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CRA EXPLORATION PTY LTD

RIANA EL 8/77

PROGRESS REPORT FOR THE 12 MONTHS TO 7 JULY 1986

Author: S J Caithness

Date: 16 June 1986

Submitted to: T W Dickson

Accepted by:

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CRAE Canberra
Department of Mines
Tasmania
Billiton Australia

REPORT NO: 14024

CONTENTS

1. SUMMARY

A regional drainage geochemical survey has been carried out over the EL. The survey was designed to look for fine gold as a primary target and as a pathfinder for volcanogenic massive sulphides.

Follow-up completed on three drainage anomalies has failed to significantly upgrade the catchment areas.

Data compilation has highlighted the Crosby Creek-Loyetea South area as worthy of follow-up for Pb-Zn and Au mineralisation.

A programme of drillcore re-assaying at Crosby Creek and Loyetea South, follow-up sampling of anomalous stream sediments, and geological reconnaissance over old workings is proposed.

2. INTRODUCTION

This report details all work carried out over Exploration Licence 8/77 (Riana) for the year ending 7 July 1986.

EL 8/77 forms part of the Moina Joint Venture between CRA Exploration Pty Limited, Billiton Australia and Comalco Limited. CRAE commenced management of exploration activities within the EL in conjunction with neighbouring licences, EL 7/74 (Moina) and EL 36/79 (Loongana), in March 1985.

The licence covers the Gunns Plains-Nietta area and is located approximately 20 km southwest of Ulverstone (see plans TASh 3075 & 3076).

3. CONCLUSIONS

The regional stream sediment sampling programme located eight anomalies worthy of investigation. Follow-up sampling over three of these anomalies has failed to further upgrade the catchments.

The Crosby Creek-Loyetea South area has potential for both Au and Pb-Zn mineralisation. Previous exploration was based largely on soil geochemistry and gradient array IP surveying. No deep seeking EM system has been used in the area to search for conductors indicative of massive sulphides.

The selective assaying of drill core from Crosby Creek and Loyetea South leaves potential for Au in pyritic horizons.

Reconnaissance has not previously been reported over old workings within the licence area.

4. RECOMMENDATIONS

1) Assaying drillcore from the Crosby Creek and Loyetea South prospects for Au is recommended. This will serve to indicate the potential for Au as a primary target and explore the possibility of a Au rich halo surrounding a Pb-Zn orebody.

2) Follow-up geochemical sampling will be completed over the remaining anomalies.

3) Reconnaissance geological investigations will be carried out over old workings in the licence area. This will dominantly involve rock chip sampling.

5. GEOLOGY

The oldest rocks outcropping within EL 8/77 are Cambrian sediments and volcanics of the Fossey Mountain Trough and Mt Read volcanic belt.

The Licence lies at the western end of the Fossey Mountain Trough which is dominated by acid tuffs and sediments. Lesser volcanics of the Mt Read group occur in the southern portion of the Licence. These include dominantly acid to intermediate volcanics with associated tuffaceous units.

Cambrian rhyodacitic to dacitic intrusives have also been mapped within the area.

The Ordovician Roland Conglomerate unconformably overlies the Cambrian. This is in turn overlain by the Moina Sandstone and Gordon Limestone respectively. Gordon Limestone is well developed in a synclinal feature along the western edge of the EL. This feature contains a core of Silurian Eldon Group sediments.

Tertiary basalt covers much of the central licence area.

Old workings have been noted at two localities. The centrally located Preston Ag mine lies within Cambrian sediments and tuffs along the Cambrian-Ordovician contact. A group of small gold workings lie within Cambrian sediments at the northern edge of the licence.

The geology has been compiled from previous explorers' mapping and is included on plan TASh 3074.

6. DATA COMPILATION

A compilation at 1:25000 scale of previous exploration within EL 8/77 has been completed. This includes all stream sediment sample locations and results, grid and drillhole locations and the regional geology.

The compilation has highlighted the southern portion of the licence as being the most prospective.

7. GEOCHEMISTRY

A regional stream sediment survey was undertaken by CRAE. The programme was designed to look for fine Au both as a primary target and as a pathfinder for volcanogenic massive sulphides. Large (5 kg) -4 mesh samples were collected at a density of approximately 1 per 4 km^2. These were assayed using the cyanide leach technique. Standard -80 mesh samples were also collected at each site and assayed for base metals, gold and indicator elements.

The sampling produced eight isolated anomalies worthy of follow-up investigation. The best result was at Crosby Creek with (in ppm) 120 Pb, 425 Zn and 1120 Ba, however no fine Au anomalies were found. Results are presented in Appendix I and sample locations are shown on plan TASh 2948.

Follow-up sampling has been completed on three anomalies to date. This has failed to significantly upgrade any of the catchments and no further work is proposed. Results are presented in Appendix II.

8. FUTURE PROGRAMME

The future programme for Riana EL 8/77 will entail resampling drillcore from the Crosby Creek and Loyetea South prospects, follow-up stream sediment sampling and geological investigation of old workings.

The Crosby Creek and Loyetea South prospects were explored for Sn-W and Pb-Zn mineralisation in the mid 1970's by CRAE. Drillholes were targeted on geochemical and IP (gradient array) anomalies and only selective assaying of the core was carried out. This core should be reassayed for Au both as a primary target and as an indicator of massive Pb-Zn mineralisation.

Follow-up geochemical sampling of anomalous catchments highlighted during the initial survey will be completed.

Geological reconnaissance over the old workings in the area will be completed. This will involve field inspection and rock chip sampling to ascertain whether any potential exists.

9. REFERENCES

Porter, T M 1976 EL 19/72 Nietta, Northwest Tasmania. Progress Report No.3 Unpublished CRAE Report No 8491

Purvis, G J 1978 EL 19/72 Nietta, Northwest Tasmania. Progress Report No.4 Unpublished CRAE Report No 9278

von Strokirch, T 1985 Relinquishment Report on the Cuprona Section of EL 8/77 Riana, Tasmania. Unpublished CRAE Report No 13394

10. LOCATION

Burnie 1:250 000 Sheet SK 55-3

11. KEYWORDS

Cambrian, Acid, Sediments, Assays-drill, Geochem-drainage

12. LIST OF PLANS

Plan No		Scale
TASh 3075	RIANA EL 8/77 Location Plan	1:1 000 000
TASh 3076	RIANA EL 8/77 EL and Prospect Location Plan	1:100 000
TASh 3074	RIANA EL 8/77 Regional Geology	1:25 000
TASh 3077	RIANA EL 8/77 Previous Explorers Stream Geochemistry - Cu	1:25 000
TASh 3078	RIANA EL 8/77 Previous Explorers Stream Geochemistry - Pb	1:25 000
TASh 3079	RIANA EL 8/77 Previous Explorers Stream Geochemistry - Zn	1:25 000
TASh 2948	RIANA EL 8/77 CRAE Regional Stream Sediment Sample Locations 1985/86	1:25 000

✓ TASh 3089	NIETTA EL 19/72 Northwest Tasmania Crosby Creek Prospect Geological Plan	1:2 000
✓ TASh 3090	NIETTA EL 19/72 Northwest Tasmania Loyetea South Prospect Geological Plan	1:2 000
✓TASh 3091	NIETTA EL 19/72 Northwest Tasmania Geological Plan Nietta-Loyetea Area	1:25 000

12. LIST OF APPENDICES

Appendix I	RIANA EL 8/77	Regional Stream Geochemistry Results
Appendix II	RIANA EL 8/77	Regional Stream Geochemistry Anomaly Follow-up

APPENDIX I

RIANA EL 8/77

REGIONAL STREAM GEOCHEMISTRY RESULTS

	Sample	Easting	Northing	Cu	Pb	Zn	Ag	As	Fe	Mn
43028	3363	418900	5420500	28	120	425	0.1	0.1	4.75	1300
43029	4465	419000	5420200	30	16	110	0.1	8	3.75	910
43030	4484	413150	5419950	8	50	135	0.1	10	2.01	700
43031	4487	413100	5420200	7	55	150	0.1	4	1.67	970
43032	1527	418700	5424050	60	6	150	0.1	4	10.4	2160
43033	1529	418700	5423700	52	5	120	0.1	3	8.4	1700
43034	1531	418400	5423500	54	3	140	0.1	0.1	9.06	1580
43035	1537	426200	5426250	44	13	105	0.1	0.1	8.04	960
43036	1539	425600	5421600	0.1	16	38	0.1	9	1.18	1500
43037	1541	426600	5422100	6	12	50	0.1	3	0.72	3720
43038	1555	424250	5421300	0.1	5	12	0.1	5	0.62	710
43039	1557	423850	5421200	0.1	7	3	0.1	0.1	0.37	345
43040	1563	423900	5428300	18	12	90	0.1	7	3.22	440
43041	517	417700	5445200	48	7	230	0.1	4	12.8	3560
43042	519	418075	5446750	54	9	265	0.1	5	18.6	4620
43043	521	416050	5446650	49	7	195	0.1	4	16.6	2300
43044	523	416700	5446700	58	9	150	0.1	3	15.1	1840
43045	525	419950	5446650	30	13	115	0.1	6	7.32	1740
43046	527	421150	5445000	0.1	0.1	3	0.1	0.1	0.15	10
43047	537	421800	5431200	60	30	175	0.1	4	9.34	1560
43048	539	422150	5432050	13	4	68	0.1	3	2.18	450
43049	541	419950	5431800	52	13	44	0.1	9	3.37	710
43050	543	419900	5431400	70	36	74	0.1	13	4.16	1500
43051	545	419850	5429000	44	12	145	0.1	4	8.84	1640
43052	547	421500	5429650	49	8	150	0.1	2	9.04	1680
43053	529	418800	5444600	72	135	180	0.1	64	7.06	1840
43054	531	418550	5444550	34	7	78	0.1	10	6.9	1380
43055	533	420800	5446600	26	12	80	0.1	11	4.25	2300
43056	535	421600	5447000	27	19	125	0.1	12	4.74	1140
43057	549	421300	5428200	60	4	195	0.1	7	12.2	1880
43058	551	421400	5424950	43	10	130	0.1	4	8.76	2840
43059	553	423800	5426600	22	16	68	0.1	6	2.32	385
43060	555	423820	5426590	35	25	160	0.1	6	3.56	1120
43061	557	423300	5426500	24	15	130	0.1	3	4.05	510
43062	559	424300	5429800	45	36	230	0.1	8	7.86	1480
43063	561	424600	5430300	58	72	520	0.1	5	7.5	720
43064	563	420720	5421750	45	28	80		14	5.38	2500
43065	565	419900	5423500	40	6	98		2	6.84	1520
43066	567	422000	5426400	4	8	9		0.1	0.35	14
43067	569	423100	5419900	40	9	115		6	5.78	780
43068	571	422950	5421050	3	3	24		0.1	0.85	435
43069	573	425100	5429500	42	12	140		7	6.6	940
43070	1959	414900	5446700	56	7	72		7	11.9	355
43071	1961	414900	5443700	70	3	235		2	18.4	1600
43072	1963	415100	5443700	54	5	170		3	14.6	5300
43073	1965	415400	5445500	43	3	160		5	14.6	2720
43074	1967	413500	5440850	56	6	175		2	9.3	1600
43075	1969	413400	5440800	64	5	145		2	10.6	1120
43076	1971	412700	5443750	58	4	195		4	14.1	3260
43077	1973	416000	5442900	49	11	310		3	15	3820
43078	1975	411100	5440200	58	7	135		0.1	10.4	930
43079	1977	410100	5441250	62	14	120		0.1	13.2	3440
43080	1979	408300	5441500	27	10	64		12	3.6	345
43081	1981	411300	5442300	66	5	165		3	11.7	2120
43082	1983	412050	5443200	34	3	105		7	6.82	1540
43083	1985	410850	5444550	66	5	140		5	11.4	2320
43084	1987	410100	5446750	44	5	84		10	5.5	3560
43085	1989	408600	5446100	10	2	15		3	1.67	570
43086	1991	409300	5444200	31	9	64		4	3.7	1180

41087	1231678	423100	5419900
8	680	423300	9500
9	681	423150	8800
90	685	424400	5430700
91	786	424600	300
92	1153131	424300	5429800
93	35	423900	600

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SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	ANALYSES Cu	Pb	Zn	Ag	As	Fe (%)	Mn	Ba	Au (ppm)	Au (ppt)	Geological Observations
1153362	418900	5420500	-4#										<50	Weakly incised; moderate flow; eucalypt forest; alluvial banks; 3m wide; Mn staining; 5% gravel, 40% sand, 55% silt; mod-high organics.
363			-80#	28	120	425	<1	<2	4·75	1300	1120	<0·005		Dominant sst; siltstone; vein quartz; siltstone %.
1154464	419000	5420200	-4#										<50	Moderately incised; medium flow; rainforest; alluvial banks; 3m wide; 30% gravel, 45% sand, 25% silt; moderate organics.
465			-80#	30	16	110	<1	8	3·75	910	310	0·040		Dominant volcanic sediment + siltstone; shale; quartzite; vein quartz; sst; % of fg. volcanic; Mn staining.
1154484	413150	5419950	-4#										<50	Moderate-well incised; moderate flow; rainforest; 3m wide; alluvial banks; Mn staining; 25% gravel, 45% sand, 30% silt; mod-high organics.
485			-80#	8	50	135	<1	10	2·01	700	410	<0·005		Dominant volcanic sediment (flow?), micaceous sst; shale; volcanic breccia (?) - platy fracture plus qtz mica xts in fg. groundmass; basalt %.
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD - MOINA

Tenement : RIANA EL 8/77

Area / Prospect : REGIONAL STREAM SEDIMENTS

1 250 000 Sheet : BURNIE AMG Zone :

DPO's :

Sheet No. : 1/2

Laboratory : AMDEL

Collected By : G. FITZPATRICK A. EDWARDS Date : JANUARY 1986.

5 cm

CRA EXPLORATION PTY. LTD.

013014

011

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe (%)	Mn	Ba	Au (ppm)	Au (ppb)	Geological Observations
1154486	413100	5420200	-4#										<50	Well incised, moderate flow; rainforest; 1m wide,
487			-80#	7	55	150	<1	4	1·67	970	400	<0·005		colluvial banks; Mn staining; 25% gravel, 45% sand, 30% silt; moderate organics. Dominant basalt float; micaceous sediments.
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD-MOINA.

1 : 250 000 Sheet : BURNIE AMG Zone :

Sheet No. : 2/2.

Tenement : RUANA EL 8/77.

OPO's :

Laboratory : AMDEL

Area / Prospect : REGIONAL STREAM SEDIMENTS.

5 cm

Collected By : B. FITZPATRICK A. EDWARDS Date : JANUARY 1986.

CRA EXPLORATION PTY. LTD.

013015

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe(%)	Mn	Ba	Au(ppb)	Au(ppt)	Geological Observations
1231527	418700	5424050	-80#	60	6	150	<1	4	10·4	2160	330	0·010		Slow flow; alluvial banks, 0·5m wide; eucalypt forest + blackberries;
528			-4#										<50	30% gravel, 50% sand, 10% silt, 10% organics; plunge pool
														Basalt.
1231529	418700	5423700	-80#	52	5	120	<1	3	8·40	1700	370	0·005		Moderate flow; alluvial banks, 1m wide; eucalypt forest; 50% gravel,
530			-4#										<50	35% sand, 5% silt, 10% organics; rock trap
														Basalt; quartz; conglomerate; sandstone
1231531	418400	5423500	-80#	54	3	140	<1	<2	9·06	1580	310	0·005		Moderate flow; colluvial banks; 1m wide; eucalypt forest;
532			-4#										<50	55% gravel, 35% sand, 10% silt; rock trap
														Conglomerate; basalt; quartz; siltstone
1231537	426200	5426250	-80#	44	13	105	<1	<2	8·04	960	470	0·01		Slow flow, alluvial banks; 0·5m wide; open farmland, moderately
538			-4#										<50	incised; 50% gravel, 35% sand, 10% silt, 5% organics; plunge pool
														Dominant basalt float; mudstone; conglomerate. Fe staining.
1231539	425600	5421600	-80#	<2	16	38	<1	9	1·18	1500	430	0·01		Moderately incised; mod. flow, 1m wide, alluvial banks;
540			-4#										<50	myrtle rainforest; 65% gravel, 30% sand, 5% silt; rock trap
														Black shales; siltstone; greywacke; Fe + Mn staining
1231541	426600	5422100	-80#	6	12	50	<1	3	0·72	3720	350	0·005		Slow flow; well incised; alluvial banks, 0·5m wide; rainforest;
542			-4#										<50	65% gravel, 25% sand, 5% silt, 5% organics.
														Black shales; siltstones; mudstones
DETECTION LIMIT														
ANALYTICAL METHOD														

012

Project : SHEFFIELD - MOINA

1 : 250 000 Sheet : AMG Zone :

Sheet No. : 1/2

Tenement : RIANA EL 8/77

DPO's :

Laboratory : AMDEL

Area / Prospect : REGIONAL STREAM SEDIMENT SURVEY

Collected By : A. CAICK, I. ROGERS

Date : APRIL-MAY 1985

5 cm

CRA EXPLORATION PTY. LTD.

013016

013

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe(%)	Mn	Ba	Au(ppb)	Au(ppb)	Geological Observations
12315555	424250	5421300	-80#	<2	5	12	<1	5	0.62	710	300	0.005		Moderate flow; weakly incised; alluvial banks; rainforest;
556			-4#										<50	60% gravel, 35% sand, 5% silt; log trap
														Quartz; mudstone; Mn staining
12315557	423850	5421200	-80#	<2	7	3	<1	<2	0.37	345	180	0.005		Moderate flow; moderately incised; alluvial banks; rainforest;
558			-4#										<50	60% gravel, 30% sand, 5% silt, 5% organics; rock bar
														Siltstone; mudstone; quartz; Mn staining
12315563	423900	5428300	-80#	18	12	90	<1	7	3.22	440	180	0.005		Moderate flow; moderately incised; colluvial banks; 0.5m wide;
564			-4#										50	Eucalypt forest + fern understorey; 65% gravel, 25% sand, 5% silt, 5% organics
														Basalt; quartz; siltstone.
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD - MOUNT

Tenement : RIANA EL 8/77

Area / Prospect : REGIONAL STREAM SEDIMENT SURVEY

1 : 250 000 Sheet :

AMG Zone :

DPO's :

Sheet No. : 2/2

Laboratory : AMDEL

Collected By : A. COCK, I. ROGERS

Date : MAY 1985

5 cm

CRA EXPLORATION PTY. LTD.

013017

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type Ot. Sed	Cu	Pb	Zn	Ag	As	Fe (%)/Mn	Ba	Au(ppb)/Au(ppb)	STAIN	CONTAMN	Geological Observations
990517	417700	5445200	-80#	48	7	230	<1	4	12.8/550	160	0.005	Fe/Mn	Agric.	1½m wide, mod flow. Gentle valley - colluvial slopes (T. basalt)
518			-4# CNL								150			Boulder bar site. Float: 95% basalt 5% conglomerate, buff siltstones and vein quartz.
990519	418075	5446750	-80#	54	9	265	<1	5	18.6/4620	240	0.01	Fe+/Mn+	Agric.	1½m wide, mod. flow. Gentle valley - colluvial slopes (T. basalt)
520			-4# CNL								100			Boulder bar site. Float - 100% Tertiary basalt. Numerous (recent) dams obstructing basalt into creek.
990521	416050	5446650	-80#	49	7	195	<1	4	16.6/3300	150	0.01	Fe+/Mn+	Agric.	1½m wide, mod. flow. Gentle valley - colluvial slopes (T. basalt)
522			-4# CNL								100			Boulder bar - very sand rich sediment. Float: 100% (T basalt)
990523	416700	5446700	-80#	58	9	150	<1	3	15.1/1840	85	0.27	Fe+/Mn+	Agric.	1m wide, mod. flow. Gentle valley - colluvial slopes (T. basalt)
524			-4# CNL								50			Boulder bar. Float: 100% Tertiary basalt - strong contribution from nearby dams.
990525	414950	5446650	-80#	30	13	115	<1	6	7.32/1740	210	0.01	Mn	Urban Agric.	3m wide, mod-strong flow. Steep valley - colluvial & outcrop slopes.
526			-4# CNL								550			Gravel bar. Float: 70% T. basalt; 20% fine grained, strongly clayed grey shales and silts, 10% v. qz.
990527	421150	5445000	-80#	<2	<2	3	<1	<2	0.15/10	15.	0.01	Fe/Mn	Rifle R. Logging	1m wide, low flow. Moderately steep valley - o/crop scree. Gravel &
528			-4# CNL								150			boulder bar site. Float: 90% conglomerate, qtz + hematitic,
														10% red-pink siltstones and fine quartzites.
														o/c (or v. large outcrops) of pink cong., clasts of quartz, chert and
														jaspers in a red med. gr. sand matrix.
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD - MOINA | 1 : 250 000 Sheet : BURNIE | AMG Zone : | Sheet No. : 1

Tenement : RIANA 8/77 | DPO's : | Laboratory : AMDEL

Area / Prospect : REGIONAL STR. SED. SURVEY | 5 cm | Collected By : [signature] Date : 23:4:85

CRA EXPLORATION PTY. LTD.

013018

015

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe%/Mn	Ba	Au(ppm)/Au(ppb)	STAIN	CONTAMN	Geological Observations
			ST. SED											
990529	418800	5444600	-30#	72	135	180	<1	64	7.06/1840	330	0.025	Fe/Mn (Three Tim...)	Mining (37'...)	1m wide, mod flow. Fairly steep valley. Gravel - boulderbar
530			-4# CNL								1050			scuffle. Float ?20% conglomerate, 5% brecciated b.ff
														siltstone or fine sandstone 10% qz tes, chloritic and pyritic.
990531	418550	5444550	-80#	34	7	78	<1	10	6.90/1580	160	0.015			
532			-4# CNL								200	Mn	figure (Urban)	2m wide. Mod flow, moderate valley slopes. Boulderbar.
														Float basalt, chloritic qz tes, argillized siltstones, v. qz.
990533	420800	5446600	-80#	26	12	80	<1	11	4.25/2300	110	0.010	Mn+	Urban	1½m wide, mod flow. Steep, incised valley - o/c banks.
534			-4# CNL								250			Plunge pool tail Float - qz tes, siltstone, qz, basalt
														o/c - buff med gr. quartzites.
990535	421600	5447000	-80#	27	19	125	<1	12	4.74/1140	260	0.015	Fe/Mn+	Urban	3m wide, strong flow. Moderately steep valley sides Boulderbar
536			-4# CNL								150			site. Float: Tertiary basalt, conglomerate, grey well cleaved
														shales, v. qz.
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD - MOINA	1 : 250 000 Sheet : ~~QUEENSTOWN~~ ISURNIE	AMG Zone :	Sheet No. : 2
Tenement : RIANA 8/77	DPO's :		Laboratory : AMDEL
Area / Prospect : REGIONAL STR. SED. SURVEY	5 cm		Collected By : [signature] Date : 23·4·85

CRA EXPLORATION PTY. LTD.

013019

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type ST. SED.	Cu	Pb	Zn	Ag	As	Fe (%) / Mn	Ba	Au (ppm) / Au (ppb)	STAIN	CONTAMN	Geological Observations
990537	421800	5431200	-80#	60	30	175	<1	4	9.34 / 1560	280	0.020	Mn/Fe	Agric.	1½m wide, mod. flow. Boulder bar and gravel bar site. Gentle valley.
538			-4# CNL								150			Float: basalt; greywacke-well sorted, med. grained, dark grey; brecciated algo chert or silicified siltstone, grit-conglomerate (pink)
990539	422150	5432050	-80#	13	4	68	<1	3	2.18 / 450	670	0.015	Mn/Fe		1½m wide, mod flow: Steep valley. Plunge pool and gravel bar.
540			-4# CNL								150			Float: pink to red massive finegrained andesite lava or v. well sorted tuff, quartzite, grey shales, conglomerate-grit.
990541	419950	5431800	-80#	52	13	44	<1	9	3.37 / 710	160	0.010	Fe-	? mining	2½m wide, mod. flow. Boulder bed site. Float: grit-congl;
542			-4# CNL								500			dark grey, well sorted fine-med gr sst (greywacke), red siltstones, mid green-grey shales. ? Mining cont - ckin known as "Adit Ck".
990543	419900	5431400	-80#	70	36	74	<1	13	4.16 / 1500	250	0.010	Fe	? mining	2½m wide. Mod flow, boulder bed. Float as above plus some
544			-4# CNL								700			dk grey lst; sugary white qzite; also med-coarse epidiotic.
														c/c of Gordon Lst. St 300°M D.p 25°S.
990545	419850	5429000	-80#	44	12	145	<1	4	8.84 / 1640	320	0.015	Fe/Mn	Agric	1½m wide, low flow. Abundant T. basalt. c/c Gordon
546			-4# CNL								200			Lst. Abund. agric. contamination
990547	421500	5429650	-80#	49	8	150	<1	2	9.04 / 1680	340	0.010	Fe-/Mn-	Agric.	1½m wide. Mod flow. Boulder bar (v.v. deficient in fines).
548			-4# CNL								150			Float: 85% Tertiary basalt, 15% white-light
														grey siltstones (almost porcellanous).
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD - MOINA

1 : 250 000 Sheet : BURNIE AMG Zone :

Sheet No. : 1

Tenement : RIANA 8/77

DPO's :

Laboratory : AMDEL

Area / Prospect : REGIONAL STREAM SEDIMENT.

5 cm

Collected By : [signature] Date : 24-4-85

CRA EXPLORATION PTY. LTD. 013020

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type / ST. SED.	Cu	Pb	Zn	Ag	As	Fe (%) / Mn	Ba	Au (ppm) / Au(ppb)	STAIN	CONTAM^N	Geological Observations
990549	421300	5428200	-80#	60	4	195	<1	7	12·2 / 1880	350	0·005	Mn/Fe	Agric.	1½m wide, mod. flow. Rockbar site. V. subdued site.
550			-4# CNL								100			Basalt float and outcrop at site.
990551	421400	5424950	-80#	43	10	130	<1	4	8·76 / 3840	180	0·010			
552			-4# CNL								50	Mn+ / Fe+	Agric	1m, slow flow. Subdued topography. Boulder bed. Basalt float at site.
990553	423800E	5426600	-80#	22	16	68	<1	6	2·52 / 385	140	0·010	Mn+ / Fe	Agric	1½m, mod. flow. V. gravel rich. Gentle valley. Float: buff-pink slo. pale cream, med gr. qz:fsp; coarse v. poorly sorted grit (often ferruginous) dark grey well sorted greywacke, med grained, v. hard.
554			-4# CNL								200			
990555	423820	5426590	-80#	35	25	160	<1	6	3·56 / 1120	210	0·010	Fe / Mn	Agric	1m. Low flow, gentle slopes. V. gravel-sand rich. Float as described above.
556			-4# CNL								250			
990557	423300	5426500	-80#	24	15	130	<1	3	4·05 / 510	170	0·010	Mn / -	Agric	1½m wide. Mod. flow. Steep banks (dc). V. gravel rich. Float as
558			-4# CNL								100			previous plus o/c of well bedded, fine grained well sorted sats (red-buff) and mid grey siltstones/shales. Str. 195°M D. 75°W.
990559	424300	5429800	-80#	45	36	230	<1	8	7·86 / 1480	190	Insuff. Sample	Fe(-)	Logging	1m, low flow Moderately steep valley. Very sand-silt rich (logging
560			-4# CNL								350			activity) Float: buff-red slo, well sorted, silicified breccia, sats
														slo, qz:fsp and grit, poorly sorted med. grained greywacke (? volcani-clastic), dark grey heavily calcareous and strongly pyritic (disseam)
														nulotones.
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD - MOINA

1 : 250 000 Sheet : BURNIE AMG Zone :

Sheet No. : 2

Tenement : RIANA 8/77

DPO's :

Laboratory : AMDEL

Area / Prospect : REGIONAL STREAM SEDIMENT

5 cm

Collected By : [signature] Date : 24:4:85

CRA EXPLORATION PTY. LTD.

013021

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type S/SED	Cu	Pb	Zn	Ag	As	Fe (%)/Mn	Ba	Au(ppm)/Au(ppb)	STAIN	CONTAMN	Geological Observations
990561	424600	5430300	-80#	58	72	520	<1	5	750/520	250	0.005	Mn/-	Logging	1m wide, low flow. Gentle valley. Float: black chert; silicified siltstone; v. dark grey greywacke, dark grey mudstone - slightly silicified.
562			-4# CNL								450			
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD-CETHANA-MOINA

1 : 250 000 Sheet : BURNIE AMG Zone :

Sheet No. : 3

Tenement : RIANA EL 8/77

DPO's :

Laboratory : AMDEL

Area / Prospect : REGIONAL S/SED. SURVEY

5 cm

Collected By : Date : 26:4:85

CRA EXPLORATION PTY. LTD.

013022

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type S.SED	Cu	Pb	Zn	Ag	As	Fe(%) / Mn	Ba	Au(ppb)	Au(ppt)	Strand / contam	Geological Observations
990563	420270	5421750	-80#	45	28	80	<1	14	5.38 / 2500	260	<0.005		Mn+ Agric	1/2m wide. Strong flow. Gentle valley. Silt-clay deficient. Float:
564			-4#									50		grey siltstones, light grey cherts, vein quartz, porphyritic (Rh) acid volc.
990565	419900	5423500	-80#	40	6	98	<1	2	6.84 / 1500	240	<0.005		Mn / Ag.	1m wide, mod. flow. Sand rich, clay deficient. Incised valley. Float and
566			-4#									<50		outcrop - Tertiary basalt.
990567	422000	5426400	-80#	4	8	9	<1	<2	0.35 / 14	80	0.01		- / Ag	1m wide, mod flow. Gentle valley. V. gravel rich, clay deficient.
568			-4#									<50		Float: quartzites, cherts, grits and hematitic conglomerates
990569	423100	5419900	-80#	40	9	115	<1	6	5.78 / 780	270	0.09		Mn / Ag.	3m wide. Strong flow. Gravel rich Float: grey siltstones,
570			-4#									<50		micaceous greywacke, ferruginous siltstones (possibly fine volc-clast)
990571	425100	5329500	-80#	3	3	24	<1	<2	0.85 / 455	110	<0.005		Mn / Log.	1/2m. Mod flow. Gravel rich. Float: various coloured siltstones
572	422950	5421050	-4#									<50		dark grey quartzites.
990573	425100	5329500	-80#	42	12	140	<1	7	6.60 / 940	160	<0.005		Ext. Log.	1/2m Slow flow. Extremely silt rich (result of extensive logging)
574			-4#									50		No recognisable float.
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD - MAINA

1 : 250 000 Sheet : BURNIE AMG Zone : 55

Sheet No. :

Tenement : RIANNA EL 8/77

DPO's :

Laboratory : AMDEL

Area / Prospect : REGIONAL STREAM SEDIMENTS

5 cm

Collected By : [signature] Date : 8 MAY 85

CRA EXPLORATION PTY. LTD.

013023

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe(%)	Mn	Ba	Au(ppm)	Au(ppb)	Geological Observations
1141959	414900	5446700	-80#	56	7	72	<1	7	11.9	355	40	0.010		Moderately incised; mod. flow; very high organics; agricultural land;
960			-4#										450	<5% gravel, 10% sand, 85% silt; poor sample site → little/no sediment;
														Float basalt on creek bank
1141961	414900	5443700	-80#	70	3	235	<1	2	18.4	1600	250	0.010		Moderately incised; mod. flow; high organics; agricultural land;
962			-4#										400	dam 50m upstream; 10% gravel, 30% sand, 60% silt
														Chloritic fine-medium grained basic volcanic float.
1141963	415100	5443700	-80#	54	5	170	<1	3	14.6	5300	160	0.010		Moderately incised; mod flow; moderate organics; agricultural land;
964			-4#										100	20% gravel, 50% sand, 30% silt
														Basalt float dominates creek
1141965	415400	5445500	-80#	43	3	160	<1	5	14.6	2720	180	0.010		Moderately incised; mod. flow; high organics; agricultural land;
966			-4#										200	colluvial banks; 10% gravel, 50% sand, 40% silt
														Basalt float common in stream.
1141967	413500	5440850	-80#	56	6	175	<1	2	9.30	1600	270	0.010		Well incised; mod. flow; low organics; agricultural land;
968			-4#										100	colluvial banks; 50% gravel, 40% sand, 10% silt
														Basalt float dominates stream
1141969	413400	5440800	-80#	64	5	145	<1	2	10.60	1120	160	0.010		Moderately incised; moderate flow; low organics; agricultural land;
970			-4#										100	colluvial/alluvial land; 50% gravel, 30% sand, 15% silt, 5% clay
														Weakly magnetic basalt float dominates creek; rare carbonate
														amygdules
DETECTION LIMIT														
ANALYTICAL METHOD														

020

Project : SHEFFIELD - MOINA | 1 : 250 000 Sheet : | AMG Zone : | Sheet No. :

Tenement : RIANA EL | DPO's : | Laboratory : ALS / AMDEL

Area / Prospect : STREAM SEDIMENT SURVEY | 5 cm | Collected By : S. CAITHNESS | Date : 22-4-85

CRA EXPLORATION PTY. LTD.

013024

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe(%)	Mn	Ba	Au(ppb)	Au(ppb)	Geological Observations
1141971	412700	5443750	-80#	58	4	195	<1	4	14·10	3260	180	0·010		Moderately incised; mod flow; low organics; agricultural land;
972			-4#										50	colluvial/alluvial banks; 60% gravel, 30% sand, 10% silt
														Fine, weakly magnetic basalt dominates stream
1141973	416000	5442900	-80#	49	11	310	<1	3	15·00	3820	210	0·010		Moderately incised; slow flow; mod organics; agricultural land;
974			-4#										50	colluvial banks; 50% gravel, 40% sand, 10% silt
														Basalt float dominates stream; Rare rounded quartz pebbles.
1141975	411100	5440200	-80#	58	7	135	<1	<2	10·40	930	120	0·010		Moderately incised; mod flow; low organics; agricultural land;
976			-4#										150	colluvial banks; 60% gravel, 35% sand, 5% silt
														Micaceous m.g. granite %; weathered porphyritic basic volcanic
														float is common; minor qz float; basalt float on hill sides +
														qz pebbles
1141977	410100	5441250	-80#	62	14	120	<1	<2	13·20	3440	180	0·010		Moderately incised; mod. flow; high organics; agricultural land;
978			-4#										150	colluvial banks; 40% gravel, 30% sand, 20% silt, 10% clay.
														Basalt float dominates stream; poor sample site - 2 dams
														upstream + burning of blackberries around site.
1141979	408300	5441500	-80#	27	10	64	<1	12	3·60	345	100	0·105		Moderately incised; slow flow; mod. organics; agricultural land;
980			-4#										100	60% gravel, 30% sand, 10% silt; colluvial banks.
														Quartz gravel → granite ??
1141981	411300	5442300	-80#	66	5	165	<1	3	11·70	2120	140	0·005		Hill incised; mod. flow; low organics; agricultural land; 40% gravel,
982			-4#										100	40% sand, 20% silt. Common basalt float + some conglomerate
DETECTION LIMIT														
ANALYTICAL METHOD														

ANALYSES

Project : SHEFFIELD - MOINA	1 : 250 000 Sheet :	AMG Zone :	Sheet No. :
Tenement : RIANA EL 8/77	DPO's :		Laboratory : ALS/AMDEL
Area / Prospect : STREAM SEDIMENT SURVEY	5 cm		Collected By : S. CAITHNESS Date : 23-4-85

CRA EXPLORATION PTY. LTD.

013025

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe(%)	Mn	Ba	Au(ppb)	Au(ppt)	Geological Observations
1141983	412050	5443200	-80#	34	3	105	<1	7	6.82	1540	200	<0.005		Well incised; mod flow; low organics; colluvial banks; agricultural
984			-4#										50	+ eucalypt forest; 50% gravel, 40% sand, 10% silt
														Basalt + conglomerate float dominates creek.
1141985	410850	5444550	-80#	66	5	140	<1	5	11.40	2320	170	0.005		Well incised; mod flow; low organics; colluvial banks; agricultural
986			-4#										100	+ eucalypt forest; 50% gravel, 40% sand, 10% silt
														Dominant black quartzite float; lesser siltstone + basalt float;
														minor shale float; quartz stockworking of siltstone. Property owner
														mentioned old gold workings in area
1141987	410100	5446750	-80#	44	5	84	<1	10	5.50	3560	130	0.005		Weakly incised; mod flow; low organics; alluvial banks; agricultural
988			-4#										50	land; 60% gravel, 35% sand, 5% silt
														Quartz rich gravel dominates stream; Float + % of fine dark grey
														volcanic(?) with quartz phenocrysts (?)
1141989	408600	5446100	-80#	10	2	15	<1	3	1.67	570	100	<0.005		Moderately incised; mod. flow; low organics; colluvial banks;
990			-4#										150	agricultural land; 60% gravel, 30% sand, 10% silt, <1% clay.
														Siltstone float dominates creek; Minor weathered conglomerate,
														minor basalt; Poor sample site — recs dam upstream
1141991	409300	5444200	-80#	31	9	64	<1	4	3.70	1180	110	0.020		Moderately incised; mod flow; colluvial banks; low organics;
992			-4#										100	agricultural land; 40% gravel, 50% sand, 10% silt
														Dominantly basalt float (on hills also); quartz rich gravel
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD - MOINA

Tenement : RIANA EL 8/77

Area / Prospect : STREAM SEDIMENT SURVEY

1 : 250 000 Sheet :

AMG Zone :

DPO's :

5 cm

Sheet No. :

Laboratory : ALS / AMDEL

Collected By : S CAMPBELL Date : 22-4-85

APPENDIX II

RIANA EL 8/77

REGIONAL STREAM GEOCHEMISTRY ANOMALY FOLLOW-UP

CRA EXPLORATION PTY. LTD.

013027

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe (%)	Mn	Ba	Au (ppm)	Au (ppt)	Geological Observations
990569	423100	5419700	-80#	40	9	115	<1	6	5.78	780	270	0.09		First pass anomalous sample
570			-4#										<50	
1231678	423100	5419700	-80#	28	40	105	1	2	6.97	2950		<0.003		Moderate flow; weakly incised; colluvial/alluvial boobs; eucalypt forest + grazing land; 50% gravel, 40% sand, 10% silt; low organics. 5% of black shale; float of micaceous medium grained tuffaceous sediment, shale and medium grained andesitic tuff (??)
1231679	423120	5419720	rock chip	10	40 / 35	50	1	12	3.80	930	4400	<0.003		Weathered and ferruginous medium grained sediment containing quartz stockworking. Taken 30m upstream from 1231678
				ICP80							XRF	PM205		
1231680	423300	5419500	-80#	20	35	85	1	<1	6.08	2350		<0.003		Taken 400m upstream from 1231678 Moderate flow; weakly incised; agricultural land; colluvial/alluvial boobs; 40% gravel, 40% sand, 20% silt; low organics. 5% of pale grey shale, float of shale, weakly magnetic andesite + vein quartz.
DETECTION LIMIT				2	5	2	1	1	0.01	5		0.003		
ANALYTICAL METHOD				ICP80								PM205		

Project : SHEFFIELD - MOUNT

Tenement : RUNNA EL 8/77

Area / Prospect : STREAM SEDIMENT ANOMALY FOLLOW UP

1 : 250 000 Sheet : BURNIE AMG Zone :

DPO's : 32022, 32025

Sheet No. : 1/2

Laboratory : ALS BRISBANE

Collected By : SJC. Date : APRIL 1986

5 cm

CRA EXPLORATION PTY. LTD.

013028

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	ANALYSES Cu	Pb	Zn	Ag	As	Fe (%)	Mn	Ba	Au (ppm)	Geological Observations
													025
1231681	423150	5418800	-80#	35	15	105	1	<1	8·49	2250		<0·003	Moderate flow; weakly jointed; colluvial/alluvial boulder, agricultural land; 70% gravel, 20% sand, 10% silt; low organics % of med grained basalt; dominant basalt float with minor quartz and pale grey banded chert
DETECTION LIMIT				2	5	2	1	1	0·01	5		0·003	
ANALYTICAL METHOD				K580	→	→	→	→	→	→		PM205	

Project : SHEFFIELD - MOUNT

1 : 250 000 Sheet : BURNIE AMG Zone :

Sheet No. : 2/2

Tenement : RIANNA EL 8/77

DPO's : 32022

Laboratory : ALS BRISBANE

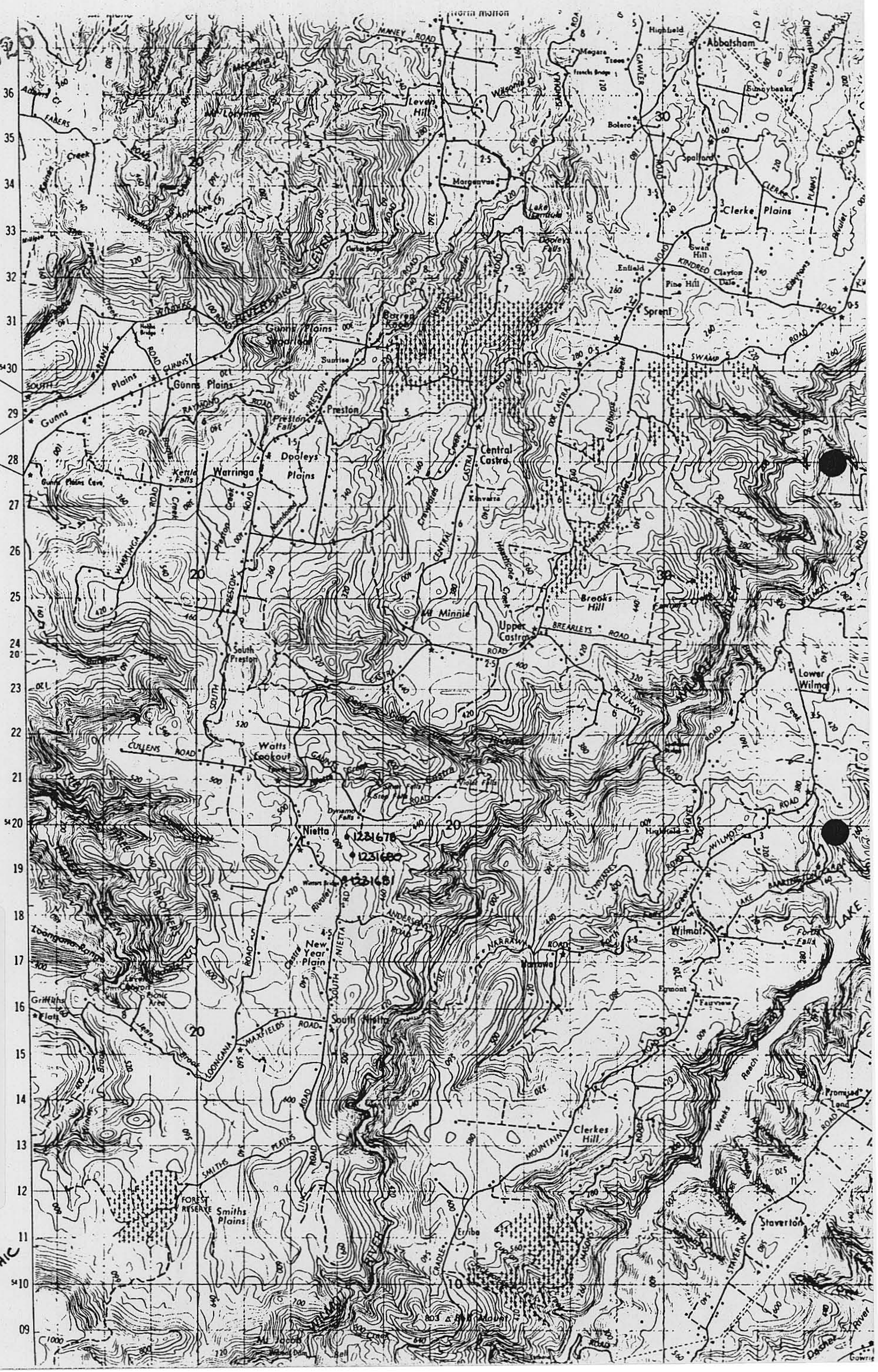
Area / Prospect : STREAM SEDIMENT ANOMALY FOLLOW UP

Collected By : SJC Date : APRIL 1986

5 cm

026

013029



5 cm

FORTH
1:100,000
TOPOGRAPHIC

CRA EXPLORATION PTY. LTD. 013030

021

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe (%)	Mn	Ba	Au (ppm)	Au (ppt)	Geological Observations
				ANALYSES										
990784	424400	5430700	-4# s/s										300	Approx 600m upstream of original anomaly 1'lim strong flow (in flood)
785			-80# s/s	50	75	220	3	5	8.46	1890		<3		Moderately incised, banks colluvial. Pine plantation - numerous
														mole crabs with introduced chert outcrop. Grab bornite, very clay
														rich (result of bentonite works) Very heavy Mn, minor Fe stain.
														Float 50% siltstone (often very clayey, but distinct from
														the "exotic chert" in the creek) 50% basalt (or perhaps
														some andesite?) - probably Cambrian (?? the Mutton Spilite?)
														Traces sulphide in the basalt - partly silty, that which looks
														more andesitic - pyrite & possibly pyrrhotite.
														Float in creek parallel to creek between this site and original site
														downstream (approx 600m) is dominantly basalt (? Tertiary - distinctly
														darker than chert, some large boulders in the creek and with no sulphide)
														plus dark shales (including black shales) and silts, some chert, plus
														more silicified pink grit and conglomerates (Burlyn's units)
														Saline - very much a fine facies of the Riland or similar)
990786	424600	5430300	-80# s/s	35	75	380	2	8	8.10	2300		<3		Original anomaly site. No flagging now but probable site located.
														Creek characteristics as above, slight increase in proportion
														of silt/chert float.
DETECTION LIMIT														
ANALYTICAL METHOD														

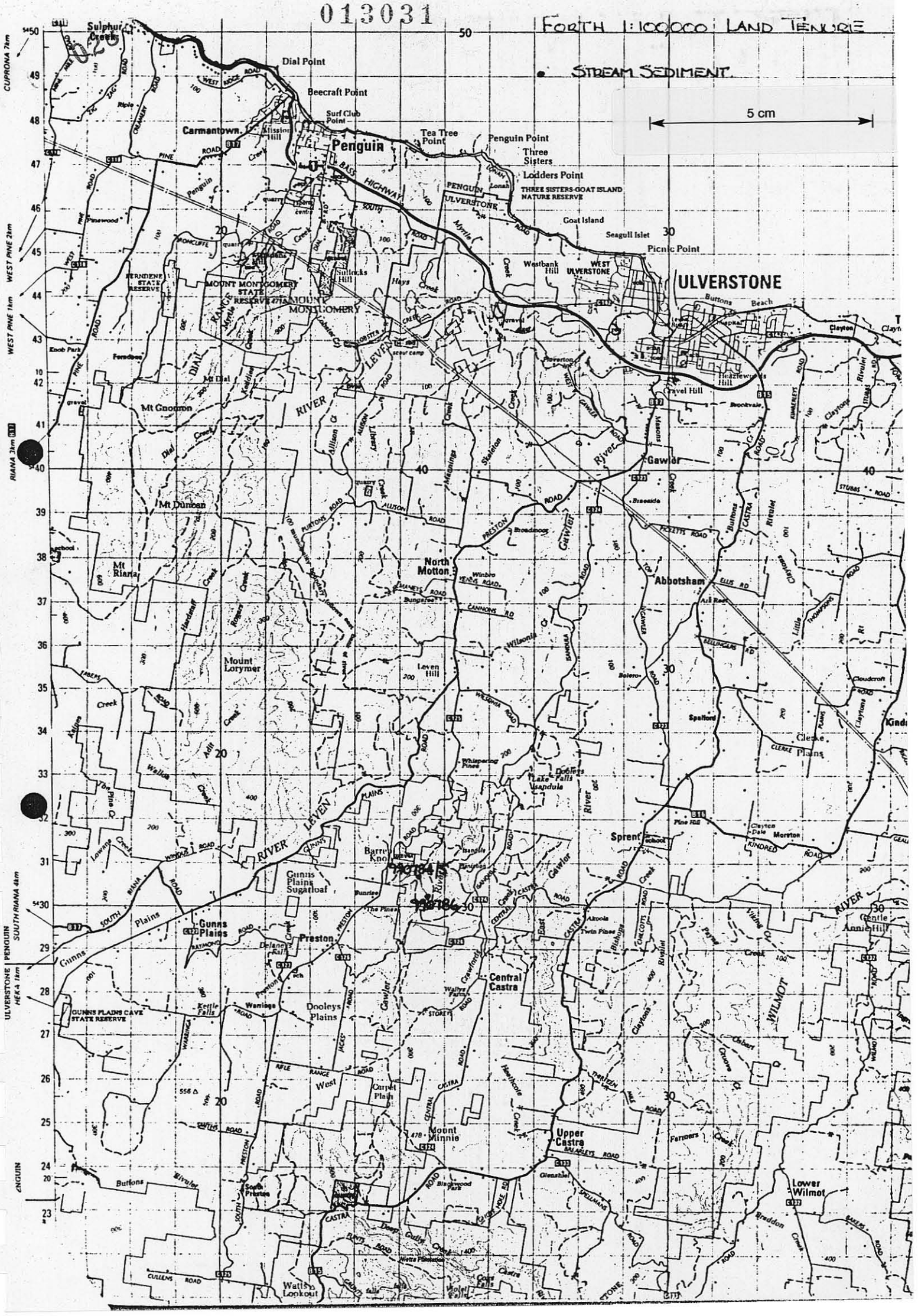
Project : SHEFFIELD - MOINA	1 250 000 Sheet : BURNIE	AMG Zone : SK 55-3	Sheet No. :
Tenement : RIANA EL 8/77	DPO's		Laboratory :
Area / Prospect DRAINAGE ANOMALY FOLLOW-UP	5 cm		Collected By : I. M. CLEMENTSON Date : 18 · DEC · 85.

013031

FORTH 1:100000 LAND TENURE

• STREAM SEDIMENT

5 cm



CRA EXPLORATION PTY. LTD. 013032

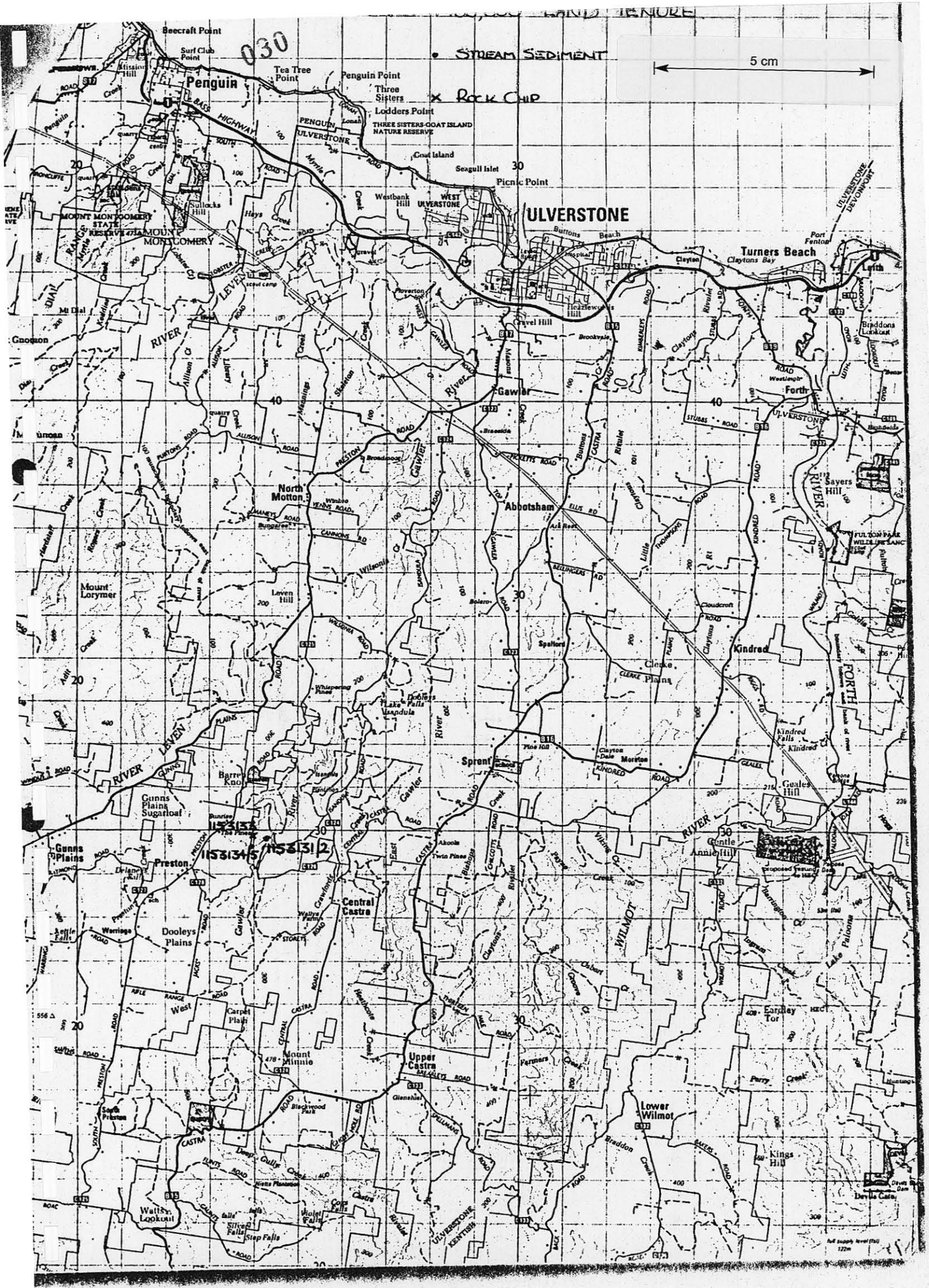
SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe (%)	Mn	Ba	Au (ppm)	Au (ppb)	Geological Observations
115313	424300	5429800	-80#	48	36	225	<1	11	8.34	1960	200	<0.005		Moderate flow; weakly incised; colluvial bank;
132			-4#										200	contamination - distance from pine forest planting;
														20% gravel, 40% sand, 40% silt; moderate organics.
														Dominant basalt float; lesser siltstone float
														(rarely chloritically altered); minor quartz.
115313	423950	5429800	r.c.	90	55	70	<1	6	1.44	130		10		Collected float from fenceline road; dark grey-
														red brown chert sample; silica veining; locally
														ferruginous patches.
115313	423900	5429600	-4#										50	Strong flow; moderately incised; colluvial bank;
135			-80#	45	24	205	<1	8	9.84	2240	220	0.075		pine forest - agricultural land; 40% gravel, 40% sand;
														20% silt
														Dominant coarse-med. grained gritstone containing
														rounded-subrounded fragments up to 1cm; lesser
														dark grey basalt containing olivine phenocrysts
Follow-up of stream sediment anomaly no. 990559 (424300E 5427800N) containing 36ppm Pb & 8ppm As. Two samples														
taken - one repeat & one ~400m upstream. Rocks are dominantly fine red-brn to (siltstone, shale) with lesser chert														
nodules often veined with white magnesite. Basalt float reasonably common as is a coarse grit/conglomerate.														
Possible deep lead cover related to basalt. No evidence of alteration in rocks														
DETECTION LIMIT														
ANALYTICAL METHOD														

Project : SHEFFIELD - MOINA	1 250 000 Sheet :	AMG Zone :
Tenement : RIANNA EL 8/77	OPO's :	
Area / Prospect : STREAM SED. ANOMALY FOLLOW UP	5 cm	

Sheet No. : 1/1

Laboratory : ALS / AMDEL

Collected By : S. CAITHNESS Date : 11-11-85


030
• STREAM SEDIMENT
× ROCK CHIP
5 cm
Beecraft Point
Surf Club Point
Penguin
Tea Tree Point
Penguin Point
Three Sisters
Lodders Point
THREE SISTERS-GOAT ISLAND NATURE RESERVE
Coal Island
Seagull Islet
Picnic Point
ULVERSTONE
Westbank Hill
WEST ULVERSTONE
MOUNT MONTGOMERY STATE RESERVE
MOUNT MONTGOMERY
Turners Beach
Claytons Bay
Port Fenton
Leith
Braddons Lookout
Gawler
Forth
Sayers Hill
North Motton
Abbotsham
Mount Lorymer
Leven Hill
Kindred
Clarke Plains
Sprent
Gunns Plains Sugarloaf
Barrow Knob
Gunns Plains
Preston
Central Castra
Dooleys Plains
Gentle Annie Hill
Guales Hill
Earrley Tor
Upper Castra
Mount Minnie
Lower Wilmot
Kings Hill
Wallis Lookout
Silver Falls
Step Falls
Violet Falls
Dewis Cabin
RIVER LEVEN
RIVER FORTH
WILMOT
1153134
1153135
1153132

013033

BASS STRAIT

SMITHTON

BURNIE

ULVERSTONE

DEVONPORT

DELORAINE

RIANA
E.L. 8/77

5 400 000mN

ROSEBERY

ZEEHAN

QUEENSTOWN

STRAHAN

5 300 000mN

SOUTHERN OCEAN

300 000mE

400 000mE

5 cm

CRA EXPLORATION PTY. LIMITED			
RIANA E.L. 8/77 LOCATION PLAN			
REF.	SK55 - 3	(8114 - 8115)	
SCALE	1 : 1000 000	DRAWN	R.T.
AUTHOR	S.J.C.	REPORT No.	14024
DATE	19 - 6 - 1986	PLAN No. TASh	3075

013035

032

425 300mE
5 431 985mN

LOYETEA SOUTH

CROSBY CREEK

5 cm

CRA EXPLORATION PTY. LIMITED

RIANA E.L. 8/77
E.L. AND PROSPECT
LOCATION PLAN

REF.	SK55 - 3	(8115 - 8115)	
SCALE	1 : 100 000	DRAWN	R.T.
AUTHOR	S.J.C.	REPORT No.	14024
DATE	20 - 6 - 1986	PLAN No. TASh	3076

86-2567

033

RIANA E.L. 8/77

LEGEND

QUATERNARY — Qt — Alluvium, talus, residual gravels

TERTIARY — Tb — Basalt flows

Ts — Sediments

DEVONIAN — Ddogr — Dolcoath Granite

SILURIAN — Sc — Eldon Group Sediments: undifferentiated quartzwacke, siltstone and shale sequences.

ORDOVICIAN — Og — Gordon Limestone

Om — Moina Sandstone

Or — Roland Conglomerate

*CAMBRIAN

VOLCANICS

Acid Volcanic Units:
This division includes units dominantly within the Nietta Group

- €qbp..... quartz biotite porphyry.
- €qfp..... quartz feldspar porphyry.
- €na..... rhyolite extrusives and microgranodiorite intrusives with some pyroclastics.
- €rd..... riolitic to dacitic volcanics
- €nlnv..... rhyolitic to rhyodacitic lavas with lesser pyroclastics. - unaltered
- €ua..... undifferentiated acid volcanics.

Intermediate Volcanic Units:

- €ra..... Beulah intermediates - andesite and dacite
- €iv..... intermediate volcanics - andesite

Basic Volcanic Units:

- €m..... Motton Spilite with intercalated mudstone and chert
- €uv..... Undifferentiated volcanics

TUFFACEOUS UNITS

Acid Tuffaceous Units:

- €xt..... crystal tuff
- €lxt..... lithic crystal tuff
- €vxt..... vitric crystal tuff
- €lt..... lithic tuff
- €vlt..... vitric lithic tuff
- €vt..... vitric tuff
- €lvt..... lithic vitric tuff
- €at..... undifferentiated acid tuff

Intermediate Tuffaceous Units

- €uit..... undifferentiated intermediate tuff
- €ixt..... crystal tuff
- €lxt..... lithic crystal tuff
- €vlt..... crystal lithic tuff

€ut..... Undifferentiated tuff

SEDIMENTS

Fine - Medium Sediments:

- €b..... Barrington chert
- €rm..... Redfords Creek Group.-mudstone and siltstone with lesser feldspathic sandstone and minor and minor conglomerate
- €sh..... shale

Medium - Coarse Sediments:

- €rc..... Redfords Creek Group.-conglomeratic greywacke with lesser feldspathic sandstone and mudstone
- €us..... Undifferentiated sediments

Intrusive Units:

- €dogr..... Dove Granite

* Cambrian units are based on lithological divisions and do not represent a stratigraphic column.

PRE CAMBRIAN — pEd..... Dove Group metasediments

Fault, showing relative movement.

Concealed Fault

Synclinal axis

Anticlinal axis, showing plunge direction

Dip and strike of bedding

60° Dip and strike of cleavage

Possible geological boundary

Unconformable geological boundary

Geological boundary

Mineral occurrence - old working

Plunge of drag fold

Radfords Reef

Colbourns

Browns Blow

Preston Ag Mine

5 430 000mN

5 425 000mN

5 420 000mN

415 000mE

420 000mE

425 000mE

013036

5 cm

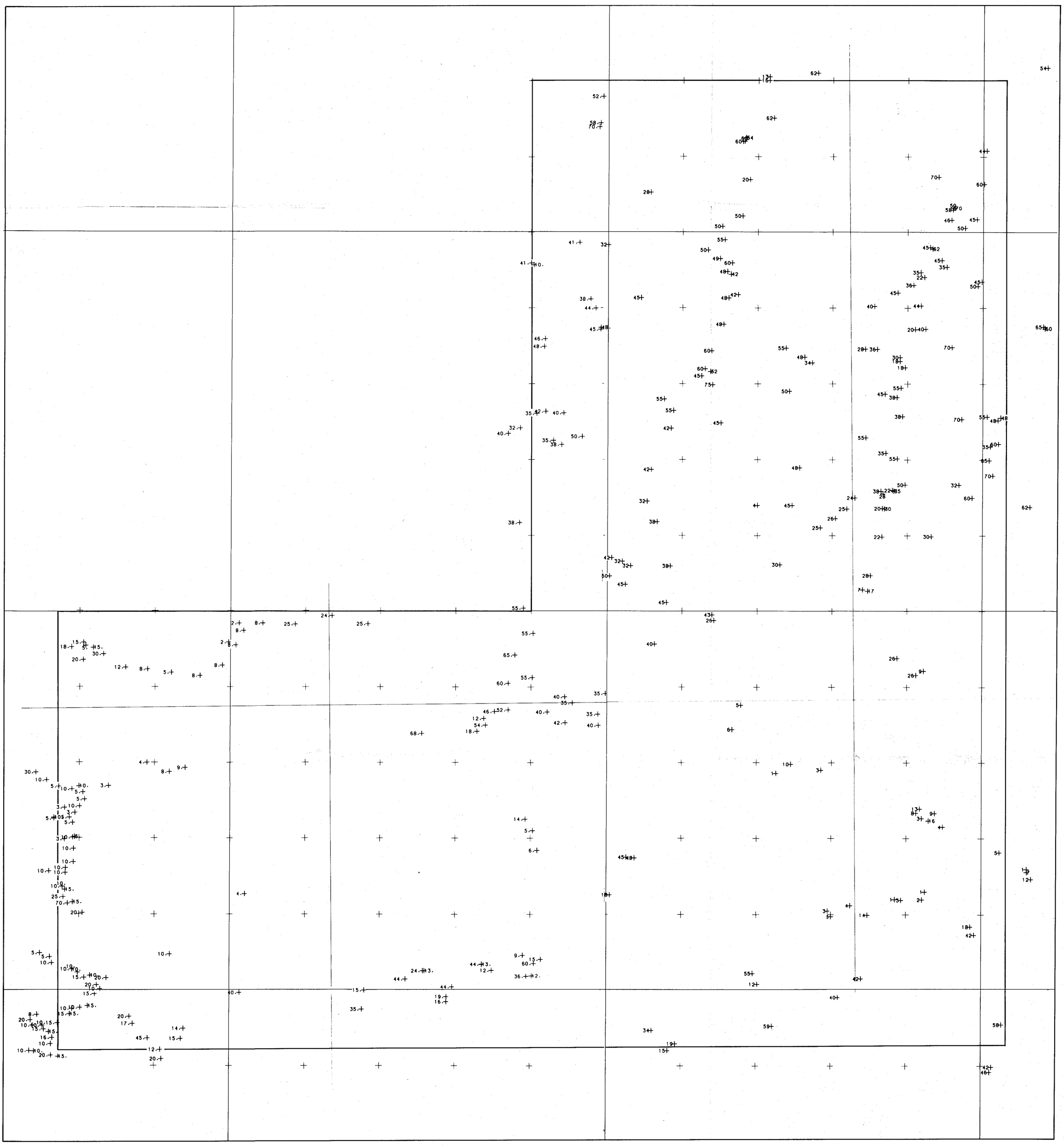
** N.B. **
This plan is a compilation of pre-existing mapping. Major regional references include: T.M. Porter and Tasmanian Mines Department, with small detailed areas taken from individual grid maps.

CRA EXPLORATION PTY. LIMITED			
RIANA E.L. 8/77 REGIONAL GEOLOGY			
REF.	SK55 - 3	(8114 - 8115)	
SCALE	1 : 25.000	DRAWN	R.T.
AUTHOR	S.J.C.	REPORT No.	14024
DATE	19 - 6 - 1986	PLAN No. TASh	3074

86-2567

034

RIANA E.L. 8/77



5 cm

CRA EXPLORATION PTY. LIMITED			
RIANA E.L. 8/77 PREVIOUS EXPLORERS STREAM GEOCHEMISTRY - Cu			
REF.	SK55 - 3	(8114 - 8115)	
SCALE	1 : 25.000	DRAWN	R.T.
AUTHOR	S.J.C.	REPORT No.	14024
DATE	23 - 6 - 1986	PLAN No. TASh	3077

013037

86 - 2567

035

RIANA E.L. 8/77

5425 000mN

5420 000mN

4425 000mE

013038

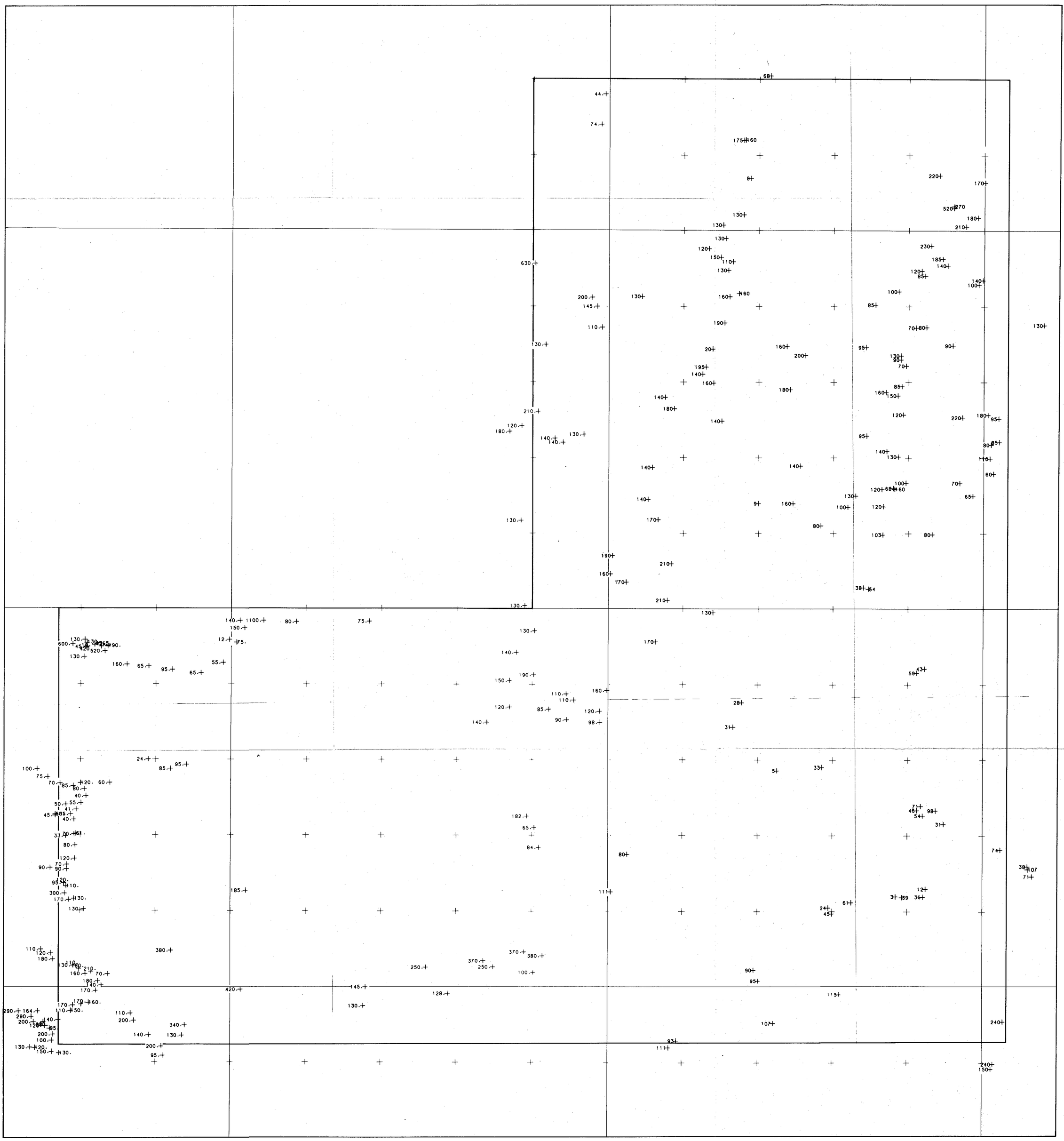
5 cm

79-183

86-2567

CRA EXPLORATION PTY. LIMITED			
RIANA E.L. 8/77 PREVIOUS EXPLORERS STREAM GEOCHEMISTRY - Pb			
REF.	SK55 - 3		8114, 8115
SCALE	1 : 25 000	DRAWN	R.T.
AUTHOR	S.J.C.	REPORT No.	14024
DATE	23 - 6 - 1986	PLAN No. TASh	3078

RIANA E.L. 8/77



013039

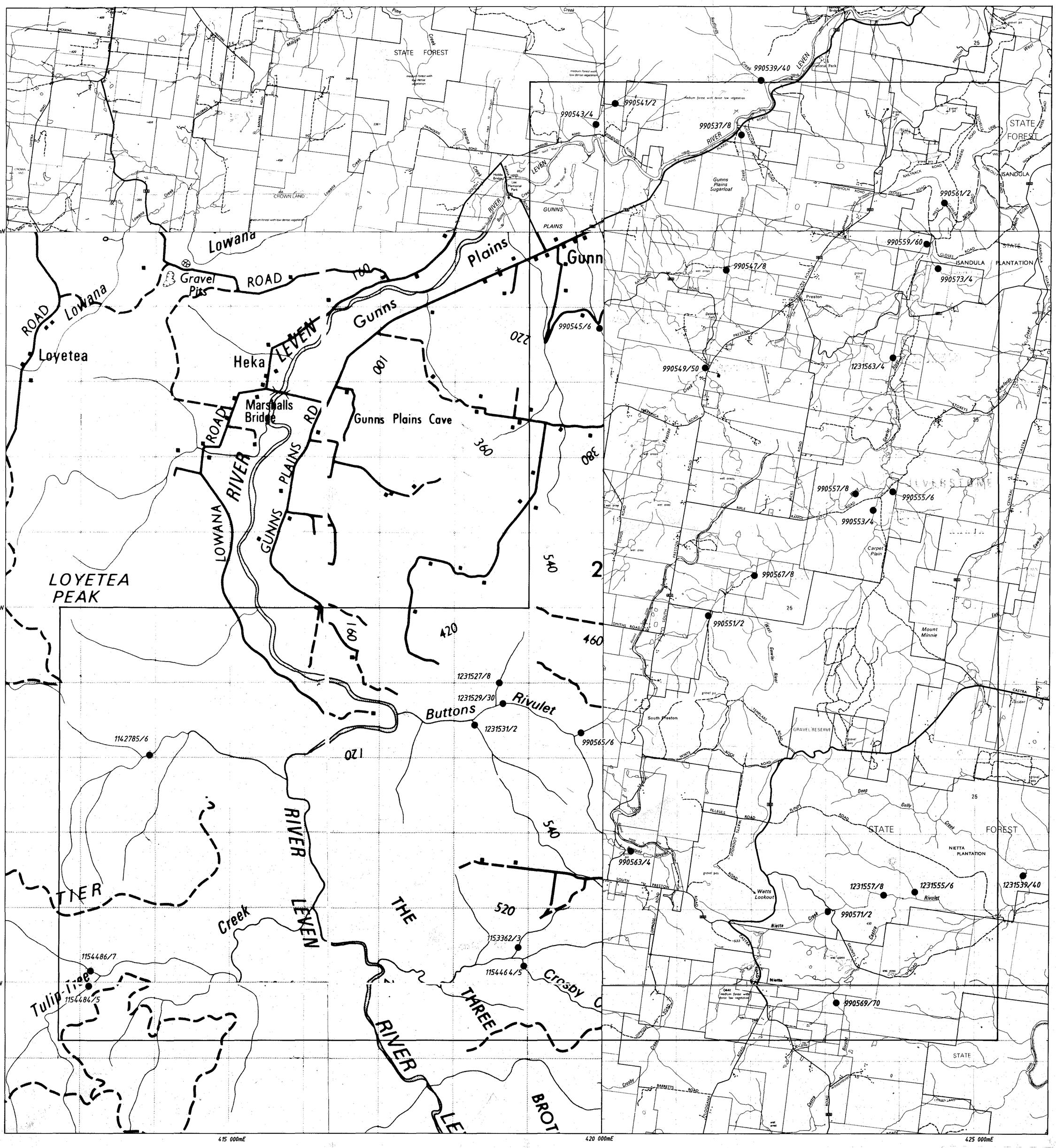
5 cm

CRA EXPLORATION PTY. LIMITED			
RIANA E.L. 8/77 PREVIOUS EXPLORERS STREAM GEOCHEMISTRY - Zn			
REF.	SK55 - 3		(8114 - 8115)
SCALE	1 : 25 000	DRAWN	R.T.
AUTHOR	S.J.C.	REPORT No.	14024
DATE	23 - 6 - 1986	PLAN No. TASh	3079

6379

86-2567

RIANA E.L. 8/77



013040

5 cm

GIS 47028-93

* N.B. * EVEN No. .... -4 mesh CYANIDE LEACH SAMPLE.
ODD No. .... -80 mesh SAMPLE.

CRA EXPLORATION PTY. LIMITED

RIANA E.L. 8/77
CRAE REGIONAL STREAM SEDIMENT
SAMPLE LOCATIONS 1985 - '86

REF.	SK55 - 3	(8015 - 8115)	
SCALE	1 : 25 000	DRAWN	R.T.
AUTHOR	S.J.C.	REPORT No.	14024
DATE	7 - 3 - 1986	PLAN No. TASh	2948

86-2567 6381

013041

5 cm

C R A EXPLORATION PTY. LIMITED

EL 19/72 'NIETTA' NORTH WEST TASMANIA

CROSBY CREEK PROSPECT

GEOLOGICAL PLAN 86-2567

REFERENCE :	BURNIE SK 55-3	SCALE :	1:2000
GEOLOGIST :	T.M.P	PLAN N°:	TASh 3089 (T953)
DATE :	MARCH 1976	Report No.	14024

LEGEND

TRAVERSE MAPPING SYMBOLS.

- Rhyodacite.
- Microdiorite (includes some rhyodacite)
- Fine rhyolitic (rodacite) tuffs & tuffaceous sediments.
- Tuffaceous shale, shale, fine vitric tuffs & schists.
- Rhyolitic tuffs - includes ash flow, lapilli & crystal tuffs and agglomerates. (Grades to a dacitic composition).
- Agglomerate & lapilli tuff.

Tb — Tertiary basalt.

Cambrian:
- Eri — Microdiorite intrusive
- Enl — Rhyodacite intrusive
- Enls — Tuffaceous shale, fine tuff, fine vitric tuff, shale & schists.
- Enlc — Agglomerate, ash flow, lapilli & crystal tuffs.

Fence

Unfenced track margin

Fault

Geological boundary

30° Dip & strike of bedding

DDH.

DD 75CC3 Dip 60° Azim. 0°mag T.D. 197.12m

DD 75CC5 Dip 60° Azim. 0°mag T.D. 197.1m

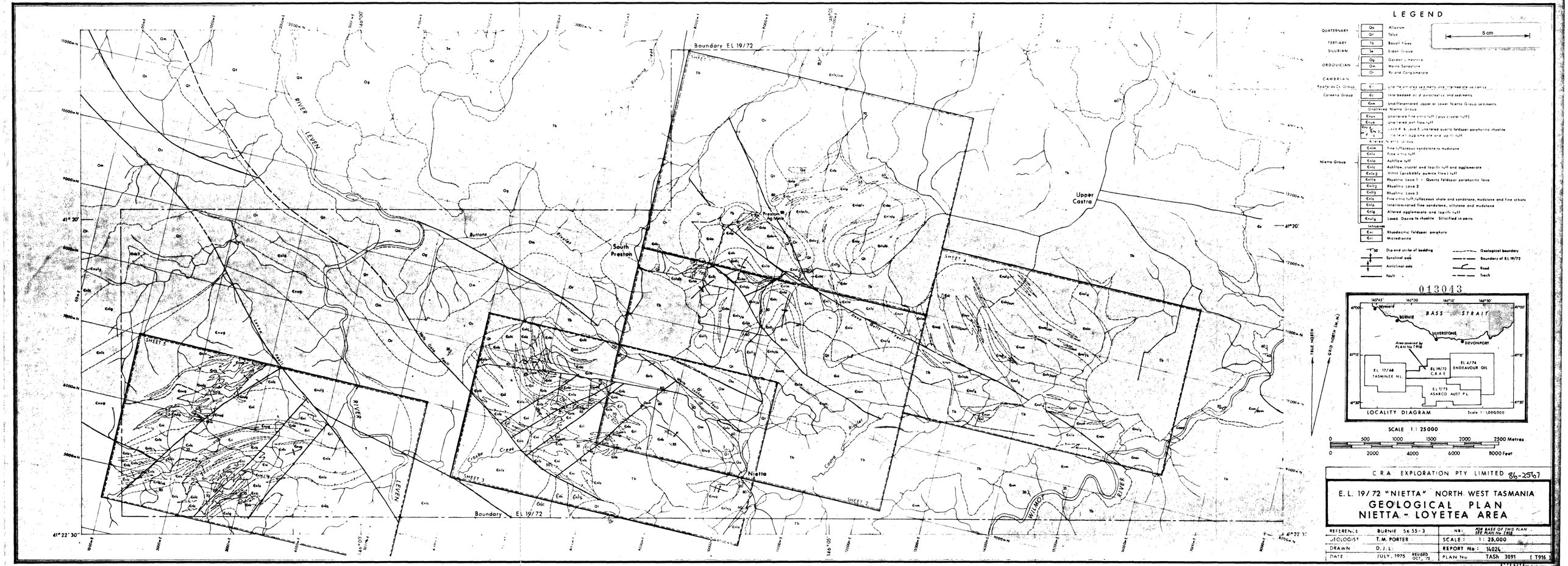
DD 75CC1 Dip 90° Azim. 0°mag T.D. 213m

DD 76CC2 Dip 90° Azim. 180°mag T.D. 197.7m

6350

T953


LEGEND
Intrusives
Єri Diorite - may be a tuff in parts
Єni Rhyodacite - may be a lava in parts
Unaltered Nietta Group
Єnug Agglomerate - conglomerate? in parts.
Cambrian
Altered (to unaltered) Nietta Group
Єnls Tuffaceous shale, shale, fine vitric tuff, fine tuff & schists
Єnlc Lapilli to crystal tuffs. Includes some agglomerate & ash flow tuff
Єnlg Altered (schistose) agglomerate.
Єnlv Altered fine vitric tuff to tuffaceous shale.
TRAVERSE MAPPING SYMBOLS.
◊ - Agglomerate & lapilli tuff (or conglomerate in parts)
S - Tuffaceous shale, shale, fine vitric tuff
fv - Fine tuffs - intermediate & acid.
Q - Quartz eyed crystal (or ash flow) tuff
⊠ - Acid (possibly ash flow) tuff.
■ - Unaltered acid crystal tuff.
- Schistose tuffs
A - Intermediate(?) crystal to lapilli (& ash flow) tuffs.
Δ - Fine altered vitric tuff
▲ - Fine unaltered vitric tuff.
C - Conglomerate
π - Rhyodacite
x - Diorite
Dip & strike of bedding
Traverse line
Fault
Geological boundary.
Mag N
013042
5 cm
DD76 LS 1
Azimuth 340°
Dip 50°
TD 300m
DD76 LS 2
Azimuth 50°
Dip 65°
TD 290m
Boundary of EL 19/72 / EL 7/73
6383
CRA EXPLORATION PTY. LIMITED
E.L. 19/72 'NIETTA' NORTH WEST TASMANIA
LOYETEA SOUTH PROSPECT
GEOLOGICAL PLAN
86-2567
REFERENCE : BURNIE SK 55-3
SCALE : 1:2000
GEOLOGIST : T.M.P.
PLAN N°: TASH 3090 (T958)
DATE : MARCH 1976
Report No. 14024



LEGEND

5 cm

QUATERNARY	Qa	Alluvium
	Qt	Talus
TERTIARY	Tb	Basalt flows
SILURIAN	Sw	Eldon Group
ORDOVICIAN	Og	Gordon Limestone
	Om	Marma Sandstone
	Or	Reland Conglomerate
CAMBRIAN		
Rosebery Creek Group	€	Undifferentiated sedimentary and interbedded volcanics
Corinna Group	€c	Interbedded acid pyroclastics and sediments
	€um	Undifferentiated Upper or Lower Nietta Group sediments
Undifferentiated Nietta Group		
	€nuv	Undifferentiated fine vitric tuff (plus crystal tuff)
	€nue	Undifferentiated ash flow tuff
	€nu 4, €nu 5	Units 4 & 5 undifferentiated quartz feldspar porphyritic rhyolite
	€nu 1, €nu 2, €nu 3	Undifferentiated pyroclastic and lava rhyolite
Nietta Group		
	€nlm	Fine tuffaceous sandstone to mudstone
	€nlv	Fine vitric tuff
	€nla	Ashflow tuff
	€nlc	Ashflow, crystal and lapilli tuff and agglomerate
	€nlv2	Vitric (probably pumice flow) tuff
	€nlla	Rhyolitic Lava 1 - Quartz feldspar porphyritic lava
	€nllg	Rhyolitic Lava 2
	€nlls	Rhyolitic Lava 3
	€nls	Fine vitric tuff, tuffaceous shale and sandstone, mudstone and fine schists
	€nlp	Interlaminated fine sandstone, siltstone and mudstone
	€nlg	Altered agglomerate and lapilli tuff
	€nulg	Lavas: Dacite to rhyolite Silicified in parts
Intrusives		
	€ri	Rhyodacitic feldspar porphyry
	€rr	Microdiorite

- 50 — Dip and strike of bedding
- Synclinal axis
- Anticlinal axis
- Fault
- Geological boundary
- Boundary of EL 19/72
- Road
- Track

013043

SCALE 1 : 25000

0 500 1000 1500 2000 2500 Metres

0 2000 4000 6000 8000 Feet

C R A EXPLORATION PTY LIMITED 86-2567

E. L. 19/72 "NIETTA" NORTH WEST TASMANIA
GEOLOGICAL PLAN
NIETTA - LOYETEA AREA

REFERENCE	BURNIE Sk 55-3	NB:	FOR BASE OF THIS PLAN SEE PLAN No. 1918
GEOLOGIST	T. M. PORTER	SCALE :	1: 25,000
DRAWN	D. J. L.	REPORT No :	14024
DATE	JULY, 1975 REVISED OCT., '75	PLAN No	TASh 3091 (T916)

6382