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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

Mineral Resources Division

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E.D.R.	DEC 1985			E&L
	DEPT. OF MINES			
	12.179/86			

EXPLORATION LICENCE NO. 22/85

SAVAGE RIVER

OPEN FILE

Report on Exploration Activity
20th November, 1985 to
20th November, 1986

Rept. T220

I.J. Mathison
20th Nov., 1986.

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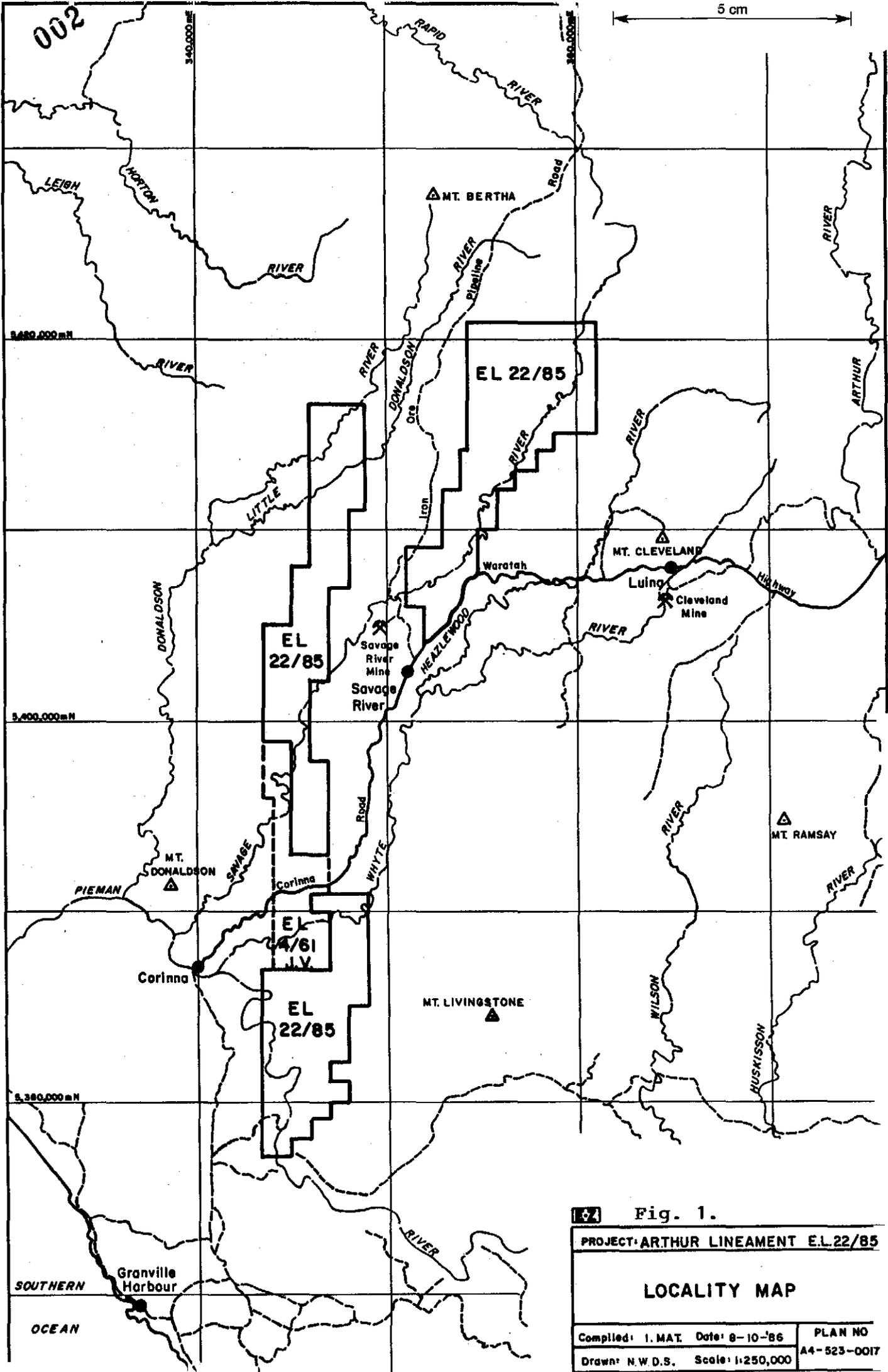
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164 Fig. 1.	
PROJECT: ARTHUR LINEAMENT E.L. 22/85	
LOCALITY MAP	
Compiled: I. MAT. Date: 8-10-'86	PLAN NO
Drawn: N.W.D.S. Scale: 1:250,000	A4-523-0017

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1. INTRODUCTION

1.1. Location and Access (See Fig. 1)

E.L. 22/85 of 175 sq.km. was granted to E.Z. on 20th November, 1985. The E.L. consists of three separate blocks; the Lucy Creek Block, the Badger Plains Block and the Bronzite Hill Block. Access to all three blocks is difficult and most travelling within the E.L. is on foot.

The Lucy Creek Block (41 sq.km) extends north eastwards from the Reece Dam on the Pieman River to just south of the Corinna Road. The southern 6 sq.km. of the block is land vested in the H.E.C. while a strip 800 metres wide along the Pieman River forms the Pieman River State Reserve. This 7 sq.km of State Reserve within the boundaries of E.L. 22/85 is excluded from the E.L. The northern portion of the Lucy Creek Block is accessible from the Corinna Road and the western portion is accessible by dinghy along the Pieman River from Corinna.

The Badger Plains Block (60 sq.km.) extends in a narrow strip northwards from the Corinna Road, across the Savage River to the Donaldson River. Access is by rough 4WD tracks and by walking tracks from the Corinna Road and the Savage River Pipeline Road.

The Bronzite Hill Block (74 sq.km.) extends north eastwards along the Savage River from the Waratah Highway just north east of Savage River Township. The southern and western boundaries of this block are accessible from the Waratah Highway and the Savage River Pipeline Road.

1.2. Previous Exploration

The Lucy Creek Block, the Badger Plains Block and a small south western portion of the Bronzite Hill Block were formerly part of E.L. 4/61. Exploration, of this area, by Savage Resources (formerly I.M.I.) included stream sediment geochemistry, heavy mineral surveys, soil geochemistry, geological mapping and air photo interpretation.

The remainder of the Bronzite Hill Block formed part of E.L. 1/68. This was explored by Comstaff between 1968 and 1985. Investigations carried out within the current E.L. 22/85 include soil and stream geochemistry, DIGHEM, ground E.M. (GENIE), geological mapping and diamond drilling.

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Good quality aeromagnetic coverage of all parts of E.L. 22/85 is available from the Tasmanian Department of Mines.

1.3. Regional Geology (See Plate 1)

The most significant geological feature of the three blocks of E.L. 22/85 and the intervening E.L. 4/61 is the Arthur Lineament. This 8-15km wide, intensely deformed metamorphosed belt of Proterozoic sediments and mafic intrusives and volcanics separates an area of relatively unmetamorphosed sediments in the east from another western area of relatively unmetamorphosed sediments and volcanics.

H. Shannon of Savage Resources on the basis of regional and detailed mapping, air photo interpretations and discussions with N. Turner of the Mines Department considers the schistose rocks of the Arthur Lineament - the "Whyte Schists" to be part of two formations. He differentiates a western sequence of metamorphosed basic igneous rocks, volcanogene sandstones, mudstones with minor magnetite, magnesite and dolomite units near the top - the Battys Bend Formation - from a sequence of micaceous schistose quartzites and pelites which he considers to be part of the Oonah Formation. Further east these micaceous schists and quartzites grade into quartz sandstone and siltstones - relatively unmetamorphosed Oonah Formation.

On the western side, the Arthur Lineament rocks are flanked by a sequence of relatively unmetamorphosed intermediate to basic volcanics, dolomitic carbonates and siltstones - the Longback Formation. The Longback Formation overlies the Mt. Donaldson Formation of conglomerate sandstone and phyllite which in turn unconformably overlies much older slates and sandstones assigned to the Rocky Cape Group.

Early correlations tentatively associate the Longback Formation and possibly the Mt. Donaldson Formation with similar rocks of the Smithton Trough.

1.4. Aim of Exploration

E.Z's principal target models of interpretation within the Arthur Lineament portion of E.L. 22/85 are Besshi-type stratiform Cu-Zn (Au, Ag) mafic volcanogenic massive sulphides, Au deposits associated with exhalative pyritic chert-carbonate units, and Au deposits associated with major shear zones.

2. WORK COMPLETED**2.1. Geological Compilation (See Plate 1)**

I.R. McDonald prepared a 1:50,000 scale interpretation geology map by compiling all available geological data. Major sources of data were:

1. Published maps of the Department of Mines, Tasmanian (see Plate 1 for details);
2. H. Shannon, 1985, unpublished 1:50,000 scale photogeological interpretation of the Savage River area (unpublished map for Savage Resources Pty. Ltd.)

2.2. Review of Previous Exploration

Copies of the results of previous exploration by Savage Resources (I.M.I.) and Comstaff were obtained. A review of this data suggested that the area with the most untested potential within E.L. 22/85 was the Lucy Creek Block. Consequently the thrust of E.Z.'s 1986 field programme was towards developing a geological and geochemical understanding of this block.

2.3. Review of Gold Mineralisation (See Plate 2)

All readily available literature on the Corinna-Savage River gold fields was collected and reviewed. Reports and publications examined were:-

Thureau, G., 1881:

West Coast Progress Report on Mines.
House of Assembly Paper No. 82

Thureau, G., 1884:

Report on Mt. Cleveland and Corinna Goldfields.
Parliamentary Paper No. 104

Montgomery, A., 1894:

Report on the Corinna Goldfield
Secretary for Mines Report 1893-94

Smith, J. Harcourt, 1897:

Report on the Mineral District between Corinna and Waratah.
Secretary for Mines Report, 1896-97

Twelvetrees, W.H., 1900:

Report on the Mineral Fields between Waratah and Corinna.
Secretary of Mines Report, 1899-1900

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Twelvetrees, W.H., 1903:

Report on Mineral Fields between Waratah and Long Plains.

Unpub. Report Tasmanian Dept. of Mines

Scott, J.B., 1926:

Report on Brown and Little Plains, Rocky River District

Unpub. Report Tasmanian Dept. of Mines

Blake, F., 1939:

Report on Corinna Alluvial Goldfield

Unpub. Report Tasmanian Dept. of Mines

Julen, H., 1981:

A History of Gold Mining on the Tasmanian West Coast

Regal press, Launceston.

In addition old work plans and old lease maps held by the Department of Mines were copied.

Using this data, all reported occurrences of hard rock gold mineralisation and most reported occurrences of significant alluvial gold were located on a 1:50,000 scale geological map. Some problems were encountered in locating creeks referred to by local names and some creek names have, in more recent years, been changed. Nevertheless, a considerable amount of reliable information was obtained.

2.4. Gridding and Access (Lucy Creek Block)

A 1km spaced grid with interconnecting walking tracks and base lines was designed to cover all except the southern portion of the Lucy Creek Block. Cutting of this grid is almost complete. The grid is being pegged at 20m slope corrected intervals.

2.5. Geological Mapping (Lucy Creek Block)

Mapping of the Lucy Creek Grid is in progress. To date 7km of the Pieman River and 12km of grid have been mapped. Rock chip samples are being collected at selected intervals or wherever a significant change in rock type occurs. So far 72 rock chip samples have been collected.

Before being submitted for analysis, a representative rock chip from each sample is slabbed for binocular microscope examination. Slabbing and rock description are in progress.

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3. RESULTS

3.1. Geological Compilation (See Plate 1)

The 1:50,000 geological interpretation of the Savage River area shows detailed subdivisions of the Battys Bend Formation and the Mt. Donaldson Formation. These subdivisions, proposed by H. Shannon, are in good agreement with the aeromagnetic contour maps of the area. Units of the Battys Bend Formation and the Mt. Donaldson Formation with a predominance of basic volcanic or intrusive rocks stand out as bands of magnetic highs with steep magnetic gradients while dolomite units, in particular, form bands of magnetic lows with relatively gentle magnetic gradients. Several of the major cross cutting faults marked on the map are also evident on the contoured aeromagnetic maps. In the Lucy Creek area it would be possible to subdivide further the Pbg3 unit of the Battys Bend Formation using the aeromagnetic data.

This geological compilation has provided a good base to guide more detailed exploration.

3.2. Review of Mineralisation (See Plate 2)

The mapped distribution of known bedrock mineralisation highlights the significance of the upper Bowry Member of the Battys Bend Formation and the contact of this member with the overlying schists of the Oonah Formation as major mineralized horizons within the area. Known bedrock mineralisation in the Bowry Member includes the Rocky River Mine (magnetite with copper and gold), the Savage River magnesite deposit, the Savage River magnetite deposits and the Specimen Hill gold deposits. Two other deposits, the Cape Copper Cu+Au+Ag deposit in Nine Mile Creek and the auriferous quartz veins of Golden Ridge occur within the Oonah schists just above the contact with the Bowry Member. However both of these occurrences are associated with thin amphibolites (N. Turner pers. comm.) and may represent either a last gasp of magmatic activity or tight folding of these units.

Many of the alluvial gold deposits in the Savage River area overlie the Bowry Member or occur just downstream from this member. This strongly indicates a primary source either within the Bowry Member or along its upper contact with the overlying Oonah Formation.

Another obvious source of alluvial gold is the Tertiary lead extending from Blackguards Hill south westwards along Brown Plains. Gold deposits as far west as

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Middletons Creek probably originated from reworking of this lead.

Only two groups of alluvial workings cannot be directly attributed to the Bowry Member or to the above mentioned Tertiary lead. These are the workings at the foot of Mt. Donaldson and the workings of Lucy Spur and Nancy Spur. Deposits in both these areas show evidence of long transport of at least some of the gold. However, the very coarse gold at Mt. Donaldson and the report by Harcourt Smith of hard rock gold on Lucy Spur suggest a nearby bedrock source for at least some of the gold.

3.3. Geological Mapping

Only preliminary results of this mapping are available. The results of this work and associated geochemical sampling should be available by late January, 1987.

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4. DISCUSSION

Only preliminary results are available from detailed exploration within this area. Major delays have been caused by the difficulties of access into this area. Track cutting and gridding has been in progress since June and the first stages of gridding are nearing completion. Significant causes of delay have been the long walking distances associated with track cutting, the exposed location of the main camp site and the normal winter and spring high water levels in all streams.

5. PROPOSED PROGRAMME FOR 1986-87

Geological mapping of the Lucy Creek Block.

Rock chip sampling of the Lucy Creek Block.

Stream sediment sampling and a panned concentrate survey of the Lucy Creek Block.

Ground magnetic surveys and ground E.M. of surveys parts of the Lucy Creek Block.

Target definition in the Lucy Creek Block.

Preliminary access preparation and reconnaissance geological mapping and sampling of the other parts of E.L. 22/85..

ACKNOWLEDGEMENTS

GEOLOGY COMPILED FROM THE FOLLOWING SOURCES.

Published Maps (Dept of Mines, Tasmania) - 1962
 Blissett, A.H. and Gulline, A.B. - Zeehan 1 mile to 1 inch - geological sheet.
 Dept of Mines - 1973.
 Burke 1:250,000 - geological sheet.
 Brown, A.V. - 1983.
 Regional Geology of the Dundas - Mt Lindsay - Mt Ramsay Area.
 Brown, A.V. - 1984.
 Regional Geology of the Mt Youngbuck - Magnet Area.
 Unpublished
 Shannon, H. - 1985.
 1:50,000 scale photogeological interpretation of the Savage River Area.
 (Unpublished map for Savage Resources Pty. Ltd.)

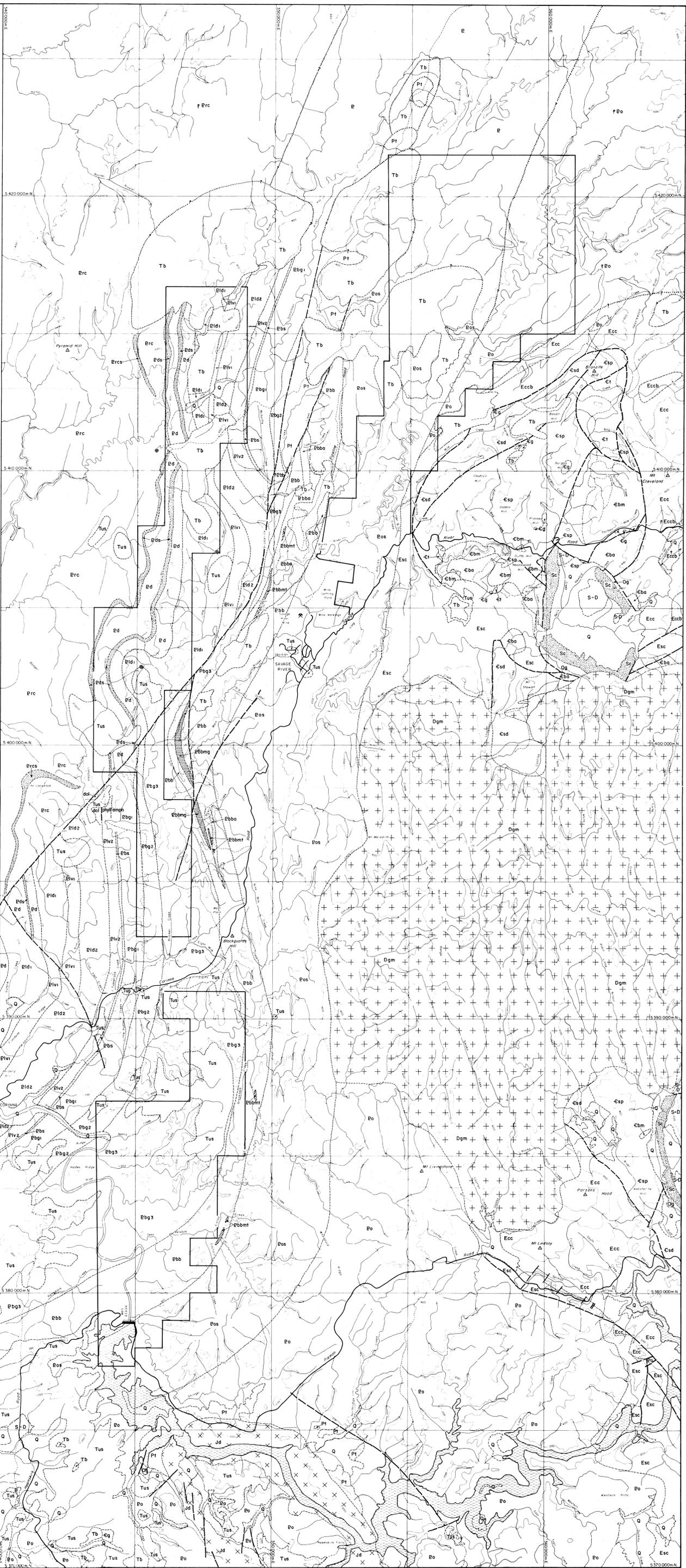
GEOLOGY LEGEND

- QUATERNARY**
 Q Undifferentiated Alluvium, Gravels and Glacial Deposits.
- TERTIARY**
 Tus Undifferentiated Sediments and Gravels.
 Tb Basalts.
- JURASSIC**
 Jd Dolerite.
- PERMO-CARBONIFEROUS**
 Pt Tuffite, Glacio-Marine Mudstones.
- DEVONIAN**
 Dgm Meredith Granite.
- SILURO-DEVONIAN**
 S-D Undifferentiated Eidon Group Sediments.
 Sc Cruffy Quartzite.
- ORDOVICIAN**
 Og Gordon Limestone.
- CAMBRIAN**
 Cg Gabbro.
 Ct Tonalite.
 Cbm Massive Aphyric Basalt. Principally The Hazelwood River Complex.
 Cba Porphyritic (lap. ch), High-Mg Basalt to Andesite.
 Csp Serpentinised Layered Pyroxenite and Pyroxenite.
 Csd Serpentinised Dunit.
- EOCAMBRIAN**
 Ecc Crimson Creek Fm. Lithic Wackes and Mudstones.
 Eccb Interbedded Basalts.
 Esc Success Creek Group Quartzwacke and minor Mudstone.
- PROTEROZOIC**
 P Undifferentiated Proterozoic Rocks.
 Boa Quartz Sandstones, Siltstones and Mudstones (Mainly in east).
 Bop Schistose Quartzwackes, Micaceous Pelites, some Graphitic Schist (Mainly in west).
 Bb Bortys Bend Fm. Grey and Green Basal Mudstones, Laminar Sandstone, Phyllite, Greenschist, Amphibolite, Turbidite Sandstone, Minor Carbonates.
 Bbb Bowry Member. Greenschist, Amphibolite, Sandstone.
 Bbbm Amphibolite.
 Bbbmg Magnesian.
 Bbbm1 Magnesian.
 Bbg3 Greenschist, Turbidite Sandstone, Amphibolite, Thin-bedded Sandstone at top.
 Bbg2 Quartz-Augen Greenschist.
 Bbg1 Greenschist, Grey and Green Phyllite, Amphibolite.
 Bbs Green and Grey Mudstone, minor Turbidite Sandstone.
 Bl Longback Fm. Slate, Dolomite, Fragmental and Massive Volcanics.
 Blv2 Upper Volcanics - Green Tuff with Flattened Pumice common, Amphibolite, Volcanic Breccia.
 Blv1 Upper Dolomite Slate Unit - Dolomite common in South only. Quartz veins and laminated texture in Dolomite, Chert.
 Blv Lower (Bretford) Volcanics - Tuffaceous Mudstone, Breccia, Massive Volcanics, Grey Tuff with Flattened Pumice (in north).
 Bld1 Lower (Savage) Dolomite - Slate expands at expense of Dolomite in North. Dolomite textures include Stromatolitic and Brecciated Stromatolitic Dolomite and Oolitic Dolomite, Chert.
 Bd Mt Donaldson Fm. Black Phyllite and Sandstone/Conglomerate.
 Bds Prominent Quartz Sandstone Beds.
 Erc Rocky Cape Group Slates and Sandstones.
 Ercs Prominent Sandstone Beds.

- Probable Geological Contact.
 --- Geological Contact.
 --- Fault.

TOPOGRAPHIC LEGEND

- Highways and Roads
 Vehicle Tracks
 Walking Track or Grid Line
 Rivers or Creeks
 Contour Line - of 200m Intervals
 Helicopter Landing Site
 Operating Mine
 H.E.C. - Lake Peman
 Trig. Point

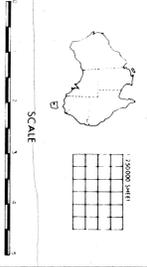


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ELECTRONIC ZINC COMPANY OF AUSTRALASIA LIMITED
 MINERAL RESOURCES DIVISION
 PROJECT ARTHUR LINEAMENT

GEOLOGY INTERPRETATION

Compiled: L.M.D.
 Date: 17-7-86
 Scale: 1:50,000
 Drawn: R.J.B.
 File No.: AC-523-0010



MINERAL OCCURENCE LEGEND

- Alluvial Gold Workings - (Position of some workings approximate - interpreted from old reports).
- Hardrock mineralization.
- Fe** Magnetite - (Also Ebbml).
- Cu** Copper.
- Q** Gold.
- Y** Adit.
- +** Shaft.

MINING COMPANY LEGEND

CREEKS FROM BLAKE - 1939

- | | |
|----------------------------------|----------------------------------|
| Sailer Jack and Middleton Creeks | Corning Hydraulic G.M. Co. |
| Nonesuch and Brooklyn Creeks | S.R. Hydraulic G.M. Co. |
| Guthrie Creek | New Donaldson Hydraulic G.M. Co. |
| Nonesuch Creek | Brooklyn Hydraulic G.M. Co. |
| Lucy Spur | Lucy Spur Hydraulic G.M. Co. |
| Brookside | Brookside Hydraulic G.M. Co. |
| Nancy Spur | Frenchman's Peak Ltd. |

GEOLOGY LEGEND

- QUATERNARY**
- Q** Undifferentiated Alluvium, Gravels and Glacial Deposits.
- TERTIARY**
- Tus** Undifferentiated Sediments and Gravels.
 - Tb** Basalts.
- JURASSIC**
- Jd** Dolerite.
- PERMO-CARBONIFEROUS**
- Pt** Tillite, Glacio-Marine Mudstones.
- DEVONIAN**
- Dgm** Meredith Granite.
- SILURO-DEVONIAN**
- S-D** Undifferentiated Eilon Group Sediments.
 - Sc** Crofty Quartzite.
- ORDOVICIAN**
- Og** Gordon Limestone.
- CAMBRIAN**
- Cg** Gabbro.
 - Ct** Tonalite.
 - Cbm** Massive Aphyric Basalt.] Principally The Hazelwood River Complex.
 - Cba** Porphyritic (opa, ch), High-Mg Basalt to Andesite.
 - Csp** Serpentinized Layered Peridotite and Pyroxenite.
 - Csd** Serpentinized Dunite.
- EOCAMBRIAN**
- Ecc** Crimson Creek Fm. Lithic Wackes and Mudstones.
 - Eccb** Interspersed Basalts.
 - Esc** Success Creek Group Quartzwackes and minor Mudstone.
- PROTEROZOIC**
- P** Undifferentiated Proterozoic Rocks.
 - Bo** Onond Fm. Quartz Sandstones, Siltstones and Mudstones (Mainly in east).
 - Bos** Onond Fm. Schistose Quartzwackes, Micaceous Pelites, some Graphitic Schist (Mainly in west).
 - Pb** Bartye Bend Fm. Grey and Green Rosal Mudstone, Lable Sandstone, Phyllite, Greenschist, Amphibolite, Turbidite Sandstone, Minor Carbonates, Magnetite and Magnetite near top.
 - Pbb** Bartye Member. Greenschist, Amphibolite, Sandstone.
 - Pbb1** Zoned Amphibolite.
 - Pbb2** Magnetite.
 - Pbb3** Magnetite.
 - Pbg1** Greenschist, Turbidite Sandstone, Amphibolite, Thin-bedded Sandstone to top.
 - Pbg2** Quartz-Augen Greenschist.
 - Pbg3** Greenschist, Grey and Green Phyllite, Amphibolite.
 - Pbs** Green and Grey Mudstone, minor Turbidite Sandstone.
 - P1** Longback Fm. Slate, Dolomite, Fragmental and Massive Volcanics.
 - P1v1** Upper Volcanics - Green Tuff with Flattened Pumice common, Amphibolite, Volcanic Breccia.
 - P1v2** Upper Dolomite Slate Unit - Dolomite common in South only, Quartz veins and laminated Texture in Dolomite, Chert.
 - P1v3** Lower (Beneficial) Volcanics - Tuffaceous Mudstone, Breccia, Massive Volcanics, Grey Tuff with Flattened Pumice (in north).
 - P1v4** Lower (Savage) Dolomite - Slate expanse of expanse of Dolomite in North. Dolomite textures include Stromatolitic and Brecciated Stromatolitic Dolomite and Gabbro Dolerite, Chert.
 - Pd** Mt. Donaldson Fm. Black Phyllite and Sandstone/Conglomerate.
 - Pds** Prominent Quartz Sandstone Beds.
 - Prc** Rocky Cape Group. Slates and Sandstones.
 - Prcs** Prominent Sandstone Beds.
- Probable Geological Contact
 --- Geological Contact
 --- Fault

TOPOGRAPHIC LEGEND

- Highway and Roads
- Vehicle Tracks
- Working Track at Grid Line
- Rivers or Creeks
- Contour Line at 200m Intervals
- Helicopter Landing Site
- Operating Mine
- H.E.C. Lake Pieman
- Trig Point

KNOWN MINERAL OCCURENCES

Completed L.M.A.T. Date: 11-11-86 Scale: 1:50,000
 A.M.C. Location: Longitude:
 Drawn: R.A.R. File No.: PLAN NO: AO-533-0020

MINING COMPANY OF AUSTRALASIA LIMITED

MINERAL RESOURCES DIVISION
 PROJECT: ARTHUR LINEAMENT

