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ANNUAL REPORT 1989-90

E.L.24/88 CHAMPION ROAD

by

Vic Threader

for

Mineral Holdings Australia Pty. Ltd.

90-3194

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October 1990

Vic Threader and Associates Pty. Ltd.  
Kingston Beach.

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### Introduction

The licence area lies immediately east of Arthur River and is traversed by Champion Road which joins Farquhars Road in the south and Bird Road in the north.

Vegetation is wet eucalypt forest containing mainly rain forest species and over-mature eucalypts with dense horizontal scrub in the gullies. There is evidence of previous eucalypt logging but tracks are too overgrown to provide useful access.

The commodity being sought is silica flour i.e. a fine silica sand containing >50% of  $-75\mu\text{m}$  material. Silica flour of high purity is required for production of optical glass, optical fibre and fused silica.

### Geology

The area lies within the Arthur Lineament. Rocks within this belt are referred to as the Arthur Metamorphic belt and consist of Precambrian schist, amphibolite and carbonates. Schist is the bedrock of the licence area but magnesite and dolomite occur at Cann Creek 3km to the northwest.

Silica flour is associated with magnesite/dolomite occurrences in the Arthur Lineament at Corinna 60km to the southwest, where it is considered to be of eluvial origin after carbonate. Silica flour is not known to be associated with the extensive magnesite deposits of the Arthur and Lyons Rivers about 10km to the south and southwest. The Champion Road silica flour, by analogy with Corinna, is thought to have originated from the Cann Creek carbonate deposits but has been dispersed by weathering agents and occurs now only as isolated remnants over several kilometres to the southwest.

005

Grain Size Distribution

Sizing Analyses given in the Annual Report (1988-89) for Cann Creek and Champion Road: TCR89-3030 and the Hooker Resource report on EL23/88: TCR89-2952 are summarised in the following tables:

<u>Cann Creek (area 1)</u>	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8
+2.36mm in sample	40.44	51.74	30.62	53.01	70.75	23.11	52.26	47.31
-75µm in sample	30.68	15.16	31.90	28.26	14.14	54.68	19.23	17.67
-75µm of the -2.36 mm fraction	51.44	31.41	46.00	60.14	47.69	71.11	40.28	33.53
-38µm of the -2.36 mm fraction	39.3	22.5	31.5	42.6	35.4	53.5	30.8	25.4
	CC9	CC10	CC11	CC12	CC13	CC14		
+2.36mm in sample	53.59	38.89	41.63	32.67	53.12	18.12		
-75µm in sample	17.86	21.88	32.21	37.00	20.95	39.23		
-75µm of the -2.36 mm fraction	38.48	35.80	55.18	54.95	44.59	47.85		
-38µm of the -2.36 mm fraction	30.6	26.3	37.5	34.9	36.4	32.6		
<u>E.L.23/88 (area 2)</u>	SF3	SF5	SF8					
+2.36mm in sample	64	35	24					
-75µm in sample	16.2	37.9	38					
-75µm of the -2.36 mm fraction	45	58	50					
<u>Champion Road (area 3)</u>	CR1	CR2	CR3	CR4	CR5	CR6	CR7	
+2.36µm in sample	10.38	29.18	5.98	21.78	14.89	6.36	5.49	
-75µm in sample	53.35	34.56	61.53	44.60	49.20	75.45	78.44	
-75µm in the -2.36 mm fraction	59.23	48.73	65.44	57.01	57.80	80.57	82.99	
-38µm in the -2.36 mm fraction	38.5	26.4	33.3	31.0	34.5	55.3	55.0	

A comparison of these gradings is given below:

	<u>Area 1</u>	<u>Area 2</u>	<u>Area 3</u>
§ +2.36mm in samples	43.4	41	19.6
* -75µm in -2.36mm fraction	47.0	51	64.6 (57.7)**
-38µm in -2.36mm fraction	34.2	-	39.2 (32.8)**

§ The oversize material (+2.36mm) consists of composite (cemented) particles of silica flour but in the case of Area 1 (Cann Creek) there is a component of rounded quartz pebbles which, in part, accounts for the higher content of oversize particles in that area.

\* The sizing criterion applied by Amatek in assessing silica flour is that 50% should pass the 75µm screen.

\*\* These bracketed figures in area 3 exclude two of the test results (area 3.1) which have a high yield of silica flour and which occur at a lower elevation (20m lower) than the neighbouring sampled area (3.11) and is interpreted as a reworked deposit from the higher ground. The unbracketed figures therefore more truly reflect the trend in yield of silica flour away from the source area.

The three surface samples taken by Hooker Resources in E.L.23/88 are insufficient evidence to indicate any trend. The area is now held by Mineral Holdings Australia Pty. Ltd. as E.L.57/89 and is targeted for assessment when an excavator is on site for bulk sampling the resource area.

The pattern of size grading suggests deposition by a southwesterly flowing stream with some redistribution to account for the range in elevation of the various occurrences.

The two Champion Road deposits (area 3) are at elevations of 185-190m and 150-170m, the Hooker sampling area is 250m (area 2), Cann Creek deposit (area 1) is 225-230m and the present elevation of the Cann Creek magnesite is 210m; presumably the original level was much higher, probably above 300m. Quartz gravel deposits not containing silica flour which occur along Bird Road in the northwest of Figure 2 are at elevations of 200m, 220m and 320m (A.S.L.) and are suggestive of an erosion surface of 400m+ in the Cann Creek magnesite area.

#### Current Exploration

Activity on this tenement during the year has been confined to:

- 1) foot traverses to identify areas for further excavator pit sampling,
- 2) further sampling and testing of the resource by prospective clients and negotiations to secure contracts both in Australia and overseas.

- 1) Traverses were walked from Champion Road on to interfluvial spurs and hilltops to search for remnants of alluvial deposits. Fourteen test pits were dug to 4-500mm using hand tools and eight of these, thought to contain alluvial material, were sampled.

Soils are usually around 150mm and overlain by 150mm of peaty leaf mould. Pits of 400-500mm depth in these conditions are just deep enough to determine the presence of alluvial material but not to determine whether a silica flour resource is present. As stated, the objective was to identify additional areas for excavator pit sampling and these are indicated on Figure 2.

It is proposed to extend the sampling of areas 3.1 and 3.11 to define these resources and to test the prospective areas marked on Figure 2 of this report. This would be done when the earth-moving machinery is in the area for the bulk sampling programme.

2) In connection with attempting to establish a market for the product either in Australia or overseas, further sampling has been undertaken and samples despatched to prospective clients:

Sibelco Belgium

Quarzwerte Germany

P.P.G. Industries U.S.A.

M.K. Silica Tasmania has also taken samples and run chemical and sizing analyses:

Comparative particle size distribution and chemical analyses of Champion Road and Corinna silica flour are presented in the following tables. The Champion Road samples were collected from the 3.1 area road cutting and the Corinna material represents run of mine as delivered to the silica plant at Minna Road. Both were collected by M.K. Silica Company management.

This evidence indicates that Champion Road has  $1\frac{1}{2}$  times higher yield of  $-75\mu\text{m}$  and  $2\frac{3}{4}$  times higher yield of  $-38\mu\text{m}$  sand than Corinna but that Corinna is the higher purity material.

A broader sampling base is necessary to establish the true relationship.

1. Particle Size Distribution (see also Figure 5)

	<u>Champion Road</u>			<u>Corinna</u>		
	<u>Mass%</u>	<u>Cum. Mass %</u>	<u>Fe<sub>2</sub>O<sub>3</sub> PPM</u>	<u>Mass %</u>	<u>Cum. Mass %</u>	<u>Fe<sub>2</sub>O<sub>3</sub></u>
+425 $\mu\text{m}$	12.6	12.6		10.5	10.5	
300	2.4	15.0		1.4	11.9	
250	1.3	16.3		1.2	13.1	
212	0.9	17.2	35	1.0	14.1	15
150	2.9	20.1		5.2	19.3	
106	4.3	24.4		12.2	31.5	
75	7.4	31.8		23.2	54.7	
(-75)	(68.2)		—	(45.3)		—
45	21.8	53.6	21	28.2	82.9	25
-45	46.4	100		17.1	100	

## 2. Chemical Analysis

	<u>-250<math>\mu</math>m+75<math>\mu</math>m</u>		<u>-75<math>\mu</math>m</u>	
	<u>Champion Road</u>	<u>Corinna</u>	<u>Champion Road</u>	<u>Corinna</u>
Fe <sub>2</sub> O <sub>3</sub>	35	15	21	30
Al <sub>2</sub> O <sub>3</sub>	237	22	346	28
TiO <sub>2</sub>	101	6	72	8
CaO	870	180	260	180
MgO	870	85	342	85
Na <sub>2</sub> O	22	8	28	5
Mn	0.5	0.2	0.4	0.4
Cu	0.2	0.2	0.4	0.3
Co	0.2	<0.1	0.8	0.1
Ni	0.2	<0.1	0.5	0.1

Sizing analyses of the eight shallow pit samples collected during the current programme are listed in the following table and the frequency curves are plotted in Figure 6.

All samples had a high content of angular quartz with a wide particle size range. Samples 3 and 7 had a high clay content and are thought to represent weathered bedrock.

The frequency curves indicate poor sorting characteristics, and suggest a local origin.

One of the distributions (no.6) was chosen as representative and the -1180 $\mu$ m fraction plotted (6a on figures 5 and 6). The resulting plot more nearly resembles the distribution of silica flour (Champion Road and Corinna in figure 5).

On balance the samples, excluding nos 3 and 7, are thought to be an alluvial cover on bedrock and the inconclusive evidence of the sizing analyses is probably due to the shallowness of the test pits.

008

**ANALABS**

A Division of Incharge Inspection and Testing Services Australia Pty Ltd.

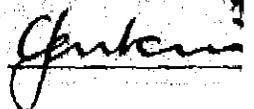
429009

**ANALYTICAL DATA**

SAMPLE PREFIX		REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE				
		999.43.08.07469	24/10/90		1 OF 3				
TUBE No.	SAMPLE No.	g	%wt	Elem mass %					
1	Ch.R.1 +2360	231.56	38.6	38.6					
2	Ch.R.1 +1180	96.45	16.1	54.7					
3	Ch.R.1 +600	41.47	6.9	61.6					
4	Ch.R.1 +300	27.36	4.6	662					
5	Ch.R.1 +150	23.37	3.9	70.1					
6	Ch.R.1 +75	22.46	3.7	73.8					
7	Ch.R.1 +38	41.64	6.9	80.7					
8	Ch.R.1 -38	115.74	19.3	100					
9	Ch.R.2 +2360	263.75	56.0	56.0					
10	Ch.R.2 +1180	72.10	15.3	71.3					
11	Ch.R.2 +600	23.02	4.9	76.2					
12	Ch.R.2 +300	10.96	2.3	78.6					
13	Ch.R.2 +150	9.74	2.1	80.6					
14	Ch.R.2 +75	11.74	2.5	83.1					
15	Ch.R.2 +38	21.41	4.5	87.6					
16	Ch.R.2 -38	57.97	12.4	100					
17	Ch.R.3 +2360	31.94	7.6	7.6					
18	Ch.R.3 +1800	27.07	6.4	14.0					
19	Ch.R.3 +600	22.89	5.4	19.4					
20	Ch.R.3 +300	32.12	7.6	27.0					
21	Ch.R.3 +150	64.12	15.2	42.2					
22	Ch.R.3 +75	46.95	11.1	53.3					
23	Ch.R.3 +38	37.80	9.0	62.3					
24	Ch.R.3 -38	158.24	37.7	100					
25	Ch.R.4 +2360	270.25	41.4	41.4					

Results in ppm unless otherwise specified  
 Y = element present; but concentration too low to measure  
 X = element concentration is below detection limit  
 - = element not determined

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003

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## ANALYTICAL DATA

SAMPLE PREFIX      REPORT NUMBER      REPORT DATE      CLIENT ORDER No      PAGE

999.43.08.07469

24/10/90

2 OF 3

TUBE No.	SAMPLE No.	g	%wt	Cum. mass %					
1	Ch.R.4 +1180	95.36	14.6	56.0					
2	Ch.R.4 +600	20.42	3.1	59.1					
3	Ch.R.4 +300	18.93	2.9	62.0					
4	Ch.R.4 +150	28.60	4.4	66.4					
5	Ch.R.4 +75	26.35	4.0	70.4					
6	Ch.R.4 +38	31.82	4.9	75.3					
7	Ch.R.4 -38	161.49	24.7	100					
8	Ch.R.5 +2360	170.81	34.6	34.6					
9	Ch.R.5 +1180	53.80	10.9	45.5					
10	Ch.R.5 +600	33.71	6.8	52.3					
11	Ch.R.5 +300	27.34	5.5	57.8					
12	Ch.R.5 +150	28.25	5.7	63.5					
13	Ch.R.5 +75	32.19	6.5	70.0					
14	Ch.R.5 +38	60.64	12.3	82.3					
15	Ch.R.5 -38	86.38	17.7	100					
16	Ch.R.6 +2360	295.98	48.7	48.7					
17	Ch.R.6 +1180	67.49	11.1	59.8	Mass %	Cum. mass %			
18	Ch.R.6 +600	21.71	3.6	63.4	8.9	8.9			
19	Ch.R.6 +300	18.61	3.1	66.5	2.7	16.6			
20	Ch.R.6 +150	19.05	3.1	69.6	2.7	24.3			
21	Ch.R.6 +75	17.24	2.8	72.4	7.0	31.3			
22	Ch.R.6 +38	25.76	4.2	76.6	10.4	41.7			
23	Ch.R.6 -38	141.11	23.4	100	58.2	100			
24	Ch.R.7 +2360	74.19	14.4	14.4					
25	Ch.R.7 +1180	24.07	4.7	19.1					

Results in ppm unless otherwise specified.  
 T = element present; but concentration too low to measure  
 X = element concentration is below detection limit  
 - = element not determined

AUTHORISED OFFICER *Genkin*

# ANALABS

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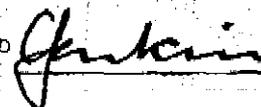
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## ANALYTICAL DATA

SAMPLE PREFIX		REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
		999.43.08.07469	24/10/90		3 OF 3
TUBE No.	SAMPLE No.	g	%wt	Chem. mass %	
1	Ch.R.7 +600	17.92	3.5	22.6	
2	Ch.R.7 +300	24.18	4.7	27.3	
3	Ch.R.7 +150	41.44	8.0	35.3	
4	Ch.R.7 +75	33.56	6.5	41.8	
5	Ch.R.7 +38	34.62	6.7	48.3	
6	Ch.R.7 -38	264.90	51.5	100	
7	Ch.R.8 +2360	452.61	61.5	61.5	
8	Ch.R.8 +1180	59.58	8.1	69.6	
9	Ch.R.8 +600	10.23	1.4	71.0	
10	Ch.R.8 +300	9.78	1.3	72.3	
11	Ch.R.8 +150	12.40	1.7	74.0	
12	Ch.R.8 +75	14.66	2.0	76.0	
13	Ch.R.8 +38	27.89	3.8	79.8	
14	Ch.R.8 -38	148.25	20.2	100	
15					
16					
17					
18					
19					
20					
21					
22					
23	DETECTION	0.01	0.1		
24	UNITS	gms	%		
25	METHOD	199	199		

Results in ppm unless otherwise specified  
 T = element present; but concentration too low to measure  
 X = element concentration is below detection limit  
 - = element not determined

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011

### Bulk Sampling

Requests have been received for 700t and 150t bulk samples from potential clients. It is proposed to combine these into one sample pit measuring 17m square at surface decreasing to 9m at a depth of 3m, a working area of 3m width, soil stockpile and heaped vegetation would result in an affected area of 40m square. Drainage of the pit would be directed westerly into a gully and access on to Champion Road would be from the south of the pit (figures 3 and 4).

A sampling area was inspected by Forestry Commission and Division of Mines officials on 19th September and an area of 25m x 25m marked out on area 3.11. The area to meet the two bulk sample requirements is now 29m x 29m and it is intended to bulk sample areas 3.1 and 3.11.

The sampling proposal as set out in figure 3 is applicable with minor modifications to both areas.

### Reserves

Areas 3.1 and <sup>3.11</sup> 11 cover 17-18000m<sup>2</sup> but are not yet clearly defined. The thickness of the deposit ranges from 2m to 7m and the in situ reserve is estimated to be 150-200 000t.

The effect of Champion Road, which passes through this area, on decreasing the recovery of the resource has yet to be assessed.

It is evident that the resource consists of several remnants of an alluvial deposit belonging to a previous erosion cycle which has been in part reworked. The vertical section (figure 5) indicates that the known areas (3.1 and 3.11) are pockets of detrital sand which have been preserved in depressions on a bedrock surface. It is unlikely that they would have been discovered if they had not been exposed in roadworks. Presumably the greater part of the original deposit has been eroded and dispersed. More work is required to locate other remnants in order to prove an economic reserve.

Proposed Exploration

1. Bulk sampling and further test pitting as outlined in the text of this report.
2. Continuation of search for more silica flour residuals: 1) Some promising areas adjacent to Champion Road could be test pitted by excavator following the bulk sampling which would allow economies with regard to establishment fee. 2) Other prospective areas should be drilled either with the "Wacka" drill or the Stihl hand-held power auger to reduce the cost and environmental damage involved in accessing relatively inaccessible areas by excavator or bulldozer.

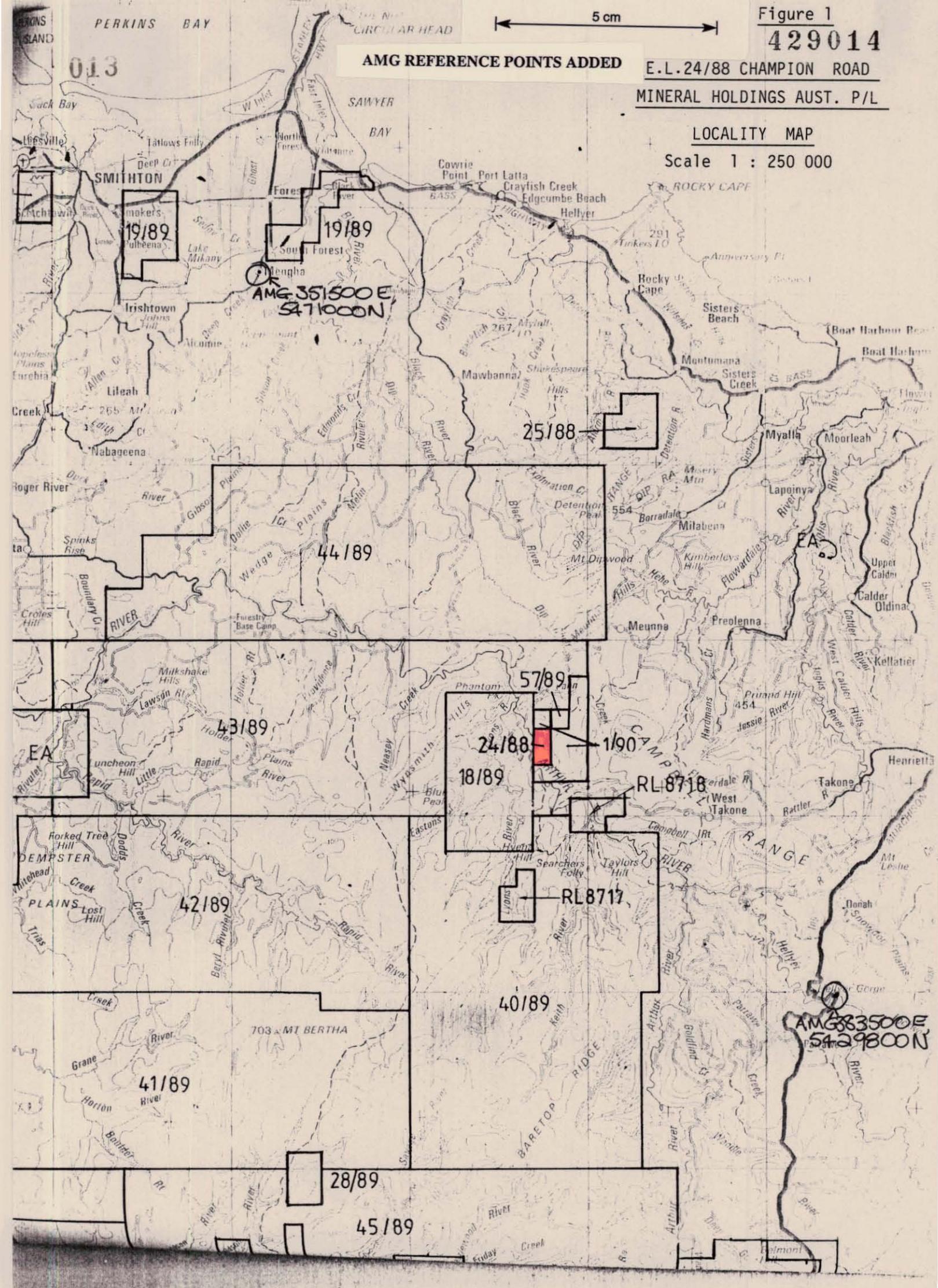


Figure 1  
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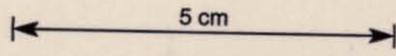
AMG REFERENCE POINTS ADDED

E.L.24/88 CHAMPION ROAD  
MINERAL HOLDINGS AUST. P/L

LOCALITY MAP

Scale 1 : 250 000

013



AMG 351500E  
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25/88

44/89

57/89

43/89

24/88

1/90

18/89

RL8718

42/89

RL8717

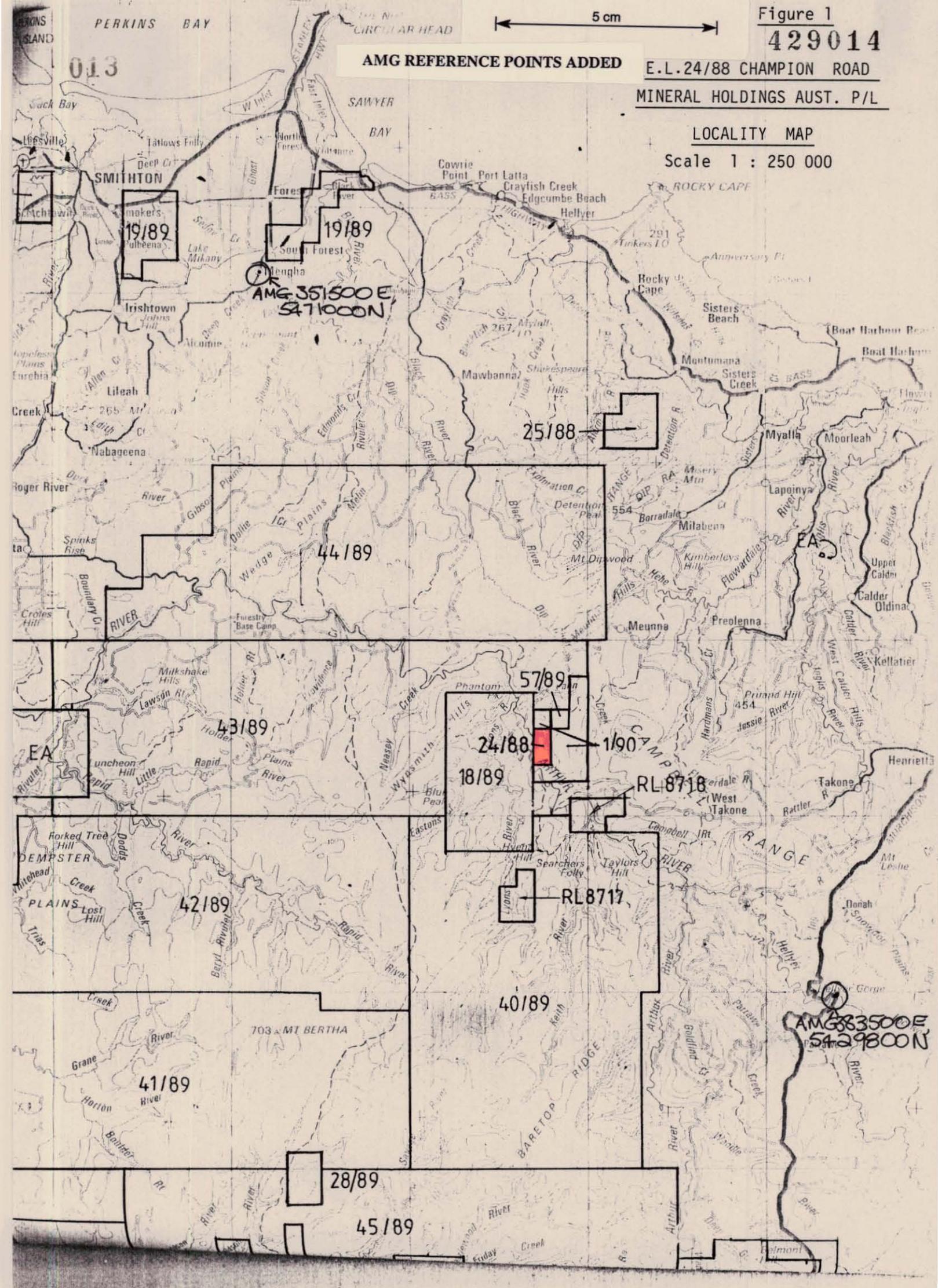
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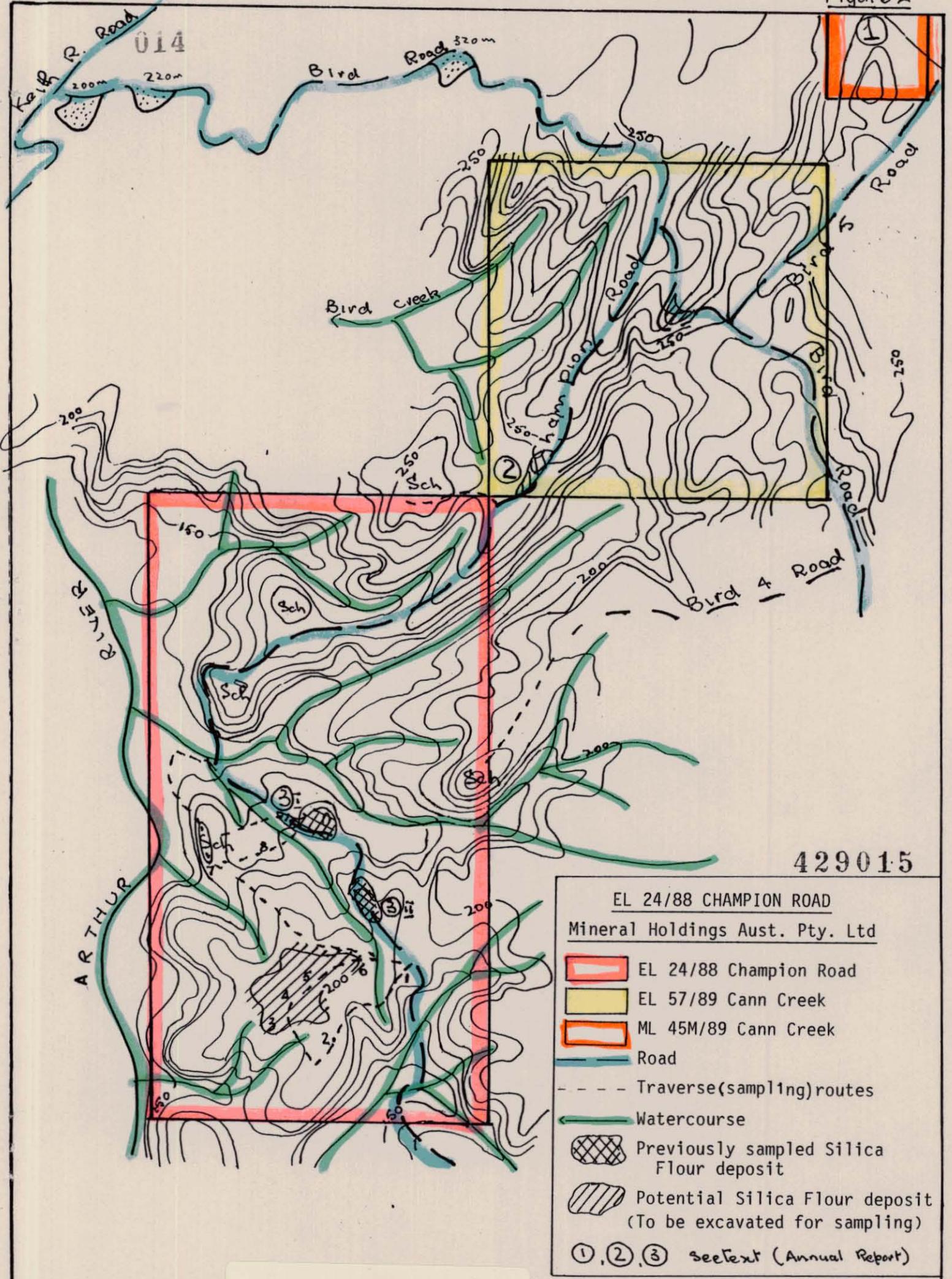
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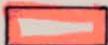
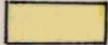
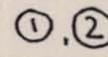




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EL 24/88 CHAMPION ROAD

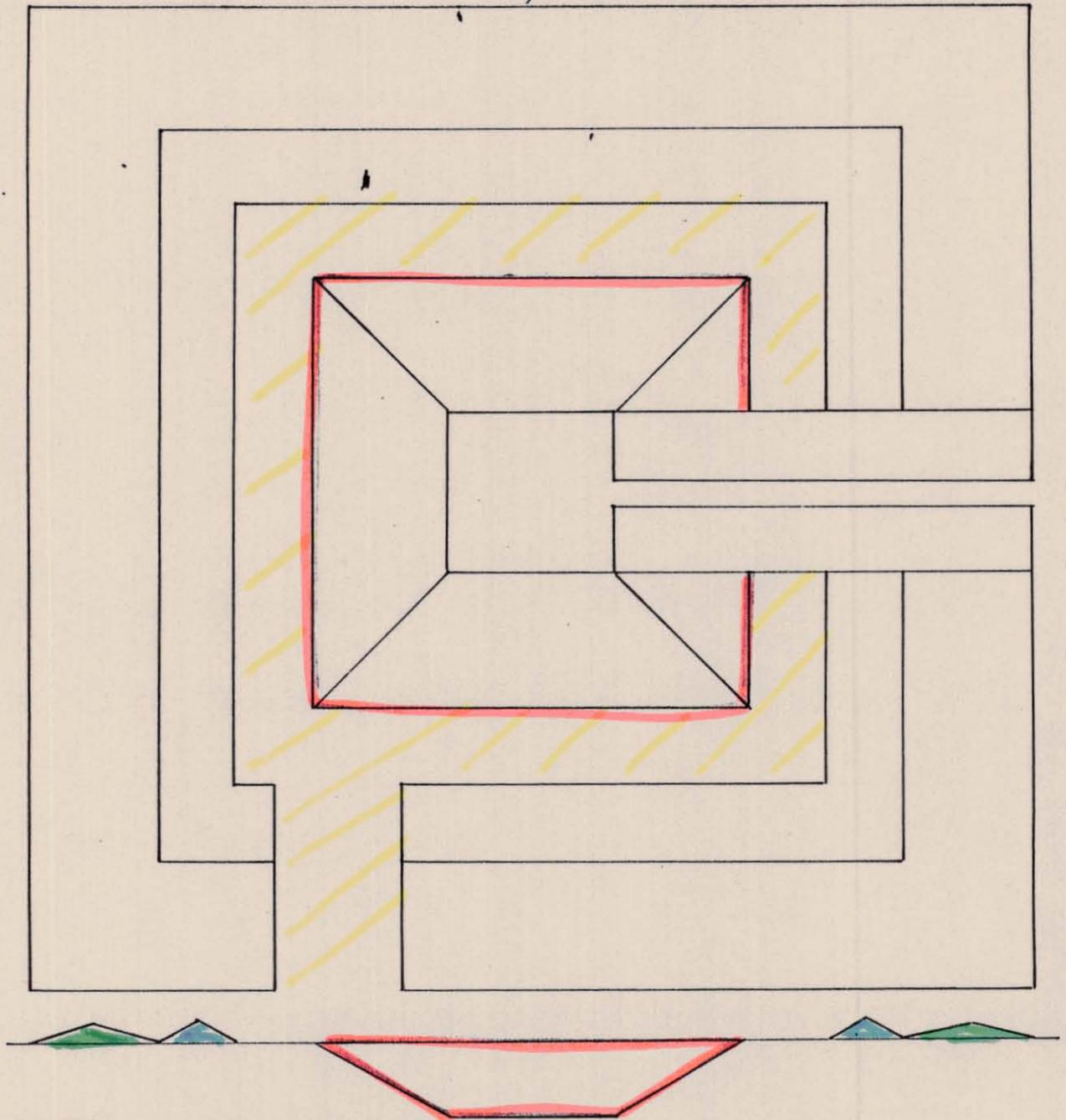
Mineral Holdings Aust. Pty. Ltd

-  EL 24/88 Champion Road
-  EL 57/89 Cann Creek
-  ML 45M/89 Cann Creek
-  Road
-  Watercourse
-  Previously sampled Silica Flour deposit
-  Potential Silica Flour deposit (To be excavated for sampling)
-  ①, ②, ③ see text (Annual Report)

BULK SAMPLE PROPOSAL - EL 24/88 CHAMPION ROAD

MINERAL HOLDINGS AUSTRALIA, PTY. LTD.

N



-  Bulk Sample Area (17m x 17m)
-  Access and working area (3m)
-  Topsoil stockpile (3m)
-  Cleared vegetation (10m)
-  Drain

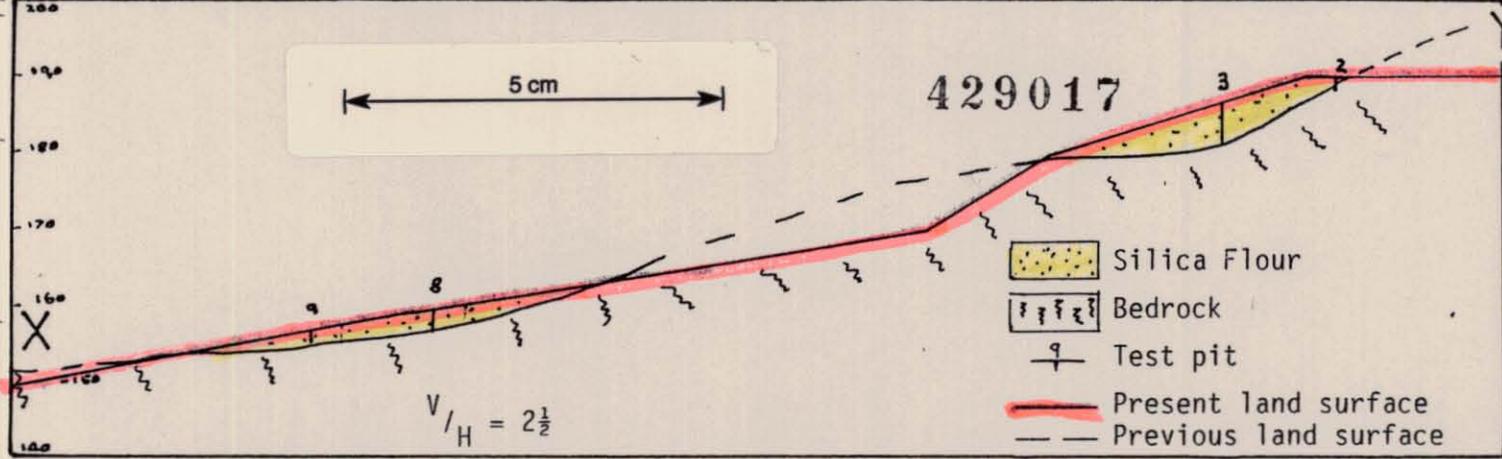
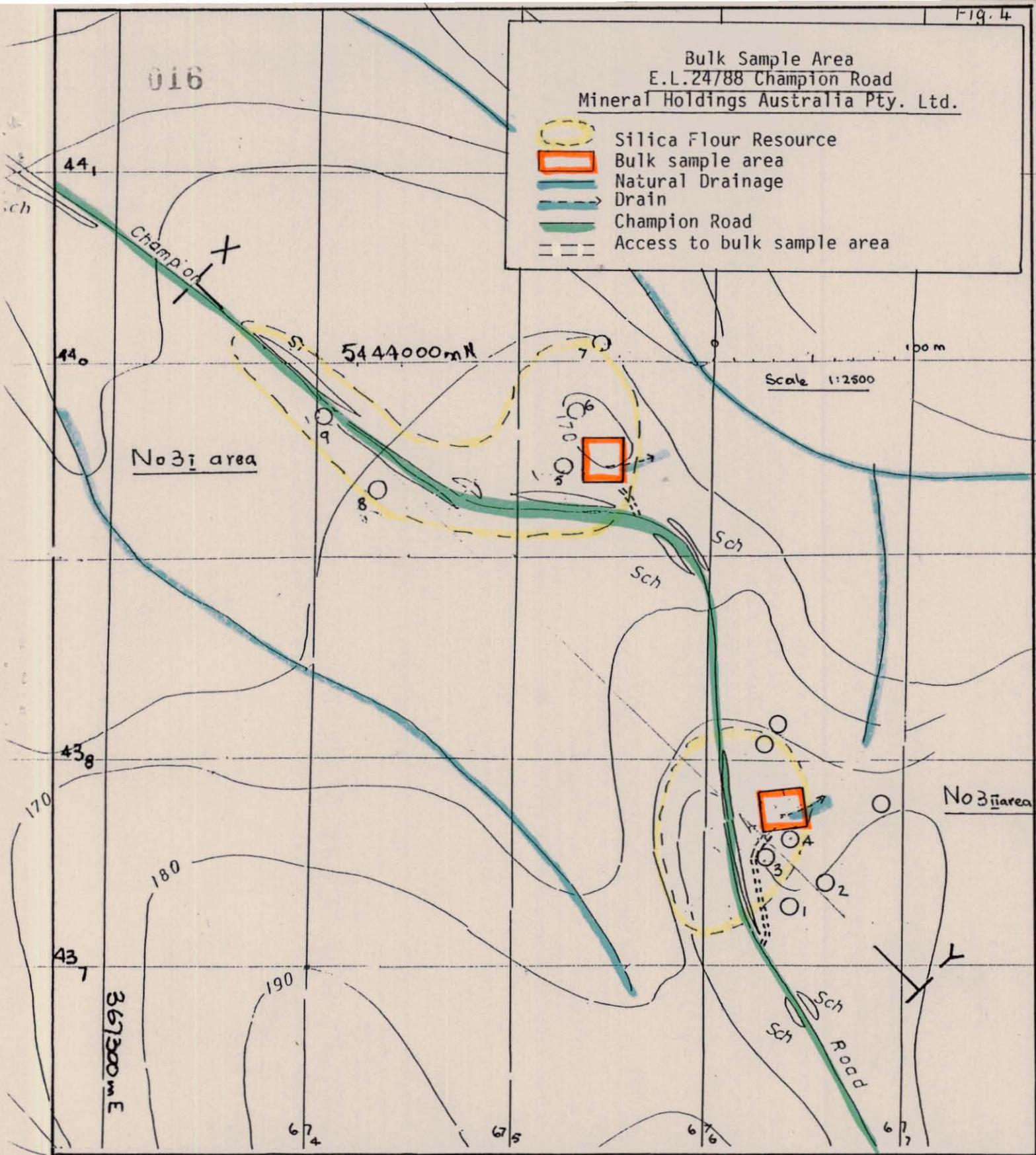
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0 5 10 m  
Scale - 1 : 250

5 cm

Bulk Sample Area  
E.L.24788 Champion Road  
Mineral Holdings Australia Pty. Ltd.

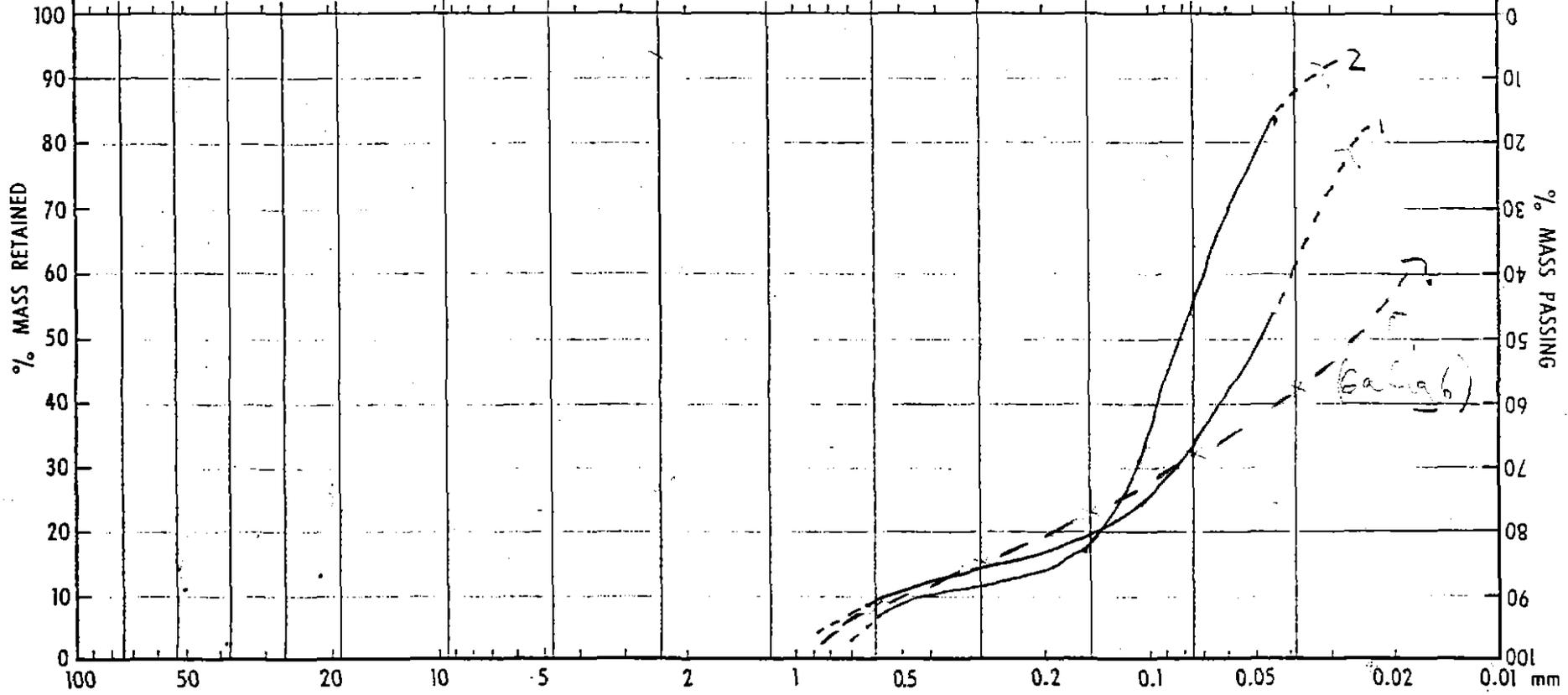
-  Silica Flour Resource
-  Bulk sample area
-  Natural Drainage
-  Drain
-  Champion Road
-  Access to bulk sample area



017

M 1324

										SEDIMENT ANALYSIS PARAMETERS				
										M =	V =	Sk =	K =	
COARSE AGGREGATE					FINE AGGREGATE					A77-1957 (concrete)				
COARSE AGGREGATE			FINE AGGREGATE			BINDER			N.A.A.S.R.A. (road materials)					
COBBLE		PEBBLE		GRANULE	S A N D					SILT				
					V. COARSE	COARSE	MEDIUM	FINE	V. FINE					
-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6 φ		
75	53	37.5	26.5	19	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.075	0.038	Aust. Stand. Sieve



653 654 655  
 (0.075) (0.15) (0.3)

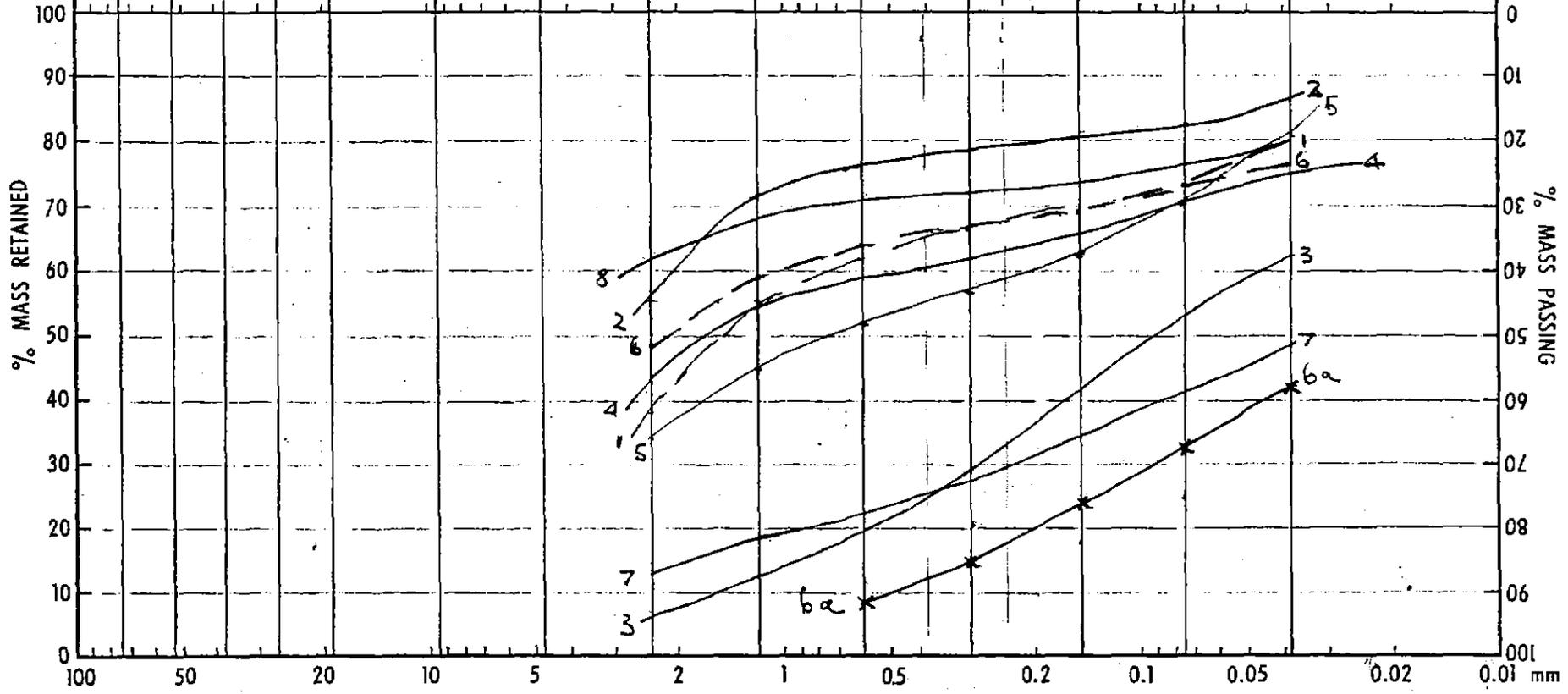
Sizing analysis by M & Siler No1 Champion Road  
 2 Corinna

429018

Figure 5

M 1324

REFERENCE	LAB. SERIAL No.	LOCALITY				SEDIMENT ANALYSIS PARAMETERS								
ANALYSIS	999-43-08-07469	EL24/88	Champion Road (Oct. 1990)			M =	V =	Sk =	K =					
COARSE AGGREGATE			FINE AGGREGATE				A77-1957 (concrete)							
COARSE AGGREGATE			FINE AGGREGATE		BINDER		N.A.A.S.R.A. (road materials)							
COBBLE	PEBBLE		GRANULE	SAND					SILT					
				V. COARSE	COARSE	MEDIUM	FINE	V. FINE						
-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	Ø	
75	53	37.5	26.5	19	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.075	0.038	Aust. Stand. Sieve



CS3 CS4 CS5  
(.022) (.04) (.075)

018

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Figure 6