

GEOPEKO

A DIVISION OF PEKO EXPLORATION

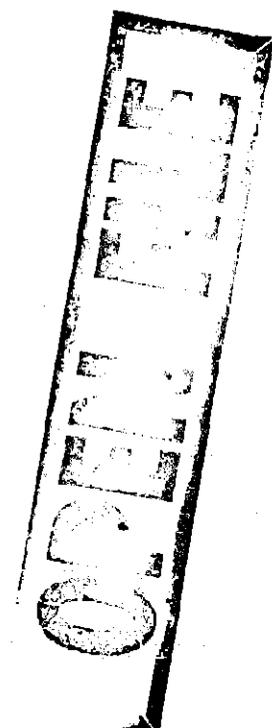
EL 46/89 JULIUS RIVER

REPORT ON

EXPLORATION ACTIVITY

JANUARY 1990 TO NOVEMBER 1990

(RELINQUISHMENT REPORT)

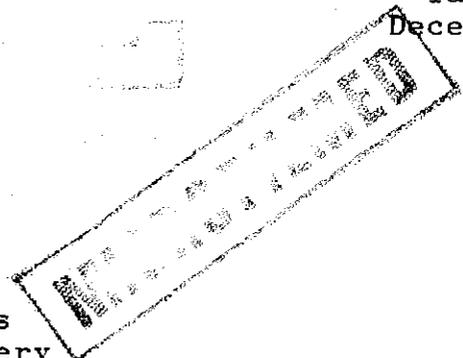


91-3211 VOL 1/2

MINES
EL 46/89
LETTER
8-1-91
REFERS

Katrina Virgoe
Ian Mathison
December, 1990

T249

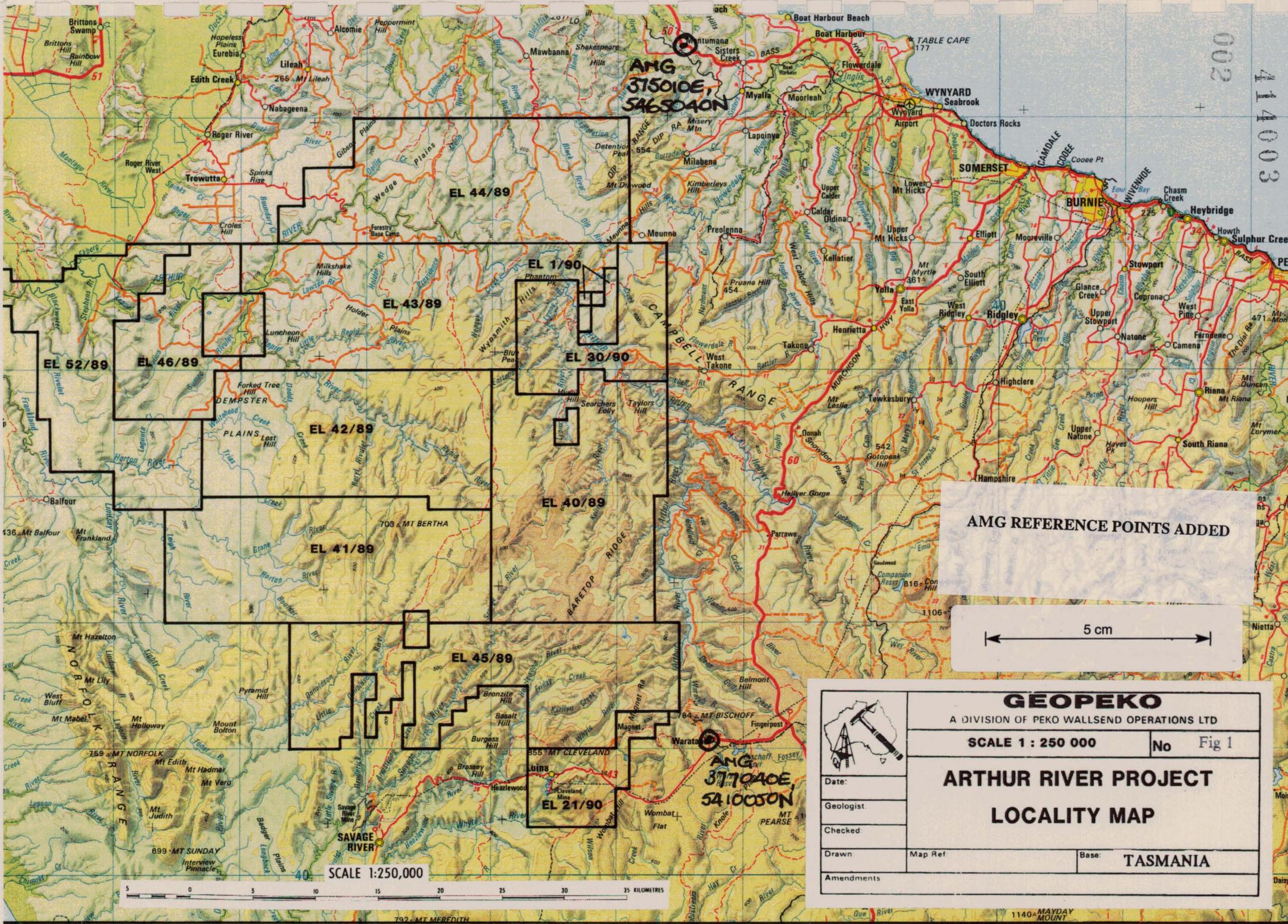


Distribution: Geopeko, Parkes
Geopeko, Rosebery
DMMR, Hobart

AMG REFERENCE POINTS ADDED

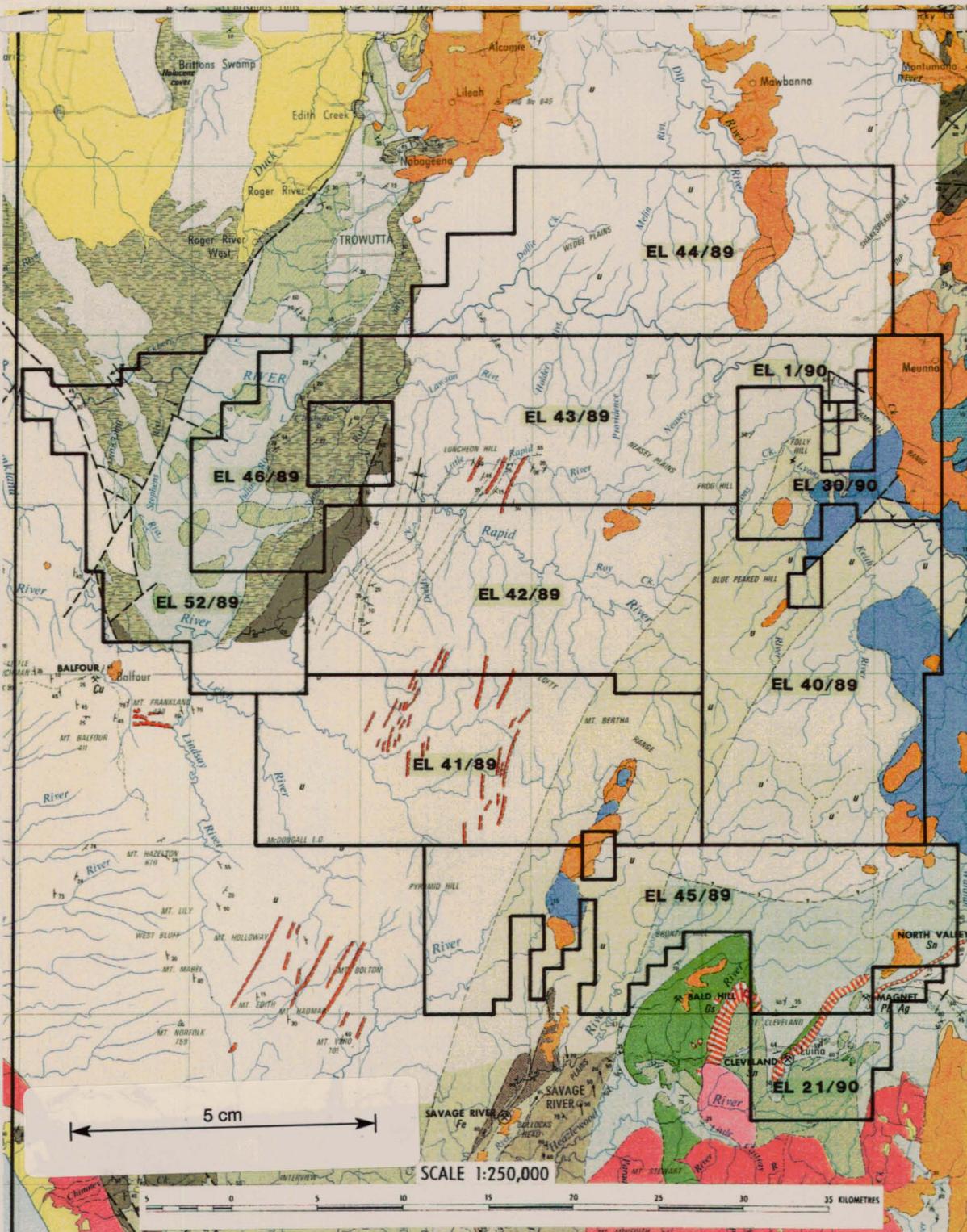
TABLE OF CONTENTS

	<u>Page No.</u>
1.0 Introduction	1
1.1 Location & Access	1
1.2 Tenure & Land Usage	1
1.3 Regional Geology	1
1.4 Known Mineral Deposits/Occurrences	2
1.5 Previous Exploration	2
1.6 Exploration Philosophy	2
1.7 Target Models	3
2.0 Exploration Activity	3
2.1 Aims	3
2.2 Geochemistry	4
2.3 Geology	5
2.4 Geophysical Review	6
3.0 Conclusions	6
4.0 Recommendations	7
5.0 Environmental Disturbance And Rehabilitation	7
References	8
Figure 1 / Location and Access	
Figure 2 / Regional Geology	
Figure 3 / Known Mineral Deposits/Occurrences	
Figure 4 / Aeromagnetic Interpretation	
Figure 5 / Gravity Interpretation	
Table 1 / Stratigraphic Correlation	
Table 2 / Known Mineral Deposits/Occurrences	
Appendix 1 / EL Schedule	
Appendix 2 / Review of Previous Exploration	
Appendix 3 / Geophysical Review	
Appendix 4 - 1990 Summer water Sampling Data Sample Descriptions units & Results - See Vol 2.	
Plate 1a / Geological Mapping	
Plate 1b / Geological Mapping	
Plate 2a / Gold in Water (Au, C, Au:C)	
Plate 2b / Gold in Water (Au, C, Au:C)	
Plate 3a / Base Metals in Water (Cu, Pb, Zn, As)	
Plate 3b / Base Metals in Water (Cu, Pb, Zn, As)	



			GEOPEKO	
			A DIVISION OF PEKO WALLSEND OPERATIONS LTD	
SCALE 1 : 250 000		No		Fig 1
ARTHUR RIVER PROJECT				
LOCALITY MAP				
Date:	Map Ref:		Base: TASMANIA	
Geologist:	Amendments:			
Checked:				
Drawn:				

003
414004



HOLOCENE		Alluvium, sand, gravel and talus.
PLEISTOCENE		Till, fluvioglacial, periglacial and associated deposits. Erosional surface.
TERTIARY		Non-marine sequences (light); marine limestone (dark); basalt and related igneous rock types (orange).
TRIASSIC		Low angle unconformity.
PERMIAN		Fluvio-lacustrine sequences of sandstone, siltstone, mudstone (light) with carbonaceous sequences indicated (dark). Fresh water sequence with some coal measures.
UPPER CARBONIFEROUS		Upper glacio-marine sequence of pebbly mudstone, pebbly sandstone and limestone. Fresh water sequence with some coal measures. Lower glacio-marine sequence of pebbly mudstone, pebbly sandstone, minor limestone, Tasmanite oil shale and basal tillite.
CAMBRIAN		Middle-Upper Cambrian fossiliferous usually greywacke turbidite sequences (horizontally lined overprint); acid with intermediate volcanic and associated rocks dominant (dark); and horizon with fossiliferous Upper Cambrian shallow water deposits (vertically lined overprint); basic-intermediate volcanic and associated rocks dominant (diagonally lined overprint); probably Cambrian unfossiliferous usually greywacke turbidite sequences (light); probably Cambrian unfossiliferous orthoquartzite sequence (dotted).
PRECAMBRIAN		Usually unconformity attributed to Penguin Orogeny but apparent conformity at Smithton and Pieman River.
PRECAMBRIAN		Comparatively unmetamorphosed sequences. Mudstone-sandstone sequences ('u') - dominantly mudstone (light); dominantly orthoquartzite (dark); quartzwacke turbidite successions (small dot over-print); conglomerate (large dot over-print); dolomite (horizontally lined over-print); basalt lava (vertically lined over-print).
PRECAMBRIAN		Metamorphic rocks. Pelitic sequences (dark); metaquartzite sequences (light) with some platy quartzite units indicated (vertically lined over-print); amphibolite (diagonally lined over-print). Garnet bearing rocks are indicated (g).
IGNEOUS ROCKS		
CAMBRIAN		Dominantly adamellite-granite.
LOWER CARBONIFEROUS - UPPER DEVONIAN		Coarser grained basic rocks.
PRECAMBRIAN		Serpentinite, peridotite and associated rocks.
PRECAMBRIAN		Dolerite.

GEOPEKO	
A DIVISION OF PEKO WALLSEND OPERATIONS LTD	
SCALE 1 : 250 000	No Fig 2
ARTHUR RIVER PROJECT	
REGIONAL GEOLOGY	
Date:	
Geologist:	
Checked:	
Drawn:	Map Ref
Amendments:	Base TASMANIA

1.0 INTRODUCTION

1.1 Location and Access (Fig. 1)

EL 46/89 Julius River is located in NW Tasmania approximately 25 km to the south of the coastal town of Smithton.

Access within most of this EL is very good and is provided by a network of unsealed logging tracks. Secondary access is provided by 4WD and walking tracks.

A relatively inaccessible area exists in the SW corner and along the western edge of the EL. This area is from 3-5 km away from a formed road and access requires the cutting of walking tracks.

1.2 Tenure and Land Usage

EL 46/89 of 94 km² was granted to Peko Exploration Ltd in January 1990. The EL schedule is detailed in Appendix 1.

The EL consists predominantly of State Forest with approximately 3 km² of Private Property and 11 km² of Uncommitted Crown Land. The EL encloses the Lake Chisholm and Julius River Forest Reserves and includes part of the "Sumac Rivulet" Australian Heritage Commission Act, Registered Entry.

Large tracts of wet eucalypt forest within the State Forest have been intensively logged over the past 10 years. These areas now either lie devoid of vegetation or support thick regrowth.

Vegetation over the rest of the EL is predominantly moderately open wet eucalypt forest.

1.3 Regional Geology

Geopeko's block of Arthur River ELs lie within the Rocky Cape Region of NW Tasmania. The oldest rocks in the area are those of the Precambrian Arthur Lineament. The Arthur Lineament is a north-east trending metamorphic belt consisting of highly deformed sediments, basic volcanics and dolomite. To the west of this belt lies the Rocky Cape Group, a thick shallow marine shelf sequence and to the east lies the Oonah Formation, a deeper water turbidite sandstone sequence. The Rocky Cape Group contains Precambrian dolerite/gabbro dykes which have been emplaced into north-north west trending faults.

The north western area is underlain by the Eo-Cambrian to Cambrian Smithton Trough which lies with a faulted or unconformable contact on the Rocky Cape Group. The Smithton Trough sequence consists of the basal Forest Conglomerate and Black River Dolomite (Success Creek Group correlate), volcanoclastic sediments and basalt (Crimson Creek Formation correlate), the Smithton Dolomite and fossiliferous sediments

STRATIGRAPHIC CORRELATION ADOPTED FOR THIS REPORT

	ROCKY CAPE BLOCK	LYONS RIVER (Arthur Lineament)	CLEVELAND - NARAYAN	CORINNA	ZEELAND (Ord - Dev sedgs omitted)
TEITIARY	Tb - Tertiary Basalt Tc - Tertiary gravel	Tb - Tertiary Basalt Tc - Tertiary gravel	Tb - Tertiary Basalt Tc - Tertiary gravel	Tb - Tertiary Basalt Tc - Tertiary gravels	Tb - Tertiary Basalt Tc - Tertiary gravels
PERMO-CARB		P - Permian Supergroup Fluviatile sandstone, coal measures, glaciomarine & glacial deposits			
DEVONIAN			Intrusion of Cleveland Granite	Intrusion of Pisman Granite	Intrusion of Renison Hill & Heasvikirk Granite
CAMBRIAN	Cs - Unnamed Quartzwacke, siltstone, mudstone, conglomerate				Dundas Group
			Intrusion/emplacement of Ultramafic Bodies		Intrusion/emplacement of Ultramafic bodies
EO-CAMBRIAN	Ed - Smithton Dolomite Em - Smithton Basalt Mafic volcanoclastics and tholeiitic basalts Eb - Black River Dolomite Dolomite, silicified dolomite, chert Ef - Forest Conglomerate and Quartzite		Ew - Unnamed mafic volcs, volcanoclastics and turbidites with some carbonates	?? Ecd - Corinna Dolomite Ebv - Barnafai Volcanics	Crimson Creek Formation Success Creek Group
PRE-CAMBRIAN	Prj - Jacobs Quartzite Quartzarenite Pri - Irby Siltstone Black mudstone, minor siltstone, sandstone, & dolomite Prd - Detention Quartzite Quartzarenite & siltstone Prc - Cowrie Siltstone Laminated siltstone, pyritic mudstone	??? Prn - Neasy Formation Quartzite+siltstone, minor dolomite and basic volcs	Pb - Burnie Formation Interbedded quartzose quartzwacke & siltstone with minor mafic volcs	Pd - Donaldson Formation Quartzose turbidites Pi - Interview Slate and Quartzite	Oonah Formation Interbedded quartzwacke and siltstone with some carbonates & mafic volcs
		Pa - Keith Metamorphics Pelitic & quartzose schist -some calcic & mafic schist (magnesite & amphibolite)		Timms Group Pelitic & quartzose schist -some calcic & mafic schist (magnesite & amphibolite) - magnetite	

(Dundas Group correlate). The south eastern corner of the area is underlain by rocks of the Cleveland-Waratah Association that lie within the Dundas Trough. These rocks have been correlated with the Crimson Creek Formation and consist of basaltic, andesitic and tholeiitic lavas and volcanoclastic sediments.

The Precambrian-Cambrian rocks along the eastern edge of the area are in places overlain by Permian fluvio-glacial sediments and/or Tertiary basalt.

1.4 Known Mineral Deposits/Occurrences

There are a number of metallic mineral occurrences adjacent to the western, eastern and southern EL boundaries of Geopeko's Arthur River Project. (Green et al 1988).

These are listed in Table (2) and Figure (3) shows their locations.

The deposits range from small, relatively insignificant workings, e.g. Victory Mine, Atlas Leases to large world class ore bodies e.g. Mt Bischoff, Savage River. In most cases, extensions of the prospective host formations can be continued into Geopeko's Arthur River EL's.

1.5 Previous Exploration

The northwest of Tasmania has seen regional company exploration activity since the mid 1960's. Techniques applied include stream sampling, gridding, soil and rock chip sampling, geological mapping, photogeology, diamond drilling and geophysical surveys. Generally this work has been concentrated in areas within a few kilometres walking distance of vehicular access. As much of the central northwest is remote and inaccessible, this has resulted in many areas having not yet seen intensive modern exploration. (See Appendix 2 for review of previous exploration)

1.6 Exploration Philosophy

Geopeko considers this portion of Tasmania to have been inadequately explored for base metals and gold mineralization. Since the early prospecting stage, systematic exploration by several companies has relied on airborne geophysics (Aeromagnetics and INPUT) and conventional stream sediment geochemistry with limited ground follow up. These techniques will give readily detectable responses from, "ideal" orebodies under "ideal" conditions. However, the combination of rugged topography and intense leaching of soil profiles; the superimposed effects of Tertiary weathering and surficial deposits; the complications of pyritic black shales and manganese deposits; and the contamination of several river systems by tailings and slimes from old mining operations would have masked many good responses and obscured any subtle responses.

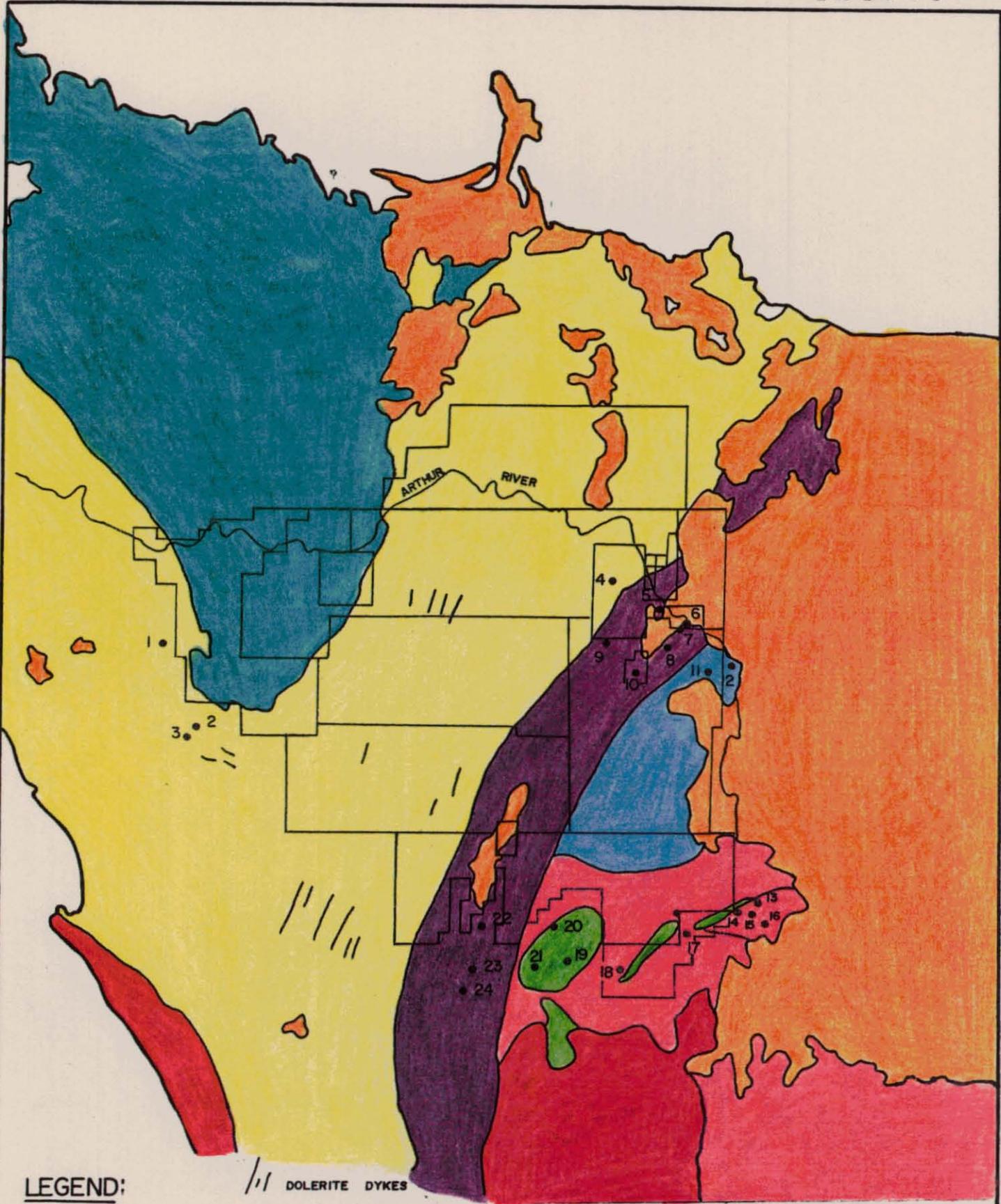
TABLE (2) METALLIC MINERAL OCCURRENCES/DEPOSITS

Map No.	Name	Commodity	Geology & Mineral Style	
1	The Clump	Cu	Rocky Cape Group	V
2	Murrays Reward	Cu	Rocky Cape Group	V
3	Specimen Hill	Sn Cu	Rocky Cape Group	V
4	Folly Hill	Au	Rocky Cape Group	A
5	Campbell Hydraulic	Au	Arthur Lineament	A
6	Victory	Cu	Arthur Lineament	V
7	Arthur River	Magnesite	Arthur Lineament	S
8	Keith River Gossan	Magnesite Py (Cu)	Arthur Lineament	MS
9	Pike's	Au	Arthur Lineament	A
10	Lyons River	Magnesite	Arthur Lineament	S
11	Atlas Leases	Ag Pb	Arthur Lineament	V?
12	Kay's	Au	Arthur Lineament	A
13	North Valley	Sn	Oonah Formation	A
14	Silver Cliffs	Pb Ag	Oonah Formation	V
15	Mt Bischoff	Sn	Oonah Formation	SCR
16	Fooks Load	Sn Pb Zn Ag Sb	Oonah Formation	V
17	Magnet	Pb Ag Zn	Crimson Ck Equiv.	V
18	Cleveland	Sn (Cu W Bi Mo)	Crimson Ck Equiv.	SCR
19	Lord Brassey	Ni	Cambrian Ultramafic	M
20	Bald Hill	Os Ir Au	Cambrian Ultramafic	A
21	Caudry's	Os Ir	Cambrian Ultramafic	?
22	Specimen Reef	Au	Arthur Lineament	V
23	Savage River Nth	Magnetite (Py)	Arthur Lineament	MS
24	Savage River Cent.	Magnetite (Py)	Arthur Lineament	MS

Mineralization Styles

A - Alluvial Deposit
V - Vein Deposit
M - Magmatic Deposit

S - Stratiform
MS - Massive Stratiform
SCR - Stratiform Carbonate Replacement



LEGEND:

- HOLOCENE - CARBONIFEROUS COVER
- DEVONIAN GRANITE
- SMITHTON BASIN
- ROCKY CAPE GROUP
- BASIC INTRUSIVES
- OONAH FORMATION
- DUNDAS TROUGH SEDIMENTS
- ARTHUR LINEAMENT

DOLERITE DYKES

	GEOPEKO	
	A DIVISION OF PEKO WALLSEND OPERATIONS LTD	
Date SEPT. 1990.	Scale 1:500,000	No Fig. 3
Geologist: K.J.V.	MINERAL OCCURRENCES.	
Checked:	(See Table 2 also)	
Drawn:	Map Ref TAS. DEPT. MINES.	Base PARKES NSW
Amendments:		

Geopeko consider that the geochemical prospecting method developed by Dr. Baker of the Tasmanian Mines Department whereby the humate content of stream water is analysed for its content of leached metals provides a rapid and inexpensive method of screening large areas of ground.

Selected areas with a combination of suitable geological environment and geochemical characteristics could subsequently be further explored using expensive and slow techniques such as detailed geological mapping, grid based geochemistry and modern geophysical techniques.

As the proposed technique is both rapid and relatively cheap, it should be possible to define prospective areas at an early stage. Consequently Geopeko anticipate that it will be possible to relinquish a large proportion of the area following the first year of tenure.

1.7 Target Models

Geopeko consider the Precambrian rocks of NW Tasmania to be prospective for stratiform Pb, Zn, Ag deposits of the Mt Isa-McArthur River type and for stratiform Cu-Zn (Au) deposits of the Besshi Type. The mineralization at the Atlas Leases can be assigned to the first group while the Keith River Gossan can be compared to the Besshi Type.

Several occurrences of alluvial gold along the Arthur River highlight the potential of the area for gold only mineralization. Applicable models for gold mineralization include shear related gold deposits and volcanogenic gold deposits associated with basic volcanics.

The Cambrian and Eo-Cambrian rocks of the Smithton Trough have a potential for carbonate hosted zinc-lead-silver deposits, for carbonate hosted disseminated gold deposits and for shear related gold deposits. While no mineral occurrences are known from the Smithton Trough, anomalous base metal and gold geochemistry has been reported by previous explorers.

2.0 EXPLORATION ACTIVITY

2.1 Aims

Exploration during 1990 was aimed at delineating through grass root techniques, prospective and geochemically anomalous areas within the EL. Areas worthy of further investigation would be followed up with more detailed exploration in the 1991 field season.

Work included huminex water sampling, rock chip sampling, geological mapping, regional geochemical compilation and a geophysical review.

2.2 Geochemistry

Work Completed

Thirty eight (38) two litre huminex water samples were collected at a sample density of 2-3 km². Good access within most of the EL allowed sampling of the entire exploration area except for 3 creeks in the south-west corner.

At each sample location water colour, water level, rate of flow, vegetation type and rock float were recorded for statistical purposes. The sample location was marked with an aluminium tag, a sample tag and orange flagging tape.

Any mineralized, altered or interesting rock outcrop or float encountered during creek and road traverses was sampled for assay or hand specimen purposes. None of these rock samples has been assayed.

Regional stream sediment data obtained by previous exploration companies in the area were compiled. This allowed delineation of anomalous areas recognized by traditional stream sampling methods as well as providing a comparison for the Huminex technique.

Stream Sediment Compilation

A compilation of stream sediment base metal data within EL 46/89 by previous companies in the area has been undertaken.

At least sixty five samples were collected by CRAE in EL 1/77 and one sample by ANZECCO in EL 6/72.

All samples were sieved to -80# and base metals were analysed by AAS techniques.

Overall the base metal values tended to be low though CRAE's sampling programme highlighted three main areas. One area lies to the north-east of the Julius River Forest Reserve with values of 54 ppm Cu, 360 ppm Pb and 2650 ppm Zn (sample 934092) and 19 ppm Cu, 195 ppm Pb and 230 ppm Zn (sample 934573). Another area lies near the start of the Sumac Rivulet with values of 53 ppm Cu, 10 ppm Pb and 219 ppm Zn (sample 934943) and 65 ppm Cu, 14 ppm Pb and 270 ppm Zn (sample 934585). The third area lies to the north of the Arthur River and received six values in the range 68-99 ppm Cu, 17-61 ppm Pb and 200-450 ppm Zn (samples 1055161, 162, 163, 167, 168, 169)

The one ANZECCO sample, NRK/69 received values of 30 ppm Cu, 30 ppm Pb and 340 ppm Zn.

Gold in Water

Statistical analysis of 325 water samples taken regionally by Geopeko in the 1989-90 field season indicates that Au values >30 ng/l and Au:C >4 are possibly anomalous and that Au values >50 ng/l and Au:C >8 are probably anomalous. Any higher values are definitely anomalous. (Mathison, 1990)

Overall the gold results from this EL were very low, with only one anomalous sample received out of the 38 taken.

This sample 20610 (16.9 ng/l Au, ratio 9.94) was taken on a tributary of Keppel Creek and drains turbidite greywackes of the Smithton Trough.

The Smithton Trough sequence contains two dolomite horizons and it is possible that the huminex method is not as effective over these areas. This may explain the very low gold assays received in this EL.

The other 37 samples taken had gold ranges from 0.0-16.5 ng/l and Au:C ratios of 0.0-2.87.

Base Metals in Water

Statistical analysis of the 325 water samples taken regionally by Geopeko in the 1989-90 field season indicates that samples with values of Cu >3.8 µg/l, Pb >7 µg/l and Zn > 27 µg/l are possibly anomalous and samples with Pb >13 µg/l, Cu >7 µg/l and Zn >47 µg/l are probably anomalous. (Mathison, 1990)

Overall the base metal assay results were low with 3 samples out of the 38 taken reporting anomalous results, ie sample 20098 (4.9 µg/l Cu, 7.50 µg/l Pb), sample 20137 (10.0 µg/l Pb) and sample 20143 (9.4 µg/l Cu). All three samples drain dolomitic horizons within the Smithton Trough sequence.

2.3 Geology

EL 46/89 is underlain by rocks of the Eo-Cambrian to Cambrian Smithton Basin. The basin stratigraphy is as follows:

Fossiliferous Dundas Group Correlate	----- conformable?
Smithton Dolomite	----- unknown
Volcaniclastic lithic wacke, basalt and mudstone	----- conformable
Black River Dolomite & Forest Conglomerate & Quartzite	----- unconformity
Precambrian Rocky Cape Group (Cowrie Siltstone)	

Limited field mapping indicates that rocks from lower in the stratigraphy outcrop in the EL area. The rock types observed include siliceous dolomite "chert" and mafic volcaniclastics and basalt.

No significant mineralization or alteration was encountered during the sampling programme.

2.4 Geophysical Review

A geophysical review of the Rocky Cape Block using regional gravity and magnetic data was undertaken by D.E. Leaman. This work is detailed in a separate report. (Leaman, 1990) Discussions specific to this EL are appended as Appendix 3 and summarized in figures 4 and 5.

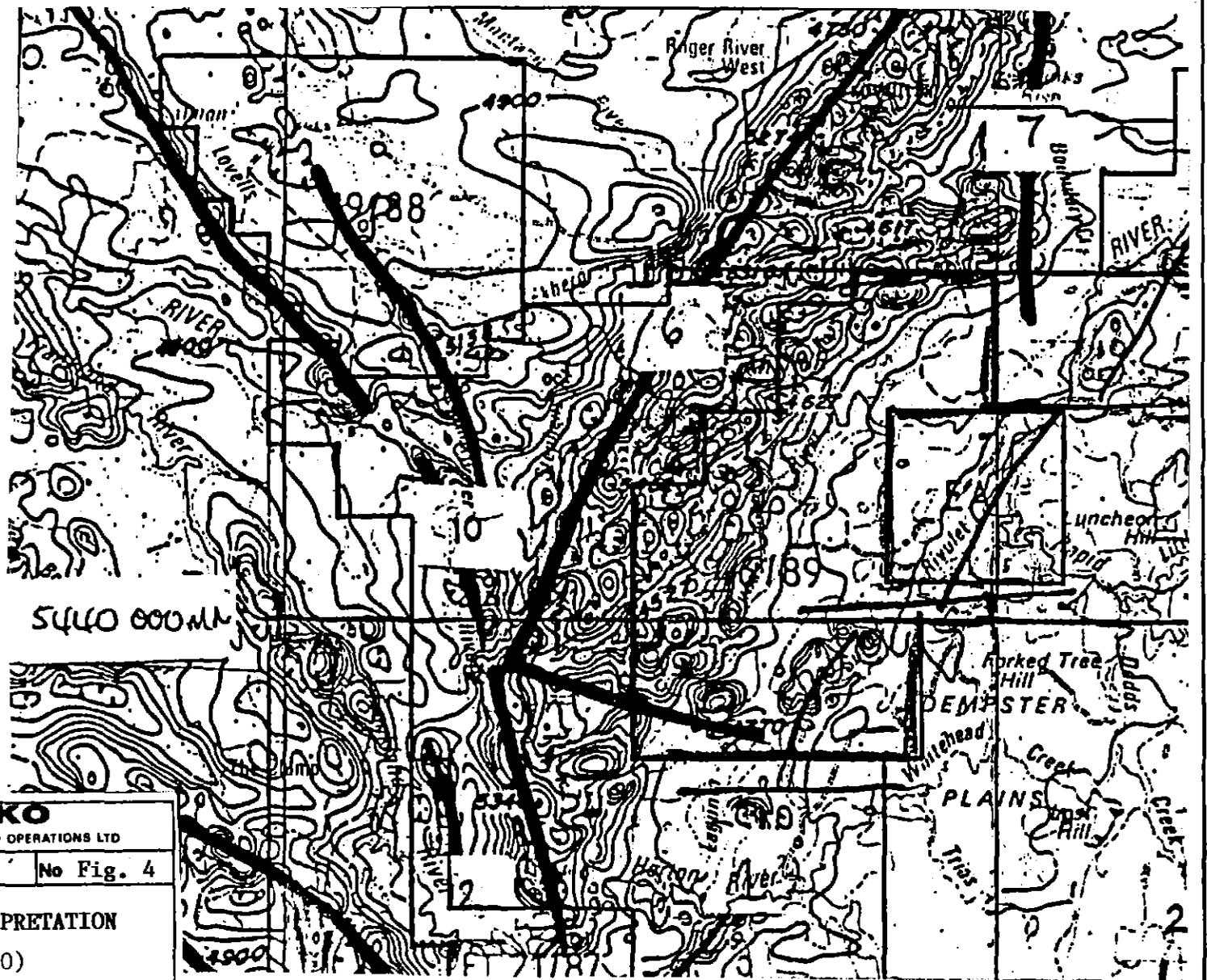
Magnetic data indicates that two major anomalous structures exist in EL 46/89. Feature 1 is a north-east trending regional structure which shows an increased amplitude as it passes through this EL. Leaman suggests that this may reflect shallowness of source or an alteration effect.

The other feature trends north-westerly and marks an abrupt change in volcanic character which may indicate either an area of faulting or mass alteration.

Any trace geochemistry associated with these structures should be followed up with more detailed work.

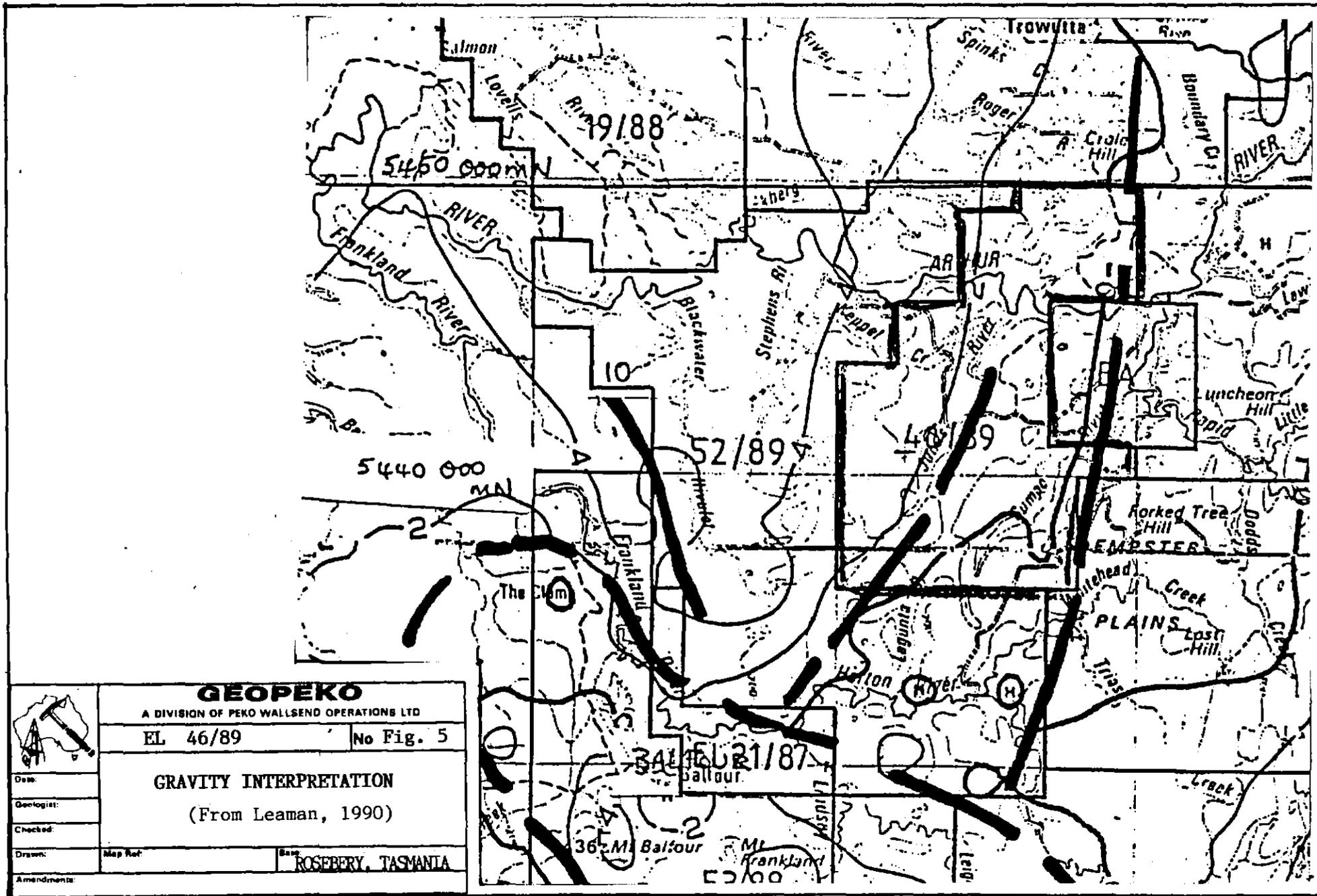
3.0 CONCLUSIONS

- * EL 46/89 has been adequately covered by the regional 1989-90 water sampling programme, except for a remote 10 km² area in the south-west corner.
- * The water sample gold results have highlighted one anomalous area, ie, the drainage area of a tributary of Keppel Creek.
- * The very low gold results received in this EL may indicate that the huminex method is not as effective in sequences containing dolomite.
- * The water sample base metal results were very low.
- * The compilation of base metal stream sediment data indicates that CRA in EL 1/77 delineated three anomalous areas. This anomalism was not supported by Geopeko's water sampling results.
- * No mineralization was encountered or anomalous rocks sampled.
- * Two major anomalous magnetic structures pass through EL 46/89. (Leaman, 1990). No anomalous geochemistry appears to be associated with these structures.



	GEOPEKO	
	A DIVISION OF PEKO WALLSEND OPERATIONS LTD	
Date:	EL 46/89	No Fig. 4
Geologist:	AEROMAGNETIC INTERPRETATION	
Checked:	(From Leaman, 1990)	
Drawn:	Map Act:	Base: ROSEBERY, TASMANIA
Amendments:		

414014



GEOPEKO
A DIVISION OF PEKO WALLSEND OPERATIONS LTD

EL 46/89 No Fig. 5

GRAVITY INTERPRETATION
(From Leaman, 1990)

Date:
Geologist:
Checked:
Drawn:
Amendments:

Map Ref: Base: ROSEBERY, TASMANIA

022

414015

NB: In early December, after the bulk of this report was completed, it became obvious that the DMMR laboratory was having severe problems with the determination of gold in water. Some unknown element or compound was being concentrated by the activated charcoal extraction technique and was reporting on the gold channel. Repeat analyses using alternative techniques indicated that many, but not all, gold results were spurious. Re-analysis of water samples to identify genuinely anomalous samples is currently in progress.

4.0 RECOMMENDATIONS

The subdued topography of the Smithton dolomite indicates that water sampling may not be as effective in this area. Work to date has not defined any target zones for further exploration. EL 46/89 should be relinquished.

5.0 ENVIRONMENTAL DISTURBANCE AND REHABILITATION

Exploration conducted by Geopeko during 1990 has caused no environmental disturbance. Semi permanent samples markers left at sample sites are considered to be valuable reference points for future exploration. No rehabilitation has been necessary.

REFERENCES

- BROWN, A.V. (1989), "Geological Survey Explanatory Report, 1:50 000 series Sheet 21 - Smithton". Tas. DMMR.
- BURRETT, C.F., Martin E.L. (1989) "Geology & Mineral Resources of Tasmania" Geological Society of Australia 15 (Burrett et al 1989)
- GREEN, G.R., BOTTRILL, R.S., BACON, C.A., TURNER, N.J. (1988) - Mineral Deposits and Metallogenic Map of Tasmania 1:50 000, Tas. DMMR.
- LEAMAN, D.E., (1990) - Geophysical - Structural Review - Rocky Cape Block NW Tasmania. Unpublished report for Geopeko.
- MATHISON, I.J. (1990) - Arthur River Project - 1990 Summer Field Season Water Sampling.

APPENDIX 1
EL SCHEDULE

TASMANIA

No. EL 46/89

(Regulation 6A)

The Mining Act 1929

EXPLORATION LICENCE

Issued to PEKO EXPLORATION LIMITED of P.O. BOX, ROSEBERY, TASMANIA, 7470 in respect of 94 square kilometres of land in the Land Districts of WELLINGTON AND RUSSELL vicinity of JULIUS RIVER as described in the schedule hereto.

This licence shall remain in force until the TWELFTH day of JANUARY 1991.

This licence is subject to the following conditions:-

1. That the licensee shall immediately on the issue of this licence take steps to commence preliminary works necessary for the investigation of the area.
2. That the licensee shall carry out investigations as may be necessary to determine the mineral potential of the area, and in particular will fulfil the proposals set out in the exploration programme and approved by the Director of Mines.
3. That the licensee shall employ such technical and other staff and equipment as may be necessary effectively to carry out such investigations.
4. This licence shall apply to all minerals.
5. The licensee shall notify the owner and occupier of private land, in writing, at least three days before entering such land.
6. That the security (Private Land Deposit) provided by Section 15E (1) (a) & (b) of the Mining Act, 1929, (see below) shall be lodged with the Director of Mines before entering private land.
7. The licensee shall observe, perform and fulfil the conditions as set forth in Schedule 'A' (Revised) attached hereto.

- 019
8. The licensee shall be liable to pay the cost of any work carried out to remedy any damage arising from any breach of the conditions of this licence.
 9. The licensee shall deposit an amount of \$5,000 (Performance Deposit) as security that the conditions contained herein shall be observed. Upon expiry or sooner determination of the licence, if the licensee satisfies the Director of Mines that such conditions have been complied with, the Director of Mines shall refund such deposit or such portion thereof, as he may determine.
 10. If it is found, that the operations hereby authorised, are causing any undue damage to, or erosion of, the subject land or other land in the vicinity thereof or are unnecessarily disturbing the environment, the Minister may cancel the licence without compensation to the licensee by giving seven days' notice in writing of his intention so to do.
 11. The licensee shall obtain the written permission of the Director of Mines before carrying out any work in a Forest Reserve.
 12. The licensee shall arrange and keep in good standing public liability insurance to the minimum of \$1,000,000. Evidence of currency shall be produced on demand.

SCHEDULE

Commencing at a north east corner of the area whose grid co-ordinates are 340 000 metres E. 5 450 000 metres N. thence grid south to 5 446 000 metres N. grid west to 337 000 metres E. again grid south to 5 441 000 metres N. grid east to 340 000 metres E. aforesaid again grid south to 5 440 000 metres N. again grid west to 338 000 metres E. again grid south to 5 436 000 metres N. again grid west to 330 000 metres E. grid north to 5 444 000 metres N. again grid east to 332 000 metres E. again grid north to 5 446 000 metres N. aforesaid again grid east to 334 000 metres E. again grid north to 5 449 000 metres N. again grid east to 336 000 metres E. again grid north to 5 450 000 metres N. aforesaid thence again grid east to the point of commencement.

The area excludes: 85 ha Julius River Forest Reserve
0.2 skm Lake Chisholm Forest Reserve

Land Tenure:

The area comprises: State Forest
Crown Land
Crown Land (Subject to Dept. of Environment & Planning approval)
Private Property

The area includes part of "Sumac Rivulet" Australian Heritage Commission Act, Registered Entry.

NOTE: The land tenure table is a guide only.

APPENDIX 2

REVIEW OF PREVIOUS EXPLORATION

APPENDIX 2

REVIEW OF PREVIOUS EXPLORATIONA2.1 EL 12/65 Pieman Project

During the mid 1960s Pickands Mather & Co International held EL 12/65 over a large part of northwest Tasmania. An extensive regional stream geochemical survey was conducted and although a number of geochemical anomalies were detected, and some resampling occurred later, no further work was undertaken. (Anon. 1966 in Cromer, 1988a). Unfortunately records of this sampling program are no longer held by the Tasmanian DMMR.

A2.2 EL 48/70 and EL 49/70

Two exploration licences to the southwest of Geopeko's Arthur River Project were granted as a joint venture to Australian Consolidated Industries Ltd and Consolidated Goldfields Australia Ltd. Field investigations included an aeromagnetic survey, stream sediment sampling, geological mapping and soil and rock chip sampling. This was designed to detect any tin mineralization that may be associated with the three Devonian granites in the two licence areas. Detailed evaluation was carried out in areas of geochemical and geomagnetic anomalies and known mineralization.

Results were not encouraging enough to justify further exploration and the two ELs were dropped in 1972. (Bell, 1972)

A2.3 EL 6/72 North West Tasmania

Australian and New Zealand Exploration Company was granted EL 6/72 in January 1972. This EL covered an area of the Smithton Trough to the north of the Arthur River. It was considered by ANZECO to be prospective for tungsten due to the similarity of the dolomites to those hosting the King Island Scheelite ore body. A panned concentrate and stream sediment sampling programme was completed over the EL with 94 samples taken and analysed for W, Cu, Pb, Zn, Mo, Sn and Cr. ANZECO received a number of anomalous assays for all the elements tested but found it difficult to interpret the results. Though some follow up was recommended, no further exploration was attempted. (Kinnane, 1972).

A2.4 EL 2/73

Following a study of the mineral potential of Australia during 1971, ESSO took out EL 2/73 in the northwest of Tasmania and conducted an airborne geophysical survey (INPUT) over the licence area. Sixty two anomalies were detected, however, dense vegetation restricted examination to thirty six targets and only thirteen had outcrop. Most of the anomalies were attributed to black slates and lithological contacts. ESSO

considered that no further exploration was warranted and the EL was relinquished in 1974. (Neale, 1973)

A2.5 EL 43/70 Keith River

Magnesite was first discovered in the Lyons River-Keith River area in 1925 by P.B. Nye. Since Mineral Holdings Australia was granted EL 43/70 over the area, numerous companies have explored the licence under joint venture agreements. A joint venture between Mineral Holdings Australia and CRAE Pty Ltd in 1982 delineated two deposits of moderate-high grade magnesite. These are known as the Lyons River and the Keith-Arthur River Prospects. (Mackenzie, 1984). Retention Licences 8717 and 8718 cover these two magnesite reserves.

A2.6 EL 1/77 Rocky Cape

EL 1/77 was initially taken up by CRAE Pty Ltd to investigate the possible tin potential of the area. Following a joint venture with Geopeko in 1979 and recommendations by P. Legge in 1980 that the Rocky Cape rocks showed similarities to the Selwyn Basin, Canada, the target was extended to shale hosted lead zinc deposits.

Statistical evaluation of regional drainage data indicated that the Trowutta Dempster plains district showed elevated values of Cu, Pb, Zn and Co. (Weir, 1982). Follow up of this area included stream sediment sampling, geological mapping and rock chip sampling. A photogeological interpretation (by Carey, 1981) covered the whole EL. The stream sediment sampling revealed lead anomalies from the Julius River, the Meryanna area, Wents Creek and Stephens Rivulet and an arsenic anomaly from Sumac Rivulet.

Follow up in the Julius River and Meryanna area included detailed stream sampling, gridding, soil sampling and ground geophysics. It was concluded that the Julius River anomaly was derived from a disseminated source or shears within the dolomite and that the Meryanna anomaly was the results of erosional basaltic remnants on topographic highs.

Resampling of the other 3 anomalous areas failed to repeat the initial high values.

CRA Exploration relinquished the northern part of EL 1/77 in 1983 concluding that the black shale sequences exposed at the eastern margin of the trough were too thin to have produced economic mineralization from brines (Weir, 1983).

Exploration continued in the western coastal parts of the EL including diamond drilling at the Alpine and Red prospects for tin before total EL relinquishment in 1985.

A2.7 EL 1/79 Rapid River

A detailed program of exploration was carried out over the Rapid River EL by Geopeko and/or CRAE Pty Ltd from 1979 to 1987. Commodities searched for included gold, platinum, shale hosted base metals and Mittershill type tungsten as well as extensions to the Lyons River magnesite trend. The work included airborne magnetic and radiometric surveys, ground follow up of all major magnetic anomalies, geological mapping and stream sediment sampling in selected areas. No significant mineralization was located. (Dickson, 1987)

A2.8 EL 10/79

EL 10/79 was operated as a joint venture by CRAE and Mineral Holdings Australia Pty Ltd. The target was initially dolomite, but when some anomalous gold and platinum values were obtained, greater emphasis was given to the metals aspect of exploration. Grades of 3.09 g/t [410732] and 4.06 g/t Au with 0.46 g/t Pt [408726] were obtained from dolomite chip sampling and, although resampling returned results of only 0.04 g/t Pt, the partners concluded that there was a significant gold occurrence in the dolomites. However, EL 10/79 was relinquished in 1984 with no follow up work. (Anon 1985 in Cromer, 1988a)

A2.9 EL 12/80 Leigh River and EL 61/83

EL 12/80 was granted to CRAE Pty Ltd in order to investigate two tin stream sediment anomalies located during previous reconnaissance by CRAE in 1977. The EL was also considered for shale hosted lead zinc and gold mineralization and this was supported by the presence of a number of INPUT anomalies obtained by ESSO in 1973. Work carried out included a computer study of all previous stream sediment geochemistry, infill stream sediment sampling, regional scale mapping, follow up of nine aeromagnetic anomalies defined by the Mines Dept. West Coast survey and investigations into the gold potential of altered Cambrian basalts. No significant base or precious metals were detected and the EL was relinquished in 1985. (Dickson, 1985).

EL 61/83 was taken up by CRAE to cover a large aeromagnetic anomaly located on the eastern margin of EL 12/80. A grid was established over the anomaly and Genie EM traverses carried out. No base metal or gold anomalism was detected and the EM failed to locate any conductors. The aeromagnetic anomaly was attributed to unmineralized Precambrian basic volcanics and the EL was dropped in 1985. (Dickson, 1986)

A2.10 EL 18/80 Arthur River and EL 18/83 Lake Chisholm

EL 18/80 was taken up by BHP Co Ltd and thought to be prospective for a skarn or massive sulphide hosted tin tungsten deposit of the Renison/Cleveland style. Carlin style gold, diamonds, Mississippi Valley lead-zinc and sedimentary copper

deposits were secondary targets. Work completed includes stream sediment and pan concentrate sampling, rock chip sampling, petrology, a photogeological and Landsat Image study, geological mapping, and evaluation and follow up of existing INPUT and aeromagnetic data. In view of the disappointing results and difficult access, the EL was relinquished in 1983. (Anon, 1983).

EL 18/83 lies adjacent to EL 18/80 and was taken by BHP to cover a broadly coincident INPUT/Aeromagnetic anomaly. An extensive grid was cut over the main zone of interest at Lake Chisholm and soil sampling, geophysical surveys and geological mapping were carried out. Pan concentrate sampling was used to follow up anomalous tin geochemistry reported from earlier work. The INPUT/Aeromagnetic anomaly was attributed to a small amphibolite body and magnetically susceptible basalts. No indications of potentially economic mineralization were encountered. (Anon, 1984).

A2.11 EL 21/87 Balfour and EL 22/87 Trowutta

Aureole Resources took up ELs 21/87 and 22/87 to explore for platinum group metals, gold and base metals, hosted mainly by receptive rocks along the eastern and southern margins of the Smithton Trough. Work included a regional geophysical evaluation by D.E. Leaman and rock chip sampling for assay and petrological purposes. Despite upgrading the prospectivity of parts of the two ELs, 22/87 was relinquished and 21/87 reduced in 1989 as Aureole shifted their emphasis to other tenements. (Cromer, 1988a + b).

A2.12 EL 5/63

EL 5/63 was granted to Comstaff Proprietary Limited in 1963 and covered the area from Rosebery in the south to Wandle Creek in the north. Comstaff divided the EL in 6 areas, ie, Area 1 Arthur River, Area 2 Ramsay, Area 3 Mt Block, Area 4 Chester/Pinnacles, Area 5 Huskisson and Area 6 East Renison. Area 1 covers part of Geopeko's EL 45/89 and is the only area discussed in this summary.

Systematic and detailed exploration of Area 1 commenced in 1970-71 field season and little is reported of any exploration carried out before this time.

Exploration of Area 1 from 1970-75 was based around 2 stream sampling programmes and several widely spaced TURAM EM traverses. The stream sampling surveys produced anomalies in the Tinstone Creek area (Ag,Cu,Zn,Pb,Sn & Ba), Magnet Creek (Sn), Deep Gully (Sn), Rollins Creek (Sn), Dalcos Creek (Sn) and from the Happy Day Creek (Cu, Zn, Ni). Follow up included gridding and soil sampling of the Tinstone Creek area, Happy Day Creek and four other Cu-Zn anomalies. No anomalies indicative of the presence of mineralization were recorded.

The Turam EM survey reported 8 anomalies and 5 of them were gridded and subjected to EM and/or magnetic surveys. No significant results were obtained.

From 1975-78 work was centred on the Magnet-Bischoff grid which was subjected to geological mapping, soil sampling, ground magnetics and EM surveys. Three diamond holes were drilled in the grid area, one to test an EM anomaly and the other two to test the Magnet lode at depth. No mineralization was intersected and no further work on the grid was recommended. (Shaw & Everett, 1985).

In 1980 a programme to investigate the alluvial tin potential of the Arthur River commenced. Initial work was encouraging with a tin volume estimate of 6-8 million m³ of variable grade outlined. Though follow up work was recommended, no further exploration on this project was reported. (Washausen & Wilding, 1980).

In 1983-85 a DIGHEM survey was carried out over Area 1 using flight lines with a NW-SE direction. Five anomalies were recommended for follow up. Comstaff attributed them to Tertiary basalt cover.

In 1985 Comstaff was required to reduce EL 5/63 and most of Area 1 was relinquished. (Shaw & Everett, 1985).

A2.13 EL 1/68 Heazlewood

In 1968 EL 5/63, held by Comstaff Pty Ltd, was subdivided to form EL 1/68. EL 1/68 covered an area north of Luina which is drained principally by the Savage and Heazlewood Rivers.

Initially exploration of this licence focussed on the ultramafics and their potential for nickel mineralization. Gridding, soil sampling, geological mapping, geophysical surveys and some trenching failed to identify any new mineralization.

Regional reconnaissance projects were then implemented in the Savage, Whyte and Heazlewood drainages. The upper Heazlewood drainage basin emerged as the most prospective with anomalous values of zinc and copper. Two grids (HAB, HAC) were cut and geologically mapped and soil sampled. No mineralization was found and geochemical responses were weak.

In 1980, a DIGHEM survey over the total licence area was commissioned and exploration for the next 3 years centred around the follow up of 13 resultant anomalies. All anomalies were gridded, geologically mapped, soil sampled and subjected to ground magnetic and EM surveys. In all cases no mineralization was observed. In late 1983 two EM targets were selected for drill testing. Both holes failed to intersect mineralization and the EM responses were attributed to black graphitic slate and phyllite.

In 1984 Comstaff considered that all avenues for locating mineralization had been exhausted and the EL was relinquished. (Shaw, 1984).

REFERENCES

- ANON, (1966) - Interim Report for the North-West in Cromer 1988a, Tasmanian Project for Period Ending April 1966. Pickards Mather and Co. International. Tas. DMMR Open File Report No. 66-439
- ANON (1983) - EL 18/80 Arthur River. Final Report June 1983, BHP Co. Ltd. Tas. DMMR Open File Report 83-2001
- ANON (1984) - EL 18/83 Lake Chisholm - Tasmania. Final Report by BHP Co. Ltd. Tas. DMMR Open File Report 84-2145
- BELL, D.H. (1972) - EL 48/70, EL 49/70, 1971-1972 Annual Report - North Western Tasmania. Joint Venture Exploration by Australian Consolidated Industries Ltd., Consolidated Goldfields Australia Ltd., Mt. Lyell Mining & Railway Co Ltd., and Renison Ltd. Tas. DMMR Open File Report 72-876
- CAREY, S.W. (1981) - "Notes to accompany the Photo Interpretation of the country between the Arthur & Pieman Rivers, Tasmania." Geopeko Ltd, Tas. DMMR Open File Report 82-1753
- CROMER, W.C. (1988a) - EL 21/87 Balfour. Annual Report Year 1 (20 January 1988 - 19 January 1989), Aureole Resources Pty. Ltd. Tas. DMMR Open File Report 89-2900
- CROMER, W.C. (1988b) - EL 22/87 Trowutta. Annual Report Year 1 (15 November 1987 - 15 November 1988), Aureole Resources Pty. Ltd. Tas. DMMR Open File Report 88-2866
- DICKSON, T.W. (1985) - EL 12/80 Leigh River. Relinquishment Report, CRAE Pty.Ltd. Tas. DMMR Open File Report 85-2476
- DICKSON, T.W. (1986) - EL 61/83 Boulder Rivulet. Final Report, CRAE Pty. Ltd. Tas. DMMR Open File Report 86-2552

- DICKSON, T.W. (1987) - Rapid River EL 1/79 - North Western Tasmania. Final Report on Exploration by CRA Exploration Pty. Ltd. Tas. DMMR Open File Report 87-2723
- KINNANE, N.R. (1972) - Report on the Geological Reconnaissance & Stream Sediment Sampling Programme, N.W. Tasmania. Australia & New Zealand Exploration Company. Tas. DMMR Open File Report 72-869
- LEGGE, P.J. (1980) - The Lead Zinc Potential of the Younger Precambrian Rocks of North West Tasmania. CRAE Pty. Ltd. Tas. DMMR Open File Report 85-2349
- MACKENZIE, P.C. (1984) - EL 43/70 - Arthur River Area. Report on Exploration for 12 months to 15th October, 1984 by CRA Exploration Pty. Ltd. Tas. DMMR Open File Report 84-2214
- MCNEILL, R.D. (1960) - "Geological Reconnaissance of Part of the Arthur River area." Tas. DMMR Technical Report No. 5, 1960.
- NEALE, R.C. (1973) - Pieman River, EL 2/73 - Tasmania. Progress Report for the period January 31 - July 31, 1973, by ESSO Australia Ltd. Tas. DMMR Open File Report 74-987
- SHAW, R.W. & EVERETT, M.P. (1985) - EL 5/63 - Area 1 Arthur River. Final Report on Areas Surrendered to the DMMR, Tasmania (June 1985). Comstaff Pty Ltd. Tas. DMMR Open File Report 85-2383
- SHAW, R.W. (1984) - EL 1/68 Heazlewood - "Final Report to the Department of Mines, Tasmania" (1984). Comstaff Pty Ltd. Tas. DMMR Open File Report 85-2316.
- WASHAUSEN, F.F. & WILDING, I.G. (1980) - EL 5/63- Report on the Arthur River Alluvials, Section 1. Comstaff Pty Ltd. Tas. DMMR Open File Report 80-1415.
- WEIR, D.J. (1982) - EL 1/77 Rocky Cape. Lead Zinc Computer Study - Stream Sediments, CRAE Pty. Ltd. Tas. DMMR Open File Report 82-1801
- WEIR, D.J. (1983) - EL 1/77 Rocky Cape. Progress Report - Trowutta Dempster Plains Area, Period Ending 28/2/83, CRAE Pty. Ltd. Tas. DMMR Open File Report 82-1959

APPENDIX 3
GEOPHYSICAL REVIEW

EL 46/89 JULIUS RIVER

The location of this area is shown in Figure 1.

Figure 30 presents relevant gravity and magnetic data.

EL 46/89 covers the eastern margin of part of the Smithton Trough and its unconformable onlap onto the Rocky Cape Block.

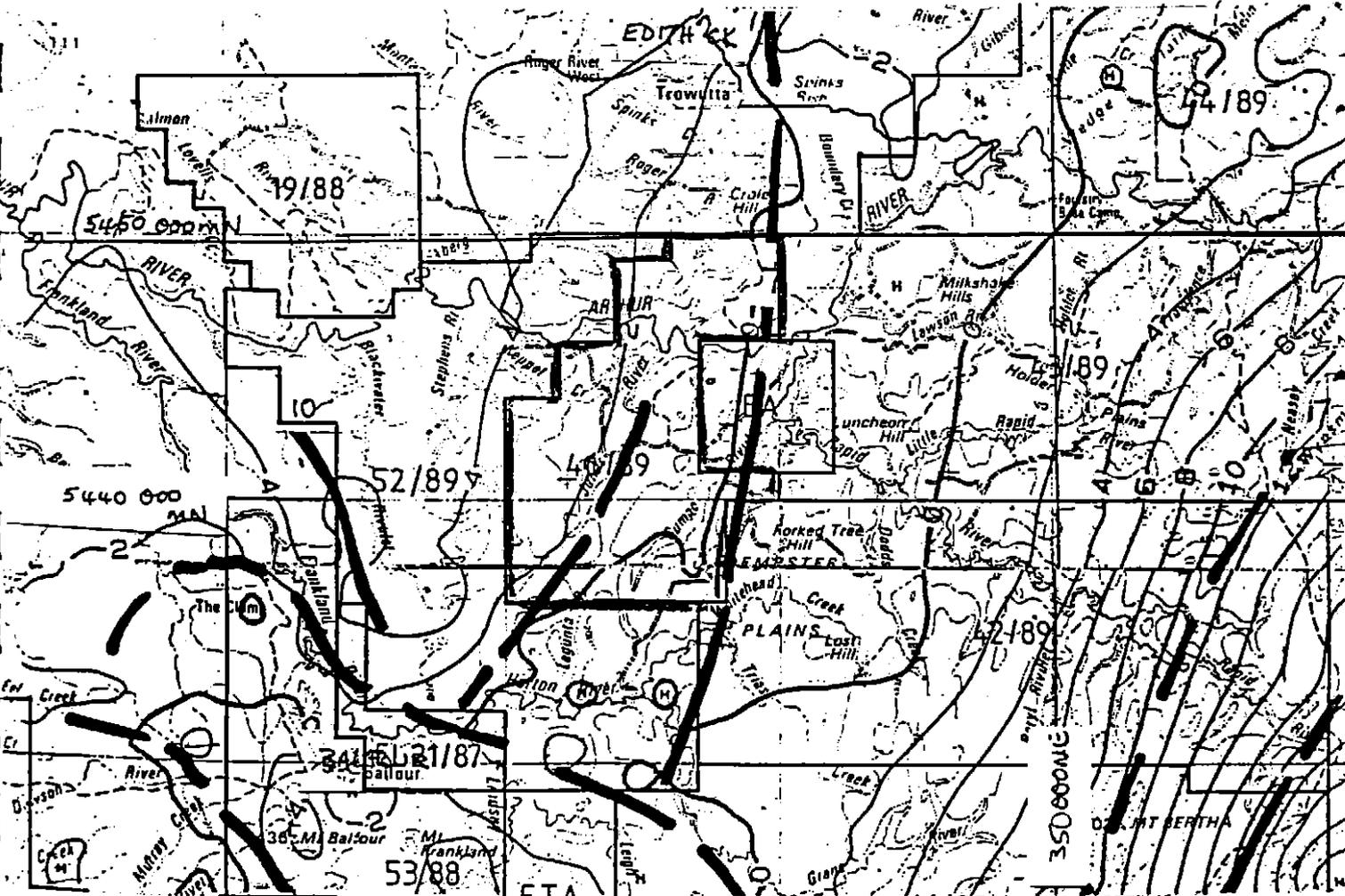
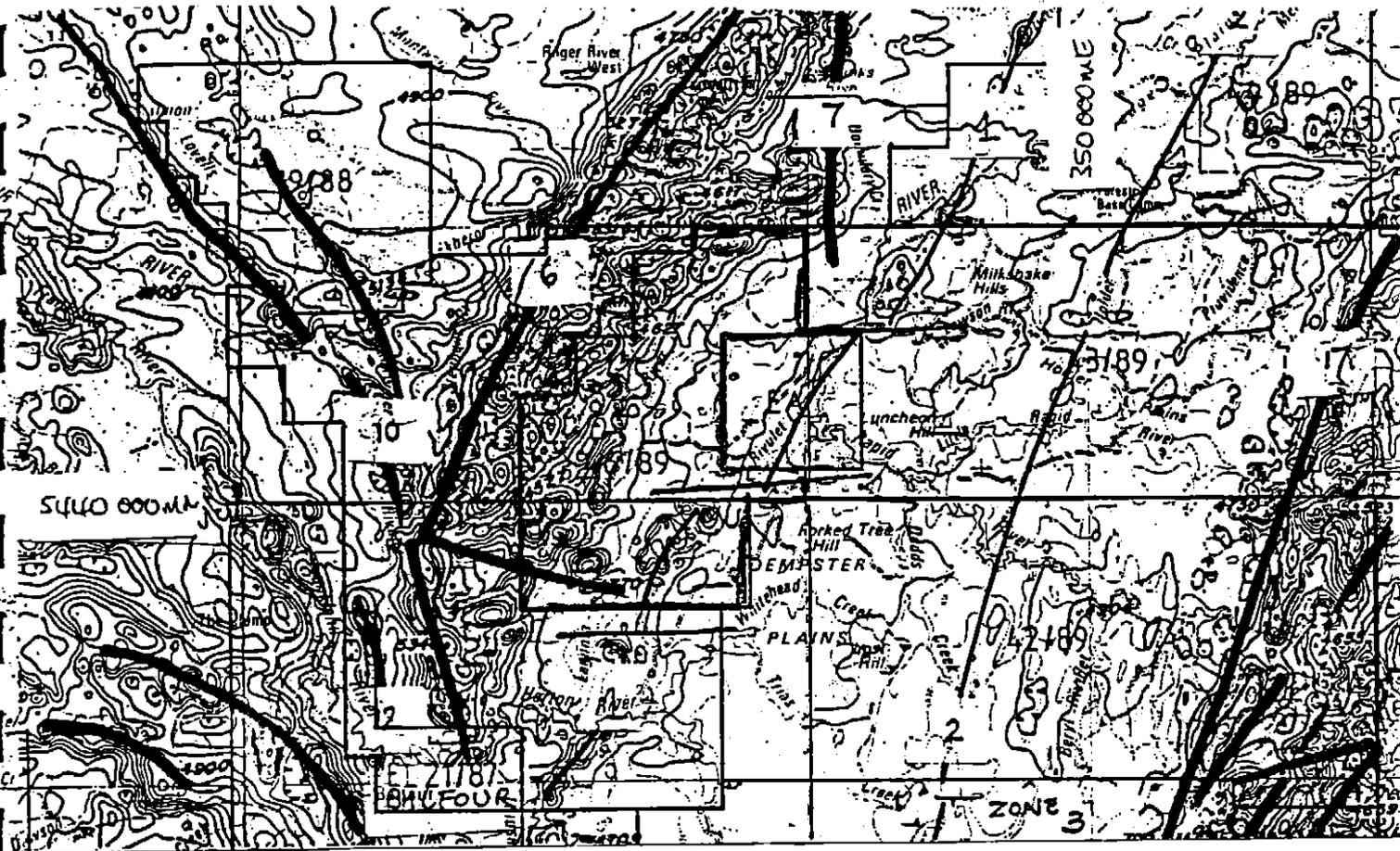
Basal dolomites and part of the mafic volcanics are exposed but the magnetic data do not suggest any truly anomalous character and the field reflects the distribution and attitude of these rocks (see Figures 13 and 17).

Magnetically anomalous character does, however, attach to the belt of anomalies within the Rocky Cape Block (feature 1). Within this EL this feature has an abnormally high amplitude which may reflect shallowness of source or some alteration. This occurrence near the Sumac Rivulet should be inspected; use of a susceptibility meter and surface magnetic profiles may be necessary to identify the source units.

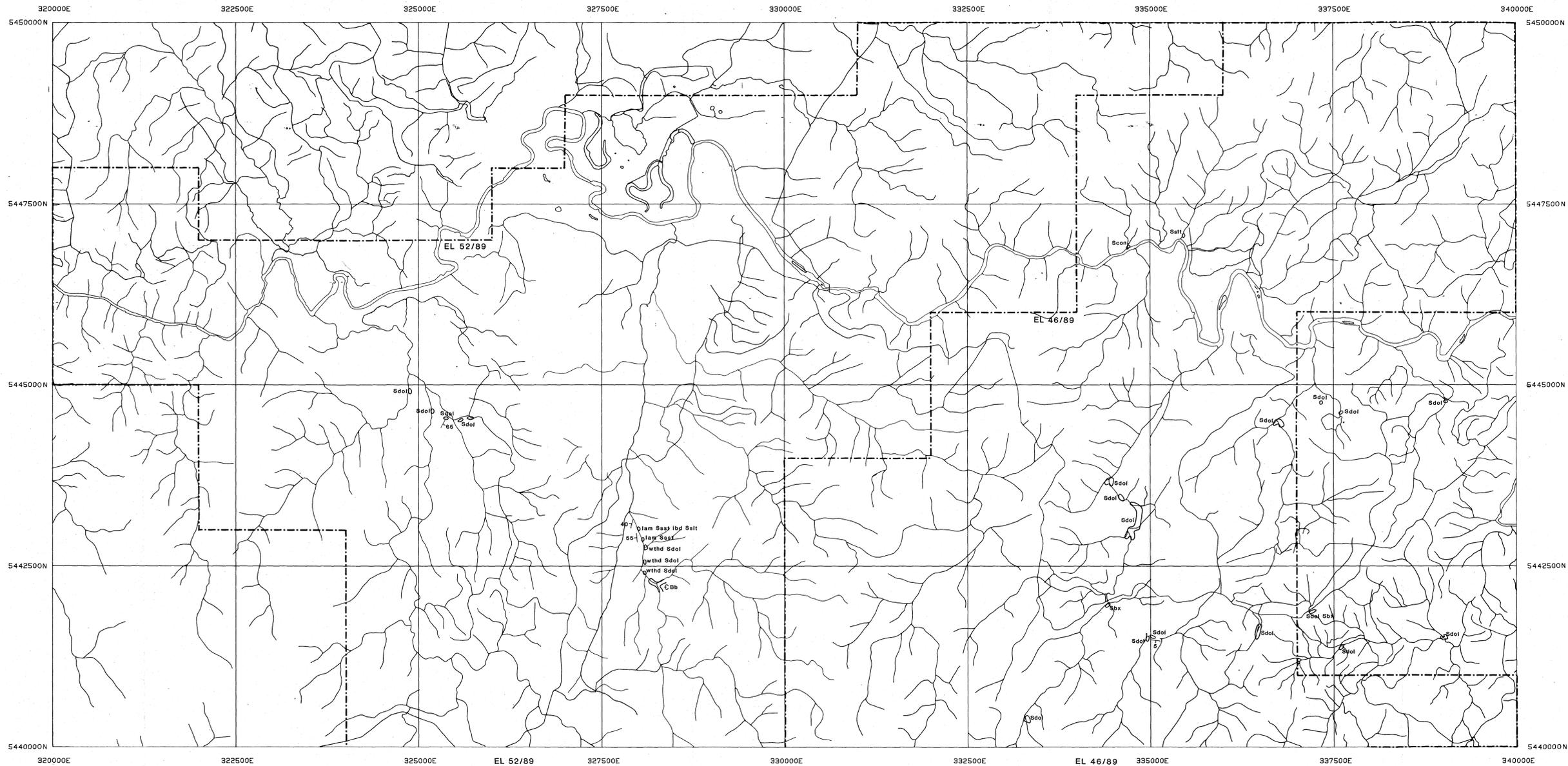
The other anomalous feature of the magnetic field extends from 326 000 mE, 5439 000 mN to 333 000, 5436 000. This gradient marks an abrupt change in volcanic character and its origin should be evaluated.

Gravity data are too diffuse to offer specific guidance and the gradient suggestions may have little significance. Even so, it is apparent that the entire character of the gravity field is transformed somewhere nearby and the relationships between Pieman Granite, Rocky Cape Block and Smithton Trough generate a complex form.

Some detailed examination of the magnetic lines across the southern 3 km of the EL is recommended and that this work be done in association with recommendations for EL 52/89. The aim of this analysis should be to derive understanding of the source of the volcanic termination effect - is it geometric, including faulting, or mass alteration? - and to assess feature (1).



EL 46/89 JULIUS RIVER MAGNETIC AND RESIDUAL GRAVITY DATA
 FIGURE 30



- ROCK TYPES**
- SEDIMENTS:**
 Sst sandstone
 Sqr quartz arenite
 Swk greywacke
 Ssl siltstone
 Scl calcinite
 Scon conglomerate
 Sbx breccia
- IGNEOUS ROCKS:**
 Tert Bb tertiary basalt
 C Bb cambrian basalt
 Bd dolerite
- METAMORPHICS:**
 Mpyl phyllite
 MSqr meta arenite
- SEDIMENT GRAIN SIZE**
 vfg very fine grained
 fg fine grained
 mg medium grained
 cg coarse grained
- TEXTURES**
 vns veins
 lbd interbedded
 lam laminated
 clvd cleaved
 stn staining
 gd graded
 wthd weathered
- COLOURS**
 bk black
 wh white
 gn green
 gy grey
 pl pale
 dk dark
 or orange
 cm cream
- MINERALOGY**
 py pyrite
 qt quartz
 Fe iron
 Mn manganese
 cbd carbonate
 Tq turquoise
- STRUCTURAL SYMBOLS**
 bedding
 facing
 overturned bedding
 cleavage
 fault
 rock outcrop
 float/subcrop
 definite contact
 approximate contact
 interpreted contact

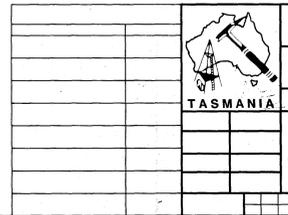
PLATE 1a

414033



91-3211.

		3445
3244	3444	
3243	3443	

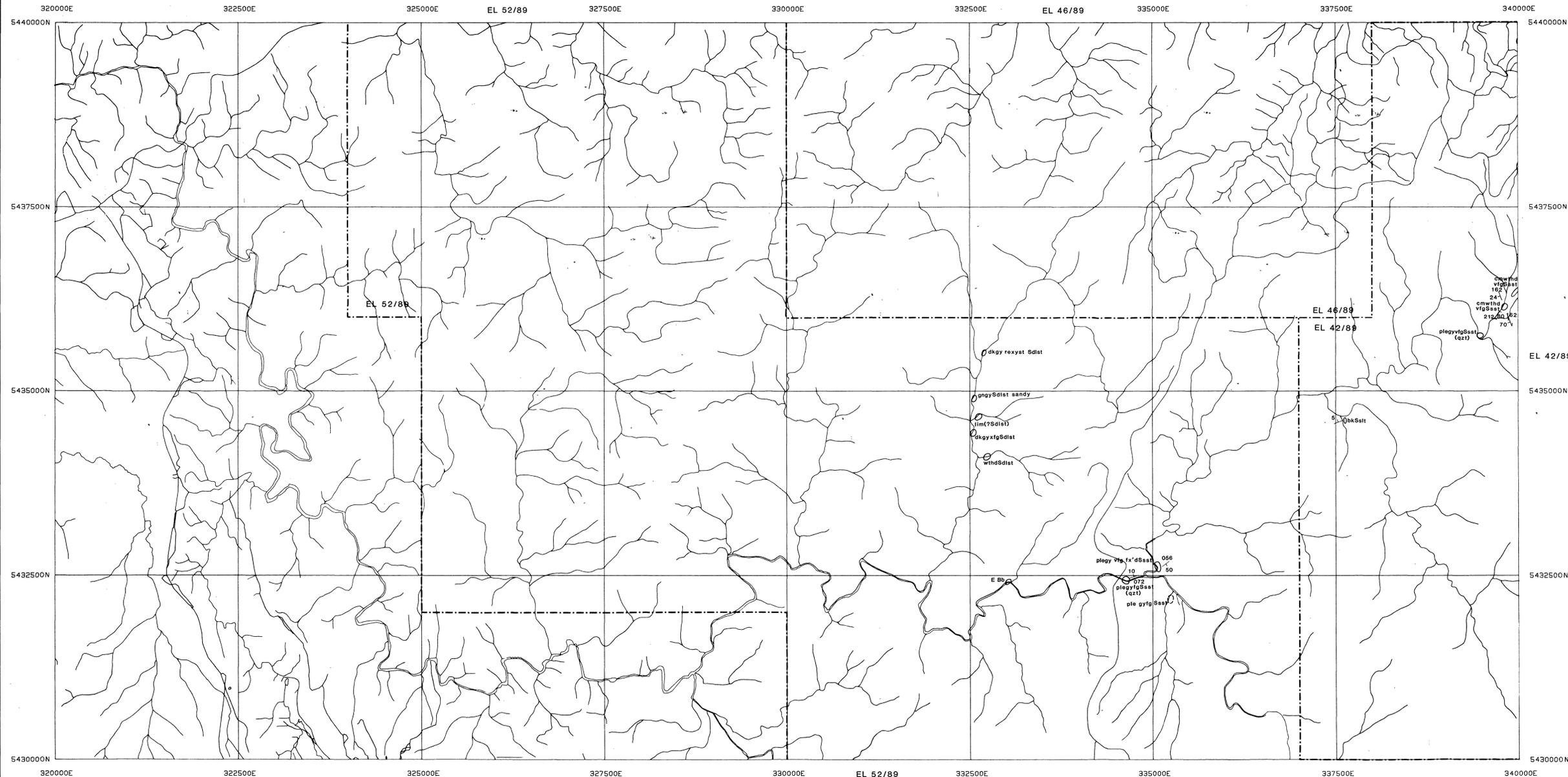


GEOPEKO
 A DIVISION OF PEKO EXPLORATION LIMITED

SCALE - 1:25000
 AUSTRALIAN HEIGHT DATUM

3244 SUMAC

EL 46/89
GEOLOGICAL FACT MAPPING



- ROCK TYPES:**
- SEDIMENTS:**
- Sast sandstone
 - Ssar quartz arenite
 - Swt greywacke
 - Sst siltstone
 - Sdol dolomite
 - Scon conglomerate
 - Sbx breccia
- IGNEOUS ROCKS:**
- Tert Bb tertiary basalt
 - C Bb cambrian basalt
 - Bd dolerite
- METAMORPHICS:**
- Mpyl phyllite
 - MSar meta arenite
- SEDIMENT GRAIN SIZE**
- vfg very fine grained
 - fg fine grained
 - mg medium grained
 - cg coarse grained
- TEXTURES**
- vns veins
 - ibd interbedded
 - lam laminated
 - clvd cleaved
 - stn staining
 - gd graded
 - wthd weathered
- COLOURS**
- bk black
 - wh white
 - gn green
 - gy grey
 - pl pale
 - dk dark
 - or orange
 - cm cream
- MINERALOGY**
- py pyrite
 - qt quartz
 - Fe iron
 - Mn manganese
 - cbd carbonate
 - Tq turquoise
- STRUCTURAL SYMBOLS**
- bedding
 - facing
 - overturned bedding
 - cleavage
 - fault
 - rock outcrop
 - float/subcrop
 - definite contact
 - approximate contact
 - interpreted contact

PLATE 1b

414034
5cm

91-3211.

	3244	3444
	3243	3443
	3242	3442

	GEOPEKO
	A DIVISION OF PEKO EXPLORATION LIMITED
	SCALE - 1:25000 AUSTRALIAN HEIGHT DATUM
	3243 DEMPSTER
	EL 46/89 GEOLOGICAL FACT MAPPING

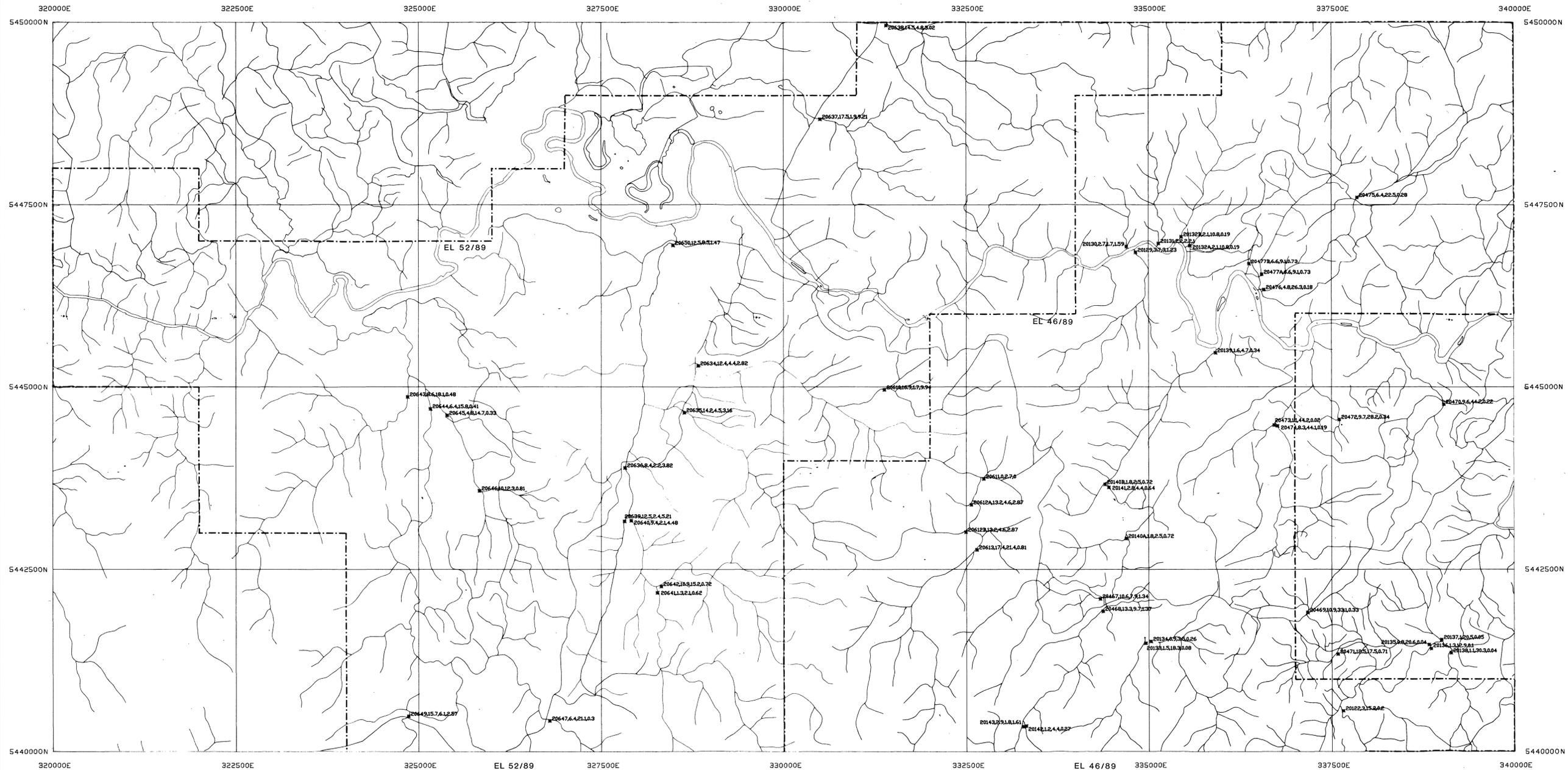


PLATE 2a

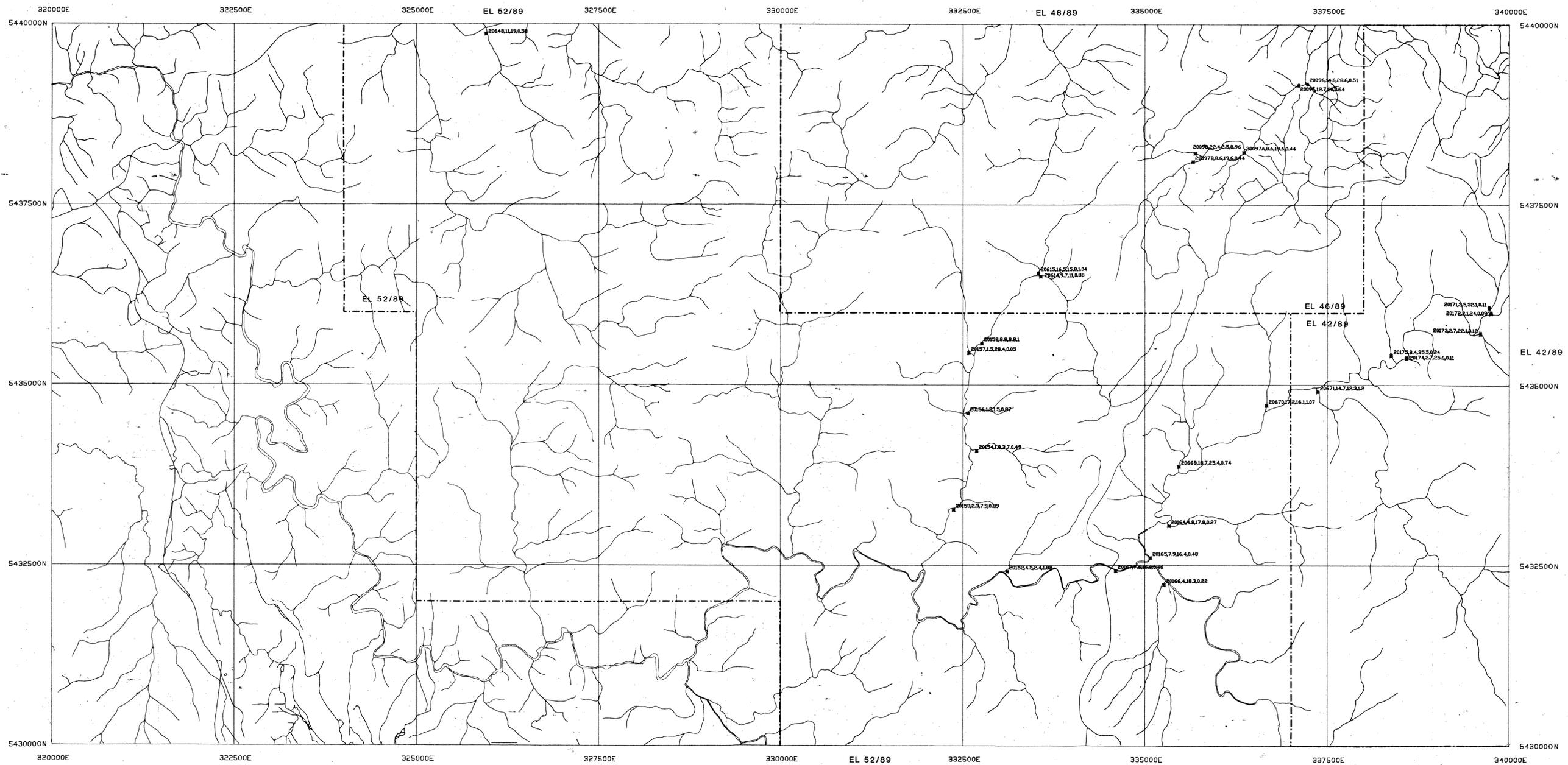
LEGEND
 =====
 Sample Location
 Sample Number
 Au (ppt)
 C (ppm)
 * 20662, 11.8, 13.9, 0.85 Au/C Ratio
 BT - Below Detection

414055
 5 cm

91-3211

		3445
	3244	3444
	3243	3443

 TASMANIA	GEOPEKO A DIVISION OF PEKO EXPLORATION LIMITED
	SCALE - 1:25000 AUSTRALIAN HEIGHT DATUM
	3244 SUMAC
EL 46/89	WATER GEOCHEMISTRY Sample Number, Au, C, Au/C



LEGEND
 Sample Location
 Sample Number
 Au (ppt)
 C (ppm)
 Au/C Ratio
 * 20662,11.8,13.9,0.85
 BT - Below Detection

414036
 5 cm
PLATE 2b

91-3211.

3244	3444
3243	3443
3242	3442

	GEOPEKO A DIVISION OF PEKO EXPLORATION LIMITED
	SCALE - 1:25000 AUSTRALIAN HEIGHT DATUM
	3243 DEMPSTER
EL 46/89 WATER GEOCHEMISTRY Sample Number, Au, C, Au/C	

414039

DATA ENTRY

Project Arthur River Project DB Number _____ Date 20/12/90

Prospect _____ X Ref T 249

Company Geopeko

Title EL 46/89 Julius River Report on Exploration Activities January 1990 to December 1999

Author Katrina Verge and Ian Matheson (Relinquishment Report)

Key Words Water, Neminer Southern Trough, Gravity, Peromagnetism

Near Town Trowutta Country AUS State TAS Volumes 2

Commodities Cu Pb Zn Au Pages 8

Tenements EL 46/89 Plans 6

Comments 1 Geochem. Water Cu Pb Zn Au AS Comments 2 V1 Text Appendices Plans
V2 Water Sampling Data

Latitude Deg 41 Min 05

Longitude Deg 145 Min 00

MAP SHEET 1:250 000 SERIES

Map Names _____ Map No _____

Map1 BURNIE SK55-3

Map2 _____

Map3 _____

MAP SHEET 1:50 000 SERIES

MAPS _____

Stored At _____

Shelved At _____

Classification _____

Name: MAPNO3 Kind: Nonkey Type: Text Size: 8

<edit_keys> <change> <select> <menu> <search>

GEOPEKO

A DIVISION OF PEKO EXPLORATION

EL 46/89 JULIUS RIVER

1990 SUMMER
WATER SAMPLING DATA
SAMPLE DESCRIPTIONS,
UNITS AND RESULTS

TCR 91-3211
VOL 2/2

EL46/89

LETTER
8-1-'91
REFERS

OPEN FILE

Karina Virgoe
Ian Mathison
December, 1990

To accompany report
T249

Distribution: DMMR, Hobart

RECEIVED
DECEMBER 1990

ARTHUR RIVER PROJECT 1990 SUMMER - WATER SAMPLES
DMMR REPEAT ANALYSIS

EL	NUMBER	AU	AURPT
1/90	20071	3468.0	1.8
1/90	20072	82.8	18.0
1/90	20073	118.8	1.3
43/89	20052	47.2	6.5
43/89	20060	47.2	2.6
43/89	20076	596.4	1.6
43/89	20077	47.0	2.6
43/89	20087	67.1	3.6
43/89	20087	67.1	3.6
43/89	20089	35.6	2.6
43/89	20091	30.1	3.6
43/89	20657	30.7	2.3
44/89	20001	66.0	36.6
44/89	20012	36.8	5.1
44/89	20021	33.2	9.1
44/89	20079	36.9	4.4
44/89	20079	36.9	4.4
44/89	20079	36.9	4.4
44/89	20080	56.7	0.4
44/89	20080	56.7	0.4

AU :-by activated carbon extraction

AURPT :-by new organic extraction technique

Page 1

07-01-1991

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE	20-02-1990	NUMBER	20095	MAP	DEMPSTER	TYPE	WATER
EL	46/89	NORTH	5439180	EAST	337120	SAMPLER	KJV
WIDTH	5.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sdol	
COLOUR	med brown			FLOAT_2		Sar	
FLOW	moderate			FLOAT_3			
CONTAM						LEVEL	mod
VEGETATION	rain forest					DRAINAGE AREA	6.0
DATE	20-02-1990	NUMBER	20096	MAP	DEMPSTER	TYPE	WATER
EL	46/89	NORTH	5439180	EAST	337240	SAMPLER	KJV
WIDTH	3.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sdol	
COLOUR	med brown			FLOAT_2			
FLOW	moderate			FLOAT_3			
CONTAM						LEVEL	mod
VEGETATION	rain forest					DRAINAGE AREA	3.0
DATE	20-02-1990	NUMBER	20097	MAP	DEMPSTER	TYPE	WATER
EL	46/89	NORTH	5438240	EAST	336400	SAMPLER	KJV
WIDTH	2.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sdol	
COLOUR	med brown			FLOAT_2		Ssst	
FLOW	moderate			FLOAT_3			
CONTAM						LEVEL	mod
VEGETATION	rain forest					DRAINAGE AREA	2.0
DATE	20-02-1990	NUMBER	20097	MAP	DEMPSTER	TYPE	WATER
EL	46/89	NORTH	5438100	EAST	335700	SAMPLER	KJV
WIDTH	5.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sdol	
COLOUR	med brown			FLOAT_2		Ssst	
FLOW	mod			FLOAT_3			
CONTAM						LEVEL	mod
VEGETATION	rain forest					DRAINAGE AREA	2.0

Page 2

07-01-1991

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE 20-02-1990 NUMBER 20098 MAP DEMPSTER TYPE WATER
 EL 46/89 NORTH 5438120 EAST 335700 SAMPLER KJV

WIDTH 3.0 UNIT Smithton Trough
 DIRECTION 0 FLOAT_1 Cb Bb
 COLOUR clear FLOAT_2
 FLOW moderate FLOAT_3

LEVEL mod

CONTAM
 VEGETATION rain forest DRAINAGE AREA 2.0

DATE 20-02-1990 NUMBER 20122 MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5440540 EAST 337640 SAMPLER JHF

WIDTH 1.0 UNIT Prc
 DIRECTION 10 FLOAT_1 gy Sslt
 COLOUR med brown FLOAT_2 Sdol
 FLOW slow FLOAT_3

LEVEL med

CONTAM logging
 VEGETATION logged DRAINAGE AREA 3.0

DATE 20-02-1990 NUMBER 20129 MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5446860 EAST 334840 SAMPLER JHF

WIDTH 2.0 UNIT Smithton Trough
 DIRECTION 270 FLOAT_1
 COLOUR clear FLOAT_2
 FLOW moderate FLOAT_3

LEVEL low

CONTAM
 VEGETATION wet eucalypt DRAINAGE AREA 2.5

DATE 20-02-1990 NUMBER 20130 MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5446940 EAST 334720 SAMPLER JHF

WIDTH 2.0 UNIT Smithton Trough
 DIRECTION 150 FLOAT_1 gy lam Sslt
 COLOUR clear FLOAT_2 cm Sslt
 FLOW moderate FLOAT_3

LEVEL low

CONTAM
 VEGETATION wet eucalypt DRAINAGE AREA 1.5

07-01-1991

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE 20-02-1990 NUMBER 20131 MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5446980 EAST 335240 SAMPLER JHF

UNIT Smithton Trough
 WIDTH 2.0 FLOAT_1
 DIRECTION 240 FLOAT_2
 COLOUR clear FLOAT_3
 FLOW moderate

LEVEL low

CONTAM
 VEGETATION rain forest DRAINAGE AREA 2.0

DATE 20-02-1990 NUMBER 20132 MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5447080 EAST 335460 SAMPLER JHF

UNIT Smithton Trough
 WIDTH 1.0 FLOAT_1 Sdol
 DIRECTION 180 FLOAT_2 gy Sslt
 COLOUR weak brown FLOAT_3
 FLOW slow

LEVEL low

CONTAM
 VEGETATION rain forest DRAINAGE AREA 2.5

DATE 20-02-1990 NUMBER 20132 c MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5446940 EAST 335560 SAMPLER JHF

UNIT Smithton Trough
 WIDTH 2.0 FLOAT_1 gy lam Sslt
 DIRECTION 190 FLOAT_2 cm Ssst
 COLOUR weak brown FLOAT_3
 FLOW moderate

LEVEL low

CONTAM
 VEGETATION rain forest DRAINAGE AREA 1.0

DATE 20-02-1990 NUMBER 20133 MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5441500 EAST 334960 SAMPLER JHF

UNIT Smithton Trough
 WIDTH 3.0 FLOAT_1 Sdol
 DIRECTION 10 FLOAT_2
 COLOUR med brown FLOAT_3
 FLOW fast

LEVEL low

CONTAM logging
 VEGETATION logged DRAINAGE AREA 2.0

Page 4

07-01-1991

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE	20-02-1990	NUMBER	20134	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5441540	EAST	335040	SAMPLER	JHF
WIDTH	3.0			UNIT		Smithton Trough	
DIRECTION	290			FLOAT_1		Sdol	
COLOUR	med brown			FLOAT_2			
FLOW	moderate			FLOAT_3			
CONTAM	logging					LEVEL	low
VEGETATION	logged					DRAINAGE AREA	3.0
DATE	20-02-1990	NUMBER	20135	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5441460	EAST	338720	SAMPLER	JHF
WIDTH	2.0			UNIT		Smithton Trough	
DIRECTION	70			FLOAT_1		Sdol	
COLOUR	brown			FLOAT_2			
FLOW	moderate			FLOAT_3			
CONTAM	logging					LEVEL	low
VEGETATION	logged					DRAINAGE AREA	4.0
DATE	20-02-1990	NUMBER	20136	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5441420	EAST	338860	SAMPLER	JHF
WIDTH	3.0			UNIT		Smithton Trough	
DIRECTION	350			FLOAT_1		Sdol	
COLOUR	med brown			FLOAT_2			
FLOW	fast			FLOAT_3			
CONTAM	logging					LEVEL	low
VEGETATION	logged					DRAINAGE AREA	10.0
DATE	20-02-1990	NUMBER	20137	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5441540	EAST	339000	SAMPLER	JHF
WIDTH	3.0			UNIT		Smithton Trough	
DIRECTION	25			FLOAT_1		Sdol	
COLOUR	med brown			FLOAT_2			
FLOW	moderate			FLOAT_3			
CONTAM	logging					LEVEL	low
VEGETATION	logged					DRAINAGE AREA	1.5

07-01-1991

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE	20-02-1990	NUMBER	20138	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5441360	EAST	339140	SAMPLER	JHF
WIDTH	1.0			UNIT		Smithton Trough	
DIRECTION	30			FLOAT_1		Sdol	
COLOUR	brown			FLOAT_2			
FLOW	moderate			FLOAT_3			
						LEVEL	low
CONTAM	logging						
VEGETATION	logged					DRAINAGE AREA	3.0
DATE	20-02-1990	NUMBER	20139	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5445480	EAST	335920	SAMPLER	JHF
WIDTH	7.0			UNIT		Smithton Trough	
DIRECTION	40			FLOAT_1		Sdol	
COLOUR	clear			FLOAT_2			
FLOW	moderate			FLOAT_3			
						LEVEL	low
CONTAM							
VEGETATION	rain forest					DRAINAGE AREA	20.0
DATE	20-02-1990	NUMBER	20140	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5442940	EAST	334680	SAMPLER	JHF
WIDTH	1.0			UNIT		Smithton Trough	
DIRECTION	40			FLOAT_1		Sdol	
COLOUR	clear			FLOAT_2			
FLOW	moderate			FLOAT_3			
						LEVEL	low
CONTAM	logging						
VEGETATION	logged					DRAINAGE AREA	1.0
DATE	20-02-1990	NUMBER	20140	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5443620	EAST	334420	SAMPLER	JHF
WIDTH	1.0			UNIT		Smithton Trough	
DIRECTION	20			FLOAT_1		Sdol	
COLOUR	clear			FLOAT_2		Bb	
FLOW	moderate			FLOAT_3			
						LEVEL	low
CONTAM	logging						
VEGETATION	logged					DRAINAGE AREA	1.5

Page 6

07-01-1991

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE	20-02-1990	NUMBER	20141	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5443640	EAST	334460	SAMPLER	JHF
WIDTH	5.0			UNIT		Smithton Trough	
DIRECTION	325			FLOAT_1		Sdol	
COLOUR	clear			FLOAT_2			
FLOW	fast			FLOAT_3			
CONTAM	logging					LEVEL	low
VEGETATION	logged					DRAINAGE AREA	17.0
DATE	20-02-1990	NUMBER	20142	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5440360	EAST	333280	SAMPLER	JHF
WIDTH	4.0			UNIT		Smithton Trough	
DIRECTION	270			FLOAT_1		Sdol	
COLOUR	very weak			FLOAT_2			
FLOW	moderate			FLOAT_3			
CONTAM						LEVEL	low
VEGETATION	rain forest					DRAINAGE AREA	4.5
DATE	20-02-1990	NUMBER	20143	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5440360	EAST	333320	SAMPLER	JHF
WIDTH	5.0			UNIT		Smithton Trough	
DIRECTION	20			FLOAT_1		Sdol	
COLOUR	clear			FLOAT_2			
FLOW	moderate			FLOAT_3			
CONTAM						LEVEL	low
VEGETATION	rain forest					DRAINAGE AREA	6.0
DATE	06-02-1990	NUMBER	20467	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5442100	EAST	334340	SAMPLER	JHF
WIDTH	3.0			UNIT		Prc	
DIRECTION	60			FLOAT_1			
COLOUR	brown			FLOAT_2			
FLOW	fast			FLOAT_3			
CONTAM						LEVEL	high
VEGETATION	rain forest					DRAINAGE AREA	0.0

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE	06-02-1990	NUMBER	20468	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5441940	EAST	334380	SAMPLER	JHF
WIDTH	6.0			UNIT		Prc	
DIRECTION	70			FLOAT_1			
COLOUR	brown			FLOAT_2			
FLOW	fast			FLOAT_3			
CONTAM							LEVEL high
VEGETATION	rain forest						DRAINAGE AREA 0.0
DATE	06-02-1990	NUMBER	20469	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5441920	EAST	337160	SAMPLER	JHF
WIDTH	5.0			UNIT		Prc	
DIRECTION	160			FLOAT_1			
COLOUR	brown			FLOAT_2			
FLOW	fast			FLOAT_3			
CONTAM	logging						LEVEL high
VEGETATION	logged						DRAINAGE AREA 0.0
DATE	06-02-1990	NUMBER	20470	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5444740	EAST	339040	SAMPLER	JHF
WIDTH	5.0			UNIT		Prc	
DIRECTION	355			FLOAT_1			
COLOUR	brown			FLOAT_2			
FLOW	fast			FLOAT_3			
CONTAM	logging						LEVEL high
VEGETATION	logged						DRAINAGE AREA 0.0
DATE	06-02-1990	NUMBER	20471	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5441340	EAST	337530	SAMPLER	JHF
WIDTH	5.0			UNIT		Prc	
DIRECTION	340			FLOAT_1			
COLOUR	brown			FLOAT_2			
FLOW	fast			FLOAT_3			
CONTAM	logging						LEVEL high
VEGETATION	logged						DRAINAGE AREA 0.0

Page 8

07-01-1991

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE	06-02-1990	NUMBER	20472	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5444560	EAST	337600	SAMPLER	JHF
WIDTH	0.0			UNIT		Prc	
DIRECTION	0			FLOAT_1			
COLOUR	weak brown			FLOAT_2			
FLOW	still			FLOAT_3			
CONTAM	logging						LEVEL high
VEGETATION	logged						DRAINAGE AREA 0.0
DATE	06-02-1990	NUMBER	20473	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5444480	EAST	336720	SAMPLER	JHF
WIDTH	3.0			UNIT		Prc	
DIRECTION	2			FLOAT_1		Sdol	
COLOUR	med brown			FLOAT_2			
FLOW	fast			FLOAT_3			
CONTAM	logging						LEVEL high
VEGETATION	logged						DRAINAGE AREA 0.0
DATE	06-02-1990	NUMBER	20474	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5444480	EAST	336800	SAMPLER	JHF
WIDTH	10.0			UNIT		Prc	
DIRECTION	120			FLOAT_1		Sdol	
COLOUR	brown			FLOAT_2			
FLOW	fast			FLOAT_3			
CONTAM	logging						LEVEL high
VEGETATION	logged						DRAINAGE AREA 0.0
DATE	06-02-1990	NUMBER	20475	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5447620	EAST	337760	SAMPLER	JHF
WIDTH	15.0			UNIT		Prc	
DIRECTION	170			FLOAT_1			
COLOUR	med brown			FLOAT_2			
FLOW	fast			FLOAT_3			
CONTAM							LEVEL high
VEGETATION	wet eucalypt						DRAINAGE AREA 0.0

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE 06-02-1990 NUMBER 20476 MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5446320 EAST 336680 SAMPLER JHF

WIDTH 5.0 UNIT Prc
 DIRECTION 275 FLOAT_1
 COLOUR med brown FLOAT_2
 FLOW fast FLOAT_3

CONTAM
 VEGETATION wet eucalypt LEVEL high
 DRAINAGE AREA 0.0

DATE 06-02-1990 NUMBER 20477 MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5446700 EAST 336380 SAMPLER JHF

WIDTH 1.0 UNIT Prc
 DIRECTION 150 FLOAT_1 Sslt
 COLOUR clear FLOAT_2
 FLOW fast FLOAT_3

CONTAM
 VEGETATION rain forest LEVEL med
 DRAINAGE AREA 0.0

DATE 20-02-1990 NUMBER 20477 c MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5446540 EAST 336540 SAMPLER JHF

WIDTH 1.0 UNIT Smithton Trough
 DIRECTION 110 FLOAT_1 Sdol
 COLOUR FLOAT_2
 FLOW fast FLOAT_3

CONTAM
 VEGETATION rain forest LEVEL med
 DRAINAGE AREA 0.0

DATE 21-02-1990 NUMBER 20610 MAP SUMAC TYPE WATER
 EL 46/89 NORTH 5444995 EAST 331380 SAMPLER KJV

WIDTH 5.0 UNIT Smithton Trough
 DIRECTION 0 FLOAT_1 Ssst
 COLOUR clear FLOAT_2 Sag
 FLOW moderate FLOAT_3

CONTAM
 VEGETATION rain forest LEVEL mod
 DRAINAGE AREA 2.0

Page 10

07-01-1991

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE	21-02-1990	NUMBER	20611	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5443750	EAST	332750	SAMPLER	KJV
WIDTH	2.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		qt	
COLOUR	very weak			FLOAT_2		Ssst	
FLOW	moderate			FLOAT_3		Sdol	
CONTAM						LEVEL	mod
VEGETATION	rain forest					DRAINAGE AREA	1.0
DATE	21-02-1990	NUMBER	20612	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5443400	EAST	332600	SAMPLER	KJV
WIDTH	2.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1			
COLOUR	weak brown			FLOAT_2			
FLOW	slow			FLOAT_3			
CONTAM						LEVEL	mod
VEGETATION	rain forest					DRAINAGE AREA	1.0
DATE	21-02-1990	NUMBER	20613	MAP	SUMAC	TYPE	WATER
EL	46/89	NORTH	5442780	EAST	332650	SAMPLER	KJV
WIDTH	5.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sdol	
COLOUR	clear			FLOAT_2		Ssst	
FLOW	moderate			FLOAT_3		qt	
CONTAM						LEVEL	mod
VEGETATION	rain forest					DRAINAGE AREA	3.0
DATE	21-02-1990	NUMBER	20614	MAP	DEMPSTER	TYPE	WATER
EL	46/89	NORTH	5436520	EAST	363580	SAMPLER	KJV
WIDTH	10.0			UNIT		Smithton Trough	
DIRECTION	0			FLOAT_1		Sdol	
COLOUR	very weak			FLOAT_2		Sct	
FLOW	moderate			FLOAT_3			
CONTAM						LEVEL	mod
VEGETATION	rain forest					DRAINAGE AREA	1.5

Page 11

07-01-1991

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

DATE 21-02-1990 NUMBER 20615 MAP DEMPSTER TYPE WATER
EL 46/89 NORTH 5436560 EAST 363540 SAMPLER KJV

WIDTH 3.0 UNIT Smithton Trough
DIRECTION 0 FLOAT_1 Sdol
COLOUR weak brown FLOAT_2
FLOW moderate FLOAT_3

LEVEL mod

CONTAM
VEGETATION rain forest

DRAINAGE AREA 3.0

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

NUMBER	AU	C	AU_C	CU	PB	ZN	AS
20474	8.3	44.1	0.19	1.40	1.00	7	0.5
20475	6.4	22.5	0.28	1.20	0.00	9	-0.5
20476	4.8	26.3	0.18	1.40	0.00	8	-0.5
20477	6.6	9.1	0.73	1.60	0.50	7	-0.5
20610	16.9	1.7	9.94	0.50	0.00	2	-0.5
20611	0.0	2.7	0.00	0.80	0.00	4	-0.5
20612	13.2	4.6	2.87	1.30	1.00	6	-0.5
20613	17.4	21.4	0.81	0.70	0.50	6	0.5
20614	9.7	11.0	0.88	0.60	0.50	3	0.5
20615	16.5	15.8	1.04	0.50	0.50	2	0.5

Page 1

Database fields

08-01

ARTHUR RIVER PROJECT WATER SAMPLES - EL 46/89

NUMBER	AU	C	AU_C	CU	PB	ZN	
20095	12.7	20.0	0.64	3.60	2.00	11	-0.5
20096	14.6	28.6	0.51	2.00	3.50	15	-0.5
20097	8.6	19.6	0.44	0.70	0.00	3	-0.5
20098	22.4	2.5	8.96	4.90	7.50	14	-0.5
20122	3.0	15.2	0.20	1.20	4.00	2	-0.5
20129	3.7	3.0	1.23	2.40	6.50	8	-0.5
20130	2.7	1.7	1.59	1.00	0.50	3	-0.5
20131	2.2	2.2	1.00	1.20	0.00	1	0.5
20132	2.1	10.8	0.19	1.80	2.00	7	-0.5
20133	1.5	18.3	0.08	0.90	0.50	0	-0.5
20134	0.9	3.5	0.26	1.00	1.00	4	-0.5
20135	0.8	20.6	0.04	1.60	0.00	2	-0.5
20136	1.3	12.9	0.10	0.70	0.00	2	-0.5
20137	1.0	20.5	0.05	4.00	10.00	3	-0.5
20138	1.1	30.3	0.04	2.00	0.50	3	-0.5
20139	1.6	4.7	0.34	1.80	0.50	0	0.5
20140	1.8	2.5	0.72	0.80	0.00	1	-0.5
20141	2.8	4.4	0.64	1.10	1.00	3	-0.5
20142	1.2	4.4	0.27	2.30	2.50	8	-0.5
20143	2.9	1.8	1.61	9.40	3.50	13	-0.5
20467	10.6	7.9	1.34	1.80	0.50	6	-0.5
20468	13.3	9.7	1.37	2.50	1.00	9	-0.5
20469	10.9	33.1	0.33	1.00	0.00	5	-0.5
20470	9.6	44.2	0.22	0.50	0.00	5	-0.5
20471	12.5	17.5	0.71	1.30	1.00	12	-0.5
20472	9.7	28.2	0.34	0.50	0.50	3	-0.5
20473	1.1	44.2	0.02	0.80	0.50	11	-0.5

ARTHUR RIVER PROJECT 1990 SUMMER - WATER SAMPLES
DMMR REPEAT ANALYSIS

EL	NUMBER	AU	AURPT
1/90	20071	3468.0	1.8
1/90	20072	82.8	18.0
1/90	20073	118.8	1.3
43/89	20052	47.2	6.5
43/89	20060	47.2	2.6
43/89	20076	596.4	1.6
43/89	20077	47.0	2.6
43/89	20087	67.1	3.6
43/89	20087	67.1	3.6
43/89	20089	35.6	2.6
43/89	20091	30.1	3.6
43/89	20657	30.7	2.3
44/89	20001	66.0	36.6
44/89	20012	36.8	5.1
44/89	20021	33.2	9.1
44/89	20079	36.9	4.4
44/89	20079	36.9	4.4
44/89	20079	36.9	4.4
44/89	20080	56.7	0.4
44/89	20080	56.7	0.4

AU :-by activated carbon extraction
AURPT :-by new organic extraction technique

**ARTHUR RIVER PROJECT 1990 SUMMER - WATER SAMPLES
ANALYTICAL METHODS, UNITS AND LABORATORIES**

Element	Units	Laboratory	Method
Au	ng/l (ppt)	DMMR Hobart	Activated carbon extraction from water, Aqua regia digestion - AAS
AuRPT	ng/l (ppt)	DMMR Hobart	Organic solvent extraction from water, AAS determination
C	mg/l (ppm)	DMMR Hobart	Total Organic Carbon - carbon analyser
Au/C	-	DMMR Hobart	Au result in ppt divided by C result in ppm
Cu	ug/l (ppb)	ANALABS Mbne	Carbon rod AAS on raw water
Pb	ug/l (ppb)	ANALABS Mbne	Carbon rod AAS on raw water
Zn	ug/l (ppb)	ANALABS Mbne	Carbon rod AAS on raw water
As	ug/l (ppb)	ANALABS Mbne	Hydride generation AAS on raw water