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Aberfoyle Resources Limited

EXPLORATION DIVISION
ACN 004 664 108

EXPLORATION LICENCE 47/83, LYNCHFORD

TASMANIA

REPORT ON EXPLORATION FOR

AREA TO BE RELINQUISHED MAY 1993

Volume 1 of 2

Text & Appendices

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Endorsed by:

for D B Wallace
REGIONAL EXPLORATION MANAGER

Distribution

Aberfoyle - Hawthorn	(1/4)
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CONTENTS

APPENDICES

1. PETROLOGICAL DESCRIPTIONS - REGIONAL
2. CRAE STREAM SEDIMENT AND ROCK CHIP LEDGERS
3. ABERFOYLE -80 MESH AND BCL RESULTS
4. CSIRO PB ISOTOPE REPORT
5. PETROLOGICAL DESCRIPTIONS - KING RIVER POWER TUNNEL
6. ABERFOYLE KING RIVER TUNNEL ROCK CHIP ASSAYS
7. ABERFOYLE KING RIVER TUNNEL CHANNEL ASSAYS
8. S ISOTOPE RESULTS

PLATES

		SCALE
LYN 15	STREAM SEDIMENT SAMPLE LOCATIONS	1:10,000
LYN 16	STREAM SEDIMENT ASSAY RESULTS	1:10,000
LYN 17 A+B	KING RIVER POWER TUNNEL ROCK CHIP LOCATIONS	1:2,000
LYN 18	KING RIVER POWER TUNNEL ROCK CHIP RESULTS	1:2,000
LYN 20	ROCK CHIP SAMPLE LOCATIONS	1:10,000
LYN 21	ROCK CHIP SAMPLE RESULTS	1:10,000
LYN 23	OUTCROP GEOLOGY	1:10,000
LYN 38	INTERPRETIVE GEOLOGY	1:10,000
LYN 39	KING RIVER POWER TUNNEL-CHANNEL SAMPLE LOCATIONS AND RESULTS	1:2,000
LYN 41	KING RIVER POWER TUNNEL-CHANNEL SAMPLE RESULTS	1:2,000
LYN 47	LYNCHFORD EL 47/83 - SECOND PARTIAL RELINQUISHMENT AREA (In text)	1:100,000
TASh 2869	CRAE GEOCHEMICAL SAMPLING AND GOLD DRAINAGE GEOCHEMISTRY	1:10,000
TASh 3102	CRAE ROCK AND STREAM SEDIMENT GEOCHEMISTRY	1:10,000
TASh 3573	KING RIVER POWER TUNNEL OUTCROP SAMPLE LOCATIONS AND RESULTS	1:2,000

1.0 SUMMARY

The southern part of EL 47/83 is dominated by volcanic sediments, intrusives and minor volcanics of Cambrian age. The volcanics are rhyolitic to dacitic lavas and volcaniclastics with lesser interbedded shales.

The area has been surveyed with reconnaissance stream sediment geochemistry, comprising both -80 mesh and bulk cyanide leach techniques. No significant base metal anomalies were identified in any of these surveys while BCL anomalies were attributed to known gold workings.

The area has been recommended for relinquishment to reduce the statutory expenditure commitment on the licence which is in its eighth year. Further work is proposed for the retained northern area.

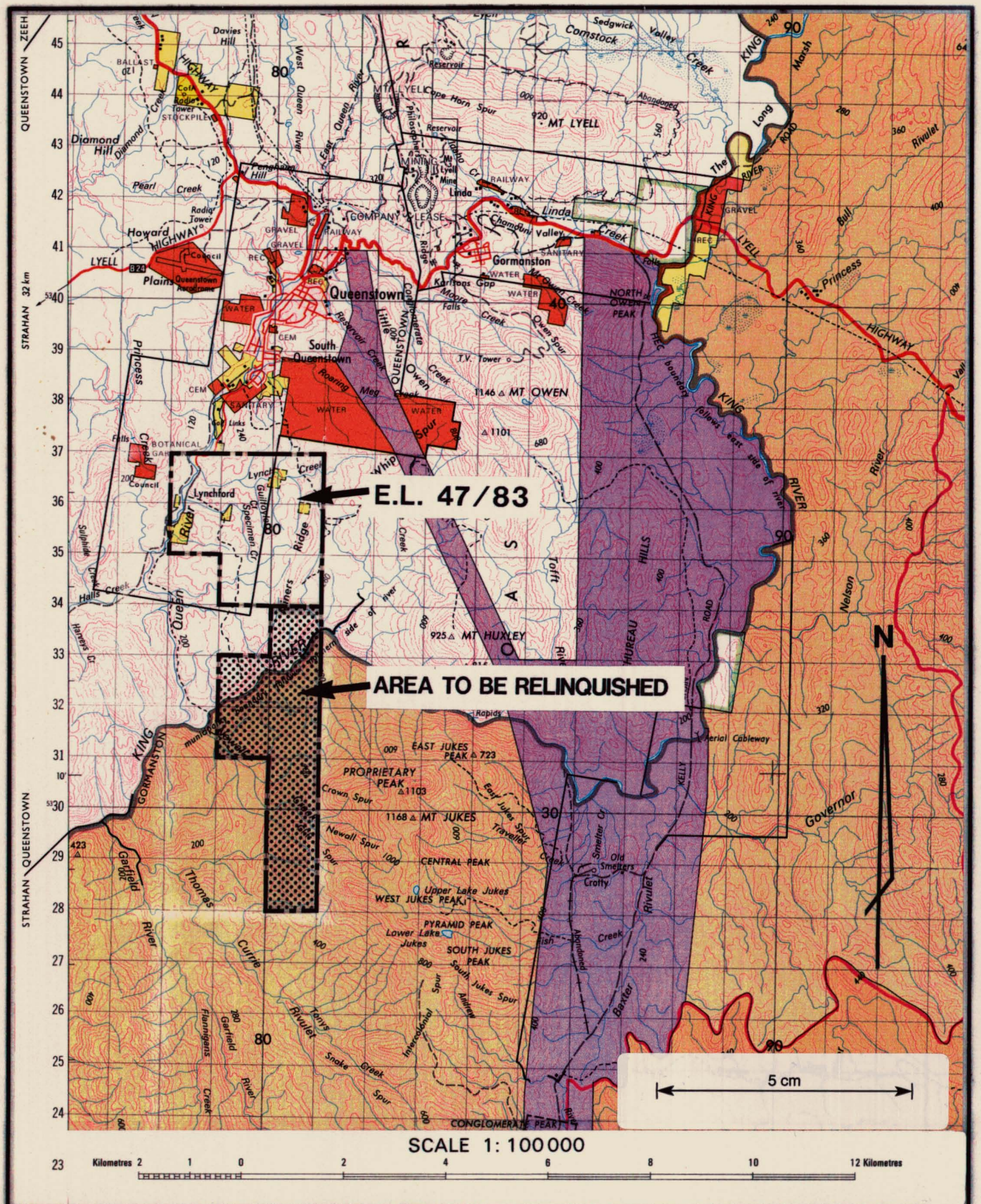
2.0 INTRODUCTION

Exploration Licence 47/83 Lynchford was granted to CRA Exploration Pty Ltd (CRAE) in March 1985. The licence covered an area of approximately 32 square kilometres immediately south of Queenstown in western Tasmania (Plate LYN 47).

An agreement was reached with CRAE on 28 April, 1988 whereby Aberfoyle Resources Ltd would fund and manage exploration on EL 47/83 to earn a majority interest. This agreement is known as the Mount Read Volcanic Joint Venture and included other CRAE tenements.

The first statutory reduction of the licence area was completed on the fifth anniversary of the tenement in March 1990. The licence was reduced from approximately 32 to 16 square kilometres (Noonan, 1990).

A non-statutory partial relinquishment is proposed in May, 1993. This report describes exploration undertaken by CRAE and Aberfoyle on that area selected for relinquishment.



Aberfoyle Resources Limited

EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date

Location Code :

WESTERN TASMANIA

LYNCHFORD E.L. 47/83

SECOND PARTIAL RELINQUISHMENT AREA

Scale : 1:100 000

Date : April 1993

Compiled :	J.M.S.
Drawn :	J.M.S.
Traced :	
Checked :	D.B.W.
Plate No. :	LYN 47

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3.0 EXPLORATION HISTORY

3.1 Early Prospecting

The report area has a long history of prospecting and exploration due to its proximity to the Mount Lyell mining field. It is very probable that all obvious surface indications of mineralisation have been located and prospected. The area is littered with small pits and costeans which have investigated quartz veins, gossanous zones and faults, while sluicing operations for gold have also been recorded.

A report on prospecting activities in the district is to be found in Twelvetrees (1900).

3.2 Modern Exploration

Modern exploration prior to the granting of the current tenement has been conducted by Pickands Mather International (1965-67), Cyprus Mining corporation (1971-72) and Renison Goldfields/Mount Lyell (1980-82). Work completed was generally restricted to stream sediment geochemical surveys north of the King River, difficult access being a deterrent to exploration south of the river. Results of this work are reported in Smith (1967) for the Pickands Mather survey, by Cyprus in 1972 and in Komyshan and Bishop (1982) for the Renison Goldfields survey.

Portions of the relinquished area were flown with DIGHEM II as part of a larger airborne survey and results are also included in Komyshan and Bishop (1982).

4.0 EXPLORATION ACTIVITY EL 47/83 (Relinquished Area)

4.1 Regional Geology

4.1.1 Introduction

The regional geology is summarised on Plate LYN 38 (1:10,000 Interpretive Geology) compiled from mapping by Aberfoyle Resources Ltd and from mapping by the Department of Mines (1:50,000 Mount Lyell sheet 1987 and 1:25,000 Queenstown sheet 1989).

Original Aberfoyle outcrop mapping is shown on Plate LYN 23. Petrological descriptions of samples collected during regional geochemical surveys are attached as Appendix 1.

4.1.2 Cambrian

The oldest rocks exposed in the relinquished area are those of the Western Sequence which outcrop in the Queen River area. They comprise a basal sequence of fine ground micaceous sandstones to quartzites that form Miners Ridge (∈mrs).

The Miners Ridge sandstone is flanked to the east and south by quartz feldspar porphyrics (∈cvp) and dacitic lapilli volcaniclastics and lavas (∈cvl) of the Central Volcanic Complex. The dacitic lavas are intercalated with sediments, comprising black mudstone, siltstone and micaceous sandstone (∈cvs), immediately south of the King River and in the headwaters of the Newall Creek. Lesser rhyolite lavas (∈crl) and minor andesite lava (∈cva) are also recorded.

4.1.3 Ordovician

Unconformably overlying the volcanics in the southern part of the relinquished area is a sequence of conglomerate (Ocg) and sandstone (Oss) (in places chromite bearing) which are correlates of the uppermost Owen-Conglomerate and overlying Pioneer beds. These are succeeded conformably by the Gordon Limestone (Olst).

4.1.4 Silurian

West of the relinquished area is a sequence of Silurian sandstone (chromite bearing) (Sss) and mudstone (Smst) which covers a major proportion of the Newall valley area and conformably overlies the Ordovician sediments.

4.1.5 Devonian

Fine grained quartz rich sandstones with minor interbedded siltstones and mudstones of Devonian age (Dss), conformably overly the Silurian sediments.

4.1.6 Quaternary

Lying unconformably on the Palaeozoic basement are a range of Quaternary sediments. Pockets of Pleistocene ? glacial till and outwash gravels (Qg) occur as high level deposits along the valley of the Queen River. In the Newall Valley area, colluvial scree (Qc) sourced mainly from the ridge of Owen Conglomerate forming Mount Jukes, flanks the western margin of the area to be relinquished and overlies Ordovician to Silurian sediments. Recent alluvial deposits (Qa) occur at various points along the Queen River valley.

4.2 Regional Geochemistry

4.2.1 Stream Sediment

4.2.1.1 CRAE 1985-1987

Because of the lack of gold determinations and of sampling in the vicinity of the King River, a regional stream sediment sampling programme was carried out by CRAE in 1985. This programme was designed to test for fine (invisible) gold both as a primary target and as a pathfinder for base metal mineralisation.

Samples were collected from all accessible major drainage and analysed using cyanide leach techniques sensitive to 50 ppt Au. Such techniques had been tested elsewhere in western Tasmania in orientation surveys which showed that sample densities as low as 1 per 5 square kilometres were effective in locating ultrafine gold associated with known base metal deposits. Standard -80 mesh samples were also collected for base metal and gold determinations.

The results are tabulated in Appendix 2 and are shown on Plate TASh 2869. No anomalies were located in the relinquished area.

During 1987 CRAE conducted additional stream sediment sampling south of the Jukes road. A helicopter was hired in an attempt to collect samples from tributaries of the Garfield River which drained the southern most area of the licence. Extremely thick vegetation cover and lack of gravel bars prevented the helicopter from setting down and consequently the programme was abandoned. To obtain adequate coverage of this area it would be necessary to access by foot from the southern most point of the Jukes road.

Eight -80 mesh and cyanide leach samples were collected from creeks south of the Jukes road, these gave adequate coverage of the EL down to 5329000 mN. Base metal values were uniformly low, maximum values of 20, 45 and 45 ppm were recorded for copper, lead and zinc respectively, (TASh 3102). Two of the cyanide leach samples collected returned weakly anomalous gold assays, (950 and 1000 ppt Au). These anomalies are attributed to the alluvial gold workings located along Newall Creek. The -80 mesh samples collected all returned less than 0.05 ppm Au.

4.2.1.2 **Aberfoyle 1988**

Aberfoyle conducted a -72 mesh and bulk cyanide leach stream sediment geochemical survey in 1988 over the southern part of the EL in areas sampled and unsampled by CRAE. Results are tabulated in Appendix 3 and are shown on Plates LYN 15 and 16.

Only minor elevations in base metals were noted in the -72 mesh stream sediment samples.

Significant results for Au were obtained from both the -72 mesh and BCL stream sediments.

A creek draining westward into the Thomas Currie Rivulet returned a -72 mesh value of 0.246 g/t Au (482405). A BCL sample (482452) from a creek draining west along the southern margin of the EL also returned encouraging values of 3350 ppt, although accompanying -72 mesh values were below detection limit. Together these results suggest a possible Au anomaly along the southern margin of the EL.

Reconnaissance mapping in the area revealed outcrops of interbedded mudstone and siltstone within the creeks and glacial scree covering the higher slopes. Further mapping and follow up sampling is required.

Other encouraging results were obtained from a stream system draining north into the King River where samples 482431 and 482432 returned 48 ppb Au and 22 ppb Au respectively.

An elevation in Au (2300 ppt) in a BCL sample from the Newall Creek is attributed to alluvial gold workings. Upstream sampling of tributaries failed to identify any further anomalous values.

4.2.2 Rock Chip

4.2.2.1 **CRAE**

During the CRAE stream sediment sampling programmes, rock chip samples were collected from outcrop and stream float. Results are tabulated in CRAE sample ledgers (Appendix 2) and shown on Plate TASh 3102.

Weakly elevated base metal values are reported from samples 988997-999 collected from the Jukes Road at around 5330700 mN and 379800 mE. All three samples were sediments and returned 50-120 ppm Cu, 165-310 Pb and 145-340 Zn.

4.2.2.2 **Aberfoyle**

Limited rock chip sampling has been undertaken by Aberfoyle with twelve samples submitted for assay during reconnaissance mapping of streams. Results of assays and sample location sites are included as Appendix 3 and Plates LYN 20 and LYN 21. Of these, two samples were anomalous. Sample 482123 (379904E 5332040N) returned an anomalous 780 ppm Zn and an associated 2 ppm Ag and 1200 ppm Ba. The rock is an andesitic lava. Carbonate (calcite) - sericite alteration observed in this sample is similar to Hellyer style hangingwall alteration.

A sample of gossanous float near 379827E 5332083N (482124) returned an anomalous Pb 1450 ppm, Zn 490 ppm, Ag 4 ppm and As 800 ppm.

4.2.3 Pb Isotopes

The sample of gossanous float (482124, 1450 ppm Pb) was submitted for Pb isotope characterisation. Results indicate a Cambrian VMS signature similar to that at Prince Lyell (Carr and Dean, 1989, Appendix 4).

4.3 King River Power Tunnel

4.3.1 Introduction

Development of the King River Power Tunnel by the Hydro Electric Commission was completed in 1989. The 7 kilometre long tunnel extended west from Lake Burbury to the King River power station through a significant section of the Mount Read Volcanics.

A small sampling programme was conducted by CRAE during development of the tunnel in 1987. Aberfoyle then undertook a more detailed sampling programme after the tunnel was completed in 1989.

4.3.2 Geology

Detailed mapping of the tunnel was undertaken by the HEC with a strong engineering bias. Geology is recorded on "as excavated" sections at 1:100 and 1:1000 scale and includes geology from surface diamond drill holes. These maps are available from the HEC in Hobart.

A summary of the tunnel geology is given below. Locations are given in metres west from the origin at Lake Burbury and can be related to the plans of the tunnel showing sampling results.

6848-6805 mW	Variably, weakly altered dacitic lava.
6805-6465 mW	Variably altered lapilli volcaniclastics.
6465-6244 mW	Dacitic lava.
6244-6199 mW	Intensely white quartz veined black shale in faulted contact with dacitic lava. A minor fault wedge of dacite occurs from 6222-6217 mW.
6199-5658 mW	Variably weakly altered quartz phyric rhyolitic lava.
5658-5628 mW	Andesitic lava with associated black shale beds, in places tending to a polymict andesitic ash-lapilli volcaniclastic with black shale fragments and minor chert.
5628-5592 mW	Dominantly dacitic lava breccia with minor associated chert, black shale and greywacke bands.
5592-5560 mW	A rhyolitic lapilli volcaniclastic with minor associated breccia volcaniclastic and rhyolitic lava.
5560-5200 mW	Weakly altered rhyolitic lava.
5200-4770 mW	Feldspar phyric, lesser quartz phyric lapilli volcaniclastic in places with pervasive silica, sericite alteration with calcite after feldspar.
4770-4717 mW	Variably chlorite and lesser pyrite altered quartz phyric rhyolitic lava interval.

Nine samples were collected for thin section description from the headrace tunnel between 6025 and 6800 mW, one from the surge tunnel and one from the access tunnel. Sample locations are shown on Plate LYN 17 and petrographic descriptions are included as Appendix 5.

4.3.3 Geochemistry

4.3.3.1 CRAE 1988

Selected grab samples were collected by CRAE when the tunnel had been developed to 6600 mW. Ten samples were collected and analysed for Cu, Pb, Zn, Ag, As, Fe, Bi, Mn, Mo and Au. Locations and results are shown on plate TASh 3573 (Funnell, 1988).

Sampling was concentrated on Qtz-Chl-Clay-Py, Qtz-Carb-Py and Qtz-Hem veins which were cutting a Cambrian quartz-feldspar porphyry unit.

Precious and base metal values were generally low with only a slight elevation noted in zinc in samples 1198701 to 703 and lead in sample 1198707.

In addition to the tunnel sampling, drillhole logs were obtained by CRAE for the 29 drillholes the HEC drilled on the EL during the course of their geological evaluation of the King River Power Development site. The drillholes which, according to the logs, contained sulphides were inspected but none were considered to warrant assaying. In many cases where disseminated pyrite or Qtz-Carb-Py veining was noted in the logs, no evidence of these could be found in the drillcore.

4.3.3.2 Aberfoyle 1989

A preliminary sampling programme was undertaken in March 1989 (51 samples) to highlight anomalous zones for detailed follow up. Results of this survey are tabulated in Appendix 6 and shown on Plates LYN 17 and 18.

The programme replicated CRAE's sampling with weakly elevated zinc values (90-250 ppm) noted between 6690 and 6840 mW in the main headrace tunnel. Other weakly elevated base metal values were noted at 6030 mW (745 ppm Pb) and at 6220 and 6240 mW (210, 170 ppm Zn respectively).

At 6840 mW a sample associated with vein quartz returned 1.97 ppm Au.

A sample of pyritically altered dacite porphyry supplied by Mr Dougall Gray, a former engineer with the HEC, assayed 18.3 ppm Au, 4.5 ppm Ag and 920 ppm As. The sample was reportedly collected from a development face 30 m into the tunnel in July, 1986. Follow up sampling in this area has not repeated the assay.

A detailed channel sampling programme was undertaken later in 1989 to follow up the precious metal mineralisation detected in earlier broad spaced grab samples. Results of this programme are tabulated in Appendix 7 and shown on Plates LYN 39 and 41.

This programme was unable to repeat the previous 1.97 ppm Au result at 6840 mW. The higher grade sample is thought to be related to a narrow quartz vein fortuitously sampled in the original programme.

Channel sampling did not enhance the weak zinc anomaly between 6690 and 6840 mW.

4.3.4 Isotopes

4.3.4.1 Pb Isotopes

A galena sample associated with white quartz veining in black shales at 6215 mW was collected for Pb isotope characterisation. The results are discussed in detail in Carr and Dean, 1989 (Appendix 4) who conclude that the Pb had a distinct Devonian vein style signature.

4.3.4.2 S Isotopes

Two pyrite samples (482349 and 50) were selected for δS^{34} isotope analysis. Results indicated δS^{34} values of 6.9 per mil and 11.4-11.6 per mil respectively. Results and sample locations are tabulated in Appendix 8.

5.0 REFERENCES

Funnell, F. R., 1988. EL 47/83 Lynchford, West Tasmania. Report on Exploration for twelve months to February, 1988.

Komyshan, P. and Bishop, J., 1982. Annual Report. EL 9/66 1981-82. RGC Unpublished Report.

Noonan, D. J., 1990. EL 47/83 Lynchford Tasmania. Report on Exploration in the Area to be Relinquished. Aberfoyle Resources Ltd. Unpublished Report.

Smith, H. D., 1967. Exploration Report. Geological Investigations in the Queenstown Area. PMI Unpublished Report.

Twelvetrees, W. H., 1900. Report on the Mineral Districts of Mount Huxley, Jukes and Darwin. Report of the Secretary of Mines 1900-1901.

APPENDIX I

378 200 mE
5 333 070 mN.

SAMPLE: 989974: TSC46402

013021

Rock Name:
Graywacke

Hand Specimen:
This is a medium grained, well indurated rock with a grey colour. The rock contains darker grey coloured fragments up to about 1 cm in size. Staining with sodium cobaltinitrite after a hydrofluoric acid etch shows that the rock contains no potash feldspar.

Thin Section:
This is a detrital rock containing angular plagioclase and quartz grains as well as lithic clasts ranging up to about 1 mm in size. The detrital quartz and plagioclase grains typically exhibit angular shapes and many of the detrital plagioclase grains still retain well preserved elongate, lath shapes. The lithic clasts tend to have somewhat more rounded appearing shapes and in some cases are difficult to distinguish from the matrix which contains chlorite and fibrous phyllosilicates.

The thin section was cut to include one of the dark grey patches noted in hand specimen. This region consists of a much finer grained sedimentary rock containing angular quartz and feldspar grains up to 0.1 mm wide distributed through an argillaceous matrix. Within this area a well preserved foliation is defined by a concentration of opaque material along narrow discontinuous lamellae. This foliation direction is parallel to a much vaguer foliation direction evident in the coarser grained portion of the rock. A very vague mineralogical banding oriented at a high angle to this foliation is also evident in the argillaceous patch.

The detrital plagioclase is moderately fresh showing some alteration to finely divided sericite/clay. This alteration is highly variable even within the same detrital grain.

Opaques occur as disseminated grains and aggregates up to 0.2 mm wide. Very finely divided opaque material tends to be concentrated along narrow discontinuous lamellae which define a foliation direction.

This is an immature detrital sediment comprised mainly of detrital plagioclase and quartz grains. Much of the detrital plagioclase retains remnant lath shapes which could make them appear as phenocrysts in hand specimen accounting for the presence of a porphyritic appearing texture in parts of the hand speicmen. The darker grey patches in hand specimen consist of a finer grained detrital sediment and are thought to represent finer grained, argillaceous regions in the original sediment. Both the argillaceous patches and the coarser grained proportion of the rock exhibit a bedding foliation defined by discontinuous opaque lamellae.

No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
988-953	Argillised, Devitrified Rhyolite. Small corroded quartz and argillised feldspar phenocrysts scattered through a uniform mass of fine quartz and sericite. 377780E 6335700N	Felsitic devitrification textures common. Preferred orientation, but not distinct flow-features.	Fine leucoxene patches throughout.	Uniform, featureless rock; quartz i inverted beta-quartz. Probably originally a glassy lava, depending on field occurrence.
988-958	Argillised Porphyritic Rhyolite. Embayed fragmented quartz phenocrysts in a fine groundmass of quartz and sericite, cut by sets of quartz-K-feldspar veins. 379250E 5331100N	Devitrification textures. Some shearing, postdating veins. Phenocrysts fragmented.	Limonite pseudomorphs after carbonate rhombs. Leucoxene streaks throughout.	Could be a lava or a tuff-lava, i.e. lava with pyroclastic componen perhaps grading into an ignimbrite.
988-959	Porphyritic Rhyolite. Large phenocrysts of quartz, argillised plagioclase, sometimes mantled by K-feldspar; sericitised biotite phenocrysts. Fine K-feldspar/ quartz groundmass. 379300E 5331075N	Randomly orientated phenocrysts, no flow-features. Minor fracturing.	Accessory zircon and apatite. Secondary leucoxene in altered biotite.	Fabric indicates a minor intrusive. Selective sericitisation of biotite and some plagioclase (sodic oligoclase). Verging on toscanite (rhyodacite).

SAMPLE: 482120

LOCATION: 380180E 5329020N

SUMMARY:

This is an altered, formerly glassy and devitrified felsic vitric-crystal tuff containing sparse sericitized plagioclase phenocrysts. Several features noted below suggest to me that it more likely to be a Tyndall or Dundas Gp. correlate than a Central Volcanic Complex tuff.

HAND SPECIMEN:

This is a highly altered cream to pink and maroon coloured felsic tuff(?) containing altered diffuse small (<1cm) lava fragments.

THIN SECTION DESCRIPTION:

This is a felsic vitric crystal tuff containing common but not abundant crystals of plagioclase (almost totally sericitized albite) and less common partly resorbed quartz phenocrysts in an extensively sericitized and recrystallized formerly rhyolitic glassy ash matrix. The groundmass of the tuff has devitrified and recrystallized to a fine-grained mosaic intergrowth of quartz and albite that is riddled by a fine mesh of sericite. In places the sericite coalesces into dense felted masses. Very narrow veinlets (<.05mm wide) of secondary quartz anastomose across the sample and are probably sites of fracturing and local leaching of the sample during deformation. Sparse former FeTi oxide microphenocrysts have altered to an Fe oxide dust and chlorite, leaving only relic outlines defined by the Fe oxide dust.

Several lithic fragments composed of devitrified and recrystallized felsic volcanic lithologies are present, and stand out from the remainder of the rock in thin section by their slightly coarser-grained devitrification products (quartz-albite).

Zircon crystals are notable by their abundance. This latter observation, and the presence of quartz phenocrysts remind me more of a Tyndall or Southwell Subgroup (Dundas Gp correlate) tuff than those in the Central Volcanic Complex.

SAMPLE: 482121

LOCATION: 380375E 5328130N

SUMMARY:

This is a former felsic lithic tuff or lava breccia which has been thoroughly sericitized, with the almost total obliteration of original texture of the sample. It is likely to be from the same sequence as 482120, although I think they are better equated with the Dundas-Tyndall sequences than the Central Volcanic Complex felsic tuffs.

HAND SPECIMEN:

On a freshly-cut surface, this sample is seen to be a pale grey lava breccia with angular fine-grained purple and cream coloured felsic lava fragments in a highly altere sericitic matrix.

THIN SECTION DESCRIPTION:

In thin section, this sample is seen to be a very altered felsic volcanic with a weak fracture cleavage defined by sericite, which permeates the sample to the extent that the former texture of the sample is almost obliterated. Lithic fragments are less obvious in thin section than in hand specimen, and in the former their presence is only indicated by ghost margin outlines of former fragments, which have otherwise devitrified and recrystallized to a sericite-quartz-albite mosaic identical to the remainder of the rock.

This sample contains a number of relatively large well-formed zircons, and is similar to 482120 in this respect. Both samples may well be from the same sequence of sericitized felsic pyroclastic rocks which I personally think are more like the Dundas-Tyndall Gp. tuffs.

SAMPLE NUMBER: 482123

Location 379904 E. 5332040 N

SUMMARY:

This is an extensively sericitized and carbonated former andesitic lava or tuff with a weak fracture cleavage defined by the sericite.

HAND SPECIMEN:

This is a dark grey fine-grained sparsely feldspar-phyric lava or tuff of probably andesitic derivation.

THIN SECTION DESCRIPTION:

In thin sction, this sample is seen to be an extensively carbonated and sericitized feldspar-phyric felsic or andesitic lava or tuff. Former feldspar phenocrysts are blocky, slightly rounded euhedra to about 2mm long that are totally replaced by very fine-grained slightly Fe-stained sericite; these make up around 10-15 modal % of the rock. Sparse large mafic phenocrysts to about 1mm long have been replaced by chlorite and sericite, and these minerals have weathered to a rusty clay material. The texture of the groundmass has been totally obliterated by weak cleavage development and an intense sericite-calcite overprinting. Tiny former FeTi oxide grains scattered throughout the matrix are altered to leucoxene and sericite/clay, and their abundance suggests an andesitic rather than dacitic or rhyolitic precursor. The intensity of carbonate alteration in this sample is far greater than normally encountered in regionally altered Mount Read Volcanics, and imply local hydrothermal alteration.

SAMPLE NUMBER: 482126

LOCATION 380680 E 5331845 N

SUMMARY:

This is a virtually aphyric rhyodacitic to rhyolitic rock, with a formerly almost holocrystalline groundmass. It represents either the centre of a thick flow or a shallow intrusive.

HAND SPECIMEN:

This is a pink highly altered felsic lava or tuff with meandering fractures defined by lighter pink sericite(?) and dark spots representing altered former mafic(?) phenocrysts.

THIN SECTION DESCRIPTION:

This rock is a sparsely feldspar-phyric rhyodacitic to rhyolitic lava or shallow intrusive. It consists of about 1 modal% of subhedral feldspar phenocrysts to about 2mm across that have been replaced by greenish and Fe-stained sericite. These crystals are the dark grains obvious in hand specimen. Microphenocrysts of FeTi oxides have broken down to leucoxene and chlorite.

The groundmass of this sample was not formerly glassy, but was composed of tiny microlites and laths of feldspar (now albitized) set in a ragged quartz-albite intergrowth that contains minor chlorite and sericite flecking. This textute is more typical of the centres of thick flows of felsic lava, or else of shallow dykes and sills, than of typical felsic lava flows.

The rock is cut by numerous narrow sericite-lined fractures, and much of the sericite is Fe-stained to greenish and brownish shades.

SAMPLE NUMBER: 482129

Location 360570 E 5332347 N

SUMMARY:

This rock is a chloritized felsic (dacitic) lithic crystal tuff-breccia containing a diverse population of mainly dacitic clasts in a devitrified and chloritized vitric ash matrix.

HAND SPECIMEN:

This is a mottled green and pink felsic lithic tuff-breccia containing brick red angular, fine-grained felsic lava fragments up to 1 cm long in a chlorite-rich grey-green matrix.

THIN SECTION DESCRIPTION:

In thin section, this sample is seen to be a fairly well-preserved lava breccia composed of clasts of vitric, vitrophyric and holocrystalline feldspar-phyric dacitic lavas in a groundmass composed essentially of dacitic ash. Clearly defined lithic fragments include:

1. holocrystalline dacitic rocks composed of interlocking albitized feldspar laths with minor interstitial quartz; these are probably derived from shallow intrusive dacitic plugs,
2. very fine-grained aphyric dacitic lavas composed of trachytic textured, tiny albitized plagioclase microlites in isotropic devitrified glass, and
3. formerly glassy dacite lavas containing blocky feldspar phenocrysts,
4. felsic tuff fragments containing a major component of broken albite crystals that often occur massed together in crystal clots.

The groundmass/matrix of this sample is probably a devitrified dacitic ash; it contains abundant (albitized) feldspar phenocrysts and crystal fragments. Devitrification and subsequent recrystallization of the former glass has produced a variety of textures and grainsizes in the secondary quartz-albite intergrowths replacing glass, and green slightly pleochroic chlorite is abundantly scattered throughout the groundmass. Chlorite also occurs as a fracture filling along veinlets and cracks and fractures that wrap around lithic fragments.

APPENDIX II

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe%	Mn	Au ppb	Geological Observations
988987	5825	7000N	St.Sed	10	15	10	<1	6	0.22	10	<3	1m wide, moderate flow. Incised. Fe stain. Float 95% v.qz 4% light buff qzite (micaceous) 1% dark grey-black shale.
988988A/B	5985	7000	Rock/c	75	35	15	1	44	1.49	25		o/c of dark grey, well laminated shale No visible sulphides Strike 000°m D:? 55° E
988989	6095	6850	Float A	10	<5	95	4	240	43.0	800	3	Float of a highly ferruginous surficial deposit: an ironstone very friable, dominantly goethite after ? specular hematite. Possibly a reprecipitated gossan, more probably a Tertiary ferricrete feature. Corresponds closely to predicted location of the DIGHEM anomaly
			Float B	10	30	110	4		48.0	1000	<3	
988990	6025	6850	-80# St.Sed	15	20	30	<1	20	2.43	150	<3	Cf. brown ironstone occurrence. 1m mod flow, Fe stain. o/c of grey slightly pyritic shales. Ck at the point, transgressing shales.
988991	6100	6700	-80# St.Sed	15	15	25	<1	9	2.10	170	<3	½m. Slow. Float of ochre-brown, some grey, silts and shales.
988992	5925	6700	-80# St.Sed	15	25	35	<1	10	1.29	105	<3	1m, mod flow. Float med-fine gr. tuffs, bolated, green-grey bw quartz
988993	5800	6750	-80# St.Sed	10	30	20	<1	8	1.02	60	<3	1½m. Mod flow. Float mainly o/c grey and ochre shales.
DETECTION LIMIT				2	5	2	1	1	0.01	5	3	
ANALYTICAL METHOD				ICP							Fire A.A.S	

Project: QUEENSTOWN - ZEEMAN | 1 250 000 Sheet: QUEENSTOWN | AMG Zone 55 | Sheet No.: 1

Tenement: LYNCHFORD EL 47/83 | DPD's: 35001 | Laboratory: A.L.S.

Area / Prospect: DIGHEM ANOMALY 39/303.5 | Collected By: I.M. CLEMENTSON Date: 12 June 85

013029

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	ANALYSES Cu	Pb	Zn	Ag	As	Fe %	Mn	Au ppb		Pt/Pd ppb	Geological Observations
988997	379750	5330850	o/c	85	200	20	<1	22	0.55	45	<3			Malachite/chalcocite dusting within f-m grained sandstone, slightly chloritic
988998	"	"	o/c	110	290	60	<1	60	2.23	165	<3			Pyrite and arsenopyrite in sandstone as above
988999	379825	5330650	o/c	50	165	200	<1	40	1.90	45	<3			Dark grey/black sandy lst - carbonaceous. Highly weathered.
989000	379900	5330450	o/c	45	30	25	<1	4	2.66	40	<3			Purple, hematitic (?) fine grained schistose tuff. Silicic to sandy grade. Zone of qz-chlorite veins. Schistosity dips at 60° to 060°m.
989951	379880	5330150	o/c	40	20	5	<1	4	0.75	15	<3			As above, but with bedding visible dipping at 45° to 080°m.
989958	380450	5330800	o/c	35	20	40	<1	10	2.46	65	<3			Coarse tuffaceous breccio-conglomerate unit within fairly uniform felsic-lithic tuffs. Fe staining but not after pyrite
989963	378500	5334050	o/c	145	55	55	1	120	7.39	60	<3			Gossanous zone within dark grey-black shales.
989964	"	"	o/c	130	45	15	1	310	9.99	80	<3			Gossanous quartz vein within fine sandy tuffs
989965	"	"	o/c	195	90	55	2	190	13.7	80	<3			Selected pyrite nodules & vein coatings within a very carbonaceous shales
989966	378300	5334075	o/c	150	30	100	1	32	7.62	4200	<3			Coarse breccia - felsic porphyrite clasts in a similar matrix.
989967	377650	5334900	o/c	35	10	35	1	8	3.00	570	<3		<50/<10	Coarse, foliated ultrabasic. Weathered.
989968	378300	5334075	o/c	170	110	105	1	50	7.02	1.48%	<3			Manganese-iron stained fault zone within silty lithic tuffs.
DETECTION LIMIT				2	5	2	1	1	0.01	5	3		50/10	
ANALYTICAL METHOD				ICP	→	→	→	→	→	→	A.A.S/CRA		Fire Assay	

Project : QUEENSTOWN-ZEEHAN	1 : 250 000 Sheet : QUEENSTOWN	AMG Zone : SAS5-5	Sheet No. :
Tenement : LYNCHFORD EL 47/83	DPO's : 35004 & 35008 (check Repeats)		Laboratory : A.L.S.
Area / Prospect : REGIONAL RECONNAISSANCE ROCK & DRAINAGE SURVEY			Collected By : I.T. CLEMENTSON Date : 29/10/85

013030

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au ppm / ppb		Pt/Pd	Geological Observations
989971	378760	5331900	o/c - R/C	75	40	60	1	22	1.65	1200	<3			Dark grey, very dirty (shaley in places). Close to contact with coarse qz porphyry. Abundant dissem. pyrite
989972	-	..	(REPEATS) -	55 (55)	90 (115)	115 (135)	1 (1)	110	6.90 (7.00)	240	15 (.05)			As above but with gossanous stockworking.
989973	378200	5333050	o/c - R/C	135	65	45	1	44	2.86	170	<3			Black shale with minor pyrite. Dip 75° to 75°M.
989974	378200	5333070	o/c - R/C	AMDEL Report : "Greywacke"										PETROLOGY: ?? qz porphyry but well banded & with shale frags. Rounded qz eyes & rhomboid feldspars.
989989	379230	5336730	R. R/C	15	15	5	<1	16	3.65	65	<3			Highly silicified & haematised volcanic fragmental.
989990	..	..		80 (30)	20 (30)	20 (20)	<1 (<1)	36	8.51 (9.20)	55	<3 (0.02)			As above
989991	-	..		40 (50)	10 (30)	10 (15)	1 (1)	9	15.4 (23.6)	40	<3 (0.03)			As above but intensely haematitic & magnetitic 600-9000 $\times 10^{-5}$ SI
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : QUEENSTOWN - ZEEHAN
1 : 250 000 Sheet : QUEENSTOWN AMG Zone : 55
Sheet No. :

Tenement : LYNCHFORD EL 47/83
DPO's : 35004 & 35008 (check repeats)
Laboratory : A.L.S. / AMDEL

Area / Prospect : REGIONAL SAMPLING
Collected By : I. M. CLEMENTSON Date : 1 Nov. 85

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au PPB	Au P.P.T.	Geological Observations
989952	380100	5329800	-4# CN s/s									50	1m wide, moderate flow. Boulder bar. Very gravel-sand rich. Minor Fe
989953			-80# s/s	2	20	10	<1	7	0.48	70	3		stain. Float 90% Owen conglomerate & quartz; 10% fine shale tuffs.
989954			-4# CN. s/s									50	2m wide, moderate flow. Boulder bar. Very gravel rich. Silt clay
989955	379950	5330075	-80# s/s	2	20	15	<1	4	0.16	25	<3		deficient. Minor Fe stain. Float 90% Roland/Owen Cong & qz
													10% purple/green sericitic tuff-shales & schists. Poss. contam from
													road works
989956	379900	5330550	-4# CN s/s									50	1m wide, moderate flow, otherwise as above.
989957			-80# s/s	2	15	70	<1	18	0.32	50	<3		
989959	380800	5331350	-80# s/s	2	10	5	<1	8	0.06	5	<3		1/2m wide, very low flow. Very sand rich, low clay. No stain. Float is
989960			-4# CN s/s									100	all Owen Conglomerate.
989961	380550	5331075	-80# s/s	2	15	5	<1	5	0.05	<5	<3		1m wide, low flow. Minor Fe stain. Roland/Owen Conglomerate
989962			-4# CN s/s									100	and minor shale-tuff float. Boulder bar, sand rich site.
DETECTION LIMIT				2	5	2	1	1	0.01	5	3	50	
ANALYTICAL METHOD				ICP	→	→	→	→	→	→	CRA AAS	CN LEACH	

Project : QUEENSTOWN - ZEEHAN | 1 : 250 000 Sheet : QUEENSTOWN | AMG Zone : SHSS-S | Sheet No. :

Tenement : LINCHFORD EL 47/83 | DPO's : 30398 | Laboratory : AMDEL/A.L.S.

Area / Prospect : REGIONAL RECONNAISSANCE ROCK & DRAINAGE SURVEY | Collected By : I.T. CLEMENTSON | Date : 29:10:85

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	ANALYSES Cu	Pb	Zn	Ag	Mo	Fe %	Mn	Au PPB	Flu R.P.T.	Geological Observations
189959	379970	5332050	-80#	20	45	70	<1	14	2.06	260	<3		1½m, mod flow. Low Fe stain. Gravel rich boulder bar. Float: 30% black shale,
70			-4#									50	60% sericitic lithic tuff, 10% qz. o/c high sericitic lithic tuff.
89975	380650	5334500	-80#	2	15	5	<1	5	0.26	15	<3		1½m, mod flow. Low Fe stain. Gravel bar. Float: 80% qz & qzite or
76			-4#									100	linear siltstones, 10% qz flo porphyry, 10% lithic tuff. o/c qz, lithic tuff
189977	380100	5336620	-80#	45	75	45	<1	46	2.17	240	5		1m, mod flow. Moderate Fe stain. Boulder bar. Float: 40% pale qz. bso,
78			-4#									750	40% grey shales & fine lithic tuffs, 10% dark green chl. tuffs, 10% arc tuffs
989979	380120	5336560	-80#	95	85	140	1	26	5.80	730	<3		1½m, mod flow. Mod. Fe stain, boulder bar. Float: qz lithic tuffs,
80			-4#									250	minor qzite & shales.
89981	380320	5336540	-80#	55	60	110	<1	16	1.68	610	5		1½m, mod flow. Minor Fe stain. Gravel bar. Float: qz arc. siltstone,
982			-4#									750	tuffs & grey cleaved shales, vein qz. o/c v.qz & siltstone/lithic tuffs
989983	380550	5336560	-80#	25	40	20	<1	20	0.97	155	3		2m, mod. flow. Low Fe/Mn stain. Gravel rich. Float: v.qz, black
84			-4#									150	shale, lithic tuffs. o/c black shales & int bdd shale tuffs
989985	379350	5336475	-80#	105	60	140	<1	20	4.28	840	3		1½m, mod flow. Heavy Fe/Mn stain. V. silt rich. Float: v.qz, chl. tuffs
86			-4#									850	(lithic with shale frags); andesite.
DETECTION LIMIT				ICP	—	—	—	—	—	→	AAS CRA	CN LEACH	
ANALYTICAL METHOD				2	5	2	1	1	0.01	5	3	50	

Project :	QUEENSTOWN - ZEEHAN	1 : 250 000 Sheet : QUEENSTOWN AMG Zone : 55	Sheet No. :
Tenement :	LYNCHFORD EL 47/83	DPO's : 35004 & 30398	Laboratory : ALS / AMDEL
Area / Prospect :	REGIONAL DRAINAGE SAMPLING		Collected By : I.T. CLEMENTSON Date : 7/11/85

013033

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au PPB	Au	Geological Observations
939987	379350	5335600	-80#	90	70	95	<1	22	4.10	420	10		3m. Mod. flow Mod. Fe stain. Float: andesite, qz porphyry, grey shale and shale tuff. Visible Au in pan.
33			-4#									350	
984992	378070	5332750	-4#									250	1m. Plunge pool. Heavy Fe/Mn stain? Contam ex Queen River. Float
993			-80#	15	35	85	<1	12	1.43	320	<3		70% dark shales (Sil.) 30% grey green foliated lithic tuffs o/c - blue shale (Silurian)
989994	377630	5333340	-4#									850	1½m mod flow Mn ex Fe/Mn Boulder bar. Possibly glacial or r.v. coarse alluvial banks + float: everything including shales, qz tuffs various tuffs, qz porphyry, vein quartz
989995			-80#	5	25	20	<1	6	0.25	45	<3		
DETECTION LIMIT				2	5	2	1	1	0.01	5	3	50	
ANALYTICAL METHOD				ICP	→	→	→	→	→	→	AAS CRA	CN LEACH	

Project : QUEENSTOWN - ZEEHAN
1 : 250 000 Sheet : QUEENSTOWN AMG Zone : 55
Sheet No. :
Tenement : LYNCHFORD EL 47/83
DPO's : 35004 & 30398
Laboratory : ALS / AMDEL
Area / Prospect : REGIONAL DRAINAGE
Collected By : M CLEMENTSON Date : 7·11·85

013034

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au PPB	Au PPT.	Geological Observations
538225	378050	5333580	-4#									50	Mod. flat; well incised; steep gradient; cleared eucalypt forest; colluvial loam; 60% gravel, 30% sand, 10% silt. % of carbonaceous fine grained tuffaceous sediment, minor laminated shale float; minor unaltered tuffaceous sediment
823			-80#	30	40	70	41	14	1.64	280	15		
538245	378000	5333810	-4#									150	Mod. flat; mod incised; steep gradient; colluvial loam; cleared eucalypt forest; 60% gravel, 35% sand, 5% silt; lag angular. % of dark green intermediate(?) tuff; minor dark grey tuffaceous siltstone/shale.
825			-80#	70	65	120	1	32	3.47	690	5		
[illegible]				80	70	[illegible]	[illegible]		[illegible]	750	[illegible]	[illegible]	
533666	378130	5333530	-4#									250	Strong flat; mod incised; colluvial loam; beach scrub; 70% gravel, 25% sand, 5% silt. Green tuffaceous sst + siltstone; minor grey-black shale; minor vein quartz.
367			-80#	55	65	105	1	24	3.47	810	15		
DETECTION LIMIT				2	5	2	1	1	0.01	5	3	50	
ANALYTICAL METHOD				ICP	→	→	→	→	→	→	AAS CRA	CN LEACH	

Project : QUEENSTOWN - ZEEHAN

Tenement : LYNCHFORD EL 43/83

Area / Prospect : REGIONAL STREAM SEDIMENTS

1 : 250 000 Sheet : QUEENSTOWN AMG Zone : 55-S

DPO's : 30398 & 35004 & 35008 (draft)

Sheet No. : 3

Laboratory : ALS BRISBANE

Collected By : S. CATHNESS Date : 31-10-85

013035

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au PPB	Au P.P.T.	Geological Observations
1153368	378220	5335690	-4#									100	Strong float; mod. incised; colluvial banks; bracken scrub;
369			-80#	30	45	70	<1	12	1.79	790	<3		high organics; 40% gravel, 50% sand, 10% silt.
													Dominant massive, unaltered acid tuff float; minor
													fine siltstone/shale
1153370	378400	5336080	-4#									2150	Mod-strong float; well incised; alluvial banks; bracken
371			-80#	85	75	190	1	22	5.18	1700	5		scrub + eucalypts; low organics; 40% gravel, 40% sand,
													20% silt.
													Pyritic acid tuff; vein quartz
DETECTION LIMIT				2	5	2	1	1	0.01	5	3	50	
ANALYTICAL METHOD				ICP							AAS CRA	CN LEACH	

Project: QUEENSTOWN - ZEEHAN

1 : 250 000 Sheet: QUEENSTOWN AMG Zone: 55 S

Sheet No.: 4

Tenement: LYNCHFORD EL 43/83

DPO's: 30398 & 35004

Laboratory: ALS BRISBANE / AMDEL.

Area / Prospect: REGIONAL STREAM SEDIMENTS

Collected By: S. CAITHNESS Date: 31-10-85

0130336

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au PPB	Au P.P.T.	Geological Observations
153812	379050	5331430	-4#									300	Mod-strong flow; weakly incised; eucalypt forest; low organics;
813			-80#	10	15	20	<1	3	0.09	<5	25		50% gravel, 40% sand, 10% silt
813	[illegible]			[illegible]					[illegible]	[illegible]	0.67 ppm		Dominant qz porphyry float; minor vein qz + rhyolite (?)
153814	379250	5331180	-4#									50	Mod. flow; mod. incised; eucalypt forest; mod. organics;
815			-80#	5	15	10	<1	2	0.07	<5	5		colluvial loam; 60% gravel, 30% sand, 10% silt
													Dominant qz porphyry float; minor vein qz
153816	378950	5331140	-4#									<50	Mod flow; mod incised; eucalypt forest; 60% gravel,
817			-80#	2	15	10	<1	3	0.22	10	<3		30% sand, 10% silt
													Dominant clear qz sst (Moira?); trace vein qz
153818	378340	5332390	-4#									550	Mod. flow; well incised; eucalypt forest; 60% gravel,
819			-80#	25	45	80	1	16	1.87	540	<3		35% sand, 5% silt
													Fine-med. grained tuffaceous sediment % + qz
													veining
153820	378240	5333200	-4#									100	Mod.-strong flow; well incised; eucalypt forest; colluvial
821			-80#	15	25	20	<1	10	1.19	55	10		loam; 60% gravel, 30% sand, 10% silt. Low organics.
													Fine tuffaceous sst + siltstone % - chl altered; vein quartz
DETECTION LIMIT				2	5	2	1	1	0.01	5	3	50	
ANALYTICAL METHOD				ICP	→	→	→	→	→	→	AAS CRA	CN LEACH	

Project: QUEENSTOWN - ZEEHAN
Tenement: LYNCHFORD EL 43/83
Area / Prospect: REGIONAL STREAM SEDIMENTS.

1 : 250 000 Sheet: QUEENSTOWN AMG Zone: 55-S
DPO's: 30398 & 35004 & 35009 (Mack)

Sheet No.: 2
Laboratory: ALS BRISBANE
Collected By: S. CAITHNESS Date: 30-10-85.

013031

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au ppb	Geological Observations
1153372	378520	5336030	Rock Chip	25	10	10	<1	2	1.28	60	<3	Highly altered red tuff(?). Haematized and silicified; pitting after sulphide; Rock occurs as float at the base of a hill; Weakly magnetic 80×10^{-5} SI units.
373				50	10	10	<1	30	2.33	50	<3	
1153374	378330	5336950	r.c.	25	15	15	<1	6	0.56	30	<3	DIGHEM anomaly; stockwork quartz veining through sandstone - grit (Maina Sst). Minor silicified black shale; common malachite staining on road cutting
375				15	<5	10	<1	1	0.79	80	<3	
DETECTION LIMIT				2	5	2	1	1	0.01	5	3	
ANALYTICAL METHOD				ICP	→	→	→	→	→	→	AAS CRA	

Project : QUEENSTOWN-ZEEHAN
1 250 000 Sheet : QUEENSTOWN AMG Zone : SK55-5
Sheet No. : 1
Tenement : LYNCHFORD EL 43/83
DPO's : 35004
Laboratory : ALS BRISBANE
Area / Prospect : ROCK CHIP SAMPLES
Collected By : S. CAITHNESS Date : 30-10-85

0130338

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au PPB	Au PPT.	Geological Observations
1142799	379750	5330850	-80#	5	15	20	<1	4	0.08	10	5		Strong-moderate flow; well incised; eucalypt forest; possible
800			-4#									450	contamination from HEC works; 60% gravel, 35% sand,
													5% silt.
													Rhyolite % at sample site; red-brown rhyolite float,
													conglomerate; sandstone
1153806	379380	5330650	-4#									<50	Moderate-strong flow; moderately incised; eucalypt forest;
807			-80#	5	15	10	<1	2	0.22	50	<3		mod. organics; colluvial boggy 40% gravel, 40% sand,
													20% silt.
													Dominant fine-med. grained sandstone/siltstone float
1153808	379430	5330650	-4#									50	Strong flow; moderately incised; eucalypt + myrtle
809			-80#	5	45	25	<1	7	0.46	360	<3		forest; low organics; 50% gravel, 30% sand, 20% silt.
													Fine grained tuffaceous sediments; grey-black shale
													%
1153810	379010	5331470	-4#									700	Mod flow; mod. incised; low organics; eucalypt forest;
811			-80#	5	30	15	<1	6	0.54	25	10		possible contamination from old workings (250m north along
													track) 60% gravel, 30% sand, 10% silt.
													Dominant siltstone/sst float; minor qz porphyry + qz-cp.
DETECTION LIMIT				2	5	2	1	1	0.01	5	3	50	
ANALYTICAL METHOD				ICP	→						AAS CRA	CN LEACH	

Project: QUEENSTOWN - ZEEHAN | 1 250 000 Sheet: QUEENSTOWN | AMG Zone: SH 55-5 | Sheet No.: 1

Tenement: LYNCHFORD EL 43/83 | DPO's: 30398 & 35004 | Laboratory: ALS BRISBANE

Area / Prospect: REGIONAL STREAM SEDIMENTS | Collected By: S. CAITHNESS | Date: 30-10-85

PROJECT QUEENSTOWN - ZEEHAN — GEOCHEMICAL SAMPLING LEDGER — DATES : MARCH 1985

TENEMENT LYNCHFORD EL 47/83 — LAB. AMDEL

AREA / PROSPECT NEWALL CREEK RECONNAISANCE — GEOLOGIST I.M. CLEMENTSON — SAMPLE TYPE ROCK. — PAGE NO. 1

SAMPLE NUMBER	GRID REF.	ANALYSES Cu	Pb	Zn	Fe %	Au	DPO NUMBER	GEOLOGICAL OBSERVATIONS	CORRESP. -80 MESH STREAM SAMPLE
988954	378620E 5331500N	14	<5	6	1.03	0.005	30348	Float: (argillaceous, the N bank area of the new King R. bridge):- highly chloritic (? fuchsite) quartzite with minor black Mn oxides	
988955	378850E 5331500N	14	<5	4	2.06	0.005		o/c: channel sample (5m) of weathered silty quartzites near old workings	Rovers dear
988956	378850E 5331500N	7	8	32	0.58	0.010		Float: very chloritic (? fuchsite) vein quartz from old workings	
988957	378850E 5331500N	34	58	52	4.55	0.04		o/c: channel sample (2m) of very ferruginous weathered quartzite	
988958	379250E 5331100N	17	<5	7	2.28	0.005		o/c large quartz "blow" - stockwork to semi-massive vein quartz within a host of ?? highly altered (pale green soft aphanitic) siltstone or ? volcanic "dome"	
		PETROLOGY: Argillised porphyritic rhyolite; could be a lava or a tuff-lava, perhaps grading into an ignimbrite							
988959	379300E 5331075N	15	<5	7	1.64	0.005		o/c as above but with lower proportion vein quartz and with 2-5mm quartz 'eyes' or phenocrysts	
		PETROLOGY: Porphyritic rhyolite; no flow textures. Fabric indicates a minor intrusive. Selective removal of biotite and some plagioclase.							

METHOD
DET. LIMIT

013040

PROJECT Cullenbenwarra - Zeeman — GEOCHEMICAL SAMPLING LEDGER — DATES : March 1985

TENEMENT Lynchford EL 4713/83 — LAB. Ackel

AREA / PROSPECT Kingsmill Au Mine Reefs — GEOLOGIST I M Clementson — SAMPLE TYPE Rocks — PAGE NO. 1

SAMPLE NUMBER	GRID REF.	ANALYSES Cu	Pb	Zn	Ag	Fe%	Au	DPO NUMBER	GEOLOGICAL OBSERVATIONS	CORRESP. -80 MESH STREAM SAMPLE
988961		200	10	50	<1	9.22	0.010		2m channel sample highly weathered arsenate	
962		195	20	48	<1	8.60	0.010		4m channel sample	
963		28	<5	10	<1	0.73	0.015		Float totally bleached buff-green phyric rock	
964		120	22	52	<1	9.20	0.005		2m channel sample weathered (highly altered?) arsenate	
965		190	26	115	<1	9.66	0.005		1½m channel sample carbonate host with less Mn concentration? Fracture	
966		145	34	33	<1	8.24	0.005		4m channel sample with arsenate	
967		240	6	185	<1	7.16	0.005		Ferruginous weathered arsenate	
METHOD										
DET.LMT										

0130411

PROJECT QUEENSTOWN - ZEEHAN

TENEMENT LYNCHFORD EL 47/83

AREA / PROSPECT RECONNAISSANCE - general

GEOCHEMICAL SAMPLING LEDGER

GEOLOGIST I.M. Clementson

SAMPLE TYPE

DATES : MARCH 84

LAB. AMDEL

PAGE NO. 1

SAMPLE NUMBER	GRID REF. Approx AMG	Cu	Pb	Zn	Fe %	Ag	DPO NUMBER	GEOLOGICAL OBSERVATIONS	CORRESP. -80 MESH STREAM SAMPLE
988951	377800E [illegible]N	15	<5	42	5.38	0.005	30348	O/c - [illegible] green [illegible] [illegible] mafic [illegible] [illegible] [illegible] length.	
988052	377730E [illegible]N	9750	8	30	6.72	0.095		Float - [illegible] [illegible] with 10% [illegible] py + [illegible]	
[illegible]	[illegible]E [illegible]N	24	<5	2	1.37	<0.005		O/c - massive pale green [illegible]	
		Petrology: "Argillised devitrified rhyolite, probably originally a glassy lava"							
METHOD									
DETLIMIT									

0130042

APPENDIX III

013044

Australian Laboratory Services PTY. LTD.

CONSULTING ANALYTICAL CHEMISTS

INCORPORATED IN QUEENSLAND

LABORATORY REPORT

Brisbane Head Office and Laboratory
32 Shand Street, Stafford, Q. 4053
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Townsville Laboratory
21 Bombala Street, Garbutt, Q. 4814.
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Charters Towers Laboratory
18 Drew Street, Charters Towers, Q. 4820
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Bendigo Laboratory
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Orange Laboratory
10 Leewood Drive, Orange, N.S.W. 2800
Phone: (063) 631 722. Fax: (063) 631 189

LYN

Page 1 of 1

Client: ABERFOYLE RESOURCES LIMITED

Address: P O BOX 952
BURNIE
TASMANIA 7320

B.C.L's
SEE PLATE LYN 15
FOR LOCATIONS.

Batch Number: D186

Contact: MR R DE BOMFORD

No. of Samples: 15

Order No. 7516 Sample Type: STREAM SEDIMENT

Date Received: 28/04/89

Date Completed: 09/05/89

SAMPLE NUMBER	Element / Unit / Method	Au ppt PM216	S.Wt Kg			
482451		250	10.4			
482452		3350	4.71			
482453		1350	6.99			
482454		450	9.12			
482455		850	4.78			
482456		100	3.94			
482457		150	12.5			
482458		150	7.10			
482459		700	7.82			
482460		1200	7.49			
482461		100	5.62			
482462		2300	14.6			
482463		1500	8.18			
482464		150	11.2			
482465		2950	22.5			
Detection Limit:		50				

Comments:

Signed:

FORM ALS 011A

013045

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.
Phone (09) 458 7999 — 52 Murray Road, Welshpool, W.A. 6106 — Telex AA92560
FAX: 004 31 8890

ANALYTICAL REPORT No. 23.3.08.06134

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Aberfoyle Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

ORDER No.	PROJECT
6293	

DATE RECEIVED	RESULTS REQUIRED
16/04/89	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	01/05/89	1	41

NUMBER OF SAMPLES	SAMPLE NUMBERS	PRE-TREATMENT: DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	ANALYSIS: REFER TO ANALYSIS SECTION	PREPARATION	METHOD
	482401/41	SS	Prep: 001,013,016						Cu,Pb,Zn,Ag/101,As/114		
	482401/41	SS							Ba/401,Au/309		
	482401/41	SS							AuChk/309		

RESULTS TO

Aberfoyle Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

RESULTS TO

REMARKS

L/N CATORD
-72 #
STREAM SEDS

SEE PLAN No.
L/N 15
FOR LOCATIONS.

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
ng	CU	nitric acid	A3	other mixed acids	Mx	spectrophotometry	SPEC
R	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
	PU	HF mixture	A6	ignition	IG	titration	TTN
	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
eam sediment	SS					fluorescence	FLUOR
eavy mineral	HM					inductively coupled plasma	ICP

013046

ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.06134	01/05/89	6293	1 OF 2

JBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As		
1	482401	10	<5	35	<0.5	0.012	20	4		
2	482402	5	<5	35	<0.5	<0.008	<10	5		
3	482403	25	5	45	<0.5	<0.008	15	5		
4	482404	5	<5	20	<0.5	<0.008	25	3		
5	482405	5	25	80	<0.5	0.246	580	19		
6	482406	5	25	80	<0.5	<0.008	200	11		
7	482407	20	40	65	<0.5	<0.008	300	8		
8	482408	35	45	75	<0.5	0.008	15	7		
9	482409	10	10	45	<0.5	<0.008	140	4		
10	482410	5	<5	35	<0.5	<0.008	20	5		
11	482411	5	<5	30	<0.5	<0.008	40	3		
12	482412	5	<5	25	<0.5	<0.008	35	4		
13	482413	5	<5	25	<0.5	<0.008	50	6		
14	482414	5	<5	45	<0.5	<0.008	25	4		
15	482415	5	10	50	<0.5	<0.008	70	3		
16	482416	20	35	60	<0.5	<0.008	350	12		
17	482417	5	30	65	<0.5	<0.008	130	9		
18	482418	30	15	75	<0.5	<0.008	15	4		
19	482419	5	5	25	<0.5	<0.008	110	8		
20	482420	55	25	95	<0.5	<0.008	15	7		
21	482421	10	10	60	<0.5	<0.008	140	3		
22	482422	45	45	105	<0.5	<0.008	590	9		
23	482423	70	65	150	<0.5	<0.008	800	14		
24	482424	35	25	55	<0.5	<0.008	15	4		
25	482425	20	20	45	<0.5	<0.008	500	6		

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

013047

ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	25.3.08.06134	[illegible]1/05/89	6[illegible]	2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As		
1	482426	20	5	25	<0.5	<0.008	170	5		
2	482427	35	10	40	<0.5	<0.008	290	5		
3	482428	25	5	35	<0.5	<0.008	190	4		
4	482429	20	5	30	<0.5	<0.008	290	5		
5	482430	25	5	40	<0.5	<0.008	IS	5		
6	482431	45	10	55	<0.5	0.048	IS	4		
7	482432	30	20	40	<0.5	0.022	IS	5		
8	482433	25	10	35	<0.5	<0.008	290	5		
9	482434	30	85	70	<0.5	<0.008	240	3		
10	482435	15	80	70	<0.5	<0.008	120	9		
11	482436	<5	<5	15	<0.5	<0.008	50	3		
12	482437	25	20	145	<0.5	<0.008	90	4		
13	482438	10	15	40	<0.5	<0.008	80	7		
14	482439	<5	<5	25	<0.5	<0.008	130	3		
15	482440	15	5	35	<0.5	0.008	290	5		
16	482441	45	85	85	<0.5	<0.008	IS	5		
17										
18										
19										
20	NOTE: Au Checks for sample number 482405 are 0.934 and 1.350									
21	Weight of this sample was 15.85gms. There is no more sample									
22	to do further checks.									
23	DETECTION	5	5	5	0.5	0.008	10	1		
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM		
25	METHOD	101	101	101	101	309	401	114		

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER [illegible]

013048

FROM ALS BRISBANE 5. 9.1989 16:07 P. 3

Australian Laboratory Services PTY. LTD.

32 Shand Street, Stafford, Q. 4053
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CONSULTING ANALYTICAL CHEMISTS

IN QUEENSLAND

LABORATORY REPORT

Page 1 of 1

ABERFOYLE RESOURCES LIMITED
Address: P O BOX 952
BURNIE
TASMANIA 7320

Batch Number: D186

Contact: MR R DE BOMFORD

No. of Samples: 15
Date Received: 28/04/89
Date Completed: 09/05/89

Job No: 7516 Sample Type: STREAM SEDIMENT

SAMPLE NUMBER	Element Unit Method	Au ppt PM216	S Wt Kg
482451		250	10.4
482452		3350	4.71
482453		1350	6.99
482454		450	9.12
482455		850	4.78
482456		100	3.94
482457		150	12.[illegible]
482458		150	7.10
482459		700	7.82
482460		1200	7.49
482461		100	5.67
482462		2300	14.6
482463		1500	8.18
482464		150	11.2
482465		2950	22.5
Detection Limit.		50	

Comments:

Signed:

FORM ALS 015(A

APPENDIX IV

Sirotope

CSIRO
AUSTRALIA

Division of Exploration Geoscience
Delhi Road, North Ryde, NSW. Postal Address: PO Box 136, North Ryde NSW 2113
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Chief: Dr. B.J.J. Embleton

REPORT TO ABERFOYLE RESOURCES LIMITED

ON THE Pb ISOTOPIC COMPOSITIONS

AND METALLOGENIC ASSOCIATION OF EXPLORATION SAMPLES

FROM THE LYNCHFORD E.L., WESTERN TASMANIA

REPORT SR 093

GRAHAM R. CARR
JUDITH A. DEAN

29/8/89

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Telex: AA92178
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Lindfield
Location: Bradfield Road, Lindfield
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Telephone: (02) 467 6733
Telex: AA26296
Fax: (02) 467 1902

1. AIMS OF STUDY

The aim of this study has been to determine the likely metallogenic association of exploration samples from the Lynchford E.L., located to the south of Queenstown, by comparing their Pb isotopic compositions with those of known mineralization in the region.

2. SAMPLES

Four samples were provided by Danny Noonan from an area south of Queenstown. Sample 482122 is galena from a quartz vein hosted within a Cambrian black shale and quartz phyric dacite lava sequence.

Sample 482124 is of gossanous float from a creek draining north into the King River.

3. TARGET SIGNATURES

All major Cambrian ore deposits of western Tasmania have similar Pb isotopic compositions confirming that they formed as part of a major metallogenic event (see Gulson and Porritt, 1987). A relatively homogeneous isotopic composition over such a region suggests the hydrothermal systems were very large, leaching Pb and other elements from a significant volume of crust and thus tending to average out local variations in the Pb isotopic composition of the source rocks. The Cambrian massive sulfide ("target") signature is represented in this study by the overlapping fields for Hellyer, Que River and Rosebery(+Hercules) (Fig. 1). The fields are 95% confidence ellipses which depict the mean +/- 2 x standard deviations of data from each deposit. Despite the averaging effect of the hydrothermal systems, minor differences can be expected between deposits, as is exemplified

by Rosebery/Hercules and Que River/Hellyer fields.

Minor mineralization in western Tasmania commonly consists of discontinuous pods or veins. The isotopic composition of such mineralization varies between occurrences indicating that the hydrothermal systems were probably much smaller. Most examples of this mineralization have isotopic compositions that are more radiogenic than the Cambrian target (i.e. higher $^{206}Pb/^{204}Pb$ ratios, Fig 1.) and some can be associated with Devonian plutonism (e.g. Queen Hill, Mt Farrell).

However, other examples have isotopic compositions that are less radiogenic than the Cambrian target, e.g. WOW/CAB, an old Comstaff prospect in the Oonah Formation and the Marionoak mineralization on the Pieman Dam road (Fig. 1). While the origin of such mineralization remains enigmatic, the low $^{206}Pb/^{204}$ ratios may result from leaching of Pb from nearby Precambrian source rocks. At both WOW/CAB and Marionoak both more radiogenic and less radiogenic populations are present indicating a complex

Although it is likely that Devonian thermal events were responsible for the generation of these relatively localized hydrothermal systems, it is possible they developed at other times, even during the Cambrian. Irrespective of the age, it is unlikely that such mineralization would have significant economic potential.

4. METHODS

Whole rock powders provided by Aberfoyle were leached in a mixture of 7N HNO_3 and 7N HCl acids. Lead was purified from the leachate by anion exchange in HBr solutions and by micro-electrodeposition techniques.

Analyses were performed on an ISOMASS 54E thermal ionization

mass spectrometer run in fully automated mode. Precision estimates for the ratios are depicted as error bars in the upper left hand corner of the ratio plots and are based on the analyses of over 1000 standards.

5. RESULTS

The results are listed in Table 1 and plotted in Figure 2. There is measurable variation in the $^{206}Pb/^{204}Pb$ ratio between samples, but the results for each sample are internally consistent within the limits of analytical error (replicate analyses of single samples are grouped using dashed ellipses in Fig. 2). All results plot outside the Target fields for Cambrian massive sulfide deposits of the region, and are different to data for the Tasman and Crown Lyell Extended and Prince Lyell deposits at Mt Lyell (Gulson and Porritt, 1987, p.296). Samples 482124 (pts 6 & 7) plot close to the Hellyer target ellipse, but the galena sample 482122 (pts 1-3) has significantly higher $^{206}Pb/^{204}Pb$ ratios.

6. DISCUSSION

The data plot between the fields for Cambrian mineralization and the well established Devonian mineralization at Queen Hill and Mt Farrell. As with the results for the Mackintosh Licence sample (see Report SR 092) we are posed with a dilemma; could this represent as yet unrecognised local variation in the Cambrian signature of a scale similar to the differences between Rosebery/Hercules and Que River/Hellyer or is it part of the broad Devonian signature? In the southernmost extension of the

Mt Read volcanics at Elliot Bay, the Cambrian signatures have significantly lower $^{206}Pb/^{204}Pb$ ratios than the Rosebery/Hercules, Que River/Hellyer fields (Gulson et al, 1987). Some mineralization in the Farrell Slates (e.g. Murchison Lode, Gulson and Porritt, 1987), with isotopic compositions similar to the Lynchford samples are considered to be Devonian in age (Polya et al., 1986). Thus, based on these empirical considerations, it would seem more likely the mineralization is related to Devonian rather than Cambrian events.

However, considered as a separate group, sample 482124 cannot be readily distinguished from the Prince Lyell high-Pb samples.

Thus we cannot rule out that these samples might represent a Cambrian signature for the area to the south of Queenstown.

7. CONCLUSIONS

Unfortunately, the Pb isotopic compositions of the samples do not give a definitive answer to the question of whether the Lynchford E.L. represents Cambrian or Devonian mineralization. We would contend that the variation from the Cambrian signatures

reduces the probability that the E.L. is likely to represent a significant massive sulfide, but would recommend that further exploration is warranted. The Pb isotopic analysis of 3 to 4 more high-Pb samples (>1000ppm if possible) may help clarify whether the data represents two populations, one of which may be similar to Prince Lyell.

8. REFERENCES

Gulson, B.L. and Porritt, P.M., 1987. Base metal exploration of the Mount Read Volcanics, Western Tasmania: Pt II. Lead isotope signatures and genetic implications. Econ. Geol., 82, pp. 291-307.

Gulson, B.L., Large, R.R and Porritt, P.M., 1987. Base metal exploration of the Mount Read Volcanics, Western Tasmania:Pt III. Application of lead isotopes at Elliott Bay. Econ. Geol., 82, pp. 308-327.

Polya, D.A., Solomon, M., Eastoe, C.J. and Walshe, J.L., 1986. The Murchison Gorge Tasmania - a Possible cross section through a Cambrian massive sulfide sustem. Econ. Geol., 81, pp. 1341-1355.

TABLE 1. LEAD ISOTOPE RATIOS OF LYNCHFORD E.L. SAMPLES.

Sample	$\frac{208\ Pb}{206\ Pb}$	$\frac{207\ Pb}{206\ Pb}$	$\frac{206\ Pb}{204\ Pb}$	$\frac{207\ Pb}{204\ Pb}$	$\frac{208\ Pb}{204\ Pb}$	Pb(ppm)
1 482122gl	2.0749	0.8456	18.444	15.595	38.270	870,000
2 482122glR/1	2.0757	0.8458	18.453	15.607	38.304	
3 482122glR/2	2.0750	0.8456	18.451	15.601	38.285	
6 482124	2.0736	0.8468	18.404	15.584	38.162	1,450
7 482124R	2.0746	0.8469	18.421	15.601	38.217	

R, R/1, R/2 denote repeat dissolution and analysis.
gl denotes galena
Sample No prefixes are used to plot points in Figure 2.

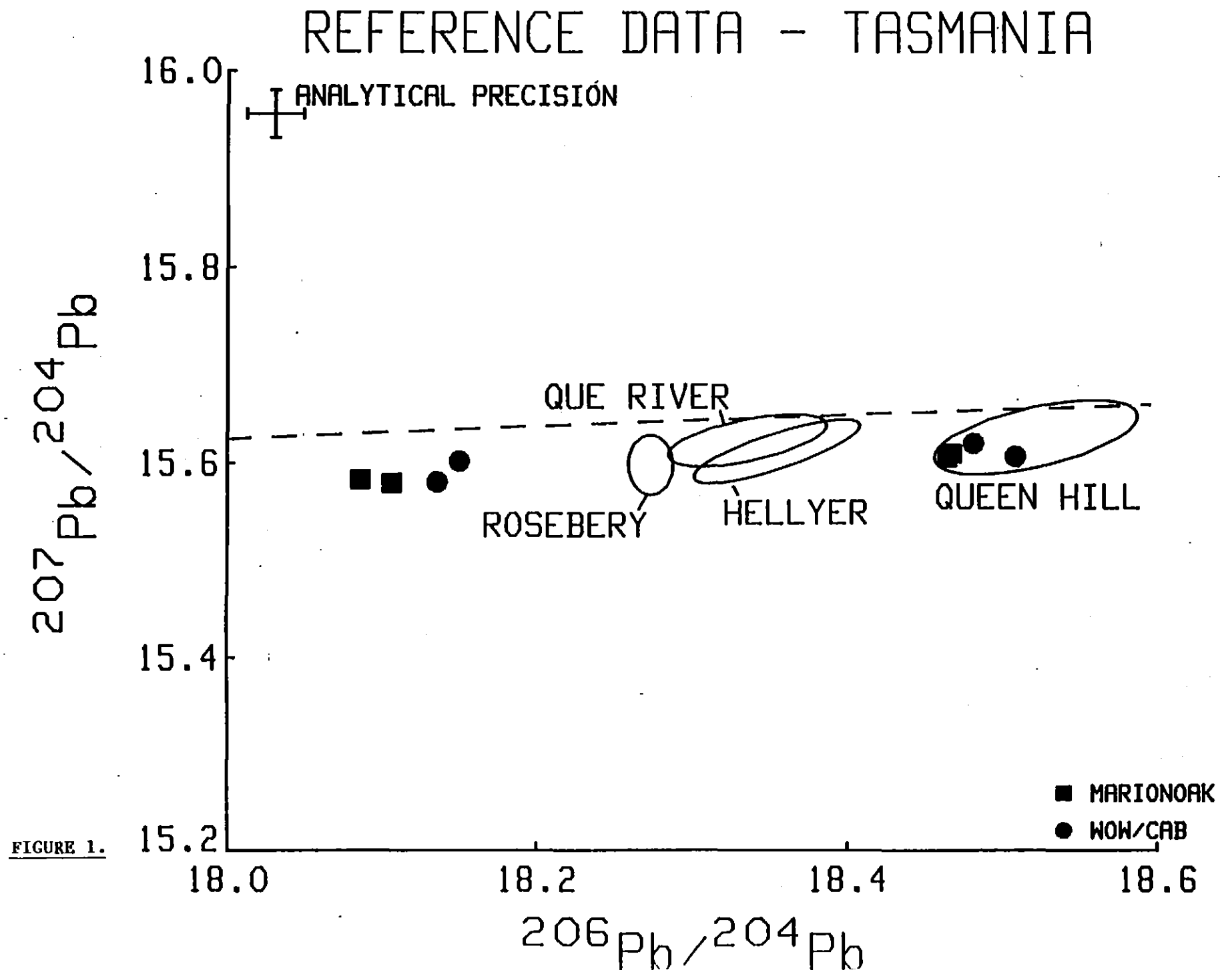

FIGURE 1.

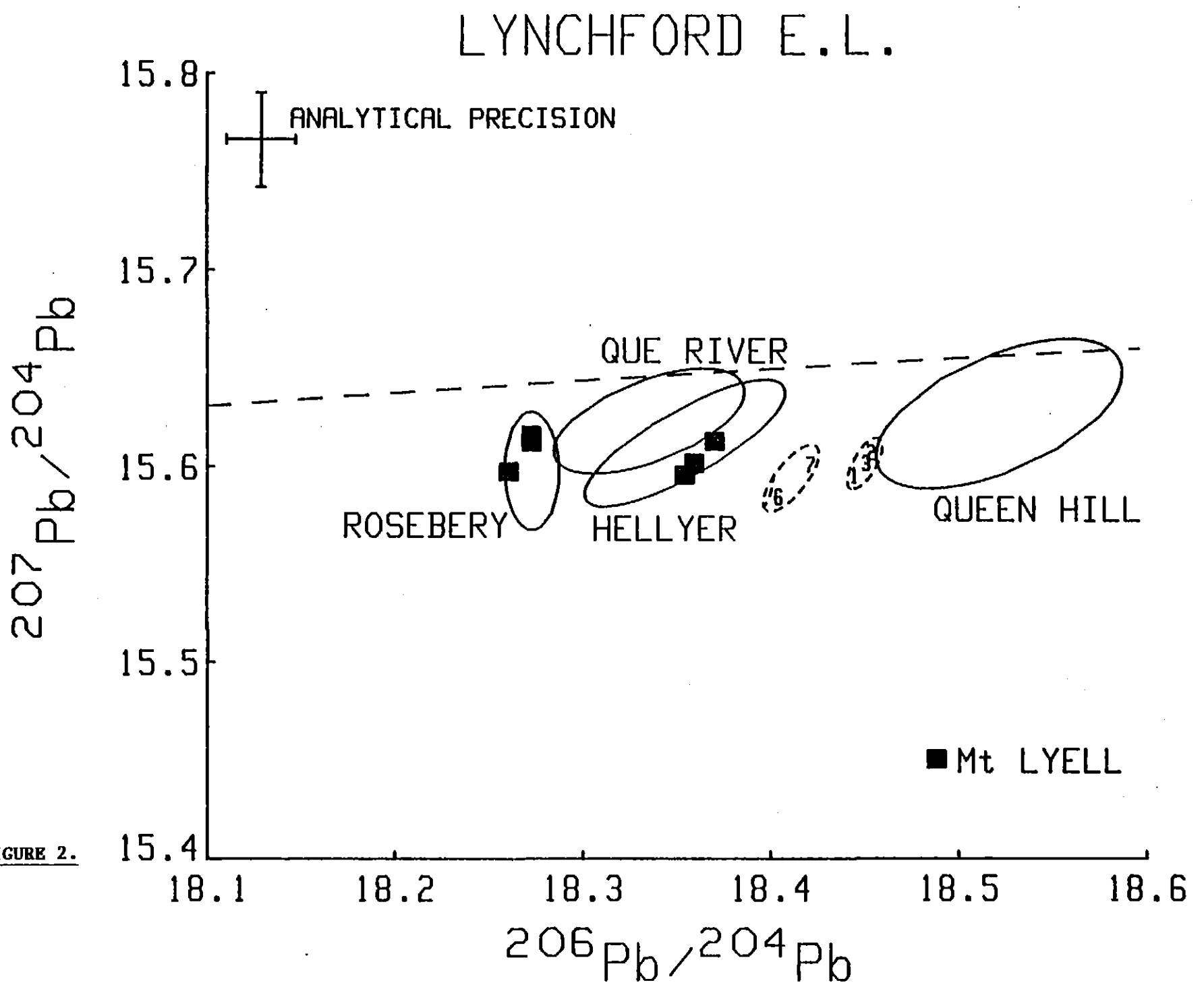

FIGURE 2.

APPENDIX V

SAMPLE NUMBER: 482302

SUMMARY:

This rock was a rhyolitic lava containing phenocrysts of quartz+feldspar+biotite+FeTi oxide, and is essentially identical to 482318.

HAND SPECIMEN:

This sample on a freshly cut face is a pale green-grey quartz+feldspar-phyric rhyolitic lava very similar to 482318 and 324.

THIN SECTION DESCRIPTION:

This sample is almost identical to the Quartz+feldspar+biotite +FeTi oxide-phyric rhyolitic lava 482318, except that the recrystallized formerly groundmass is somewhat finer-grained and laced with very wispy sericite compared to 318. In other respects it could be the same sample as 318. In reflected light, the sample is seen to contain only two or three tiny pyrite grains each less than 0.05mm across.

COMMENTS ABOUT THE KING RIVER POWER TUNNEL SUITE

These eleven samples are broadly cogenetic in that they are all derived from a quartz+feldspar+biotite+FeTi oxide phenocryst-bearing rhyolitic magma that contained relatively large and common (av. 10-15 per thin section) well-formed zircon microphenocrysts. Most samples are lavas, several are vitric or crystal vitric tuffs, and one is a coarse lava breccia. As might be expected, the porous breccia is the most altered. Although these lavas are apparently considered to be Central Volcanic Complex in affinities, I think they are more like the quartz-phyric, zircon-bearing rhyolites that characterize the Southwell Sub-group in the area NE of Hellyer, and the Tyndall Group further south. That is not to say that these lavas cannot be a poorly known quartz-phyric section of the Central Volcanic Complex, but where I have examined the latter in detail, the felsic lavas are almost always quartz phenocryst-free, feldspar- phyric lavas.

The alteration of these samples may be assigned to three types. The earliest phase involved devitrification and recrystallization of felsic groundmass glass. This phase may have involved introduction of the pyrite which is quite abundant in these samples relatively to 'typical'

Mount Read felsic lavas. A later phase of silica veining and pressure solution accompanying cleavage formation in some samples was followed by an overprinting by calcite.

It is significant that the only two samples showing chlorite alteration contain chalcopyrite in addition to the more ubiquitous pyrite.

SAMPLE NUMBER: 482318

SUMMARY:

This rock was a glassy quartz+feldspar+biotite+FeTi oxide-phyric rhyolitic lava and was the probable precursor of the more deformed and altered samples described above. Chlorite alteration is even less significant in this sample than 482324.

HAND SPECIMEN:

This is a massive light grey-green felsic lava with 5-10 modal% quartz phenocrysts. It is very similar to 482324 described immediately above.

THIN SECTION DESCRIPTION:

This sample is a quartz+albite+altered biotite+altered FeTi oxide -phyric rhyolitic lava that had originally a glassy groundmass. It is better preserved than any of the previously-described three samples, and is probably identical to the protolith of those samples. Large (to 2mm) quartz phenocrysts make up around 8 modal% of the sample and are slightly rounded, and contian common rounded melt inclusions that have been chloritized. Feldspar phenocrysts are slightly less abundant than the quartz phenocrysts and have been albitized, and slightly sericitized. They are also slightly to notably rounded. Former biotite phenocrysts are replaced by calcite, chlorite and sericite, with FeTi oxide dust defining former cleavage planes. They often contain relatively large zircon inclusions, and the same mineral occurs as small microphenocrysts throughout the groundmass in small but notable amounts.

The formerly glassy groundmass has devitrified and recrystallized to a relatively coarse-grained mosaic of albite and quartz. Alteration is restricted to meandering calcite+sericite-filled fractures, and occasional concentrations of calcite through the groundmass.

Polished thin section examination shows that the only sulphides in this sample are tiny pyrite grains which make up a meandering veinlet about 0.1mm wide that traverses this sample. No other sulphide phase was noted intergrown with the pyrite.

SAMPLE NUMBER: 482324

SUMMARY:

This rock is a brittle-fractured quartz+feldspar+FeTi oxide-phyric rhyolitic lava originally probably identical to the previously described two samples (482340 and 336), but the cleavage seen strongly in 336 and weakly in 340 is absent in this sample; alteration is carbonate-sericite dominated, and certainly more intense than usually encountered in Mount Read rhyolites away from known mineralization. Very minor pyrite is present. There is less chlorite development than in 482340 and 336.

HAND SPECIMEN:

This is a light green-pale grey, highly altered quartz-phyric felsic lava.

THIN SECTION DESCRIPTION:

In thin section, this sample is seen to be a altered rhyolitic lava that would have been quite similar originally to the two previously described samples. Subequal amounts of quartz and feldspar phenocrysts (each approximately 3-5 modal%) are present. The quartz grains, to 2mm across, have been fractured and partially recrystallized via subgrain development along former fractures; some grains have recrystallized entirely. Albitized feldspar phenocrysts are slightly sericitized. The formerly glassy groundmass has recrystallized to quartz-albite-chlorite-sericite mosaics and sparse former biotite phenocrysts are replaced by sericite-pale green chlorite intergrowths, with the cleavage preserved.

This sample has been fairly extensively brittle-fractured, with narrow fractures defining irregular angular branches rather than a subparallel fracture cleavage. Fracture planes are defined by polygonal secondary quartz, calcite, sericite and even some clean secondary albite in wider crush zones.

Polished section examination shows that this sample contains an exceedingly small amount of pyrite that occurs scattered through the rock as tiny discrete grains, and also as two or three very narrow, irregular veinlets. No chalcopyrite was seen.

SAMPLE NUMBER: 482327

SUMMARY:

This rock was formerly a quartz+feldspar-phyric rhyolitic lava or tuff with a glassy groundmass. It is cut by abundant quartz veinlets and shows fairly widespread carbonate alteration of both the groundmass and the quartz veinlets.

HAND SPECIMEN:

This is an altered and silicified brownish felsic lava or tuff extensively cut by narrow quartz veinlets.

THIN SECTION DESCRIPTION:

This rock in thin section is seen to be a quartz+feldspar-phyric rhyolitic lava or tuff composed of crystals fragments of quartz that vary from quite rounded and reacted to angular broken crystal fragments to about 2mm across. Feldspar crystal fragments are modally subordinate to quartz and are slightly sericitized albite grains that usually contain small pools of calcite. Rare biotite phenocrysts are replaced by green chlorite and seicite with FeTi oxide granules along cleavage traces. The groundmass is fairly uniform textured and composed of a fine-grained mosaic intergrowth of albite and quartz, with minor sericite and chlorite speckling, and replaces former devitrified glass. It is difficult to judge whtehr this was a lava or a crystal tuff originally. The abundance of broken grains tends to support the latter possibility, but the uniform groundmass and common rounded reacted, entire quartz grains are more like assemblages in a lava.

The rock is cut by abundant narrow veinlets of polygonal secondary quartz, and calcite has overprinted large sections of the quartz veinlets, and also occurs spotted over the groundmass.

In reflected light, pyrite is seen to be scattered through the rock in small aggregates of tiny well-formed euhedra, as well as occurring as occasional larger cubes. It does not seem to be associated with the carbonate alteration, or with the quartz veining. Chalcopyrite is present as only a few tiny specks in the rock.

SAMPLE NUMBER: 482336

SUMMARY:

This rock is almost identical 482340 except that it shows a much stronger cleavage development in thin section, marked by subparallel sericite-chlorite bands and layers. The sulphide abundance and mineralogy is also identical to that in 482340, except that the small sulphide concentrations in the latter are dragged out into the cleavage in this sample.

HAND SPECIMEN:

This is a massive, grey-green quartz-phyric felsic lava with a weak fracture cleavage defined by sericite and chlorite.

THIN SECTION DESCRIPTION:

In thin section, this sample is seen to be almost identical to 482340 described above, except for one important point. That is, this sample shows a much better developed fracture cleavage which is well defined in thin section by a prominent subparallel anastomosing mesh of sericite and pale green chlorite traversing the rock. Also, some of the quartz phenocrysts have fractured and rotated slightly in the cleavage, giving the appearance of angular grains; some quartz phenocrysts show subgrain recrystallization along healed fractures.

Polished section examination of this slide shows that sulphides occur in approximately the same abundance in this sample as in 482340, but in this sample they occur scattered along several chlorite-sericite cleavage bands rather than as local concentrations. Again, the sulphide mineralogy is simply dominant pyrite with minor chalcopyrite, mainly occurring as separate tiny anhedral, almost rounded equidimensional grains in the cleavage. They probably represent former concentrations of pyrite-chalcopyrite drawn out into the cleavage during deformation. On this basis, in both samples there is no evidence that the introduction of sulphides or carbonate accompanied cleavage development (deformation).

SAMPLE NUMBER: 482340

SUMMARY:

This is a quartz+feldspar-phyric rhyolitic lava with a weak fracture cleavage, and quite strong calcite-chlorite-sericite alteration. It contains minor but significant concentrations of pyrite and chalcopyrite.

HAND SPECIMEN:

This is a massive grey-green quartz-phyric felsic lava or tuff with some apparent silicification(?) of the groundmass.

THIN SECTION DESCRIPTION:

This rock in thin seen is clearly a quartz+feldspar-phyric rhyolitic lava. Quartz phenocrysts make up around 5-10 modal% of the rock and are up to 3mm across. They are invariably rounded and resorbed grains that contain fairly abundant round, green chloritized melt inclusions. Angualr broken crystals are absent. Feldspar phenocrysts are smaller than the quartz phenocrysts but slightly more abundant. They are elongate blocky prisms composed of albite after a more calcic plagioclase precursor. Many albitized plagioclase phenocrysts are slightly to notably rounded, and have been clearly reacting with the magma. Most are fairly thoroughly sericitized. Former biotite phenocrysts have broken down to chlorite, sericite and ilmenite, but make up only about 1 modal% or less of the sample.. The ilmenite occurs as bladed grains grown with their long axes orientated along the former biotite cleavage, and form due to the inability of chlorite and sericite to accept Ti released during biotite breakdown. Calcite also occurs within altered biotite phenocrysts. Altered FeTi oxide phenocrysts are not uncommon, and are replaced by leucoxene and magnetite/ilmenite intergrowths. Small euhedral zircon crystals are quite common in this section.

The recrystallized formerly glassy groundmass of this sample is a fine-grained mosaic intergrowth of albite and quartz that has been riddled with sericite and tiny rhombioc calcite crystals. Grainsize within the groundmass and also extent of calcite alteration vary in a patchy fashion across the slide. Calcite is clearly replacing

quartz-albite in the groundmass. Sericite also occurs in dense mesh-like veins across the sample; these veins define what is probably a rough fracture cleavage, since many are subparallel.

Examination of the slide in reflected light shows a number of interesting features. Firstly, chalcopyrite is relatively abundant (but nevertheless still constituting on ly a tiny fraction of one modal% of the rock) as tiny blebs scattered randomly in the groundmass; it also occurs in several more concentrated patches in the groundmass, where some small cpy grains can be seen to be altering to magnetite. These concentrations of cpy do not appear to be replacing another opaque or silicate phase, but are within the groundmass. In similar fashion, a small concentration of pyrite containing minor intergrown chalcopyrite also occurs in the groundmass. No sulphide occurs along the weak fracture cleavage, although very fine-grained hematite(?) is common.

I think that this rhyolitic lava is similar to some of those I described for you in the last lot from Lynchford. The abundance of quartz phenocrysts and zircon would normally have suggested a similarity with Tyndall-Southwell Subgroup correlates, although there is no way to be sure of this. The degree of calcite-sericite alteration is notably more than typical 'background' levels in the regionally altered Mount Read Volcanics, and the pyrite-chalcopyrite development, although still minor, is more than typically seen in Mount Read felsic lavas away from known mineralization.

SAMPLE NUMBER: 482347

SUMMARY:

This is a rhyolitic lava breccia that has been extensively carbonated and contains a significant abundance of disseminated pyrite cubes.

HAND SPECIMEN:

This is a coarse-grained felsic lava breccia with carbonate-altered pale grey formerly glassy lava fragments to at least 3cm across separated by sulphide-rich matrix that sometimes contains an unusual red coloured mineral.

THIN SECTION DESCRIPTION:

In thin section, this rock is seen to be a former quartz-phyric rhyolitic lava breccia that has been very largely replaced by polygonal calcite intergrowths. Former quartz phenocrysts are occasionally preserved, and vary from angular to rounded, and from undeformed to extensively strained and subgrain-recrystallized. More than 80 modal% of the sample, including all the matrix/groundmass has been replaced by a dense carbonate mass composed of small interlocking calcite rhombs. Margins of these carbonate masses are reddish stained siderite (?) or ankerite that constitutes the reddish-purple areas so notable in hand specimen.

About 2-3 modal% of the sample consists of euhedral pyrite cubes to a maximum size of around 1mm. In thin section, these are seen to be fresh and inclusion-free, slightly 'moth-eaten' in places, and scattered through the rock randomly as single and rarely twin cubes. Many show well-developed quartz ribbon pressure fringes. As with the sample described above, it is difficult to argue that the sulphides formed in the same episode as the carbonate alteration, although the pyrite is certainly more abundant in inter-fragment matrix.

SAMPLE NUMBER: 482349

SUMMARY:

This is a quartz+feldspar+biotite+FeTi oxide-phyric rhyolitic lava in which an early generation of euhedral pyrite grains has grown prior to the carbonate alteration that has overprinted parts of this rock.

HAND SPECIMEN:

This is a very fine-grained green felsic lava or tuff containing common quartz phenocrysts and cut by a 7mm wide quartz vein.

THIN SECTION DESCRIPTION:

In thin section, this sample is seen to have been a quartz+feldspar +biotite+FeTi oxide-phyric rhyolitic lava with a fine grained uniform groundmass composed of a quartz-albite mosaic after devitrified glass. It is essentially identical to sample 482318 described above. Quartz phenocrysts are quite rounded, and feldspar phenocrysts are albitized and flecked by sericite. Biotite phenocrysts, which make up around 1 modal% or less of the rock, are replaced by chlorite and sericite that have been replaced, in turn, by calcite. Well-formed zircon microphenocrysts are not uncommon, and perfectly euhedral pyrite cubes are quite abundant scattered through the sample. The pyrite cubes occur in the groundmass, but also within the phenocrysts, and a single large cube occurs in the quartz vein that cuts this rock.

Anastomosing fractures across the rock are filled by pale sericite and calcite. The quartz vein cutting this sample is made up of strained ribbon quartz grains that have been partly overgrown by calcite.

In reflected light, the pyrite is seen to be unaltered and inclusion-free, and to be clearly unrelated to the carbonate alteration that has overprinted the quartz veining. No other sulphides were noted in this sample.

SAMPLE NUMBER: 482350

SUMMARY:

This rock is a porphyritic rhyolite originally similar to the samples described above, but it contains discontinuous bands of pyrite cubes up to 5mm wide, and scattered pyrite cubes throughout the devitrified groundmass of this formerly glassy lava. Chlorite and calcite are very sparse.

HAND SPECIMEN:

This is a massive brown quartz-phyric felsic lava containing quite abundant pyrite cubes up to about 1mm across in diffuse layers and irregular bands traversing the rock.

THIN SECTION DESCRIPTION:

This rock was probably very similar to the previous four samples originally, being a quartz+feldspar+biotite+FeTi oxide-phyric rhyolitic lava. However, although it is not apparently very deformed compared with samples 340 and 336 for example, the rock has been permeated by mineralizing solutions from which have grown abundant quite large euhedral pyrite grains. These form discontinuous bands of discrete crystals and aggregates, and also discrete cubes scattered randomly through the rock. In the bands, pyrite occurs intergrown with minor pale rusty coloured carbonate (siderite?), muscovite or well-crystallized sericite, and fibrous ribbon quartz. The latter also occurs as well-formed pressure fringes on pyrite cubes. The groundmass is variably recrystallized and quite strongly sericitized, and chlorite is rare.

In reflected light, the pyrite is seen to be free of other sulphide inclusions, but contains slight marginal alteration to an Fe-oxide or hyroxide phase.

SAMPLE NUMBER: 482351

SUMMARY:

This rock is a uniform, weakly cleaved rhyolitic vitric tuff containing sparse quartz and feldspar crystal debris in a groundmass of devitrified and recrystallized glassy shards.

HAND SPECIMEN:

This is a pale green, very fine-grained aphyric vitric tuff that shows a weak fracture cleavage.

THIN SECTION DESCRIPTION:

This sample is composed of a very fine-grained quartz-feldspar-sericite intergrowth with the sericite defining a weak cleavage. Dispersed throughout the very fine-grained 'groundmass' is about 3-5 modal% of devitrified, well-formed glass shards, now composed of a very fine-grained mosaic of quartz. A similar modal abundance of small angular crystal fragments, mainly formerly feldspar, are also replaced by quartz-albite mosaics. The sample was clearly a glass-rich rhyolitic vitric tuff containing a small component of crystal debris. Chlorite is a very minor component of this sample.

In reflected light, the sample is seen to contain no sulphides, but tiny trains of secondary Fe oxides follow the cleavage.

SAMPLE NUMBER: 482352

SUMMARY:

This rock is a cleaved rhyolitic crystal vitric tuff.

HAND SPECIMEN:

This is a massive grey fine-grained lithic crystal tuff with a distinct cleavage, traversed by a few calcite veins up to 3mm thick.

THIN SECTION DESCRIPTION:

This rock is composed of around 25 modal% of angular volcanic quartz grains, and minor chloritized biotite and sericitized feldspar phenocrysts in a foliated very fine-grained quartz-sericite-albite groundmass. Besides the obvious quartz grains, other grains in the murky matrix of this rock include sericitized feldspar phenocrysts and devitrified and sericitized formerly glassy lithic fragments. Occasional biotite phenocrysts are replaced by sericite and chlorite. The fine-grained groundmass probably has a large vitric component, but shows a fairly well-developed cleavage defined by concentrations of sericite and pale green chlorite. Relatively large zircon microphenocrysts are scattered sparsely through the rock.

Calcite veins 1 to 2mm wide transect the rock, and are composed of polygonal calcite grains around 0.1mm across.

The angular nature of the quartz grains in this sample, and the devitrified fine-grained quartz-albite-sericite groundmass suggest that this sample was originally a rhyolitic crystal vitric tuff.

APPENDIX VI

013074

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

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FAX: 004 31 8890

ANALYTICAL REPORT No. 23.3.08.06082

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

ORDER No.	PROJECT
6224	

DATE RECEIVED	RESULTS REQUIRED
20/03/89	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
6	06/04/89	1	50

SAMPLE NUMBERS	PRE-TREATMENT: DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	ANALYSIS: REFER TO ANALYSIS SECTION	PREPARATION	METHOD
482300/49	RC	Prep: 009,011,012,013,016						Cu,Pb,Zn,Ag/101,As/114		
482300/49	RC							Ba,Cr,Zr,Ti/401,Au/309		

RESULTS TO

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

RESULTS TO

REMARKS

KING RIVER TUNNEL

STATE OF SAMPLES

core	WC
core	SC
cutting	CU
	Ro
	SO
	PU
	WA
issue	TI
stream sediment	SS
heavy mineral	HM

ANALYSIS — PREPARATION

perchloric acid	A1	cold acid	CA
hydrochloric acid	A2	specific sulphide	SS
nitric acid	A3	other mixed acids	Ma
aqua regia	A4	alkaline attack	AA
nitric-perchloric	A5	volatilization	VO
HF mixture	A6	ignition	IG
HF under pressure	A7	pressed powder (XRF)	PP
fusion	A8	glass fusion (XRF)	GF

ANALYSIS — METHOD

atomic absorption	AAS
x-ray fluorescence	XRF
spectrophotometry	SPEC
colorimetry	COL
chromatography	CHR
titration	TTN
other chemicals means	CHEM
miscellaneous	MISC
fluorescence	FLUOR
inductively coupled plasma	ICP

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.06082	06/04/89	6224	1 OF 6

BE o.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As	Cr	Zr
	482300	5	<5	25	<0.5	<0.008	910	6	7	240
	482301	5	<5	25	<0.5	<0.008	620	7	20	180
	482302	5	<5	30	1.5	<0.008	700	4	9	160
	482303	10	<5	15	<0.5	<0.008	1350	4	6	170
	482304	5	<5	15	<0.5	<0.008	1350	6	25	160
	482305	5	<5	25	0.5	<0.008	730	9	5	180
	482306	5	<5	25	<0.5	<0.008	650	5	20	200
	482307	10	<5	25	<0.5	<0.008	750	6	6	190
	482308	5	<5	20	<0.5	<0.008	740	4	20	160
0	482309	5	<5	25	<0.5	<0.008	650	7	<5	200
1	482310	5	<5	30	<0.5	<0.008	790	3	15	210
2	482311	5	<5	20	<0.5	<0.008	780	2	<5	190
3	482312	5	5	25	<0.5	<0.008	700	2	15	190
	482313	25	745	35	1.5	<0.008	630	9	8	210
5	482314	10	<5	15	0.5	<0.008	980	3	<5	160
6	482315	5	<5	20	<0.5	<0.008	760	8	15	230
7	482316	5	<5	20	<0.5	<0.008	1050	6	25	200
	482317	10	<5	25	<0.5	<0.008	950	10	40	200
	482318	5	<5	55	4.5	<0.008	890	6	25	210
20	482319	25	<5	30	<0.5	<0.008	1150	23	25	190
	482320	10	100	170	0.5	<0.008	870	27	25	250
2	482321	10	<5	30	<0.5	<0.008	1200	22	40	220
	482322	10	<5	40	<0.5	<0.008	1050	10	40	240
	482323	5	<5	75	<0.5	<0.008	1050	17	20	240
25	482324	5	<5	140	<0.5	<0.008	1200	12	25	230

Results in ppm unless otherwise specified
T = element present: but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.06082	06/04/89	6224	2 OF 6

...BE ...	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As	Cr	Zr
1	482325	5	<5	90	<0.5	<0.008	830	20	55	190
2	482326	<5	<5	110	<0.5	<0.008	1200	1	40	200
3	482327	5	<5	105	<0.5	<0.008	810	4	70	240
4	482328	10	<5	105	<0.5	<0.008	1150	3	65	260
5	482329	10	10	65	<0.5	<0.008	840	3	50	210
6	482330	10	<5	80	<0.5	<0.008	570	3	60	210
7	482331	5	<5	55	<0.5	<0.008	500	4	50	240
8	482332	<5	<5	45	<0.5	<0.008	730	2	60	210
9	482333	10	<5	35	<0.5	<0.008	830	1	45	210
10	482334	5	<5	65	<0.5	<0.008	750	2	35	270
11	482335	20	5	95	<0.5	<0.008	460	1	70	200
12	482336	10	5	245	<0.5	<0.008	650	1	90	240
13	482337	30	<5	250	<0.5	<0.008	1400	1	70	220
14	482338	10	<5	135	<0.5	<0.008	1000	2	85	260
15	482339	10	<5	115	<0.5	<0.008	760	1	75	250
16	482340	10	<5	100	<0.5	1.970	930	5	85	240
17	482341	<5	<5	45	<0.5	<0.008	920	<1	70	260
18	482342	<5	<5	55	<0.5	<0.008	880	1	70	260
19	482343	<5	<5	45	<0.5	<0.008	620	3	80	230
20	482344	<5	<5	100	<0.5	<0.008	1300	12	75	2600
21	482345	<5	100	40	<0.5	<0.008	1300	22	95	270
22	482346	25	55	210	<0.5	<0.008	780	44	30	190
23	482347	20	<5	65	<0.5	<0.008	220	6	25	110
24	482348	10	<5	70	<0.5	<0.008	280	2	20	65
25	482349	50	<5	60	<0.5	0.018	1500	7	35	150

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.06082	06/04/89	6224	3 OF 6

JBE o.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As	Cr	Zr
1										
2										
3										
4										
5										
6										
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16										
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18										
19										
20										
21										
22	DETECTION	5	5	5	0.5	0.008	10	1	5	5
23	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
24	METHOD	101	101	101	101	309	401	114	401	401
25										

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.06082	06/04/89	6224	4 OF 6

JBE No.	SAMPLE No	Ti
1	482300	1700
2	482301	1100
3	482302	1050
4	482303	1050
5	482304	1050
6	482305	1100
7	482306	1300
8	482307	1150
9	482308	1100
10	482309	1300
11	482310	1350
12	482311	1300
13	482312	1200
14	482313	1250
15	482314	1100
16	482315	1600
17	482316	1800
18	482317	1700
19	482318	1950
20	482319	1350
21	482320	2250
22	482321	2100
23	482322	2200
24	482323	2350
25	482324	2150

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.06082	06/04/89	6224	5 OF 6

JBE o.	SAMPLE No.	Ti
1	482325	2200
2	482326	2200
3	482327	2700
4	482328	3000
5	482329	2500
6	482330	2550
7	482331	2700
8	482332	2400
9	482333	2400
10	482334	2300
11	482335	2500
12	482336	3100
13	482337	2650
14	482338	2950
15	482339	2850
16	482340	2950
17	482341	2750
18	482342	2900
19	482343	2600
20	482344	3000
21	482345	3000
22	482346	2200
23	482347	1100
24	482348	700
25	482349	1400

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.06082	06/04/89	6224	6 OF 6

UBE o.	SAMPLE No.	Ti								
1										
2										
3										
4										
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6										
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12										
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14										
15										
16										
17										
18										
19										
20										
21										
22	DETECTION	50								
23	UNITS	PPM								
24	METHOD	401								
25										

Results in ppm unless otherwise specified
T = element present: but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

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Telex AA92560

ANALYTICAL REPORT No: 23.3.08.06115

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

ORDER No.	PROJECT
6267	

DATE RECEIVED	RESULTS REQUIRED
07/04/89	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	26/04/89	1	8

REFER BELOW	SAMPLE NUMBERS	PRE-TREATMENT: DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	ANALYSIS: REFER TO ANALYSIS SECTION	PREPARATION	METHOD
	482123/29,482350,482450	RC	Prep: 009,012,013,016						Cu,Pb,Zn,Ag/101,As/114		
	482123/29,482350,482450	RC							Au/309		
	482123/29,482350	RC							Ba,Cr,Zr,Ti/401		

RESULTS TO

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

RESULTS TO

REMARKS

Lynch Fold

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
crushing	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
[illegible]	Re	aqua regia	A4	alkaline attack	AA	colorimetry	COL
[illegible]	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
[illegible]	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.06115	26/04/89	6267	1 OF 2

...SE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	As	Cr	Zr
8	482350	10	60	40	4.5	18.300	1100	920	70	260
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	10	1	5	5
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	101	101	101	101	309	401	114	401	401

Results in ppm unless otherwise specified
T = element present but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

013083

ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.06115	26/04/89	6267	2 OF 2

TUBE No.	SAMPLE No.	Ti									
1											
2											
3											
4											
5											
6											
7											
8	482350	2850									
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23	DETECTION	50	3								
24	UNITS	PPM	PPM								
25	METHOD	401	401								

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

APPENDIX VII

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

Phone (09) 458 7999 — 52 Murray Road, Welshpool, W.A. 6106 — Telex AA92560

FAX: 004 31 8890

ANALYTICAL REPORT No. 23.3.08.08.06816

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

	ORDER No.	PROJECT
R DeBomford Aberfoyle Resources Exploration Division P O Box 952 Burnie Tas 7320	9397	

DATE RECEIVED	RESULTS REQUIRED
30/01/90	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	09/02/90	1	27

STATE OF SAMPLES (REFER BELOW)	SAMPLE NUMBERS	PRE-TREATMENT: DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	ANALYSIS: REFER TO ANALYSIS SECTION	PREPARATION	METHOD
	<4826,51/77	RC Prep: 016							Cu,Pb,Zn,Ag/101		
	<4826,51/77	RC							Au,AuChk/309		
	<4826,51/77	RC							Ba,As/401		

RESULTS TO

R DeBomford
Aberfoyle Resources Exploration Division
P O Box 952
Burnie
Tas 7320

RESULTS TO

REMARKS

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUO
heavy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

013085

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

013086

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.08.06816	09/02/90	9397	1 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	AuChk	Ba	As
1	482651	20	10	70	<0.5	<0.008	<0.008	860	2
2	482652	15	10	65	<0.5	<0.008	–	740	<2
3	482653	20	5	100	<0.5	<0.008	–	840	<2
4	482654	25	90	295	<0.5	<0.008	–	970	8
5	482655	15	20	120	<0.5	<0.008	–	1100	2
6	482656	15	5	55	<0.5	0.057	0.065	1050	8
7	482657	20	20	110	<0.5	<0.008	–	410	2
8	482658	20	25	135	<0.5	<0.008	–	440	<2
9	482659	20	60	90	<0.5	<0.008	–	450	<2
10	482660	20	15	125	<0.5	<0.008	–	570	<2
11	482661	20	20	145	<0.5	<0.008	–	680	<2
12	482662	20	15	190	<0.5	0.017	<0.008	680	<2
13	482663	15	10	280	<0.5	<0.008	–	1100	<2
14	482664	20	15	160	<0.5	<0.008	–	820	<2
15	482665	20	10	240	<0.5	<0.008	–	1400	<2
16	482666	20	20	290	0.5	<0.008	<0.008	1100	<2
17	482667	20	25	95	<0.5	<0.008	–	760	2
18	482668	15	15	125	0.5	<0.008	–	810	<2
19	482669	20	15	80	<0.5	<0.008	–	960	<2
20	482670	15	10	45	<0.5	<0.008	–	1000	<2
21	482671	25	5	25	<0.5	<0.008	–	680	7
22	482672	15	5	40	<0.5	<0.008	–	700	7
23	482673	20	10	45	0.5	<0.008	–	660	7
24	482674	20	10	35	0.5	<0.008	<0.008	730	3
25	482675	20	10	50	<0.5	<0.008	–	910	<2

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

013087

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.08.06816	09/02/90	9397	2 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	AuChk	Ba	As
1	482676	20	10	95	<0.5	0.012	-	1050	3
2	482677	20	5	80	0.5	<0.008	-	810	2
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DETECTION	5	5	5	0.5	0.008	0.008	10	2
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
25	METHOD	101	101	101	101	309	309	401	401

Results in ppm unless otherwise specified
T = element present: but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

APPENDIX VIII

The University of Queensland
DEPARTMENT OF GEOLOGY AND MINERALOGY
St. Lucia, Queensland, Australia, 4067.

Head of Department: Dr. G.R. Orme

Telephone: (07) 377 2375
International: 61 7 377 2375
Telex: UNIVQLD A40315
Facsimile: (07) 870 4993

SDG:YMH

February 28, 1990

Mr D.J. Noonan,
Geologist,
Aberfoyle Resources Limited,
P.O. Box 952,
BURNIE TAS 7320

Dear Danny,

Sulphur Isotope Analyses

Sample	Mineral	$\delta^{34}S^{o}/oo$ CDT
482349	pyrite	11.4, 11.5

1. Sulphides were combusted at 900°C with Cu_2O to extract SO_2
2. Isotopic analyses were performed with an MM602E mass spectrometer.
3. NBS 122 (0.5°/oo CDT) and NBS 123 (17.0°/oo CDT) were used to establish a calibration curve.

As per our previous letter, the fine-grained pyrites from Lynchford were prepared by digestion in cold acids before sulphur isotope analysis. If you plan to submit further disseminated pyrite samples for analysis, we would appreciate your prior advice in order to schedule the acid dissolution and subsequent analysis more efficiently. For your information, a current price list is enclosed.

Yours sincerely,

Sue Golding

Dr Sue Golding
Senior Research Officer
for Dr Stephen Dobos
Director, Isotope Geochemistry Laboratories

Enc

LYN GENL RAL
013090

The University of Queensland
DEPARTMENT OF GEOLOGY AND MINERALOGY
St. Lucia, Queensland, Australia, 4067.

Telephone: (07) 377 2375
International: 61 7 377 2375
Telex: UNIVQLD A40315
Facsimile: (07) 870 4993

Head of Department: Dr. G.R. Orme

SDG:YH
June 30 1989

Mr D.J. Noonan
Geologist
Aberfoyle Resources Limited
Exploration Division
PO Box 952
BURNIE TAS 7320

Dear Danny

Sulphur Isotope Analyses

Sample	Minerals	$\delta^{34}S$ °/oo CDT
482350	pyrite	6.9

1. Sulphides were combusted at 900°C with Cu_2O to extract SO_2.
2. Sulphates were thermally decomposed at 900°C in the presence of $BaSO_4$ and V_2O_5 to extract SO_2.
3. Isotopic analyses were performed with an MM602E mass spectrometer.
4. CSIRO Ag_2S (2) (0.2 °/oo CDT) and NBS 123 (17.2 °/oo CDT) were used to establish a calibration curve.

As discussed in our phone call, the remaining fine-grained pyrites from Lynchford will be prepared by digestion in cold acids and analysed for $\delta^{34}S$ at the earliest opportunity. I will be happy to comment critically on your interpretation of these analyses.

Yours sincerely,

Sue Golding

Dr Sue Golding
Senior Research Officer
for Dr Stephen Dobos
Director, Isotope Geochemistry Laboratories

ATTACHMENT

Sample No:	Co-ordinate	Depth	Location	Sample	Sample Description
482349	379451 5331726	~100m	King River Power Tunnel		Rhyolitic lava with disseminated pyrite and sericite-carbonate overprint.
482350	378894 5331782	~100m	King River Power Tunnel		Rhyolitic lava with abundant pyrite and mild sericite-carbonate overprint.

Aberfoyle Resources Limited

EXPLORATION DIVISION
ACN 004 664 108

EXPLORATION LICENCE 47/83, LYNCHFORD

TASMANIA

REPORT ON EXPLORATION FOR

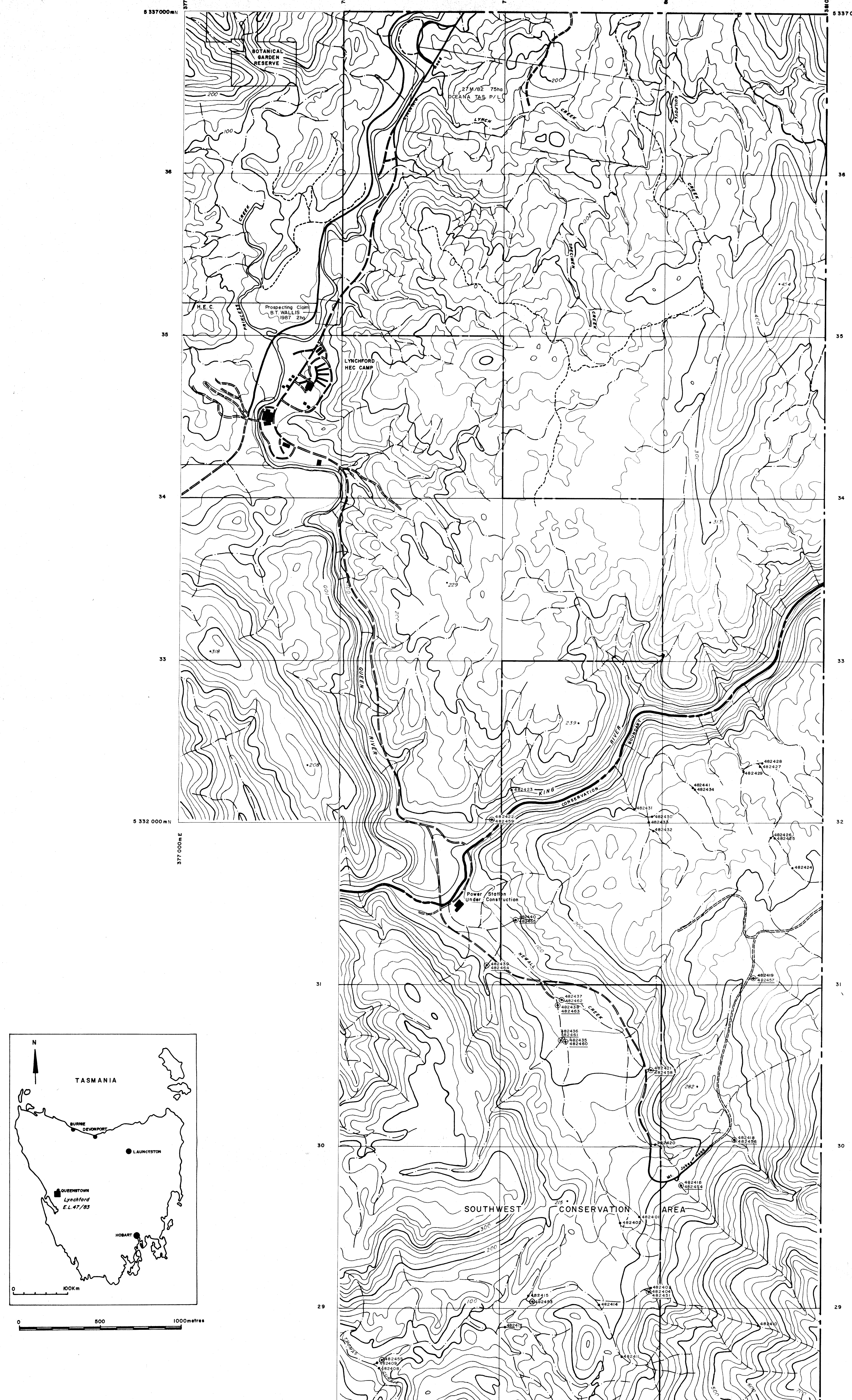
AREA TO BE RELINQUISHED MAY 1993

Volume 2 of 2

Plates

Distribution

Aberfoyle - Hawthorn	(1/4)
Aberfoyle - Burnie	(2/4)
CRAE	(3/4)
Department of Mines	**(4/4)**



013093

5 cm

93-3438.

● −80# Sample

◉ −80# B.C.L. Sample (B.C.L. Sample No. Underlined.)

Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date
DJNjms	13·2·90		

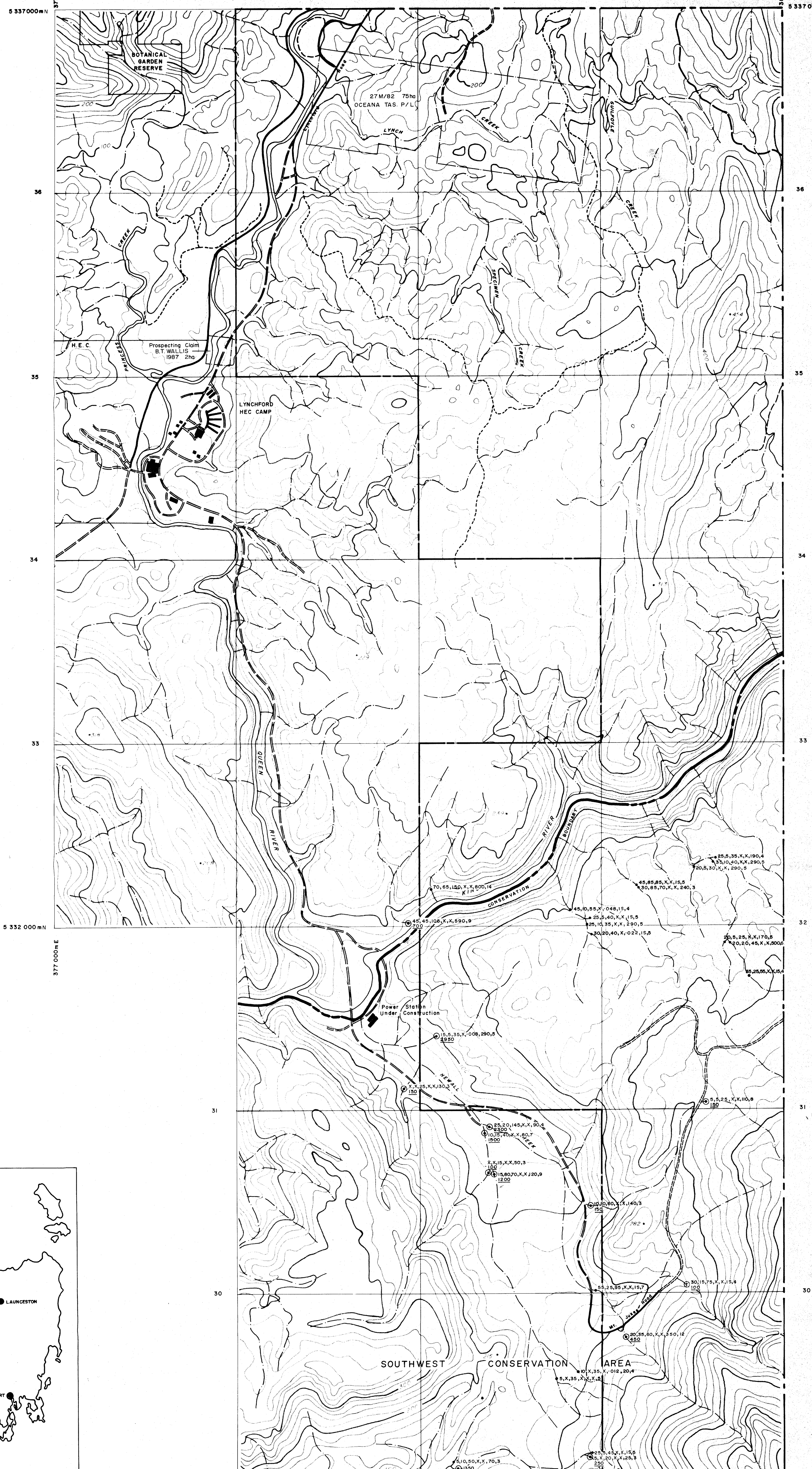
NORTH WEST TASMANIA

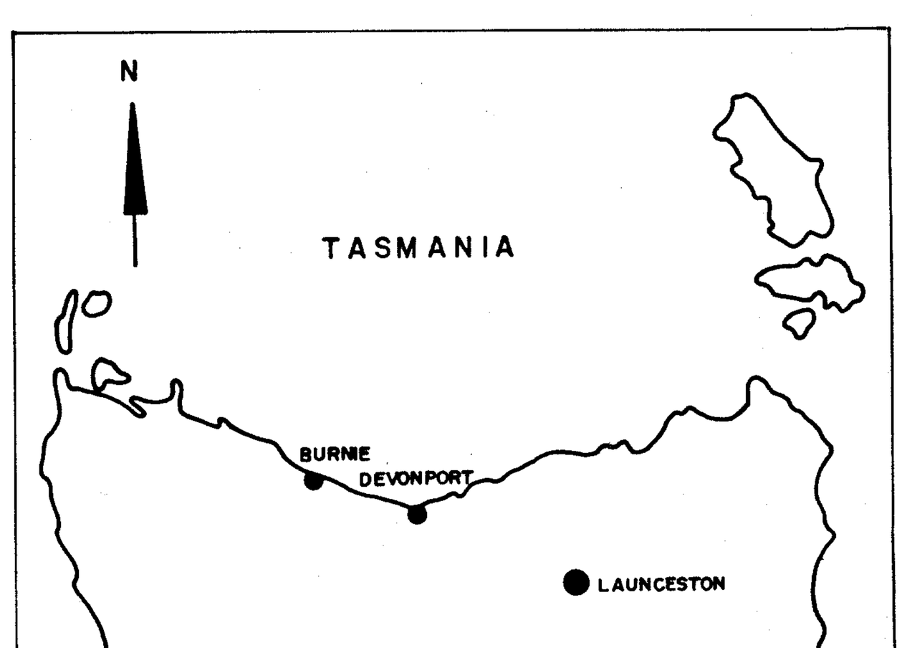
LYNCHFORD E.L. 47/83-CRA J.V.

STREAM SEDIMENT SAMPLE LOCATIONS

Compiled : DJN
Drawn :
Traced : JLR
Checked :

Location Code :
Scale : 1:10,000
Date : May, 1989
Plate No : LYN 15





0 500 1000metres

013094

5 cm

93-3438.

IS Insufficient Sample
● Cu, Pb, Zn, Ag, Au, Ba, As
⊙ BCL Au ppt (Underlined)

Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date
DJNjms	13-2-90		

NORTH WEST TASMANIA
LYNCHFORD E.L. 47/83-CRA J.V.
STREAM SEDIMENT ASSAY RESULTS

Compiled : DJN
Drawn :
Traced : JLR
Checked :

Location Code :
Scale : 1:10,000
Date May, 1989
Plate No: LYN 16

013095

93-3438.

Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date
DJN rje	8·10·90		

NORTH WEST TASMANIA
LYNCHFORD E.L.47/83
KING RIVER POWER SCHEME - Development Tunnel
ROCK CHIP SAMPLE LOCATIONS

Compiled : DJN
Drawn : JLR
Traced :
Checked :

Location Code
Scale : 1 : 2000
Date : May, 1989
Plate No : LYN 17A


380400 E
380800 E
381200 E
381600 E
5332000 N
5331600 N
5331200 N
380400 E
380800 E
381200 E
381600 E
E.L.47/83
564271
5350
564274
5300 564277
564280
5250
564283
564286
5200
564289
5150 564292
564295
5100
564298
482686
5050
482683
5000 482680
564897
4950
564894
564891
4900
564888
4850 564885
564882
4800
564879
564876
4750
564873
4700 564870
564867
4650
564864
564861
4600
564858
4550 564855
4500
4450
4400
4350
4300
4250
4200
4150
4100
4050
4000
3950
3900
3850
3800
3750
013096
5 cm
93-3438.
Aberfoyle Resources Limited
EXPLORATION DIVISION
REVISIONS
Init. Date Init. Date
NORTH WEST TASMANIA
LYNCHFORD E.L.47/83
KING RIVER POWER SCHEME - Development Tunnel
ROCK CHIP SAMPLE LOCATIONS
Compiled : DJN
Drawn : RJE
Traced : RJE
Checked :
Location Code :
Scale : 1 2000
Date : October, 1990
Plate No : LYN 17B

378 800 E

379 200 E

379 600 E

380 000 E

5332000N

5331600N

5331200N

E.L.47/83

10,5,245,X,X,650,1,90,240,3100

X,X,45,X,X,620,X,70,260,2750

X,X,55,X,X,680,1,70,260,2900

X,X,45,X,X,620,3,80,230,2600

10,60,40,4,5,18,3,1100,920,70,260,2850

X,X,45,X,X,700,2,75,2600,3500

X,100,40,X,X,1300,22,95,270,3000

10,X,100,X,1970,930,5,85,240,2950

10,X,115,X,X,760,1,75,250,2850

10,X,135,X,X,1000,2,85,260,2950

10,X,250,X,X,1400,1,70,220,2650

X,X,45,X,X,730,2,60,210,2400

276° 34' = 6

10,X,80,X,X,870,5,60,210,2550

10,X,105,X,X,1150,3,65,260,3000

10,10,65,X,X,840,3,90,210,2500

10,X,110,X,X,1200,1,40,200,2200

5,X,105,X,X,810,4,70,240,2700

5,X,90,X,X,830,20,55,190,2200

5,X,55,4,5,X,1890,6,25,210,1950

10,X,125,X,X,990,10,40,200,1700

5,X,120,X,X,1050,6,25,200,1800

20,X,65,X,X,220,6,25,110,400

5,X,20,X,X,760,8,15,230,600

10,X,15,5,X,980,3,X,160,1100

5,X,25,X,X,910,6,7,240,1700

5,X,25,X,X,620,7,20,180,1100

5,X,30,15,X,700,4,9,160,1050

10,X,15,X,X,1350,4,6,170,1050

15,X,15,X,X,1350,6,25,160,1050

15,X,25,5,X,730,9,5,180,1100

15,X,25,X,X,650,5,20,200,1300

PORTAL ' TUNNEL

10,X,25,X,X,750,6,6,190,1150

5,X,20,X,X,740,4,20,160,1100

5,X,25,X,X,650,7,X,200,1300

5,X,30,X,X,790,3,15,210,1350

5,X,20,X,X,780,2,X,190,1300

5,5,25,X,X,700,2,15,190,1200

013097

5 cm

x Cu, Pb, Zn, Ag, Au, Ba, As, Cr, Zr, Ti

93-3438

Aberfoyle Resources Limited

EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date

Location Code :

NORTH WEST TASMANIA

LYNCHFORD E.L.47/83

KING RIVER POWER SCHEME - Development Tunnel

ROCK CHIP SAMPLE RESULTS

Scale : 1:2000

Date : May, 1989

Compiled : DJN

Drawn : JLR

Traced :

Checked :

Plate No : LYN 18

377 000mE 78 79 80 381 000mE

5 337 000mN

BOTANICAL GARDEN RESERVE

27M/82 75ha
OCEANA TAS. P/L

LYNCH CREEK

SULPHYDE CREEK

482141 482138 482140

482142

SPECIMEN CREEK

PRINCESS CREEK

H.E.C.

Prospecting Claim
B.T. WALLIS
1987 2ha

G 482042 G 482041 G 482094 G 482107
G 482018 G 482050 P 482009

LYNCHFORD
HEC CAMP

36 35 34 33 32 31 30 29

QUEEN RIVER

KING RIVER

BOULDER CONSERVATION

482129 482128 482127 482126

482124 482123 482143, 482044, 564587

5 332 000mN

377 000mE

Power Station Under Construction

NEWALL CREEK

482125 564856 564857 564853 564855 564854 888026

MT. JUKES ROAD

SOUTHWEST CONSERVATION AREA

482120 482121

THOMAS GURBIE RIVULET

5 328 000mN

378 000mE 79 80 81

N

TASMANIA

BURNIE DEVONPORT LAUNCESTON QUEENSTOWN HOBART

Lynchford
E.L.47/83

0 100Km

0 500 1000metres

013098

+ ROCK CHIP SAMPLE LOCATION

93-3438

5cm

Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date
DJN/jms	9-2-90		
DJN/jms	13-2-90		
DJN/rje	1-10-90		
DJN/rje	3-12-90		
Location Code :			

NORTH WEST TASMANIA

LYNCHFORD E.L. 47/83-CRA J.V.

ROCK CHIP SAMPLE LOCATIONS

Scale : 1:10,000 Date : May, 1989

Compiled : DJN
Drawn :
Traced : JLR
Checked :
Plate-No : LYN20

377000mE 78 79 80 381000mE

5 337000mE — 5 337000mN

BOTANICAL GARDEN RESERVE

27M/82 75ha
OCEANA TAS. P/L

200

35,20,145,0·5,X,250,X,290,120,3900,25,2·74%,6·32%,0·62%,2·60%

25,25,170,X,X,670,X,440,50,3850,20,2·8%,8·32%,3·78%,1·83%

15,25,50,X,X,600,2,15,320,1800,25,4·55%,0·46%,0·06%,2·37%

LYNCH ROAD

LYNCH CREEK

SULPHIDE CREEK

SPECIMEN CREEK

PRINCESS CREEK

H.E.C.

Prospecting Claim
B.T. WALLIS
1987 2ha

LYNCHFORD HEC CAMP

36 — 35 — 34 — 33 — 32 — 31 — 30 — 29

QUEEN RIVER

KING CONSERVATION BOUNDARY RIVER

10,X,105,·5,X,980,2,25,210,3900

10,450,490,4,X,210,800,80,120,610

X,X,60,1,X,1150,7,X,280,1900

X,20,10,780,2,X,1200,33,6,130,3150,—,—,28543,8872

5,30,70,1,·01,530,3,10,250,1650

5,X,20,·5,X,940,3,8,280,1450

Power Station
Under Construction

NEWALL CREEK

X,X,15,15,·5,X,900,10,25,240,1250

Mt. JUKES Road

SOUTHWEST CONSERVATION AREA

X,X,25,X,X,280,2,X,240,1200

THOMAS

GURNEY RIVER

X,X,X,25,X,X,580,1,X,270,1400

5 332 000mE — 5 328 000mE

377 000mE — 378 000mE — 79 — 80 — 81

N

TASMANIA

BURNIE
DEVONPORT
LAUNCESTON
QUEENSTOWN
Lynchford
E.L.47/83
HOBART

0 100Km

0 500 1000metres

013099

5cm

93-3438.

x Cu, Pb, Zn, Ag, Au, Ba, As, Cr, Zr, Ti, K_2O, MgO, CaO, Na_2O

Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date

Location Code :

NORTH WEST TASMANIA

LYNCHFORD E.L. 47/83-CRA J.V.

ROCK CHIP SAMPLE RESULTS

Scale : 1:10,000 — Date May, 1989

Compiled : DJN
Drawn :
Traced : JLR
Checked :
Plate No : LYN21

377 000mE 378 000mE 379 000mE 380 000mE 381 000mE

5 337 000mN

36 35 34 33 32 31 30 29

5 332 000mN 5 328 000mN

Aberfoyle Resources Limited
EXPLORATION DIVISION

NORTH WEST TASMANIA

LYNCHFORD E.L. 47/83 - CRA J.V.

OUTCROP GEOLOGY

REVISIONS			
Init.	Date	Init.	Date
DJNjms	23-1-90		
DJNjms	13-2-90		
DJNrje	2-5-90		
DJNrje	5-7-90		
JMS	19-4-93		

Location Code :

Scale : 1:10,000

Date May, 1989

Compiled : DJN

Drawn :

Traced : JLR

Checked :

Plate No : LYN 23

013100

93-3438

5 cm

N

TASMANIA

BURNIE

DEVONPORT

LAUNCESTON

QUEENSTOWN

Lynchford E.L.47/83

HOBART

0 100Km

0 500 1000metres

GN MN

12·2°

QUATERNARY	Qa	Recent alluvial Deposits	
	Qc	Colluvial Scree	
	Qg	Glacial till and outwash gravels	
DEVONIAN	Dss	Fine grained quartz rich sandstone and minor interbedded siltstone and mudstone.	
SILURIAN	Smst	Mudstone, siltstone and minor sandstone	36
	Sss	White quartz rich chromite bearing sandstone	
ORDOVICIAN	Olst	Impure limestone and micritic limestone (Gordon Limestone)	
	Oss	Grey quartz sandstone minor conglomerate and chromite layers (Pioneer Beds)	26
	Ocg	Undifferentiated Conglomerate and sandstones (Owen Conglomerate)	15
CAMBRIAN	€tfl	Felsic lapilli volcaniclastic	Tyndall Group 35
	€tm	Sandstone and Mudstone	
	€tl	Quartz, lithic fragment rich lapilli volcaniclastic	
	€lbv	Breccia volcaniclastic (Quartz, Hematite rich)	Que-Hellyer Equivalents ?
	€lyb	Polymict Basaltic lapilli volcaniclastic	
	€lab / €ldl	Andesitic - Basaltic lavas & lava breccias and minor dacitic lava indicated.	
	€cvl / €cva	Dominantly Dacitic lapilli volcaniclastic & Dacitic lavas with minor felsic porphyries and odd Andesitic lava (€cva) indicated.	61 / 41
	€cvs	Black mudstone, siltstone and micaceous sandstone	69 Central Volcanic Complex 34
	€crl	Quartz feldspar phyric rhyolitic lava	23
	€cvp	Intrusive and extrusive quartz feldspar porphyry.	20
	€wql	Quartz rich lapilli volcaniclastic	
	€wm / €wlv	Dominantly black shale, siltstone, sandstone & lapilli volcaniclastics with some units dominantly lapilli volcaniclastic (€wlv) indicated.	Western Sequence
	€mrs	Quartz rich sandstone (Miners Ridge Sandstone)	
	€mrb	Tholeiitic Basalt (Miners Ridge Basalt)	33

5 337 000mN — 377 000mE — 380 000mE — 5 337 000mN

5 332 000mN — 377 000mE

5 328 000mN — 378 000mE — 380 000mE — 5 328 000mN

34 — 33 — 32 — 31 — 30 — 29

Qg · Olst · €wql · €wm · €wlv · €lab · €cvp · Dss · Oss · Smst · Sss · €mrs · Qc · €cvl · €cvs · €crl · Ocg

Power Station Under Construction

QUEENSTOWN
Lynchford E.L 47/83
BURNIE
DEVONPORT
LAUNCESTON
HOBART
TASMANIA
N
0 100K m

0 500 1000 metres

GN MN 12·2°

SOUTHWEST CONSERVATION AREA

KING RIVER BOUNDARY · CONSERVATION · HAMILL CREEK · JUKES ROAD · THOMAS · CURRIE

013101
93-3438.

5 cm

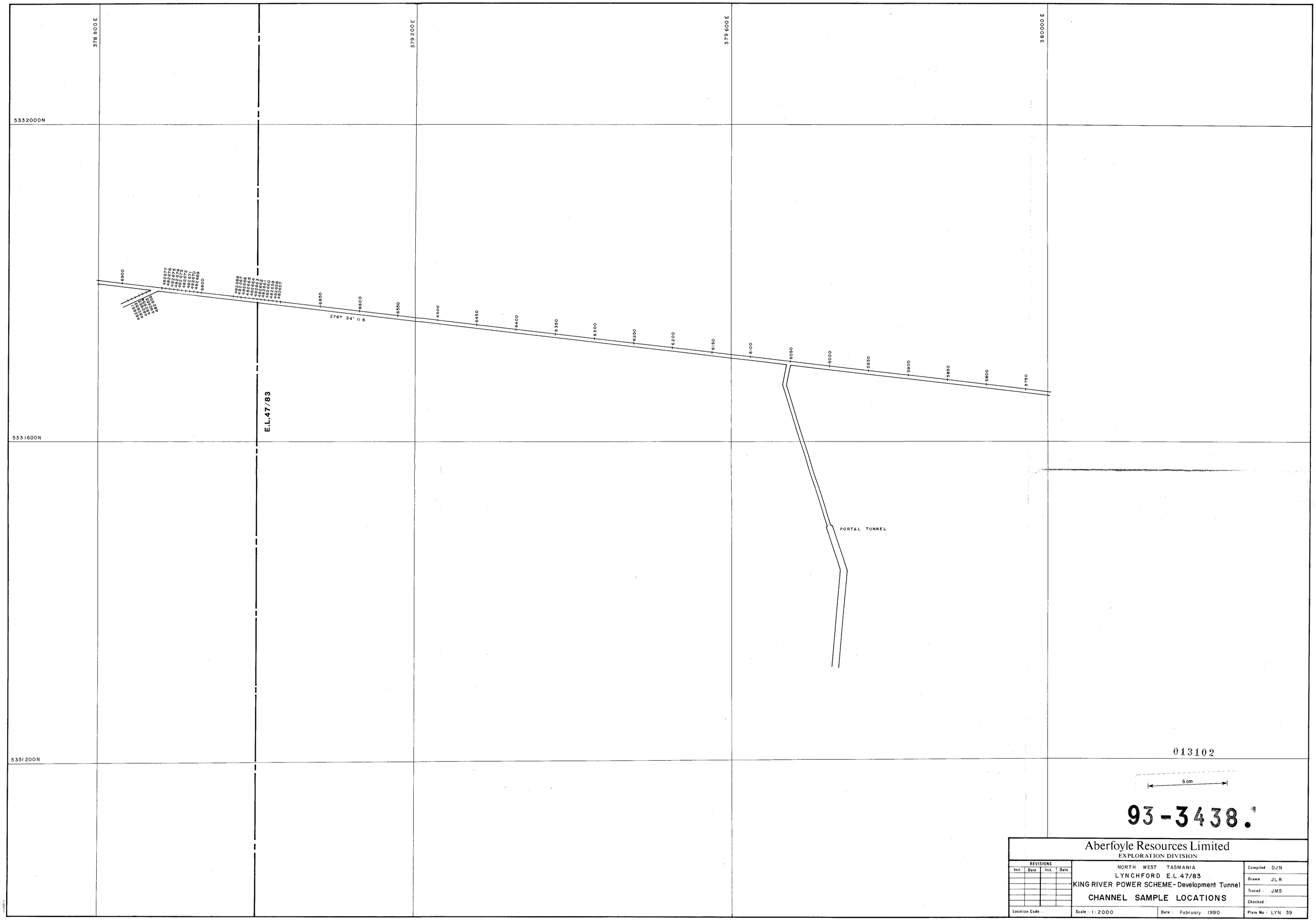
Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date
DJN jms	23-1-90		
DJN jms	13-2-90		
DJN rje	9-5-90		
DJN rje	9-7-90		
DJN geo	14-1-91		
JMS	19-4-93		
Location Code :			

NORTH WEST TASMANIA
LYNCHFORD E.L. 47/83-CRA J.V.
INTERPRETIVE GEOLOGY

Scale : 1:10,000 | Date : February 1990

Compiled : DJN
Drawn : JMS
Traced : JL R
Checked :
Plate No : LYN 38



013102

5 cm

93-3438.

Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date

NORTH WEST TASMANIA
LYNCHFORD E.L.47/83
KING RIVER POWER SCHEME - Development Tunnel
CHANNEL SAMPLE LOCATIONS

Location Code :
Scale : 1:2000
Date : February 1990

Compiled : DJN
Drawn : JLR
Traced : JMS
Checked :
Plate No : LYN 39

93-3438.

013104

\+ Cu, Pb, Zn, Ag, Au, Ba, As

5 cm

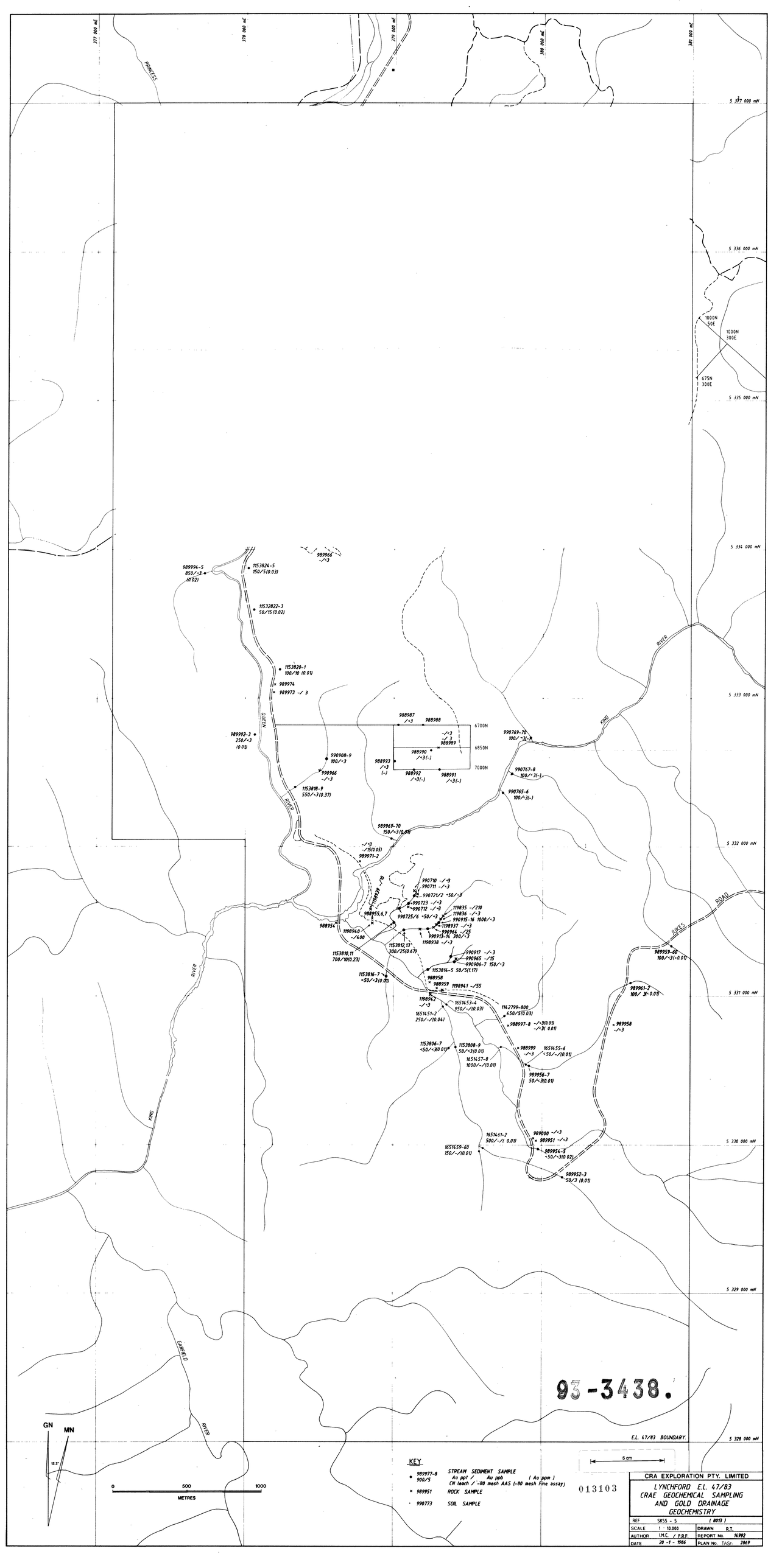
Aberfoyle Resources Limited
EXPLORATION DIVISION

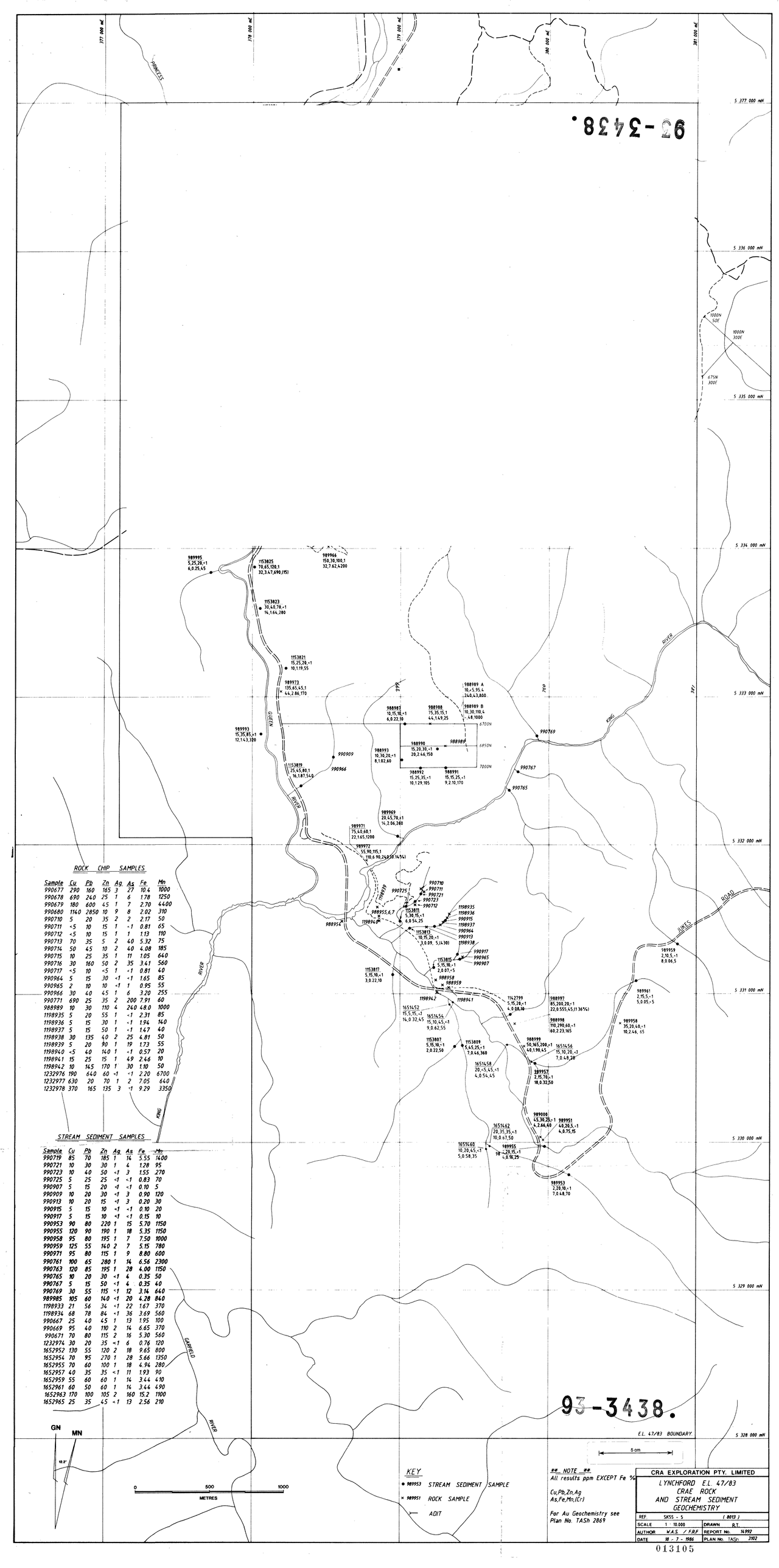
REVISIONS			
Init.	Date	Init.	Date
Location Code			

NORTH WEST TASMANIA
LYNCHFORD E.L.47/83
KING RIVER POWER SCHEME - Development Tunnel
CHANNEL SAMPLE RESULTS

Scale : 1:2000 | Date : FEBRUARY 1990

Compiled DJN
Drawn JLR
Traced J.M.S
Checked
Plate No LYN 41


377 000 mE
378 000 mE
379 000 mE
380 000 mE
381 000 mE
5 337 000 mN
5 336 000 mN
5 335 000 mN
5 334 000 mN
5 333 000 mN
5 332 000 mN
5 331 000 mN
5 330 000 mN
5 329 000 mN
5 328 000 mN
PRINCESS
KING
RIVER
GARFIELD
JUKES
ROAD
1000N 50E
1000N 300E
675N 300E
6700N
6850N
7000N
989994-5 850/<3 (0.02)
1153824-5 150/5(0.03)
1153822-3 50/15(0.02)
1153820-1 100/10 (0.01)
989974
989973 -/ 3
989966 -/<3
989992-3 250/<3 10 01
990908-9 100/<3
990966 -/<3
1153818-9 550/<3(0.37)
988987 /<3
988988
988989
988990 /<3(-)
988993 /<3 (-)
988992 /<3(-)
988991 /<3(-)
990769-70 100/<3(-)
990767-8 100/<3(-)
990765-6 100/<3(-)
989969-70 150/<3(0.01)
989971-2
990710 -/<3
990711 -/<3
990721/2 <50/<3
990722 -/<3
990712 -/<3
990725/6 <50/<3
988955,6,7
988954
1198940 -/400
1153812,13 300/2510.67)
1153810,11 700/1010.23)
1153816-7 <50/<3(0.01)
1198939 -/10
1198935 -/210
1198936 -/<3
990915-16 1000/<3
1198937 -/<3
990964 -/25
990915-16 300/<3
1198938 -/<3
990917 -/<3
990965 -/15
990906-7 150/<3
1153814-5 50/5(1.17)
988958
988959
1198941 -/55
1198942 -/<3
1651453-4 950/-/(0.03)
1651451-2 250/-/(0.04)
1142799-800 450/5(0.03)
988997-8 -/<3(0.01) -/<3(0.01)
1153806-7 <50/<3(0.01)
1153808-9 50/<3(0.01)
1651457-8 1000/-/(0.01)
988999 -/<3
1651455-6 <50/-/(0.01)
989956-7 50/<3(0.01)
989958 -/<3
989959-60 100/<3(<0.01)
989961-2 100/ 3(<0.01)
989000 -/<3
989951 -/<3
989954-5 <50/<3(0.02)
989952-3 50/3 (0.01)
1651461-2 500/-/(0.01)
1651459-60 150/-/(0.01)
E.L. 47/83 BOUNDARY
93-3438.
KEY
989977-8 900/5 STREAM SEDIMENT SAMPLE Au ppt / Au ppb (Au ppm) CN leach / -80 mesh AAS (-80 mesh fine assay)
989951 ROCK SAMPLE
990773 SOIL SAMPLE
GN MN
12.2°
0 500 1000
METRES
6 cm
013103
CRA EXPLORATION PTY. LIMITED
LYNCHFORD E.L. 47/83
CRAE GEOCHEMICAL SAMPLING AND GOLD DRAINAGE GEOCHEMISTRY
REF SK55 - 5 (8013)
SCALE 1 : 10,000 DRAWN R.T.
AUTHOR I.M.C. / P.R.F. REPORT No. 14992
DATE 20 - 1 - 1986 PLAN No. TASP 2869



ROCK CHIP SAMPLES

Sample	Cu	Pb	Zn	Ag	As	Fe	Mn
990677	290	160	165	3	27	10.4	1000
990678	690	240	25	1	6	1.78	1250
990679	180	600	<5	1	7	2.70	4400
990680	1140	2850	10	9	8	2.02	310
990710	5	20	35	2	2	2.17	50
990711	<5	10	15	1	<1	0.81	65
990712	<5	10	15	1	1	1.13	110
990713	70	35	5	2	40	5.32	75
990714	50	45	10	2	40	4.08	185
990715	10	25	35	1	11	1.05	640
990716	30	160	50	2	35	3.61	560
990717	<5	10	<5	1	<1	0.81	40
990964	5	15	30	<1	<1	1.65	85
990965	2	10	10	<1	1	0.95	55
990966	30	40	45	1	6	3.20	255
990771	690	25	35	2	200	7.91	60
989989	10	30	110	4	240	4.80	1000
1198935	5	20	55	1	<1	2.31	85
1198936	5	15	30	1	<1	1.94	140
1198937	5	15	50	1	<1	1.47	40
1198938	30	135	40	2	25	4.81	50
1198939	5	20	90	1	19	1.73	55
1198940	<5	40	140	1	<1	0.57	20
1198941	15	25	15	1	49	2.46	10
1198942	10	145	170	1	30	1.10	50
1232976	190	640	60	<1	<1	2.20	6700
1232977	630	20	70	1	2	7.05	640
1232978	370	165	135	3	<1	9.29	3350

STREAM SEDIMENT SAMPLES

Sample	Cu	Pb	Zn	Ag	As	Fe	Mn
990719	85	70	185	1	14	5.55	1400
990721	10	30	30	1	4	1.28	95
990723	10	40	50	<1	3	1.55	270
990725	5	25	25	<1	<1	0.83	70
990907	5	15	20	<1	<1	0.10	5
990909	10	20	30	<1	3	0.90	120
990913	10	20	15	<1	2	0.20	30
990915	5	15	10	<1	<1	0.10	20
990917	5	15	10	<1	<1	0.15	10
990953	90	80	220	1	15	5.70	1150
990955	120	90	190	1	18	5.35	1150
990958	95	80	195	1	7	7.50	1000
990959	125	55	140	2	7	5.15	780
990971	95	80	115	1	9	8.80	600
990761	100	65	280	1	14	6.56	2300
990763	120	85	195	1	28	4.00	1150
990765	10	20	30	<1	4	0.35	50
990767	5	15	50	<1	4	0.35	40
990769	30	55	115	<1	12	3.14	640
989985	105	60	140	<1	20	4.28	840
1198933	21	56	34	<1	22	1.67	370
1198934	68	78	84	<1	36	3.69	560
990667	25	40	45	1	13	1.95	100
990669	95	40	110	2	14	6.65	370
990671	70	80	115	2	16	5.30	560
1232974	30	20	35	<1	6	0.76	120
1652952	130	55	120	2	18	9.65	800
1652954	70	95	270	1	28	5.66	1350
1652955	70	60	100	1	18	4.94	280
1652957	40	35	35	<1	11	1.93	90
1652959	55	60	60	1	14	3.44	410
1652961	60	50	60	1	14	3.44	490
1652963	170	100	105	2	160	15.2	1100
1652965	25	35	45	<1	13	2.56	210

GN MN 10.2°

0 500 1000 METRES

KEY

- ● 989953 STREAM SEDIMENT SAMPLE
- × 989951 ROCK SAMPLE
- ADIT

** NOTE **
All results ppm EXCEPT Fe %

Cu,Pb,Zn,Ag
As,Fe,Mn,(Cr)

For Au Geochemistry see Plan No. TASh 2869

CRA EXPLORATION PTY. LIMITED

LYNCHFORD E.L. 47/83
CRAE ROCK
AND STREAM SEDIMENT
GEOCHEMISTRY

REF.	SK55 - 5	(8013)	
SCALE	1 : 10,000	DRAWN	R.T.
AUTHOR	W.A.S. / F.R.F.	REPORT No.	14992
DATE	18 - 7 - 1986	PLAN No. TASh	3102

013105

5 332 000mN

KING RIVER

710 6900m 6850m 6800m 701 702 703 704 6750m 705 6700m 706 707 6650m 708 709 6600m 6550m 6500m 6450m 6400m 6350m 6300m 6250m

access tunnel

Bearing 276° 34' 11.6"

93-3438.

93-3438.

013106

5 cm

5 331 600mN

379 400mE

379 000mE

** NOTE **

At the time of sampling the power tunnel had been driven to 6600m.

All results in ppm except Fe in %.

Sample No.	Cu	Pb	Zn	Ag	As	Fe%	Bi	Mn	Mo	Au
1198701	15	10	150	1	10	4.05	<5	450	<2	0.02
1198702	60	20	240	1	10	7.05	<5	1350	<2	0.01
1198703	35	25	310	2	16	5.27	<5	6000	<2	0.02
1198704	20	15	70	2	9	5.26	<5	1500	<2	0.01
1198705	5	35	65	1	7	1.98	<5	830	<2	0.02
1198706	65	15	55	3	14	4.30	<5	4150	<2	0.01
1198707	30	105	65	2	8	2.16	<5	340	<2	0.02
1198708	15	15	20	2	12	3.02	<5	670	<2	0.01
1198709	10	20	20	1	9	2.76	<5	500	<2	0.01
1198710	10	60	<2	3	16	29.7	<5	320	<2	0.01

CRA EXPLORATION PTY. LIMITED

LYNCHFORD E.L. 47/83
KING RIVER POWER TUNNEL
OUTCROP SAMPLE LOCATIONS
AND RESULTS

REF.	SKSS - 5	(7913 - 8013)	
SCALE	1 : 2000	DRAWN	R.T.
AUTHOR	F.R.F.	REPORT No.	14992
DATE	13 - 11 - 1987	PLAN No. TASh	3573