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PASADENA PROJECTS PTY. LTD.

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ECHOLON PTY. LTD.

EXPLORATION LICENCE 23/87 - WYNSMITH HILLS

OPEN

ANNUAL REPORT : YEAR 1

(November 1987 - November 1988)

88-2865

88-2865

MINES

File Ref.

14 OCT 1988

Doc. R. I.

Action Officer Initials

Refer to

Lelley 13.10.88

W. C. CROMER

Resubmit to

Date

October 1988

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EL 23/87 (1 : 25,000).

TENEMENT INFORMATION

EL 23/87, Wynsmith Hills, covering an area of 244 km² (Figure 1 & Plan 1) was granted to Pasadena Pty. Ltd., Betoota Pty. Ltd. and Echelon Pty. Ltd. on 16 November 1987.

Land tenure (guide only) is : -

State Forest	- approximately 200 km ²
Crown Land	- 23 km ²
Private Property	- 16 km ²
Dip Falls Forest Reserve	- 0.34 km ²

The EL includes 34 km² of the Savage River Australian Heritage Act Interim Listing, and excludes 2.8 km² of Crown Reserve.

SUMMARY OF PREVIOUS EXPLORATION

Historical

Gold, magnetite, magnesite, copper, silver and lead have been reported from the district.

Traces of alluvial gold were known in many northwest rivers in the 1860's and 1870's. Sprent confirmed these reports on his exploratory trips south of the Arthur in 1876 (Julen, 1981). Also, in 1876, Chinese prospectors were mining payable gold from the Hellyer River (*ibid*, p 9) and it is likely that river terraces further downstream on the Arthur River near the old Victory Mine [703403] were being worked at the same time. The Campbell Hydraulic Gold Mining Company was sluicing over gravels on the south side of the Arthur Rivver near the Victory at the time of Montgomery's (1895) visit. Alluvial grades of up to 2 g/t were reported but average grades were uneconomic.

The Atlas leases southeast of EL 23/87 were worked sporadically in the early 1890's for silver-lead (Nye, 1971

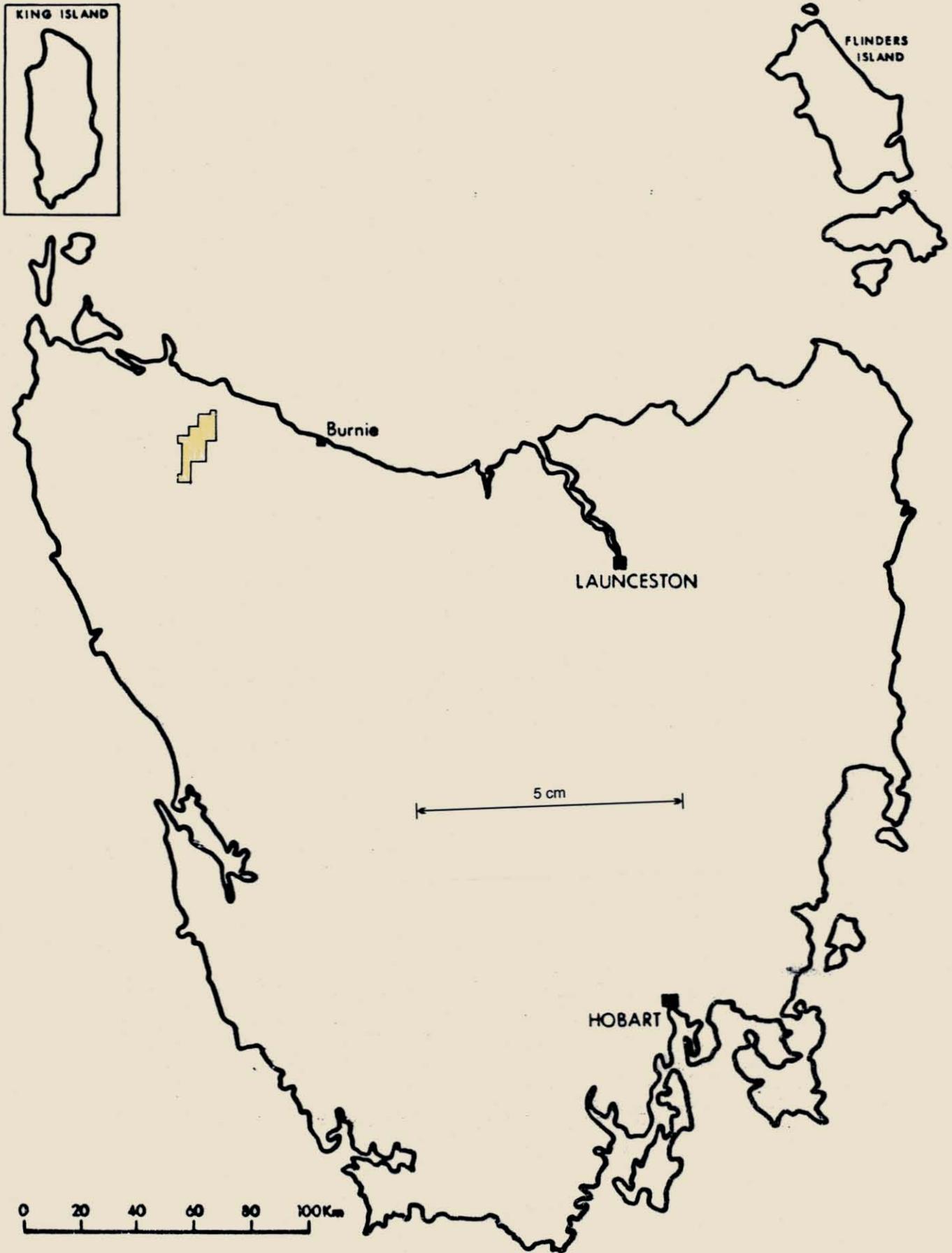


Figure 1. Location Map - EL 23/87, Wynsmith Hills

b), and about 1900, several gold dredging claims were taken out on the Arthur River. However, no work was done (Julen, 1981; p 43).

The uneconomic Victory Mine was opened up in the 1890s, presumably for copper and dolomite. Nye (1975 a; b) reported briefly on the geology of the mine area. All these mineral recurrences are inside the present EL. With the possible exception of alluvial gold in the Hellyer River, all proved to be uneconomic.

Recent Exploration

Lyell - EZ Exploration held a large Special Prospector's Licence (SPL 308) in the late 1950's covering much of far northwestern Tasmania. In the early 1960's, B.A. Farquhar held SPL 343 covering part of the present EL 23/87. In 1964 the area was apparently vacant, but in 1965 Pickards Mather and Co International held over 10,000 km² as EL 12/65 in northwestern Tasmania. No reports are available.

By 1969 all of this area had been relinquished. Tasminex (EL 8/69) and B.A. Farquhar (SPL 56) held adjoining licences over the central part of the present EL. Tasminex did a general mineral evaluation of the area (Hall, 1969). Farquhar formed a joint venture with Mineral Holdings in 1970 when all of SPL 56 and part of EL 8/69 were incorporated in Mineral Holdings' EL 43/70. Nye (1971a, 1971b, 1977), Rye and Hughes (1970) and Porter (1972) summarised the exploration effort. Work included magnesite, dolomite, copper and iron occurrences around the Victory Mine, a search for the Atlas leases, investigation of the Keith River iron deposits, and (in conjunction with CRA Exploration in 1972) an assessment of the Lyons River copper prospect.

BHP held EL 18/80 including the western half of the the present EL in a search for tin/tungsten and silica. BHP conducted photogeological interpretations and regional stream sediment sampling.

In the early to mid 1980's, most of the present EL was vacant, but CRA Exploration in 1983-85 carried out diamond drilling on the Atlas leases on EL 1/79, and with Mineral Holdings on the adjacent EL 43/70, proved up to 30 mt of low-medium grade magnesite at the Lyons River copper prospect.

Results of regional exploration in the past 30 years have been discouraging.

EXPLORATION PHILOSOPHY AND SUMMARY OF EXPLORATION IN YEAR 1

Philosophy

The licence holders' exploration philosophy is that:

- (a) Primary base metal and gold and platinum mineralisation in Precambrian mafic rocks is associated with, or underlies, magnetic anomalies in the vicinity of the Arthur Lineament.
- (b) Although the Arthur Lineament is the largest magnetic feature in the area, preliminary appraisal of the regional magnetic data has delineated a major N-S trending bifurcation of the trend within EL 23/87. This has potential for mineralisation.

Summary of Exploration in Year 1

Activity in Year 1 included:

- (a) literature review
- (b) compilation of a 1: 25,000 regional interpretative geological map of the EL based on available data, to be used as a basis for further exploration and formulating exploration concepts.
- (c) Reconnaissance geological mapping to confirm broad rock types and relationships and assist map compilation.

DETAILS OF REGIONAL SURVEYS

Regional Geological Map Compilation and Interpretation

Plan 2 is a largely interpretative 1:25,000 geological map of EL 23/87, based on all available sources including : -

- regional mapping by McNeil (1960), Matthews (1960) and Longman and Matthews (1961) west of the western boundary of the licence area
- regional mapping by Lennox *et. al.* (1982) in the extreme north of the licence area
- regional geophysical and photointerpretation by BHP (1983) on EL 18/80
- photointerpretation by the licence holders
- Carey's (1981) photointerpretation of western Tasmania
- various prospect and EL reports by Mineral Holdings, CRA and BHP (see references)
- informal discussions with N.J. Turner, Department of Mines, Tasmania
- recent geological reconnaissance by the licence holders

Plan 2 is regarded as a basis for Year 2 planning and exploration.

Geology

The main geological features of the Arthur Lineament south of EL 23/87 on adjoining EL 24/87 (also held by the licence holders) has been summarised by Cromer *et. al.* (1988).

In the Savage River area, greenschists, amphibolites and associated volcanics (including the Bernafrai Volcanics) and interbedded sediment of the Bowry and Timbs Formations may represent metamorphosed and deformed submarine mafic volcanics. The amphibolites of the Bowry Formation host the Savage River stratiform volcanogenic, magnetite-pyrite-silicate deposits, subeconomic stratiform magnesite ores, and the Specimen Reef gold-quartz-carbonate ores.

Regional facings are to the east. The Bowry and Timbs Formations underlie the Oonah Formation to the east, and in turn overlie the Mt Donaldson Formation further west.

The Bowry Formation with its contained amphibolites is the most prospective unit along the lineament for base metals and gold. It extends at least seven kilometres north of Savage River (and underlies parts of the southeastern extremity of EL 24/87) where it may be faulted against the Oonah. The iron deposits of the Keith River northeast of EL 24/87 are hosted in correlates of the Bowry, and N.J. Turner (pers. comm.) suggests the formation extends the length of the Lineament. In Plan 2, the Victory Mine pyroxenites and dolomite, and the Lyons River/upper dolomite prospect, are considered to also be correlates of the Bowry.

Similarly in Plan 2, the Timbs Formation and the Longback Subgroup, both with amphibolites, greenschists, metasediments and sediments (and the latter also probably containing Bernafrai Volcanics equivalents) has tentatively been extended NNE through the lower southeastern corner of EL 23/87, at least as far as the Arthur River.

Most of EL 23/87 is underlain by "Older Precambrian" Rocky Cape Group sandstones, quartzites, phyllites and slates. Regional facings are generally to the NW, and regional structural trends parallel the Arthur Lineament.

No regional mapping, other than reconnaissance, of the Rocky Cape Group has been attempted by any previous EL holders over the present EL. Matthews (1960) and McNeil (1960) mapped the

Arthur River area west of EL 23/87, and Lennox *et. al.* (1982) mapped south to Mawbanna.

Tertiary basalt covers about 25% of the licence area. There are no known occurrences of Lower Permian glaciomarine sediments, but Permian tillite is known from the Victory Mine area on the Arthur River extending probably as a fault-bounded slice, SSW to Pinner Creek and the Lyons River.

Structure

The Arthur Lineament is the locus of a series of major *en echelon* or roughly parallel deep-seated transcurrent faults, some with sinistral movement.

Carey (1981) traced the Pieman, Donaldson and Whyte faults NW from the Pieman Heads area. Turner (1988, pers. comm.) continues the Pieman Fault (parallel to an extended Henty Fault) at least as far as the Arthur River. North of Savage River, at the prominent bend in the Lineament, the Pieman Fault converges onto the Lineament and in the interpretation in Plan 2 combines with a major fault of the Donaldson Fault Zone. In a regional sense, Carey (*ibid*) discussed the significance of the Balfour and Arthur Lineaments in relation to known mineralisation. The former is a fault-delineated NNW-SSE trending corridor several kilometres wide showing strong dextral movement, containing all the known base metal (mainly copper) mineralisation north of the Pieman. Carey (*ibid.* p 6) suggests it may be offset about 10km to the NNE where it abuts against the Arthur Lineament, continues SSE to be further sinistrally offset against the Henty fault system (itself parallel to the Arthur Lineament) and extends down the western side of the West Coast Range to host the base metal deposits of the region.

The most conspicuous feature of NW Tasmania is therefore the divergence of trends - NNE and NNW - well delineated by magnetic anomalies. The Balfour Lineament is parallel to the present coast and to later fractures thought to separate

Tasmania from Victoria Land. Carey (*ibid*, p 6) suggests it extends toward King Island.

Pre-Tabberabberan movement along the Arthur Lineament is therefore probably younger than that along the Balfour Lineament. The mafic volcanic rocks of the Bowry and Timbs Formations are regarded by several workers as the locus of submarine volcanism in the Late Precambrian (c 700ma) which developed along the western edge of a simple extensional elongate coastal rift basin separating and underlain by, the Precambrian Rocky Cape Group. Leaman (1988) has developed this idea. He suggests the rift was the ancestral Dundas Trough, and that later, more easterly volcanism in the Middle Cambrian produced the Mt Read volcanic trend. Late Cambrian and Devonian movement has created "the illusion of a trough bend" (*ibid*, p 21) around the Tyennan Block.

Movement on the Pieman fault system in the Arthur Lineament is at least as young as Lower Permian Group rocks, and may have acted as a locus for Tertiary volcanism.

Divergent Trend

Photolineaments on Plan 2 show a general structural trend parallel with the Arthur Lineament. However, in the southern and eastern parts of EL 23/87, there is a prominent, second order divergent structural trend (also shown by strong regional magnetic anomalies) striking N and just W of north. The direction is also indicated by the trend of the Lyons River and a long segment of the Arthur River, and appears to extend for at least 25km to the Mawbanna area. The subparallel trend of basalt outcrops in the same area may be related.

The significance of the divergent trend is as yet unknown, and requires detailed interpretation.

Implications for hard-rock prospectivity

Only a small part of the Arthur Lineament occurs on the licence area. If the interpretation on Plan 2 is correct, correlates of the more prospective Bowry and Timbs Formations lie to the east of EL 23/87, so that only the Longback Subgroup (with the Bernafrai Volcanics?) is present on EL 23/87.

A more interesting target for further regional interpretation is the prominent structural and magnetic trend diverging from the Arthur Lineament northwards through the licence area.

Clearly, detailed aeromagnetic interpretation is required before detailed field work is carried out.

CONCLUSIONS AND RECOMMENDATIONS

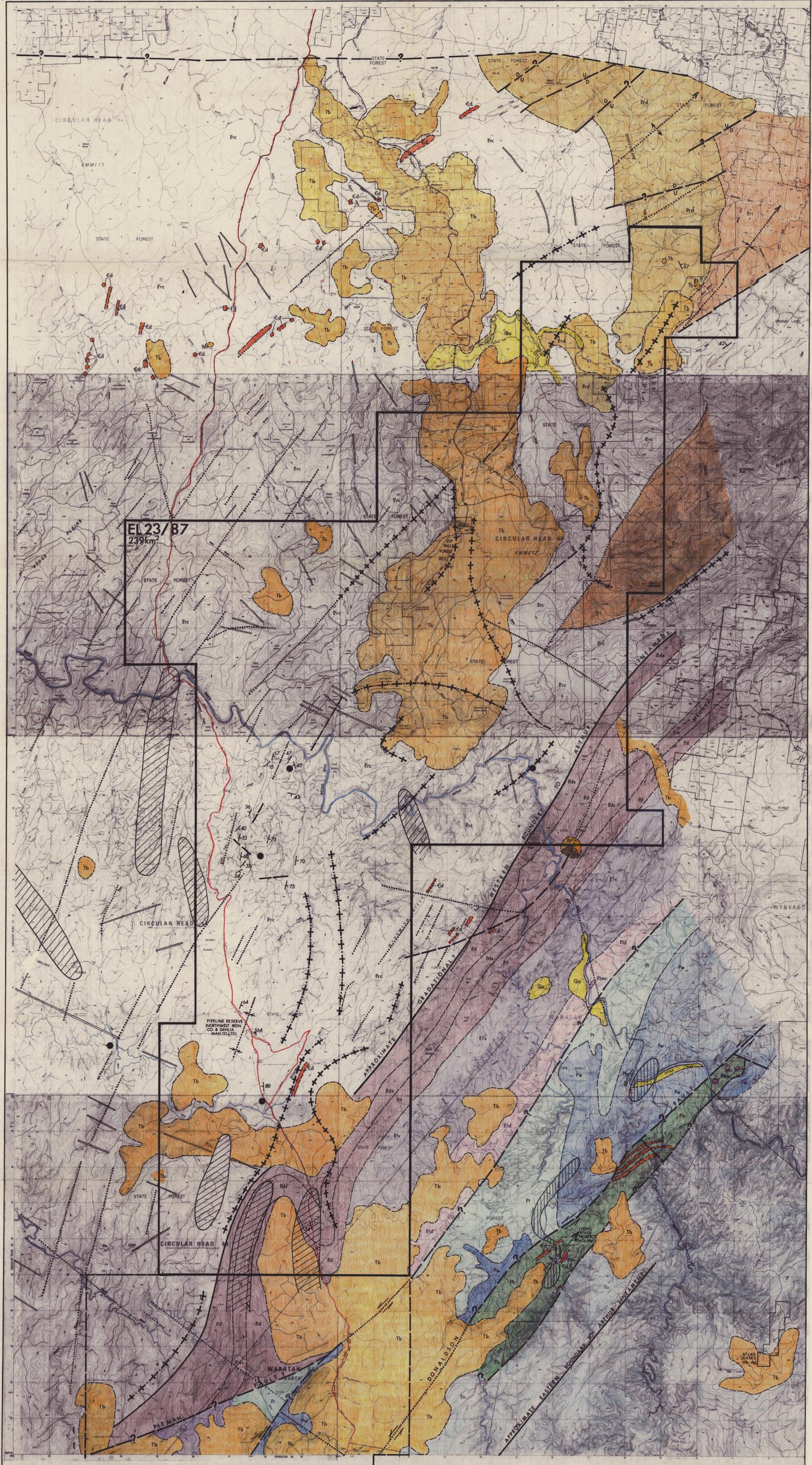
1. Strataform base metal and gold prospectivity in the Arthur Lineament is restricted to the extreme southeastern parts of the licence area.
2. There are no known occurrences of significant mineralisation within the Rocky Cape Group.
3. Proposed future exploration may include :-
 - (a) Detailed assessment of regional aeromagnetic and other data, to delineate and assess the significance of the second order structural and magnetic trend diverging from the Arthur Lineament through the Rocky Cape Group.
 - (b) Further, more detailed photo-interpretation of Rocky Cape Group structural trends, and confirmatory field mapping.

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LEGEND

- QUATERNARY**
- Qa Alluvium
- TERTIARY**
- Tb Basalt, minor pyroclastics
 - Ts Qtz gravel, conglomerate, sand & clay - sub-interbasaltic?
- PERMO-CARBONIFEROUS (Lower Permian)**
- Pw Wynyard Tillite
- CAMBRIAN? - PRECAMBRIAN**
- Ed1 Dolerite dykes

- PRECAMBRIAN "WHITE GROUP"**
- Onah Onah Formation
 - Ed Schistose quartzwacke, graphitic schists; micro-chlorite palisade, minor green tuff
 - Tb "Bovvy Formation" correlate
 - Ts Greenschist amphibolite, sandstone with magnetite (Tsm) & magnetite-haematite-pyrite (Tspm)
 - Tm "Timbs Formation" correlate
 - Et Greenschist, qtz-rich greenschist sandstone, phyllite mudstone, amphibolite, turbiditic sandstone
- Longback Subgroup correlate**
- Elv Volcanics, mudstone, phyllite, tuff, amphibolite, including Bernafai Volcanics correlate?
 - Elid Dolomite and slate with local magnetite (Eldm)
- Mt Donaldson Formation correlate**
- Ed Black phyllite and sandstone with some resistant quartzite and sandstone horizons (Eds)

- ROCKY CAPE GROUP**
- Irby Siltstone
 - Ir Mudstone, siltstone
 - Det Detention Quartzite
 - Or Orthoquartzite, siltstone
 - Cowrie Siltstone
 - Erc Finely laminated siltstone, minor quartzite
- Geological boundary; approx, inferred
- Major fault; approx, inferred. Relative movement indicated
- Inferred lineament (mainly photo interpreted)
- Minor fault



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EL 23/87 - WYNMOUTH
 INTERPRETATIVE GEOLOGICAL
 COMPILATION

COMPILED	W.C.C.
DRAWN	T.C.D.
DATE	August 1988
SCALE	1:25,000
FRAME	PG20/2

- Inferred plunge of fold axis, synform, antiform
- Abandoned mine or prospect
- Dip and strike of bedding. Facing usually unknown
- Pipeline road, Savage River Mines
- Approx. gradational? boundary to Arthur Lineament
- Magnetic anomaly; circular; linear
- Magnetic anomaly interpreted as black shales
- Magnetic anomaly