

404001

ANNUAL REPORT

1996-1997

MICROFILMED
FICHE No. 014403 -

EL 31/90 -REDPA & EL 33/90-TOGARI (BRITTONS SWAMP)

by

Vic Threader

for

5 SEP 1997
EL31/90 See
folio 6
EL33/90 See
folio 85

MINERAL HOLDINGS AUSTRALIA PTY LTD

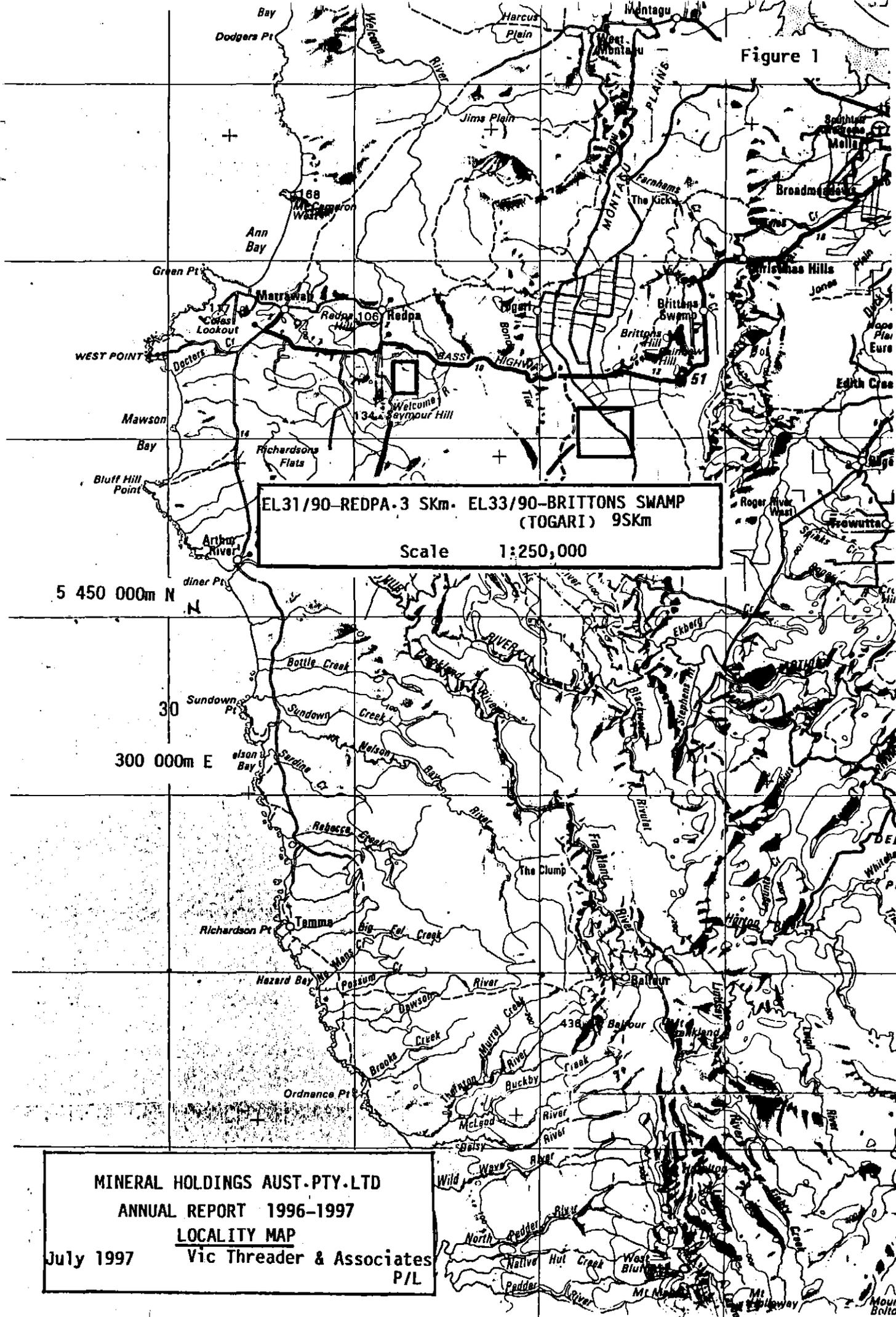
August 1997

Vic Threader & Associates Pty Ltd
Kingston Beach, Tasmania.

97-4052

ANNUAL REPORT - EL31/90-REDPA
AND EL33/90-TOGARI - MINERAL
HOLDINGS - V THREADER

Figure 1



EL31/90-REDPA.3 SKm. EL33/90-BRITTONS SWAMP (TOGARI) 9SKm
 Scale 1:250,000

5 450 000m N

300 000m E

MINERAL HOLDINGS AUST. PTY. LTD
 ANNUAL REPORT 1996-1997
 LOCALITY MAP
 July 1997 Vic Threader & Associates P/L

5 cm

404002

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INTRODUCTION

ELs 31/90 (Redpa) and 33/90 (Togari) are situated 40 & 30 km. respectively, SW of Smithton in northwestern Tasmania.

The exploration in both licences has been focused on the resources of Smithton Dolomite for utilisation in the chemical and metallurgical industries.

EXPLORATION 1996 -1997 (sixth year of tenure)

EL31/90. A bed of dolomitic limestone (DL) occurring within the Smithton Dolomite occupies an area of 3 + ha. of scattered outcrops on the King family property as shown on Figure 3. The outcrop plus sub-outcrop would probably cover the whole area of Figure 3 ie. about 20ha. DL crops out also on the Edwards/Jaeger property to the south of King's which could increase the total area to >50ha bounded on the SW and NE by dolomite with opposing dips suggesting a southeasterly plunging syncline. The DL is thinly bedded, current bedded and discontinuously banded due to partial replacement of limestone by dolomite (Photographs Appendix 4). The banding is enhanced by differential erosion of the limestone compared with the harder dolomite. The stratigraphic section (Figure 3 Annual Report for 1996) suggests that the DL may occur near the top of the Smithton Dolomite.

Nye *et al* 1941 (1) described a massive bedded DL near Smithton which they referred to as an altered "oolitic" limestone. It contained rounded grains which the authors considered to be fragments of crinoidal limestone rather than true oolites. Their description implies that the oolitic texture is macroscopic. Longman & Mathews (1960) (2) described a similar rock on Edward's property as massive bedded, partially dolomitised, oolitic limestone. The description of their sample location appears to place it near rockchip samples E7 & E8 of Figure 3 in the Annual Report for 1992. The oolites averaged 0.2mm according to Longman & Mathews (fine to medium sand on the Wentworth grade scale and at the finer end of Mesoscopic in the crystallinity scale of Bissett & Chilingar (3)) so may not be easily detected with the naked eye. The authors considered them to be true oolites (confirmed by Dr .C. Calver -pers. comm.). Longman and Mathews considered the DL on Edward's property and that upstream from the Blackwood Bridge at Smithton to be "similar in all respects". There is insufficient evidence so far to

determine whether the DL is a mappable unit. The Redpa and Smithton occurrences are about 40km.apart. On the mapping evidence, the Edwards' DL is stratigraphically lower in the sequence than the DL on King's. From the economic point of view Edward's may well be the better stone as it was massive bedded and had an average MgO content of 13% over 12m. depth (BH 25-Ann.Rept. 1992), but more drilling is needed to confirm this.

A composite 40kg. rockchip sample of DL was collected from four locations in the licence (Figure 2) and despatched overseas for furnace trials. No test results have yet been received.

All the known locations of DL, a total of 9, on the King family property (Figure 3) were sampled and analysed in order to select drilling targets

The MgO content of O/C 9 is 12.85%, while, in the borehole drilled at that location, R14b is 11.53% down to 5m. and between 5 and 20m it is 19.8% dolomite (Table 1), so there is a change from dolomitic limestone at the top of the hole to dolomite at the bottom. If the above structural interpretation is correct, this outcrop probably lies on the eastern boundary of the DL and so indicates the probable limits of the resource in this area.

Six of the sampled locations were subsequently hammer drilled but loss of air pressure at the water table, 5-10m., prevented the target depth of 20m being reached except in BH14b. The loss of air pressure, probably as a result of solution cavities, prevented sample return but in each case the holes were still drilling in hard rock when aborted.

A summary of these hammer drill holes plus two drilled in 1992 and two in 1996 is given in Table 1 below. Table 2 shows complete analyses of outcrops and borehole samples on King's property.

Table1.

BH No	YEAR	DEPTH HOLE (m)	OVER-BURDEN(m)	THICKNESS DOL. LS. (m)	MgO%	CaO%	LOI
23	1992	6	nil	6	4.77	49.44	43.67
25	1992	12	nil	12	13.65	39.37	45.7
R2	1996	20	7	13	ND	ND	ND
R10	1996	20(angle hole)	nil	17	8.2	46.62	ND
R12	1997	5	nil	5	5.24	46.1	41.8
R13	1997	6	nil	6	5.47	46.6	42.6
R14	1997	20	nil	5	11.53	39.8	44.5
				15	19.85	31.9	45.8
R15	1997	5	nil	5	11.74	40	44
R16	1997	10	nil	10	7.83	44.5	42.2

EL33/90. Dolomitic limestone is not known to occur in this licence. Five x 20mm hammerdrill holes were drilled in the SW of the licence where previous rockchip sampling had indicated high quality dolomite. Three of these holes were in freehold land along the State Forest boundary and two in State Forest alongside the Montagu River on an access track which had been constructed for the purpose. (Figure 4)

One hole (TP.8) intersected a mud filled cavity at 12m., lost air pressure and was abandoned. The remaining four holes terminated at the target depth of 20m..

Composition of Dolerite (Both Licences). Complete analyses of samples from both drilling programmes, Table 3, is given in the Appendix. The CaO, MgO & LOI (representing CO₂) content of all samples analysed has been adjusted to 100% and plotted on a ternary diagram (Figure 5) to illustrate the range of compositions of dolerite sampled in both licences. The two highlighted areas shown on this diagram are: 1) Togari samples contained 96-97% dolomite and therefore plot close to the theoretical composition of dolomite and 2) The DL (EL31/90) samples had a range of MgO content between 3.68 & 12.85 % MgO. The 10% line passes through the plotted positions of King's DL for both surface and borehole samples. The composition of dolomite in BH No. R14, 0-5m. lies in area 2) and 5-20m. lies in area 1).

Contaminants in the samples were SiO₂ and Fe₂O₃. The Togari samples contained <0.5-4.4% & 0.0-1.9% respectively. BHs 9 & 10 which were located on the freehold /State Forest boundary were of higher purity than BHs 6, 7 & 8 which were located along Montagu River.

The DL samples from EL31/90 contained very low levels of these contaminants: 0.8 & 0.1 % respectively.

Discussion

EL 31/90 The objective was to obtain analytical data and so all holes were collared on outcrop. Previous experience in this area indicates an overburden thickness of around 10m. In that programme, the holes were drilled to bedrock then PVC was driven to bedrock to contain the overburden and prevent contamination of the samples. This had limited success because the holes partially collapsed before the casing could be put in place or while it was being driven. It was also not possible to make an effective seal between the

casing and bedrock. BH R2, drilled in 1996, intersected bedrock underlying 7m. of soil and clay. The hole was continued to 20m. but all samples were contaminated.

EL 33/90. In this licence, the dolomite sub-outcrops under a 1 to 2 m. cover of clayey or sandy overburden which was effectively cased off with PVC tubing and the top 1m. of contaminated dolerite was discarded.

The surface samples previously reported in the Licence were either from exposures in drainage channels or shallow test pits.

The water table in the Togari area comes to within 1m of surface at times which may explain the higher levels of silica and iron contamination.

The driller did not report any significant discontinuities other than the cavity at 12m. in TP8 but without any cored drilling, a reliable estimate of solution cavity loss cannot be made. The 4ha. area drilled would contain a maximum *in situ* resource of 100,000t/vertical metre.

Cored drilling in both licences will ultimately be required before Indicated Resources can be estimated.

Further Exploration Until a firm market for these materials can be established, further exploration expenditure other than continued market research cannot be justified and it is recommended that Retention Licences are applied for in both areas.

ANALYSES OF DOLOMITIC LIMESTONE OUTCROPS AND BOREHOLE SAMPLES ON KING'S PROPERTY.EL 31/90(REDPA)

BH No.	OUTCROP No.	Al2O3	SiO2	TiO2	Fe2O3	MgO	CaO	LOI	MnO	P2O5	K2O	Na2O	S	CaO/MgO	LOG
	1	0.23	0.9	0.009	0.08	11.26	39.8	44.85	0.007	0.02	0.06	<0.006	<0.005	3.53	
23 (1992)	3-6m	0.46	1.43	0.04	0.047	4.77	49.44	43.67	0.02	0.09	0.01	0.05	0.025	10.36	Still in DL at E.O.H.
	2	0.14	0.4	<0.005	<0.05	12.13	39.8	45.2	0.003	<0.02	<0.06	<0.006	<0.005	3.28	
	R11*														4m. clay. 1m. stone, 1m. clay.-Aborted.
	3	0.21	0.8	0.007	0.07	3.68	47.6	43.58	<0.006	<0.02	0.07	<0.006	0.007	12.93	
	R12.1-5m.	1.2	3.5	0.11	0.8	5.24	46.1	41.8	0.02	<0.1	0.13	0.017	<0.01	8.80	Cavity at 5m. Lost air-Hole Aborted.
	4	0.11	0.7	<0.005	0.05	9.43	41.4	44.51	<0.003	<0.02	<0.06	<0.006	<0.005	4.39	
	5	0.22	0.50	0.014	0.1	7.60	42.3	44.39	0.004	<0.02	0.07	0.01	<0.005	5.57	
	R10.0-5m.	0.2	1	0.02	0.12	6.50	47.8		0.04	0.02	0.04	<0.1			Drilled at -60degr.
	5-10m.	0.12	0.52	0.01	0.07	9.00	45.1		<0.01	0.01	0.02	0.10		9.00	
	10-15m.	0.06	0.55	0.01	0.03	5.50	49.7		0.02	0.01	0.01	<0.1		9.00	
	15-20m.	0.16	0.47	0.01	0.09	11.70	43.9		0.03	0.01	0.03	<0.1		3.75	True depth:17m
					mean	8.10									
	6	0.29	1.1	0.009	0.07	10.06	39.6	44.42	<0.003	<0.02	0.1	0.017	<0.005	3.90	
	R13. 1-6m.	0.3	1.8	0.02	0.2	5.47	46.6	42.6	<0.01	<0.1	<0.04	0.08	<0.01	8.80	Lost air. No sample return.
	7	0.34	1	0.014	0.12	10.20	39	44.47	0.003	<0.02	0.1	<0.006	<0.005	3.90	
	8	0.06	2.6	0.018	<0.05	7.32	42.3	43.28	<0.003	<0.02	<0.06	<0.006	<0.005	5.78	
	R 15.1-5m.	0.4	1.1	0.03	0.2	10.95	39.7	43.7	0.09	<0.1	0.07	0.13	<0.01	3.63	Lost air.
	5-10m.	0.2	0.9	0.02	0.1	12.53	40.3	44.3	<0.01	<0.1	<0.4	0.013	<0.01	3.22	No sample return.
					mean	11.74									
	9	0.11	<0.2	0.007	<0.005	12.85	38.3	45.39	<0.003	<0.02	0.06	0.006	<0.005	2.98	
	R14B.1-5m	<0.1	<0.53	0.02	<0.08	11.53	39.8	44.5	<0.01	<0.1	<0.04	0.017	<0.01	3.45	R14a. Lost air at 5m.
	5-10m	0.3	<0.53	0.02	0.1	19.40	33.2	45.7	<0.01	<0.1	<0.04	0.028	<0.01	1.71	R14b started 5m. from
	10-15m	0.2	<0.53	0.02	0.1	19.37	31.6	45.8	<0.01	<0.1	<0.04	0.027	<0.01	1.63	R14a. Struck water at
	15-20m	0.1	<0.53	0.02	<0.08	20.79	31	45.8	<0.01	<0.1	<0.04	0.29	<0.01	1.53	5m. but did not lose
					mean	17.77									air pressure. Hole, vert.
	R16.1-5m.	0.2	0.7	0.01	0.1	6.02	45.9	43.4	<0.01	<0.1	<0.4	0.012	<0.01	7.62	Dark grey Soft.
	5-10m.	0.1	<0.53	0.02	<0.08	9.64	43.3	44.1	<0.01	<0.1	<0.4	0.012	<0.01	4.49	Light grey. Hard.
					mean	7.83									Lost air aborted.

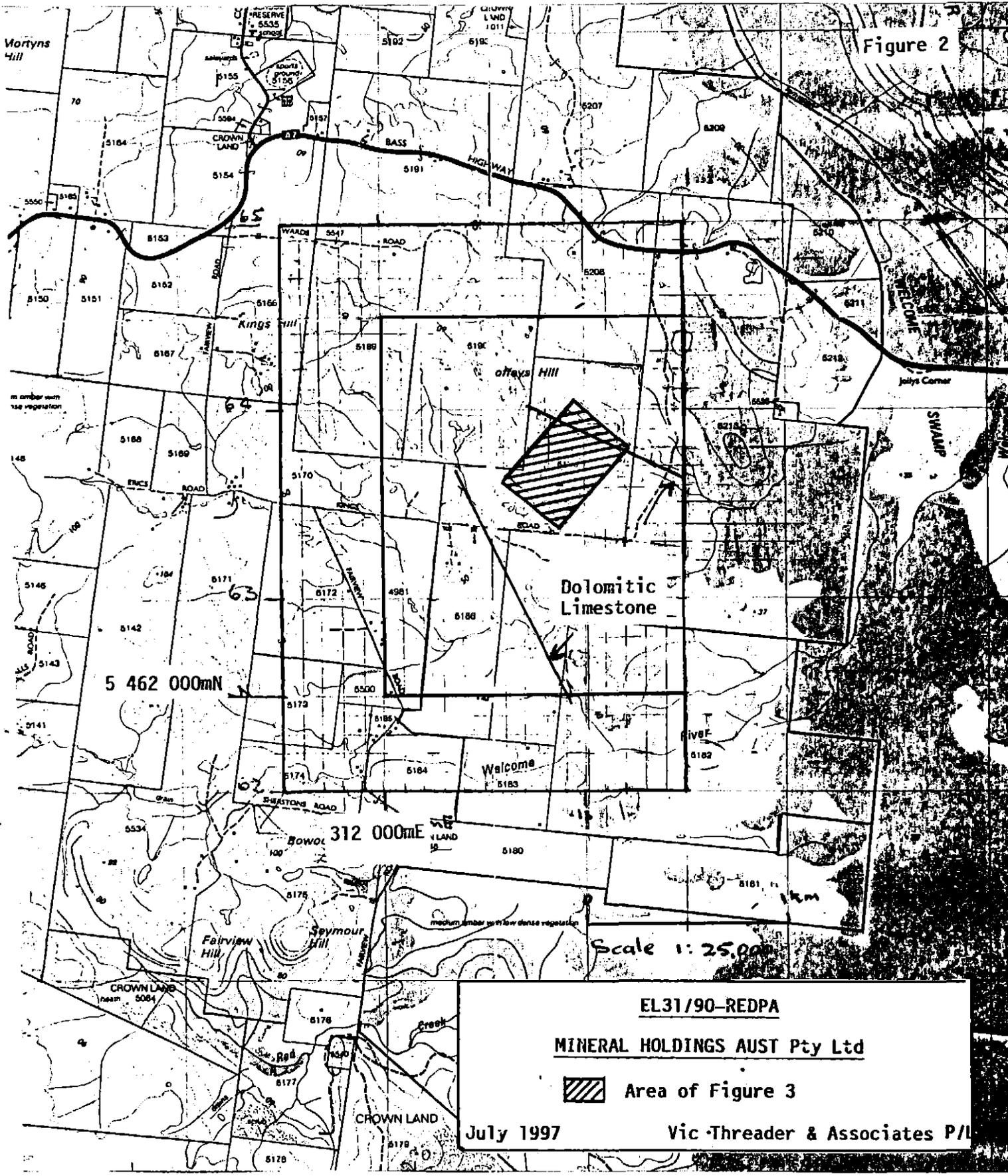
Table 2.

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1. Nye P.B., Finucane K.J. & Blake F. (1934). The Smithton District. Bull. 41, Geol. Surv. Tas. Dept. Mines.
2. Longman M.J. & Mathews W.L. (1961). Tech. Rept. Tas. Dept Mines.
3. Chilinga G.V. (1967). Carbonate Rocks. Elsevier.

Figure 2

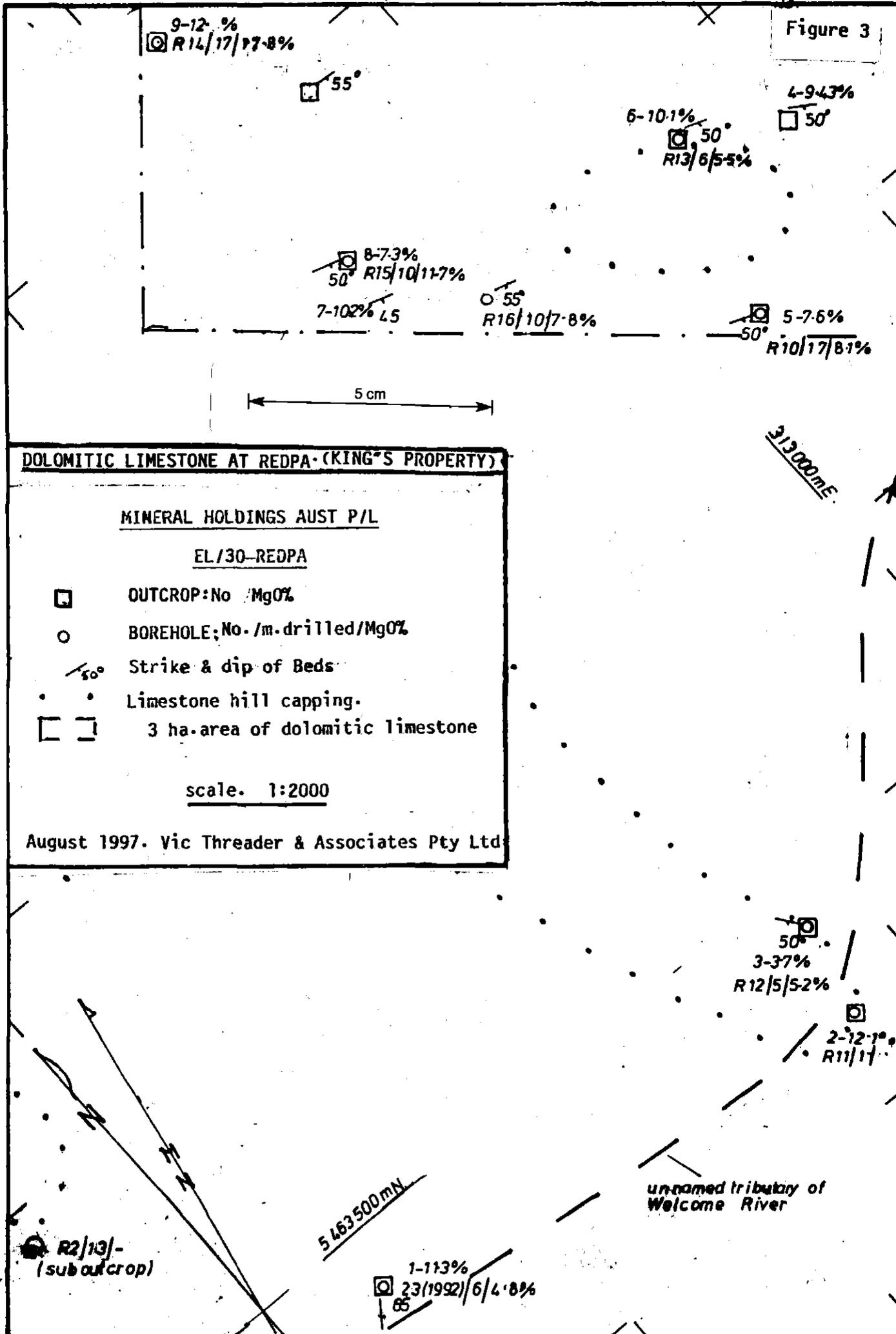


EL31/90-REDPA
 MINERAL HOLDINGS AUST Pty Ltd
 Area of Figure 3
 July 1997 Vic Threader & Associates P/L

5 cm

404010

Figure 3



DOLOMITIC LIMESTONE AT REDPA (KING'S PROPERTY)

MINERAL HOLDINGS AUST P/L

EL/30-REDPA

- OUTCROP: No MgO%
- BOREHOLE: No. /m. drilled/MgO%
- ↘_{50°} Strike & dip of Beds
- Limestone hill capping.
- [] 3 ha. area of dolomitic limestone

scale. 1:2000

August 1997. Vic Threader & Associates Pty Ltd

313000ME

R2/13/-
(sub outcrop)

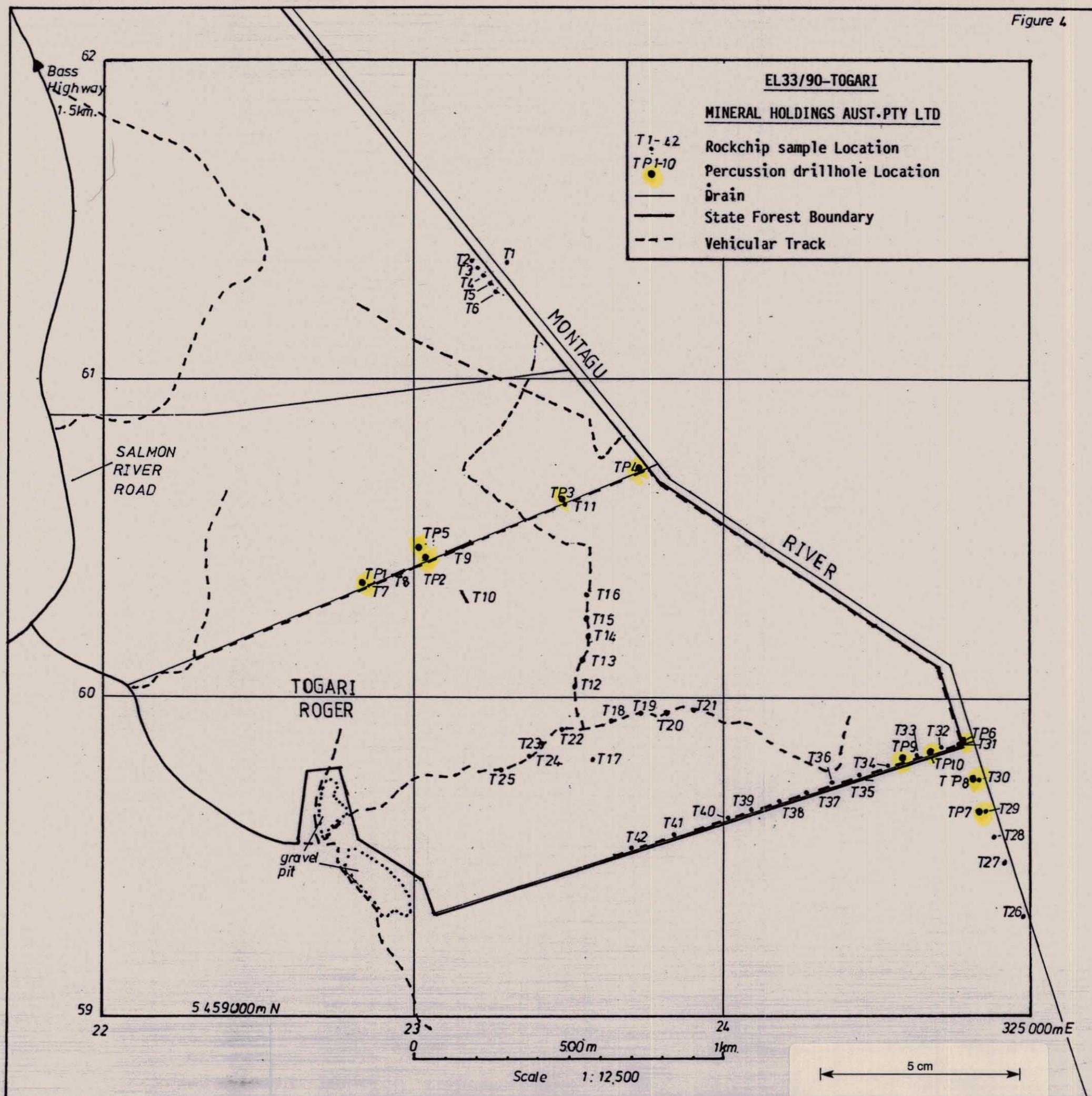
5 463 500 MN

1-113%
23(1992)/6/4.8%
85

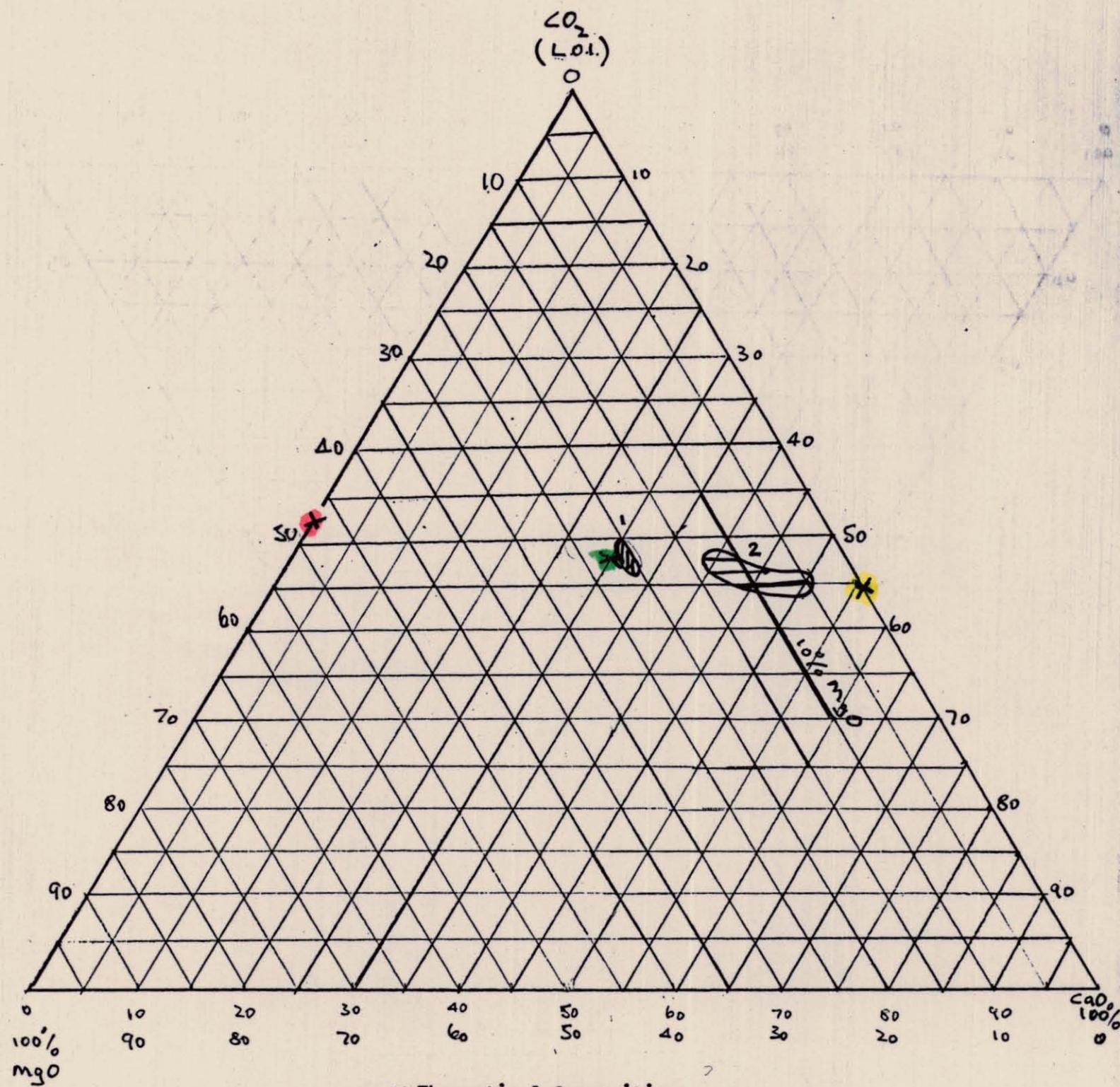
50°
3-37%
R12/5/52%

2-12.1%
R11/1/

unnamed tributary of
Welcome River



404013



APPENDICES

1. Borelogs and Analyses.
2. Laboratory reports (Analabs).
3. AMG References of boreholes.
4. Photographs of dolomitic limestone outcrops.

ANNUAL REPORT 1996-1997

OUTCROP AND BOREHOLE SAMPLES AT EL31 1/90 (REDPA & 33/90 (TOGARI))

Sample No.	Al ₂ O ₃	SiO ₂	TiO ₂	Fe ₂ O ₃	MgO	CaO	LOI	MnO	P ₂ O ₅	K ₂ O	Na ₂ O	S	CaO/MgO	REMARKS
R.O/C 1	0.23	0.9	0.009	0.08	11.26	39.8	44.85	0.007	0.02	0.06	<0.006	<0.005	3.53	Dark grey with light grey bands. Hard.
R.O/C 2	0.14	0.4	<0.005	<0.05	12.13	39.8	45.2	0.003	<0.02	<0.06	<0.006	<0.005	3.28	as above
R.O/C 3	0.21	0.8	0.007	0.07	3.68	47.6	43.58	0.006	<0.02	0.07	<0.006	0.007	12.93	as above
R.O/C 4	0.11	0.7	<0.005	0.05	9.43	41.4	44.51	<0.003	<0.02	<0.06	<0.006	<0.005	4.39	as above
R.O/C 5	0.22	0.5	0.014	0.1	7.6	42.3	44.39	0.004	<0.02	0.07	0.01	<0.005	5.57	as above
R.O/C 6	0.29	1.1	0.009	0.07	10.06	39.6	44.42	<0.003	<0.02	0.1	0.017	<0.005	3.94	as above
R.O/C 7	0.34	1	0.014	0.12	10.2	39	44.47	0.003	<0.02	0.1	<0.006	<0.005	3.94	as above
R.O/C 8	0.06	2.6	0.018	<0.05	7.32	42.3	43.28	<0.003	<0.02	<0.06	<0.006	<0.005	5.78	as above
R.O/C 9	0.11	<0.2	0.007	<0.05	12.85	38.3	45.39	<0.003	<0.02	0.06	0.006	<0.005	2.98	Off white to creamy white, non banded. Hard
R 12 1-5m	1.2	3.5	0.11	0.8	5.24	46.1	41.8	0.02	<0.1	0.13	0.017	<0.01	8.8	L & Dk grey, hard. Cavity: 3.4m. Lost air at 5m.
R 13 1-6m	0.3	1.8	0.02	0.2	5.47	46.6	42.6	<0.01	<0.1	<0.04	0.08	<0.01	8.52	0-2m: grey. 2-5m: light grey. Hard. Lost 4 air at 5m
R 14B 1-5m	<0.1	<0.53	0.02	<0.08	11.53	39.8	44.5	<0.01	<0.1	<0.04	0.017	<0.01	3.45	White, hard to 5m. Dirty white at water table
R 14B 5-10m	0.3	<0.53	0.02	0.1	19.4	33.2	45.7	<0.01	<0.1	<0.04	0.028	<0.01	1.71	White, hard. All samples wet to end of hole.
R 14B 10-15m	0.2	<0.53	0.02	0.1	19.37	31.6	45.8	<0.01	<0.1	<0.04	0.027	<0.01	1.63	
R14B 15-20m	0.1	<0.53	0.02	<0.08	20.79	31.9	45.8	<0.01	<0.1	<0.04	0.29	<0.01	1.53	
R 15 1-5m	0.4	1.1	0.03	0.2	10.95	39.7	43.7	0.09	<0.1	0.07	0.13	<0.01	3.63	Hard, dark grey.
R15 5-10m	0.2	0.9	0.02	0.1	12.53	40.3	44.3	<0.01	<0.1	<0.4	0.013	<0.01	3.22	As above. Struck water at 9m. Lost air at 10m.
R16 1-5m	0.2	0.7	0.01	0.1	6.02	45.9	43.4	<0.01	<0.1	<0.04	0.012	<0.01	7.62	Dark grey, soft.
R16 5-10m	0.1	<0.53	0.02	<0.08	9.64	43.3	44.1	<0.01	<0.1	<0.04	0.012	<0.01	4.49	Light grey, hard. Wet at 9m. Lost air at 10m.
TP6 2-5m	0.1	2.5	0.04	0.5	19.53	30.85	45.89	<0.01	<0.1	<0.04	0.06	0.02	1.58	Hard, Grey. Water level: 0.5m
TP6 5-10	0.1	0.6	0.01	0.2	19.76	32.48	46.75	<0.01	<0.1	<0.04	0.11	<0.01	1.64	
TP6 10-15m	0.2	1.2	0.02	0.4	19.71	31.75	46.52	<0.01	<0.1	<0.04	0.1	0.17	1.61	
TP6 15-20m	1	3.8	0.09	0.8	19.35	29.93	44.64	<0.01	<0.1	<0.04	0.08	0.19	1.55	
TP7 2-5m	<0.1	1.1	0.01	0.2	20.51	31.66	46.59	<0.01	<0.1	<0.04	0.08	<0.01	1.54	Hard, grey. Water level: 0.5m.
TP7 5-10m	0.2	3.6	0.04	0.5	19.67	30.31	45.36	<0.01	<0.1	<0.04	0.09	0.03	1.54	
TP7 10-15m	0.2	2.5	0.02	0.4	19.69	31.31	45.75	<0.01	<0.1	<0.04	0.07	<0.01	1.59	
TP7 15-20m	0.2	4.4	0.03	0.5	19.18	20.8	45.22	<0.01	<0.1	<0.04	0.11	<0.01	1.08	
TP8 1-6m	0.2	5	0.05	0.3	19.22	30.39	44.69	<0.01	<0.1	<0.04	0.11	<0.01	1.58	Hard, grey. Water level: 1m.
TP8 6-12m.	0.5	4.7	0.05	1.9	19.06	29.46	44.38	<0.01	<0.1	<0.04	0.1	0.07	1.55	As above. Mud filled cavity at 12m.
TP9 2-5m.	0.1	<0.53	0.01	0.2	20.52	31.64	46.82	<0.01	<0.1	<0.04	0.08	<0.01	1.54	Hard, grey.
TP9 5-10m.	<0.1	0.6	<0.008	0.1	19.95	32.45	46.65	<0.01	<0.1	<0.04	0.09	<0.01	1.63	As above
TP9 10-15m	0.1	2.5	<0.008	0.2	18.97	32.05	45.72	<0.01	<0.1	<0.04	0.09	<0.01	1.69	Hard, Dark grey. Water struck at 15m.
TP9 15-20m.	<0.1	<0.53	<0.008	0.1	19.52	32.93	47.04	<0.01	<0.1	0.09	0.09	<0.01	1.69	As above.
TP10 2-5m.	<0.1	0.9	<0.008	0.1	19.59	32.51	46.52	<0.01	<0.1	<0.04	0.1	<0.01	1.66	Hard, grey.
TP10 5-10m.	0.2	0.6	0.01	0.2	20.34	31.99	46.72	<0.01	<0.1	<0.04	0.06	<0.01	1.57	As above.
TP10 10-15m	<0.1	<0.53	<0.008	0.1	20.31	31.66	46.67	<0.01	<0.1	<0.04	0.07	<0.01	1.59	As above.
TP10 15-20m	<0.1	<0.53	<0.008	0.1	20.76	31.46	46.87	<0.01	<0.1	<0.04	0.07	<0.01	1.52	As above.

404018 ANALYTICAL DATA

SAMPLE PREFIX: MIN206.60.13153 REPORT No. 29/05/97 CLIENT ORDER NO. VIC THREADER PAGE 1 OF 2

SAMPLE No.	S	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	
METHOD	OM613	O1204	O1204	O1204	O1204	O1204	O1204	O1204	O1204	
1	R MH1	<0.005	0.23	0.9	0.009	0.08	0.007	39.800	0.06	11.260
2	R MH2	<0.005	0.14	0.4	<0.005	<0.05	0.003	39.800	<0.06	12.130
3	R MH3	0.007	0.21	0.8	0.007	0.07	0.006	47.600	0.07	3.680
4	R MH4	<0.005	0.11	0.7	<0.005	0.05	<0.003	41.400	<0.06	9.430
5	R MH5	<0.005	0.22	0.5	0.014	0.10	0.004	42.300	0.07	7.600
6	R MH6	<0.005	0.29	1.1	0.009	0.07	<0.003	39.600	0.10	10.060
7	R MH7	<0.005	0.34	1.0	0.014	0.12	0.003	39.000	0.10	10.200
8	R MH8	<0.005	0.06	2.6	0.018	<0.05	<0.003	42.300	<0.06	7.320
9	R MH9	<0.005	0.11	<0.2	0.007	<0.05	<0.003	38.300	<0.06	12.850
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	0.005	0.05	0.2	0.005	0.05	0.003	0.006	0.06	0.005
25	UNITS	%	%	%	%	%	%	%	%	%

Results in ppm unless otherwise specified
 IS = inclement sample
 SNR = sample not received

AUTHORISED OFFICER: *[Signature]*

AMG CO ORDINATES OF BOREHOLE DRILLED IN EL31/90 & EL33/90 in 1997

EL No.	BH No.	metres E	metres N
EL 31/90	R10	313 030	5 463 690
	R11	312 850	5 462 460
	R12	312 860	5 462 480
	R13	313 050	5 463 770
	R14	312 920	5 463 950
	R15	312 920	5 463 820
	R16	312 950	5 463 770
EL33/90	TP6	324 800	5 460 850
	TP7	324 850	5 460 640
	TP8	324 840	5 460 730
	TP9	324 680	5 460 780
	TP10	324 680	5 460 800

PHOTOGRAPHS OF OUTCROPPING DOLOMITIC LIMESTONE-APRIL 1997



Outcrop No.2 showing weathering of soft limestone



Outcrop No.4 showing banding.