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PACMINEX PTY LIMITED

PROGRESS REPORT OF EXPLORATION

AND DRILLING TO MAY 1974

ON E.L. 53/70, TASMANIA.

**OPEN FILE**

PMR. 60/74

SYDNEY

May, 1974.

P.M. MACNAMARA

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KEYWORDS

TASMANIA

SK55-3 BURNIE

GEOLOGY

EXPLORATION

GEOCHEMISTRY

DIAMOND DRILLING

SURVEY

MAGNETIC

REGIONAL

PETROGRAPHY

ASSAY

CRIMSON CREEK ARGILLITE

OONAH QUARTZITE AND SLATE

FORMATION

MEREDITH GRANITE

SUCCESS CREEK PHASE

TIN

COPPER

LEAD

ZINC

DRILL LOG

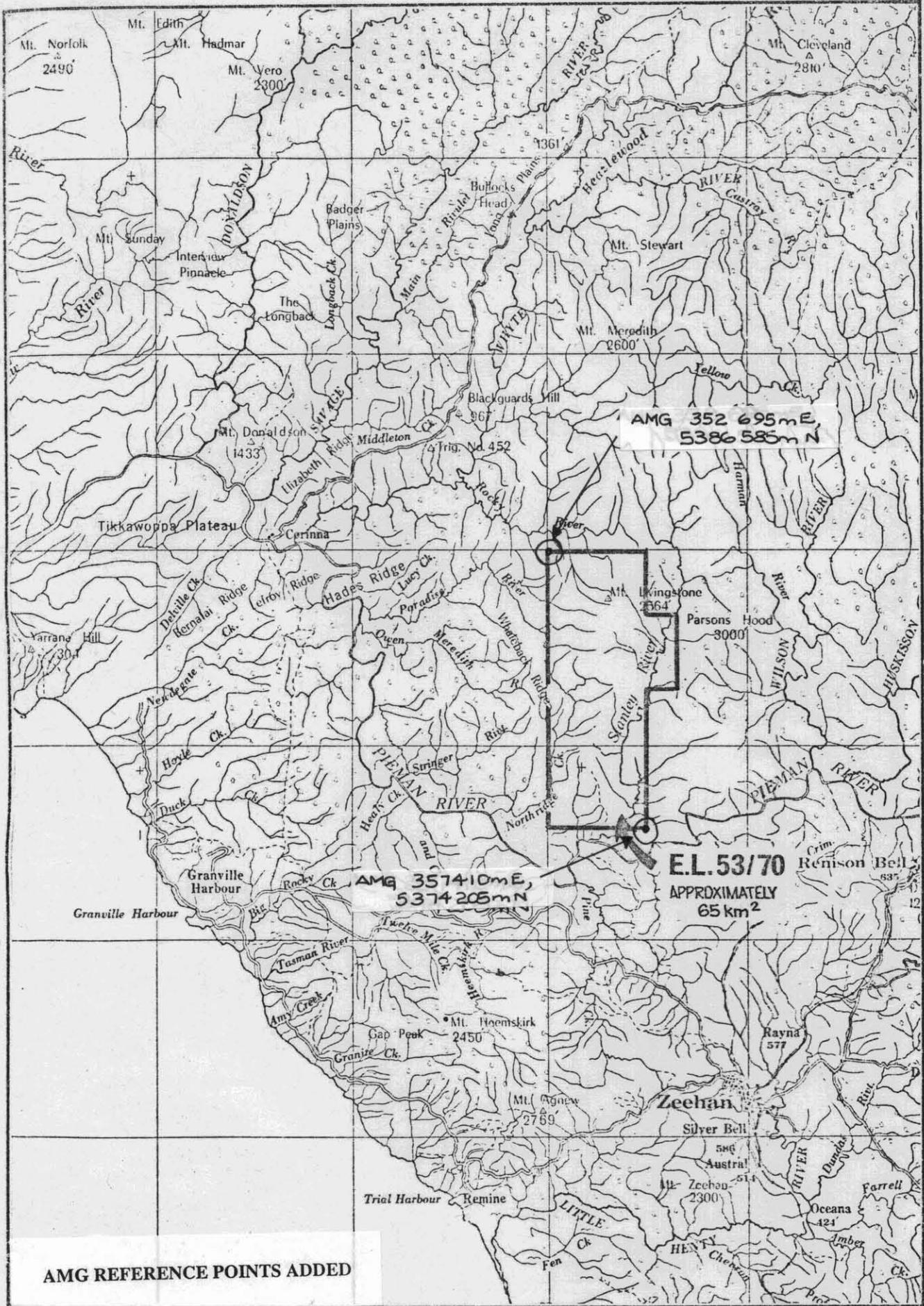


Figure 1. LOCATION MAP OF E.L. 53/70 STANLEY RIVER AREA W. TAS.

## 1. INTRODUCTION

1.1 Discussions concerning Exploration Licence 53/70 were initiated between the licence holder, Valley Exploration Pty Ltd (Valley), and CSR Limited's exploration subsidiary Pacminex Pty Limited in August, 1973 (Figure 1).

1.2 An option arrangement subsequently made between the parties led to Pacminex commencing field work on E.L. 53/70 on 5th November, 1973. Access required helicopter support as no roads occur in or near the E.L.

Four geologists were employed in checking potential target zones.

1.3 Old Mines Department records and more recent exploration reports by companies, combined with the results of the Pacminex inspection and sampling indicated two targets considered for priority attention. These are on Livingstone Creek (flowing at the eastern foot of Mt. Livingstone) and on the Stanley River (Figure 1).

A ferruginous capping ("gossan") on the west bank of Livingstone Creek appeared to be the best and most obvious target to test within the E.L. Reported lead-zinc mineralisation in dolomite beneath alluvials 1.5 km to the south-east near the Stanley Reward Tin Mine offered a secondary target. Some suggestions had been made that this may have been a carbonatite rock.

1.4 Various methods of exploration were considered. The geological data that was already available to Pacminex plus the high cost of helicopter supported access and logistics for a rapidly proposed summer programme indicated drilling to be the best approach to acquire positive knowledge of target areas at depth.



1.5 Four diamond drill holes totalling 298.6 m were drilled subsequently. Three probed one section of the Livingstone Creek Tin Gossan and a fourth probed the dolomite near Stanley Reward (Figure 2).

1.6 This report deals with the results of exploration to date by Pacminex over E.L. 53/70.

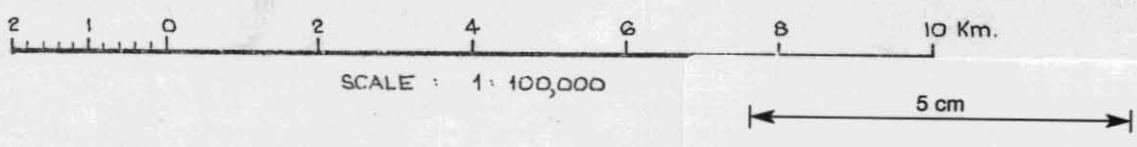
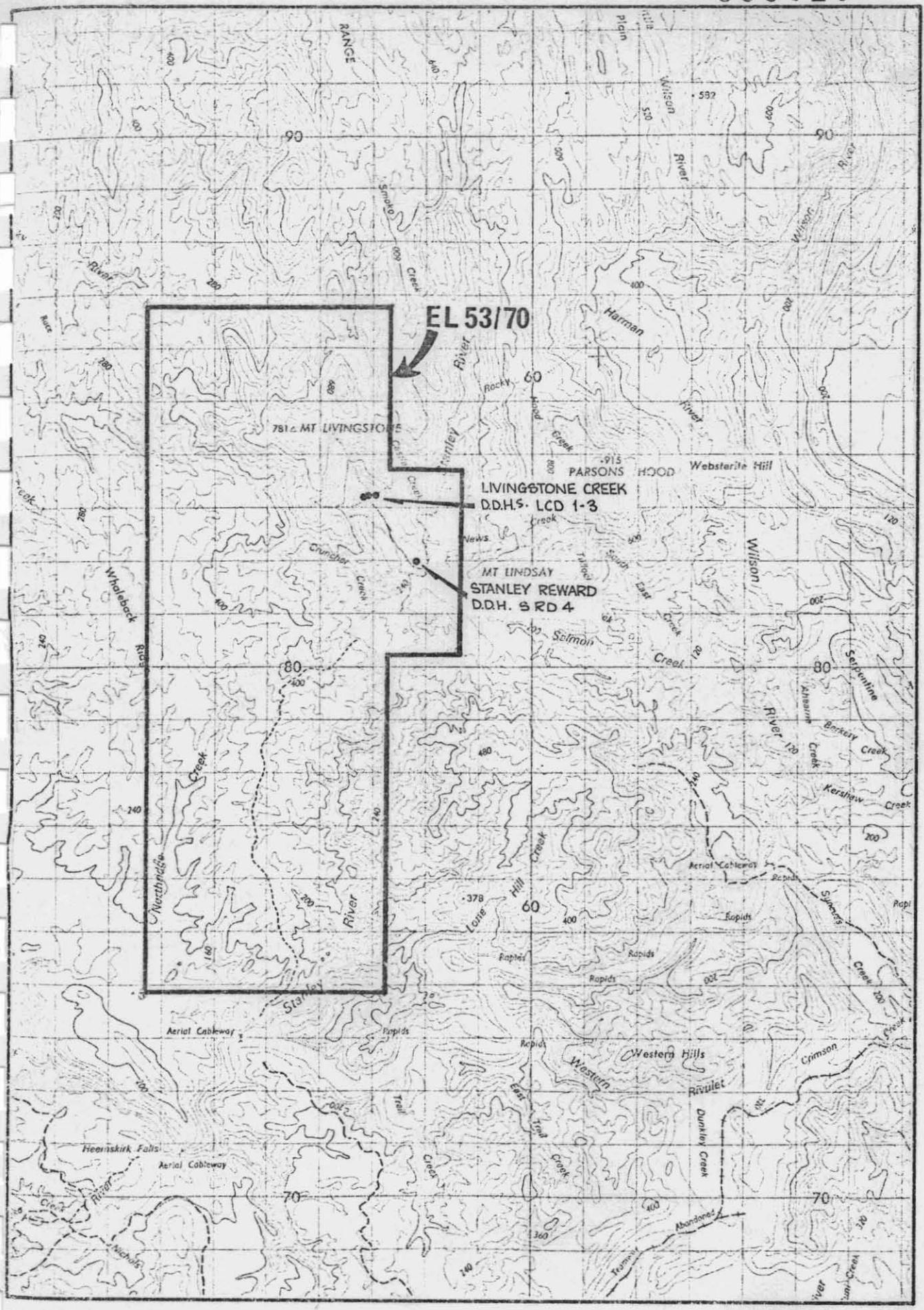


Figure 3. CONTOUR MAP OF E.L.53/70 STANLEY RIVER AREA W. TAS.

2. SUMMARY

2.1 Pacminex began field work on E.L. 53/70 when four geologists entered the area on 5th November, 1973. Helicopter support was required for access due to the widespread and reconnaissance nature of the surveys and the rugged nature of the terrain (Figure 3).

2.2 The initial work included inspection and sampling of a tin gossan on Livingstone Creek, inspection of an area of alluvial cover where dolomite exposed by old placer workings was reported to carry lead-zinc mineralisation, sediment sampling of Livingstone Creek and rivers to the west and south-west and various orientation and reconnaissance traverses to check past geological work and geochemistry of previous operators.

Chip sampling along a 20 m adit cutting the northern part of the Livingstone Creek Tin Gossan gave average values of approximately 0.5% Sn and 0.3% Cu. Similar values were obtained from limited surface chip sampling. As the gossan outcrop is some 200-250 m long by 40 m + wide it appeared to be an obvious target. All past reports and records indicated it to be the best known target within the E.L.

2.3 At this stage it was decided that drilling would give the most positive information at both Livingstone Creek and the Stanley Reward dolomite area.

2.4 Four diamond drill holes totalling 298.5 m were drilled between January and March, 1974. Results are shown in Appendix IV.

2.5 Diamond drill holes LCD 1 to 3 were drilled beneath the Livingstone Creek Tin Gossan (Figure 4). A summary of results follows :-

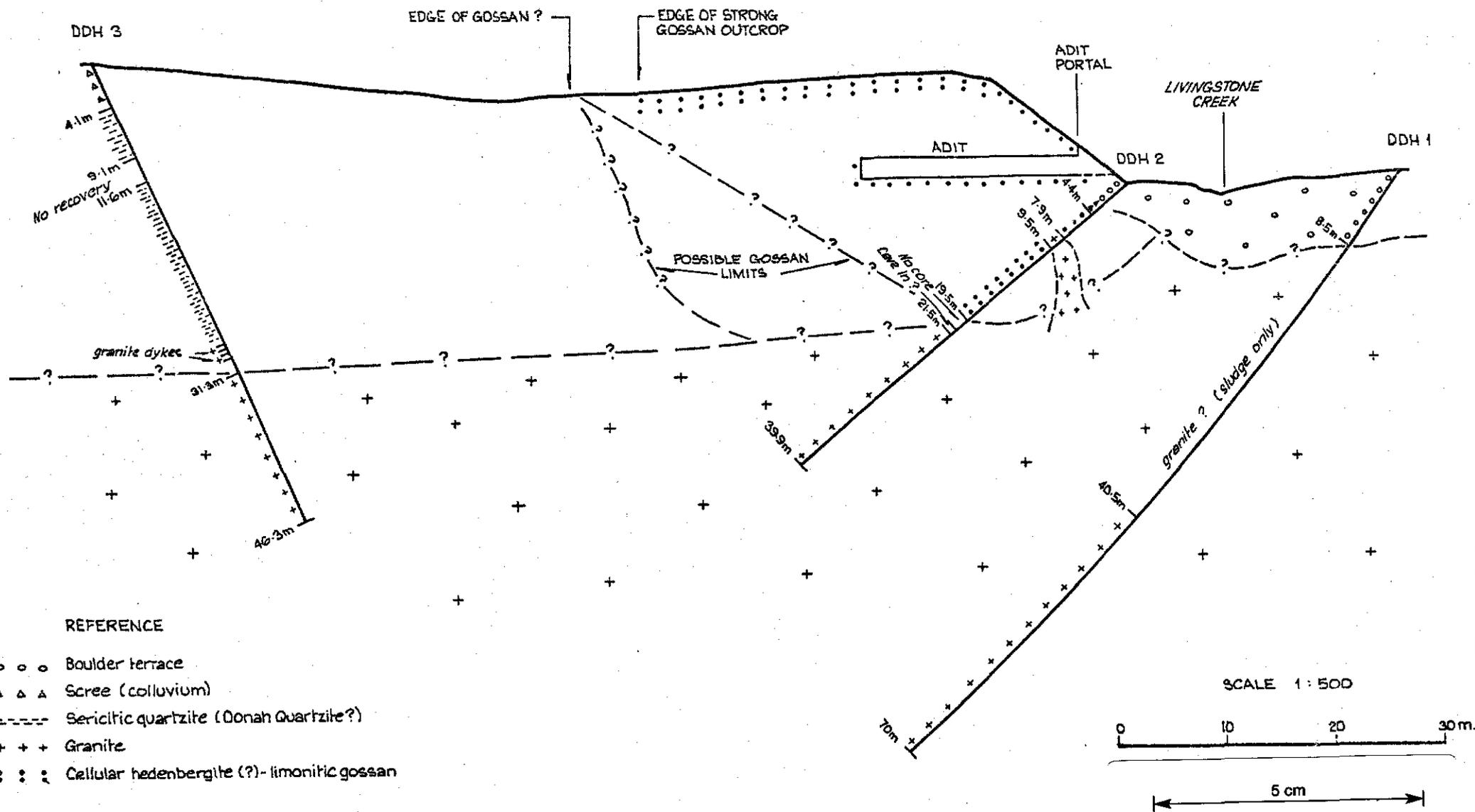


Figure 4. PROFILE THROUGH NORTHERN ADIT OF LIVINGSTONE CREEK GOSSAN (Profile direction 064°M)  
STANLEY RIVER AREA, WEST COAST, TASMANIA

595012

011

2.5.1 LCD 1 : No tin-copper mineralisation indicated. This hole defined a granitic eastern boundary to the gossan.

- 0 - 8.5 m : boulder terrace
- 8.5 - 40.5 m : altered granite (weathered ?)
- 40.5 - 70 m : partially altered (weathered ?) granite.

2.5.2 LCD 2 : 12.5 m of mineralised oxidised gossan drilled. Core recovery was poor but the hole proved continuity of mineralisation beneath the sampled adit, and chip sampled surface exposure.

- 0 - 4.4 m : boulder terrace
- 4.4 - 7.9 m : tin gossan (2.5 m of 0.2% Sn, 0.15% Cu)
- 7.9 - 9.5 m : narrow granite dyke or apophyse
- 9.5 - 19.5 m : gossan (10 m of 0.4% Sn, 0.1% Cu)
- 19.5 - 39.9 m : granite.

2.5.3 LCD 3 : No mineralisation. This hole defined a western limit of the "gossan" in the section drilled. Minor sulphide (pyrite) was observed on joints.

- 0 - 4.1 m : scree
- 4.1 - 31.3 m : sediment (fine grained quartz-sericite quartzite, possibly slightly calcareous)
- 31.3 - 46.3 m : granite.

2.6 The fourth diamond drill hole was collared about 1.5 km south-east of Livingstone Creek Tin Gossan and just south of the Stanley Reward tin prospect near the Stanley River.

2.6.1 SRD 4 : Traces of zinc and tin in dolomite, and minor magnetic sulphide blebs.

0 - 3.1 m : black soil

3.1 - 142 m : marble and carbonate rock ("dolomite" ?) with crenulated bedding at 15° to core axis; minor disseminated sulphides.

2.7 The drilling on one section was not successful in locating a primary zone or downward extension of any lode in granite under the Livingstone Creek Tin Gossan. The length and width of the gossan indicates however that it is warranted to do some further exploration on the gossan. The drilling tended to confirm that the "gossan" is in situ and replaces altered sediments which lie in a sequence near the top and above the Oonah Quartzite and Slate possibly in the "Success Creek Phase". Some 4 km strike length of an horizon which is the host to mineralisation elsewhere in West Tasmania is inferred within E.L. 53/70 and forms a target zone for prospecting (see DWG NO. 1726).

2.8 SRD 4 drilled the dolomite near Stanley Reward Tin Mine. Due to paucity of detailed information on the concealed dolomite's exact location, the hole direction tended to follow the strike of the dolomite. The drilling however, did confirm that a carbonatite did not exist and that a bedded dolomite occurred in the area and carried traces of sphalerite and anomalous tin in a narrow skarn zone. Geophysics may be able to define a target more closely in forward programmes.

2.9 There is known tin mineralisation in the granite at Stanley Reward which was untested in the current programme.

2.10 Other geochemical anomalies in E.L. 53/70 remain to be further checked.

### 3. REGIONAL GEOLOGY

3.1 The Geological Survey of Tasmania 1:250,000 Geological Atlas Series Sheet SK55-3 (Burnie Sheet) shows rocks of three main age groups in the area. These are :-

<u>Age</u>	<u>Rock Type</u>	<u>Unit</u>
Devonian	granite	Meredith Granite
Cambrian	greywacke turbidite and mudstone	Crimson Creek Argillite
Precambrian	quartz wacke turbidite	Oonah Quartzite and Slate

3.2 The geology within the area on which exploration was focussed most intensively is not known in detail, but drilling has increased our present knowledge.

Within the Licence area, but drilling has increased our present knowledge, a north-west trending boundary divides the Oonah Quartzite and Slate on the SW from the Crimson Creek Argillite on the NE (see DWG NO. 1726). This boundary is inferred in part to be near the course of Livingstone Creek.

In the north-east part of E.L. 53/70 the Meredith Granite occurs to the east and south-east of Mt. Livingstone. It intrudes the Crimson Creek Argillite and Oonah Quartzite and Slate, and transgresses the inferred boundary in places along Livingstone Creek. Much of this boundary is hidden beneath alluvials.

3.3 The zone near the top of the Oonah Quartzite and Slate and overlying formations of the lower Cambrian is one of the main mineralised zones on the West Coast of Tasmania. It includes the "Success Creek Phase" above the Oonah Quartzite and Slate.

The favourable horizon is characterised regionally by carbonate rocks, cherts and conglomerates.

In places (e.g. Zeehan) the uppermost parts contain spilitic volcanics indicating the start of eugeosynclinal sedimentation, and an ophiolite association.

In places the 'Penguin Orogeny' interrupted deposition at the base of the "Success Creek Phase". The carbonate sequence probably indicates a shallowing of the sedimentary basin after the main thickness of the Oonah Quartzite and Slate sequence was deposited.

3.4 Outcrop is insufficient to confirm the "Success Creek Phase" within E.L. 53/70. Diamond drill hole SRD 4 confirmed "dolomite" near the Stanley Reward Prospect. Diamond drilling on Livingstone Creek indicated red shale bands (LCD 3) and cherty carbonate and possible volcanics (LCD 2). This subsurface data suggests the likely presence of the favourable horizon sought.

3.5 Structural geology may be more complex than presently realised. There is little data on proven faulting though air photo lineaments and magnetic data suggest that their influence may be a problem in prospecting.

#### 4. MAGNETIC SURVEYS

4.1 A compilation of regional aeromagnetics at 1:63,360 scale supplied by Mr. J.T. Irving agrees well with the regional geology described above. A strong magnetic anomaly occurs along the western side of Livingstone Creek. A peak occurs in the vicinity of the Livingstone Creek Tin Gossan.

4.2 A vertical magnetic intensity plan at 1:2,400 scale prepared by Aberfoyle Tin Development from ground traverses has been viewed. It indicates two strong anomalies representing the faulted (?) halves of the

Livingstone Creek Tin Gossan. Lateral displacement could be approximately 100 m.

4.3 Examination of existing data suggests a need for further magnetic work in future programmes. Low level aeromagnetics followed by close spaced ground magnetics over anomalies are proposed.

#### 5. PAST WORK

5.1 Various reports and records of the Mines Department as well as available company reports were considered prior to drilling E.L. 53/70. These were found to be quite valuable. Waterhouse (1914) indicated the approximate position of the dolomite confirmed by drilling SRD 4.

5.2 A more thorough review of available data is to be carried out in the immediate future. Geological data will be transferred on to standard metric scale base maps.

#### 6. PACMINEX - NOVEMBER-DECEMBER 1973 PROGRAMME

6.1 This programme was essentially aimed at checking reported anomalies and gossans. It involved check sampling of the Livingstone Creek Tin Gossan, inspection of the Stanley Reward dolomite location and tentative selection of drill sites in both areas. Reconnaissance sediment sampling was done over various reported anomalies (see Appendix II), as well as reconnaissance traverses. Petrological samples were collected.

6.2 Some panning of heavy minerals in Stanley River alluvials was done but no systematic programme was attempted.

6.3 The results of this work indicated :-

6.3.1 The Livingstone Creek Gossan is an in situ limonite-magnetite-hedenbergite type. Chemical analyses indicate values of approximately 0.5% Sn and 0.3% Cu. The gossan is 200 to 250 m long by 40 m + wide. A possible NE dip for a lode was inferred from the regional dips in the Oonah Quartzite and Slate.

6.3.2 The dolomite reported to carry lead-zinc mineralisation mentioned by Waterhouse (1914) was completely concealed by alluvials. A helicopter pad formed previously by Aberfoyle Tin Development was an obvious easily available drill site for helicopter transported rigs. Our inference was that Waterhouse placed the dolomite south of the pad and probing by drilling was therefore aimed south-easterly.

6.3.3 A -80 mesh sediment sample (A12436) 1.5 km south-west of Mt. Livingstone gave the only anomalous tin value (240 ppm Sn against less than 150 ppm Sn for the rest).

Sample A12415 adjacent to and just below the Livingstone Creek Tin Gossan also analysed at less than 150 ppm Sn (the limit of detection). The limited sampling indicates -80 sediment sampling is not particularly effective, although the A12436 area need checking further.

6.3.4 The low base metal values obtained in regional drainage and soil sampling apparently reflect the humic acid leaching reported by other workers on the west coast of Tasmania.

Sample numbers are shown on Drawing No. 1726, chemical analyses are shown in Appendix II.

7. PACMINEX DRILLING PROGRAMME - JANUARY-MARCH 1974

7.1 A decision to drill the Livingstone Creek Tin Gossan as the primary target was made in December, 1973. The dolomite south of Stanley Reward was chosen as a secondary target for petrological information.

7.2 Associated Diamond Drillers, based at Zeehan, started to transport an F30 diamond drill and drilling equipment to the Pieman River on 21st January, 1974. All drilling and camping gear was subsequently lifted to Livingstone Creek by helicopter. The first drill hole (LCD 1) was collared on 26th January.

7.3 Three diamond drill holes (LCD 1 to 3) were drilled on a section line at the Livingstone Creek Tin Gossan locality (Figure 4). A fourth hole (SRD 4) was drilled at  $-45^{\circ}$  in a south-east direction through the dolomite near the Stanley Reward.

7.4 A brief description of results is given in the Summary (Section 2). Figure 4 shows the relative positions of LCD 1 to 3.

A log of each hole is attached in Appendix IV together with chemical analyses.

7.5 LCD 1 disproved any marked easterly dip extension to the Livingstone Creek mineralisation, although a persistent regional easterly dip occurs in adjacent Oonah Quartzite and Slate outcrop.

7.6 LCD 2 cut 12.5 m mineralised gossan, before passing into granite. At this stage a shallow westerly dip for the "gossan lode" was a possibility and it was decided to drill LCD 3 on a east dipping inclination.

7.7 LCD 3 did not intersect mineralisation but passed from (?) Oonah Quartzite and Slate into granite.

7.8 The drilling did not intersect a downward extension of a lode under the gossan on the line drilled. As the mineralisation is believed to lie in metasomatised contact sediment ("skarn" ?) extension of a lode in granite is not likely.

7.9 At the Stanley Reward helipad, there is no dolomite outcrop. SRD 4 was sited to test the possible positions of the dolomite as indicated by old reports. SRD 4 was declined at  $-45^{\circ}$  to the SE. It appeared generally to cut the bedding at  $15^{\circ}$ . Only weak zinc values were obtained. The hole was unbottomed in carbonate sequence and as anomalous tin (0.18%) was recorded in a narrow skarn band, the contact with granite may be a "likely" skarn target.

## 8. PETROGRAPHY

8.1 Thin sections show that the Livingstone Creek Tin Gossan to be limonitic hedenbergite-rich (calcium-iron pyroxene) skarn rock. Limonite now replaces much of the rock and possibly derives mainly from iron bearing sulphides, oxides and silicates originally. Tin and copper values and traces of sediment in places indicate an in situ gossan as tin is unlikely to have been transported (see description A12449, Appendix III).

8.2 Samples A12424 and A12439 are hornfelsed Oonah Quartzite and Slate. They contain tourmaline, sericite and traces of sulphides and cassiterite.

The presence of tourmaline and trace cassiterite throughout the Oonah Quartzite and Slates seems to be a general feature.

8.3 A petrographic report on samples from diamond drill hole LCD 2 confirmed the skarn and argillaceous

carbonate origin of the host to the ferruginised tin bearing material near the top of the hole. The presence of red-brown chert (A9533) and possibly of basic igneous rocks tend to confirm the horizon as part of the "Success Creek Phase".

## 9. CONCLUSIONS

9.1 Drilling has tended to confirm the area of most intensive work by Pacminex is underlain by a favourable stratigraphic horizon at the top of the Oonah Quartzite and Slate. It is therefore prospective.

9.2 Drilling of the Livingstone Creek Tin Gossan has not proven a downward extension of a lode beneath the gossan. On the line drilled, the gossan has limited extension in depth. Further testing is warranted mainly on the basis that the "gossan" is apparently in situ, measures 200-250 m long by 40 m + wide and may have a plunge extension.

9.3 Drilling near Stanley Reward confirmed the presence of a carbonate sequence and dismissed inferences on carbonatites held by some parties. Due to lack of knowledge concerning the exact location of the dolomite, SRD 4 tended to follow the strike direction (within  $20^{\circ}$ ). Bedding is recognised in the dolomite but is often crenulated. No economic sulphide grades were found, but the horizon warrants further testing for lead-zinc, copper-tin and for tin in granite reported at Stanley Reward. Skarns should be tested for scheelite possibilities.

## 10. FUTURE EXPLORATION PROGRAMME

If tenure of the Licence is renewed an exploration programme of the following type is recommended for the next prospecting stage.

- 10.1 Airborne EM (McPhar H500 system) and  
Aeromagnetics over E.L. 53/70.
- 10.2 Ground Magnetism and IP follow-up on cut  
lines.
- 10.3 Ground follow-up of airborne work, geological  
mapping including mapping of anomalies and geochemical  
sampling.
- 10.4 Diamond drilling of targets resulting from  
geological and geophysical analysis.

#### 11. REFERENCES

- BLISSET, A.H., 1962 : Explanatory Report, Zeehan 1 Mile  
Sheet. Geol. Survey Tasmania.
- IRVING, J.T., 1973 : Report on E.L. 53/70, Mt. Livingstone-  
Stanley Reward.
- WATERHOUSE, L.L., 1914 : The Stanley River Tin Field,  
Geol. Survey Bull. 15, Tasmania.

P.M. MACNAMARA  
(EMP)

APPENDIX I

DESCRIPTIONS AND CHEMICAL ANALYSES OF  
ADIT AND MISCELLANEOUS ROCK CHIP SAMPLES  
COLLECTED NOVEMBER 1973

The Northern Adit is in limonitic gossan just west of Livingstone Creek, 1.6 km SE of Mt. Livingstone.

- A12400 Chip sample, north wall of adit; cellular limonitic gossan.  
0-3 m from face (17-20 m from portal).
- A12401 Chip sample, north wall of adit; cellular limonitic gossan. 3-6 m from face.
- A12402 Chip sample, north wall of adit; cellular limonitic gossan. 6-9 m from face.
- A12403 Chip sample, north wall of adit; cellular limonitic gossan. 8-12 m from face.
- A12404 Chip sample, north wall of adit; cellular limonitic gossan. 12-15 m from face.
- A12405 Chip sample, north wall of adit; cellular limonitic gossan. 15-18 m from face.
- A12406 Chip sample, north wall of adit; cellular limonitic gossan. 18-20 m from face (portal is at 20 m from the face).
- A12407 70 m at 140° SE of northern adit portal; limonitic cellular gossan probably near in situ.
- A12408 Limonitic cellular gossan outcrop on spur top 35 m at 150° from northern adit portal.
- A12409 Limonitic gossan outcrop on edge of gossan scarp 18 m west of adit portal.
- A12410 Limonitic gossan from around tree roots 75 m west of A12409, probably nearly in situ.
- A12411 1.5 m wide. Quartz vein outcrop in hornfelsed sediments containing weathered cream radiating crystals (actinolite ?, hedenbergite ?, tourmaline ?).
- A12443 Siliceous outcrop material with limonite casts from silicified country rock sandstone, 1,500 m south of "airstrip ridge" (Conah Quartzite and Slate).

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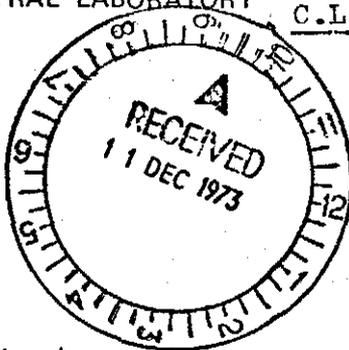
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CENTRAL LABORATORY C.L. 2907

Telephone: 660-0533  
Telegrams: Centralab

70 John Street,  
Pymont. N.S.W.

Pacminex Pty. Ltd.,  
HEAD OFFICE.



Date 7/12/73  
Our Ref. No. A.R. 011/0279  
Your Ref. ....

Attention : Dr. Rattigan

The undermentioned samples, received 20/11/73, have been tested with the following results:

ANALYSIS BY A.A.S.

Sample	% Cu	% Sn
A 12400	.046	.59
A 12401	.029	.49
A 12402	.031	.19
A 12403	.019	.65
A 12404	.028	.51
A 12405	.015	.39
A 12406	.028	.60
A 12407	.019	.51
A 12408	.010	.19
A 12409	.008	.55
A 12410	.021	.44
A 12414	.002	N.D.
A 12443	.002	N.D.

Northern  
Adit (20m long)  
average  
0.49% Sn  
0.28% Cu

.51 - 70m SE of Northern Adit  
.19 - 35m S " " "  
.55 - 18m W " " "  
.44 - 40m W " " "

*WR Mayer*  
Chemist

*[Signature]*  
Manager

APPENDIX II

DESCRIPTIONS AND CHEMICAL ANALYSES OF

CREEK SEDIMENT SAMPLES E.L. 53/70

COLLECTED NOVEMBER 1973

- 026
- A12411 0.5 km above northern adit in Livingstone Creek gossan. Creek boulders, 1 m blocks of granite quartz-felspar biotite granite, as well as quartz veined hornfelsed sediments; quartz veins carrying radiating (?) Fe-Mg crystals. Outcrop is hornfels. Organic sand.
- A12415 50 m below northern adit cutting tin gossan near Livingstone Creek. Organic, muddy silt.
- A12416 Organic sand. At location A1, north of Paradise Creek.
- A12417 Organic, sandy. R.H. Tributary.
- A12418 Organic, sandy. R.H. Tributary.
- A12419 Organic, sandy.
- A12420 Draining "airstrip ridge" organic, sandy.
- A12421 Organic, sandy.
- A12422 Residual soil possible intrusive (?) - "ring" structure.
- A12427 Organic, silty above previous sampling point Z20 (Irving). Hornfels on west bank 090/70°N dip, quartz veins (030/80°E - main veining direction, and 180°M).
- A12428 Organic, silty, near reported gossan (gossan not seen), outcrop f.g. sandstone (hornfels).
- A12429 Soil sample equivalent to Irving's PD25115. 0-0.2 m quartz scree and grey black sandy soil, organic.
- A12430 Soil sample near Irving's PS2510R. Scree soil 0-0.2 m, organic.
- A12431 Stream sediment, organic quartz sand.
- A12432 Organic fine sand sediment.
- A12433 Organic fine and coarse sandy sediment at Irving's location A13.
- A12434 Fine and coarse grit and organic sediment. No granite outcrop or boulders seen. Outcrop micaceous sandstone hornfels. Irving's location A14.
- A12435 Gritty organic sediment.
- A12436 Organic-silt-sand-quartz fragments sediment.

- A12437 Organic sandy sediment. Irving's location A6. No granite boulders in creek. Sandy micaceous hornfels outcrop. 240°/dip 80°S.
- A12438 Organic, sandy sediment from bank. Outcrop black slate 026/73°N dip but varies 020-080/70-80°SE, plunge 80°S.
- A12440 Organic, sandy sediment. Outcrop sandstone hornfels 045/72°SE.
- A12441 Organic gritty sand sediment, bank and active. Sandstone hornfels with interbedded slate 070/steep variable dip, plunge 040°/80°.
- A12442 Black organic muddy sediment. Sandstone hornfels 020/steep dip. Between A12442 and A12438, a ridge of sandstone hornfels strikes 020/70°E with barren quartz veins (10/m) trending 120/60-80°S.
- A12444 Organic muddy grit; outcrop quartz veined sandstone hornfels.
- A12445 Organic gritty sediment.
- A12446 Organic sandy sediment.
- A12447 Organic sandy sediment.

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CENTRAL LABORATORY

C.L. 3043

Telephone: 660-0533

Telegrams: Centralab

70 John Street,  
Pymont. N.S.W.

Pacminex Pty. Ltd.,  
O'Connell House,  
Head Office.

Date 14/2/74

Our Ref. No. A.R. 011/0362

Your Ref. O/N 8556

Attention : Dr. Rattigan

The undermentioned samples, received 1/2/74, have been tested with the following results:

ANALYSIS BY A.A.S.

Sample	ppm Cu	ppm Pb	ppm Zn
A12411	8	8	10
A12415	< 5	< 5	6
A12416	5	6	7
A12417	8	< 5	10
A12418	< 5	< 5	6
A12419	7	< 5	5
A12420	7	< 5	7
A12421	5	< 5	6
A12422	6	10	9
A12428	5	7	8
A12429	(30)	6	9
A12430	9	< 5	6
A12431	6	< 5	6
A12432	5	< 5	10
A12433	6	< 5	< 5
A12434	< 5	< 5	< 5
A12435	< 5	8	< 5
A12436	7	< 5	6
A12437	< 5	6	< 5
A12438	< 5	< 5	< 5
A12440	< 5	6	< 5
A12441	< 5	< 5	< 5
A12442	8	6	7
A12444	< 5	6	< 5
A12445	< 5	< 5	< 5
A12446	< 5	< 5	< 5
A12447	< 5	< 5	< 5

Sn results to follow when analysis complete.

*W.R. Mays*  
Chemist

*P. Johnson*  
Manager

CSR Limited  
formerly  
THE COLONIAL SUGAR REFINING COMPANY LIMITED.

CSR/2099

CENTRAL LABORATORY

C.L. 3116

Telephone: 660-0533

Telegrams: Centralab

Pacminex Pty. Ltd.,  
O'Connell House,  
Head Office.

Attention : Mr. P. MacNamara

70 John Street,  
Pyrmont. N.S.W.

Date 15/3/74Our Ref. No. A.R. 011/0362Your Ref. 0/N 8556

The undermentioned samples, received 1/2/74, have been tested with the following results:

ANALYSIS BY A.A.S.

Sample	ppm Sn
A12411	<150
12415	<150
12416	<150
12421	<150
12431	<150
12435	<150
12436	240
12437	<150
12441	<150
12444	<150
12447	<150

The following samples were pulverised before analysis.

A12424	<150
12426	<150
12439	<150
12448	<150

*W.R. Mays*  
Chemist  
*M. T. Baner*  
Manager

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APPENDIX III

PETROGRAPHIC DESCRIPTIONS OF  
OUTCROP SAMPLES ON E.L. 53/70  
COLLECTED NOVEMBER 1973

- A12412 5-15 mm coarse grained quartz-felspar-biotite granite creek boulder. No outcrop seen (Location A12411).
- A12413 5-15 mm quartz-felspar porphyritic granite with 1-2 mm quartz-felspar-biotite groundmass. Creek boulder, no outcrop seen.
- A12423 f.g. laminated micaceous sandstone (sample lost) - sample JHR1.
- A12424 f.g. pitted (limonite) sandstone hornfels - sample JHR2.
- A12425 Quartz porphyry with joint surface, north of Mt. Livingstone. Contact of Meredith Granite and Oonah Quartzite and Slate (JHR3) 1.6 km north of Mt. Livingstone.
- A12426 Laminated carbonate (?) scree boulder east of Stanley Reward helipad - a possible carbonate sediment as laminae are probably bedding. Check TS for contact, alteration minerals, sulphides, etc. (TS).
- A12439 Black shale at A12438 location. Oonah Quartzite and Slate. 2.8 km SSE of Mt. Livingstone (TS).
- A12448 Bedded f.g. sandstone with possible tourmaline on bedding plane or contact. Alteration minerals. 1.4 km WSW of Mt. Livingstone in Oonah Quartzite and Slate.
- A12449 Gossan material from above northern adit, Livingstone Creek gossan. Radiating goethite (?) pseudomorphing tourmaline (?) or hedenbergite (?) (TS).

**PACMINEX PTY. LIMITED**

MEMORANDUM TO: DR. J.H. RATTIGAN  
MR. P.M. MACNAMARA

OUR REF: PJC/SS

FROM: P.J. CURTIS

DATE: 4th January, 1974.

LIVINGSTONE CREEK AREA, TASMANIA, PROJECT 600

Introduction

Rocks were submitted for identification of rock type and minerals present.

Summary

A9980 (A12424)

A hornfelsed then pneumatolysed pyritic shale meta-sediment of sericite, quartz, albite, tourmaline, rutile, traces of cassiterite and limonitic pseudomorphs of sulphide.

A9981 (A12426)

Pneumatolysed shaley siltstone of quartz, sericite, phlogopite, actinolite and albite. A contact metamorphosed altered rock. Traces of cassiterite are present.

A9982 (A12439)

A tourmalinised shale of fine tourmaline, sericite and quartz. A little cassiterite may also be present and traces of chalcopyrite. Shearing of this rock has occurred.

A9983 (A12448)

A recrystallised quartz-sericite rock of mainly quartz. Phlogopite and stumpy tourmaline prisms are seen sparsely, more abundant rutile and traces of cassiterite are seen along parallel horizon intervals associated with limonite/specularite.

Pneumatolysed shale rock after contact metamorphism.

A9984 (A12449)

Skarn, metamorphosed rock possibly originally diopside hornfels (?) altered to hedenbergite (shapes of cross sections confirm this), by iron metasomatism. Then weathered to limonite pseudomorphs of hedenbergite.

Details of Investigation

A9980 (A12424) : Pale greenish-brown fine grained flaggy rock.

A fine grained quartz-sericite-albite rock of grain size mainly about 0.10 mm and larger sericite flakes, quartz and albite. Many limonite rich pseudomorphs of sulphide

(probably pyrite) occur, which vary in concentration along different bedding planes. Some of these pseudomorphs now contain albite and others sericite and kaolinite as well as dense iron oxide. About 1 percent of perfectly formed tourmaline prisms occur scattered with rutile and a little irregular cassiterite. Possibly topaz but no fluorite is seen.

In the alternative section provided, occurs a greater density of rutile as fine acicular needles and also ragged irregular biotite flakes are seen and irregular chlorite, quartz, albite and kaolinite. Sericite in this section shows an orientation of flakes in parallel to sub-parallel alignment.

The presence of albite was confirmed by mineral stain.

A hornfelsed then pneumatolysed pyritic shale metasediment.

A9981 (A12426) : Massive limestone ?

A shale metasediment but coarser grained than for A9980 and the rock probably was not pyritic.

Pale ragged phlogopite and greenish fibrous actinolite bundles (approx. 3 volume percent) associated with limonite are present showing a parallel orientation of crystals along bedding planes. The phlogopite is sometimes somewhat chloritised.

Sericite varies in density from 5 to 30 volume percent, the difference being made up mainly by recrystallised quartz (approx. 0.10 mm) which as linearly oriented mosaic lamellae shows banding. The phlogopite and actinolite are more patchy in distribution. Scattered water clear albite as simple grains or aggregates were indicated by mineral stain.

Appreciable tiny prismatic tourmaline (0.005 to 0.01 mm) grains are scattered throughout, rutile and apatite in moderate abundance (1 volume percent) with possible cassiterite which is present in traces. Less than 1 volume percent fine specularite also occurs.

Pneumatolysed, contact metamorphosed shaley siltstone.

A9982 (A12439)

Mainly quartz as sheared quartz grains and quartz rock fragments. Minimal sericite is seen between the quartz, mainly fine black needles of tourmaline ( $< 5 \times 1 \mu$ ) as aggregates (stellate or sheaf forms) or solitary grains within many quartz grain boundaries showing that -  
tourmalinisation of quartz-sericite-shale began before

034

shearing of the rock took place. Also between the quartz grains and part replacing them are clumps of brown rutile with possibly a little cassiterite.

Polished section indicates scattered specularite (approx. 0.030 mm and less) to less than 1 volume percent. Chalcopyrite occurs only as traces of tiny grains. Abundant tiny rutile flakes are seen, up to 3 volume percent as clumps showing grey reflection and yellow internal reflection. Replacement of quartz grains is noted.

A tourmalinised shale which was subsequently sheared.

A9983 (A12448)

A recrystallised quartz sericite rock showing quartz in irregular sutured mosaics and as polygonal forms showing stress relief as lenticles alternating with fine sericite; and as poikiloblastic grains with fine sericite inclusions. Quartz and sericite in laminae aggregation indicate banding to the rock. Brownish rutile aggregates form laminae parallel with the banding. Tourmaline (brownish-green) occurs as stumpy prisms oblique to banding. Scattered pale phlogopite as ragged and faintly pleochroic plates also occur associated with the sericite.

Cassiterite is seen in fractures parallel to banding associated with more abundant tourmaline and some rutile. The cassiterite is more irregular and paler and with slightly lower birefringence than the rutile. There is an association of cassiterite with recrystallised sericite along the fractures.

Polished section shows specularite (up to .030 mm in size and less) and goethite grains to less than 1 volume percent of the section. Traces also of chalcopyrite (approx. 5  $\mu$  size) are seen.

A9984 (A12449) : Livingstone Creek Adit

A skarn type of contact metasomatism by iron bearing solutions, the result of possible conversion of diopside hornfels rock to hedenbergite at some little distance from a granite contact. The mineral is now represented by iron oxides pseudomorphing radiate groupings of slender prisms. No other minerals are seen.

Hedenbergite rock.

..... J. S. Arthur .....

APPENDIX IVLOGS OF DIAMOND DRILL HOLESFROM E.L. 53/70, TASMANIA

- (i) DDH LCD 1 to 3 : Livingstone Creek Tin Gossan,  
Livingstone Creek.
- (ii) DDH SRD 4 : Dolomite near Stanley Reward Tin  
Mine, Stanley River.



937

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HOLE No. LCD1

PAGE 2 OF 4

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:100	SAMPLE No.	Assayed length	ASSAY VALUE		
							%		
							Sn	Cu	
S L U D G E	20								
					198				
					21.3	A12756	1.5	<0.01	0.02
						12757	1.6	<0.01	0.02
					22.9				
					24.4	12758	1.5	<0.01	0.03
		25				12759	1.5	<0.01	0.02
					25.9				
					27.5	A12760	1.6	<0.01	0.02
						12761	1.5	<0.01	0.02
		30				12762	1.5	<0.01	<0.01
					30.5				
					32	12763	1.5	<0.01	<0.01
						12764	1.5	<0.01	<0.01
		35				12765	1.5	<0.01	<0.01
					35				
					36.6	12766	1.6	<0.01	<0.01
						12767	1.5	<0.01	<0.01
				38.1					
					12768	1.5	<0.01	<0.01	
	40								
	40.6	40.5-70.1m			12769	1.0	<0.01	<0.01	
		to pale yellow (Limonite?)			12770		<0.01	0.01	
100		mainly, but white			41.0	12771	0.4	<0.01	<0.01
86		unaltered granite 53-54.5m,							
42.5		55.3-59.4, 67.7-70.1m.							

038

295039

HOLE No. LCD1

PAGE 3 OF 4

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:100	SAMPLE No.	Assayed length	ASSAY VALUE	
							% Sn	% Cu
86%	42.5	5-10mm quartz and felspar - 2-5mm biotite granite, with felspar to 20mm in places; fairly uniform texture to 70.1m			A12772	3.0	<0.01	<0.01
96	45	Limonite on fractures to 70.1m, Limonitic FeMgs to 42.7m, then minor only - nil in white granite: Felspar creamy to pale yellow (Jarosite? Epidote)			12773	3.0	<0.01	<0.01
99	40.5-42.7m	Cone crumbly 13-20 breaks/metre.			12774	3.0	<0.01	<0.01
96	50	42.7-57.3 - fresher granite minor limonite only replacing mica past 52m 6-9 breaks/metre.			12775	3.0	<0.01	<0.01
98	55				12776	3.0	<0.01	<0.01
60	57.3-63.6	12-15 breaks/m.			12777	3.0	<0.01	<0.01
48	60				12778	3.0	<0.01	<0.01
81%	63.4-63.7	dark tourmaline rich patches			12779	3.0	<0.01	<0.01
	63.6-70.1m	6-12 breaks/m.						

039

595040

HOLE No. LCD1

PAGE 4 OF 4

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:100	SAMPLE No.	Assayed length	ASSAY VALUE	
							% Sn	% Cu
	65							
87%		67.9-68: dark tourmaline rich patches.			A12780	3.0	<0.01	<0.01
94								
	70	Finish 70.1m			12781	2.1	<0.01	<0.01
		Inclination						
		0m - 55° By clino.						
		36.5m - 55° (Acid bottle) = -47° true						
		70m - 51° " " -43° "						
		Samples						
		Sludge 10.7-40.6m A12750-12770						
		core 40.6-70.1m A12771-12781						
		Location: collar is about 30m at ? 040° M from portal of northern adit in Livingstone Cr. gossan.						

PROJECT AREA: STANLEY RIVER: EL53/70, T.A.S. PROJECT No. 600  
 SPURRED: 8.2.74 COMPLETED: 12.2.74  
 LOCATION: LIVINGSTONE CREEK CO-ORDS: X: 556CP569832 Y:  
 ELEVATION: RL295m (approx.) DIRECTION: 244° M INCLINATION: -40° TOTAL DEPTH: 39.9m  
 HOLE TYPE: D.D.H./ F30 RT DRILLING CONTRACTOR: Assoc. D.D. DRILLER: R. O'NEAL  
 LOGGED BY: P. MACN. DATE: 15.2.74 BIT SIZE: NX(HQ) TO 6.1m; NQ TO 13.1 } NX ~ 6.7cm TO NQ ~ 4.5cm.

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:100	CORE SAMPLE No.	Assayed length	ASSAY VALUE				
							% Sn	% Cu	% Zn	% Pb	% Ni
31%	0	0-4.4m: Boulder terrace possibly on scree. Mainly schistose quartz sericite hornfels, minor granite and gossan boulders.			A12782	2.1m	<0.01	<0.01	<0.01	<0.01	<0.01
25		0-2.1m: hornfels + minor granite. 2.1-3.1m: gossan - SCREE? 3.1-4.4m: hornfels + gossan scree.			12783	2.3	0.35	0.01	0.02	<0.01	<0.01
32	5	4.4-7.9m: Gossan, in situ? 4.4-6.1m: blue black fibrous gossan. 6.1-7.3m: brown, clayey and cherty limonitic gossan; platy 50-70° to C.A. 7.3-7.9m: d. brown earthy and black metallic gossan; planar structures 50° to C.A. (core axis)			12784	1.7	0.37	0.13	0.03	<0.01	0.01
47		7.9-9.5m: Granite, highly altered, fine grained in part, crumbly. contacts/flow lines 20-40° to C.A.			12785	1.2	0.12	0.24	0.03	<0.01	<0.01
45		9.5-19.5m: Gossan - dark brown to blackish, limonitic, metallic to clayey: possible sediments, including red chert (Renison Horizon?); granite(?) 19-19.3 blue-black heavy gossan speckled green 12.8-13.4m, 13.7-18.0m; elsewhere banded 20° to C.A. in places.			12786	0.6	0.03	0.21	0.04	<0.01	<0.01
25		13.6-13.7: Pink-brown cherty pitted rock some brown clay - possibly "red chert" horizon?			12787	0.7	<0.01	0.16	0.03	<0.01	0.01
35					12788	0.6	<0.01	0.03	0.01	<0.01	0.02
60					12789	0.3	<0.01	0.04	0.01	<0.01	0.01
50	10				A12790	0.3	0.02	0.14	0.03	<0.01	<0.01
60					12791	1.0	0.45	0.18	0.03	<0.01	<0.01
73					12792	0.5	0.11	0.23	0.03	<0.01	<0.01
15					12793	0.6	0.27	0.25	0.03	<0.01	<0.01
10					12794	0.6	0.36	0.17	0.03	<0.01	<0.01
60					12795	0.3	0.13	0.24	0.03	<0.01	<0.01
60					12796	0.3	0.71	0.03	0.03	0.01	<0.01
20					12797	0.3	0.77	0.09	0.03	0.01	<0.01
90					12798	0.3	0.24	0.18	0.03	<0.01	<0.01
15					12799	0.5	0.48	0.07	0.02	<0.01	<0.01
15	15				A12800	0.6	0.47	0.10	0.02	<0.01	<0.01
0		dark brown clayey, crystalline(?) rock, speckled green "clay" - altered basic rock? 9.5-9.8m, 18.0-19.0m			No	RECOVERY					
25					12801	0.6	0.63	0.08	0.02	0.01	<0.01
35					12802	0.7	0.43	0.10	0.03	<0.01	<0.01
65					12803	0.6	0.45	0.09	0.02	<0.01	<0.01
90					12804	0.6	0.41	0.13	0.02	<0.01	<0.01
90		19-19.3m: granite(?) - 1mm quartz felspar yellow kaolinitic soft rock.			12805	0.6	0.34	0.13	0.03	<0.01	<0.01
45		19.5-21.0m: No Core recovered.			12806	0.4	0.50	0.07	0.03	<0.01	<0.01
65					12807	0.3	0.10	0.05	0.02	<0.01	<0.01
25					12808	0.2	0.78	0.13	0.05	0.01	<0.01
0	20				No	RECOVERY					

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:100	CORE SAMPLE No.	Assayed length	ASSAY VALUE							
							% Sn	% Cu	% Zn	% Pb	% Ni			
0	20	21.0-21.5m: Limonitic, red-brown, pitted chert (CAVE IN?) - as for 13.6-13.7m			No	RECOVERY SLUDGE ONLY								
20		21.5-39.9m: Granite, mostly med. grained kaolinitic, limonite on fractures to 28.9m, tourmaline veinlets in places. Core in 2-18cm sticks, average 5cm; fractures 15, 60 to G.A.			12810	0.3	0.04	0.02	<0.01	<0.01	<0.01			
80		21.5-21.65m: granite, fine grained 1mm quartz-biotite-kaolinized feldspar chilled margin?			12811	0.2	0.13	0.04	0.05	<0.01	<0.01			
90		21.65-22.9m: 3-5mm quartz-feldspar-biotite in 1-2mm q.f.b. matrix.			12812	0.15	0.01	0.02	<0.01	<0.01	<0.01			
90		22.9-29m: 3-10mm qtz-feldspar in 1-2mm qtz-feldspar-biot. matrix			12813	0.65	<0.01	0.01	<0.01	<0.01	<0.01	0.01		
10		29.0-32.6m: No CORE.			12814	0.6	<0.01	0.01	<0.01	<0.01	<0.01	0.01		
45		32.6m-36.3: granite porphyry, coarser than above? : 5-10mm quartz 5-15mm feldspar 2mm biotite. No quartz and red feldspar 32.6-33.2m			A12815	1.2	<0.01	<0.01	<0.01	<0.01	<0.01	0.01		
25	25	36.3-39.9m: No CORE - sludge only.			12816	0.6	<0.01	<0.01	<0.01	<0.01	<0.01	0.01		
85		End of Hole 39.9m.			12817	0.6	0.01	<0.01	<0.01	<0.01	<0.01	0.01		
93		Limonite: 0-19.5m - strong; 19.5-28.9m - mainly on fractures; 28.9-36.3m - nil seen.			12818	0.7	<0.01	<0.01	<0.01	<0.01	<0.01	0.01		
84					12819	1.2	<0.01	<0.01	<0.01	<0.01	<0.01	0.01		
57					A12820	1.0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
0	30				No	CORE RECOVERY SLUDGE ONLY								
100					326									
0					332	A12821	0.6	<0.01	<0.01	0.04	0.01	0.01		
55					338	No	CORE RECOVERY SLUDGE ONLY							
0	35				344	A12822	0.6	<0.01	<0.01	0.01	<0.01	0.01		
45					350	No	CORE RECOVERY SLUDGE ONLY							
50					357	A12823	0.7	<0.01	<0.01	0.03	<0.01	0.01		
0					363	A12824	0.6	<0.01	<0.01	0.03	<0.01	0.02		
0					399	No	CORE RECOVERY SLUDGE ONLY							





D.D.H. LC2  
LIVINGSTONE CREEK  
STANLEY RIVER, TASMANIA

1. 0 - 4.4 m

Boulder terrace (or scree ? ) possibly on scree.  
 Mainly schistose quartz sericite hornfels, minor granite and gossan

1.1 0 - 2.1 m

Boulders 0.03 - 0.2 m in core of schistose quartz sericite hornfels (country rock) and minor granite.

1.2 2.1 - 3.1 m

Boulder ? - blue black 'metallic' cellular gossan with radiating goethitic structure. Scree ?

1.3 3.1 - 4.4 m

Boulders ? , mixed, of blue black 'metallic' gossan and hornfels. Base of colluvial scree ?

2. 4.4 - 7.9 m

Gossan, in situ.

2.1 4.4 - 6.1 m

Gossan; in situ; blue black cellular with radiating fibrous ('woody') texture forming bands at 70-80° to C.A. (Core Axis) minor MnO<sub>2</sub>. 8-20 breaks/m in the core.

2.2 6.1 - 7.3 m

Gossan; red brown, yellow brown and blackish brown, earthy (clayey) and cherty, dense, limonitic platy structure 50-70° to C.A., some fibrous structure 20° to C.A.; 10-40 breaks/m.

2.3 7.3 - 7.9 m

Gossan; dark brown limonitic earthy and black 'metallic' types planar structure 50° to C.A.; 10-40 breaks/m.

3. 7.9 - 9.5 m

Granite, highly altered, possible chilled or finer phases; crumbly.

3.1 7.9 - 8.6 m

Granite; brown goethite studded with quartz 7.9-8.3 m, then goethitic coarse grained granite 8.3 - 8.6 m.

3.2 8.6 - 9.2 m

Granite, fine grained (2mm) cream to salmon altered clayey, crumbly. Limonite fracture and contact of coarse and fine grained granite at 20° to C.A. at 8.6 m (parallel felspar laths - flow lines ? ).

3.3 9.2 - 9.5 m

Granite, coarse grained (10 mm quartz grains), highly altered, crumbly; 5 - 10 mm grain size. Contact at 9.2 m is 45° to C.A. Contact (?) at 9.5 m at 20-40° to C.A. (granite-sediment contact).

4. 9.5 - 19.5 m

Gossan, possible sediments, including red chert (Renison horizon indicator ? ), and possible basic igneous rock. Dark brown to blackish, limonitic clayey moderately heavy and dense.

4.1 9.5 - 9.8 m

Green (serpentine ? malachite ? ) and brown clayey rock (ultramafic - check nickel content)

4.2 9.8 - 10.8 m

Brown banded clayey limonite and 'metallic' limonitic goethitic gossan; bands 20° to C.A. 'Contact' at 9.8 m is an irregular limonitic vein 25° to C.A.

4.3 10.8 - 11.3 m

As for 9.8 - 10.8 m yellow brown, clayey; slickensides with pink clay 10° to C.A.

4.4 11.3 - 11.9 m

As above - banded and yellow earthy gossan; bands 20° to C.A.

4.5 11.9 - 12.5 m

'Metallic' goethite, pink clay 'banding' 20° to C.A.

4.6 12.5 - 12.8 m

Green clay, and pink and yellow brown clayey gossan limonitic clay contacts 15 and 14° to C.A.

4.7 12.8 - 13.4

As for 4.4 - 6.1 m; blue black solid gossan, fibrous structure; fibres 20° to C.A.

4.8 13.4 - 13.6 m

Yellow and brown clayey gossan similar to 9.5 - 12.8m; some green clay 13.5 - 13.6.

4.9 13.6 - 13.7 m

Pink cherty pitted rock, some brown clay. Possibly Renison type 'Red Chert' (or contact rock or lateritized ultramafic.).

4.10 13.7 - 18 m

Gossan (as for 4.4 - 6.1 m) blue black, 'cellular' in places, heavy, 'metallic'.

4.10.1 13.7 - 14.3 m

Gossan, heavy metallic; some clay and some fibrous structure.

4.10.2 14.3 - 14.9 m

Blue black fibrous heavy gossan, pink clay at 14.9 m.

4.10.3 14.9 - 15.5 m

No recovery.

4.10.4 15.5 - 16.1 m

Gossan, blue black, heavy massive and porous sections.

4.10.5 16.1 - 16.8 m

As for 15.5 - 16.1 m with yellow brown clayey sections.

4.10.6 16.8 - 17.4 m

Blue black heavy (?) gossan with green clay speckling and yellow brown clayey sections (check basic rock possibility).

4.10.7 17.4-10.8 m

Metallic blue black (?) gossan; green clay fracture 60° to C.A.

4.11 18.0 - 19.0 m

Gossan (?) - dark brown limonitic clayey rock, no quartz grains; slickensided.

4.11.1 18.0 - 18.6 m

Altered light to dark brown speckled rock (1 mm (?) crystals), green clay in places Minor heavy fine grained blue black 'metallic' bands (altered basic rock ? ).

4.11.2 18.6 - 19.0 m

Limonitic, green and blue speckled altered (?) rock (basic volcanic ? ) Talcose at 19.0 m.

4.12 19.0 - 19.3 m

Granite ? - 1 mm quartz-felspar kaolinitic rock, white to yellowish red, sericitic, soft.

4.13 19.3 - 19.5 m

1 mm dark brown non-cellular heavy fine grained rock with very fine elongate crystals ( ? felspar) - possibly a basalt ?.

5. 19.5 - 21.0 m

No Core.

6. 21.0 - 21.5 m

Red limonitic pitted chert - possibly only cave in.

6.1 21.0 - 21.3 m

Cave in ? Hard very fine grained red brown 'quartzite' or chert similar to 13.6 - 13.7 m limonitic and pitted.

6.2 21.3 - 21.5 m

Cave in ? - rounded and redrilled 3 cm pieces of core. Red brown chert (as for 13.6 - 13.7 m) and blue black fine grained heavy massive gossan.

7. 21.5 - 39.9 m

Granite, mostly uniformly medium grained, kaolinitic, limonite on fractures to 28.9 m; tourmaline veinlets in places; kaolinitic fractures 10° to C.A. Core in 2-18 cm sticks (average 5 cm) and can be just broken by hand. Fractures 10-20° and 60° to C.A.

7.1 21.5 - 21.65 m

Granite fine grained; 1 mm quartz - biotite - kaolinised felspar - chilled margin ?

7.2 21.65 - 22.3 m

Granite, porphyritic, 5 mm quartz in 1 mm quartz - biotite - felspar matrix. kaolinised; 10° pegmatite vein.

7.3 22.3 - 22.9 m

Granite, porphyritic, 3.5 mm quartz, felspar and biotite in a finer (1.2 mm) quartz - felspar - biotite matrix. Cream colour, kaolinitic, moderately hard.

7.4 22.9 - 23.5 m

Granite (as above), 3-10 mm quartz and felspar in 1-2 mm quartz - felspar - biotite matrix. cream; slightly limonitic and chloritic.

7.5 23.5 - 25.9 m

As for 22.9 - 23.5, crumbly, slight limonitic impregnation.

7.6 25.9 - 26.8 m

As for 22.9 - 23.5, but harder. Tourmaline, veinlets, (20°, 50°, 70° to C.A.) limonite on fractures, weakly impregnating.

7.7 26.8 - 28.00 m

Granite (texture as above; pink; after sulphide ? ) veinlets of goethite and quartz - tourmaline; green chlorite - epidote clay on fractures; limonite impregnations and on fractures.

051

7.8 28.00 - 29.00 m

Granite as above; soft; no limonite; minor clay (green), 10 cm quartz - tourmaline vein at 29.0 m.

7.9 29.0 - 32.6 m

No core. Sludge is light coloured 0.3 mm sand 29 - 30.8 m with magnetite around 29 m. Sand (0.7 mm) 30.8 - 34.4 mm with (?) magnetite and biotite specks.

7.10 32.6 - 36.3 m

Granite porphyry, coarser grained than above. No obvious veining.

7.10.1 32.6 - 33.2 m

Porphyry, coarse grained biotite felspar porphyry - no quartz seen.

1-10 mm red felspar 5mm green chloritised biotite in a yellow and pink felspar - biotite matrix. Xenolith ? Crumbly. Slickensides 80°, 45° to C.A.

7.10.2 33.2 - 33.8 m

No core.

7.10.3 33.8 - 34.4 m

Granite, coarse grained; 5-10 mm quartz 5-15 mm felspar 2mm biotite. Cream, crumbly, kaolinitic, minor 60° slickensides.

7.10.4 34.4 - 35.0 m

No recovery.

7.10.5 35.0 - 36.3 m

As for 33.8 - 34.4 m with green chlorite, epidote. Moderately hard. Slickensides 10°, 45° to C.A.

7.10.6 36.3 - 39.9 m

No core. Recovery - sludge only.

SUMMARY

Limonite :	0 - 19.5 m - strong
	19.5 - 28.9 m - mainly on fractures
	28.9 - 36.3 m - none seen.

PMM/LMB  
14/3/74



053

PROJECT AREA: STANLEY RIVER: EL 53/70, TAS. PROJECT No 600  
 SPUNNED: 17.2.74 COMPLETED: 21.2.74  
 LOCATION: LIVINGSTONE CREEK (LIVINGSTONE CREEK GOSSAN) CO-ORDS: X: 556CP568 Y: 832  
 ELEVATION: 305m (approx.) DIRECTION: 066°M INCLINATION: -65°E TOTAL DEPTH: 46.3m  
 HOLE TYPE: D.D.H F30 RT RIG DRILLING CONTRACTOR: A.D.D. (ZEEHAN) DRILLER: R. O'Neal  
 LOGGED BY: P. MACH. DATE: 17.3.74 BIT SIZE: NX TO 4m; NQ TO 39.6m; BQ TO 46.3m

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:100	SAMPLE No.	Assayed length	ASSAY VALUE			
							%		%	
							Sn	Cu	Zn	Pb
	0	0-4.16m: Rubble - 0.15m of white quartzite pebbles then 0.7m white non-limonitic quartz-mica schist + quartzite.			A27001	4.2	<0.01	<0.01	<0.01	<0.01
20%		4.16-9.15m: brown clay to 6.4m then yellow brown qtz. mica shale. Soft chocolate more micaceous shale 8.7-9.14m.		4.2	27002	2.7	<0.01	<0.01	0.02	<0.01
75%	5	Strongly limonitic - possibly khaki (tuffaceous) shale w when fresh.		6.9	27003	1.6	<0.01	<0.01	0.03	<0.01
98%		bedding: 15°/6.4-7.6m 0°/8.5m; 15°/8.7-9.1m to Core Axis (C.A.)		8.5	27004	0.6	<0.01	<0.01	0.03	<0.01
90		9.14-11.6m: No core		9.1	No CORE (SEE SLUDGE RESULT)	2.5				
0	10	11.6-15.24m: 0.5mm quartz-chlorite-sericite-carbonate(?) quartzitic siltstone. Dark grey to greenish, banded to laminated. Minor 1-2cm wide chocolate micaceous shaley bands. Trace chalcopryrite. Bedding 15° to C.A. (Rocks more granular and softer above 15.24m)		11.6	A27005	3.0	<0.01	<0.01	0.02	<0.01
95%				14.6	27006	1.5	<0.01	<0.01	0.02	<0.01
98%	15			16.1	27007	2.2	<0.01	<0.01	0.01	<0.01
95%		15.24-28.5m: Similar to 11.6-15.24 0.3mm quartz-chlorite-carbonate siltstone banded (1-10mm bands), dark grey.		18.3	27008	2.2	<0.01	<0.01	0.02	<0.01
95	20	Hornfelsing possibly increases towards granite at 29.2m (hornfels FeMgs)		20.5						









058

PROJECT AREA: STANLEY RIVER TASMANIA PROJECT No. 600  
 SPUNDED: 17<sup>th</sup> FEB 1974 COMPLETED: 22<sup>nd</sup> FEB 1974  
 LOCATION: LIVINGSTONE CREEK CO-ORDS: X: Y:  
 ELEVATION: DIRECTION: 064° INCLINATION: 65° TOTAL DEPTH: 46.37m  
 HOLE TYPE: D.D.H DRILLING CONTRACTOR: A.D.D. (ZECHAN) DRILLER: R. NEAL  
 LOGGED BY: K. WIGGLESWORTH BIT SIZE: NX TO 3.97m NG TO 39.66 89 TO 46.37

CORE RECOVERY	METRAGE	DESCRIPTION	Core bed'd'g angle and joint spacing	LOG SCALE:	SAMPLE No.	Assayed length	ASSAY VALUE			
				1:100						
	0	0 to 4.17m BOULDER SCREE ABOVE WEATHERED IN SITU ROCK BOULDERS OF: 1. qtz felspar mica schist 2. qtzite white some mica.		0	27001	4.17				
20%				4.17	27002	2.69				
	5	4.17 to 9.15 qtzite 1. 4.17 to 8.45 qtzite brown weathered micaceous in part Some iron staining in bands 1 to 2 mm thick General iron staining throughout interval 2. 8.45 to 9.15 minor carbonate veins & lenses in qtzite		6.86	27003	1.68				
75%				8.54	27004	0.61				
	10	9.15 to 11.59 No core sample sludge only.		9.15		2.44				
98%				11.59	27005	2.97				
90%				14.56	27006	1.56				
	15	11.59 to 14.56 qtzite grey possibly a fine & grained ss. originally. DARK laminations 2 to 3mm apart and 1mm thick. Passes downwards into dark and light green grey banded qtzite - fine to coarse grained bands Then to dark brown to grey fine to med grain banded qtzite		16.12	27007	2.18				
98%				18.30	27008	2.17				
	20	12.50 BROWN siltstone. 14.56 to 20.50 qtzite dark grey fine to med grain 1. 15.20 brown siltstone 2. 15.35 pyrite on joint 3. 16.32 mica on joint 4. 18.91 brown siltstone 2-3cm thick 5. 18.30 to 20.47 minor mica. qtzite shows banding		20.47						



061

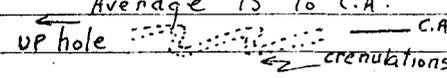
PACMINEX PTY. LTD.

595061

HOLE No. SRD4

PAGE 1 OF 7

PROJECT AREA: STANLEY RIVER: EL 53/70, TASMANIA PROJECT No 600  
 SPUNNED: 27.2.74 COMPLETED: 10.3.74  
 LOCATION: STANLEY REWARD HELIPAD, STANLEY RIVER CO-ORDS: X: 556 CP 573 9120 Y:  
 ELEVATION: 225m (approx) DIRECTION: 137° M INCLINATION: -45° S.E. TOTAL DEPTH: 142.3m  
 HOLE TYPE: D.D.H. / F30 RT RIG DRILLING CONTRACTOR: R.D.D. (ZEEHAN) DRILLER: J. FENGUSSON.  
 LOGGED BY: P. MACN. DATE: 19.3.74 BIT SIZE: NQ TO 36.6m, BQ TO 142.3m TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:100	SAMPLE No.	Assayed length	ASSAY VALUE				
							% Sn	% Cu	% Zn	% Pb	SAMPLE WEIGHT (Kg)
0	0	0-3.1m: Black soil "button grass" RIVER TERRACE			1/2 = ALL CORE SPLIT						
0					CHIPS = EVERY 0.3m						
98	5	3.1-142.3m: Dolomite 0.5-1mm grain size, fairly pure dolomite, crystalline. White to dark grey to grey-black. DARKER varieties show crenulated bedding generally ~15° to core axis (disseminated dark matter) Crenulation due to deformation or slumping? Minor red shaley section at 95m (red clay - ? chlorite) Crenulations due to dark matter (clay? chlorite minor sulphides) Possible skarn minerals, sparse due to purity of dolomite. Minor magnetite.			3.1m A27058 (1/2)	2.9	<0.01	<0.01	<0.01	<0.01	5.7
95					6.0 27059 (1/2)	3.0	<0.01	<0.01	<0.01	<0.01	6.1
94	10				9.0 27060 (1/2)	2.3	<0.01	<0.01	<0.01	<0.01	4.3
0					11.3 N.S.						
65	15	3.1-4.6m: dolomite, 10-20% dark crenulated bands (bedding) 0-15° to C.A. 4.6-18.3m: As for 3.1-4.6m 10% crenulated bands Average 15° to C.A. UP hole  C.A. crenulations			14.8 27062 (1/2)	1.5	<0.01	<0.01	<0.01	<0.01	2.1
0					16.3 -						
100	20	18.3-19.9m: 20-30% dark crenulated and wholly bands.			17.8 27061 (1/2)	<0.01	<0.01	<0.01	<0.01	<0.01	6.8
					21.0						

062

595062

HOLE No. SRD 4

PAGE 2 OF 7

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:100	SAMPLE No.	Assayed length	ASSAY VALUE				
							% Sn	% Cu	% Zn	% Pb	Kg
100	20	19.9-23.5m: 10% dark bands, 10° to C.A.									
99		23.5-24.5m: 15-20% dark bands 20-25° to C.A.			A 27063 (1/2)	3.0	<0.01	<0.01	<0.01	<0.01	6.3
98	25	24.5-41.4m: <10% dark bands; 0-15° to C.A.			27064 (1/2)	1.0	<0.01	<0.01	<0.01	<0.01	2.1
100					27065 (chips)	5.0	<0.01	<0.01	<0.01	<0.01	1.4
100	30				27066 (chips)	5.0	<0.01	<0.01	<0.01	<0.01	1.7
100	35				27067 (ch)	1.7	<0.01	<0.01	<0.01	<0.01	0.9
100	40				27068 (ch)	3.3	<0.01	<0.01	<0.01	<0.01	0.6
100	42.5	41.4-45.2m: 15% dark bands in places. 0-10° to C.A.			27069 (ch)	5.0	<0.01	<0.01	<0.01	<0.01	0.8

063

595063

HOLE No. SRD4

PAGE 3 OF 7

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:	SAMPLE No.	Assayed length	ASSAY VALUE				
							%		%		Kg
							Sn	Cu	Zn	Pb	
	425										
100%					A27069 (chips)						0.9
	45	45.2-57m: mainly white dolomite. 5% dark whorly bands with dissemin. dark matter. Pyrite disseminations.				45.0m					
					27070 (ch)	5.0	<0.01	<0.01	<0.01	<0.01	1.5
100											
	50					50.0					
					27071 (ch)	5.0	<0.01	<0.01	<0.01	<0.01	1.1
100											
	55					55.0					
					27072 (ch)	2.5	<0.01	<0.01	<0.01	<0.01	0.7
100		57-58.2m: dark dolomitic strongly pyritic, little chlorite(?) and dark grey carbonate.				57.5					
		58.2-60.3m: As for 45.2-57m.			27073 (1/2)	2.5	<0.01	<0.01	<0.01	<0.01	2.8
100		60.3-62m: As for 57-58.2m.				60.0m					
	60				27074 (1/2)	2.0	<0.01	<0.01	<0.01	<0.01	2.4
100		62-67m: As for 45.2-57m.				62.0					
					27075 (chips)	3.0	<0.01	<0.01	<0.01	<0.01	0.8
100											
	65					65.0					









APPENDIX V

PETROGRAPHIC REPORT : DDH LCD 1 & LCD 2

LIVINGSTONE CREEK, E.L. 53/70

By P.J. Curtis

1. SUMMARYDDH LC1

A9537	39.6-40.6m	Granite
A9527	54.3m	Granite. No cassiterite.
A9528	67m	Potash granite. No cassiterite.

DDH LC2

A9529	3.7m	A hornfelsed tourmalinised, argillite.
A9530	5.7m	Metasomatised skarn rock.
A9531	10.7m	Ferruginised shaly carbonate rock, chalcopyrite and pyrite boxworks.
A9532	12.9m	A hornfelsed basic igneous rock.
A9533	13.6m	A crenulated silicified shale with igneous fragments (?).
A9534	17.1m	Boxworks indicates the original presence of chalcopyrite.
A9535	18.3m	Possible peridotite with olivine and/or pyroxene forms now filled with montmorillonite. Boxwork structure indicates sulphide mineralisation (chalcopyrite) and some fine montmorillonite structures are seen.
A9536	26.7m	A part tourmalinised granite with traces of cassiterite in altering biotite.

Please note that some specimens are very heavily oxidised and altered (silicified) so as to make identification of primary rock types very difficult.

2. INVESTIGATION

A9537 D.D.H. L.C.1, 39.6 - 40.6m

A sample was immersed in immersion oil and examined under low power (60 diameters). Mainly consists of sharp angular fragments (~0.25mm) of clear quartz, fragments of potash feldspar, plagioclase feldspar (?): fairly abundant biotite and a little perthite, from a granitic source. Contaminating chert and a little chlorite are also present.

A9527 D.D.H. L.C.1, 54.3m

A coarse grained granitic rock with large plates of feldspar and biotite and coarse quartz.

In thin section the rock is seen to have a typically granitic texture and consists of mainly replacement perthite and quartz and minor plagioclase (An<sub>9</sub>), anti-perthite and biotite. The plagioclase in anti-perthite is undergoing sericitisation along cleavages. Faint zoning of some plagioclase feldspar plates is noted. Replacement perthite is probably due to late stage potash metasomatism of an original more granodioritic rock. The biotite is riddled with radioactive zircon, some sphene and tourmaline inclusions; also some epidote is intergrown with the biotite. A little apatite is seen associated with feldspar.

No cassiterite is seen in the granite which is undergoing alteration.

A9528 D.D.H. L.C.1, 67m

A coarse granitic rock shows weathering and oxidation of biotite with penetration of emanating limonite stain along cleavages of

feldspar and interstices.

Similar to section of A9527, coarse plates of replacement perthite and quartz. Less of smaller plagioclase plates (with few large plates) much sericitised and some are zoned with albite mantles which are clear. Brown biotite occurs with abundant inclusions, including radioactive zircon, apatite, topaz and sphene. The biotite is rather ragged in places and intergrown with epidote locally. Alteration of plagioclase is producing some quite coarse plates of muscovite from growths of fine sericite. Myrmekite development in small clear plagioclase grains is observed.

No cassiterite is seen. This rock is potash granite, rather more altered by potash metasomatism than A9527.

A9529 D.D.H. L.C.2, 3.7m

A fine grain, black and white, evenly banded rock showing a fine cross fracture.

A tourmaline quartz hornfels rock or tourmalinised sediment. The grain size is fairly even, (0.02 to 0.2mm, median 0.08mm) for all the quartz and much of the tourmaline. The tourmaline is sieved with abundant quartz left behind during replacement of shale minerals (?) and quartz shows triple junctions of annealed recrystallised masses. Some quartz bands in the rock are free from tourmaline. The tourmaline is optically negative and uniaxial; pleochroic, red-brown, green and colourless. Specks of high R.I. cassiterite prisms are seen associated with the tourmaline and are finely scattered throughout, and some coarser masses (~ 0.08mm) occur

with tourmaline. Very few occur in the quartz.

A hornfelsed, tourmalinised argillite.

A9530 D.D.H. L.C.2, 5.7m

Radial prisms as stellate clusters, now goethite and secondary hematite, of original hedenbergite (?). Interstitial euhedra (~ 0.1mm) of titanomagnetite are pseudomorphed by parallel intergrowths of hematite and titanohematite.

Highly ferruginised radiate crystals, originally hedenbergite and possibly with associated andradite (?) though it is more likely that euhedral shapes of octahedra and dodecahedra were titanomagnetite because of the presence of secondary titanohematite within them.

A metasomatised (?) skarn rock

A9531 D.D.H. L.C.2, 10.7m

Possible pyrite replicas and chalcopyrite boxworks are present? A fine schistosity, delineated by secondary hematite may indicate ferruginised shales? Bands above this formation show rhombohedral partings delineated by secondary hematite. Possible carbonate present.

A ferruginised shaley carbonate (?) rock with some sulphides shown by rudimentary boxworks.

A9532 D.D.H. L.C.2, 12.9m

A mass of red hematite aggregates which are

commonly surrounded by transparent marginal zones of anhedral goethite. Fibrous and granular greenish montmorillonite occupies interstices as clots. Quartz occurs in rare grains (0.010 to 0.015mm) with the clay.

A radiate fine prism structure for the hematite is seen in polished section. Some hematite pseudomorphs of pyroxene are also observed and may be indicative of rock type (?).

A possible basic rock structure is seen, with absence of silica, and radiate prismatic hematite pseudomorphs which may be after amphibole. Possible metamorphosed ultramafic rock, much ferruginised by weathering process, is a possible interpretation. No gossan or sediment features are discernible.

A hornfelsed basic igneous rock?

A9533 D.D.H. L.C.2, 13.6m

Brownish chert with attached clay mineral.

Fine chalcedonic silica intergrowths of coarse vein framework encompassing fine growths of the mineral. Fine anhedral clear goethite is scattered lightly through the interstices associated in places with a rubbly brown-green tourmaline and possible fine high B.R. and R.I. fine aggregates of cassiterite. Zoning of parallel elongate, fine chalcedony growths with some crenulation around a pseudomorph containing limonitised, fine magnetite is seen under low power, a possible palimpsest texture. More recent secondary silicification took place and so the texture appears only as a 'ghost' form through the recrystallisation fabric. Clots of

clear and opaque goethite occur but only as secondary segregations in the chalcedony framework. No other textural characteristics are seen.

Possible crenulated then silicified shale with igneous fragments as xenoliths?

A9534 D.D.H. L.C.2, 17.1m

Radiating needles or decussate prisms of hematite pseudomorphs of hedenbergite (?).

Interstices are filled with equally fibrous clay mineral (montmorillonite) and rubbly granular goethite. Suggests a hornfelsed basic igneous rock? Intermittently with igneous structures are jasperite partitions of pyrrhotite or garnet boxworks shapes and possible bornite structures of curvy lines boxworks.

Hornfelsed basic igneous rock with some pyrrhotite and chalcopryrite mineralisation?

A9535 D.D.H. L.C.2, 18.3m

Some chrysocalla is seen in cellular quadrangular box works, most likely of chalcopryrite (?). Elsewhere typical segregations of form of olvine or pyroxene. A possible peridotite with montmorillonite pseudomorphing forms and at one end of section, some monmorillonite fibres show replacement by hematite.

Fibrous montmorillonite occurs in interstices and in coarse vein.

Possible ultrabasic igneous rock texture discernible but original sulphide mineralisation

is seen.

A9536 D.D.H. L.C.2, 26.7m

A coarse granite consisting of coarse irregular quartz; large perthites, part sericitised and large orthoclase masses showing penetration and part erosion by veins of brown tourmaline. Replacement of coarse plates of plagioclase by tourmaline is also seen. Large plates of part-sericitised biotite also occur. A little topaz is seen as euhedra embedded in feldspar. Traces of cassiterite and some zircon occur as inclusions in altering biotite, also some epidote. Grains of cassiterite are 0.003 to 0.005mm in size, are fairly abundant and coloured yellow-brown to brown.

A part tourmalinised and altered granite containing a little cassiterite in biotite.

P.J. CURTIS  
(IM)

LIVINGSTONE CREEK  
STANLEY RIVER - TASMANIA  
ROCKS FOR THIN SECTIONING

595076

1. A9537 D.D.H. L.C. 1/39.6 - 40.6m  
pale sandy felspar mica sludge - granite?  
check composition.
2. A9527 D.D.H. L.C. 1/54.3m  
fresh grey granite - check tourmaline,  
SnO<sub>2</sub> etc.
3. A9528 D.D.H. L.C. 1/67m  
slightly altered and limonitic granite.
4. A9529 D.D.H. L.C. 2/3.7m - Country rock  
creek bank boulder - schistose hornfels.  
For comparison with altered (?) sediments  
below.
5. A9530 D.D.H. L.C. 2/5.7  
Gossan check fibrous radiating mineral  
in the blackish gossan.
6. A9531 D.D.H. L.C. 2/10.7m  
yellow brown clayey rock - check for sediment  
features.
7. A9532 D.D.H. L.C. 2/12.9m  
Fibrous blue black "gossan" speckled with  
green clay. Check for basic igneous rock,  
gossan and sediment features.
8. A9533 D.D.H. L.C. 2/13.6m  
Pitted pink brown cherty rock. Possibly "red  
chert" of Renison horizon. Check for sedimentary  
and contact metamorphic features (or lateritic  
chertified basic rock?).

9. A9534 D.D.H. L.C. 2/17.1m

Blue black heavy "gossan" (? with green speckling - clay? malachite? - check as for A9532 and A9535.

10. A9535 D.D.H. L.C. 2/18.3m

Dark brown, crystalline (?) rock with green clay in places - basic igneous? 1mm crystals? Check if basic igneous rock, sediment, contact rock etc.

11. A9536 D.D.H. L.C. 2/26.7m

Altered cream granite with quartz tourmaline veinlets. Any cassiterite associated?

078

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MINERALOGICAL REPORT No. 1479

9th April 1974

BY: I.R. Pontifex

TO: Mr. P.J. Curtis,  
Pacminex Pty. Ltd.,  
Box R221, Royal Exchange,  
Sydney. N.S.W. 2000.

YOUR REFERENCE: Your Order No. 8585 and 8602

MATERIAL: Rock samples

IDENTIFICATION: 9528, 9534, 9535, 9538

WORK REQUESTED: X-ray powder diffraction

SAMPLES & SECTIONS: Returned to you.

McPHAR GEOPHYSICS PTY. LTD.



I.R. PONTIFEX  
CHIEF MINERALOGIST.

9528:

As noted in my letter to you dated 29/3/74 I could find no meaningful sample of yellow material for XRD analysis. The sample was therefore not analysed.

9534:

The fine green specs were extracted from the sample by binocular microscope. Subordinate contamination occurred from associated minerals. The x-ray powder diffraction photo indicated:

montmorillonite	:	major
magnetite	)	
hematite	)	minor
	)	

The montmorillonite is a dioctahedral variety.

9535:

The XRD photo indicated this mineral to consist almost exclusively of dioctahedral montmorillonite.

Conceivably the coloration in the montmorillonite is due to traces of Ni (? or Cu) in the crystal lattice.

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APPENDIX VI

DIAMOND DRILL CORE ANALYSES  
FROM LCD 1 TO 3 AND SRD 4

2887



## TELEPHONES:

Metallurgical Research	}	4241-2 2 Lines
Laboratory		
Mines Inspection		
Explosives and Inflammable Liquids		
Registrar of Mines		2 2457

## Tasmania

Department of Mines,

Launceston Offices,

287 Wellington Street,

South Launceston 5th March, 1974

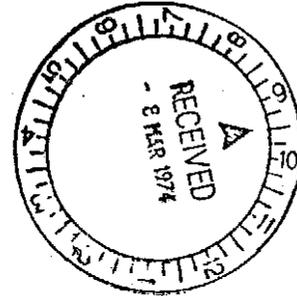
Pacminex Pty. Ltd.,  
(C.S.R. Ltd.),  
P.O. Box R 221,  
Royal Exchange,  
SYDNEY. N.S.W. 2001

Dear Sirs,

Livingstone Creek Area740275 - 740317

Please find below results of assays on diamond drill  
core for DDH 2 which were required urgently.

<u>Reg. No.</u>	<u>Pacminex No.</u>	<u>Assay %</u>	
		<u>Sn</u>	<u>Cu</u>
740275	A12782	<0.01	<0.01
276	12783	0.35	0.01
277	12784	0.37	0.13
278	12785	0.12	0.24
279	12786	0.03	0.21
280	12787	<0.01	0.16
281	12788	<0.01	0.03
282	12789	<0.01	0.04
283	12790	0.02	0.14
284	12791	0.45	0.18
285	12792	0.11	0.23
286	12793	0.27	0.25
287	12794	0.36	0.17
288	12795	0.13	0.24
289	12796	0.71	0.08
290	12797	0.77	0.09
291	12798	0.24	0.18
292	12799	0.48	0.07
293	12800	0.47	0.10
294	12801	0.63	0.08
295	12802	0.43	0.10
296	12803	0.45	0.09
297	12804	0.41	0.13
298	12805	0.34	0.13
299	12806	0.50	0.07
300	12807	0.10	0.05
301	12808	0.78	0.13
302	12809	0.04	0.02
303	12810	0.13	0.04
304	12811	0.01	0.02
305	12812	<0.01	0.01



<u>Reg. No.</u>	<u>Pacminex No.</u>	<u>Assay %</u>	
		<u>Sn</u>	<u>Cu</u>
740306	A12813	<0.01	0.01
307	12814	<0.01	<0.01
308	12815	<0.01	<0.01
309	12816	<0.01	<0.01
310	12817	0.01	<0.01
311	12818	<0.01	<0.01
312	12819	<0.01	<0.01
313	12820	<0.01	<0.01
314	12821	<0.01	<0.01
315	12822	<0.01	<0.01
316	12823	<0.01	<0.01
317	12824	<0.01	<0.01

Analyses by ..... *P. Thomas* .....

(H. K. Wellington),  
Chief Chemist & Metallurgist.

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TELEPHONES:

Metallurgical Research	}	12131-2 2 Lines
Laboratory		
Mines Inspection		
Explosives and Inflammable Liquids		
Registrar of Mines		2 2457

Tasmania

Department of Mines,

Lamceston Offices,

287 Wellington Street,

South Lamceston 22nd March, 1974

Pacminex Pty. Ltd.,  
 (C.S.R. Ltd.),  
 P.O. Box R 221,  
 Royal Exchange,  
 SYDNEY. N.S.W. 2001

Dear Sirs,

Livingstone Creek Area

740275 - 740317

Please find below results of further assays on diamond drill core for DDH 2, the results for Sn and Cu having been sent on the 5th March, 1974.

<u>Reg. No.</u>	<u>Pacminex No.</u>	<u>Zn</u>	<u>Pb</u>	<u>Ni</u>
740275	A12782	<0.01	<0.01	<0.01
276	783	0.02	<0.01	<0.01
277	784	0.03	<0.01	0.01
278	785	0.03	<0.01	<0.01
279	786	0.04	<0.01	<0.01
280	787	0.03	<0.01	0.01
281	788	0.01	<0.01	0.02
282	789	0.01	<0.01	0.01
283	790	0.03	<0.01	<0.01
284	791	0.03	<0.01	<0.01
285	792	0.03	<0.01	<0.01
286	793	0.03	<0.01	<0.01
287	794	0.03	<0.01	<0.01
288	795	0.05	<0.01	<0.01
289	796	0.03	0.01	<0.01
290	797	0.03	0.01	<0.01
291	798	0.05	<0.01	<0.01
292	799	0.02	<0.01	<0.01
293	800	0.02	<0.01	<0.01
294	801	0.02	0.01	<0.01
295	802	0.03	<0.01	<0.01
296	803	0.02	<0.01	<0.01
297	804	0.02	<0.01	<0.01
298	805	0.03	<0.01	<0.01
299	806	0.03	<0.01	<0.01
300	807	0.02	<0.01	<0.01
301	808	0.06	0.01	<0.01
302	809	<0.01	<0.01	<0.01
303	810	0.05	<0.01	<0.01
304	811	<0.01	<0.01	0.01
305	812	<0.01	<0.01	0.01

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- 4 -

<u>Reg. No.</u>	<u>Pacminex No.</u>	<u>Zn</u>	<u>Pb</u>	<u>Ni</u>
740306	A12813	<0.01	<0.01	0.01
307	814	<0.01	<0.01	0.01
308	815	<0.01	<0.01	0.01
309	816	<0.01	<0.01	0.01
310	817	<0.01	<0.01	0.01
311	818	<0.01	<0.01	0.01
312	819	<0.01	<0.01	0.01
313	820	<0.01	<0.01	<0.01
314	821	0.04	0.01	0.01
315	822	0.01	<0.01	0.01
316	823	0.03	<0.01	0.01
317	824	0.03	<0.01	0.02

<u>Reg. No.</u>	<u>Pacminex No.</u>	<u>Sn</u>	<u>Cu</u>
740192	A12750	<0.01	<0.01
193	751	<0.01	0.01
194	752	<0.01	<0.01
195	753	<0.01	0.01
196	754	<0.01	<0.01
197	755	<0.01	0.02
198	756	<0.01	0.02
199	757	<0.01	0.02
200	758	<0.01	0.03
201	759	<0.01	0.02
202	760	<0.01	0.02
203	761	<0.01	0.02
204	762	<0.01	<0.01
205	763	<0.01	<0.01
206	764	<0.01	<0.01
207	765	<0.01	<0.01
208	766	<0.01	<0.01
209	767	<0.01	<0.01
210	768	<0.01	<0.01
211	769	<0.01	<0.01
212	770	<0.01	0.01
213	DDH 2 A12825	0.08	0.16
214	826	0.11	0.15
215	827	0.06	0.11
216	828	0.02	0.03
217	829	0.34	0.11
218	830	0.32	0.14
219	831	0.18	0.16
220	832	0.16	0.22
221	833	0.19	0.16
222	834	0.14	0.21
223	835	0.40	0.13
224	836	0.46	0.09
225	837	0.48	0.10
226	838	0.37	0.15

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<u>Reg. No.</u>	<u>Pacminex No.</u>	<u>Sn</u>	<u>Cu</u>
740227	DDH 2 A12839	0.47	0.12
228	840	0.47	0.09
229	841	0.48	0.09
230	842	0.44	0.08
231	843	0.34	0.09
232	844	0.36	0.08
233	845	0.34	0.08
234	846	0.21	0.06
235	847	0.12	0.04
236	848	0.04	0.02
237	849	0.08	0.03
238	DDH 2 PM 7	0.06	0.03
239	8	0.05	0.02
240	9	0.05	0.03
241	10	0.07	0.04
242	11	0.08	0.04
243	12	0.07	0.04
244	13	0.09	0.05
245	14	0.06	0.04
246	15	0.05	0.03
247	16	0.03	0.03
248	17	0.11	0.03
249	18	0.04	0.03
250	19	0.03	0.02
251	20	0.03	0.02
252	21	0.01	0.02
253	22	0.03	0.02
254	23	0.01	0.01
255	24	0.01	0.01
256	25	<0.01	0.01
257	26	0.02	0.02
258	27	<0.01	0.02
259	28	0.01	0.02
260	29	0.03	0.03
261	30	0.01	0.02
262	31	0.01	0.01
263	32	0.02	0.01
264	DDH 1 A12 771	<0.01	<0.01
265	772	<0.01	<0.01
266	773	<0.01	<0.01
267	774	<0.01	<0.01
268	775	<0.01	<0.01
269	776	<0.01	<0.01
270	777	<0.01	<0.01
271	778	<0.01	<0.01
272	779	<0.01	<0.01
273	780	<0.01	<0.01
274	781	<0.01	<0.01
318	PM 1	<0.01	<0.01
319	21	0.01	<0.01

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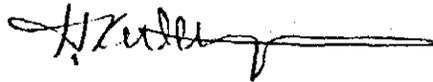
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<u>Reg. No.</u>	<u>Pacminex No.</u>	<u>Sn</u>	<u>Cu</u>
740320	PM 3	0.02	0.01
321	4	0.01	0.01
322	5	0.03	0.01
323	6	0.04	0.02

Analyses by: *P. Thomas*

Fee: \$393.00



Chief Chemist & Metallurgist.

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Tasmania



TELEPHONES:

Metallurgical Research	.....	} 4 2431-2 2 Lines
Laboratory	.....	
Mines Inspection	.....	
Explosives and Inflammable Liquids	.....	
Registrar of Mines	.....	2 2457

Department of Mines,

Launceston Offices,

287 Wellington Street,

South Launceston

30th April, 1974

Dr. J. H. Rattigan,  
Pacminex Pty. Ltd.,  
(C.S.R. Ltd),  
P.O. Box R 221,  
Royal Exchange,  
SYDNEY. N.S.W. 2001

Dear Sirs,

Zeehan Area

740632 - 740725

Please find below results of assays on diamond drill core and sludge samples from your Project 600 at Stanley River, north of Zeehan, received on 26th March, 1974.

<u>Reg. No.</u>	<u>P. No.</u>	<u>Sn</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>
740632	A27001	<0.01	<0.01	<0.01	<0.01
633	27002	<0.01	<0.01	<0.01	0.02
634	27003	<0.01	<0.01	<0.01	0.03
635	27004	<0.01	<0.01	<0.01	0.03
636	27005	<0.01	<0.01	<0.01	0.02
637	27006	<0.01	<0.01	<0.01	0.02
638	27007	<0.01	<0.01	<0.01	0.01
639	27008	<0.01	<0.01	<0.01	0.02
640	27009	<0.01	<0.01	<0.01	0.02
641	27010	<0.01	<0.01	<0.01	0.01
642	27011	<0.01	<0.01	<0.01	0.01
643	27012	<0.01	<0.01	<0.01	0.01
644	27013	<0.01	<0.01	<0.01	0.03
645	27014	<0.01	<0.01	<0.01	0.05
646	27015	<0.01	<0.01	<0.01	0.02
647	27016	<0.01	<0.01	<0.01	0.03
648	27017	<0.01	<0.01	<0.01	0.01
649	27018	<0.01	<0.01	<0.01	0.01
650	27019	<0.01	<0.01	<0.01	<0.01
651	A27058	<0.01	<0.01	<0.01	<0.01
652	27059	<0.01	<0.01	<0.01	<0.01
653	27060	<0.01	<0.01	<0.01	<0.01
654	27061	<0.01	<0.01	<0.01	<0.01
655	27062	<0.01	<0.01	<0.01	<0.01
656	27063	<0.01	<0.01	<0.01	<0.01
657	27064	<0.01	<0.01	<0.01	<0.01
658	27065	<0.01	<0.01	<0.01	<0.01
659	27066	<0.01	<0.01	<0.01	<0.01
660	27067	<0.01	<0.01	<0.01	<0.01
661	27068	<0.01	<0.01	<0.01	<0.01
662	27069	<0.01	<0.01	<0.01	<0.01
663	27070	<0.01	<0.01	<0.01	<0.01

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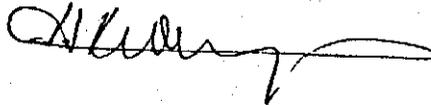
<u>Reg. No.</u>	<u>P. No.</u>	<u>Sn</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>
740664	A27071	<0.01	<0.01	<0.01	<0.01
665	27072	<0.01	<0.01	<0.01	<0.01
666	27073	<0.01	<0.01	<0.01	<0.01
667	27074	<0.01	<0.01	<0.01	<0.01
668	27075	<0.01	<0.01	<0.01	<0.01
669	27076	<0.01	<0.01	<0.01	<0.01
670	27077	<0.01	<0.01	<0.01	<0.01
671	27078	<0.01	<0.01	<0.01	<0.01
672	27079	<0.01	<0.01	<0.01	<0.01
673	27080	<0.01	<0.01	<0.01	<0.01
674	27081	<0.01	<0.01	<0.01	<0.01
675	27082	<0.01	<0.01	<0.01	<0.01
676	27083	<0.01	<0.01	<0.01	<0.01
677	27084	<0.01	<0.01	<0.01	<0.01
678	27085	<0.01	<0.01	<0.01	<0.01
679	27086	<0.01	<0.01	<0.01	<0.01
680	27087	<0.01	<0.01	<0.01	<0.01
681	27088	<0.01	<0.01	<0.01	<0.01
682	27089	<0.01	<0.01	<0.01	<0.01
683	27090	<0.01	<0.01	<0.01	<0.01
684	27091	<0.01	<0.01	<0.01	<0.01
685	27092	<0.01	<0.01	<0.01	<0.01
686	27093	*0.18	<0.01	<0.01	<0.01
687	27094	<0.01	<0.01	<0.01	<0.01
688	A27020	<0.01			
689	27021	<0.01			
690	27022	<0.01			
691	27023	<0.01			
692	27024	<0.01			
693	27025	<0.01			
694	27026	<0.01			
695	27027	<0.01			
696	27028	<0.01			
697	27029	<0.01			
698	27030	<0.01			
699	27031	<0.01			
700	27032	<0.01			
701	27033	<0.01			
702	27034	<0.01			
703	27035	<0.01			
704	27036	<0.01			
705	27037	<0.01			
706	27038	<0.01			
707	27039	<0.01			
708	27040	<0.01			
709	27041	<0.01			
710	27042	<0.01			
711	27043	<0.01			
712	27044	<0.01			
713	27045	<0.01			
714	27046	0.01			
715	27047	<0.01			
716	27048	<0.01			
717	27049	<0.01			
718	27050	<0.01			

<u>Reg. No.</u>	<u>P. No.</u>	<u>Sn</u>
740719	A27051	<0.01
720	27052	<0.01
721	27053	<0.01
722	27054	<0.01
723	27055	<0.01
724	27056	<0.01
725	27057	<0.01

Analyses by: ..... *P. Thomas* .....

Fee: \$262.00

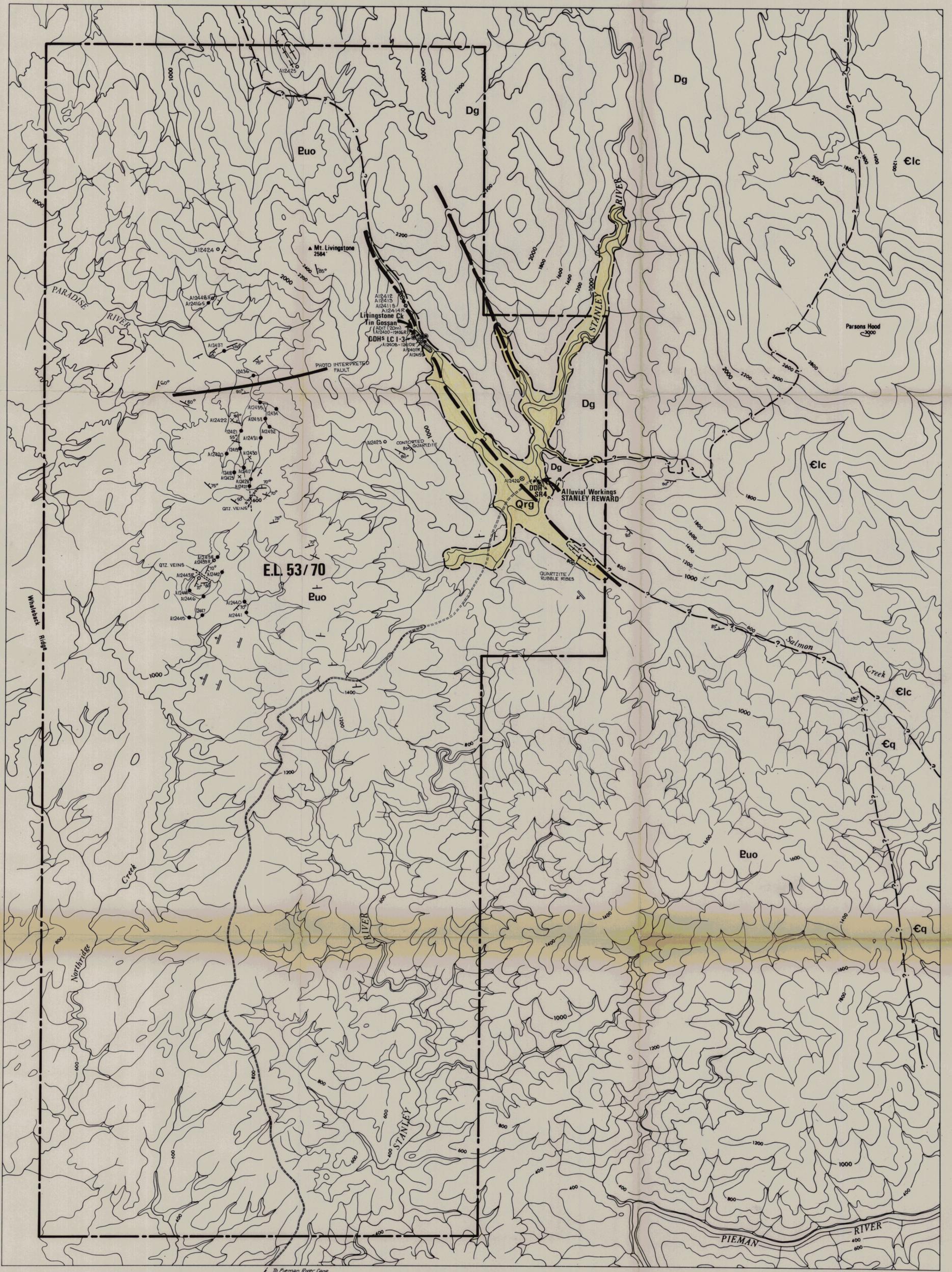
Yours faithfully,



(H. K. Wellington),  
Chief Chemist & Metallurgist.

HKW:RA

Enc.



REFERENCE

- |  |                              |  |             |            |  |
|--|------------------------------|--|-------------|------------|--|
|  | River, creek                 |  | QUATERNARY  | <b>Qrg</b> | HOLOCENE-PLISTOCENE Gravels, alluvials etc.                        |
|  | Road, track                  |  | DEVONIAN    | <b>Dg</b>  | Meredith Granite   |
|  | Topographic contours in feet |  | CAMBRIAN    | <b>Eic</b> | Crimson Creek Argillite (includes E <sub>q</sub> - orthoquartzite) |
|  | E.L. 53/70 boundary          |  | PROTEROZOIC | <b>Euo</b> | Oonah Quartzite and Slate  |
|  | Sediment samples             |  |             |            | Joint  |
|  | Rock chip sample             |  |             |            | Strike and dip of bedding  |
|  | Scree soil sample            |  |             |            | Bedding (Photo interpreted)  |
|  | Creek boulder sample         |  |             |            | Lineament / fault  |
|  | Diamond drill hole           |  |             |            |  |

595090 Livingstone 1:25,000

74-1014

PACMINEX PTY. LIMITED

E.L. 53/70, STANLEY RIVER AREA  
WEST COAST, TASMANIA

GEOLOGICAL & 2490  
SAMPLE LOCATION MAP

SCALE 1:20,000  
DRAWN: P.M.M./P.R.  
DATE: MAY 1974  
REVISED:  
DWG. NO. 1726

SCALE 0 1 2 Km.