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EXPLORATION ON THE GOWRIE PARK GRID

JUNE 1977 - FEBRUARY 1978

E.L. 7/73, NORTHERN TASMANIA

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1. SUMMARY

This report outlines the results of exploration on the Gowrie Park Grid within E.L. 7/73, Northern Tasmania, during the period June 1977 to February 1978 (see Locality Plan).

The grid covers a belt of Cambrian altered acid volcanics which is the eastern continuation of the rocks already partly explored on the Western Cethana and Eastern Cethana grids (see CRAE reports 9041 and 9044). This belt is the northern extension of the volcanics hosting the Mt. Lyell, Rosebery and Que River Cu-Pb-Zn orebodies.

Exploration over the eight months has comprised geological mapping, geochemical sampling, I.P. and magnetic surveys, and the diamond drilling of three holes totalling 314 metres.

Over 70% of the grid is covered by Quaternary scree and alluvium. Within the zone of outcrop there is a sequence of altered rhyolite lavas and coarse tuffs, with the tuff component increasing westwards towards the Eastern Cethana prospect. Pyritic and limonitic volcanics are common on surface.

Sampling defined a zone of anomalous Pb-Zn in soils mainly over the lavas, 1,500 m x 150 m as outlined by the 300 Pb contour. Peak value obtained was 3,450 ppm Pb. Rock sampling of limonitic volcanics gave values up to 3.5% Pb.

Coinciding with the soil anomaly is a broad zone of I.P. chargeability with numerous distinct peaks up to 5 times back ground.

Three diamond drill holes were put down on I.P./geochemical anomalies. The holes all intersected stringer and pervasive pyrite - haematite - galena - sphalerite mineralisation within altered lavas.

Best intersections were:

			Pb	Zn	Cu	Ag
77GPC1	:	26.10 - 29.10 (3.0m)	0.6%	0.03%	43 ppm	4 ppm
		32.70 - 35.50 (2.8m)	1.1%	0.09%	27 ppm	3.5 ppm
		82.8 - 83.50 (0.7m)	1.4%	1%	220 ppm	16 ppm
		89.0 - 90.30 (1.3m)	0.7%	0.2%	10 ppm	5 ppm
77GPC2	:	61.90 - 77.70 (15.8)	0.7%	0.2%	45 ppm	5 ppm
	including	61.90 - 65.90 (4m)	1%	0.2%	69 ppm	5 ppm
		71.70 - 77.70 (6m)	0.9%	0.4%	44 ppm	9 ppm
78 GPC3	:	34.00 - 43.40 (9.4m)	1.1%	0.4%	180 ppm	5 ppm
	including	36.7 - 39.7 (3.0m)	1.8%	0.5%	50 ppm	4 ppm
		41.6 - 42.6 (1.0m)	2.8%	1%	230 ppm	14 ppm

2. CONCLUSIONS

The drilling results are encouraging although the holes were put down on the most obvious targets. Many anomalies of similar merit remain to be tested. With few exceptions, these anomalies occur over lavas and similar stringer-style mineralisation to that already intersected, can probably be expected.

3. RECOMMENDATIONS

In the short term, exploration on the Gowrie Park grid should be discontinued, pending a better understanding of the remaining geochemical/I.P. anomalies being obtained from work on the acid volcanics elsewhere in this general area.

Future exploration should be by percussion drilling of a few targets selected from the remaining anomalies. Such drilling should form part of any percussion drilling programme planned for other targets on E.L.'s 10/76 and 7/73.

4. INTRODUCTION

The Gowrie Park grid extends westwards from the deserted hydro township of Gowrie Park, 15 km south west of Sheffield in Northern Tasmania. It lies within E.L.7/73 of 440 sq. km. (Asarco - C.R.A.E. Joint Venture, managed by C.R.A.E.).

Asarco carried out drainage sampling in the grid area in 1973/74. This work detected moderate Pb/Zn anomalies (probably diluted by Roland Conglomerate debris), and no follow-up work was attempted.

In 1976 C.R.A.E. commenced exploration in the Cethana area to the west of Gowrie Park (see locality plan). Work at Eastern Cethana outlined a coincident I.P. / 50% geochemical anomaly extending further eastwards, and the Gowrie Park grid was cut in June 1977 to cover this extension.

Geological and geochemical work was undertaken by G. Purvis with assistance from P. Bertram during November - December 1977.

Geophysical surveys were by Scintrex Pty. Ltd. Diamond drilling was carried out by Associated Diamond Drillers Pty. Ltd., during December 1977 and January 1978.

5. GEOLOGY

The gridded area comprises a sequence of hydrothermally - altered acid volcanic lavas and coarse tuffs. Overall, there is a decline in rock alteration towards the eastern end of the grid. Tuffaceous rocks predominate over lavas towards the west. The northern two-thirds of the grid is entirely covered by Quaternary debris derived from the overlying Ordovician Roland Conglomerate.

A detailed description of the rock units is given in the legend of the geological plan.

6. GEOCHEMISTRY

The results of soil and rock sampling for Pb, Zn, Cu and Mn are shown on the plans at the back of the report and in appendicies IV and V.

High Mn in soils, rocks and drillcore generally corresponds with elevated values for Pb and Zn. While this relationship maybe enhanced on surface by the scavenging effects of manganese, the drill core results show that it is a primary association.

7. GEOPHYSICS

Scintrex Pty. Ltd., carried out gradient array I.P. surveys, a ground magnetic survey and ran downhole I.P. logs for the three drillholes. The results are contained in reports by A. Howland-Rose of Scintrex (see references).

8. DRILLING

Three diamond drillholes, 77GPC 1, 2 and 78GPC 3, were drilled during December 1977 - January 1978. The holes were aimed at coincident I.P. / geochemical anomalies.

The reasons for siting each hole were as follows:

- 77GPC 1 : Aimed at the best I.P. anomaly - a charge-ability peak 5 times background, accompanied by a marked drop in resistivity (see profile in Scintrex Report). Soil and rock geochemistry was only slightly anomalous in this area.

- 77GPC 2 : Target was the strongest geochemical anomaly with a peak of 3450 ppm Pb in soils and 3.55% Pb in rock samples. I.P. response was subdued at twice background.

78GPC 3 : Target was a well-defined I.P. anomaly with chargeability three times background accompanied by marked drop in resistivity (see profile), over outcropping silicified altered lava with gossanous fractures which gave a soil anomaly of 1,100 ppm Pb and rock samples up to 2.15% Pb.

Results are shown in detail in the drilllogs (appendix I) and in the drillsections. Briefly, all three holes intersected minor pyrite-haematite-galena-sphalerite mineralisation in "pervasive stringers" up to 7 cm thick and in patchy fine grained disseminations. The mineralisation occurs throughout the lavas with zones of local concentration which in general, corresponds to the position of the I.P. anomalies on surface. However, the relative strength of the mineralisation intersected downhole does not show good correlation with the relative strength of the surface I.P. and / or geochemical anomaly above it. e.g. the amount of sulphides and the assays from holes 77GPC1 and 2 are very similar although there is a wide variation in the strength of the geochemical and I.P. anomalies over each hole.

Best intersections from each hole are shown at the end of each drilllog.

J.G. Purvis

9. REFERENCES

Barker, R.G. Feb. 1974 Stream Sediment Sampling Survey
E.L. 7/73 Paradise, Tas. Asarco
(Australia) Pty. Ltd. report

Howland-Rose, A.W. Oct. 1977 A report on Gradient Array
Electrical Induced Polarisation
and Total Magnetic Field Survey
over the Gowrie Park Grid.
Scintrex Pty. Ltd., report.

Purvis, J.G. Sep. 1977 E.L.'s 7/73 & 10/76, Northern
Tasmania. Exploration at Western
Cethana August 1976 - August 1977
C.R.A.E. report 9041.

Purvis, J.G. Oct. 1977 E.L. 10/76, Northern Tasmania
Exploration at Eastern Cethana
September 1976 - September 1977
C.R.A.E. report 9044.

10 KEYWORDS

Copper, lead, zinc, acid volcanics, Cambrian, alteration, geol,
mapping-detailed, geochem-soil, geochem-rock, geophys- I.P.,
drill-diamond

11 LOCATION

Burnie SK 55-3

1:250,000 map sheet

LIST OF PLANS

<u>Plan No.</u>	<u>Title</u>	<u>Scale</u>
Tc 106	Geological Map Gowrie Park E.L. 7/73	1:5000 approx.
Tc 107	Sample Location Gowrie Park E.L. 7/73	1:5000 approx
Tc 108	Lead Geochemistry	1:5000 approx
Tc 109	Zinc Geochemistry	1:5000 approx
Tc 110	Copper Geochemistry	1:5000 approx
Tc 111	Manganese Geochemistry	1:5000 approx
Tc 112	Diamond Drill Sect. 77-G.P.C1 Line 1700 E G.P. E.L. 7/73	1:1000 approx
Tc 113	Diamond Drill Sect. 77-G.P.C2 Line 1600 E G.P. E.L. 7/73	1:1000 approx
Tc 114	Diamond Drill Sect. 78-G.P.C3 Line 700 E G.P. E.L. 7/73	1:1000 approx

LIST OF APPENDICIES

Appendix I	Diamond Drill Logs
Appendix II	Petrological Descriptions of Rock Samples
Appendix III	Rock Sample Results
Appendix IV	Soil Sample Results
Appendix V	Down Hole I.P. Logs

APPENDIX 1

DIAMOND DRILL LOGS.

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CO-ORDINATES		AZIMUTH		DRILLERS		COMMENCED		DEPTH		HOLE No.						
1700E 1635S		180°		ASSOCIATED		17-12-77		107.10m		776PC1						
RL COLLAR		INCLINATION		DRILL TYPE		COMPLETED		CASING LEFT		DPO No(s)						
		45°		MINDRILL F 30		20-12-77		3m HQ, 11m								
DEPTH	FROM (M)	TO (M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES				
												Pb	Zn	Cu	Ag	Mn
0-0D	46-80	42-4	0-3m	HQ		Altered porphyritic acid volcanic, probably welded, Tanimbite or lava? 0-6m Fe/Mn oxides in fractures	297358	0-00	3-00			270	260	85	<1	520
						Pale green hard siliceous massive acid volcanic with	297359	3-00	6-00			440	310	110	1	2900
						prominent porphyritic quartz and green feldspar fragments in fractures, qn sp. dispersed.	297360	6-00	9-00			400	540	42	<1	4600
						or phenocrysts. Mineral lineation fairly strong but individual 26.3-29.0m STRINGER MINERALIZATION	297361	9-00	12-00			500	560	60	1	9100
						qtz and feldspar not always aligned along lineation.	297362	12-00	15-00			880	340	70	<1	1%
						10% up to 6mm average 2-4mm, feldspar up to 1cm	297363	15-00	18-00			310	410	70	<1	1%
						average 2-4mm. Probably some glass fragments also.	297364	18-00	21-00			230	410	65	1	3000
						Matrix - creamy-green, ferritic containing much fine qtz	297365	21-00	24-00			190	260	48	<1	5800
						Minor silicification associated with qtz veining.	297366	24-00	26-10			25	200	25	<1	5200
						Mineral lineation: 10m 60°/axis, 18m 55°/axis, 25m 53°/axis	618825	26-10	27-10			2900	330	15	2	2.2%
						33m 45°/axis 41m 58°/axis	618826	27-10	28-10			9800	220	95	7	9900
						Numerous clean fractures generally - 45°/axis - core badly broken	618827	28-10	29-10			7200	230	20	3	1.25%
						fuggy fault zone 30.2-31.6m 40°/axis, 21.8m 60°/axis	297454	29-10	30-10			1400	360	12	1	1.05%
						1-2m.	297455	30-10	32-10			1350	390	15	<1	9500
						34-35.5m STRINGER ZONE.	297456	32-10	32-10			630	170	40	1	7400
						4% py 3% qn in widely-spaced	297457	32-70	34-00			1820	1350	18	4	8700
						periclase stringer some almost	618828	34-00	35-50			4400	420	35	3	1.05%
						// to core axis. 4% haematite	297369	35-50	38-00			560	350	45	1	7600
						35.5-40m <1% py > qn + 2% haem	297370	38-00	41-00			400	330	48	1	5600
						40-46m. 2% py (locally 5%) in	297371	41-00	44-00			380	360	35	1	3000
						stringers 2mm to >1cm. Generally	297372	44-00	47-00			270	340	360	8	2700
						at low angle to core axis and	297373	47-00	50-00			310	520	55	1	2800
						high angle to mineral lineation	297374	50-00	53-00			660	460	160	2	6900
						Minor qn + haematite	297375	53-00	56-00			3100	960	140	3	3600
						Similar to above. Phenocrysts smaller and less abundant,	297458	56-00	57-00			2800	450	280	4	5200
						color and texture more variable.	297459	57-00	58-00			1000	450	310	4	3700
						Irish green-grey siliceous - weakly silicified in places.	297460	58-00	59-00			300	150	15	<1	3050
						Zones where feldspar bleached and very sparse - i.e.	297377	59-00	62-00			1250	350	220	5	4450
						rock is quite lillacous in these zones.	297378	62-00	65-00			5500	310	35	2	3700
						Core broken several clayey bands 45°/axis.	297379	65-00	68-00			140	340	75	1	3200
						Mineral lineation at 57m 52°/axis.	297380	68-00	71-00			150	480	48	<1	8850
							297381	71-00	74-00			720	470	180	2	1760
						Tanimbite?	297382	74-00	77-00			190	390	30	<1	1620
						Hard, pale grey-green very siliceous acid volcanic similar	297383	77-00	79-00			1550	450	60	2	2.05%
						to above, except very abundant quartz phenocrysts or	297384	79-00	81-10			32	420	65	<1	5000
						fragments, up to 1mm feldspar and/or glass streaked	618830	81-10	82-80			3300	1500	70	9	2100
						out" by schistosity or flow texture.	618831	82-80	83-50			1350	1%	220	16	5900
						Alteration - sericite + carbonate, trace chlorite.	297385	83-50	86-10			280	1000	45	1	4000
						60.7-62.0m - fuggy fault zone 65°/axis.	297386	86-10	89-00			1300	1900	35	2	8500
						63.5m - mineral bleaching 65°/axis, dth at 69m.	618833	89-00	90-30			6600	2200	10	5	1.2%
						76m 60°/axis. basal contact 67°/axis.	297387	90-30	93-00			240	450	28	<1	4800
							297388	93-00	95-50			32	470	25	<1	5700
						Lapilli top? Similar to above.	297389	95-50	97-50			55	410	28	1	4250
						Pale brownish-grey siliceous acid volcanic.	618834	97-50	98-50			1300	1200	115	2	7700
						Sparse phenocrysts or fragments of quartz, feldspar and glass	297390	98-50	100-00			600	1050	110	1	7500
						up to 8mm, average 3mm, in fine grained siliceous band	297391	101-00	104-00			1100	960	80	2	4850
						with minor haematite	297392	104-00	107-10			1250	1200	100	1	5000
						Alteration - mainly sericite, schistosity weak. Much epidemy										
						leucocratic veining - not carbonate.										
						Schistosity: 83m 63°/axis, 94m 70°/axis, basal breccia zone 63°/axis.										
						Massive welded? acid volcanics becoming more lillacous at depth. Stringer sulphide mineralization in 6										
						Acid tube surveys: 30m 43°/axis, 60m 33°/axis, 90m 33°										
						thin zones.										

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DIAMOND DRILL CORE LOG
 CO-ORDINATES 700E 850 S AZIMUTH 183° DRILLERS ADD COMMENCED 14.1.78 DEPTH 94.10m HOLE No. 78GPC3
 RL COLLAR INCLINATION 50° DRILL TYPE MINDRILL F30 COMPLETED 17.1.78 CASING LEFT 3.00m HQ DPO No(s)

DEPTH		CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES					
FROM (M)	TO (M)										Pb	Zn	Cu	Ag	Mn	
0.00	4.60		HQ/3m		Weathered altered lava?		618950	0.00	4.60		70	160	140	1	55	
			NQ 17m 3m		Soft, clayey, pale yellow-green acid volcanic. Porphyritic quartz and feldspar to 3mm. Core badly broken. White quartz veins up to 5mm // axis.		618951	4.60	6.00		140	230	90	1	250	
							618952	6.00	9.10		1900	160	180	1	1200	
							618953	9.10	12.45		2900	270	210	1	2600	
							297451	12.45	13.30	C	5900	250	700	1	1750	
4.60	6.00		NQ		Highly fractured acid volcanic with angular porphyritic quartz up to 3mm in fine grained vitric groundmass with rare glass shards. Brittle fracture, non-schistose, sericitised. Fractures 45°/axis. Basal contact 63°/axis.		618955	13.30	14.30		1800	600	370	2	9000	
							618956	14.30	16.20		1000	180	125	2	2600	
							618957	16.20	19.20		680	480	60	1	7800	
							618958	19.20	21.00		190	600	45	<1	1350	
							618959	21.00	23.00		430	640	40	<1	1300	
6.00	14.30		NQ		Altered lava? Pale yellow-green sericitised acid volcanic with prominent porphyritic quartz, often sub-rounded, average 4mm, up to 7mm. Prominent green feldspars average 3mm, up to 5mm. Vague lineation 50°/axis. Core badly broken by fractures at all angles, some with Fe/Mn oxides on them. Minor Qtz veins.	Fe/Mn oxides on fractures and in breccia zones, particularly 12.4-12.80m 15% limonite; 13-13.30m 25% limonite + Mn.	618960	23.00	26.00		150	520	25	<1	1550	
							618964	26.00	29.00		430	450	75	1	1400	
							618965	29.00	32.00		600	540	70	2	2750	
							618966	32.00	34.00		880	320	50	1	8200	
							297452	34.00	35.30	C	1000	3020	160	5	240	
							297453	35.30	36.70	C	950	490	25	1	180	
							618961	36.70	37.70	C	8000	3500	20	2	360	
14.30	16.20		NQ		Light greenish-cream altered acid volcanic with porphyritic quartz to 3mm and green feldspars and/or glass 1-2mm in fine grained non-schistose matrix. Numerous hairline, limonitic fractures at all angles. Numerous vuggy Qtz veins < 5mm at low angle/axis. At 14.7m bad fracture associated with Qtz vein - lost water here. Basal contact 45°/axis.	Minor limonite on fractures. Minor fresh py, gn towards base.	618962	37.70	38.70	C	3450	100	60	7	330	
							618963	38.70	39.70	C	100	2900	70	4	260	
							618971	39.70	40.60	C	1600	2000	410	4	7000	
							618972	40.60	41.60	C	1400	1200	280	2	1750	
							618973	41.60	42.60	C	2750	9500	230	14	160	
							618974	42.60	43.40	C	1300	2000	500	4	1400	
							618975	43.40	44.50	C	1200	1300	250	3	6600	
							618968	44.50	47.00		270	450	50	1	9600	
16.20	36.70		NQ		Altered siliceous lava? Pale grey-green, abundant porphyritic quartz 3-4mm, up to 7mm. Green porphyritic feldspars and/or glass 3-4mm. Sericitised with carbonate - dispersed and in thin stringers. Minor chlorite. Slight schistosity: 17m 55°/axis, 26m 62°/axis, 33m 53°/axis. Few shears and mylonized zones - worst at 20.7m 55°/axis.	32-36.7m 1% gn, sp + sp + py dispersed and in silts + stringers. Elic share minor dispersed py and gn, sp, cp. Minor haematite.	618969	47.00	50.00		1200	330	80	2	7000	
			BQ 17m				618970	50.00	52.00		1900	400	120	3	6200	
			21.00m				618979	52.00	54.10		1000	165	85	2	3600	
							618980	54.10	55.40		20	110	160	2	2000	
							618976	55.40	56.20	C	170	30	80	3	50	
							618977	56.20	57.50	C	4400	560	270	4	9900	
							618981	57.50	58.40		50	290	40	1	8200	
36.70	39.60		BQ		Weakly silicified altered acid volcanic. Pale lime green, hard, minor porphyritic quartz to 3mm, minor feldspar (glass) = 1mm. Sericitised, much carbonate in irregular stringers and patches throughout. Minor Qtz veins. Basal contact - fracture at 15°/axis.	3% gn, trace sp + cp. Minor py. Mainly in silts + stringers associated with carbonate = quartz - veins - patches, stringers // to core axis then at 40°/axis // schistosity.	618978	58.40	59.60	C	840	640	1600	3	1500	
							618982	59.60	62.00		55	460	70	1	1250	
							618983	62.00	65.00		20	310	115	1	7000	
							618984	65.00	68.00		10	270	20	1	7200	
							618985	68.00	71.00		95	310	90	1	6200	
							618986	71.00	74.00		15	200	30	<1	5000	
39.60	43.30		BQ		Grey, silicified acid volcanic. Lava breccia. Sericitised with carbonate veins and patches. Minor thin Qtz veins. Rock is similar to that from 16-36m. Schistosity 53°/axis. Basal fracture 20°/axis.	3% finely dispersed py, 1-2% gn + sp + cp - mainly dispersed.	618987	74.00	77.00		10	185	20	1	4600	
							618988	77.00	80.00		40	300	30	1	6400	
							618989	80.00	83.00		30	350	65	1	5400	
							618990	83.00	86.00		15	390	10	<1	3000	
							618991	86.00	89.00		10	320	10	1	4400	
43.30	54.0		BQ		Altered lava? (Lava breccia?) Light green, porphyritic quartz up to 3mm with glass or feldspar generally < 2mm - neither Qtz or feldspar abundant - much matrix. Irregular, finer-grained zones. Highly siliceous - possibly weakly silicified in patches. Schistosity at 52m 60°/axis. Basal contact 55°/axis.	43.30-44.4m 4% dispersed py + 1% gn, sp. Elsewhere 1% py, minor gn, sp, cp.	618992	89.00	92.00		50	260	75	1	5800	
							618993	92.00	94.10		10	270	15	1	5600	
							Whole hole average:					1108	697	115	1.5	8770
							For best in these sections - see over									

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CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 78GPC3
 RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH		CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES						
FROM (M)	TO (M)										Pb	Zn	Cu	Ag	Mn		
54.00	59.60	8Q			Altered lava breccia? Grey-green + purple irregularly weakly silicified, sericitic and hematitic acid volcanic. Clasts of lava up to 5cm, along with large fragments of quartz and kipp(?) in groundmass containing porphyritic quartz, feldspar and glass, also generally < 2mm. Sericitized + carbonated.	54-55.4m: 3% py. 55.4-57.5m: 8% py - dispersed + minor qn, sp, cp. 57.5-58.4m: 5% hematite. 58.4-59.6m: 1% cp + qn, sp, 1% py Hematite associated with carbonate	Best interval from:	6.00	14.30	8.3	2700	370	240	1			
59.60	72.70	8Q			Creamy-grey altered acid volcanic with variable texture. Schistosity increases markedly with depth. Porphyritic quartz and feldspar and/or glass < 3mm vary up to 7mm. Much fine grained sericitic matrix. Carbonate mainly in stringers and patches. Minor ore veining mainly near top of interval - low angle/axis. Minor shearing. Schistosity: 64m 68°/axis, 72m 60°/axis. From 69.2-70.5m breccia zone with creamy lava fragments up to 5mm in grey similar matrix. Most fragments 1-2cm lined 60°/axis.	Minor py and hematite.		36.70	43.40	9.4	1.05%	3700	180	5			
							including:	36.70	39.70	3.0	1.75%	520	50	4			
								41.60	42.60	1.0	2.75%	950	230	14			
72.70	83.90	8Q			Altered lapilli kipp? Similar to above except more effusive. Variably textured sparse porphyritic quartz, feldspar and/or glass, 2-3mm in fawn-grey sericitic and schistose matrix. Alteration and schistosity stronger than above - some bleaching. Schistosity: 72m 63°/axis, 82m 58°/axis. Basal contact a sharp color change at 63°/axis.	1-2% hematite, rare py + qn in patches.											
83.90	94.10	8Q			Altered lapilli kipp? Green strongly schistose sericitic and chloritic acid volcanic. Porphyritic quartz 2-3mm streaked with feldspar and/or glass generally 2-3mm up to 6mm. Fragments get smaller towards base. Much matrix. Irregular quartz-carbonate veins. Schistosity: 81m 55°/axis.	1-2% hematite. Very rare py, qn + cp in carbonate veins towards base of interval.											
END OF HOLE																	

SUMMARY AND SPECIAL COMMENTS Lava breccia (?) with variable texture passing to lapilli kipp at base. Minor sulphides.

LOGGED BY G. Purvis DATE 18-1-79
 SHEET 2 OF 2

APPENDIX II

PETROLOGICAL DESCRIPTIONS OF ROCK SAMPLES

Central Mineralogical Services Pty. Ltd.

231 Magill Road
Maylands, S.A. 5069
Telephone 42 5659

2nd November 1977

Mr. G. Purvis,
Geologist,
C.R.A. Exploration Pty. Ltd.,
Post Office Box 138,
BURNIE. TAS. 7320

REPORT CMS 77/10/38

YOUR REFERENCE: Order No. 20647
DATE RECEIVED: 27th October 1977
SAMPLE NOS.: 618187, 618189 - 91,
618194 and 618201
SUBMITTED BY: Mr. G. Purvis
WORK REQUESTED: Petrology

H.W. Fander

H.W. Fander, M.Sc.

Copy and Invoice to:

The Exploration Manager,
C.R.A. Exploration Pty. Ltd.,
95 Collins Street,
MELBOURNE. VICTORIA. 3000

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 2nd November 1977

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 77/10/38 Date Received: 27.10.77

Reference D.P.O. 20647

Sample No. 618187

Nature of Sample: Hand specimen

IDENTIFICATION
618187
ALTERED PORPHYRITIC RHYOLITE

DESCRIPTION SECTION No. 22670

a. Hand Specimen:

Pale quartzose, micaceous rock with preferred orientation. K-feldspar stain test negative.

b. Microscopic:

This is an altered porphyritic rhyolite; the term rhyolite is here necessarily used in a broad sense because the feldspars are completely sericitised. However, from other considerations (mainly the abundance of quartz phenocrysts), it probably was a rhyolite proper; the relatively coarse grainsize suggests that it was a shallow or minor intrusive, but this is interpretative.

The phenocrysts are large (up to 2-3mm) embayed quartz crystals, and prismatic to lath-shaped, subparallel sericite pseudomorphs after feldspar(s). They are set in a microgranular groundmass of quartz and interstitial sericite. The groundmass quartz has an average grainsize of 0.1mm, but it is not certain whether this can be regarded as the primary grainsize or is a secondary effect (e.g. due to devitrification of an originally glassy groundmass). The sericite is weakly iron-stained.

Small skeletal leucoxene patches after magnetite crystals are scattered through the rock.

This sample is reminiscent of the more acid members of the Mt. Read Volcanic series.

H.W. Fander, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 2nd November 1977

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 77/10/38 Date Received: 27.10.77

Reference D.P.O. 20647

Sample No. 618189

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 22671

a. Hand Specimen:

Very pale yellowish porphyritic fine-grained rock. K-feldspar stain test negative.

b. Microscopic:

Despite the apparent differences in hand specimen between this rock and 618187, the two rocks are compositionally and texturally similar; the difference is superficial and is due to weak Fe-staining in 618187. The rock is an altered porphyritic rhyolite.

Well-formed but embayed phenocrysts of "glassy" quartz are plentiful, though not quite as large as in 618187; lath-shaped pseudomorphs of sericite aggregates after feldspar are scattered through the rock and show good flow-alignment.

The groundmass (average grain size = 0.05 - 0.1mm) is composed of microgranular quartz and interstitial sericite, with isolated skeletal leucoxene pseudomorphs after primary magnetite.

Small sericite-filled shears traverse the rock and contain isolated cellular goethite patches, possibly after pyrite.

The groundmass grain size, and the absence of flow-banding or -brecciation and other features seen in extrusive rocks, suggests that this rock was intrusive, but this interpretation must be regarded in the light of field data.

H.W. Fander, M.Sc.

IDENTIFICATION
618189
ALTERED PORPHYRITIC RHYOLITE

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 77/10/38 Date Received: 27.10.77

Reference D.P.O. 20647

Sample No. 618190

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 22672

IDENTIFICATION
618190
ALTERED PORPHYRITIC RHYOLITE

a. Hand Specimen:

Pale, porphyritic siliceous rock. K-feldspar stain test negative.

b. Microscopic:

This altered porphyritic rhyolite is so similar to 618187 and 618189 that a detailed description is hardly warranted. In its textural features it is intermediate between the other two rocks, with large phenocrysts (as in 618187) and a finer groundmass (as in 618189).

The phenocrysts are of embayed quartz (up to 3mm) and lath-shaped sericite pseudomorphs after feldspar, with subparallel alignment. The groundmass is microcrystalline quartz and interstitial sericite, which is wispy and foliated. It is probable that this rock (and the others) underwent mild dynamic metamorphism.

Fine aggregates and pseudomorphs of leucoxene are scattered through the rock. Rare grains of apatite and small zircon crystals are seen.

The same comments regarding genesis and occurrence apply to this sample as to the others.

One of the main problems is whether these rocks were sodic or potassic (within the framework of the rhyolites); there is a tendency for the Mt. Read volcanics to be sodic, and this could have some significance in connection with mineralisation.

H.W. Fander, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 77/10/38 Date Received: 27.10.77

Reference D.P.O. 20647

Sample No. 618194

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 22673

a. Hand Specimen:

Very pale, fine-grained weakly porphyritic. K-feldspar stain test negative.

b. Microscopic:

This altered porphyritic rhyolite resembles the others in terms of composition, but there are differences whose significance is difficult to evaluate, because of the destructive effect of sericitisation, especially on textural details.

The phenocrysts are small and inconspicuous; quartz crystals are strongly resorbed, feldspar euhedral but completely sericitised. The groundmass consists of fine quartz and abundant sericite, and differs texturally from that of the previous rocks. There are poorly-defined interlocking patches of quartz with interspersed fine sericite; the textures are typical of devitrification of an originally glassy mass rather than a primary holocrystalline matrix. Even if this interpretation is correct, it does not necessarily imply an extrusive origin, especially as other textural features of extrusive rhyolites are absent.

The abundance of sericite indicates that the rock was more feldspathic than those already described; however, differences are minor, and there is a fairly clear genetic relationship between them all. The sericitisation itself was probably a pervasive, low-temperature hydrothermal effect not a weathering phenomenon.

H.W. Fander, M.Sc.

IDENTIFICATION
618194
ALTERED PORPHYRITIC RHYOLITE

021

273022

Date 2nd November 1977

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 77/10/38 Date Received: 27.10.77

Reference D.P.O. 20647

Sample No. 618201

Nature of Sample: Hand specimen

IDENTIFICATION
618201
ALTERED PORPHYRITIC RHYOLITE/DACITE

DESCRIPTION SECTION No. 22674

a. Hand Specimen:

Buff-pink fine-grained felsic rock with many phenocrysts. K-feldspar stain test negative.

b. Microscopic:

This is an altered porphyritic rhyolite or dacite very probably originally sodic. It is much more markedly porphyritic than the other rocks, and is texturally and compositionally different.

Phenocrysts are very abundant though generally fairly small, and consist of deeply embayed and strongly resorbed quartz, and small prismatic pseudomorphs of sericite after plagioclase; twin-lamellae are still recognisable but the subspecies of plagioclase can no longer be determined. It is assumed to have been albite, but if not (e.g. oligoclase) then of course the rock would have been a toscanite or even a dacite (depending on the groundmass feldspar, also sericitised).

The groundmass is very finely-crystalline (< 50µ) and homogeneous, composed of quartz, illite-sericite, and ultrafine, cloudy zoisite. There are small chlorite aggregates, and leucoxenised opaques. Thin chlorite and zoisite veinlets traverse the rock.

The main objection to classifying this as a dacite is the abundance of free quartz, but such evidence must be treated with caution.

H.W. Fander, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 77/10/38 Date Received: 27.10.77Reference D.P.O. 20647Sample No. 618191Nature of Sample: Hand specimenDESCRIPTION SECTION No. 22675

a. Hand Specimen:

Brownish coarsely-crystalline foliated rock. K-feldspar stain test negative.

b. Microscopic:

This is a sheared porphyritic rhyolite; because of the abundance of large phenocrysts, the rock has a gneissic fabric.

The phenocrysts are large and quite closely-packed; they are stressed and fragmented, especially the quartz, drawn out into lensoid bodies but not recrystallised. Where sericitised feldspar crystals were embedded in quartz they have retained their euhedral outlines, but elsewhere they are lensoid. There are patches of relatively coarse sericite containing abundant fine leucoxene; these are thought to represent completely altered biotite flakes or small "books".

Because of the deformation due to (largely dynamic) metamorphism, it is difficult to distinguish between sheared sericite pseudomorphs and sheared groundmass material, which consists of microcrystalline quartz and sericite. There are skeletal leucoxene pseudomorphs after magnetite (or ilmenite) - a feature common to all these rocks. Goethite staining is fairly widespread.

This rock could be regarded as a strongly porphyritic, sheared version of 618187.

H.W. Fander, M.Sc.

IDENTIFICATION

618191

SHEARED, ALTERED
PORPHYRITIC RHYOLITE

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 11.1.78

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/1/4 Date Received: 8.1.78

Reference DPO 00158

Sample No. 618824

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 23180

a. Hand Specimen:

Pinkish-yellow fine-grained porphyritic rock; K-stain test negative.

b. Microscopic:

This porphyritic rhyolite is generally similar to 816818, but must have contained more feldspar phenocrysts, now indeterminate because of sericitisation. Shearing was insignificant, in contrast to the other rocks.

The feldspar phenocrysts, though completely sericitised, retain vague relict textures suggesting plagioclase; logically this would be expected to be albite, and if so, the rock would be a sodic rhyolite. Quartz phenocrysts are up to 3 mm in size and show little disruption or stress. The groundmass consists of interlocking anhedral quartz and interstitial sericite, with a grain size of 0.10 - 0.15 mm, coarser than that of preceding rocks. White opaque leucoxene patches are scattered through the rock; some have skeletal textures and were probably derived from primary (accessory) magnetite.

Small aggregates and rhombs of sideritic carbonate are present throughout.

Grain sizes, of both phenocrysts and groundmass, suggest that the rock was intrusive.

The concept of a sodic rhyolite is in keeping with the range of compositions of Mount Read volcanics (sodic rhyolites, trachytes, dacites).

H.W. Fander, M.Sc.

IDENTIFICATION
618824
ALTERED PORPHYRITIC (?SODIC) RHYOLITE

02A

273025

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 11.1.78

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/1/4 Date Received: 8.1.78
Reference DPO 00158
Sample No. 618829
Nature of Sample: D.D. Core

Table with 2 columns: IDENTIFICATION, 618829, ALTERED PORPHYRITIC RHYOLITE

DESCRIPTION SECTION No. 23181

a. Hand Specimen:

Pale greenish-yellow fine-grained rock with traces of pyrite. K-stain test negative.

b. Microscopic:

A thoroughly altered and mildly sheared porphyritic rhyolite; sericite is particularly abundant, forming all the groundmass, indicating that the rock was strongly feldspathic, perhaps tending towards a quartz trachyte.

The quartz phenocrysts are large and irregular, embayed, stressed, fractured and carbonate-veined; feldspar phenocrysts were smaller and euhedral, and are represented by pseudomorphs of carbonate and fine sericite, with some relict cleavage.

The groundmass consists of fine, foliated sericite, with relict flow-banding accentuated by fine leucoxene; it was presumably fine feldspar or feldspathic glass in the fresh rock.

Sideritic carbonate forms aggregates of small rhombs, and subconcordant veins.

Pyrite occurs as loose clusters of small crystals, intergrown and associated with carbonate and leucoxene, where leucoxene patches evidently acted as nuclei for the deposition of the deuteric minerals.

There is insufficient evidence to show whether the rock was intrusive or extrusive.

H.W. Fander, M.Sc.

025

273026

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 11.1.78

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/1/4 Date Received: 8.1.78

Reference DPD 00158

Sample No. 618832

Nature of Sample: D.D. Core

IDENTIFICATION
618832
RHYOLITIC TUFF-LAVA

DESCRIPTION SECTION No. 23182

a. Hand Specimen:

Pale yellow-grey porphyritic fine-grained rock with traces of sulphides, K-stain test negative.

b. Microscopic:

This rock differs from all the others, mainly in fabric rather than composition; it is believed to be more in the nature of a rhyolitic tuff-lava, with lava-fragments embedded in a lava matrix, but relationships are uncertain because of thorough alteration and some shearing. Sulphides were introduced during shearing/deuteric alteration, and include traces of fine pyrite, galena, and ? chalcopyrite (stereo-binocular identification only).

The phenocrysts are of heavily-corroded quartz, and sericitised feldspar; some of the quartz is stressed and fractured, some occurs as whole crystals with felsitic or spherulitic margins. Feldspar is represented by sericite pseudomorphs, and apparently both whole crystals and fragments were present. The groundmass shows confused relict textures in microcrystalline quartz and sericite, of a type expected in tuff-lavas.

Very probably this rock formed by flow-brecciation of a lava on a fine scale, incorporating small lava fragments and possible pyroclastic additions in a porphyritic lava mass.

Quartz-siderite veins cut the rock, and thin sericitic shears are present. Siderite rhombs occur sporadically throughout.

H.W. Fander, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 27.1.78

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/1/14 Date Received: 23.1.78

Reference DPO No. 00168

Sample No. 618943 GPC 2 @ 100 m

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 23271

a. Hand Specimen:

Grey "lensoid" phyllitic altered fragmental rhyolite, K stain negative.

b. Microscopic:

This is a thoroughly altered and strongly sheared rhyolitic tuff which can be contrasted with both previous specimens (i.e. 618878 and 618881) in terms of fabric.

The elongate lens-like features (hand specimen) are thoroughly sericitised and/or carbonated lithic clasts. Many of these are rather featureless in thin section but others contain stressed and partly disrupted relict phenocrystal quartz grains sometimes accompanied by crudely pseudomorphous aggregates of cloudy ankeritic carbonate and sericite after feldspar phenocrysts. Several clasts show altered felsitic and/or perlitic (i.e. devitrified) structures in the groundmass. The marked flattening indicates the bulk of alteration predated regional metamorphism.

The remainder of the rock consists largely of orientated sericite with subordinate closely intergrown crudely layered schistose cloudy ankeritic carbonate and traces of chlorite. Quartz crystal fragments are sparsely disseminated throughout. Isolated devitrified/altered shards are outlined in quartz or occasionally sericite-carbonate aggregates. These features may have been more abundant than is now apparent in view of the relatively marked effects of alteration and shearing.

The rock carries accessory leucoxenised opaques and occasional grains of apatite showing virtually submicroscopic inclusions (a semi-ubiquitous feature of Mount Read volcanics). Extremely rare ultrafine particles of ?pyrite were detected under the stereobinocular.

IDENTIFICATION

618943

ALTERED, SHEARED
RHYOLITIC LITHIC-VITRIC
CRYSTAL TUFF

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/1/14 Date Received: 23.1.78

Reference DPO No. 00168

Sample No. 618948 GPC 2 @ 111m.

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 23272

a. Hand Specimen:

Grey green (chloritic) altered "rhyolitic" fragmental, leucoxenitic opaques, K stain negative.

Microscopic:

This is a thoroughly altered and sheared lithic-crystal tuff. As previously primary feldspar has been completely altered although rhyolitic composition is reasonably inferred from abundant relict primary quartz.

The rock shows some textural similarities to 618878 and comprises mainly altered lithic fragments sized in the 0.25 - 3 mm range. Many of these are vaguely recognisable as originally glassy porphyritic lavas but a few are clearly of (?reworked) pyroclastic origin as indicated by included quartz crystal fragments and, occasionally, vaguely eutaxitic fabrics. They are accompanied by frequent quartz- and occasional completely altered feldspar crystal fragments. The rock is also characterised by abundant leucoxenised opaques.

The alteration assemblage comprises sericite with closely intergrown chlorite and subordinate cloudy carbonate and microcrystalline quartz. The matrix is poorly resolved optically from the thoroughly altered and somewhat flattened rock fragments and is rather featureless. There are no recognisable shards.

As noted this rock shows some evidence of incipient reworking. Whilst there is no positive evidence (e.g. detrital grain shapes) a subaqueous origin could be considered.

D. Cowan, B.Sc.

IDENTIFICATION
618948
ALTERED SHEARED RHYOLITIC LITHIC CRYSTAL TUFF

028

273029

APPENDIX III

ROCK SAMPLE RESULTS

GEOCHEMICAL ROCK SAMPLING LEDGER

Page No. 1

TENEMENT EL 7/73

D.P.O. No.

AREA/PROSPECT COWRIE PARK SAMPLE No's.

GEOLOGIST G.P. DATE

PLAN REFERENCE

ANALYSED BY

Sample No.		Metal Content in ppm.					Geological observations	
		Pb	Zn	Cu	Ag	Mn		
618178	1900E/1300S	8	65	15	<1	40	SCREE: QTZ-SER. SCHIST & BLACK BANDS AFTER TUFF-SHALE INTERBEDS	
618179	1800E/1400S	8	38	5	<1	38	O/C: SILIC. QTZ-SER. SCHIST AFTER SILIC. TUFF.	
618180	1700E/1700S	360	15	12	<1	30	O/C: MOD. ALT. FINE LAPILLI TUFF.	
618181	1700E/1740S	210	25	18	<1	520	SCREE: COARSE XTAL TUFF OR LAPILLI TUFF.	
618182	1700E/1640S	1250	55	80	1	3000	SUB O/C: ALT. SILIC. XTAL TUFF(?) & LIMONITE & Mn	
618183	1700E/1440S	720	1850	25	<1	620	SCREE (?): V. LIMONITIC AV SCHIST.	
618184	" "	100	160	2	1	150	SCREE (?): LIMONITIC QUARTZ.	
618185	1600E/1700S	3.2%	2650	1100	45	32%	SCREE: COBBLE OF PIPROXITE-LIM. & MINOR ALT. AV FRAGS	
618186	1300E/1940S	9600	1400	1250	2	1.90%	SCREE: QTZ-SER. SCHIST AFTER TUFF & LIM. & Mn STAINS	
618187	1300E/1300S	PETROLOGICAL SAMPLE						SCREE: WEAKLY ALTERED LAPILLI TUFF.
618188	1200E/1120S	240	320	75	<1	4.0%	SCREE QTZ-SER. SCHIST AFTER TUFF & LIM. & Mn STAINS	
618189	1100E/1300S	PETROLOGICAL SAMPLE						O/C: MOD. ALTERED FINE LAPILLI TUFF.
618190	1100E/1260S	PETROLOGICAL SAMPLE						SCREE: " " " " " "
618191	1100E/1160S	PETROLOGICAL SAMPLE.						SCREE: MOD. ALT. COARSE LAPILLI TUFF.
618192	1000E/1000S	260	40	120	<1	860	SCREE QTZ-SER. SCHIST AFTER XTAL TUFF & MINOR LIM. PITS AFTER PY.	
618193	900E/960S	3800	1000	110	<1	6600	O/C: VERY LIMONITIC QTZ-SERICITE SCHIST.	
618194	900E/880S	PETROLOGICAL SAMPLE						SUB O/C: ALT. SILIC. FINE XTAL TUFF OR WELDED ASH(?)
618195	900E/700S	4900	260	180	9	18.4%	SCREE: HIGHLY PYROXENIC & HAEMATITIC SILIC. AV.	
618196	800E/870S	5400	480	50	2	1.0%	O/C: QTZ-SER. SCHIST & LIMONITE & Mn STAINS	
618197	800E/680S	5700	740	350	3	1.80%	SCREE: V. LIM. ALT. AV & TINY PITS AFTER PY.	
618198	700E/900S	380	640	180	1	1150	SUB O/C: ALT. AV & 10% LIM. BOXWORKS THROUGHOUT	
618199	700E/880S	160	40	18	<1	620	O/C: HARD MOD. ALT. AV & 5% LIM. BOXWORKS & TINY PITS AFTER PY.	
618200	500E/1140S	22	8	18	<1	160	O/C: HIGHLY SILIC. AV LAVA(?) & MINOR LIM. & PITS AFTER PY.	
618201	500E/1140S	PETROLOGICAL SAMPLE						O/C: " " " " " " " " " "
618202	500E/740S	18	75	160	<1	170	SCREE: LIMONITIC ALT. FINE LAPILLI TUFF.	
618203	Landslide	1100	32	75	2	48	O/C: ALT. QTZ-SER. SCHIST AFTER TUFF & 10% LIM. AFTER PY.	
618204	"	1200	32	120	<1	60	O/C: " " " " " " " " 35% " " "	
618205	"	1150	2000	480	<1	860	O/C: FRACTURE FILLING - LIMONITE IN SCHISTS.	
618206	300E/800S	840	1230	1100	<1	300	SUB O/C: HIGHLY GLOSSANOUS ALT. AV - MOSTLY LIM.	
618207	200E/760S	310	930	40	<1	3600	SCREE: AV & LIMONITE ON FRACTURES.	
618208	100E/1000S	200	25	50	<1	50	SCREE: QTZ-SER. SCHIST & 5% GLOSSANOUS LIM. & PITS AFTER PY.	
618209	100E/650S	100	2450	28	<1	2650	SCREE: HAEMATITIC & LIMONITIC COBBLES.	
618315	500E/700S	12	30	18	<1	830	SCREE: QTZ-SER. SCHIST & 5% LIM. BOXWORKS	
618444	1000E/1080S	240	440	150	1	2.50%	ALT. AV & ↑ 10% LIM. + SOME VISIBLE SULPHIDES.	

TENEMENT EL 7/73 GEOCHEMICAL ROCK SAMPLING LEDGER D.P.O. No.
 AREA/PROSPECT GOURIE PARK SAMPLE Nos. GEOLOGIST PB DATE
 PLAN REFERENCE ANALYSED BY CP

Sample No.		Metal Content in ppm.					Geological observations
		Pb	Zn	Cu	Ag	Mn	
618712	1700E/1640S	1650	330	30	1	5.0%	SCREE: V. LIMONITIC TUFF (↑20%)
618717	1600E/1710S	1450	360	60	4	1900	SCREE: MOD. ALT. TUFF ± 10% LIM. BOXWORKS
618720	1600E/1590S	1250	400	48	1	9800	SCREE: MOD. ALT. TUFF ± 20% LIM. + MUCH Mn
618721	700E/880S	380	330	40	8	75	d/c: V. LIMONITIC MOD. SILIC. WELDED TUFF.
618722	700E/885S	1%	1500	135	4	2.5%	SCREE: MOD. ALT. Gossanous limonite
618723	700E/885S	1.45%	5200	860	6	1.70%	d/c: LIM. IN FRACTURES IN TUFF.
618724	700E/885S	210	85	40	1	140	d/c: LIMONITIC + HAEMATITIC (↑5%) TUFF.
601486							
601486	1600E/1700S	2400	1800	165	11	4000	Scree: Alt av ± 10% limonite boxworks
601487	1600E/1700S	2.05%	1100	410	8	5.55%	Scree: Massive gossanous av
601488	1600E/1700S	8600	1900	250	11	3.75%	Scree: Small heavy gossanous cobble
601489	1600E/1705S	9600	2900	220	5	3.80%	Scree: Soft Fe/Mn gossanous material
601490	1600E/1705S	1.05%	1000	390	10	3.35%	Scree: Banded ferruginous gossanous a
601491	1600E/1710S	3.55%	2400	340	7	4.15%	Scree: Massive ferruginous gossan
601492	1600E/1715S	1.10%	6000	130	22	1.05%	Scree: Av ± 3cms gossanous band
601493	1700E/1720S	370	440	5	2	375	Scree: limonitic alt av (lava?).
601888	700E/980S	35	120	30	1	25	Scree: Alt lapilli tuff ± 5% limonite box
601889	700E/930S	640	820	95	1	860	Scree: Schist ± manganese + limonite st
601890	700E/910S	75	380	10	1	1400	d/c: massive av. ± minor li + haematite
601891	700E/900S	250	490	85	1	640	sub d/c: silicified(?) av ± 5-10% limonit
601892	700E/900S	130	250	85	1	960	sub d/c: av ± 5% limonite + haematite + H
601893	700E/890S	200	580	215	1	900	Scree: av ± limonite on fractures
601894	700E/885S	300	110	60	1	260	Scree: silic av ± limonite on fractures
601895	700E/883S	4800	920	320	2	8400	sub d/c: silic av ± limonite on fracture
601896	700E/880S	1400	960	85	2	330	sub d/c: Gossanous limonite from 1cm frac
601897	700E/880S	130	45	35	5	25	sub d/c: Same rock as above. Silic av ± p
601898	700E/880S	2.16%	2400	900	10	6.20%	Scree: Gossanous cobble.

APPENDIX IV

SOIL SAMPLE RESULTS

033

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 1
 AREA/PROSPECT GOWRIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1st SOIL SAMPLING GEOLOGIST PB DATE 28-10-77
 ANALYSED BY AMDEL

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations		
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Con-coated	Est. Depth to	Pb	Zn	Cu	Ag	Mn			
<u>LINE</u>	<u>100 E</u>																			
<u>700 S</u>	<u>618270</u>	<u>20</u>	<u>10</u>	<u>5</u>	<u>5</u>	<u>60</u>	<u>B</u>	<u>30</u>	<u>YELLOW</u>						<u>75</u>	<u>60</u>	<u>15</u>	<u><1</u>	<u>60</u>	<u>CLAYEY AV SOIL.</u>
<u>720 S</u>	<u>618271</u>	<u>50</u>	<u>5</u>	<u>20</u>	<u>15</u>	<u>10</u>	<u>B</u>	<u>20</u>	<u>"</u>						<u>42</u>	<u>45</u>	<u>15</u>	<u><1</u>	<u>240</u>	<u>AV ELLUVIUM.</u>
<u>740 S</u>	<u>618272</u>	<u>40</u>	<u>5</u>	<u>10</u>	<u>5</u>	<u>40</u>	<u>B</u>	<u>40</u>	<u>BROWN</u>						<u>38</u>	<u>45</u>	<u>18</u>	<u><1</u>	<u>70</u>	<u>HOLE FRAGS: ALTERED AV.</u>
<u>760 S</u>	<u>618273</u>	<u>50</u>	<u>10</u>	<u>15</u>	<u>10</u>	<u>15</u>	<u>B</u>	<u>40</u>	<u>YELLOW</u>						<u>28</u>	<u>22</u>	<u>8</u>	<u><1</u>	<u>65</u>	<u>HOLE FRAGS: " "</u>
<u>780 S</u>	<u>618274</u>	<u>40</u>	<u>5</u>	<u>20</u>	<u>25</u>	<u>10</u>	<u>B</u>	<u>30</u>	<u>BROWN</u>						<u>90</u>	<u>140</u>	<u>55</u>	<u><1</u>	<u>120</u>	<u>HOLE FRAGS: ALT. LIMONITIC AV.</u>
<u>800 S</u>	<u>618275</u>	<u>30</u>	<u>5</u>	<u>20</u>	<u>15</u>	<u>30</u>	<u>B</u>	<u>40</u>	<u>"</u>						<u>75</u>	<u>70</u>	<u>28</u>	<u><1</u>	<u>65</u>	<u>SCAEE: ALTERED AV (GRIT?).</u>
<u>820 S</u>	<u>618276</u>	<u>30</u>	<u>5</u>	<u>20</u>	<u>15</u>	<u>30</u>	<u>B</u>	<u>40</u>	<u>"</u>						<u>65</u>	<u>60</u>	<u>22</u>	<u><1</u>	<u>60</u>	<u>HOLE FRAGS: ALT. AV GRIT.</u>
<u>840 S</u>	<u>618277</u>	<u>50</u>	<u>5</u>	<u>20</u>	<u>15</u>	<u>10</u>	<u>B</u>	<u>50</u>	<u>"</u>						<u>50</u>	<u>75</u>	<u>48</u>	<u><1</u>	<u>48</u>	<u>HOLE FRAGS: " " "</u>
<u>860 S</u>	<u>618278</u>	<u>50</u>	<u>20</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>B</u>	<u>30</u>	<u>"</u>						<u>35</u>	<u>38</u>	<u>20</u>	<u><1</u>	<u>48</u>	<u>HOLE FRAGS: CHLORITIC ALT. AV.</u>
<u>880 S</u>	<u>618279</u>	<u>60</u>	<u>5</u>	<u>15</u>	<u>10</u>	<u>10</u>	<u>B</u>	<u>20</u>	<u>YELLOW</u>						<u>80</u>	<u>45</u>	<u>28</u>	<u><1</u>	<u>140</u>	<u>HOLE FRAGS: CHLORITIC AV GRIT.</u>
<u>900 S</u>	<u>618280</u>	<u>50</u>	<u>5</u>	<u>20</u>	<u>15</u>	<u>10</u>	<u>B</u>	<u>30</u>	<u>BROWN</u>						<u>70</u>	<u>48</u>	<u>40</u>	<u><1</u>	<u>40</u>	<u>HOLE FRAGS: ALTERED AV.</u>
<u>920 S</u>	<u>618281</u>	<u>50</u>	<u>5</u>	<u>10</u>	<u>25</u>	<u>10</u>	<u>B</u>	<u>30</u>	<u>YELLOW</u>						<u>80</u>	<u>35</u>	<u>30</u>	<u>1</u>	<u>42</u>	<u>HOLE FRAGS: " "</u>
<u>940 S</u>	<u>618282</u>	<u>50</u>	<u>5</u>	<u>10</u>	<u>20</u>	<u>15</u>	<u>B</u>	<u>30</u>	<u>BROWN</u>						<u>70</u>	<u>75</u>	<u>30</u>	<u><1</u>	<u>60</u>	<u>OK: ONE-SEA. SANDY ± 3% LIM. AFTER SULPHIDES</u>
<u>960 S</u>	<u>618283</u>	<u>50</u>	<u>-</u>	<u>15</u>	<u>25</u>	<u>10</u>	<u>C</u>	<u>80</u>	<u>"</u>						<u>120</u>	<u>110</u>	<u>42</u>	<u><1</u>	<u>90</u>	<u>HOLE FRAGS: ALT. FINE AV GRIT.</u>
<u>980 S</u>	<u>618284</u>	<u>30</u>	<u>5</u>	<u>25</u>	<u>30</u>	<u>10</u>	<u>C</u>	<u>50</u>	<u>"</u>						<u>170</u>	<u>120</u>	<u>55</u>	<u><1</u>	<u>160</u>	<u>OK: ALT. AV ± 2% LIM. AFTER SULPHIDES</u>
<u>1000 S</u>	<u>618285</u>	<u>40</u>	<u>5</u>	<u>20</u>	<u>25</u>	<u>10</u>	<u>B</u>	<u>50</u>	<u>"</u>						<u>90</u>	<u>60</u>	<u>18</u>	<u>1</u>	<u>60</u>	<u>HOLE FRAGS: ALT. SANDY AV TUFF.</u>
<u>1020 S</u>	<u>618286</u>	<u>30</u>	<u>10</u>	<u>25</u>	<u>25</u>	<u>10</u>	<u>C</u>	<u>50</u>	<u>"</u>						<u>40</u>	<u>300</u>	<u>18</u>	<u><1</u>	<u>120</u>	<u>OK: ALTERED GRITTY TUFF.</u>
<u>1040 S</u>	<u>618287</u>	<u>50</u>	<u>10</u>	<u>25</u>	<u>15</u>	<u>-</u>	<u>B</u>	<u>30</u>	<u>GREY</u>						<u>20</u>	<u>12</u>	<u>2</u>	<u><1</u>	<u>18</u>	<u>OK: ALTERED AV.</u>
<u>1060 S</u>	<u>618288</u>	<u>40</u>	<u>5</u>	<u>30</u>	<u>25</u>	<u>-</u>	<u>B</u>	<u>30</u>	<u>WHISKI</u>						<u>300</u>	<u>25</u>	<u>5</u>	<u><1</u>	<u>45</u>	<u>HOLE FRAGS & OK: LAPILLI TUFF.</u>

* Check assay value.

034

273035

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 2
 AREA/PROSPECT GOWRIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1° SOIL SAMPLING ANALYSED BY AMDEL GEOLOGIST P.B. DATE 28-10-77
 A 9006

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations
		Flocc %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Con- cased	Est. Depth to	Pb	Zn	Cu	Ag	Mn	
<u>LINE</u>	<u>300 E</u>																	
<u>600 S</u>	<u>618289</u>	<u>40</u>	<u>10</u>	<u>20</u>	<u>20</u>	<u>10</u>	<u>B</u>	<u>20</u>	<u>GREY</u>				<u>80</u>	<u>15</u>	<u>15</u>	<u><1</u>	<u>18</u>	<u>SCREE: FERRUGINOUS QUARTZ.</u>
<u>620 S</u>	<u>618290</u>	<u>20</u>	<u>5</u>	<u>35</u>	<u>35</u>	<u>5</u>	<u>B</u>	<u>40</u>	<u>"</u>				<u>22</u>	<u>10</u>	<u>2</u>	<u><1</u>	<u>10</u>	<u>SCREE: ALT. AV GRIT & LIMONITE</u>
<u>640 S</u>	<u>618291</u>	<u>40</u>	<u>10</u>	<u>20</u>	<u>20</u>	<u>10</u>	<u>B</u>	<u>20</u>	<u>BROWN</u>				<u>370</u>	<u>40</u>	<u>70</u>	<u><1</u>	<u>160</u>	<u>SURF: FINE ALT. AV GRIT & 3% LIM. AFTER SANDING</u>
<u>660 S</u>	<u>618292</u>	<u>35</u>	<u>20</u>	<u>25</u>	<u>20</u>	<u>-</u>	<u>B</u>	<u>20</u>	<u>KHAKI</u>				<u>65</u>	<u>22</u>	<u>32</u>	<u><1</u>	<u>48</u>	<u>WEAKLY ALT. AV GRIT & LIM. DTS AFTER SANDING</u>
<u>680 S</u>	<u>618293</u>	<u>30</u>	<u>5</u>	<u>20</u>	<u>25</u>	<u>20</u>	<u>B</u>	<u>60</u>	<u>BROWN</u>				<u>160</u>	<u>50</u>	<u>38</u>	<u><1</u>	<u>30</u>	<u>HOLE FRAGS: WEAKLY ALT. AV GRIT.</u>
<u>700 S</u>	<u>618294</u>	<u>50</u>	<u>10</u>	<u>20</u>	<u>15</u>	<u>5</u>	<u>B</u>	<u>60</u>	<u>KHAKI</u>				<u>100</u>	<u>48</u>	<u>18</u>	<u><1</u>	<u>50</u>	<u>HOLE FRAGS: " " " "</u>
<u>720 S</u>	<u>618295</u>	<u>50</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>5</u>	<u>B</u>	<u>10</u>	<u>"</u>				<u>85</u>	<u>45</u>	<u>18</u>	<u><1</u>	<u>100</u>	<u>RISE & HOLE FRAGS: " " " "</u>
<u>740 S</u>	<u>618296</u>	<u>30</u>	<u>5</u>	<u>20</u>	<u>25</u>	<u>20</u>	<u>B</u>	<u>40</u>	<u>BROWN</u>				<u>45</u>	<u>32</u>	<u>25</u>	<u><1</u>	<u>48</u>	<u>HOLE FRAGS: FERRUG. ALTERED AV.</u>
<u>760 S</u>	<u>618297</u>	<u>30</u>	<u>-</u>	<u>20</u>	<u>35</u>	<u>15</u>	<u>B</u>	<u>20</u>	<u>PINK</u>				<u>38</u>	<u>28</u>	<u>18</u>	<u><1</u>	<u>50</u>	<u>HOLE FRAGS: ALT. AV & LIM. STAINING</u>
<u>780 S</u>	<u>618298</u>	<u>40</u>	<u>10</u>	<u>20</u>	<u>20</u>	<u>10</u>	<u>B</u>	<u>40</u>	<u>"</u>				<u>50</u>	<u>45</u>	<u>15</u>	<u><1</u>	<u>160</u>	<u>HOLE FRAGS: ALT. LAPILLI TUFF.</u>
<u>800 S</u>	<u>618299</u>	<u>40</u>	<u>5</u>	<u>10</u>	<u>25</u>	<u>20</u>	<u>B</u>	<u>10</u>	<u>BROWN</u>				<u>360</u>	<u>600</u>	<u>190</u>	<u>2</u>	<u>320</u>	<u>O/C: LIMONITIC QTZ-SERICITE SCHIST.</u>
<u>820 S</u>	<u>618300</u>	<u>15</u>	<u>5</u>	<u>10</u>	<u>30</u>	<u>40</u>	<u>B</u>	<u>40</u>	<u>"</u>				<u>660</u>	<u>350</u>	<u>130</u>	<u>1</u>	<u>2000</u>	<u>HOLE FRAGS: ALT. LAPILLI TUFF.</u>
<u>840 S</u>	<u>618301</u>	<u>20</u>	<u>20</u>	<u>15</u>	<u>40</u>	<u>5</u>	<u>B/A</u>	<u>20</u>	<u>"</u>				<u>620</u>	<u>620</u>	<u>80</u>	<u><1</u>	<u>106%</u>	<u>HOLE FRAGS: AV & RC PEBBLES</u>
<u>860 S</u>	<u>NO SAMPLE</u>																	<u>ROLAND CONGLOMERATE SCREE</u>
<u>880 S</u>	<u>618302</u>	<u>30</u>	<u>10</u>	<u>25</u>	<u>25</u>	<u>10</u>	<u>B</u>	<u>40</u>	<u>KHAKI</u>				<u>95</u>	<u>100</u>	<u>25</u>	<u><1</u>	<u>1500</u>	<u>SCREE DEBRIS OF AV & RC.</u>
<u>900 S</u>	<u>618303</u>	<u>35</u>	<u>5</u>	<u>30</u>	<u>25</u>	<u>5</u>	<u>B</u>	<u>20</u>	<u>BROWN</u>				<u>420</u>	<u>290</u>	<u>120</u>	<u>2</u>	<u>6850</u>	<u>HOLE FRAGS: QTZ-SER. SCHIST.</u>
<u>920 S</u>	<u>618304</u>	<u>30</u>	<u>20</u>	<u>20</u>	<u>25</u>	<u>5</u>	<u>B</u>	<u>30</u>	<u>GREY</u>				<u>18</u>	<u>10</u>	<u>5</u>	<u><1</u>	<u>80</u>	<u>HOLE FRAGS: " " " "</u>
<u>940 S</u>	<u>618305</u>	<u>60</u>	<u>-</u>	<u>20</u>	<u>15</u>	<u>5</u>	<u>B</u>	<u>20</u>	<u>"</u>				<u>18</u>	<u>15</u>	<u>2</u>	<u><1</u>	<u>220</u>	<u>SCREE & HOLE FRAGS: ALT. LAPILLI TUFF; LEACHED SOIL</u>
<u>960 S</u>	<u>618306</u>	<u>50</u>	<u>10</u>	<u>20</u>	<u>15</u>	<u>5</u>	<u>C</u>	<u>10</u>	<u>"</u>				<u>25</u>	<u>20</u>	<u>2</u>	<u><1</u>	<u>250</u>	<u>O/C: ALTERED SANDY TUFF.</u>
<u>980 S</u>	<u>618307</u>	<u>55</u>	<u>5</u>	<u>20</u>	<u>15</u>	<u>5</u>	<u>B</u>	<u>30</u>	<u>"</u>				<u>25</u>	<u>12</u>	<u>2</u>	<u><1</u>	<u>480</u>	<u>HOLE FRAGS: QTZ-SER. SCHIST.</u>
<u>1000 S</u>	<u>618308</u>	<u>60</u>	<u>5</u>	<u>15</u>	<u>15</u>	<u>5</u>	<u>B</u>	<u>30</u>	<u>"</u>				<u>18</u>	<u>12</u>	<u>2</u>	<u><1</u>	<u>65</u>	<u>O/C: QTZ-SER. SCHIST.; LEACHED AV. SOIL</u>

* Check assay value.

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 3
 AREA/PROSPECT GOWRIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1^o SOIL SAMPLING GEOLOGIST P.B. DATE 31-10-77
 ANALYSED BY AMDEL

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth Int.	Colour	Outcrop	Cap-coaled	Est. Depth to	Pb	Zn	Cu	Ag	Mn	
LINE	500 E																	
600 S	618309	30	5	10	25	30	B	60	BROWN				180	40	38	1	60	AV SOIL E FEW RC PEBBLES.
620 S	618310	20	10	20	20	30	B	50	"				140	55	30	2	80	" " " " "
640 S	618311	30	15	15	20	20	B	50	"				80	38	15	<1	55	HOLE FRAGMENTS: ALTERED AV.
660 S	618312	50	5	20	20	5	B	60	"				130	60	12	<1	200	HOLE FRAG & SCREE: ALT. GRITTY TUFF.
680 S	618313	40	10	30	15	5	B	30	GREY				75	38	8	<1	65	SOIL: 80% AV, 50% RC; SCREE: ALT. AV.
700 S	618314	40	5	30	25	-	B	30	"				65	30	5	<1	220	HOLE FRAGS: QTZ-SERICITE SCHIST.
720 S	618316	40	10	25	20	5	B	40	BROWN				150	100	35	<1	3200	HOLE FRAGS: QTZ-SER SCHIST E 2-7% LIM.
740 S	618317	60	5	15	15	5	B	40	"				170	170	55	<1	4300	HOLE FRAGS: QTZ-SER SCHIST E LIM. AFTER SUNSHINE
760 S	618318	30	10	20	20	20	B	40	"				110	130	55	<1	2000	HOLE FRAGS: ALTERED AV GRIT.
780 S	618319	40	5	20	25	10	B	40	"				60	110	30	<1	160	HOLE FRAGS: QTZ-SERICITE SCHIST.
800 S	NO SAMPLE																	ROLAND CONGLOMERATE SCREE.
820 S	618320	20	5	35	35	5	B	30	BROWN				230	170	50	1	6900	HOLE FRAGS: QTZ-SERICITE SCHIST.
840 S	618321	20	5	35	35	5	B	50	"				1100	280	70	2	9700	HOLE FRAGS: ALTERED AV. GRIT.
860 S	618322	30	5	30	35	-	B	70	"				1050	400	60	<1	135%	HOLE FRAGS: QTZ-SERICITE SCHIST.
880 S	618323	40	5	25	30	-	B	40	"				1300	280	65	1	145%	HOLE FRAGS: ALT GRITTY TUFF E 2-5% LIM.
900 S	618324	40	5	25	30	-	B	60	"				250	60	18	1	8700	HOLE FRAGS: QTZ-SER SCHIST AFTER GRITTY TUFF
920 S	618325	60	5	20	15	-	B	40	"				430	80	25	<1	8600	HOLE FRAGS: QTZ-SERICITE SCHIST.
940 S	618326	50	5	20	20	5	B	30	"				80	48	15	<1	500	HOLE FRAGS: QTZ-SER SCHIST AFTER GRITTY TUFF
960 S	618327	70	10	10	10	-	B	20	GREY				48	32	10	<1	240	SCREE: ALTERED AV GRIT.
980 S	618328	50	-	20	25	5	B	30	YELLOW				32	35	10	<1	70	HOLE FRAGS: QTZ-SERICITE SCHIST.
1000 S	618329	30	-	20	30	20	B	50	"				10	15	2	<1	30	HOLE FRAGS & SCREE: QTZ-SER SCHIST

* Check assay value.

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 4
 AREA/PROSPECT CONRIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1° SOIL SAMPLING ANALYSED BY AMDEL GEOLOGIST PB DATE 31-10-77
 A 906

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Con- coidal	Est. Depth to	Pb	Zn	Cu	Ag	Mn	
LINE	700 E																	
760 S	618330	40	5	25	25	5	B	50	GREY				15	12	2	<1	20	HOLE FRAGS: ALTERED AV GRIT.
780 S	618331	50	-	20	20	10	B	40	YELLOW				80	30	12	<1	45	HOLE FRAGS & SCREE: ALTERED AV.
800 S	618332	30	5	15	25	25	B	30	BROWN				190	85	42	<1	90	HOLE FRAGS & SCREE: ALTERED AV GRIT.
820 S	618333	40	5	20	30	5	B	30	GREY				95	20	5	<1	45	HOLE FRAGS: ALTERED AV
840 S	618334	30	5	20	25	20	B	30	YELLOW				170	28	8	<1	190	HOLE FRAGS: ALT AV; SCREE: COARSE AV GRIT
860 S	618335	30	10	10	20	30	B	10	"				330	65	28	<1	490	HOLE FRAGS & SCREE: AV GRIT
880 S	618336	30	30	10	20	10	C	30	BROWN	✓			1150	160	75	1	5250	O/C: SANDY TUFF
900 S	618337	50	20	10	15	5	C	20	"	✓			190	80	32	<1	4300	O/C: ALT AV E ↑ 5% LH. BOXWORK
920 S	618338	50	-	20	25	5	B	20	PINK				70	60	8	<1	520	HOLE FRAGS & SCREE: ALT AV
940 S	618339	40	5	25	25	5	C	20	"	✓			22	18	2	<1	80	O/C: QTZ-SER SCHIST AFTER XTAL TUFF.
960 S	618340	30	5	25	35	5	C	60	BROWN	✓			220	75	12	1	40	O/C: CHLOR. QTZ-SER SCHIST 2 MM DR. LH.
980 S	618341	20	5	10	25	40	B	70	"				190	45	18	<1	60	HOLE FRAGS: ALT AV; SCREE: ALT AV + RC
1000 S	618342	30	5	30	30	5	B	40	GREY				5	8	5	<1	20	AV + RC SOIL.
1020 S	618343	50	5	25	20	-	B	70	"				5	5	2	<1	15	HOLE FRAGS & SCREE: ALT AV + RC.
1040 S	618344	60	-	20	15	5	B	40	WHITE				5	15	2	<1	90	HOLE FRAGMENTS: ALTERED AV
1060 S	618345	50	10	20	20	-	C	20	GREY	✓			18	15	5	<1	1400	O/C: FINE ALTERED AV
1080 S	618346	60	5	15	20	-	B	30	"				10	15	2	<1	270	HOLE FRAGS & SCREE: ALTERED AV
1100 S	618347	60	5	15	15	5	B	30	"				48	45	2	<1	540	HOLE FRAGS & SCREE: " "

* Check assay value.

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TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 6
 AREA/PROSPECT GAWRIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1° SOIL SAMPLING ANALYSED BY AMDEA DATE 2-11-77
 GEOLOGIST PB

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Con- cealed	Est. Depth to	Pb	Zn	Cu	Ag	Mn	
LINE	900 E																	
660 S	618405	30	5	25	20	20	B	50	BROWN				70	42	20	<1	100	HOLE FRAGS: 70% ALT. AV, 30% RC.
680 S	618406	30	10	25	25	10	B	30	"				32	28	18	1	80	HOLE FRAGS: 80% " " 20% "
700 S	618407	40	5	20	25	10	B	30	"				110	35	12	<1	720	HOLE FRAGS: ALT. AV; SCREE: ALT. AV ± 10% LIM.
720 S	618408	40	10	15	25	10	B	60	"				55	25	8	<1	400	HOLE FRAGS: QTZ-SER. SCHIST; SCREE: ALT. AV ± 3% LIM.
740 S	618409	50	5	15	20	10	B	60	ORANGE				110	120	80	<1	190	HOLE FRAGS & SCREE: ALT. AV ± 2-3% LIM. AFTER SAMPLING.
760 S	618410	30	5	30	20	15	B	50	"				95	120	75	<1	90	HOLE FRAGS & SCREE: 80% ALT. AV, 50% RC; AV SCH.
780 S	618411	30	5	30	15	20	B	70	"				120	70	30	<1	50	HOLE FRAGS & SCREE: ALT. LAPILLI TUFF.
800 S	618412	40	10	25	15	10	B	40	PINK				48	15	5	<1	28	HOLE FRAGS & SCREE: QTZ-SER. SCHIST; MINOR OXIDIZED SILK.
820 S	618413	30	15	25	20	10	C	40	BROWN	✓			170	25	15	<1	4300	O/C: ALTERED AV ± 2-4% LIMONITE.
840 S	618414	30	15	25	20	10	B	20	PINK				42	22	8	<1	45	SCREE: ALTERED AV.
860 S	618415	40	10	20	20	10	B	70	GREY				15	10	5	<1	15	HOLE FRAGS: ALT. AV; SCREE: SOME ± 10% LIM. OXIDIZED.
880 S	618416	40	15	20	15	10	B	40	PINK				70	30	5	<1	540	HOLE FRAGS: ALT. AV; SCREE: ALT. AV ± 2% LIM.
900 S	618417	40	15	15	15	15	B	40	BROWN				290	80	38	1	2350	HOLE FRAGS: ALT. AV; SCREE: ALT. AV ± 10% LIM. + MIN. OXIDIZED.
920 S	618418	30	15	20	20	15	B	40	"				140	48	15	1	440	HOLE FRAGS & SCREE: QTZ-SER. SCHIST ± 3% LIM. AFTER SAMPLING.
940 S	618419	50	10	15	10	15	B	30	"				80	28	5	<1	900	HOLE FRAGS & SCREE: ALT. AV ± 5% LIM. OXIDIZED.
960 S	618420	50	15	15	10	10	B	40	"				140	55	15	<1	280	HOLE FRAGS: QTZ-SER. SCHIST ± 2% LIMONITE.
980 S	618421	40	10	25	15	10	B	40	"				290	100	15	<1	990	HOLE FRAGS & SCREE: QTZ-SER. SCHIST ± 3% LIM. AFTER SAMPLING.
1000 S	618422	40	10	20	10	20	B	80	"				490	190	25	1	1150	HOLE FRAGS: QTZ-SER. SCHIST AFTER LAPILLI TUFF; SCREE: MINOR OXIDIZED.
1020 S	618423	40	5	25	20	10	B	30	"				90	40	12	<1	430	HOLE FRAGS & SCREE: QTZ-SER. SCHIST ± 1-2% LIMONITE.
1040 S	618424	50	5	20	15	10	B	30	"				80	80	8	<1	560	HOLE FRAGS & SCREE: QTZ-SER. SCHIST ± MINOR LIM.
1060 S	618425	10	-	10	30	50	B	50	"				25	22	2	<1	45	HOLE FRAGS & SCREE: FINE ALT. AV
1080 S	618426	60	5	15	20	-	B	40	KHAKI				8	8	<2	<1	20	HOLE FRAGS & SCREE: QTZ-SER. SCHIST.
1100 S	618427	60	10	15	10	5	B	30	GREY				8	10	12	<1	30	HOLE FRAGS & SCREE: ALTERED SILK. AV.
1120 S	618428	50	5	10	25	10	B	30	"				22	10	5	<1	32	HOLE FRAGS & SCREE: QTZ-SER. SCHIST AFTER LAPILLI TUFF.
1140 S	618429	40	10	25	20	5	C	30	"	✓			25	12	2	<1	30	O/C: QTZ-SER. SCHIST AFTER LAPILLI TUFF.
1160 S	618430	40	25	15	15	5	C	30	BLACK	✓			100	55	10	<1	1200	O/C: QTZ-SER. SCHIST.
1180 S	618431	50	10	15	20	5	C	30	GREY	✓			10	12	2	<1	120	O/C: " " "
1200 S	618432	50	5	15	20	10	B	40	YELLOW				55	18	2	<1	38	HOLE FRAGS & SCREE: QTZ-SER. SCHIST AFTER LAPILLI TUFF.
1220 S	618433	40	5	20	30	5	B	20	WHITE				45	12	2	<1	22	HOLE FRAGS & SCREE: " " " " " "

* Check assay value.

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273040

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 7
 AREA/PROSPECT GOWRIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1° SOIL SAMPLING ANALYSED BY AMGEL DATE 2-11-77
 A 9005

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Con- sealed	Est. Depth to	Pb	Zn	Cu	Ag	Mn	
LINE	1000 E																	
860 S	618434	30	5	15	30	20	B	50	YELLOW				50	30	5	<1	370	HOLE FRAGS: QTZ-SEALCITE SCHIST.
880 S	618435	20	5	20	35	20	B	50	BROWN				95	55	10	<1	440	HOLE FRAGS & SCREE: ALT. AV E 1-2% LIMONITE.
900 S	618436	35	5	30	20	10	B	40	"				200	60	18	<1	3000	HOLE FRAGS & SCREE: ALT. AV EAST E 1-2% LIMONITE.
920 S	618437	35	10	25	20	10	B	40	"				250	80	35	<1	5500	HOLE FRAGS: ALT. AV E 3-4% LIM. BOXWOODS
940 S	618438	35	10	25	20	10	B	40	"				270	80	28	1	6500	HOLE FRAGS & SCREE: ALT. AV TOFF E 1-2% LIM.
960 S	618439	30	5	30	25	10	B	30	"				440	150	48	1	6500	HOLE FRAGS & SCREE: ALT. AV E 1-2% LIMONITE.
980 S	618440	35	20	20	15	10	B	40	"				450	140	65	1	5700	HOLE FRAGS & SCREE: ALT. AV E 2-4% LIM. BOXWOODS.
1000 S	618441	50	5	20	15	10	B	60	"				170	160	48	<1	2150	HOLE FRAGS & SCREE: ALT. AV E 2-5% LIMONITE.
1020 S	618442	50	10	20	15	5	B	40	"				610	250	110	1	135%	HOLE FRAGS & SCREE: ALT. AV E 2-3% LIMONITE.
1040 S	618443	40	10	20	20	10	C	30	"	✓			700	350	150	2	1.04%	O/C: ALTERED AV E 1-2% LIMONITE.
1060 S	NO SAMPLE																	ALL SUB O/C & SCREE OF ALTERED AV.
1080 S	618445	40	10	25	20	5	C	30	BROWN	✓			410	160	70	1	1.34%	FOR O/C: ALT. AV 9.10% LIM. SOME VISIBL. SANDS.
1100 S	618446	50	5	20	20	5	B	40	WHISKY				460	160	60	1	1.14%	HOLE FRAGS: ALT. AV E 1% LIM.; SCREE: RC.
1120 S	618447	40	10	25	20	5	B	20	PINK				95	40	8	<1	4400	HOLE FRAGS: ALT. CNGR. AV E 1% LIM.; SCREE: MOSTLY RC.
1140 S	618448	40	-	20	10	30	B	60	YELLOW				110	250	12	<1	630	HOLE FRAGS: ALT. LAPILL TOFF E MINOR LIM.; SCREE: MOSTLY RC.
1160 S	618449	50	20	15	10	5	C	10	WHISKY	✓			90	130	15	<1	5400	O/C: QTZ-SEA. SCHIST E 1-2% LIMONITE.
1180 S	618450	30	15	20	20	15	B	30	YELLOW				25	45	8	<1	640	HOLE FRAGS & SCREE: QTZ-SEA. SAND AFTER LAPILL TOFF.
1200 S	618451	50	5	25	20	-	B	30	GRAY				5	12	2	<1	100	HOLE FRAGS: ALT. LAPILL TOFF; SUB: 60% RC, 40% AV; SCREE: 50% RC.

* Check assay value.

TENEMENT <u>EL 7/73</u>		GEOCHEMICAL SOIL SAMPLING LEDGER											Page No. <u>8</u>					
AREA/PROSPECT <u>GOWRIE PARK</u>		SAMPLE Nos.											D.P.O. No.					
PLAN REFERENCE <u>1° SOIL SAMPLING</u>													GEOLOGIST <u>PB</u> DATE <u>3-11-77</u>					
A 9006													ANALYSED BY <u>AMPEL</u>					
Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Concealed	Est. Depth to	Pb	Zn	Cu	Ag	Mn	
<u>LINE</u>	<u>1100 E</u>																	
<u>900S</u>	<u>618478</u>	<u>30</u>	<u>-</u>	<u>20</u>	<u>20</u>	<u>30</u>	<u>B</u>	<u>60</u>	<u>YELLOW</u>				<u>50</u>	<u>30</u>	<u>5</u>	<u><1</u>	<u>150</u>	<u>HOLE FRAGS & SCREE: ALT. XTAL TUFF & MINOR LIM.</u>
<u>920S</u>	<u>618479</u>	<u>20</u>	<u>5</u>	<u>15</u>	<u>25</u>	<u>35</u>	<u>B</u>	<u>30</u>	<u>"</u>				<u>80</u>	<u>28</u>	<u>5</u>	<u><1</u>	<u>200</u>	<u>HOLE FRAGS & SCREE: ALTERED AV.</u>
<u>940S</u>	<u>618480</u>	<u>30</u>	<u>10</u>	<u>10</u>	<u>15</u>	<u>35</u>	<u>B</u>	<u>40</u>	<u>BROWN</u>				<u>140</u>	<u>65</u>	<u>18</u>	<u><1</u>	<u>520</u>	<u>HOLE FRAGS & SCREE: ALT. ARIDITY TUFF & 1-2% LIM.</u>
<u>960S</u>	<u>618481</u>	<u>40</u>	<u>5</u>	<u>10</u>	<u>25</u>	<u>20</u>	<u>B</u>	<u>30</u>	<u>"</u>				<u>110</u>	<u>50</u>	<u>15</u>	<u><1</u>	<u>540</u>	<u>SOB OF & HOLE FRAGS: ALT. LAPILLI TUFF.</u>
<u>980S</u>	<u>618482</u>	<u>25</u>	<u>-</u>	<u>20</u>	<u>30</u>	<u>15</u>	<u>B</u>	<u>30</u>	<u>WHITE</u>				<u>25</u>	<u>15</u>	<u>5</u>	<u><1</u>	<u>55</u>	<u>HOLE FRAGS & SCREE: " " "</u>
<u>1000S</u>	<u>618483</u>	<u>30</u>	<u>5</u>	<u>15</u>	<u>20</u>	<u>30</u>	<u>B</u>	<u>50</u>	<u>BROWN</u>				<u>150</u>	<u>75</u>	<u>35</u>	<u><1</u>	<u>1450</u>	<u>HOLE FRAGS & SCREE: ALT. AV & 10% LIM; SOME GRANITE BLENDED.</u>
<u>1020S</u>	<u>618484</u>	<u>40</u>	<u>5</u>	<u>15</u>	<u>15</u>	<u>25</u>	<u>B</u>	<u>40</u>	<u>"</u>				<u>350</u>	<u>100</u>	<u>32</u>	<u>1</u>	<u>3500</u>	<u>HOLE FRAGS: ALT. AV & 10% LIMONITE.</u>
<u>1040S</u>	<u>618485</u>	<u>40</u>	<u>-</u>	<u>20</u>	<u>20</u>	<u>20</u>	<u>B</u>	<u>40</u>	<u>"</u>				<u>290</u>	<u>75</u>	<u>20</u>	<u><1</u>	<u>1700</u>	<u>HOLE FRAGS & SCREE: ALT. LAPILLI TUFF & 2-3% LIM.</u>
<u>1060S</u>	<u>618486</u>	<u>30</u>	<u>5</u>	<u>20</u>	<u>20</u>	<u>25</u>	<u>B</u>	<u>50</u>	<u>"</u>				<u>420</u>	<u>200</u>	<u>42</u>	<u><1</u>	<u>5350</u>	<u>HOLE FRAGS & SCREE: ALTERED AV & 3-4% LIM.</u>
<u>1080S</u>	<u>618487</u>	<u>30</u>	<u>5</u>	<u>25</u>	<u>20</u>	<u>20</u>	<u>B</u>	<u>40</u>	<u>"</u>				<u>320</u>	<u>220</u>	<u>70</u>	<u>2</u>	<u>5600</u>	<u>HOLE FRAGS & SCREE: ALT. AV & 10% LIM. BOXWOODS</u>
<u>1100S</u>	<u>618488</u>	<u>40</u>	<u>5</u>	<u>15</u>	<u>20</u>	<u>20</u>	<u>B</u>	<u>30</u>	<u>"</u>				<u>300</u>	<u>150</u>	<u>60</u>	<u>1</u>	<u>2500</u>	<u>HOLE FRAGS & SCREE: ALT. AV & 1-2% LIMONITE</u>
<u>1120S</u>	<u>618489</u>	<u>45</u>	<u>-</u>	<u>20</u>	<u>15</u>	<u>20</u>	<u>B</u>	<u>50</u>	<u>"</u>				<u>610</u>	<u>200</u>	<u>110</u>	<u><1</u>	<u>4450</u>	<u>HOLE FRAGS & SCREE: ALT. AV & 10% LIMONITE</u>
<u>1140S</u>	<u>618490</u>	<u>40</u>	<u>5</u>	<u>15</u>	<u>20</u>	<u>20</u>	<u>B</u>	<u>30</u>	<u>"</u>				<u>470</u>	<u>280</u>	<u>150</u>	<u>1</u>	<u>7450</u>	<u>HOLE FRAGS & SCREE: ALT. AV & 9.8% LIM. BOXWOODS; cf: ALT. AV.</u>
<u>1160S</u>	<u>618491</u>	<u>20</u>	<u>10</u>	<u>20</u>	<u>25</u>	<u>25</u>	<u>C</u>	<u>40</u>	<u>"</u>	<input checked="" type="checkbox"/>			<u>300</u>	<u>160</u>	<u>120</u>	<u>1</u>	<u>5850</u>	<u>O/C: ALT. AV & 2-3% LIMONITE BOXWOODS</u>
<u>1180S</u>	<u>618492</u>	<u>40</u>	<u>15</u>	<u>15</u>	<u>15</u>	<u>15</u>	<u>C</u>	<u>30</u>	<u>"</u>	<input checked="" type="checkbox"/>			<u>380</u>	<u>80</u>	<u>80</u>	<u><1</u>	<u>6900</u>	<u>O/C: ALT. AV & 10% LIM. BOXWOODS & BOTANICAL LIM.</u>
<u>1200S</u>	<u>618493</u>	<u>40</u>	<u>10</u>	<u>15</u>	<u>10</u>	<u>25</u>	<u>B</u>	<u>30</u>	<u>"</u>				<u>700</u>	<u>100</u>	<u>220</u>	<u>2</u>	<u>2550</u>	<u>HOLE FRAGS & SCREE: ALT. AV & 9.5% LIMONITE.</u>
<u>1220S</u>	<u>618494</u>	<u>50</u>	<u>5</u>	<u>10</u>	<u>25</u>	<u>10</u>	<u>B</u>	<u>30</u>	<u>"</u>				<u>620</u>	<u>130</u>	<u>170</u>	<u>2</u>	<u>3600</u>	<u>HOLE FRAGS & SCREE: GTR-SEA. SCIST & 2-3% LIM., 10% AC.</u>

* Check assay value.

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 9
 AREA/PROSPECT GOWRIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1° SOIL SAMPLING ANALYSED BY A.L.S. GEOLOGIST GP DATE 19-1-78
 A 9005

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock				Metal Content in ppm.					Geological observations	
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Con- cretised	Eff.	Depth to	Pb	Zn	Cu	As	Mn		
LINE 1200E																				
9005	297256						B	40	Brown						100	80	20	1	600	Screen: qtz-sericite schist (after tuff?)
9205	297257						B	30	Brown						70	75	20	1	400	Screen: altered sandy tuff
9405	297258						B	50	Brown						135	60	15	1	800	Screen: altered tuff.
9605	297259						B		Brown						130	75	30	1	680	Screen: altered tuff.
9805	297260						B	30	Brown						190	70	30	2	1100	Screen: Fine, altered lapilli tuff & altered lava
10005	297261						B	30	Brown	✓					90	45	20	1	1200	ofc: Fine, altered lapilli tuff & limonite
10205	297262						B/c	30	Brown	✓					270	100	45	3	5000	ofc: Altered lava (?)
10405	297263						B	30	Brown	✓					90	60	20	1	2300	ofc: Altered schistose lava & limonite
10605	297264						B	10	Brown						190	65	40	2	3400	Screen: altered lava
10805	297265						B	25	Brown	✓					160	50	25	1	3000	ofc: Altered coarse grained lava
11005	297266						B	25	Brown						145	50	20	2	1800	Screen: altered lava
11205	297267						B	35	Brown						230	65	30	2	8000	Screen: altered lava & hematite & limonite
11405	297268						B	25	Brown						70	40	10	1	1100	Screen: altered lava
11605	297269						B	40	Brown						390	115	40	2	5400	Screen: altered lava
11805	297270						B	25	Brown						380	95	50	2	4200	Screen: coarse grained altered lava
12005	297271						B	25	Brown						410	175	70	2	4700	Screen: very coarse grained altered lava
12205	297272						B	20	Brown						300	100	40	2	4400	Screen: altered lava
12405	297273						B	30	Brown						330	100	45	2	6200	Screen: altered lava
12605	297274						C	10	Brown	✓					400	100	30	1	6400	ofc: altered lava & minor limonitic fractures
12805	297275						B/c	20	Brown	✓					320	125	70	2	4400	ofc: altered lava & minor limonitic fractures
13005	297276						B	30	Brown						330	100	95	2	4800	sub ofc: Altered lava. Qtz vein float.
13205	297277						B	20	Brown						880	190	290	2	6400	Sub ofc: altered lava
13405	297278						B	30	Brown						800	95	125	2	5200	Sub ofc: altered lava
13605	297279						B	25	Yellow						30	30	5	<1	360	Screen: RC pebbles. Sample 50% RC.
13805	297280						B	30	Brown						100	90	5	2	3300	Screen: RC pebbles. Sample 30% RC.
14005	297281						B	20	Brown						40	30	5	1	120	Screen: RC pebbles. Sample 30% RC.
14205	297282						B	30	Brown						300	135	20	1	5000	Screen: Altered av with porphyritic qtz.

* Check assay value.

042

273043

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 10
 AREA/PROSPECT GOWRIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1^o SOIL SAMPLING GEOLOGIST PB DATE 4-11-77
 ANALYSED BY A.M.D.E.L.

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample Depth cm.	Sample Colour	Bedrock			Metal Content in ppm.					Geological observations
		Rock %	Organic %	Sand %	Silt %	Clay %				Outerop	Con-creted	Ext.	Depth to	Pb	Zn	Cu	Ag	
LINE	1300 E																	
760S	618495	20	-	10	10	60	B	70	BROWN				25	45	12	<1	55	HOLE FRAGS: 60% QTZ-SER. SCHIST, 40% RC.
780S	618496	20	-	10	10	60	B	60	"				22	70	15	<1	55	HOLE FRAGS: QTZ-SERICITE SCHIST.
800S	618497	30	5	15	20	30	B	50	YELLOW				22	12	2	<1	22	HOLE FRAGS & SCREE: 80% ALT. AV, 20% RC
820S	618498	40	10	10	10	30	B	50	BROWN				40	40	5	<1	180	HOLE FRAGS & SCREE: ALTERED AV.
840S	618499	30	10	15	15	30	B	60	KHAKI				160	2000	65	1	7200	HOLE FRAGS: 80% ALTERED AV, 20% RC
860S	618500	50	5	10	25	10	B	60	GREY				10	12	2	<1	70	HOLE FRAGS: " " " " "
880S	618501	40	15	15	15	15	B	50	BROWN				42	60	5	<1	170	HOLE FRAGS & SCREE: QTZ-SERICITE SCHIST.
900S	618502	30	5	15	20	30	B	50	BROWN				330	490	85	<1	270	HOLE FRAGS & SCREE: ALT. AV ± 3% LIM. BOXWOODS
920S	618503	50	5	20	15	10	B	40	"				390	500	150	1	6450	HOLE FRAGS & SCREE: ALT. AV ± 10% LIMONITE
940S	618504	10	-	10	20	60	B	70	ORANGE				170	190	130	<1	70	HOLE FRAGS & SCREE: ALT. AV ± 2-3% LIMONITE
960S	618505	30	5	10	20	35	B	60	YELLOW				70	160	18	1	290	SCREE: ALT. AV ± 1-2% LIMONITE; AV SOIL
980S	618506	40	5	10	15	30	B	60	KHAKI				500	780	45	1	6300	HOLE FRAGS & SCREE: QTZ-SERICITE SCHIST.
1000S	618507	40	5	20	30	5	B	30	"				340	360	60	<1	9100	HOLE FRAGS & SCREE: ALTERED LAPILLI TUFF.
1020S	618508	30	5	10	15	40	B	30	BROWN				210	120	50	1	7100	HOLE FRAGS & SCREE: " " "
1040S	618509	50	10	15	20	5	B	40	"				210	80	50	<1	5800	HOLE FRAGS & SCREE: ALTERED AV
1060S	618510	40	10	10	30	10	B	60	KHAKI				240	90	50	<1	9300	HOLE FRAGS & SCREE: " " "
1080S	618511	40	5	15	20	20	B	60	BROWN				190	90	40	1	3000	HOLE FRAGS & SCREE: QTZ-SER. SCHIST OVER LAPILLI TUFF ± 1% LIM.
1100S	618512	30	5	20	40	5	B	50	"				300	110	50	1	120%	HOLE FRAGS & SCREE: ALT. AV ± 1% LIMONITE
1120S	618513	50	5	20	20	5	B	40	"				160	55	25	<1	5200	HOLE FRAGS: ALT. AV; SCREE: ALT. AV ± 5% LIMONITE
1140S	618514	40	10	20	20	10	B	50	"				110	40	22	1	1700	HOLE FRAGS & SCREE: ALT. AV GRIT ± 1% LIM.
1160S	618515	50	5	15	25	5	B	30	"				210	60	38	<1	4700	HOLE FRAGS & SCREE: ALT. AV GRIT ± 1-2% LIM.
1180S	618516	30	5	10	15	40	B	70	"				230	85	42	<1	3900	HOLE FRAGS & SCREE: ALT. AV ± 1-2% LIMONITE
1200S	618517	40	10	20	25	5	B	30	"				400	75	42	<1	9100	HOLE FRAGS & SCREE: ALTERED AV.
1220S	618518	40	20	25	15	-	B	30	KHAKI				540	90	50	1	124%	HOLE FRAGS & SCREE: ALT. AV ± 1% LIMONITE
1240S	618519	30	15	25	25	5	B	40	"				540	90	48	1	126%	HOLE FRAGS & SCREE: ALT. LAPILLI TUFF ± 1-2% LIM. BOXWOODS
1260S	618520	50	10	15	20	5	B	40	"				370	130	110	1	104%	HOLE FRAGS & SCREE: ALT. LAPILLI TUFF & AV GRIT
1280S	618521	50	15	10	20	5	B	40	BROWN				370	140	140	<1	152%	HOLE FRAGS & SCREE: ALT. LAPILLI TUFF ± 1% LIMONITE
1300S	618522	50	10	15	20	5	B	40	"				120	55	10	<1	2950	HOLE FRAGS & SCREE: WEAKLY ALT. LAPILLI TUFF
1320S	618523	50	20	15	10	5	B	30	KHAKI				320	80	18	<1	114%	HOLE FRAGS & SCREE: " " " "
1340S	618524	30	10	30	20	10	B	10	"				340	100	22	<1	5150	HOLE FRAGS & SCREE: " " " "
1360S	618525	50	10	20	15	5	B	40	BROWN				440	60	18	<1	4850	HOLE FRAGS & SCREE: ALT. LAPILLI TUFF ± 1-2% LIM.
1380S	618526	50	10	20	15	5	B	10	"				270	60	12	<1	1850	HOLE FRAGS & SCREE: ALTERED LAPILLI TUFF.
1400S	618527	50	10	20	15	5	B	20	"				520	100	15	<1	5300	HOLE FRAGS & SCREE: ALT. AV; RC DEBRIS
1420S	618528	40	15	10	15	20	B	50	"				200	75	12	1	1400	HOLE FRAGS: ALT. AV; SCREE: 80% RC
1440S	618529	40	5	15	20	20	B	30	YELLOW				30	20	2	<1	170	HOLE FRAGS: 70% ALT. AV, 30% RC; SCREE: 30% ALT. AV, 70% RC

* Check assay value.

043

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 11
 AREA/PROSPECT GORWIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1° SOIL SAMPLING ANALYSED BY AMDEL DATE 1-11-77

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations		
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm	Colour	Outcrop	Con- crealed	Est. Depth to	Pb	Zn	Cu	Ag	Mn			
LINE	1500E																			
1400S	618348	60	5	25	5	5	B	40	BLACK						700	130	45	<1	1.52%	HOLE FRAGS: ALT. AV GRIT + 20% RC.
1420S	618349	50	5	20	20	5	B	40	"						660	130	65	1	1.5%	HOLE FRAGS: ALT. AV GRIT + 10% RC.
1440S	618350	40	15	10	5	30	B	50	"						680	95	48	1	1.4%	HOLE FRAGS & SCREE: 70% ALT. AV, 30% RC.
1460S	618351	30	10	20	20	20	B	40	PINK						540	85	40	<1	9200	HOLE FRAGMENTS: GRITTY TUFF.
1480S	618352	40	20	10	20	10	B	50	BROWN						620	110	55	1	1.18%	HOLE FRAGMENTS: ALTERED AV.
1500S	618353	40	15	25	15	5	B	40	PINK						580	95	42	1	4900	HOLE FRAGS: WHLY ALT. LAPILLI & XTAL TUFF.
1520S	618354	40	5	25	25	5	B	50	"						520	110	60	<1	9400	HOLE FRAGS: LAPILLI TUFF; SCREE: ALT. AV.
1540S	618355	40	15	30	10	5	B	30	BROWN						540	170	85	<1	1.6%	HOLE FRAG & SCREE: ALT. GRITTY TUFF.
1560S	618356	30	5	35	20	10	B	30	"						450	170	120	<1	7100	HOLE FRAGS & SCREE: " " "
1580S	618357	50	10	20	10	10	B	30	"						560	160	60	<1	1.02%	HOLE FRAGS & SCREE: ALT. SANDY TUFF.
1600S	618358	40	5	30	20	5	B	30	PINK						250	95	28	<1	4400	HOLE FRAG & SCREE: ALTERED AV.
1620S	618359	40	5	30	20	5	B	20	"						170	75	30	2	2400	HOLE FRAG & SCREE: ALT. AV + RC.
1640S	618360	40	5	20	15	20	B	40	BROWN						160	100	20	1	3850	HOLE FRAGS: 40% AV, 60% RC.
1660S	618361	40	5	20	15	20	C	60	"	✓					85	60	15	<1	1750	O/C: ALTERED AV.
1320S	297283						B	25	Grey	✓					40	30	10	1	35	sub sp: altered lava.
1340S	297284						B	20	Brown	✓					175	115	100	3	720	sp: massive altered lava.
1360S	297285						B	30	Brown						320	110	50	2	1900	Scree: massive altered lava.
1380S	297286						B	30	Brown						240	90	50	2	840	Scree: acid volc + RC - in side of gully.

* Check assay value.

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 12
 AREA/PROSPECT GOWAIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1° SOIL SAMPLING ANALYSED BY AMDEL DATE 1-11-77
 A 9006

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Con- cealed	Est. Depth to	Pb	Zn	Cu	Ag	Mn	
LINE	1600E																	
1440S	618362	20	10	6	15	50	B	30	YELLOW			65	32	10	<1	160	HOLE FRAGS & SCREE: GRITTY TUFF.	
1460S	618363	50	10	20	15	5	C	40	GREY	✓		18	10	5	<1	40	O/C: WEAKLY ALT GRITTY TUFF.	
1480S	618364	30	5	20	40	5	C	30	"	✓		38	15	12	<1	35	O/C: " " " "	
1500S	618365	40	5	20	30	5	B	20	"			28	30	18	<1	45	HOLE FRAGS: WEAKLY ALT SANDY TUFF.	
1520S	618366	40	5	15	20	20	B	40	YELLOW			70	38	25	<1	80	HOLE FRAGS: ALTERED SILIC. AV.	
1540S	618367	40	10	20	20	10	B	40	BROWN			460	220	150	2	2400	HOLE FRAGS & SCREE: WEAKLY ALT XTAL TUFF.	
1560S	618368	35	5	20	20	20	B	60	"			490	120	50	1	2950	HOLE FRAGS & SCREE: WEAKLY ALT AV.	
1580S	618369	50	5	20	20	5	B	40	"			1150	140	140	1	168%	HOLE FRAGS & SCREE: ALTERED AV.	
1600S	618370	40	10	25	15	10	B	60	"			1250	160	85	<1	6000	HOLE FRAGS & SCREE: " "	
1620S	618371	40	5	30	20	5	B	50	PINK			620	95	28	<1	2850	HOLE FRAGS & SCREE: " "	
1640S	618372	60	5	15	10	10	B	50	"			520	140	65	1	5800	HOLE FRAGS & SCREE: " "	
1660S	618373	45	5	20	20	10	B	50	BROWN			540	340	45	1	1.5%	HOLE FRAGS & SCREE: 50% AV, 50% RC	
1680S	618374	55	5	15	20	5	B	40	"			1200	210	70	2	1.56%	HOLE FRAGS: 60% AV, 40% RC	
1700S	618375	50	20	15	10	5	B	30	BLACK			3450	400	100	3	2.4%	HOLE FRAGS: ALT. AV ± 20% RC.	
1720S	618376	40	10	15	25	10	B	40	GREY			1850	180	65	2	9600	HOLE FRAGS & SCREE: 60% ALT. AV, 40% RC.	
1740S	618377	40	10	20	25	5	B	40	BROWN			95	75	20	<1	1100	HOLE FRAGMENTS: 80% " ", 20% "	
1760S	618378	30	15	15	25	15	B	30	YELLOW			40	40	120	<1	380	HOLE FRAGMENTS: 60% " ", 40% "	
1780S	618379	30	5	30	25	10	B	30	GREY			15	15	15	<1	230	HOLE FRAGMENTS: 30% AV, 70% RC.	
ADDITIONAL SOIL SAMPLES AROUND 1700S:-																		
1710S - ON LINE	618715	40	15	20	25	-	B	20	BLACK			3100	320	85	4	140%	SCREE: MOD. ALT. TUFF ± ↑ 10% LIM. AFTER SULPHIDE	
" - 10m E. OF LINE	618716	30	10	10	10	40	B	20	"			165	190	15	1	8200	SCREE: 10% LIM, 60% MOD. ALT. TUFF ± ↑ 8% LIMONITE	
" - 10m W. OF LINE	618718	60	20	10	10	-	B	30	"			1300	230	45	2	166%	SCREE: SILIC. CHLOR. WEAKLY ALT. WELDED TUFF	
1700S - 10m E. OF LINE	618719	40	10	10	20	20	B	30	"			500	180	35	1	5000	SCREE: SILIC. WELDED TUFF ± ↑ 1% LIMONITE	
1700S	601495	40	10	20	25	5	B	65	BROWN			3300	350	110	6	1.90%	Pit dug at original anomalous sample site.	

* Check assay value.

045

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 13
 AREA/PROSPECT COWRIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1^o SOIL SAMPLING ANALYSED BY AMDEL DATE 1-11-77
 A 9006

Grid Co-ordinate	Sample No.	Soil Composition					Soil horizon	Sample			Bedrock		Metal Content in ppm.					Geological observations	
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Con- cealed	Est. Depth to	Pb	Zn	Cu	Ag	Mn		
<u>LNE</u>	<u>1700E</u>																		
<u>1500S</u>	<u>618380</u>	<u>30</u>	<u>5</u>	<u>20</u>	<u>45</u>	<u>-</u>	<u>B</u>	<u>40</u>	<u>BROWN</u>					<u>210</u>	<u>65</u>	<u>12</u>	<u><1</u>	<u>900</u>	<u>HOLE FRAGS: ALT. AV GRIT E LIM.</u>
<u>1520S</u>	<u>618381</u>	<u>50</u>	<u>5</u>	<u>20</u>	<u>20</u>	<u>5</u>	<u>B</u>	<u>40</u>	<u>"</u>					<u>420</u>	<u>85</u>	<u>22</u>	<u><1</u>	<u>1.06%</u>	<u>HOLE FRAGS & SCREE: ALT. FERRUG. AV.</u>
<u>1540S</u>	<u>618382</u>	<u>50</u>	<u>10</u>	<u>10</u>	<u>30</u>	<u>-</u>	<u>B</u>	<u>30</u>	<u>"</u>					<u>760</u>	<u>270</u>	<u>75</u>	<u>2</u>	<u>2.1%</u>	<u>HOLE FRAGS & SCREE: ALTERED AV.</u>
<u>1560S</u>	<u>618383</u>	<u>40</u>	<u>10</u>	<u>15</u>	<u>30</u>	<u>5</u>	<u>B</u>	<u>40</u>	<u>BLACK</u>					<u>800</u>	<u>290</u>	<u>100</u>	<u>1</u>	<u>1.3%</u>	<u>HOLE FRAGS & SCREE: ALT. SILIC. AV (CRISTA TUFF?)</u>
<u>1580S</u>	<u>618384</u>	<u>40</u>	<u>5</u>	<u>15</u>	<u>35</u>	<u>5</u>	<u>B</u>	<u>40</u>	<u>BROWN</u>					<u>480</u>	<u>130</u>	<u>45</u>	<u>1</u>	<u>1500</u>	<u>HOLE FRAGS & SCREE: ALT. SILIC. AV E MINOR LIM.</u>
<u>1600S</u>	<u>618385</u>	<u>60</u>	<u>5</u>	<u>15</u>	<u>15</u>	<u>5</u>	<u>B</u>	<u>40</u>	<u>YELLOW</u>					<u>130</u>	<u>38</u>	<u>12</u>	<u><1</u>	<u>230</u>	<u>HOLE FRAGS: ALTERED LAPILLI TUFF.</u>
<u>1620S</u>	<u>618386</u>	<u>20</u>	<u>10</u>	<u>25</u>	<u>30</u>	<u>15</u>	<u>B</u>	<u>50</u>	<u>BROWN</u>					<u>400</u>	<u>100</u>	<u>38</u>	<u><1</u>	<u>1200</u>	<u>HOLE FRAGS: ALT. SILIC. AV E 1-2% LIM.</u>
<u>1640S</u>	<u>618387</u>	<u>20</u>	<u>5</u>	<u>15</u>	<u>30</u>	<u>30</u>	<u>C</u>	<u>50</u>	<u>"</u>	<input checked="" type="checkbox"/>				<u>300</u>	<u>80</u>	<u>22</u>	<u><1</u>	<u>140</u>	<u>O/C: ALTERED AV E 1-2% LIMONITE.</u>
<u>1660S</u>	<u>618388</u>	<u>20</u>	<u>20</u>	<u>25</u>	<u>25</u>	<u>10</u>	<u>B</u>	<u>20</u>	<u>"</u>					<u>100</u>	<u>22</u>	<u>8</u>	<u><1</u>	<u>80</u>	<u>HOLE FRAGS & SCREE: ALT. GRITTY TUFF.</u>
<u>1680S</u>	<u>618389</u>	<u>50</u>	<u>5</u>	<u>20</u>	<u>20</u>	<u>5</u>	<u>C</u>	<u>20</u>	<u>PINK</u>	<input checked="" type="checkbox"/>				<u>190</u>	<u>48</u>	<u>8</u>	<u><1</u>	<u>490</u>	<u>O/C: ALTERED GRITTY TUFF.</u>
<u>1700S</u>	<u>618390</u>	<u>40</u>	<u>5</u>	<u>15</u>	<u>30</u>	<u>10</u>	<u>B</u>	<u>40</u>	<u>YELLOW</u>					<u>130</u>	<u>25</u>	<u>10</u>	<u><1</u>	<u>50</u>	<u>HOLE FRAGS: ALT. AV; SUB OK: ALT. AV</u>
<u>1720S</u>	<u>618391</u>	<u>30</u>	<u>10</u>	<u>35</u>	<u>15</u>	<u>10</u>	<u>B</u>	<u>40</u>	<u>GREY</u>					<u>110</u>	<u>48</u>	<u>10</u>	<u><1</u>	<u>110</u>	<u>HOLE FRAGS & SCREE: ALT. GRITTY TUFF.</u>
<u>1740S</u>	<u>618392</u>	<u>50</u>	<u>5</u>	<u>30</u>	<u>10</u>	<u>5</u>	<u>C</u>	<u>30</u>	<u>"</u>	<input checked="" type="checkbox"/>				<u>520</u>	<u>110</u>	<u>70</u>	<u><1</u>	<u>1150</u>	<u>O/C: ALTERED AV GRIT.</u>
<u>1760S</u>	<u>618713</u>	<u>40</u>	<u>10</u>	<u>15</u>	<u>15</u>	<u>20</u>	<u>B</u>	<u>30</u>	<u>BROWN</u>					<u>100</u>	<u>130</u>	<u>20</u>	<u><1</u>	<u>260</u>	<u>SCREE STR. ALT. WEIRED TUFF E 2-3% LIMONITE.</u>
<u>1780S</u>	<u>618714</u>	<u>40</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>15</u>	<u>B</u>	<u>30</u>	<u>PINK</u>					<u>40</u>	<u>35</u>	<u>5</u>	<u><1</u>	<u>45</u>	<u>HOLE FRAGS: 60% CALOR. ALT. AV, 40% RC; SCREE 30% AV</u>

* Check assay value.

U46

TENEMENT EL 7/73 GEOCHEMICAL SOIL SAMPLING LEDGER Page No. 14
 AREA/PROSPECT GOWRIE PARK SAMPLE Nos. _____ D.P.O. No. _____
 PLAN REFERENCE 1° SOIL SAMPLING GEOLOGIST P.B. DATE 1-11-77
 ANALYSED BY AMDEL

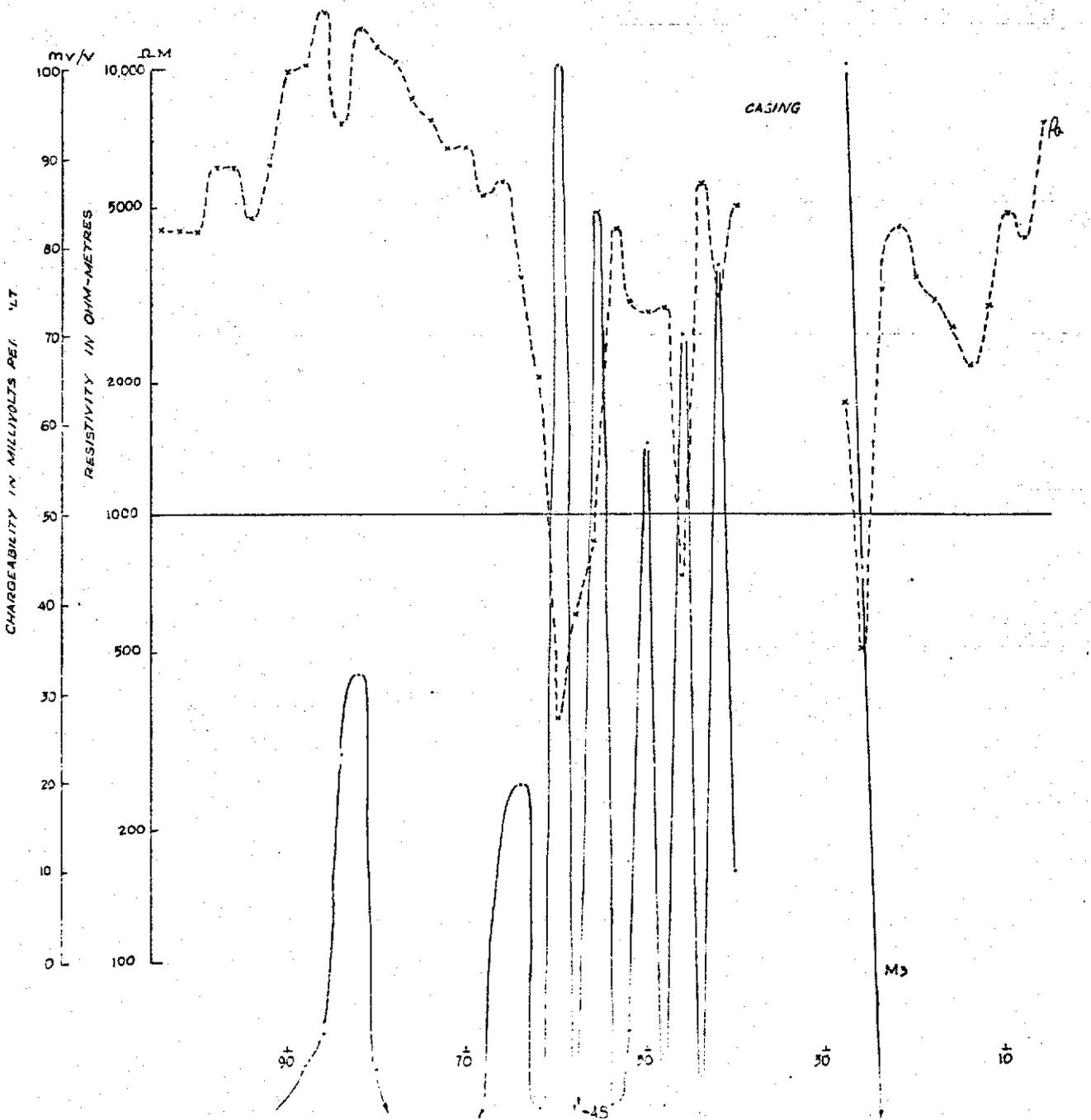
Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Con- centrated	Est. Depth to	Pb	Zn	Cu	Ag	Mn	
LINE	1800E																	
1600S	618392	60	5	20	10	5	B	20	GREY				310	85	18	<1	3500	HOLE FRAG & SCREE: ALTERED AV.
1620S	618394	40	5	20	20	15	B	30	BROWN				190	120	30	1	1700	HOLE FRAG & SCREE: " "
1640S	618395	40	10	20	20	10	B	40	WHISKY				230	85	50	<1	4600	SCREE: ALT. AV ± 1-2% LIMONITE.
1660S	618396	60	10	25	5	-	B	40	BROWN				270	85	35	<1	3400	SUB O/C: ALT AV; HOLE FRAG: ALT AV
1680S	618397	30	15	20	30	5	C	30	"	✓			1180	180	130	2	5800	O/C: SANDY TUFF.
1700S	618398	50	10	20	15	5	B	20	PINK				350	60	150	1	2500	HOLE FRAG & SCREE: ALTERED AV
1720S	618399	50	5	20	15	10	B	60	BROWN				230	65	48	<1	110	HOLE FRAG & SCREE: WEAKLY ALT. GRITTY TUFF.
1740S	618400	50	-	25	20	5	B	20	PINK				75	28	8	<1	60	HOLE FRAG & SCREE: ALT. GRITTY TUFF.
1760S	618401	40	5	20	25	10	B	30	BROWN				330	75	32	<1	3500	HOLE FRAG: ALT. AV GRIT; SUB O/C: ALT. AV (TUFF?)
1780S	618402	30	5	15	30	20	C	40	PINK	✓			300	90	28	1	2700	O/C: ALTERED AV GRIT.
1800S	618403	70	-	15	10	5	B	40	"				520	120	18	1	1400	HOLE FRAG & SCREE: ALTERED AV.
1820S	618404	50	15	25	5	5	B	20	GREY				65	30	8	<1	170	HOLE FRAG & SCREE: 50% ALT. AV, 50% AC

* Check assay value.

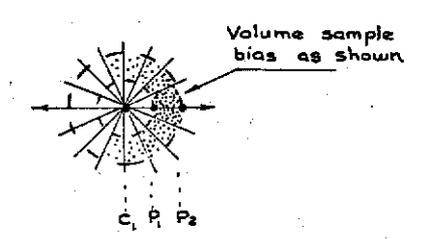
APPENDIX V

DOWNHOLE I.P. LOGS

DH 77 GPC 1
Gowrie Park
DH Pole-Dipole
Job # TAS-055 A



2 1/2 m. 3 array log

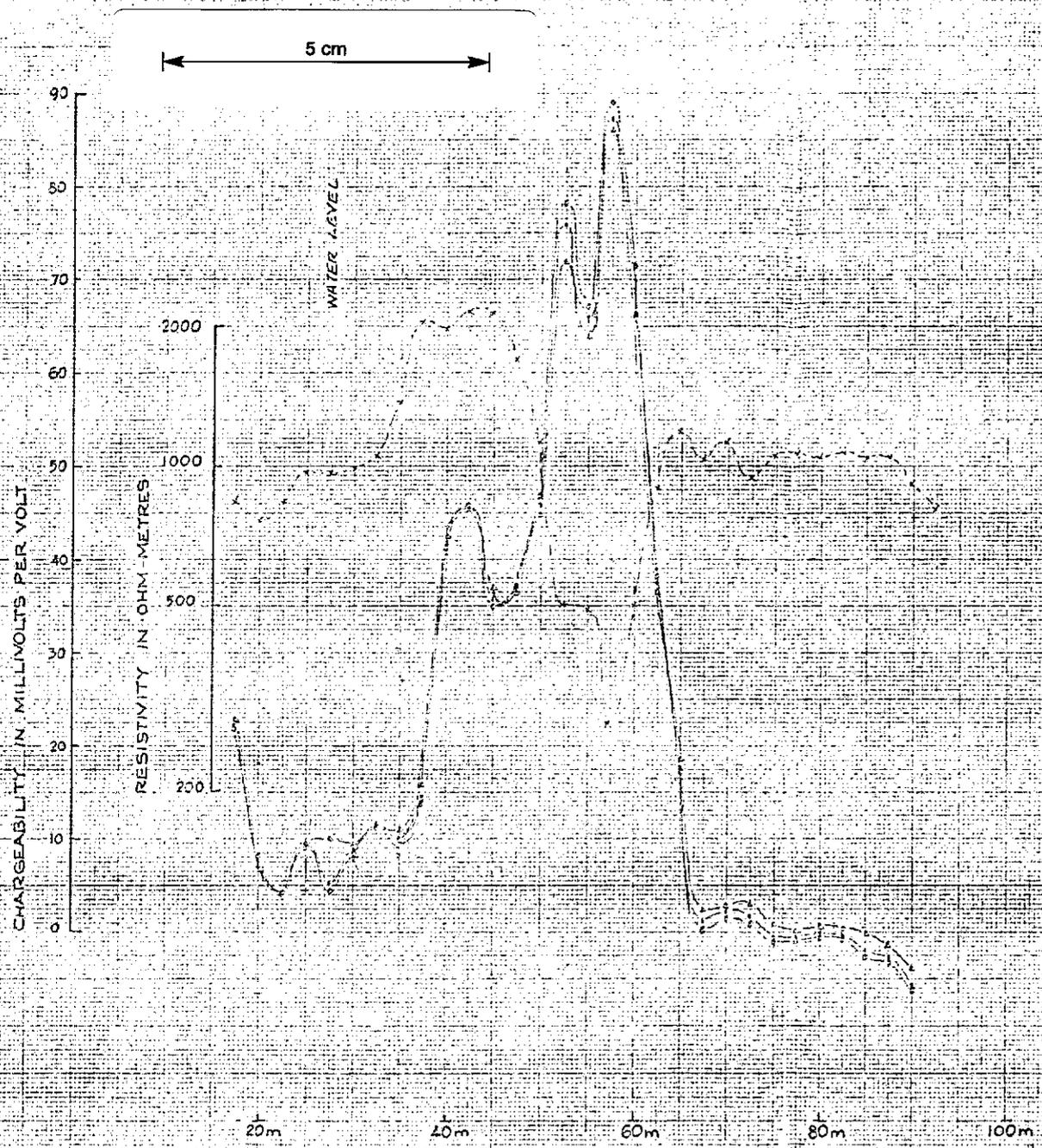


273049

DRILL HOLE 78 GPC3

Gowrie Park Area

TAS - 055 - A

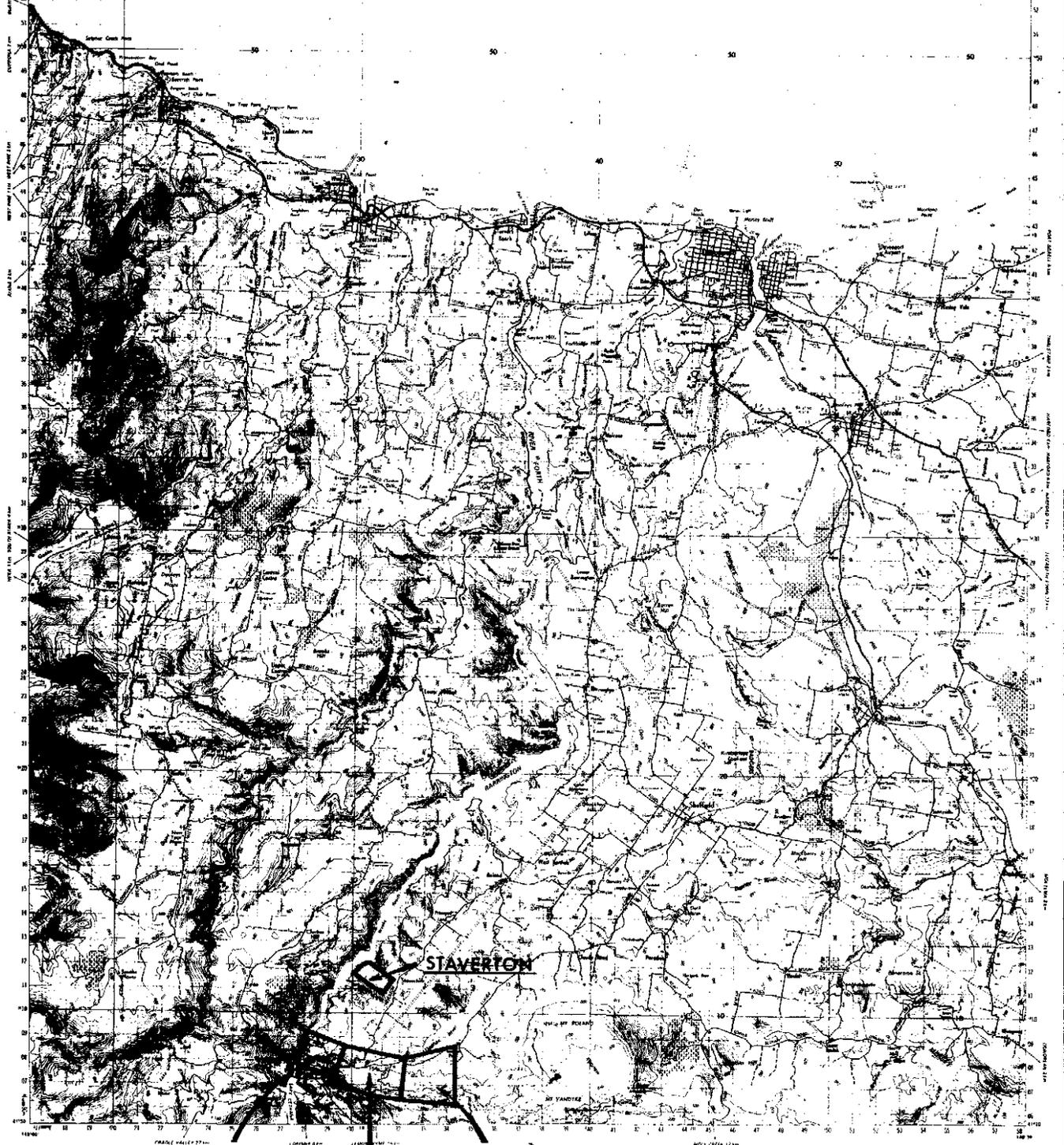


51

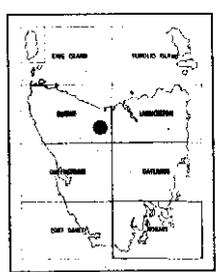
273052

5 cm

B A S S S T R A I T



WEST CETHANA EAST CETHANA GOWRIE PARK



INDEX TO 1:250 000 SHEETS

C.R.A. EXPLORATION PTY. LIMITED

LOCATION MAP

BURNIE SK 55-3

geologist: J.G.P.	scale: 1:250 000	report no. 9041,44 9159,60
drawn: N.A.P.	date: Nov. '77	plan no: Tc 89



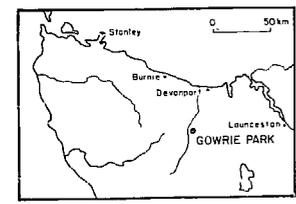
LEGEND

- QUATERNARY** Q Alluvium and sands of rivers and streams, alluvial fans and colluvial deposits.
- ORDOVICIAN** Brc **BOLLAND CONGLOMERATE** Coarse, poorly sorted conglomerate composed largely of fine-grained quartzite pebbles and clasts.
- ACID VOLCANIC UNITS** (Not listed in stratigraphic order)
 Note: Most of these units have been hydrothermally altered to quartz, see the 'C' units below. The level of alteration is indicated on the map by the following suffixes:
 W - Moderately or highly altered
 W - Weakly altered
- RHYOLITE LAVA** Cr Hard, dense, glassy rock with porphyritic quartz and prominent green alteration. Moderate to intense alteration generally, not strong. Moderately altered and usually weakly or non-schistose.
- LAPILLI TUFF** C1 C1W Fine pyroclastic composed of ashfall debris 2-20mm in diameter. Porphyritic, fine-grained and glass shards in matrix.
 C1 - Fine-grained, high, ash, subvolcanic, prominent porphyritic quartz.
- CRYSTAL TUFF** C2 Fine-grained with prominent porphyritic quartz in matrix. Numerous glass shards, 2-20mm generally, highly altered and schistose.
- TUFF** C1 C1W Variable thickness, impure and argillaceous. Generally showing evidence of sedimentary deposition. Varies from coarse-grained tuffs with sub-rounded fragments of quartz and pumice averaging 2-5mm to very fine-grained tuffs and/or fine-grained tuffs, some possibly of ashfall origin. Much of the tuffaceous tuff is a conglomerate of quartzite, crystal tuff and tuff. Bedding rarely seen due to the usual high level of alteration and schistosity. (See Cambrian sands, tuffs and shales below). Usually moderately altered. Part of a multistage sequence found north of Gwynne.

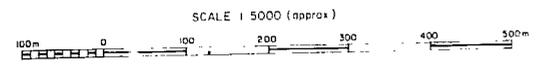
GEOLOGICAL SYMBOLS:

- H* - Unconformity (see text)
- DY* - Dyke 77 GP C1 459/180°/107 - Dip-slip fault, strike-slip, left-lateral, 45° dip, 180° strike, 107° slip.
- F* - Fault (see text)
- S* - Sandstone (see text)
- C* - Conglomerate (see text)
- Mn* - Magnetite (see text)

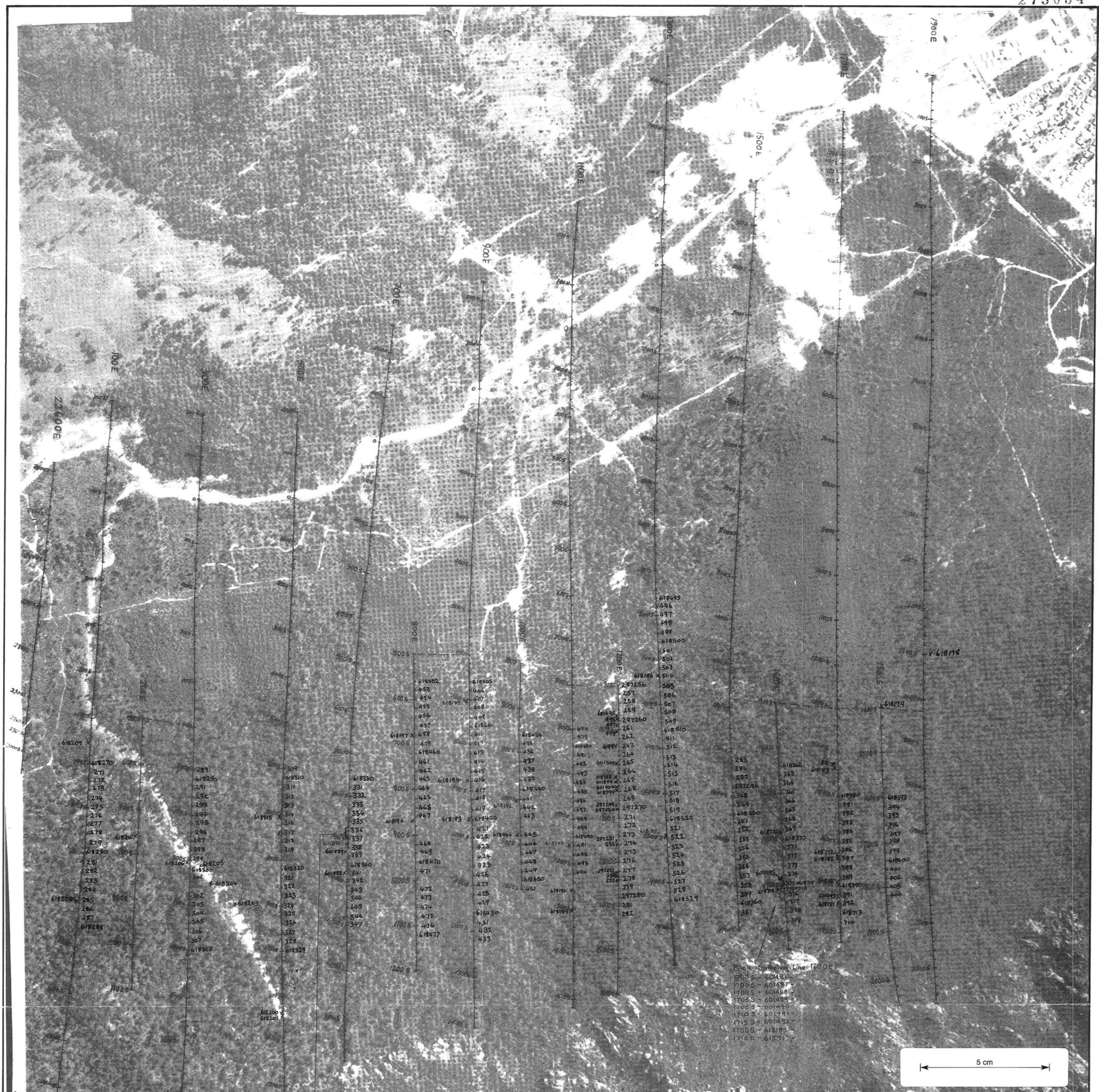
LOCALITY MAP



CRA EXPLORATION PTY LTD
 GEOLOGICAL MAP
GOWRIE PARK - E.L. 7/73
 NORTH - WEST TASMANIA
 BURNIE SK 55-3



Geologist J.G.P. Date March 1978 Report No. 7100
 Drawn - CARTODRAFT Plan No. Tc106



LEGEND

- / 190 - Soil sample value in ppm
- 45 - Additional soil sample value in ppm
- x 75 - Rock sample value in ppm
- Contouring based on soil samples only

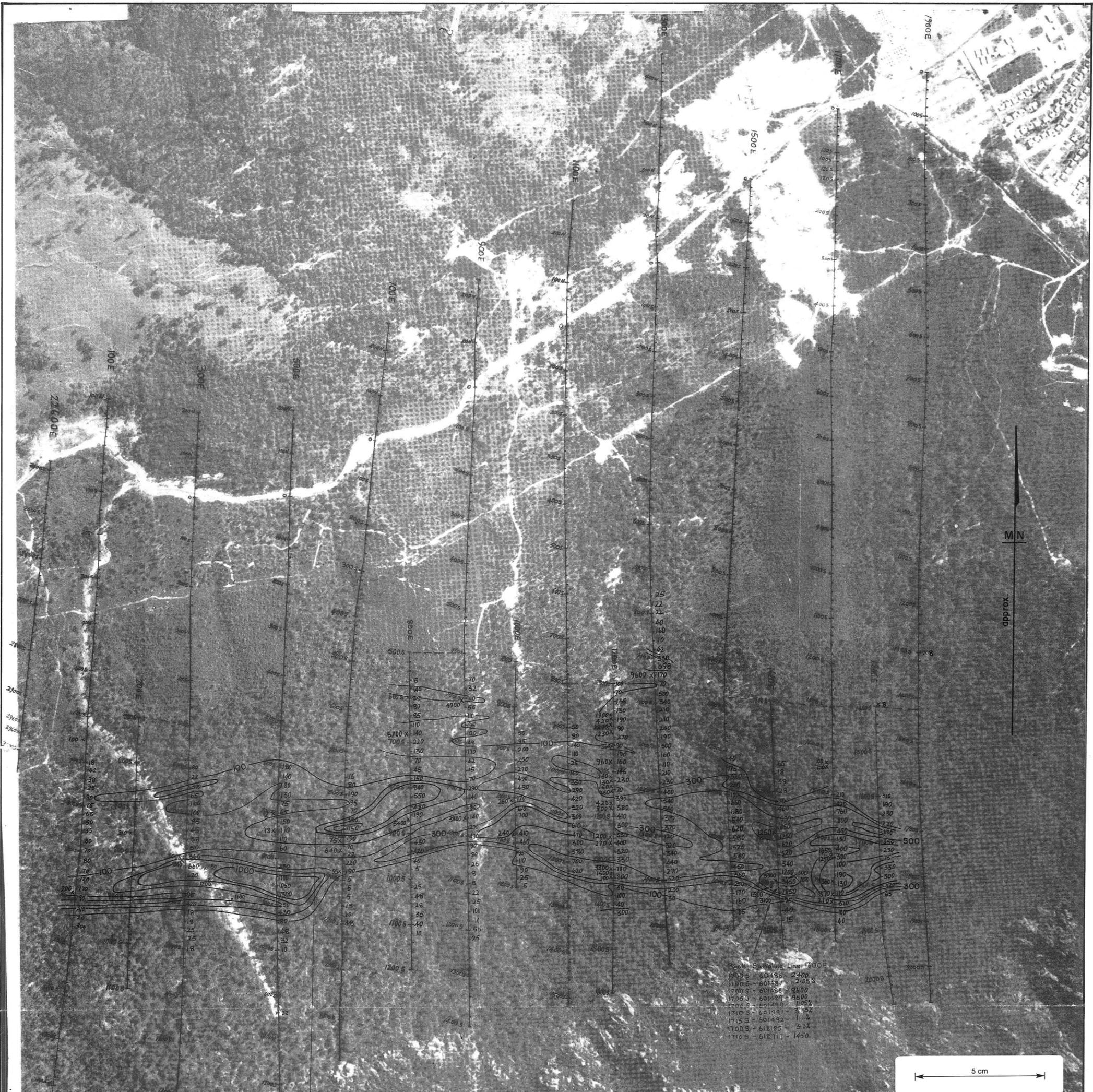
- Rock Sampling Line 700E
- 6005 - 601871
 - 6005 - 601892
 - 6005 - 601893
 - 6005 - 601894
 - 6005 - 601895
 - 6005 - 601896
 - 6005 - 601897
 - 6005 - 601898
 - 6005 - 601899
 - 6005 - 601900
 - 6005 - 601901
 - 6005 - 601902
 - 6005 - 601903
 - 6005 - 601904
 - 6005 - 601905
 - 6005 - 601906
 - 6005 - 601907
 - 6005 - 601908
 - 6005 - 601909
 - 6005 - 601910
 - 6005 - 601911
 - 6005 - 601912
 - 6005 - 601913
 - 6005 - 601914
 - 6005 - 601915
 - 6005 - 601916
 - 6005 - 601917
 - 6005 - 601918
 - 6005 - 601919

- Rock Sampling Line 1600E
- 17005 - 601486
 - 17005 - 601487
 - 17005 - 601488
 - 17005 - 601489
 - 17005 - 601490
 - 17005 - 601491
 - 17005 - 601492
 - 17005 - 601493
 - 17005 - 601494
 - 17005 - 601495
 - 17005 - 601496
 - 17005 - 601497
 - 17005 - 601498
 - 17005 - 601499
 - 17005 - 601500



C.R.A. EXPLORATION PTY LTD
SAMPLE LOCATION PLAN
 GOWRIE PARK 78-1253
 E.L. 7/73
 NORTHERN TASMANIA
 SCALE 1:5000 (approx.)

Geologist: G.P. Date: Report No: 9160
 Drawn: CARTODRAFT Plan No: Tel07



LEGEND

/ 190 - Soil sample value in ppm
 • 45 - Additional soil sample value in ppm
 x 75 - Rock sample value in ppm
 Contouring based on soil samples only

Rock Sampling Line 700E

1005	601841	250
9005	601842	150
8905	601843	200
8855	601844	300
8805	601845	4800
8705	601846	1400
8605	601847	130
8805	601848	2.52
9005	601849	380
8805	618721	380
8655	618726	12
8655	618723	1452
8655	618724	210
8805	618199	160

Rock Sampling Line 1800E

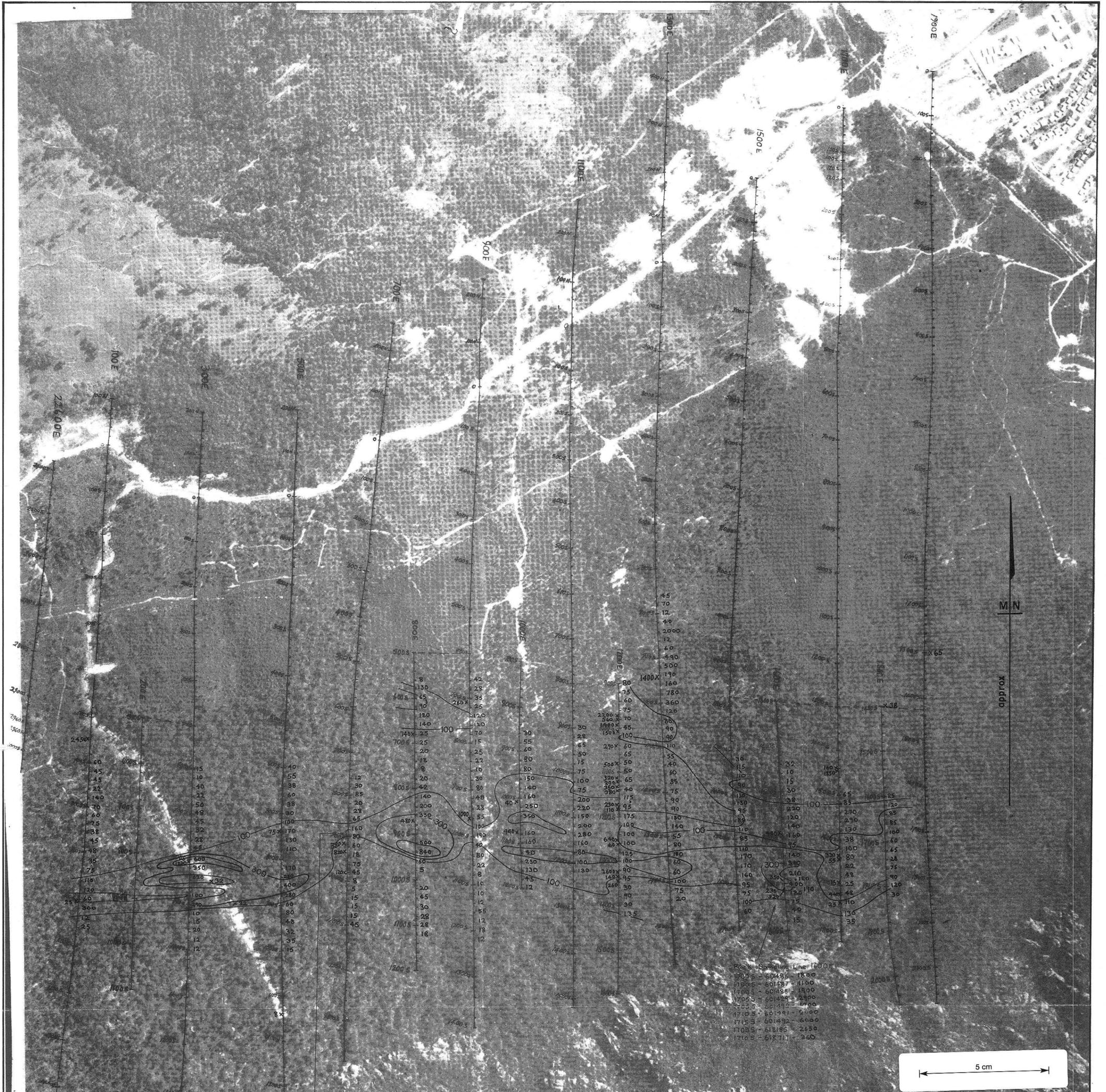
17005	601486	2400
17005	601487	2.05%
17005	601488	8600
17005	601489	8600
17005	601490	105%
17005	601491	3.5%
17005	601492	1.4
17005	618185	5.14
17005	618117	1450

5 cm

C.R.A. EXPLORATION PTY LTD.
LEAD GEOCHEMISTRY
 GOWRIE PARK
 E.L.7/73 78-1253
 NORTHERN TASMANIA
 SCALE 1:5000 (approx.)

0 100 200 300m

Geologist: G.P. Date: 3/78 Report No: 9160
 Drawn: CARTODRAFT Plan No: Tc 108



LEGEND

△ 190 - Soil sample value in ppm
 • 45 - Additional soil sample value in ppm
 x 75 - Rock sample value in ppm
 Contouring based on soil samples only

Rock Sampling Line 700E

8005	601871	490
8005	601872	250
8005	601873	580
8055	601874	110
8055	601875	120
8055	601876	960
8055	601877	45
8805	601878	2400
9005	618198	445
8805	618721	330
8855	618722	1500
8855	618723	5200
8855	618724	65
8805	618199	40

Rock Sampling Line 1600E

17005	60456	1800
17005	60457	1100
17005	60458	1900
17005	60459	2400
17005	60460	1700
17005	60461	5100
17005	60462	6000
17005	618195	2650
17005	618197	340

C.R.A. EXPLORATION PTY LTD.

ZINC GEOCHEMISTRY

GOWRIE PARK

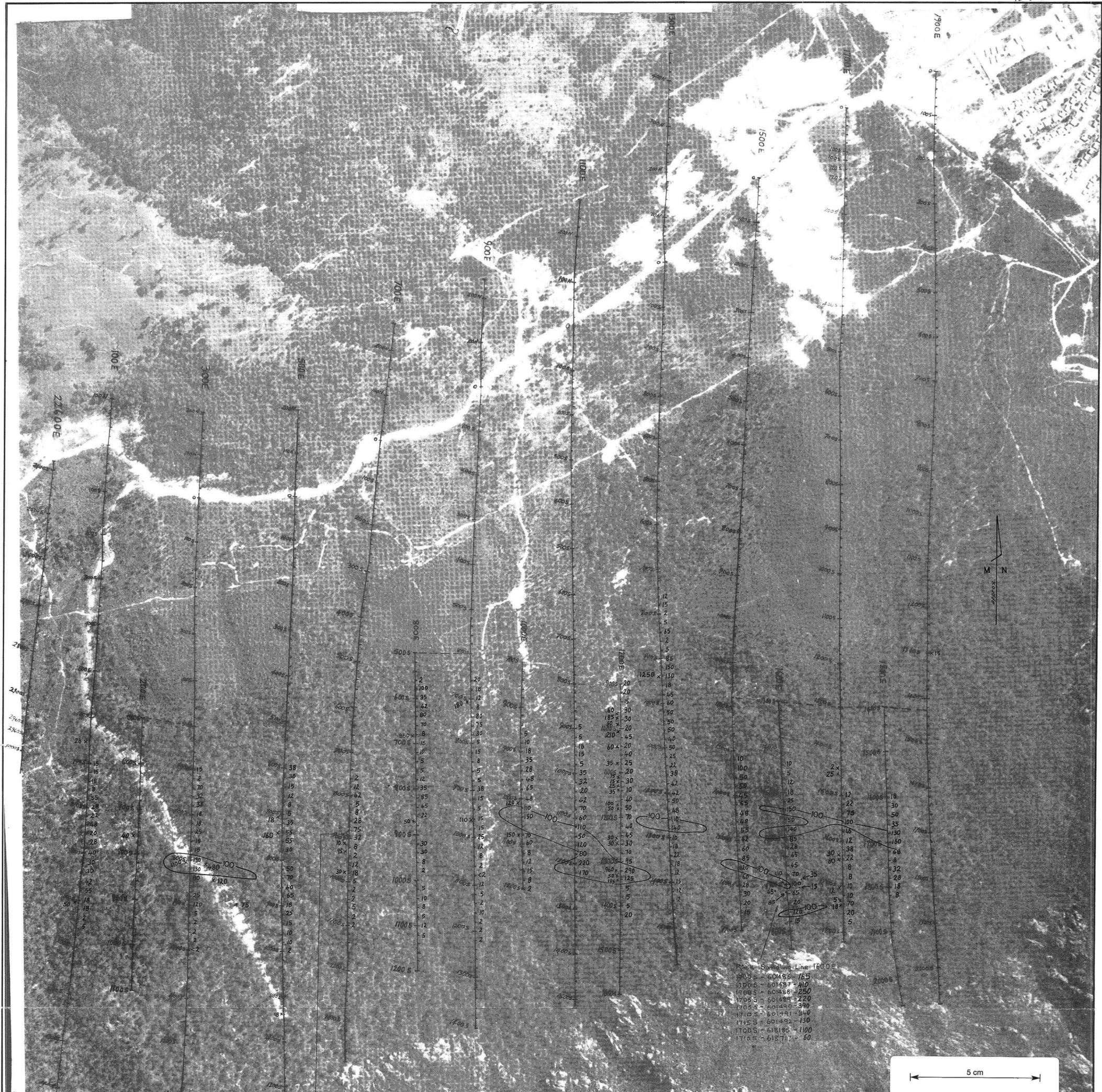
E.L. 7/73 78-1253

NORTHERN TASMANIA

SCALE 1:5000 (approx.)

0 100 200 300m

Geologist: G.P. Date: 3/78 Report No: 9160
 Drawn: CARTODRAFT Plan No: Te 109



LEGEND

△ 190 - Soil sample value in ppm
 • 45 - Additional soil sample value in ppm
 x 75 - Rock sample value in ppm
 Contouring based on soil samples only

Rock Sampling Line 700E

166S	60181	85
302S	60182	85
695S	60183	215
885S	60184	40
883S	60185	320
880S	60186	85
880S	60187	35
880S	60188	900
909S	61818	180
880S	61821	18
885S	61822	40
885S	61823	735
885S	61824	860
880S	61819	40

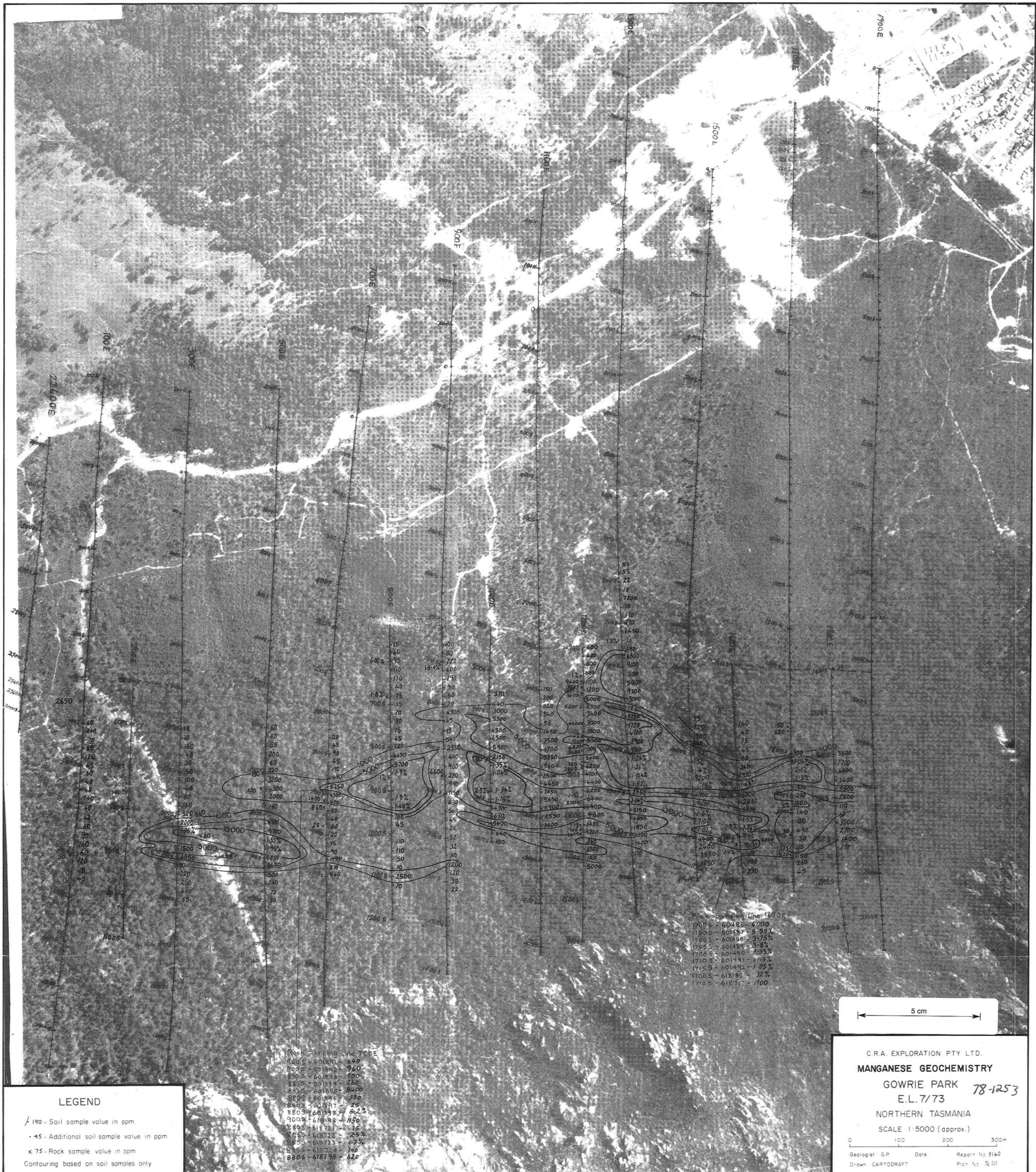
Rock Sampling Line 1600E

1705S	60186	165
1700S	60187	110
1705S	60188	250
1705S	60189	220
1705S	60190	340
1710S	60191	340
1715S	60192	130
1705S	61816	1100
1710S	61817	60

5 cm

C.R.A. EXPLORATION PTY LTD
COPPER GEOCHEMISTRY
 GOWRIE PARK
 E.L. 7/73 78-1253
 NORTHERN TASMANIA
 SCALE 1:5000 (approx.)

Geologist: G.P. Date: Report No: 9160
 Drawn: CARTODRAFT Plan No: 7c110



LEGEND

- / 190 - Soil sample value in ppm
- 45 - Additional soil sample value in ppm
- x 75 - Rock sample value in ppm
- Contouring based on soil samples only

Rock Sampling Line 700E

8005	601871	440
8005	601892	960
8505	601893	900
8855	601894	250
8838	601895	8400
8808	601896	330
8805	601897	25
8803	601898	82.2
9008	618198	1150
8305	618721	75
8555	618722	25.4
8855	618723	1.74
8305	618724	140
8305	618725	620

Rock Sampling Line 1000E

1705	601486	4000
17005	601487	6.35%
17005	601488	3.75%
17055	601489	3.8%
17055	601490	2.25%
17105	601491	1.25%
17155	601492	1.05%
17055	618195	32%
17105	618717	1900

5 cm

C.R.A. EXPLORATION PTY LTD.
MANGANESE GEOCHEMISTRY
 GOWRIE PARK 78-1253
 E.L. 7/73
 NORTHERN TASMANIA
 SCALE 1:5000 (approx.)

0 100 200 300m

Geologist G.P. Date Report No 9160
 Drawn CARTODRAFT Plan No 7c111

PROJECT GOWRIE PARK

DEPTH 107.10m HOLE No 77GPC1

CASING LEFT 3m HQ 11m OPO None

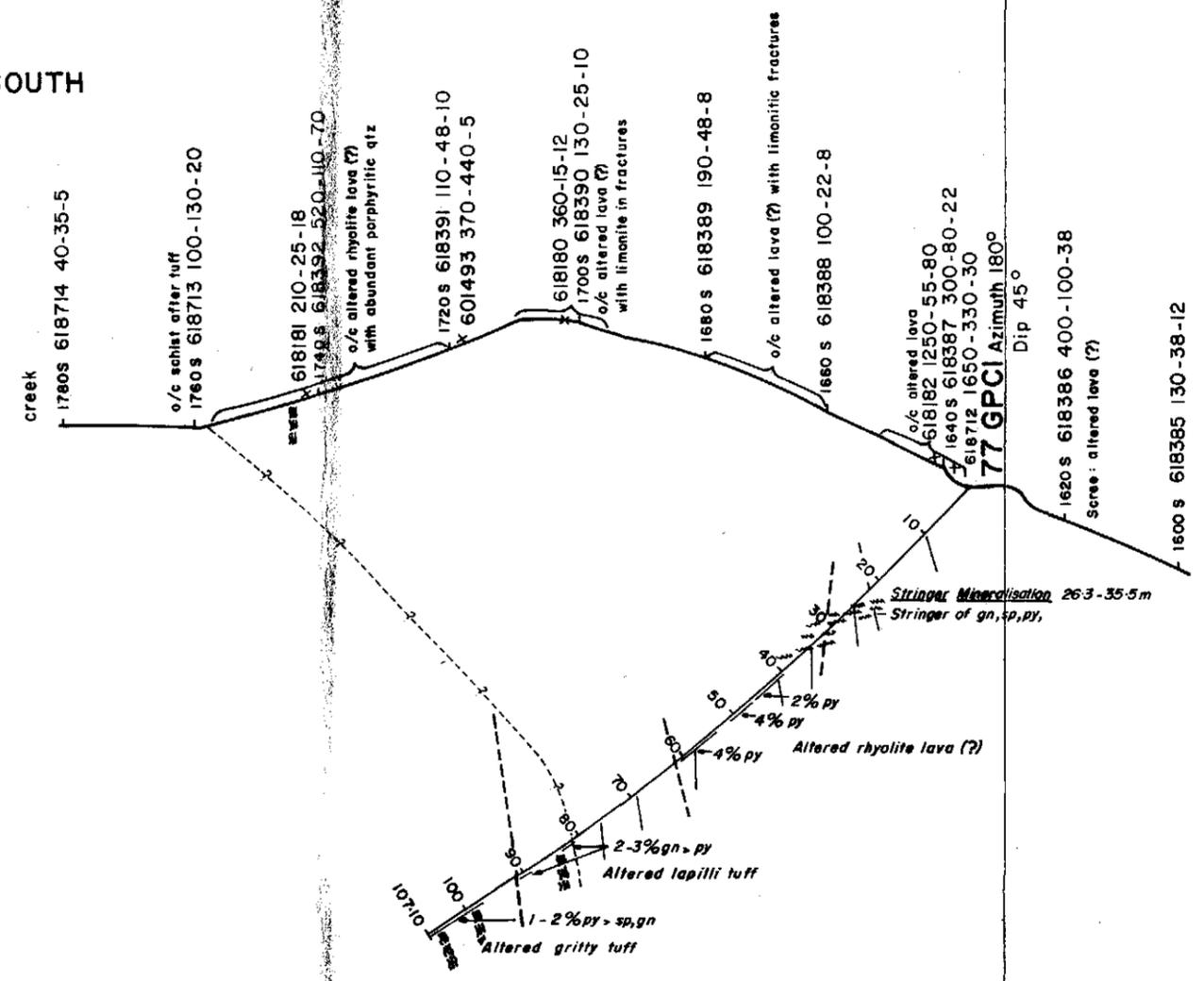
SAMPLE No.	FROM (m)	TO (m)	REC (m)	ASSAY VALUES				
				Pb	Zn	Cu	Ag	Mn
297350	0.00	3.00		270	260	85	<1	520
297359	3.00	6.00		440	310	110	1	2900
297360	6.00	9.00		400	540	42	<1	4600
297361	9.00	12.00		570	540	60	1	9100
297362	12.00	15.00		870	340	70	<1	170
297363	15.00	18.00		310	1410	70	<1	170
297364	18.00	21.00		230	410	65	1	3000
297365	21.00	24.00		190	260	48	<1	5200
297366	24.00	26.10		25	200	25	<1	5200
618825	26.10	27.10	c	2900	330	15	2	2.22
618826	27.10	28.10	c	9000	220	95	7	9900
618827	28.10	29.10	c	7800	230	20	3	1250
297454	29.10	30.10	c	1400	360	12	1	1000
297455	30.10	32.10	c	1350	390	15	<1	900
297456	32.10	32.70	c	630	170	40	1	7600
297457	32.70	34.00	c	1320	190	18	4	5700
618828	34.00	35.50	c	4400	420	35	3	1000
297369	35.50	38.00		560	350	45	1	7600
297370	38.00	41.00		400	330	48	1	5400
297371	41.00	44.00		380	360	35	1	3000
297372	44.00	47.00		270	340	360	8	2700
297373	47.00	50.00		310	520	55	1	2000
297374	50.00	53.00		660	460	160	2	6900
297375	53.00	56.00		3100	760	140	3	3400
297458	56.00	57.00	c	2200	450	280	4	5200
297459	57.00	58.00	c	1000	450	310	4	3700
297460	58.00	59.00	c	310	150	15	<1	1050
297377	59.00	62.00		1250	350	220	5	4450
297378	62.00	65.00		5500	310	35	2	3700
297379	65.00	68.00		140	340	75	1	3200
297380	68.00	71.00		150	480	48	<1	1150
297381	71.00	74.00		720	470	180	2	1760
297382	74.00	77.00		190	290	30	<1	1400
297383	77.00	79.00		1550	1850	60	2	2050
297384	79.00	81.10		32	430	65	<1	5000
618830	81.10	82.80	c	3300	190	70	9	2100
618831	82.80	83.50	c	1750	170	220	16	5700
297385	83.50	86.10		290	1000	45	1	4000
297386	86.10	88.00		1300	1900	55	2	1550
618833	88.00	90.30	c	6600	2200	10	5	1720
297387	90.30	93.00		240	450	28	<1	4900
297388	93.00	95.50		32	470	25	<1	5700
297389	95.50	97.50		55	410	28	1	4250
618834	97.50	98.50	c	1300	1200	115	2	7300
297390	98.50	101.00		600	1050	110	1	7300
297391	101.00	104.00		1100	960	80	2	4850
297392	104.00	107.10		1250	1100	100	1	5000
Soil 100 average				1370	630	102	1.7	6550

LOGGED BY G. Purvis DATE 19.12.77

Depth intersections	Pb	Zn	Cu	Ag	Mn
26.10 29.10 3.0	6370	260	43	4	
32.70 35.50 2.8	1000	850	27	3.5	
82.8 83.50 0.7	1750	170	220	16	
99.00 90.30 1.3	6600	2200	10	5	

SOUTH

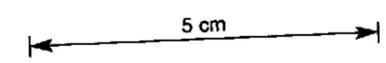
NORTH



- Geological contact -----
- Small fault or shear - - - - -
- Primary mineral lineation _____
- Schistosity ≡≡≡≡

Soil sample with Pb-Zn-Cu Values in ppm +1620 S 618386 400-100-38

Rock sample with Pb-Zn-Cu Values in ppm +618181 210-25-8



C.R.A. EXPLORATION PTY. LIMITED

DIAMOND DRILL SECTION 77-GP.G'1
LINE 1700E GOWRIE PARK
NORTH WEST TASMANIA

78-1253 BURNIE SK 55-3 053

geologist: G.P.	scale: 1:1000	report no: 9160
drawn: CARTODRAFT	date: March 1978	plan no: Tc112

PROJECT GOWRIE PARK - TASMANIA

2.77 DEPTH 112.75m HOLE No. 77GPC2
 -78 CASING LEFT 9m NR DPO No.:

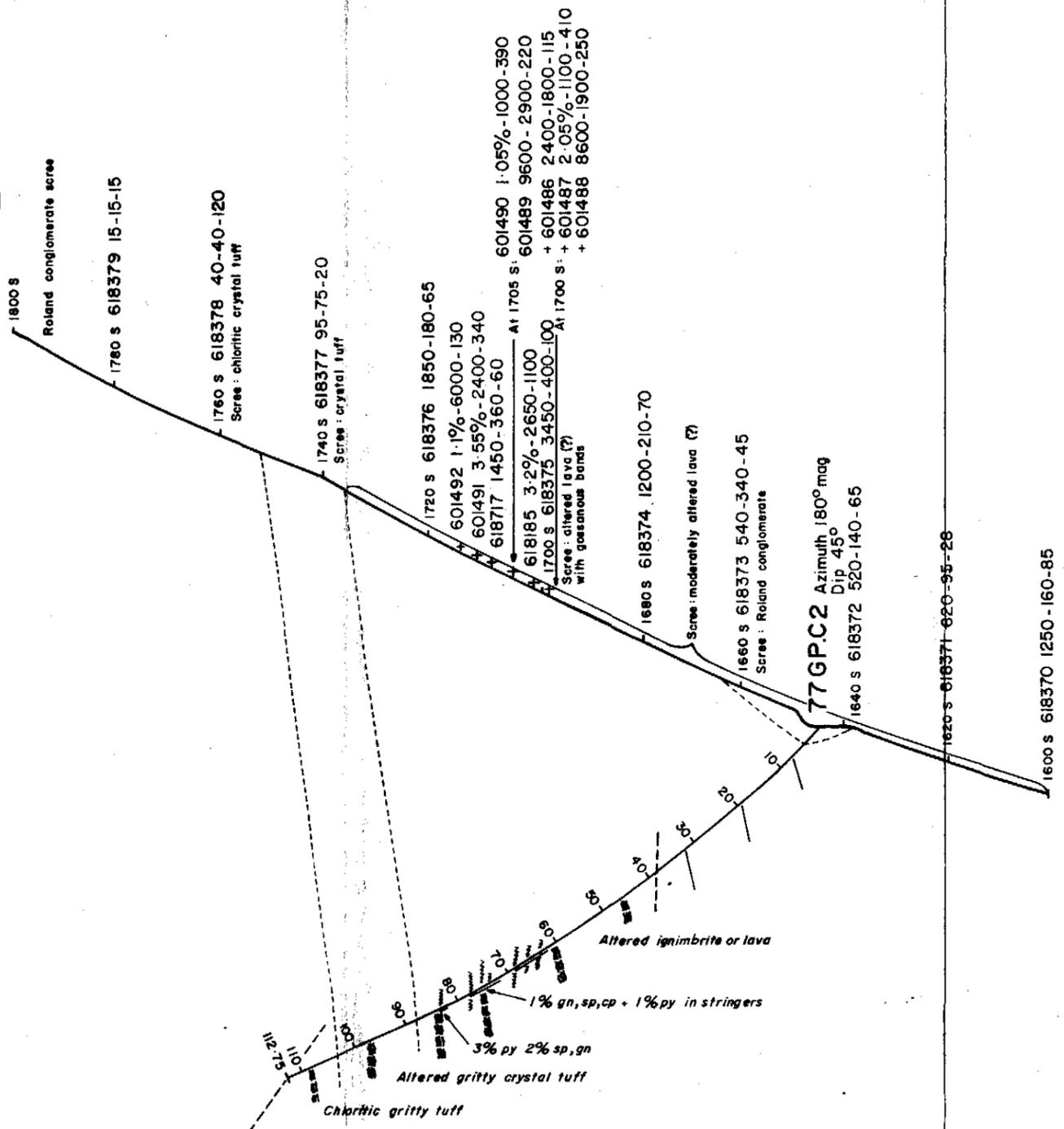
SAMPLE No.	FROM (m)	TO (m)	REC (m)	ASSAY VALUES				
				Pb	Zn	Cu	Ag	Mn
618903	4.10	5.50		120	210	45	<1	4100
618904	5.50	7.90		350	200	50	1	9200
618905	7.90	10.90		50	270	15	<1	7700
618906	10.90	13.90		160	280	20	<1	1.2
618908	13.90	16.90		250	250	20	<1	4200
618909	16.90	19.90		1500	340	30	2	7700
618910	19.90	22.90		35	140	25	1	3600
618911	22.90	25.90		85	145	45	<1	4200
618912	25.90	28.90		90	240	35	1	7500
618913	28.90	31.90		380	190	40	1	7300
618914	31.90	34.90		1400	280	30	1	3700
618915	34.90	37.90		220	270	25	<1	3400
618916	37.90	40.90		300	270	30	1	3100
618917	40.90	43.90		400	500	40	1	2600
618919	43.90	46.90		180	240	30	1	2700
618920	46.90	49.90		190	300	45	1	2600
618921	49.90	52.90		45	160	30	<1	1700
618922	52.90	55.90		115	180	20	<1	1900
618923	55.90	58.90		340	220	50	1	2300
618924	58.90	61.90		90	190	20	1	1500
297441	61.90	63.40	C	172	300	30	9	3600
297442	63.40	64.90	C	2500	850	120	3	4400
297443	64.90	65.90	C	1122	4950	50	4	5200
297444	65.90	66.90	C	4250	1500	15	2	7700
297445	66.90	67.90	C	2200	430	18	<1	6600
297446	67.90	68.90	C	1700	500	22	1	2700
618929	68.90	71.70		3300	480	40	2	1600
297447	71.70	73.40	C	1352	660	15	4	5300
618931	73.40	74.70		4800	1100	40	12	3000
297448	74.70	76.20	C	112	3600	100	18	6000
297449	76.20	77.70	C	500	3650	25	3	6000
618932	77.70	80.00		1200	760	20	2	3500
618933	80.00	82.00		760	390	40	2	3200
297450	82.00	83.30	C	720	6400	140	9	2750
618937	83.30	86.80		500	620	30	2	8800
618938	86.80	87.80		2000	1100	100	3	1320
618939	87.80	90.00		50	280	60	2	2500
618940	90.00	92.00		100	260	60	2	1600
618941	92.00	95.00		340	890	70	2	2200
618942	95.00	98.00		370	630	85	2	2800
618944	98.00	101.00		1200	2000	110	2	2600
618945	101.00	104.00		840	800	80	2	3100
618946	104.00	107.00		1000	1500	90	2	2300
618947	107.00	110.00		380	330	35	2	1600
618949	110.00	112.75		50	410	20	2	1700
Whole hole average:				1470	1762	44	2	4400
61.90	77.70	15.8		7030	2200	45	5	
61.90	65.90	4.0		1122	1672	69	5	
71.70	127.70	6.0		8865	3738	44	9	

LOGGED BY G. FORNYS DATE 14-1-78

SHEET 1 OF 1

SOUTH

NORTH



Geological contact -----

Small fault or shear -----

Primary mineral lineation -----

Schistosity

Soil sample with Pb-Zn-Cu Values in ppm

1760s 618378 40-40-120

Rock sample with Pb-Zn-Cu Values in ppm

+ 601492 1-1%-6000-130

C.R.A. EXPLORATION PTY. LIMITED

DIAMOND DRILL SECTION 77-GP.C 2

LINE 1600 E GOWRIE PARK

NORTH WEST TASMANIA

BURNIE SK 55-3

054

78-1253

geologist: G. P.

scale: 1:1000

report no: 9160

drawn: CARTODRAFT

date: March 1978

plan no: Tc 113

PROJECT: GOWRIE PARK - TASMANIA

78 DEPTH 94.10m HOLE NO 78 GPC 3

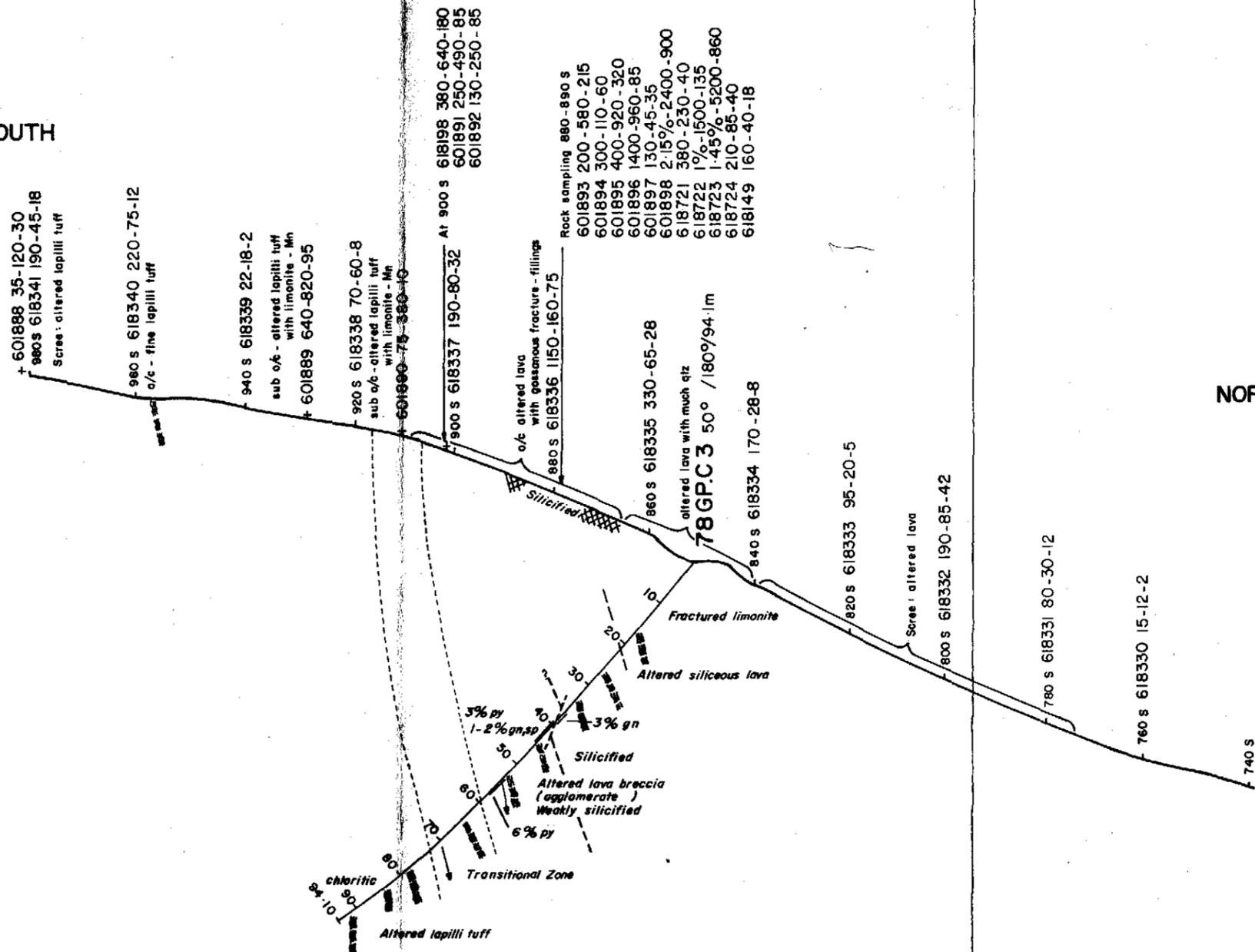
SAMPLE NO	FROM (m)	TO (m)	REC (m)	Pb	Zn	Cu	Ag	Mn
618950	0.00	4.40	70	160	140	1	55	
618951	4.60	6.00	140	230	90	1	250	
618952	6.00	9.10	190	160	100	1	1200	
618953	9.10	12.45	290	270	210	1	260	
297451	12.45	13.30	C	590	250	700	1	175
618955	13.30	14.30	180	460	370	2	300	
618956	14.30	16.20	300	180	125	2	260	
618957	16.20	19.20	680	440	60	1	780	
618958	19.20	21.00	190	600	45	<1	135	
618959	21.00	23.00	430	640	40	<1	135	
618960	23.00	26.00	150	520	25	<1	155	
618964	26.00	29.00	430	450	75	1	145	
618965	29.00	32.00	680	540	70	2	275	
618966	32.00	34.00	880	320	50	1	820	
297452	34.00	35.30	C	1020	300	160	5	242
297453	35.30	36.70	C	950	490	25	1	182
618961	36.70	37.70	C	300	300	20	2	362
618962	37.70	38.70	C	340	17	60	7	332
618963	38.70	39.70	C	12	230	70	4	262
618971	39.70	40.60	C	160	200	410	4	700
618972	40.60	41.60	C	140	120	280	2	172
618973	41.60	42.60	C	270	190	230	14	162
618974	42.60	43.40	C	150	200	50	4	142
618975	43.40	44.50	C	120	130	250	3	660
618967	44.50	47.00	C	270	450	50	1	940
618968	47.00	50.00	120	330	80	2	780	
618970	50.00	52.00	190	400	120	3	620	
618978	52.00	54.10	180	165	85	2	260	
618980	54.10	55.40	20	110	160	2	280	
618976	55.40	56.20	C	170	30	80	3	50
618977	56.20	57.00	C	440	560	270	4	390
618981	57.00	58.40	C	50	210	40	1	820
618978	58.40	59.60	C	840	640	1600	3	152
618982	59.60	62.00	C	55	460	70	1	125
618983	62.00	65.00	20	310	115	1	780	
618984	65.00	68.00	10	270	20	1	720	
618985	68.00	71.00	85	310	90	1	620	
618986	71.00	74.00	15	200	30	<1	500	
618987	74.00	77.00	10	185	20	1	460	
618988	77.00	80.00	40	300	30	1	640	
618989	80.00	83.00	30	350	65	1	540	
618990	83.00	86.00	15	390	10	<1	380	
618991	86.00	89.00	10	320	10	1	440	
618992	89.00	92.00	50	260	75	1	580	
618993	92.00	94.10	10	270	15	1	560	
Whole life average:				160	497	85	1.5	870

W. PHOS. LOGGED BY G. PURVIS DATE 18-1-78 SHEET 1 OF 2

FROM (m)	TO (m)	REC (m)	Pb	Zn	Cu	Ag	Mn
6.00	14.30	8.3	270	370	240	1	
34.00	43.40	9.4	1020	300	160	5	
36.70	39.70	3.0	175	540	50	4	
41.60	42.60	1.0	270	190	230	14	

SOUTH

NORTH



- Geological contact -----
- Small fault or shear - - - - -
- Schistosity = = = = =
- Primary mineral lineation ————
- Bedding —————>

Soil sample with Pb-Zn-Cu Values in ppm f 760 s 618330 15-12-2

Rock sample with Pb-Zn-Cu Values in ppm + 601890 75-380-10

C.R.A. EXPLORATION PTY. LIMITED

DIAMOND DRILL SECTION 78-GP.C3

LINE 700E GOWRIE PARK

NORTH WEST TASMANIA

BURNIE SK 55-3 055

78-1253

geologist: G.P.	scale: 1:1000	report no: 9160
drawn: CARTODRAFT	date: March 1978	plan no: Tc:114