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DERWENT MINERALS PTY LTD

(Incorporated in Tasmania)

752001

11 Midland Highway
Brighton TAS 7030 AUSTRALIA
Ph: 61-02-681222
Fax: 61-02-681349
Tlx: AA 33427

EXPLORATION LICENCE 32/87 - PIPERS RIVER

ANNUAL REPORT : YEAR 1

(25 August 1987 - 24 August 1988)

J.K. DAVIDSON

W.C. CROMER

V. HOFTO

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TENEMENT INFORMATION

EL 32/87 is a 72 km^2 tenement in the Pipers River area, NE Tasmania (Figure 1 and Appendix 1). The licence encompasses some 86 km^2 of which 14 km^2 are excluded as the Stony Head Artillery Range. The licence was granted on 28 August 1987 for one year covering the period from 25 August 1987 to 24 August 1988. The Licence is owned 100% by Derwent Minerals Pty. Ltd.

EXPLORATION PHILOSOPHY & OBJECTIVES

When Derwent applied for the EL it had two principal targets:

(a) Primary gold in (buried) extensions to the Back Creek and Leura structural trends, with the possibility of payable gold in (initially) relatively porous Mathinna sandstones adjacent to gold-bearing quartz reefs.

The philosophy was that although the surface exposures of gold-bearing quartz reefs were adequately explored in the 1870's (when at least 300 kg of gold was obtained), strike extensions or en-echelon reefs to known mines have not been tested.

(b) The secondary aim was placer gold.

The Red, White, Blackman and Cardigan leads in the Back Creek gold reef extended eastwards beneath the basalt towards the present Back Creek. Detailed mapping, sampling and possible drilling is needed to adequately test for placer gold.

SUMMARY OF WORK COMPLETED IN YEAR 1

The main Year 1 activity directed towards the exploration aims has been a geological compilation of the area based on a review of all previous exploration and mining, coupled with brief reconnaissance mapping and limited rock chip sampling.

This work is summarised in detail in the following sections.

Literature Survey

Numerous small gold fields were discovered in north-eastern Tasmania in the mid to late 1860's, including the Back Creek field about 1869. Most received little more than brief mention in the Government Inspector's reports of the day (e.g. Shaw, 1881). The first serious geological report of the Back Creek field was that of Thureau (1882). By this time, most of the alluvial fields including Back Creek in north east Tasmania had been worked out, but Thureau emphasised the alluvial deposits of the area. He discussed the several south-easterly trending Tertiary auriferous leads worked to the point where they dipped steeply under younger basalts. He described "heavy gold" attached to the quartz in the White Lead, suggesting a nearly primary source, but doubted that the several auriferous quartz veins of the field had sourced all the alluvial gold.

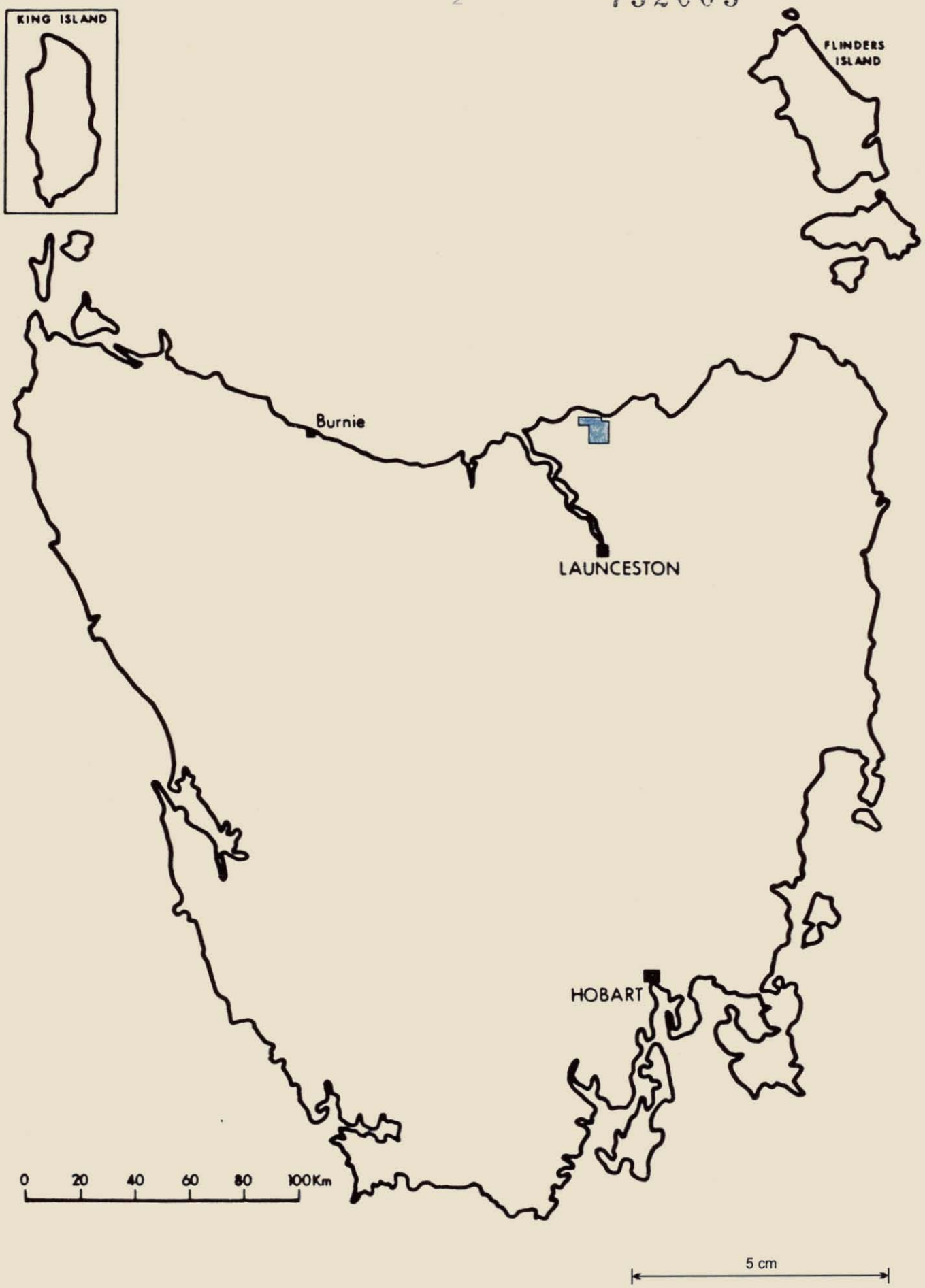

Figure 1. Location Map - EL 32/87, Pipers River.

Montgomery's (1894) account described the Back Creek alluvial and hard-rock workings in detail, and was accompanied by various maps and plans. Each of the four main leads had been surveyed, and he provided logs of two series (A and B series, Appendix 2) of Mines Department drillholes completed in 1882-2 and 1889 to test for sub-basaltic extensions of the leads. He was also (p 52) the first to estimate production figure for the field (10,000 oz., mostly alluvial). Describing the numerous, abandoned attempts at hard-rock mining, Montgomery comments that only the Union and Major Mines were then operating (Appendix 2).

Montgomery's report is also significant in that it is one of the first to describe auriferous Mathinna country rocks spatially, and probably genetically, related to quartz-gold vein systems. Several smaples have been described from the northeastern Tasmanian gold province (see below). At the Union Mine (Appendix 2) he describes (p 60) the orebody as " a white sandstone traversed by numerous small quartz veins" which locally at least forms the hanging wall of a 0.1-0.25m thick quartz vein trending NW-SE : i.e. roughly concordant with the regional strike. However, it seems that nearby, in the same mine, auriferous "sandstone" also forms the hanging wall of a traverse set of quartz veins striking NE-SW with a third set possibly striking E-W. Montgomery states (p 60) that "throughout the mine there a sudden changes of country rock from white clayey sandstone to black soft slate and soft white slate; and these latter beds, which often appear to lie in flattish layers, do not appear to carry gold like the more porous white sandstone."

The Major or Leura Mine (Appendix 2) was undergoing a revival during Montgomery's visit in 1894. The older Leura workings of the 1870's explored the eastern end of a roughly E-W trending auriferous quartz vein up to 0.6m wide over a strike length of several hundred metres. Some auriferous alluvial deposits were profitably worked up to the outcrop of the main vein at its eastern end. In the 1890's, however, work by the Major Gold Mining Co. was concentrated on the western end, and on a subparallel vein to the immediate south. Montgomery (p 65) estimated total production at only 85 oz gold from about 40 tonnes, which today seems inconsistent with the large amount of development which took place. The mine workings have been surveyed, possibly by Broadhurst (1935) but are mostly filled in now. The present leaseholders of 1062 P/M have done some shaft development work on the eastern end of the lode.

Montgomery (p 66) then briefly discused the regional strike (NE-SW) of the "Silurian country rock" (Mathinna Beds), and the Australasian State Quarry on Turquoise Hill, in which occur small amounts of pyrite, wavellite (hydrated aluminium phosphate) and secondary copper sulphate (chalcanthite?).

Twelvetrees (1908) briefly mentioned the alluvial deposits at Back Creek in a discussion of the Lefroy-Back Creek area. Like Thureau and Montgomery before him, he considered (p 12) the source of the alluvial gold had still to be discovered.

McIntosh Reid's (1925) paper dealing with aspects of the Lisle Goldfield 30 km southeast of Back Creek is significant in that it gives prominence to gold-bearing sandstones at the Bessels Reward Prospect, which shows structural similarities to the Union Mine at Back Creek. The host rocks are the Mathinna Beds, striking NW-SE,

Figure 2. The old Leura or Major Mine, looking NE. The old workings extend about 250-300m from left to right. The large dump marks the main shaft. Alluvial gold was worked westerly from a shallow lead extending right up to the start of the hard-rock workings about 100m to the right of the photograph.

consisting of narrow beds of soft, friable, white to iron or manganese stained porous sandstone interbedded with slate, and cut by transverse, mainly barren quartz veins trending NE-SW. Fine gold is disseminated throughout the sandstones : best assays were 25 g/t, and an average of several samples yielded 3 g/t. The sandstones, six in number and from 0.3 - 2.0 m thick, have a mappable strike length of over 2 km, but are not everywhere auriferous.

McIntosh Reid (1926) repeated his description of the Bessel Reward Prospect in a general summary of the Golconda gold district (which includes the Lisle goldfield) and also described uneconomic, gold-bearing Mathinna Beds sandstone imbedded with slate at Myrtlebank immediatley south of Lisle. Although the sandstone itself is apparently barren, it is heavily stained with iron and manganese oxide and the gold is confined to joints and quartz-arsenopyrite veinlets. Nearby, two granitic dykes occur. The regional strike of the Mathinna Beds is NW-SE.

The Lefroy-Lisle district is briefly mentioned by Gepp *et. al.* (1933), and Stubbs (1934) reported briefly on the Lefroy Deep Lead west of EL 32/87.

Broadhurst's (1935) bulletin on the Lefroy and Back Creek goldfields brought together all previous reports on the area, and remains a useful summary. He described the history of the two fields and resurveyed where possible most of the hard-rock workings at Lefroy. Subsequently, and as a result of Broadhurst's work, a third series of drill holes (Series C, Appendix 2) was sited to investigate extensions to the Back Creek deep lead system.

The auriferous deep leads at Lefroy and Back Creek a were briefly described by Keid (1952), and Groves' (1965) report on the geology of the Lefroy Goldfield is relevant to the Back creek area (see below).

The Back Creek area was geologically mapped as part opf the one mile to one inch Pipers River sheet (Marshall *et. al.*, 1965) and later Marshall (1969) described in detail the geology of the district stretching from Pipers River to Scottsdale. He summarised all previous work on the Back Creek area, concentrating on the stratigraphy of the structure of the Mathinna Beds.

Threader's (1967) work on the Mangana-Waterhouse goldfields east of EL 32/87 is directly relevant to the present EL since he was the first to comprehensively study the relationship between regional structure in the Mathinna Beds and the hosted hard-rock gold mineralisation of NE Tasmania.

Leaman (1973) carried out geophysical trials on part of the Lefroy quartz-gold loads to determine the effectiveness of resistivity, magnetics, SP, temperature and piezoelectric methods. He commented that although structural controls on mineralisation at Lefroy are little understood, regional gravity data were consistnet with a granodiorite stock centred south of the field. His work suggested it might be possible to distinguish non-mineralised and mineralised host rock using a combination of resistivity, SP and temperature. Piezoelectric traversing proved reliable in detecting hidden near-surface quartz veins.

In follow-up drilling to verify anomalies, Leaman (1975) drilled three holes totalling 348m and assayed four core samples (from 100-

133m inclined (?) depth) for gold. The main resistivity anomaly was due to massive mudstone and sandstone but the structural strike appeared unrelated to the anomaly trend. Assays revealed a "trace" of gold in all four samples (three of pyritic mudstone, one of quartz and pyrite).

Apart from Leaman's work, all exploration related to EL 32/87 after 1969 is contained in company reports now held in open file in the Department of Mines.

History of Mining

Quartz-gold reefs were discovered at Specimen Hill about 8km west of EL 32/87 in 1869. The town of Nine Mile Springs (later to become Lefroy) quickly grew up around this and several other hard-rock mines. the town went through fluctuating fortunes, being almost deserted by 1872 as initial finds were worked out, enjoying a revival between 1881-84 as new reefs were discovered and worked, and a second revival in 1891-6 with the discovery of the rich Pinafore reef. The field was virtually deserted by 1902 (Broadhurst, 1935). Total production is estimated at 165,000 oz (5.3t) from lodes, and 7,500 oz from alluvial (Groves, 1965, p 60), but the actual figure is probably higher. Lefroy therefore ranks as one of northern Tasmania's major gold-producing centres after Beaconsfield (30t), Mathinna (10t) and Lisle (7t).

Alluvial rather than reef gold was discovered at Back Creek, also about 1869. Several leads were worked, but the field was never as large as Lefroy. Like Lefroy, it had been twice abandoned by 1884 when it underwent a revival as miners concentrated on searching for the hard-rock source of alluvial gold. The location of the several hard-rock prospects are shown in Figure 2. Each was developed on roughly E-W trending auriferous quartz reefs.

Sparse, uneconomic gold mineralisation in narrow quartz veins was investigated by exploratory adits at the southern end of the Den Range, about 6km south of EL 32/87, in the 1870's, but the field was subeconomic.

Good quality black slate was quarried at Turquoise Hill, immediately to the west of EL 32/87 in the 1870's (when the lease was interfering with adjacent gold exploration) and sporadically since. Wavellite and turquoise have been recorded from the mine (Marshall, 1969).

Review of Exploration Since 1967

Exploration Licences encompassing the Lefroy - Back creek - Lisle gold districts since 1967 are shown in Figure 3. Not all licences were taken out for gold.

Planet Mining Co. held large areas (Els 3/66, 13/67) stretching from Badger Head to bridport, for both offshore and onshore heavy minerals. Planet did a study of drainage systems in relation to known onshore mineralisation (Campe & Walts, 1966) to assess offshore propsectivity. Results were discouraging. Later (McMahon, 1968), on EL 13/67, about fifty auger samples presumably in Cainozoic sediments failed to return anomalous heavy mineral

values. Hard-rock gold exploration near Beaconsfield was recommended but apparently not followed up. The following year Planet channel-sampled selected auriferous reefs at Lefroy : assays returned a "trace of gold". Beach sand sampling was not encouraging and the licence was relinquished (Tassell, 1969).

Minefields Exploration subsequently held EL 30/70 of 225 km^2 over the Lefroy and Back Creek goldfields, but apparently no exploration reports are available.

At about the same time **G.J. Roberts'** EL 32/70 covered the Lisle - Golconda - Nabowla area (Figure 1), bu the main play surprisingly in a known gold province, was for tin. Hull (1970) described an orientation stream sediment program in the SE corner of the EL (not in the Lisle Valley) which delineated a tin anomaly and associated elevated tungsten values.

Follow-up soil sampling (Fleming & Knight, 1970) failed to substantiate these values. Indeed, later explorers (Askins, 1977 [b]) ascribed the anomalous values to analytical error, adding that the granodiorites of the area are not known as tin bearing. Fleming and Knight took 60-70 samples of B horizon soils and assayed for gold, copper, tin and molybdenum, returning two anomalous gold values of 0.30 and 0.32 g/t. They recommended airborne geophysics, but the licence was relinquished soon after. No attempt had been made to investigate known gold occurrences, or to relate mineralisation to geolgy.

In 1976 **Comalco Limited** briefly held licences over the Lisle (26/76) goldfields, and was the first of the majors to seriously start to reassess NE gold prospectivity. Comalco's play was open pittable stratabound gold in the Mathinna Beds (Askins, 1977 [b]) of at least 10mt and 4.5 g/t. Vein gold was viewed as a low priority target because of historically small tonnages and patchy grades.

Comalco's exploration model was based on syngenetically deposited gold in favourable lithologies in the Mathinna Beds, with post-diagenetic remobilisation into quartz tension fractures during mteamorphism. Comalco saw the Devonian granodiorites as a heat source for metamorphism rather than as a magmatic source of gold : i.e. connate water became hydrothermal through proximity to granodioritic intrusion. The apparent spatial relationship between granodiorite and gold in NE Tasmania, and the apparent antipathy between other (tin-bearing) granites and gold is not addressed by this hypothesis.

Comalco thought that any disseminated gold ore-body would carry fine-grained gold easily overlooked by earlier miners and explorers. Indeed, fine, disseminated, stratabound gold in Mathinna sandstones is reported from several localities in NE Tasmania, and remains one of the more prospective plays in the Mathinna Beds. Comalco was well aware of McIntosh Reid's (1925, 1926) reports on the Bessels Reward and Myrtlebank Prospects and the Company carried out reconnaissance geological mapping, pan and stream sediment sampling (for base metals as well as gold) and rock chip sampling around the Bessels Reward area. Twelvetrees (1909) had earlier remarked on a gold-bearing dark blue-grey hornfels in this area, and Comalco mapped the unit but could not trace it along its strike into its non-metamorphic equivalent (thought to be a black shale). Fanders (1970) reported petrographically on the hornfels as cordierite-biotite-hornfels.

5 cm

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13/67	PLANET MINING CO.	1000km²
30/70	MINEFIELDS EXPLORATION	225km²
32/70	C.J. ROBERTS	300km²
25 & 26/76	COMALCO LTD.	130km² (Lisle) 66km² (Lefroy-Back Creek)
53/80	CRA EXPLORATION LTD.	750km²
20/83	BP/SELTRUST	194km²
32/87	DERWENT MINERALS	72km²

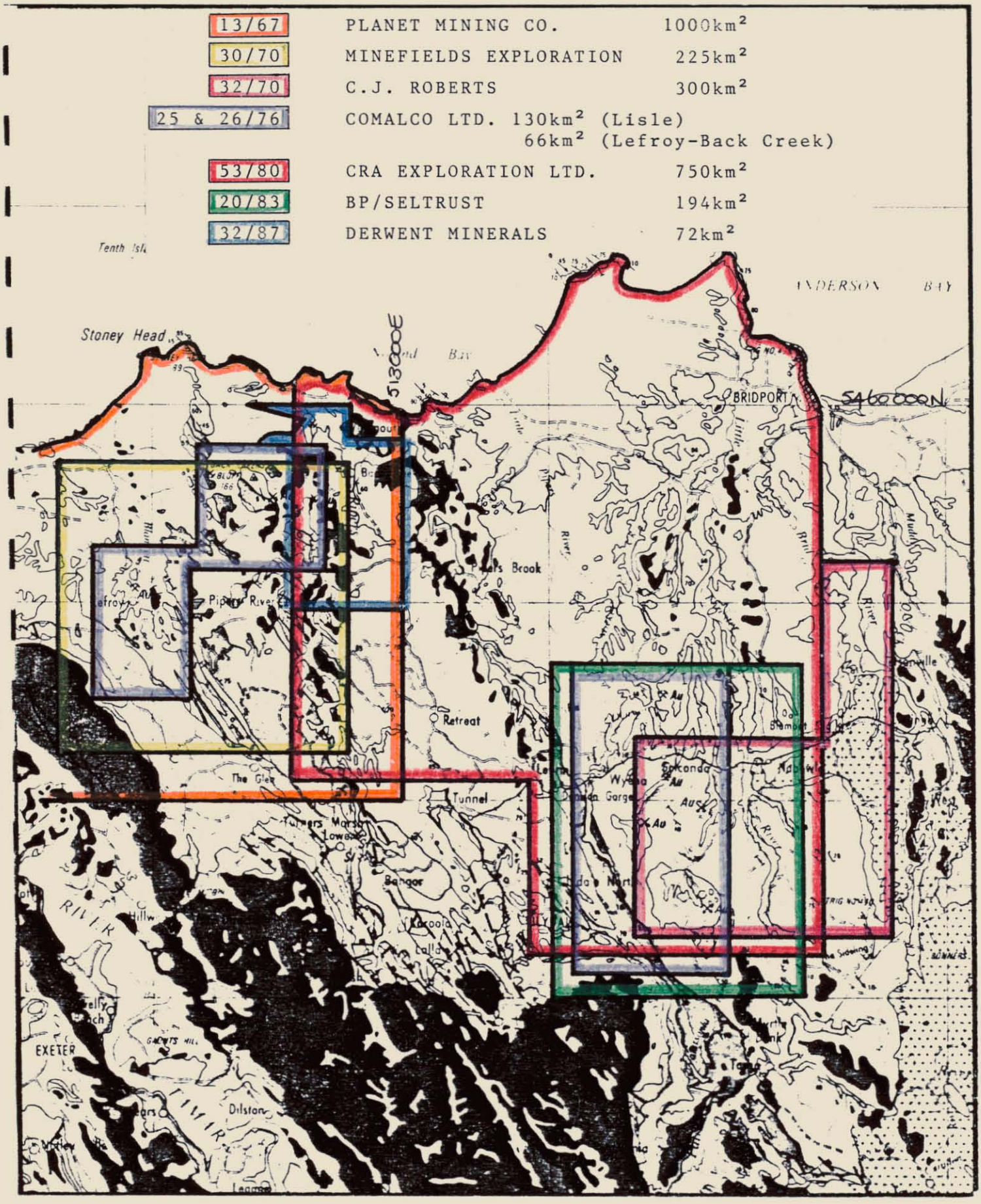

Figure 3. Location diagram and exploration licences since 1967 in the Lefroy-Back Creek-Lisle gold districts (1 : ~~25,000~~).

1/4M

Comalco found fine alluvial gold (and no other commercially valuable heavy minerals) and assayed -80 mesh stream sediments for Cu, Pb, Zn and As. As greater than about 10 ppm showed some promise as a gold indicator, but was inconsistent.

The Company regarded the rock chip sampling as discouraging. Early anomalous gold values did not repeat, and all values were regarded as less than 0.05 ppm. No one particular rock type (including Twelvetrees' dark hornfels) was obviously gold-bearing, so no systematic sampling could readily be done. In all, about 70 samples of all rock types including hornfels, black shales, siltstones and sandstones were fire assayed.

A tuff interbedded with Mathinna Sediments reported by McIntosh reid (1926) was not located.

Comalco carried out similar testing at Lefroy (Askins, 1977 [a]), on drill core from Mines Department drillholes drilled (Leaman, 1975) to test Leaman's (1974) geophysical anomalies. About 35 samples were assayed for Au and Ag, from black shales, siltstones and sandstones. Trace amounts of gold were reported from all but three samples. It is not clear whether the Mines Department assays were done by fire assay or not, but it is interesting, and possibly encouraging, that for the first batch of 19 samples, the Au and Ag result sheet commented "whenever a trace is reported the combined weight of precious metal is less than 0.5 g (sic) per tonne". If the quote and the assays are valid, at least six of these nineteen (which showed no Ag) and possibly more, may be significantly anomalous in gold. In the remaining batch of assays, "trace" equalled 0.1 g/t. (A recent phone enquiry to the Mines Department laboratories failed to determine whether the the "0.5 g" was a misprint.)

In any case, Comalco in the late 1970s regarded these values and the Lisle results as discouraging, and relinquished both licences.

CRA Exploration held EL 53/80 in the early 1980's, covering about 750 km^2 including the Lisle and Lefroy - Back Creek areas, and all the present EL 32/87. Rather than explore mainly for gold, the Company had previously commissioned a review of the lead-zinc prospectivity of the Mathinna Beds which incorporated most of NE Tasmania (Legge, 1980).

Legge's objective was to investigate the environment of depostion of the Mathinna Beds, to establish the style of known lead-zinc mineralisation, to assess the potential for stratabound mineralisation and to suggest possible targets. Northeastern Tasmania has no known economic lead-zinc deposits, and the few known prospects (with W, Pb, Ag, Au) are mainly near Scamander on the east coast. Legge's conclusions were that :

- the Mathinna Beds show age and lithological similarities to rocks hosting the Cobar and Elura lead-zinc deposits in NSW.
- the Mathinna Trough and its mineralisation may correlate with the Wagga Trough in NE Victoria - SE NSW.
- the Mathinna Beds show some similarities to rocks hosting stratabound lead-zinc deposits in Western Canada.

- the western "lutite" association of the Mathinna Beds (the slate-phyllite association of Marshall (1965) indicated *Sma* on Figure 2) with pyritic black shales suggests an environment suitable for stratabound shale-hosted lead-zinc, and warrants grass-roots investigation.

Legge remarked (p 4) on tha absence of carbonate facies in the Mathinna. He commented also (p 17-18) on the several occurrences of phosphate minerals in NE Tasmania including turquise and wavellite in slates at Turquoise Bluff and the Den Ranges. The phosphate had no reported association with base metals, but is known from the western margin of the Wagga Trough.

Legge went on to recomend a detailed reassessment of earlier aeromagnetic data over the Scamander deposits, and a detailed stream sediment and soil sampling survey over the slate-phyllite association near Back Creek - Lisle.

CRAE's objectives on EL 53/80 included gold in Tertiary deep leads, base metal mineralisation of the Cobar or Selwyn type in the Mathinna slate-phyllite association, and primary gold in the Mathinna (Broadbent, 1982). The Company did ground magnetometer traverses in the Back creek area to detect tertiary deep leads and their margins under later cover (Appendix 2) and took several hundred stream sediment samples for base metal assay. Locations are shown in Appendix 2.

CRAE concluded that :

- the Back Creek lead extends to the present coast west of Weymouth (not down the present Pipers River Valley as suggested by Marshall et. al., 1969).

- the lead is up to 12 km long, but narrow with low tonnage. No other leads show promise.

- elevated stream sediment base metal values (Appendix 2) in the Back Creek area are associated with fine-grained lithogical units in the slate-phyllite association of the Mathinna Beds. No outstanding anomalies were detected and the largest was given low priority.

Broadbent recommended scout drilling of the Back Creek lead between the Back Creek goldfield and the Leura Mine (within the present EL 32/87) and more detailed but limited stream sediment and soil sampling of the slates and phyllites. This work was apparently not done and the licence was relinquished soon after.

BR Minerals-Seltrust held EL 20/83 over the Lisle - Golconda area from 1983-85. The target was low-grade disseminated gold hosted in the granodiortic rocks or metamorphosed Mathinna, and now largely concealed beneath younger alluvial cover. Work included an airphoto interpretation, mapping, rock chip and stream sediment sampling and aeromagnetics. Several "prospective" areas were delineated (Storer, 1984). Various circular topographic features - including the Lisle Valley, Golconda and Panama goldfields, were noted and major lineaments photointerpreted. Several of these are shown on Appendix 2. Storer recommended follow-up percussion drilling. The drilling, carrried out by BP for Seltrust, included twenty-nine holes, twenty-eight of which intersected granitic basement. Pyrite was ubiquitous in the fresh rock.

No elevated gold values were returned from the drill chips assayed. Values were less than 0.01 g/t. Storer concluded that even at this concentration, leaching of about 0.25 km^3 of granitic bedrock could produce the 7.5 t of allucial gold at Lisle.

The licence was relinquished.

Reconnaissance Rock Chip Sampling

Derwent has commenced an orientation rock chip sampling programme as a follow up to CRAE's stream sediment sampling in the early 1980's. Only preliminary results are available, summarised in Table 1. Appendix 3 is a copy of the original laboratory data.

Table 1 Assay Results, Mathinna rock chip samples, EL 32/87

Sample	Lithology	Grid Ref 5 54	Cu	Pb	Zn	As (ppm)*	Au
DMPR1	indurated sandstone	[100520]	20	25	15	<1	<0.005
DMPR2	vein quartz	[100520]	20	20	30	<1	<0.005
DMPR3	dark grey mudstone	[100520]	25	20	15	<1	<0.005
DMPR4	iron-stained sandstone	[100520]	35	20	20	<1	0.010
DMPR5	limonitic sandstone	[100520]	115	70	115	1	<0.005
DMPR6	vein quartz	[100520]	25	25	35	<1	<0.005
DMPR7	carb. black mudstone	[077519]	75	25	20	<1	0.005

*Cu, Pb, Zn by acid digestion and AAS (DL = 5 ppm);
As by fusion generation and AAs (DL = 1 ppm);
Au by fire assay fusion and AAS (DL = 0.005 ppm).

Geological Compilation

Appendix 2 (back pocket) is a compilation of most of the relevant previous exploration superimposed on Marshall *et. al.*'s (1965) geological map sheet. The compilation is intended to act as a basis for follow-up work, particularly in relation to Mathinna-hosted gold and base-metal targets thought prospective by CRAE but not fully followed up.

The general style of the folding of the Mathinna is shown on Figure 4. Structural strike is approximately NW which is a direction which has acted in a similar manner in the Precambrian. The asymmetric folding comprises steeper frontal limbs dipping SW and more gentle back slopes to the NE. The degree of metamorphism is quite low in places with many instances of initially high primary porosity prior to folding. Incipient cleavage is sparse, and in the case of Figure 4, not apparent. However, in Figure 5 (a) and (b), cleavage is well developed and pervasive, cutting bedding at 20^0 or more.

PROPOSED FUTURE EXPLORATION

Quartz-Gold Veins near Known Mineralisation

The status of this play has been unaffected by Year 1 work. Derwent regards the area as still prospective for hard-rock gold of the Lefroy - Back Creek style but no field work has yet been done.

Figure 4. Structural style in the Mathinna Beds, Bridport Road [100520], looking south. Samples DMPR1-6 were collected for assay from this road cutting. Dee Table 1.

Figure 5 (a) Example of jointing, bedding and cleavage, Mathinna Beds, Weymouth Road [077519]. Bedding dips shallowly to the left and cleavage to the right; iron stained joint planes cut both the bedding and the cleavage. The scale is 0.5m.

Figure 5 (b) As above; opposite side of same road cutting. Bedding dips to the right and cleavage to the left. Sample DMPR7 (Appendix 2) was collected from centre left. The scale is 0.5m.

The review of previous work highlighted, as Comalco observed (Askins, 1977 [b]), the patchy nature of the mineralisation, but Leamans's (1974) studies also suggested a combination of geophysical methods including piezoelectric traversing might be a useful tool to explore for extensions to quartz-vein mineralisation - for examle, the Leura Mine). Accordingly, Derwent intends to liase with the present leaseholders of 1062 P/M with a view to further investigate this prospect. This play also includes disseminated gold in favourable Mathinna sandstones adjacent to known auriferous quartz vein deposits.

Strataform Disseminated Gold in Mathinna Bed Sediments

Startaform (and probably stratabound) base metals (= gold) deposits in Mathinna phyllites and slates remain high priority. No systematic sampling has yet been done in the area, and CRAE's work only serves to highlight the elevated base metal values of the fine grained MAthinna rocks within EL 32/87. The follow-up more detailed sampling proposed by Broadbent (1982) was not done. Derwent's main aim is to establish through mapping and sampling more fully the lithology and structure of the phyllite-slate facies on the EL, and the relationship, if any, of base metal and gold distribution to geology and structure.

Derwent believes Legge's (1980) work on the base metal prospectivity of the Mathinna Beds is largely untested and deserves more investigation. Clemmey (1985), for example, has drawn attention to basin structure stratigraphy and role of sedimentary prisms as metal sources for syngentic and epigenetic ores. He points out (p 230) that many ore deposits exhibit string stratigraphic control and many ore minerals are bedded, or disseminated within normal sediments. Also, black shales seem to be important metal donors.

Clemmey is a director of Derwent Minerals.

Alluvial Gold in Back Creek Deep Lead

The prospectivity of the old river courses for alluvial gold has been adequately checked by modern techniques. The various methods of undertaking this work will be investigated prior to an evaluation next summer.

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WILLIAMS, E., 1976 (b) Tasmanian Fold Belt System *Dept. Mines Tasm. Explan. Notes* 1:500 000 structural map of Pre-Carboniferous Rocks of Tasmania

LEASE	LESSEES	AREA (ha)
3M/87	P. SWETNAM	96
1040P/M	T. L.& K.P. MAHNKEN	273
1062P/M	S.R. WARREN & R.C. McKENZIE	4
1120P/M	G.G.& L.S. NIXON	5

LEGEND

SCALE 1:25000

Caravan park Camping ground
Rubbish disposal area Cemetery
Trigonometric station Spot elevation
Contour with value Depression contour
Quarry or open cut mine
Broken rocks surface
Dense forest Medium forest
Low dense vegetation Distinctive grass
Orchard Pine plantation

Built up area with commercial centre
Roads maintained for continuous public use: Primary road; Secondary road Bridge; Minor road
Roads of restricted use or access: Other road; Vehicular track Gate
Walking track Bridge
Railway Station
Light railway
Power transmission line and pylon position
Building, feature of special interest Ram Mine
Post office Police station Fire station School

Windbreak
Swamp Land subject to flooding
Waterfall Rapids
Indefinite shoreline or Mudbank Levee
Tidal rocks or ledge Offshore rock
Lighthouse Exposed wreck
Sand Tidal reef
Saline coastal flat Tidal flats
Jetty Launching ramp

BOUNDARIES shown on this map are NOT authoritative. For full particulars please contact the Registrar-General's Department or the Lands Department.
Property and land parcel boundaries are shown as at September '88.
Areas within proclaimed towns or less than two hectares are not depicted. To give a land parcel reference prefix parcel number with municipal number.

Municipality name
Municipality number
Municipality boundary
Ward name
Ward boundary
Town boundary
Reserve boundary
Property boundary Land parcel boundary and number

PROJECTION Universal Transverse Mercator (UTM)
HORIZONTAL DATUM Australian Geodetic Datum 1966
VERTICAL DATUM Australian Height Datum (Tasmania - excepting offshore islands) relative datum is mean sea level
GRID 1000 metre intervals of the Universal Transverse Mercator Zone 55 Australian Map Grid. Australian National Spheroid Grid values are shown in full at the south west corner of the map.
CONTOUR INTERVAL 10 metres with 50 metre index contours

WORLD GEODETIC SYSTEM 1984 To convert co-ordinates from this system to Australian Geodetic Datum 1966 increase the value of latitudes by 0.13" and decrease the value of longitudes by 0.2". Ellipsoidal heights decrease satellite heights by 71 metres.

MAGNETIC VARIATION True Grid and Magnetic North are shown diagrammatically for the centre of this map. Magnetic North is correct for 1981 and moves easterly about 0.1° every three years.

MEAN

LOCATION MAP

EL 32/87

5 cm

DERWENT MINERALS PTY. LTD.		
EL 32/87 & ADJOINING MLs	COMPILED	JKD
	DRAWN	
	DATE	JULY 1988
	SCALE	1:25,000
	FIGURE	

88-2844

752020

7839

APPENDIX 1

ORIGINAL BOUNDARY TO EL 32/87 – SINCE REDUCED

STONY HEAD ARTILLERY RANGE

EL 39/87

EL 32/87 72 km²

EL 31/86

EL 35/81 EL 36/86 (STONE)

BACK CREEK

"NEVER MIND" GOLD

"FRANKLIN" FIELD RED or ALBION

"UNION" WHITE

"HIDDEN TREASURE"

"LADY EMILY"

'A' SERIES

'B' SERIES

'C' SERIES

KENNET & HACKET

OLD LEURA MINE

MAJOR REEF

1120 P/M 5 ha

1040 P/M 273 ha

1062 P/M 4ha

3M/87 96 ha

BAKER TIER

DENNES RANGES

PIPERS RIVER

STATE FOREST

CROWN LAND

WEYMOUTH

BELLINGHAM

JETSON

EMU GROUND

LILYDALE 55

SCOTTSDALE 61

GEORGE TOWN 50

KEY

GEOLOGICAL BOUNDARY - APPROXIMATE. Regional geology from Marshall (1965)

STRIKE, DIP OF BEDDING; FACING KNOWN

STRIKE, DIP BEDDING, FACING UNKNOWN

VERTICAL, OVERTURNED BEDDING

STRIKE, DIP OF SLATY CLEAVAGE

HINGE TRACE OF MAJOR OVERTURNED SYNCLINE (with dip direction of axial surface indicated)

PLUNGE OF MINOR FOLD Vergence sinistral (S) or dextral (Z). Ic kink down plunge

PLUNGE OF MINOR ANTIFORM

PLUNGE OF MINOR SYNFORM

ABANDONED GOLD MINE

OPERATING MINE (slate)

AURIFEROUS QUARTZ LODE

AURIFEROUS TERTIARY LEAD

QUATERNARY

Qa ALLUVIUM, MARSH DEPOSITS, AEOLIAN SAND

Qt BASALT TALUS

CAINOZOIC

Csg MAINLY VEIN QUARTZ GRAVEL, ANGULAR TO ROUNDED, LOCALLY FERRUGINOUS, WITH MINOR SAND, SILT AND CLAY

Cs SANDSTONE AND CONGLOMERATE

TERTIARY

Tb BASALT

Tf SILICEOUS GRAVEL

Tg MAINLY VEIN QUARTZ GRAVEL, ANGULAR TO ROUNDED

Ts SANDSTONE AND CONGLOMERATE

PERMIAN

Pm UNDIFFERENTIATED SEDIMENTS (Shallow continental shelf)

SILURO-DEVONIAN

Mathinna Beds (deep?water turbidites)

Sms SANDSTONE AND SILTSTONE ASSOCIATION

Sma SLATE AND PHYLLITE ASSOCIATION

OLD MINES DEPARTMENT BORES (A series 1882-3; B series 1889; C series 1936)

PHOTO LINEAMENTS (BP-SELTRUST 1983)

POSSIBLE MARGIN OF DEEP LEAD BASALT (interpreted from magnetic survey of CRA Exploration, 1982. Main pre-basalt drainage lines indicated by large arrows.)

MAGNETOMETER TRAVERSE LINE, CRA EXPLORATION, 1982

STREAM SEDIMENT SAMPLE (MINUS 80#) LOCATIONS (CRA Exploration, 1982 Regional Survey) Dashed line encloses general area of elevated Zn and slightly elevated Cu, Pb and As values

1-7 ROCK CHIP SAMPLE (DERWENT MINERALS 1988 RECONNAISSANCE SAMPLING) ASSAYED FOR Au, As, Cu, Pb, Zn

LEGEND

LOCATION MAP

EL 32/87

Compilation based on

1. Marshall, B. et al 1965. Pipers River. Dept. Mines Tasm. geol. atlas 1 mile series, Sheet 31
2. Various published and unpublished Dept. Mines reports. See References.
3. Several Open File Reports - CRA Exploration, Comalco. See References.
4. Williams, E., 1976. Structural Map of Pre-Carboniferous rocks of Tasmania. Dept. Mines Tasm.

5 cm

DERWENT MINERALS PTY LTD	
EL 32/87 – Pipers River Geological Compilation	COMPILED DRAWN JMT DATE JULY 1988 SCALE 1: 25,000 FIGURE 2

752021

7840

88-2844

APPENDIX 2

FIG 2

022

ANALABS TASMANIA

752022

PRELIMINARY ANALYTICAL DATA

SAMPLE	REPORT NUMBER 999.22.08.05574	REPORT DATE 12/07/88	CLIENT ORDER No. 24154	PAGE 1 OF 1

	Cu	Pb	Zn	As	Au	AuChk
DMPR1	20	15	15	<1	<0.005	-
DMPR2	20	20	30	<1	<0.005	-
DMPR3	25	20	15	<1	<0.005	-
DMPR4	35	20	20	<1	0.010	-
DMPR5	115	70	115	1	<0.005	-
DMPR6	25	25	35	<1	0.100	<0.005
DMPR7	75	25	20	<1	0.005	-
DETECTION	5	5	5	1	0.005	0.005
UNITS	PPM	PPM	PPM	PPM	PPM	PPM
METHOD	101	101	101	114	313	313

AUTHORISED OFFICER