DEPARTMENT

SCALE OF FEET
(880ft to an Inch)
0 500 1000 2000

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PLANET GOLD LTD.

LEFROY GOLD FIELD PLAN OF COSTEANS

Prepared by· G Clark	Drawn by· H. M N.	
Date 10·12 68	Drawing No	Report No.1536