

000

372001

U. DIR.	A.C.	C.G.	E.O.	REG.
D. DIR.	- 8 AUG 1984			Registrar
	DEPT. OF MINES			E & IL
REF. No. 8112/84				

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
MINERAL RESOURCES DIVISION

PART OF EXPLORATION LICENCE NO. 30/83 "GOVERNOR"

KING RIVER AREA

REPORT ON EXPLORATION ACTIVITY

1ST OCTOBER, 1983 TO 30TH MARCH, 1984.

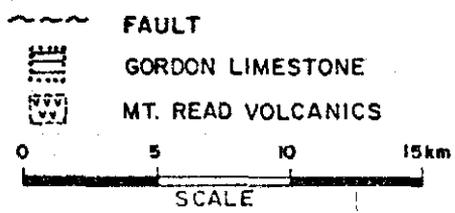
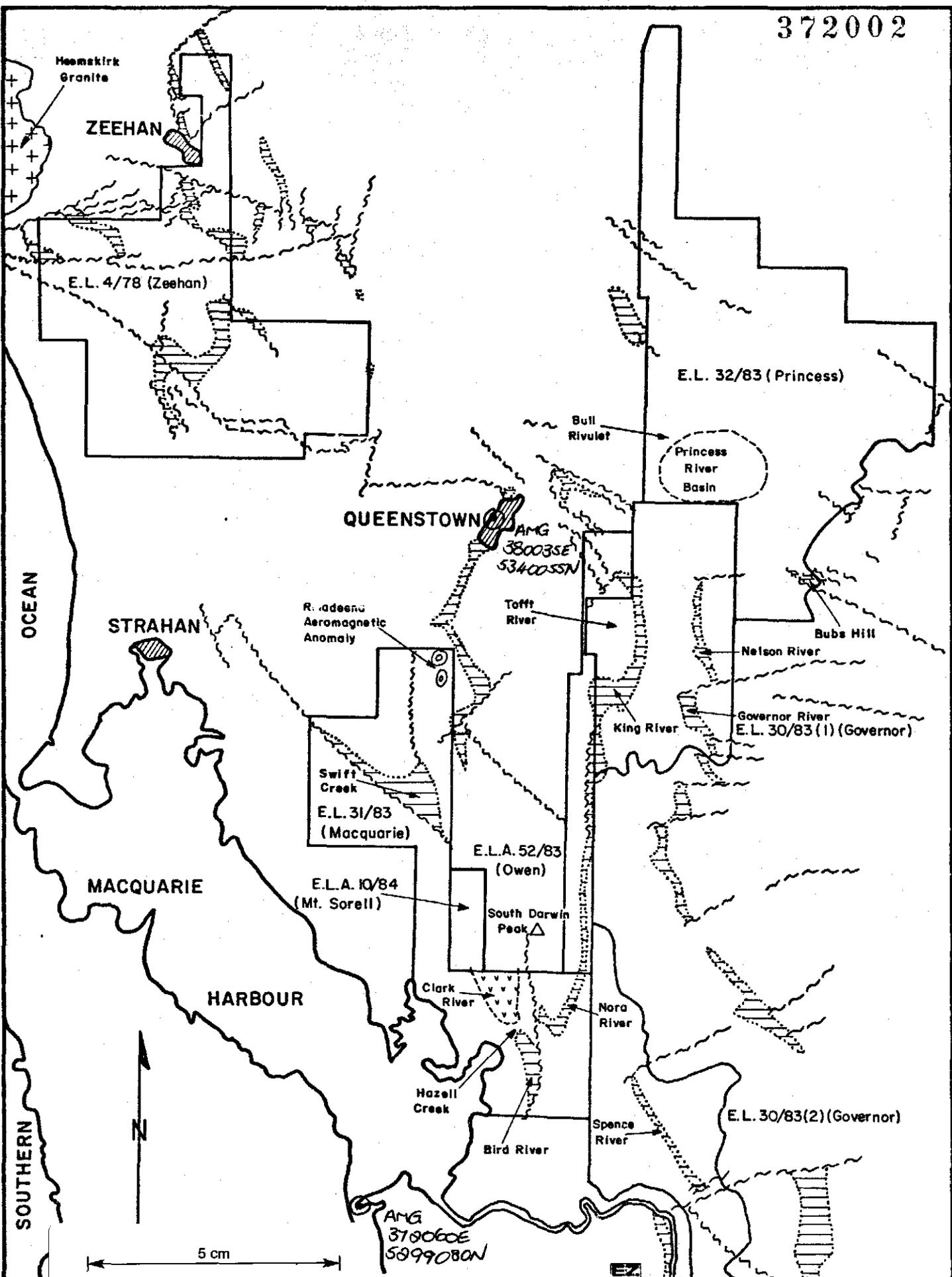
E.Z. REPORT No. T189

I. J. MATHISON,
JULY, 1984.

OPEN FILE

MICROFILMED

001



PROJECT: GORDON LIMESTONE J.V.		
LOCATIONS		
Compiled: S.T.	Date:	PLAN NO
Drawn: R.J.R.	Scale:	Fig.

OR POINTS ADDED

TABLE OF CONTENTS

<u>TABLE OF CONTENTS</u>	i.
<u>LIST OF FIGURES & APPENDIX</u>	i
<u>1. INTRODUCTION</u>	1.
<u>1.1. Location and Access</u>	1.
<u>1.2. Published Geology</u>	1.
<u>1.3. Topography and Vegetation</u>	1.
<u>1.4. Previous Exploration</u>	1.
<u>2. E.Z. EXPLORATION - OCTOBER, 1983 - MARCH, 1984</u>	2.
<u>2.1. Work Completed</u>	2.
<u>2.1.1. GRIDDING</u>	2.
<u>2.1.2. GEOLOGICAL MAPPING</u>	2.
<u>2.1.3. GEOCHEMISTRY</u>	2.
<u>2.1.4. GEOPHYSICS - GROUND MAGNETICS</u>	2.
<u>2.2. Results Received</u>	2.
<u>2.2.1. GEOLOGY</u>	2.
<u>2.2.2. ROCK CHIP GEOCHEMISTRY</u>	3.
<u>2.2.3. GEOPHYSICS - GROUND MAGNETICS</u>	4.
<u>2.2.4. SOIL SAMPLING</u>	4.
<u>3. DISCUSSIONS & CONCLUSIONS</u>	4.
<u>4. RECOMMENDED PROGRAMME - 1984-85</u>	5.

LIST OF FIGURES & APPENDIX

FIGURE KR1	King River Geology (Interp.)	AO-529-2002 ✓
KR2	King River - Ground Magnetics	AO-529-2000 ✓
APPENDIX	Rock Samples - Data Sheets	
	Petrology	

1. INTRODUCTION

1.1. Location and Access

The King River area is situated near where the Kelly Basin Road crosses the King River and just north of Crotty. Road access to the area is good. The area is 20km south of Queenstown by road.

1.2. Published Geology

On the Queenstown 1:250,000 Geological Sheet a wide zone of Gordon Limestone is mapped. The generally thin belt of limestone along the Kelly Basin Road has been thickened by folding and possibly faulting. The limestones are underlain by siliceous conglomerate of the Owen Conglomerate and overlain by quartz sandstone and siltstone of the Crotty Quartzite.

1.3. Topography and Vegetation

As is common in Western Tasmania the limestone in the King River area occupies the low land between ridges of the more siliceous sediments. Gentle troughs and ridges on the low lands suggest thick gravel banks and areas of solution collapse. Frequent fires have developed a vegetation cover of button grass and waist high ti-tree. Thicker and older scrub occurs in protected patches along creeks and rivers.

1.4. Previous Exploration

No exploration activity, old workings, or mineral occurrences have been reported from the limestone. A small adit and winze are exposed in a cutting on the new H.E.C. road. These workings are in sandstone of the Crotty Quartzite.

004

2. E.Z. EXPLORATION - OCTOBER, 1983 - MARCH, 1984

2.1. Work Completed

2.1.1. GRIDDING

Four east-west grid lines with a line spacing of 800m were prepared. A total of 4.5km was pegged at 50m space corrected intervals. No line cutting was necessary.

2.1.2. GEOLOGICAL MAPPING

The grid, creek channels and road cuttings in the gridded area were mapped and sampled. Use was also made of recent H.E.C. geological mapping - especially along King River. Thin sections of samples were prepared and examined.

2.1.3. GEOCHEMISTRY

Rock samples were collected. These were analysed for Cu, Pb, Zn, Ag, Fe and Ba by Analabs in Burnie using A.A.S. techniques.

2.1.4. GEOPHYSICS - GROUND MAGNETICS

The four grid lines were covered by a ground magnetic survey. A local base station was established in an attempt to monitor diurnal variation.

2.2. Results Received

2.2.1. GEOLOGY (See Fig. KR1)

In the vicinity of the King River Grid a large area of Gordon Limestone is thought to occur. The limestone outcrops only in the King River, Smelters Creek and Baxters Rivulet and as limited very weathered exposures in drainage costeans along the dam access road to the west of the area. Limestone is inferred to occur in large areas to south and east of the King River by the presence of circular structures clearly observed in air photographs and sometimes observed on the ground. These are probable sink holes or solution collapse features which are now filled with the coarse gravels that appear to cover the valley.

Typically the limestone is fine and medium grained, strongly bioturbated and has dolomitised patches and zones. A cleavage has been developed,

005

in the form of common stylolites which are approximately vertical and trending north-south, paralleling the Great Lyell Fault to the west of the King River Grid.

The limestone appears to have been folded. This is reflected in the erratic bedding readings measured in the creeks and rivers, and results in an increase in exposed thickness of limestone. The overlying Crotty Quartzite also shows some moderate folding.

The Great Lyell Fault is thought to constitute the western boundary of the Gordon Limestone. This boundary is not exposed and lies beneath talus slopes of Owen Conglomerate boulders.

To the south and east of the King River Grid, Crotty Quartzite is inferred to conformably overly the Gordon Limestone, however the boundary is not exposed.

Sparse evidence of mineralisation occurs in the Gordon Limestone in the area of the King River Grid. Minor euhedral pyrite crystals occur in minor bands exposed in Smelters Creek and are probably of syngenetic origin. In Baxters Rivulet, minor quartz-carbonate filled vughs occur in limited outcrops. These are of similar nature to the Bubs Hill mineralised vughs, but contain no sulphide minerals.

2.2.2. ROCK CHIP GEOCHEMISTRY (See Fig. KR1 and Appendix)

Results of analyses are listed on the rock sample sheets in the Appendix and sample locations are marked on Fig. KR1. The data suggests samples belong to three separate groups. Characteristics of these groups are summarised below.

Group Name	Element	Range	Mean	?Anomalous
LIMESTONE (n = 21)	Cu	5 - 30	<10	-
	Pb	<10 - 30	15	-
	Zn	30 - 55	30	-
	Ba	<10 -130	45	-
BLACK CLAY (n = 8)	Cu	10 - 75	35	-
	Pb	15 -330	110	>200 (2)
	Zn	35 -1200	275	>390 (2)
	Ba	100 -390	260	-
SHALE (n = 2)	Cu	10	10	-
	Pb	30 - 45	35	-
	Zn	20 - 75	50	-
	Ba	430 -650	540	-

The significance of the elevated lead and zinc values in black clay or pug formed by the weathering of limestone has not been determined. Simple concentration of background values by removal of the carbonate fraction of slightly argillaceous limestone is suspected.

2.2.3. GEOPHYSICS - GROUND MAGNETICS (See Fig. KR2)

Ground magnetic profiles across the King River Grid show a gradual increase from east to west. Superimposed on this gradient are small irregular peaks and troughs. The small wavelength of these responses together with the rather irregular base station data suggest that these responses are due to noise rather than to any geological cause.

2.2.4. SOIL SAMPLING

No soil sampling was attempted. Thick boulder gravels were observed during geological mapping. These would effectively prevent auger sampling of weathered bedrock over most of the grid.

3. DISCUSSION AND CONCLUSIONS

The King River area was selected for exploration because of its structural complexity and its easy road access. Although the area will be completely covered by water backed up by the King River Dam, it was hoped that valuable regional data

1007

would be obtained. This was effectively prevented by the cover of gravels encountered.

The H.E.C. are currently carrying out diamond drilling in the Gordon Limestone near the Andrew River and the King River. These may provide useful data of regional significance. Drill core from these holes should be logged.

4. RECOMMENDED PROGRAMME - 1984-85

No further field work in the King River area is warranted. Provided H.E.C. approval can be obtained, drill core from the Arthur River and King River areas should be logged and sampled.

Electrolytic Zinc Co. of Asia Ltd.
Rosebery, Tas.

ROCK SAMPLE LEDGER

CT: [REDACTED] LOCALITY: [REDACTED] KIND: [REDACTED] QUANT: [REDACTED]
COLLECTED BY: J. MACINTYRE DATE: 20/2/54

Sample Number	A.M.G. Co-ordinates		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	Ba
57350	5329190	385960	W.A.R.C.	BLACK TO D. GREY CLAY (PROB. WEATH. LIMESTONE).	CLAY					30	90	280	x	1.30%	268
57351	5329200	385965	W.A.R.C.	BLACK CLAY WITH MINOR LIGHT GREY PATCHES (PROB. WEATHERED LIMESTONE)	CLAY					30	65	1200	x	1.45%	329
57352	5329210	385970	W.E.R.C.	BLACK CLAY (PROB. WEATHERED LIMESTONE)	CLAY					30	100	55	0.5	4850	168
57353	5329215	385975	W.E.R.C.	BLACK AND D. BROWN CLAY (PROB. WEATHERED LIMESTONE)	CLAY					75	330	160	0.5	1.05%	342
57354	5330005	386235	R.C.	D. GREY TO BLACK HARD L/S WITH MINOR WHITE CRYSTALLIZED VEINS AND STRINGERS.	LIMESTONE					5	15	30	x	1250	x
57355	5329990	386235	R.C.	D. GREY HARD L/S WITH COMMON FOSSIL FRAGS.	LIMESTONE					5	10	30	x	2600	12
57356	5329995	386240	R.C.	D. GREY TO BLACK HARD L/S WITH COMMON CS. GRAINED CARBONATE "EYES" WITH THE FINE GRAINED FABRIC OF ROCK BENT AROUND THEM. MINOR PTYGMATIC VEINING [NOTE: SIMILAR ROCK 2M DOWNSTREAM CONTAINS FUSCULAR PYRITE, SPHALERITE + POSS. RARE GALENA, UP TO 0.7CM. IN DIAMETER.] [CLEAVAGE APPROX. VERT. / 00°]	LIMESTONE					10	15	40	0.5	4850	52
57357	5330035	386240	R.C.	MED. GREY, F. GRAINED L/S WITH VERY FINE GRAINED BLACK MATERIAL IN MINOR STYLOLITES. SPARSE FINE GRAINED PYRITE IN PATCHES. [CLEAVAGE APPROX. VERT. / 00°]	LIMESTONE					10	10	35	x	7800	45
57358	5330280	386210	R.C.	MED. TO D. GREY, F. GRAINED L/S WITH COMMON CS. GRAINED IRREGULAR PATCHES WHICH STAND OUT ON WEATHERED SURFACE	LIMESTONE					30	20	55	0.5	2550	17
57359	5330110	386250	R.C.	F. GRAINED SHALEY L/S WITH SPARSE PYRITE SPECKS. GOOD CLEAVAGE.	LIMESTONE					10	30	55	x	1.40%	123
57360 } 57377 }	5329930	386250	R.C.	D. GREY, F. GRAINED L/S WITH CS. GRAINED CARBONATE "EYES" WITH F. GRAINED FABRIC	LIMESTONE	T. Common	CMS	dol LST		5	10	30	x	5050	40
							84/3/18	micritic							

372009

600

Electrolytic Zinc Co. of Asia Ltd.
Rushbery, Tas.

ROCK SAMPLE TAGGER

PROJECT: GORDON LIMESTONE

LOCALITY: MINK RIVER W.D.

COLLECTED BY: J. MAC [REDACTED] [REDACTED]

DATE: [REDACTED] 20 / [REDACTED]

Sample Number	A.M.G.Co-ordinates		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	Ba		
57360 } 57377 }	(cont)			BEDDING AROUND THEM. THESE EYES MAY BE RECRYSTALLIZED FOSSILS.		T	Downy	CMS	hol LST								
57361	5 329 915	386 255	R.C.	D. GREY SHALEY L/S WITH SPARSE F. GRAINED PYRITE DISSEMINATIONS.	LIMESTONE						5	10	30	x	3050	29	
57362 } 57378 }	5 329 905	386 260	R.C.	D. GREY L/S, F. GRAINED WITH CS. GRAINED CARBONATE "EYES".	LIMESTONE	T	Downy	CMS	LST		5	10	40	x	3050	13	
57363	5 329 890	386 270	R.C.	MED. GREY, F. GRAINED SHALEY L/S WITH SPARSE PYRITE SPECKLS.	LIMESTONE						5	10	30	x	3850	24	
57364	5 329 860	386 275	R.C.	MED TO D. GREY, MED. GRAINED L/S WITH F. GRAINED MINOR IRREGULAR PATCHES.	LIMESTONE						5	20	30	x	5850	48	
57365	5 330 270	385 880 _M	WEA.R.C.	BLACK TO D. GREY CLAYS WITH MINOR SLIGHTLY HARDER PIECES.	CLAY						10	15	35	x	1650	104	
57366	5 330 285	385 880 _M	WEA.R.C.	D. GREY FAIRLY HARD WEATHERED L/S WITH SOME PORTIONS WEATHERED TO CLAY.	LIMESTONE.						5	10	30	0.5	8300	48	
57367	5 330 290	385 880 _M	WEA.R.C.	BLACK FRIABLE WEATHERED LIMESTONE WEATHERED IN PLACES TO BLACK CLAY.	LIMESTONE						10	15	35	x	5950	127	
57368	5 330 305	385 880 _M	WEA.R.C.	BLACK TO D. GREY SOFT FRIABLE LIMESTONE WITH MINOR L. GREY PATCHES SOME PARTS WEATHERED TO BLACK CLAY.	LIMESTONE						5	15	30	x	6150	79	
57369	5 329 840	386 280	R.C.	L → MED GREY, FINE GRAINED SHALEY L/S WITH MINOR COARSER GRAINED L/S FILLED BURROWS.	LIMESTONE						5	10	35	x	4550	33	
57370	5 329 840	386 280	R.C.	MED GREY, FINE → MED. GRAINED L/S WITH MINOR PYRITE CUBES. MINOR CS. GRAINED CARBONATE "EYES".	LIMESTONE						5	10	30	x	5150	31	
57371	5 329 825	386 280	WEA.R.C.	BLACK → MED. GREY CLAY WITH SPARSE PYRITE SPECKLS.	CLAY						25	65	390	x	7700	387	

Smith Print. No. 21152

372010

003

Electrolytic Zinc Co. of Asia Ltd.
Roxbury, Tas.

ROCK SAMPLE LEDGER

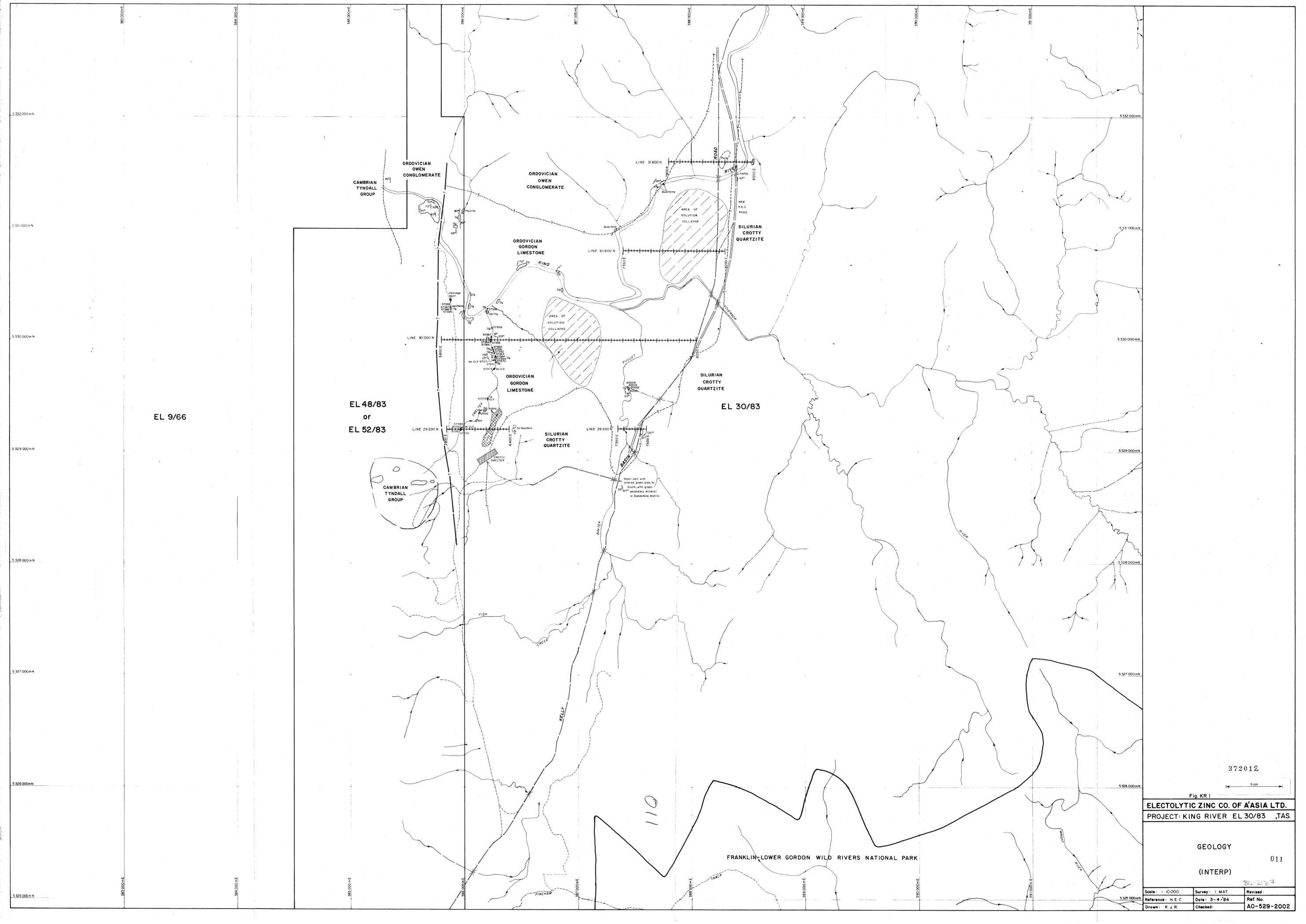
PROJECT: [REDACTED] LOCATION: KING RIVER GRID
COLLECTED BY: I. MARSHALL-SCOTT DATE: 22-12-84

Sample Number	A.M.G. Co-ordinates		Sample Type	Geological Description	Rock-type (Macroscopic)	Thin or Polished Section			Metal Content (p.p.m. unless specified)							
	N	E				Th or P	By	Reference	Rock-type (Microscopic)	Cu	Pb	Zn	Ag	Fe	Ba	Mn
57372	5 329 800	386 280	R.C.	MED. GRAY SHALEY L/S WITH COMMON "EYES"	LIMESTONE					10	5	30	x	4800	31	
57373	5 329 245	386 265	WEA. R.C.	BLACK CLAY WITH MINOR SPECKS OF PYRITE.	CLAY					15	20	35	x	1.40%	360	
57374	5 329 475	386 210	WEA. R.C.	BLACK CLAY WITH MINOR L. GRAY BANDS.	CLAY					50	225	65	0.5	1.50%	148	
57375	5 329 370	386 180	R.C.	MED. GRAY SHALE WITH COMMON F.S.P. WHITE MICA AND MINOR RED BROWN IR-OXIDE STAINING + CLAYS IN MINOR FINE HOLES. (WEATHERED PYRITE?)	SHALE					10	45	75	x	1.45%	649	
57376	5 329 355	386 130	R.C.	MED GRAY SHALE SIMILAR TO SAMPLE 57375.	SHALE					10	30	20	x	3450	432	
60001				Red grey fine grained well laminated LIMESTONE	LIMESTONE					5	10	15	x	7100	65	560
60002				Fine-med. grained dolomitic fossiliferous (corals + shells) Dark grey	LIMESTONE					10	15	15	x	3750	36	365
60003				Dark grey m.gr. DOLOMITE, massive mar. carbonate veining + veils of quartz + calcite	DOLOMITE					5	x	15	x	6050	27	635
60004				Med. grey f.gr. finely bedded coarse quartz + carbonate veils	LIMESTONE					5	10	15	x	8900	37	590
59701				Pale grey-green QUARTZITE with dk grey carbonic shale laminae	QUARTZITE											

Sample No.	Classification - Composition	Fabric	Accessories	CENTRAL MINERALOGICAL SERVICES Comments
57377 (T.S. 49156)	Impure Limestone. Microcrystalline calcite with more or less pervasive ultrafine carbonaceous matter, frequent irregular to ovoid zones of sparry calcite, minor lenticular zones of fine sparry dolomite.	Weakly carbonaceous shale-parted; concordantly sheared, with boudinaged calcite veins, veinlets.	Traces syngenetic/diagenetic pyrite. Minor traces quartz in calcite veinlets. Semi-pervasive traces	Diagenetically calcite-veined, subsequently weakly dolomitised "massive" impure limestone. Non-fossiliferous "distal" characteristics of sericite.
57378	Impure Limestone. Microcrystalline calcite with more or less pervasive ultrafine carbonaceous matter, frequent irregular to lenticular zones of sparry calcite; minor discontinuous carbonaceous shaly partings.	Closely analogous to 57377.	Minor traces ultrafine syngenetic pyrite. Rare recrystallized bivalve fragments.	Incipiently fossiliferous massive impure limestone with close affinities to 57377; similarly diagenetically calcite-veined, sheared, boudinaged.

372011

010



EL 9/66

EL 48/83
or
EL 52/83

EL 30/83

372012



Fig. KR 1

ELECTROLYTIC ZINC CO. OF ASIA LTD.
PROJECT: KING RIVER EL 30/83 ,TAS.

GEOLOGY

011

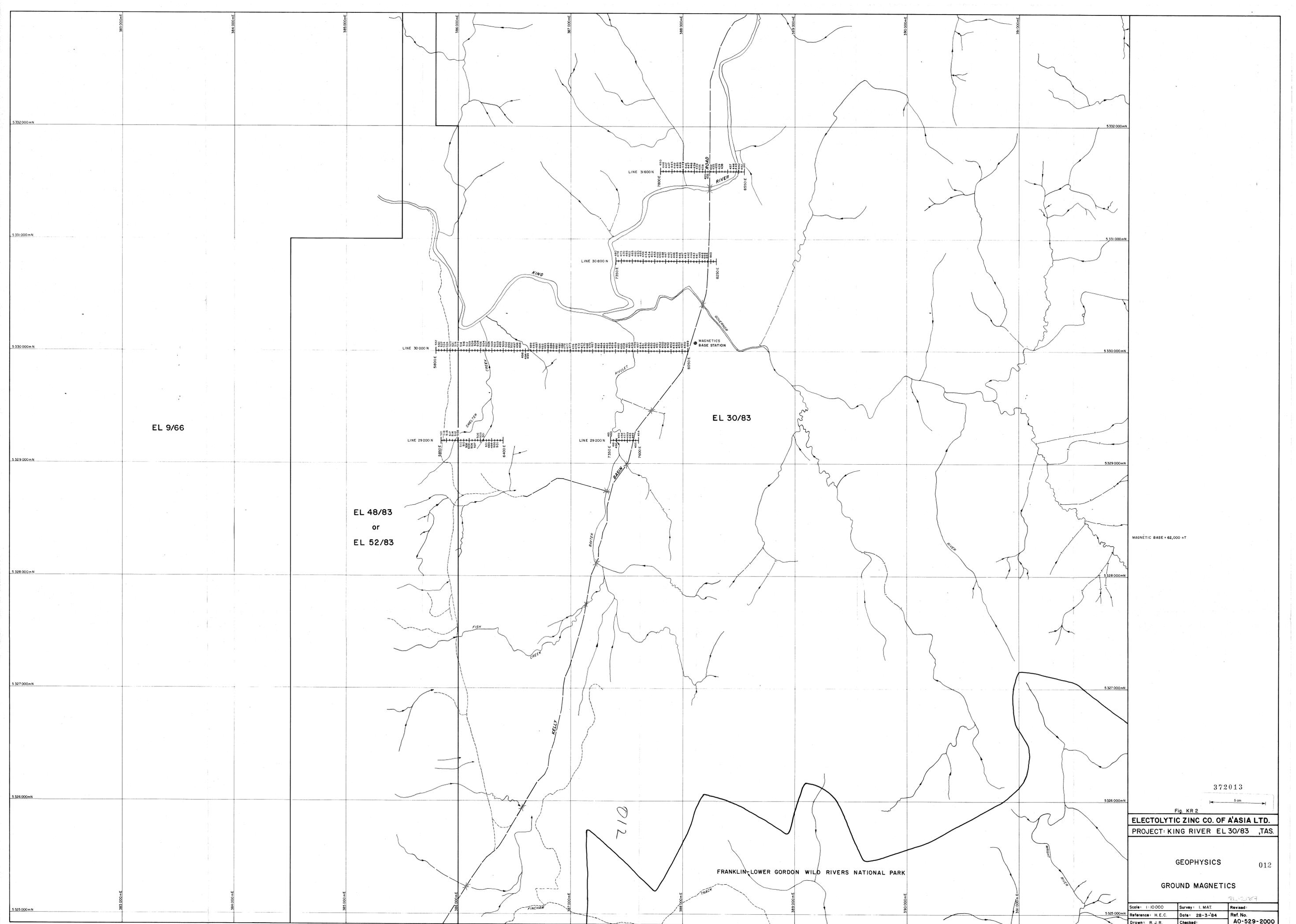
(INTER)

SL-2167

Scale: 1:10000	Survey: I MAT	Revised:
Reference: H.E.C.	Date: 3-4-84	Ref. No.
Drawn: R.J.R.	Checked:	AO-529-2002

FRANKLIN-LOWER GORDON WILD RIVERS NATIONAL PARK

110



MAGNETIC BASE = 62,000 nT

372013

Fig. KR 2

ELECTROLYTIC ZINC CO. OF ASIA LTD.
PROJECT: KING RIVER EL 30/83 ,TAS.

GEOPHYSICS 012
GROUND MAGNETICS

Scale: 1:10000	Survey: I.MAT	Revised:
Reference: H.E.C.	Date: 28-3-'84	Ref. No.
Drawn: R.J.R.	Checked:	AO-529-2000