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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
 MINERAL RESOURCES DIVISION

PART OF EXPLORATION LICENCE 31/83 'MACQUARIE'

HAZEL CREEK AREA

PROGRESS REPORT ON EXPLORATION ACTIVITY

1ST OCTOBER, 1983 TO 30TH MARCH, 1984

E.Z. REPORT No. T185

I.J. MATHISON,
JULY, 1984

MICROFILMED

AMG REFERENCE POINTS ADDED

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HC2		- Pb	AO-530-0003 ✓
HC3		- Ba	AO-530-0004 ✓
HC4	Hazel Creek Sample Locations		AO-530-0001 ✓
HC5	Hazel Creek Geology (Interp.)		AO-530-0006 ✓

APPENDIX	Stream Sediment Samples - Data Sheets
	Rock Samples - Data Sheets
	Petrological Descriptions
	Panned Concentrates - Mineralogy

1. INTRODUCTION

1.1. Location and Access

The Hazel Creek area occupies an area of 10km² east and north of Kelly Basin on Macquarie Harbour. It is 32km south of Queenstown by air or 45km by road. Access is by helicopter or by 4WD vehicle to the Bird River on the Kelly Basin Track. Either method requires an additional 2-5km on foot to reach the area of interest.

1.2. Previous Exploration

No reports of any previous exploration, of old workings or of any base metal mineralisation have been sighted.

1.3. Published Geology

Published geology is based on airphoto interpretation supported by detailed mapping along the Kelly Basin Track. On the Queenstown 1:250,000 Geological sheet, an elongate strip of Gordon Limestone has been mapped. This strip is 9km long, 800m wide and trends N.N.W.

In the south this strip terminates against a prominent north-south fault. This limestone strip was the area selected for E.Z. exploration in 1983-84.

1.4. Geophysics

The 1981 regional aeromagnetic survey carried out by the Tasmanian Department of Mines covered this area. Two small circular aeromagnetic anomalies with a relative intensity of 50nT were detected. These lie within the area mapped as Gordon Limestone and are described as Anomaly 11 by Corbett et.al. 1982.

2. WORK COMPLETED2.2. Results Received2.2.1. STREAM SEDIMENT GEOCHEMISTRY (See Appendix and Fig's HC1, 2 & 3)

Results of analyses of stream sediment samples are listed in the Appendix and are summarised below. Only one sample, 59702, is in any way anomalous with 60 ppm Pb, 430 ppm Zn and 3,850 ppm Mn. Ranges of values of the other 18 samples are listed below:

Element	Range
Cu	5 - 50
Pb	5 - 45
Zn	10 - 110
Ag	0.5 - 0.5
Fe	0.05- 3.65%
Mn	10 805
Ba	10 - 130

The anomalous sample, 59702, was collected near the fault across the Bird River. Minor lead-zinc mineralisation was also noted nearby.

Copper values from the samples collected from Clark River are higher than those from other areas. This may be due to known copper mineralisation upstream or to the higher copper content of the intermediate volcanics outcropping in the area.

2.2.2. ROCK GEOCHEMISTRY (See Appendix and Fig's HC1, 2 and 3)

Only one rock sample returned anomalous values. This sample, 59799, reported 275 ppm Pb and 945 ppm Zn. It was identified as an intensely veined dolomite breccia. Traces of galena and sphalerite were noted. Again this sample was collected from near the fault across the Bird River.

2.2.3. PANNED CONCENTRATES (See Appendix and Fig. HC4)

Several significant minerals were identified from the Clark River, Hazel Creek and Bird River drainage systems. As well as the widely distributed and common limonite, rutile, zircon, ilmenite and tourmaline found in panned concentrates from all areas sampled, the minerals described below were found. Because samples were widely spaced and were derived from

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different rock units, there is little relationship between individual samples. Consequently each area will be discussed separately.

Clark River

Sample 59230 contains abundant magnetite and epidote with sparse sulphides and tourmaline. Intergrowths of magnetite and blue green tourmaline are also relatively common. These are significant in the vicinity of an aeromagnetic anomaly within altered acid to intermediate volcanics and volcanoclastic rocks.

Hazel Creek

Sample 59910 is dominated by the rounded and oxidised opaques with rutile, zircon and tourmaline that are abundant in the Tertiary Sediments. However, the "dense aggregates of a very fine bright green wispy layer silicate enclosing clusters of a red brown spinel" are more likely to be from an altered igneous rock.

Bird River

Sample 59705 which was collected 500m downstream from the major fault system contains 1-2% sulphides. Sulphides are predominantly pyrite.

2.2.4. GEOLOGY (See Fig. HC5 and Appendix)

Rock types identified at sample locations were very different to those predicted by the Queenstown 1:250,000 sheet. Altered intermediate to acid volcanics and volcanoclastic sediments outcrop in Hazel Creek and Clark River. These areas were previously mapped as Gordon Limestone.

Limestone and dolomite outcrop along the Kelly Basin Track and the Bird River. Minor lead-zinc mineralisation occurs in dolomite breccia close to the Bird River fault. Brecciation appears to be related to dolomitisation and later tectonic activity. The mineralisation and associated veins and alteration have the characteristics of the Zeehan siliceous type of vein mineralisation (see C.M.S. Report - Sample 59799).

3. DISCUSSION AND CONCLUSIONS

The discovery of altered volcanic rocks in this area is significant. The occurrence of a discrete magnetic anomaly plus the occurrence of unusual minerals in panned concentrates warrant further exploration. While it is possible that the magnetite, tourmaline, epidote and sulphides observed in Clark River samples

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are derived from known deposits further upstream, a closer source cannot be excluded.

In the carbonate rocks the Bird River fault appears to be a significant mineralising influence. While no evidence of syn depositional tectonic activity has been observed on the western side of this fault, slump brecciated limestones do occur on the eastern side along Nora River. Exploration of the Bird River area should continue in conjunction with the proposed exploration along Nora River.

4. PROPOSED EXPLORATION PROGRAMME 1984-85

4.1. Clark River and Hazel Creek

Proposed exploration in these areas should determine the extent of the altered acid-intermediate volcanics and define the lithological and geochemical characteristics of these volcanic rocks and associated volcanoiclastic sediments.

Reconnaissance stream sediment sampling, geological sampling and rock chip sampling are proposed. Because of rough terrain and thick rainforest progress will be slow. Helipads and walking tracks will need to be cut.

4.2. Bird River

Proposed exploration in this area will complement exploration of the Nora River area east of the Bird River fault. Reconnaissance and follow-up stream sediment sampling, rock chip sampling and geological mapping are planned.

5. CITED REFERENCE

CORBETT, K.D., et.al. . The 1981 West Coast Aeromagnetic Survey : Summary of information and results.
Report 1982-83 Department of Mines, Tasmania.

Electrolytic Zinc Co. of A'asia Ltd.
Rochery, Tas.

ROCK SAMPLE LEDGER

PROJECT: GORDON LIMESTONE LOCALITY: ...
COLLECTED BY: WMT, S. ... DATE: Feb ...

Sample Number	A.M.G. Co-ordinates (p.s.a.)		Sample Type	Geological Description	Rock-type (Macroscopic)	Thin or Polished Section			Metal Content (p.p.m. unless specified)							
	N	E				T or P	By	Reference	Rock-type (Microscopic)	Cu	Pb	Zn	Ag	Fe	Mn	Ba
59797				Grey to black very fine grained LIMESTONE, silicified, mid. cleav. + py	LST	T	CMS	CMS	dot. LST	5	10	15	X	1450	165	35
59798				Dark grey to black laminated LIMESTONE, moderate carbonate veining	LST					5	10	40	X	3800	160	24
59799				Grey LIMESTONE, intensely veined (quartz + carbonate) with minor galena	LST	T			PLST Boreon	20	275	945	X	4950	490	17
59800				Dark grey finely laminated graphitic SHALE	BSH					25	15	115	X	3.15%	265	483
60000				Green grey silicified acid tuff, trace pyrite	TA	T			Porphyritic rhyolite lava	5	X	25	X	1.05%	360	491
59285				Pink oxidized fine grained kaolinized acid volcanic	TA	T			Mixed rhyolitic tuff							
59286				Grey clayed fine grained volcanic sediment - andesite	VS	T			Tuffaceous pelite	65	5	120	X	2.00%	790	471
59287				Grey fine grained igneous rock - ? andesite - trace pyrite	IA	T			Tuffaceous pelite	105	X	50	X	4.30%	750	279
59288				Intensely sheared silicified lithic tuff	LA	T			Basite rhyolite porphyry	10	5	25	X	2.15%	890	460

377008

100

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Central Mineralogical Services



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 Mineral Resources Division
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 West Coast Mines
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CHIEF	MINER	INDUS	INDUS	INDUS
17 APR 1984				INDUS
INT	ENG	GEOL		

Beulah Road
 Norwood, S.A. 5067
 Telephone 42 5659

11th April, 1984

REPORT CMS 84/3/17

YOUR REFERENCE: Order No. 900513
 DATE RECEIVED: 8th March, 1984
 SAMPLE NOS.: 11 Samples
 SUBMITTED BY: I.J. Mathison
 WORK REQUESTED: Petrology

H.W. Fander, M. Sc.

REPORT CMS 84/3/17

Eleven rock samples from the Swift Creek and Bird River limestones and the Clark River volcanics were received for petrological examination. Representative thin-sections were prepared and examined microscopically. Attached brief tabulated descriptions summarise the microscopic data and results of carbonate and K-feldspar stainings tests, where applicable, and include interpretative comments.

Summary

The six samples of limestone (Swift Creek, Bird River) reflect dolomitisation-related breccia characteristics, but relict features are typically indicative of "massive" (laminated but non-clastic) limestones or reef-distal facies. Minor exceptions relate to the Swift Creek rocks which are locally weakly fossiliferous and include one "oolithic" or algal-pelletal limestone.

Limestones, in general, include accessory fine to ultrafine pyrite of syngenetic character and may be closely compared with typical massive facies of Gordon Limestone. The Swift Creek rocks are simply variably dolomitised. In contrast, the two Bird River rocks exhibit post-dolomite quartz veining and partial silicification with accessory traces of sphalerite, galena, and sulphosalt (?tetrahedrite). This late "epigenetic" alteration/mineralisation may be compared with the siliceous (as against sideritic) variants at Zeehan.

The Clark River volcanics include intermediate-acid (dacitic-rhyolitic) porphyries, tuffs and tuffaceous pelitic sediments. Sediments reflect composite feldspathic and subsequent argillic alteration assemblages enhanced by weak regional metamorphism. Porphyries and psammitic pyroclastics are semi-selectively sericitised. Accessory Fe-sulphide is present in the sediments and carbonate is a more or less ubiquitous accessory alteration phase.

D. Cowan, B. Sc.

Sample No.	Classification - Composition	Fabric	Accessories	Comments
5 (L 60 61				
60000	<u>Altered Porphyry</u> . Relict quartz, subordinate sericitised biotite and ill-defined calcite-pseudomorphed feldspar phenocrysts in a sericitised, weakly calcite-stained microcrystalline quartzofeldspathic groundmass.	Weakly flow-structured, strongly porphyritic, microfelsitic (devitrified). Frequent weakly sheared sericite veinlets.	Minor late cross-cutting chlorite-quartz veinlets.	Sericitised, weakly carbonated and weakly sheared porphyritic biotite rhyolite. Minor intrusive characteristics, but interpretation dependant on field evidence.
59285	<u>Altered Tuff</u> . Frequent quartz, sericitic alkali feldspar crystals/crystal fragments; minor sericitised/poorly defined lithic clasts; matrix of sericite, kaolin, microcrystalline quartz, disseminated leucoxenised	Poorly sorted (fine to medium) sandy clastic, with vaguely shardy matrix. Incipiently sheared.	Rare oxidised fine-grained pyrite.	Strongly argillised (sericitised/kaolinised) rhyolitic vitric-crystal tuff. No definite ignimbritic characteristics; possibly weakly reworked.
59286	<u>Tuffaceous Pelite</u> . Kaolin (degraded sericite) and crypto- to microcrystalline quartzofeldspathic material with disseminated clots, concordant films of albite, adularia, chlorite, calcite, stained with fine-grained pyrrhotite.	Planar- to lenticularly microlaminated, vaguely vitroclastic; weakly concordantly sheared.	Clastic silt-sized leucoxenic semi-opaques; ?carbonaceous matter (bleached).	Interpreted as a vitroclastic (pelitic ashy) silty shale on relict microtextural grounds. Feldspathic clots, films are of "diagenetic" character; boudinaged veinlets in pa
59287	<u>Tuffaceous Pelite</u> . Kaolin and crypto- to microcrystalline quartzofeldspathic material with frequent sand-sized sericitic/calcite-stained alkali feldspar grains, subordinate similarly altered lava, minor pumice clasts.	Concordantly sheared, finely laminated, sandy pelitic.	Chlorite (intergrown with degraded sericite), leucoxenic semi-opaques, fine-grained pyrrhotite.	Close affinities with 59286. Detail obscured by shearing, alteration effects, but sand-sized volcanic components appear mildly reworked.

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Sample No.	Classification - Composition	Fabric	Accessories	Comments
59288	<u>Altered Porphyry</u> . Relict quartz and semi-sericitic muscovite-pseudomorphed biotite phenocrysts in a matrix of semi-sericitic muscovite, minor microcrystalline quartz and semi-pervasive ankeritic carbonate.	Crenulated to disharmonically microfolded, phyllitic, weakly banded. Evenly disseminated relict phenocrysts.	Minor traces of pale chlorite.	Thoroughly sericitised and strongly sheared biotite rhyolitic porphyry; conceivably an alteration variant of 60000; dependant on field evidence.
59797	<u>Dolomitic Limestone</u> . Fine to microcrystalline calcite with sporadic rhombs, small clusters, discontinuous veinlets of sparry dolomite-ankerite. Sporadic crosscutting quartz-calcite veinlets.	Laminated, weakly concordantly sheared. Displacive quartz veinlets are stressed, postdate dolomite.	Pervasive traces carbonaceous matter. Minor traces ultrafine pyrite. Rare late calcite-healed microfractures.	Weakly dolomitised, banded, carbonaceous limestone, with displacive quartz-calcite veinlets pre-dating a weak tectonic cleavage.
59799 (T.S. 49155)	<u>Dolomitic Breccia</u> . Ill-defined clasts, matrix of fine sparry to microcrystalline dolomite rock. Frequent irregular veinlets, impregnations of fine-grained quartz. Sporadic pyritic stylolites. Late calcite-healed microfractures.	Refractured/quartz-healed breccia, primarily similar to 60283. Weakly stressed.	Sparse microscopic clots, films of sphalerite, minor traces galena, ?tetrahedrite, talc, adularia.	Base metal sulphides, talc, adularia concentrated in, and marginal to, post-dolomite quartz veinlets, impregnations. "Zeehan"-type alteration characteristics.

0.110

377012

JOHN F. GILFILLAN & ASSOCIATES PTY. LIMITED**MINERAL EXPLORATION AND GEOLOGICAL CONSULTANTS
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Project: Queenstown

**MINERALOGICAL EXAMINATION OF
FORTY EIGHT SAMPLES OF HEAVY
MINERAL CONCENTRATES**

Report No: E3/81/255

13th April, 1984.

For: Electrolytic Zinc Company of Australasia Ltd.

J. Barron
Dr. B.J. Barron,
Petrologist.

013

Sample No. 59230 (Hazel Creek)

Description of Concentrate This sample exhibits a wide variation in grain size, up to a maximum of about 3-5mm. It includes very abundant red-brown oxidised grains, fewer very pale brown grains, and dark grey to black oxides which are very strongly magnetic account for almost 25% of the sample.

Thin Section This sample of heavy mineral concentrate has a rather variable grain size from less than 0.2 mm up to about 2 mm (medium to very coarse sand size). About 40% of the sample comprises opaque grains, most of which are magnetite (see concentrate description above), with sparse subhedral cubic crystals of partly oxidised pyrite and ?arsenopyrite. Red-brown translucent to almost opaque grains of hematite are a common accessory phase.

The silicate fraction includes common angular and broken grains of clinozoisite, epidote, sparse grains of tourmaline, as well as quite abundant lithic grains. The latter include types containing fine grained magnetic, opaque oxides (mainly magnetite) closely intergrown with dark blue-green tourmaline, aggregates of clinozoisite and argillic alteration products (possibly replacing previous feldspar), aggregates of water clear albite, and red-brown limonite-stained opaque oxides, closely intergrown fine grained quartz, opaque oxides, and tourmaline, and very fine grained foliated wispy sericite-rich material.

014

Sample No. 59233 (Hazel Creek)

Description of Concentrate A brown-grey coloured concentrate of very fine sand sized particles, rare small grains of which are strongly magnetic.

Thin Section This is a more or less equigranular concentrate comprising grains mainly within the size range 0.16 mm to 0.5 mm (fine to medium sand size), but with rare aggregates up to almost 3 mm across. It contains approximately 60% of subrounded to subhedral opaque grains which appear to include both magnetite and elongate titaniferous opaque oxides, as well as sparse grains of pyrite and ?pyrrhotite. A subordinate proportion of nearly opaque to translucent red-brown irregular to subhedral spinel crystals are present and sparse grains of limonitic oxides (including goethite) exhibit quite well rounded to subhedral shapes. Accessory grains include rutile (about 1% to 2% of the total concentrate), and rare grains of cassiterite.

The remainder of the sample comprises transparent silicates and oxides, of which epidote, zircon and tourmaline are present in approximately equal major proportions. Accessory phases include clinopyroxene, clinozoisite, carbonate and rare clouded grains of monazite.

Sample No. 59705 (Hazel Creek)

Description of Concentrate Virtually none of the sample remains.

Thin Section This sample has a rather variable grain size, ranging up to more than 2 mm (very coarse sand size) but mostly within the range 0.2 mm to 0.6 mm (fine sand to coarse sand size). The grains of this sample are quite well rounded with few angular and broken clasts, and generally these appear to be quite strongly oxidised (weathered) and stained by red-brown limonitic material.

The oxide fraction accounts for approximately 60% of the present sample and this includes abundant leucoxene-altered titaniferous oxides, relatively subordinate magnetite and abundant oxides which are partly converted to translucent red-brown limonitic material. Sparse subrounded grains of rutile commonly with patchy dark brown anatase comprise about 2% of the total grains represented in thin section. Several large fine grained lithic fragments are largely converted to red-brown limonitic oxides, while others once contained large anhedral patches of leucoxene-altered ilmenite, now set in very fine grained intergrown argillic products and quartz.

The silicate fraction, about 25 to 30% of the present sample, includes quite well rounded grains of tourmaline, zircon, and scattered grains of quartz contamination. Lithic fragments include fine grained foliated quartz-rich arenite (or greywacke), very fine grained aggregates of chlorite, and of tourmaline.

Approximately 1% to 2% of the total sample comprises partly oxidised sulphide grains of which at least two phases are present including mostly pyrite.

016

Sample No. 59707 (Hazel Creek)

Description of Concentrate Only trace proportions remain of a very fine grained mid-grey coloured concentrate with rare magnetic grains.

Thin Section Oxides account for about 40% of the present concentrate which has an average grain size of only 0.06 mm (silt sized particles) with rare grains reaching up to 0.16 mm.

The oxide fraction includes very abundant leucoxene-altered titaniferous oxides with subordinate sparsely scattered opaque oxides which appear to be of titaniferous magnetite or ilmenite composition. Recognisable small subrounded to elongate prismatic grains of red-brown rutile account for about 2% of the total number of grains represented in the sample.

The silicate grains include very abundant zircon, as well rounded to elongate prismatic shaped crystals, subordinate but yet common tourmaline, as subrounded to quite well rounded grains and common angular to irregular shaped quartz grains. Sphene is a minor strongly clouded accessory phase.

Sample No. 59902 (Hazel Creek)

Description of Concentrate None remains.

Thin Section This sample includes a rather meagre coarse fraction (with grains ranging up to 2.5 mm across), as well as a very much finer grained fraction, also comprising relatively few grains with an average size of only about 0.06 mm across (coarse silt to very fine sand size).

The coarse fraction as in previous samples consists almost entirely of strongly oxidised red-brown material, possibly including clasts with a siltstone lithic host, as well as oxidised grains in which vague fragmental relict textures are preserved.

The very fine grained fraction comprises mostly elongate subhedral prismatic subrounded, to well rounded crystals of zircon, numerous small grains of white leucoxene-altered titaniferous oxides, scattered grains of elongate to subrounded red-brown rutile, as well as sparse scattered grains of tourmaline.

017

Sample No. 59910 (Hazel Creek)

Description of Concentrate A small number of fine sand sized grains which include clear well rounded and elongate prismatic zircon crystals, as well as pale grey, green and black oxide grains.

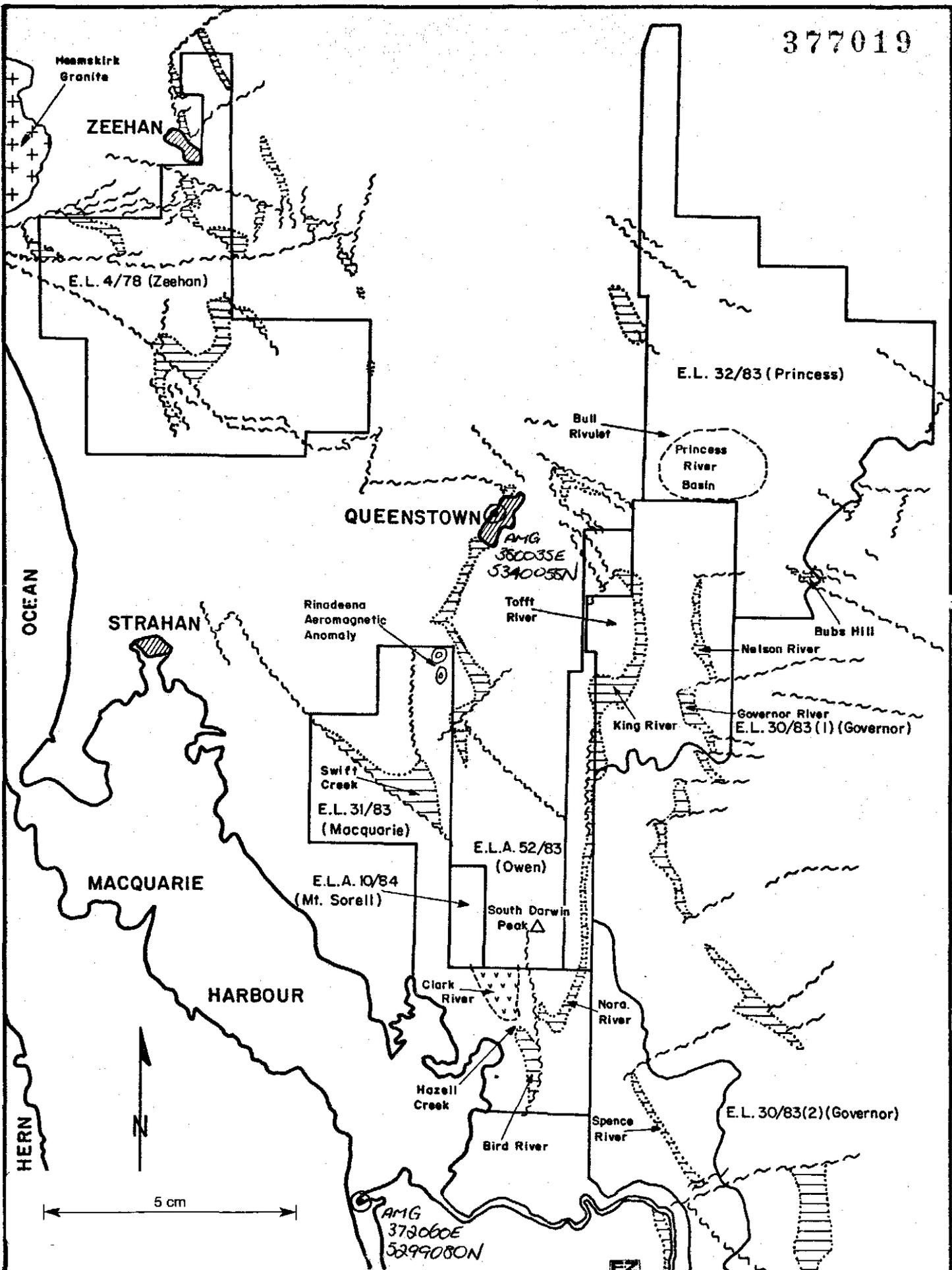
Thin Section This sample contains a variety of grains mostly within the size range 0.16 mm (fine sand) to 0.5 mm (medium sand size). A small proportion of coarser grains reach 0.6 mm to 1.5 mm (coarse to very coarse sand).

Opaque oxides account for approximately 65% of the grains represented, and most of these are subrounded to somewhat irregular shaped grains of titaniferous oxides, largely altered to leucoxene. A subordinate fraction of opaque oxides retain subhedral octahedral shapes and most likely include magnetite. Still other grains comprise translucent red-brown limonitic-stained and weathered oxides. Sparse, small grains of rutile are a minor accessory phase.

The silicate fraction is dominated by very abundant angular grains and aggregates of yellow epidote, sparse grains of quite well rounded tourmaline ± quartz, scattered small rounded zircon crystals, sphene, rare garnet and pale green actinolitic amphibole. Lithic clasts include dense aggregates of a very fine bright green wispy layer silicate enclosing clusters of a red-brown spinel; and opaque oxides, clusters of actinolite and epidote; ferricrete enclosing scattered silt-sized quartz chips; degraded oxidised and ferric oxide stained plant remains.

018

377019

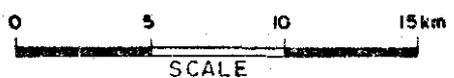


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5 cm

AMG REFERENCE POINTS ADDED

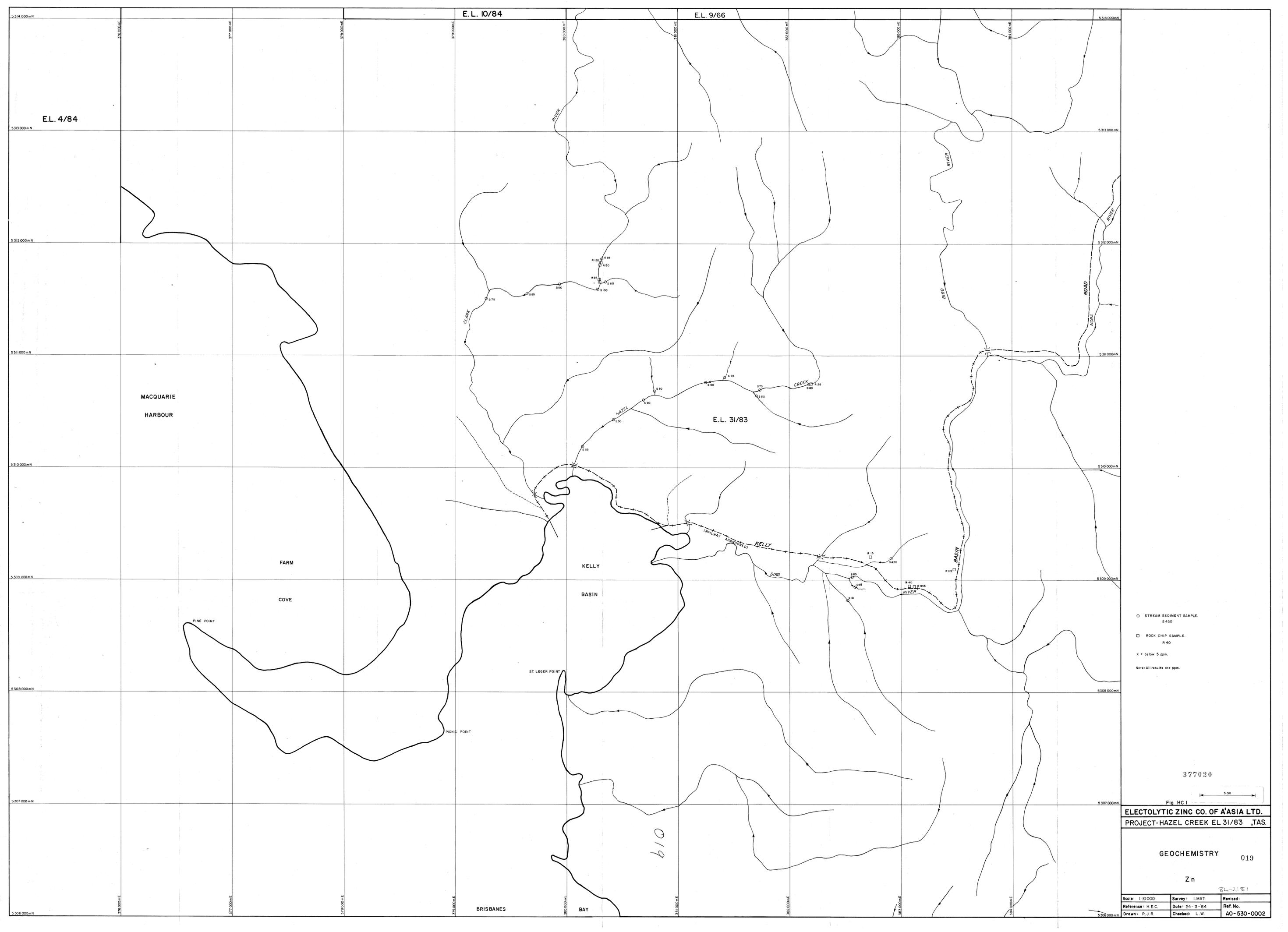
-  FAULT
-  GORDON LIMESTONE
-  MT. READ VOLCANICS



PROJECT: GORDON LIMESTONE J.V.

LOCATIONS

Compiled: S.T.	Date:	PLANNO
Drawn: R.J.R.	Scale	Fig.



- STREAM SEDIMENT SAMPLE. S430
- ROCK CHIP SAMPLE. R40
- x = below 5 ppm.
- Note: All results are ppm.

377020



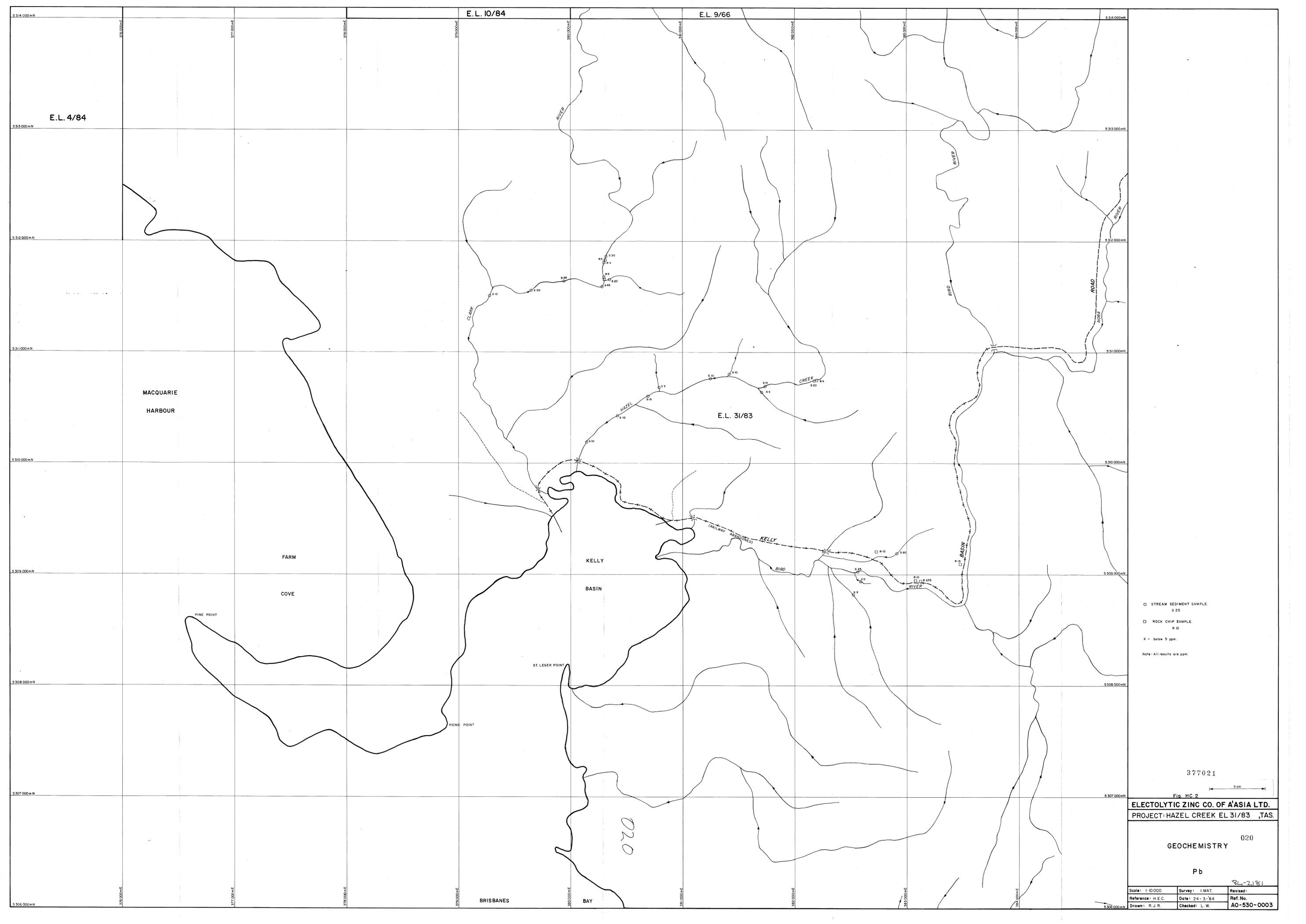
ELECTROLYTIC ZINC CO. OF ASIA LTD.
PROJECT: HAZEL CREEK EL 31/83, TAS.

GEOCHEMISTRY 019

Zn

Scale: 1:10000	Survey: 1.MAT	Revised:
Reference: H.E.C.	Date: 24-3-84	Ref. No.
Drawn: R.J.R.	Checked: L.W.	AO-530-0002

b10



E.L. 4/84

E.L. 10/84

E.L. 9/66

E.L. 31/83

MACQUARIE
HARBOUR

FARM

COVE

PINE POINT

PICNIC POINT

ST LEGER POINT

KELLY

BASIN

020

BRISBANES

BAY

- STREAM SEDIMENT SAMPLE
S 25
 - ROCK CHIP SAMPLE
R 10
 - X = below 5 ppm.
- Note: All results are ppm.

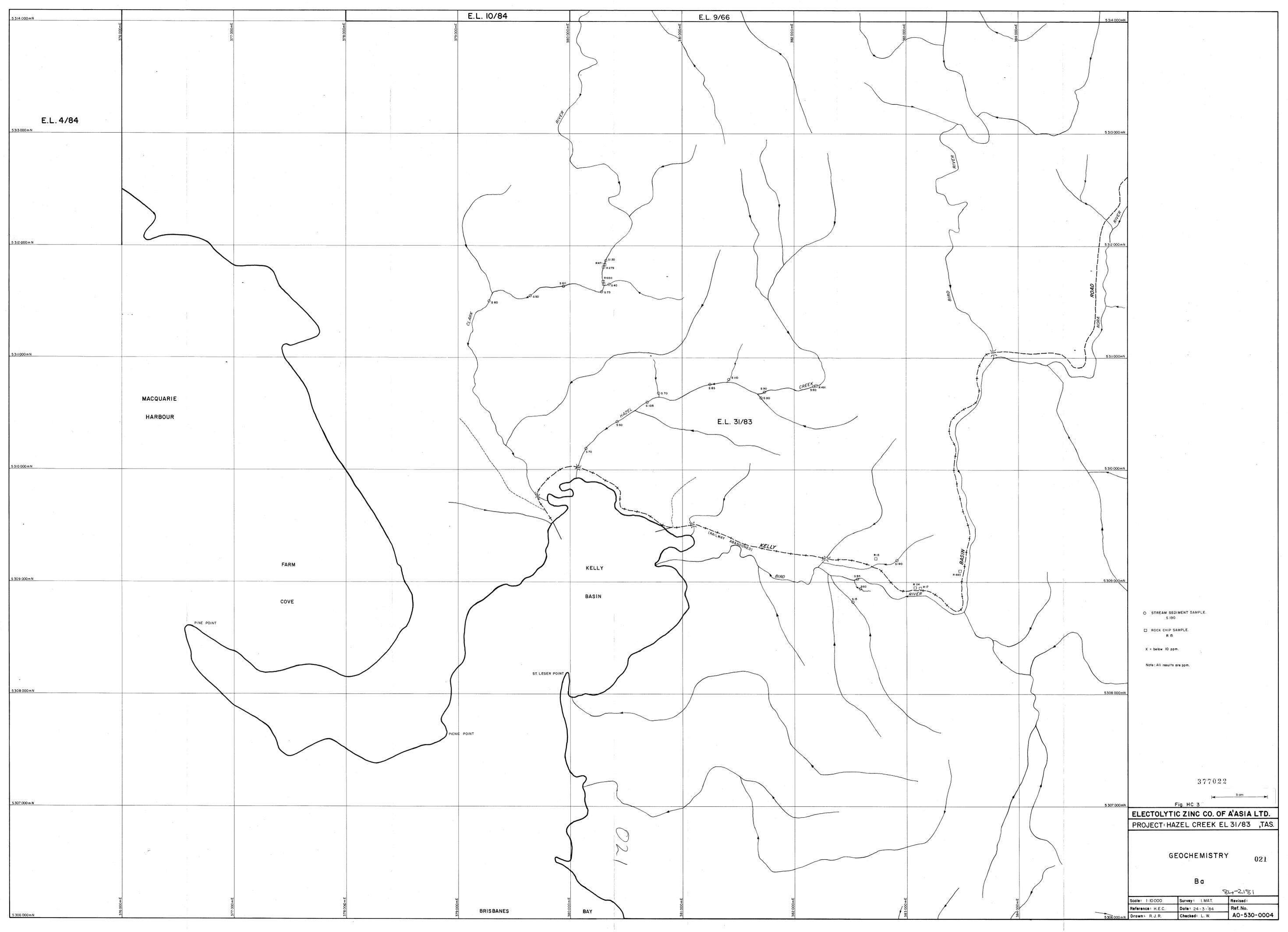
377021

5 cm

Fig. HC 2
ELECTOLYTIC ZINC CO. OF ASIA LTD.
PROJECT: HAZEL CREEK EL 31/83, TAS.

GEOCHEMISTRY 020
Pb

Scale: 1:10000	Survey: 1 MAT.	Revised:
Reference: H.E.C.	Date: 24-3-84	Ref. No.
Drawn: R.J.R.	Checked: L.W.	AO-530-003



E.L. 4/84

E.L. 10/84

E.L. 9/66

MACQUARIE
HARBOUR

FARM
COVE

PINE POINT

PICNIC POINT

ST. LEGER POINT

KELLY
BASIN

E.L. 31/83

021

BRISBANES

BAY

- STREAM SEDIMENT SAMPLE.
S 190
 - ROCK CHIP SAMPLE.
R 15
 - X = below 10 ppm.
- Note: All results are ppm.

377022



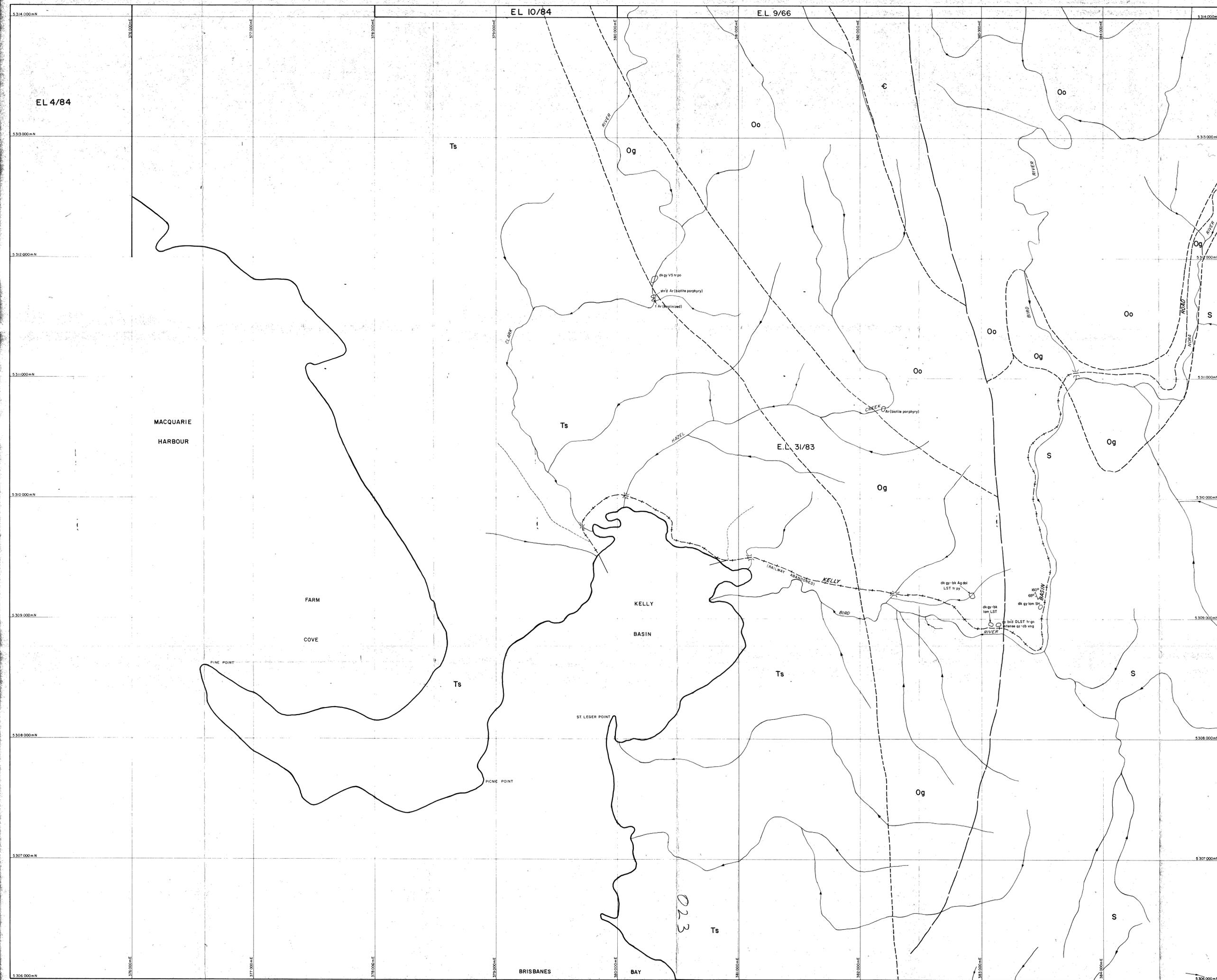
Fig. HC 3

ELECTOLYTIC ZINC CO. OF ASIA LTD.
PROJECT: HAZEL CREEK EL 31/83, TAS.

GEOCHEMISTRY 021

Ba

Scale: 1:10000	Survey: I.M.A.T.	Revised:
Reference: H.E.C.	Date: 24-3-'84	Ref. No.
Drawn: R.J.R.	Checked: L.W.	AO-530-0004



COLOUR

pk - pink	wh - white
br - brown	bk - black
bl - blue	gr - green
gy - grey	yl - yellow
rd - red	or - orange
cr - cream	pl - pale
lt - light	dk - dark

TEXTURE

Tg - fine grained	fos - fossiliferous
mg - medium grained	sil - siliceous
cg - coarse grained	mic - micaceous
bre - brecciated	fer - ferruginous
cle - cleaved	int - intense
she - sheared	wk - weak
col - calcareous	vr - very
carb - carbonaceous	pb - pebble
lam - laminated	cb - cobble
abd - cross bedded	tr - trace
tn bd - thin bedded	in bd - inter bedded
th bd - thick bedded	tbl - tabular
vn - veins, veining	frct - fractured

ROCK TYPE

SST - sandstone	SLT - siltstone
LST - limestone	DLT - dolomite
BX - braccia	COL - conglomerate
SH - shale	BSH - block shale
QZT - quartzite	LIM - limestone
GRIT - grit	CLY - clay
PUG - pug	GRA - gravel

MINERALOGY or ALTERATION

az - quartz	py - pyrite
sp - spinel	sp - sphalerite
lim - limonite	cp - chlorophyllite
carb - carbonated	sil - silicified
c - calcite	

ORDER

Colour, Texture, Rock Type, Mineralogy or Alteration, Feasite

dk gy mg fos SST or gy calc SH py or pl gy LST sil

TOPOGRAPHICAL

cut grid lines	joint
roads	joint - vertical
tracks	overturned
tramways	bedding
power lines	bedding - vertical
rivers, creeks	quarries
swampy area	

INTERPRETED GEOLOGY
 Geology adapted from Queensland 1:250,000 geological map (Corbett & Brown 1975)

Tertiary	Ts	Tertiary sediments.
Silurian	S	Undifferentiated siltstone, shale and minor sandstone.
Ordovician	Og	Gordon limestone, limestone with some siltstone.
	Oo	Siliceous conglomerate and quartz sandstone.
Cambrian	€	Basic to intermediate volcanics and associated volcanoclastic rocks.

--- Geological boundary.
 - - - Fault.

377024
 Fig. HC 5
 Scale: 1:10000

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 PROJECT: HAZEL CREEK EL 31/83, TAS.

GEOLOGY 023
 (INTERP)

Scale: 1:10000	Survey: 1 MAT.	Revised:
Reference: H.E.C.	Date: 28-6-84	Ref. No.
Drawn: R.J.R.	Checked:	AO-530-0006