485001 99-4334

RETENTION LICENCES 8715 & 8723

FOSTERS MARSHES

GREAT NORTHERN PLAINS

REPORT ON EXPLORATION

APRIL 1997 TO MAY 1999

99-4334

ANNUAL REPORT-FOSTERS MARSHES
GREAT NTH PLAINS RL'S 8715&8723
MINERAL HOLDINGS-D DUNCAN

for

Mineral Holdings Australia Pty Ltd
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AMG REFERENCE POINTS ADDED

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27th May 1999

485002

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RLs 8715 & 8723- Fosters Marshes, Great Northern Plains, NE Tasmania

1.0 Introduction

RLs 8715 and 8723 were issued to Mineral Holdings Australia Pty Ltd on 30th May 1988 covering 6 sq km and 7 sq km respectively of the Fosters Marshes area of the Great Northern Plains (Plan 1). Since that time, the licences have been renewed on several occasions and are now the subject of current applications for extension.

The licences cover part of the present floodplain of the Ringarooma River and the underlying, tin-bearing, Tertiary sands and gravels of the former palaeochannel of the ancestral river. As such, they are an integral part of the Ringarooma Tin Project of Mineral Holdings which includes the adjacent and largely offshore licences EL19/93 and T-2-MEL covering the potential alluvial tin resources in Ringarooma Bay (Plan 2).

Renewal is required to allow consolidation of the tin resources within one project so that exploration can proceed in a coherent manner with subsequent economies of scale and the area is extensive enough to attract investment in the form of joint venture partners.

2.0 Previous Exploration

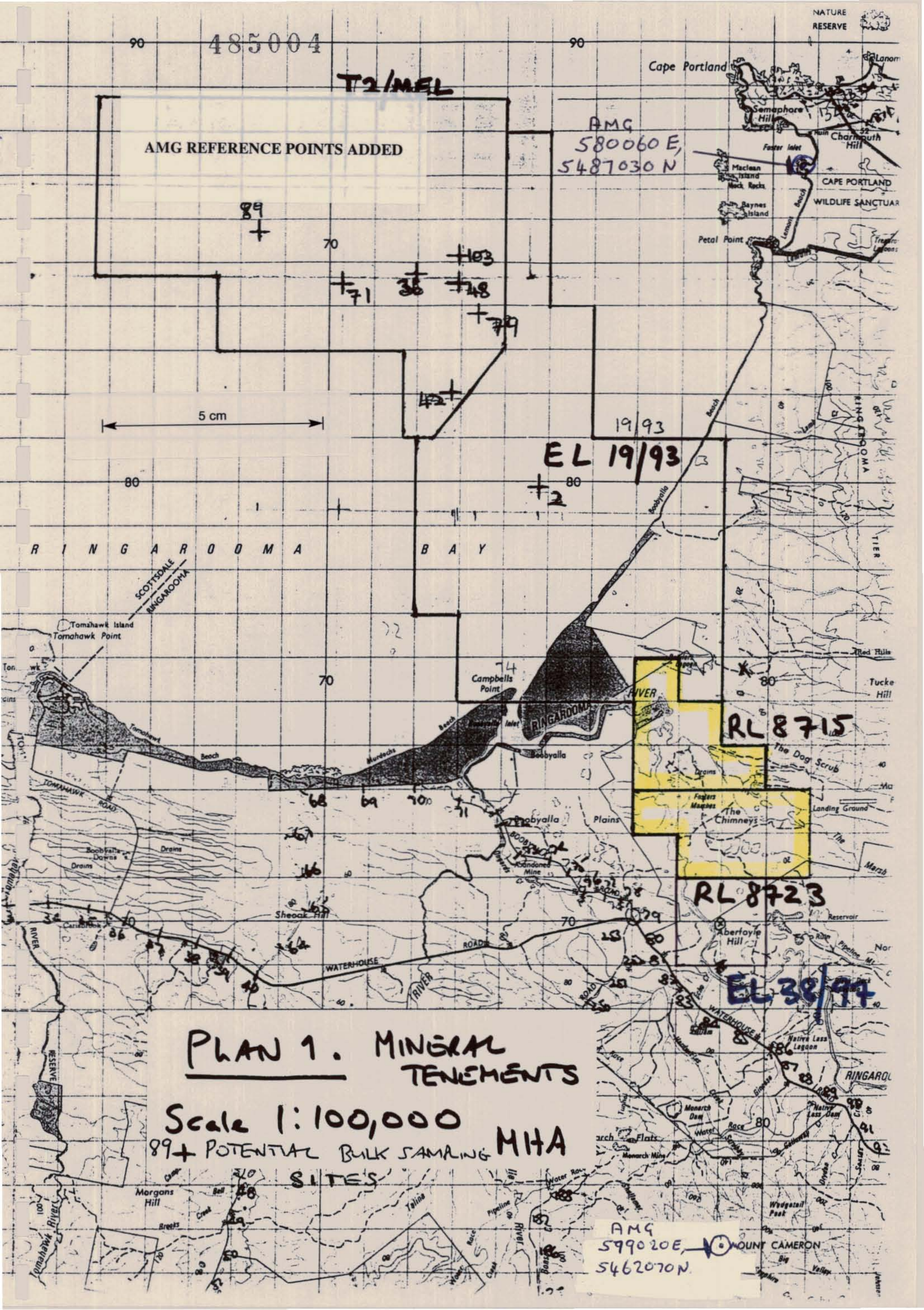
Since alluvial tin was discovered in the district in the 1870s, historical mining and exploration in the Great Northern Plains has established three main deep lead (terrestrial- fluviatile) systems ie. Scotia- Lochaber, Macgregor and Aberfoyle which feed into the wide blanket of tin-bearing wash that underlies the tenement area. Sediments overlying the wash result from reworking and deposition in estuarine, shore line and marine environments.

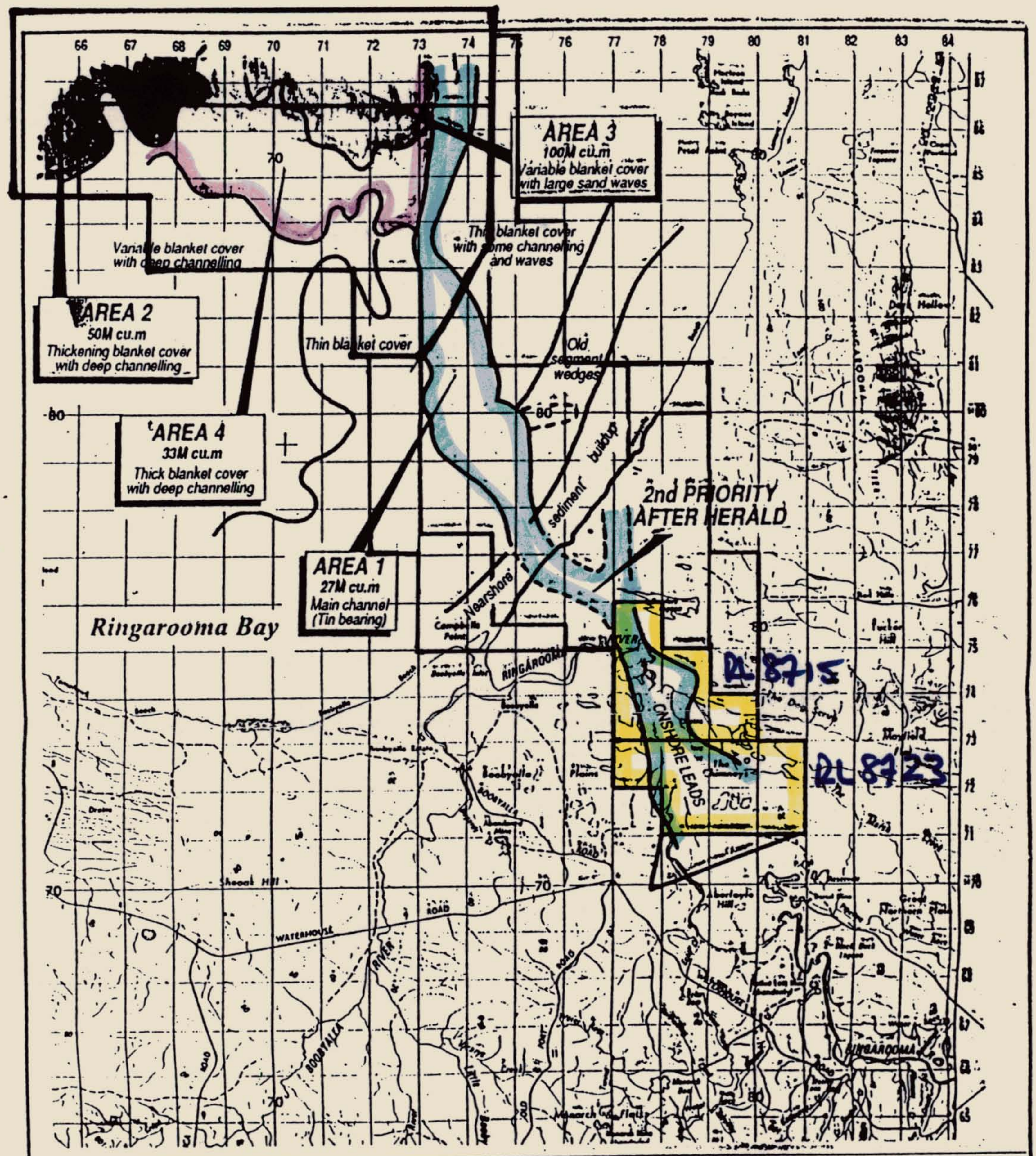
From 1930 onwards, many companies were active in or near the retention licences including (in chronological order) Austral Malay Tin, Delta Tin Mines, Dorset Tin Dredging, Rio Tinto Australia Exploration, Utah, Tasmania Mines Department, Wanex, Preussag Australia and by 1981-82 Hellyer Mining and Exploration. A total production of 4,000t of tin concentrates and 24.8kg of gold has been estimated for the district.

Hellyer Mining and Exploration compiled the previous drilling and ran their own drilling program resulting in the definition of the tin resources on the retention licences as expressed in Plans 3 and 4.

During the life of the current licences, two reviews have been carried out on the tenements' resources but both found the project to be non viable in the light of the prevailing tin price (Shaw, 1993 and MacArthur, 1995).

The recent and most comprehensive review (MacArthur) gives an indicated resource of 109M cu m at 64 g/cu m Sn (cut off grade of 30g/cu m) suitable as a dredging target. Within this resource, smaller, higher grade zones totalling 18.6M cu m at 137g/cu m (cut off grade of 90g/cu m) could be of interest for backhoe mining.


485004
T2/MEL
AMG REFERENCE POINTS ADDED
AMG
580060 E,
5487030 N
NATURE RESERVE
Cape Portland
Semaphore Hill
Charmouth Hill
Foster Inlet
Maclean Island
Baynes Island
Petal Point
Lemons Beach
CAPE PORTLAND
WILDLIFE SANCTUARY
5 cm
19/93
EL 19/93
R I N G A R O O M A B A Y
SCOTTSDALE
RINGAROOMA
Tomahawk Island
Tomahawk Point
Campbells Point
Boobyalla Inlet
RINGAROOMA RIVER
Boobyalla
Murdochs Beach
Tomahawk Beach
TOMAHAWK ROAD
RL 8715
The Dog Scrub
Drains
Fosters Marshes
The Chimneys
Plains
Landing Ground
The Marsh
RL 8723
Aberfoyle Hill
Reservoir
Pipeline
Red Hills
Tucker Hill
Boobyalla Downs
Abandoned Mine
Sheoak Hill
WATERHOUSE ROAD
EL 38/94
Native Lass Lagoon
Native Lass Dam
RINGAROOMA
Monarch Dam
Water Race
Monarch Mine
Flats
Morgans Hill
Wadgetail Peak
MOUNT CAMERON
Big Valley
Tomahawk River
RESERVE
PLAN 1. MINERAL TENEMENTS
Scale 1:100,000
89+ POTENTIAL BULK SAMPLING SITES
MHA
AMG
599020E,
5462070N



Scale 1:100,000

EL 19/93

RLS 8715, 8723

PLAN 2

TASMANIA

Hobart

THE RINGAROOMA ALLUVIAL TIN PROPERTY
OFFSHORE TARGET ZONES

~~Figure 2~~

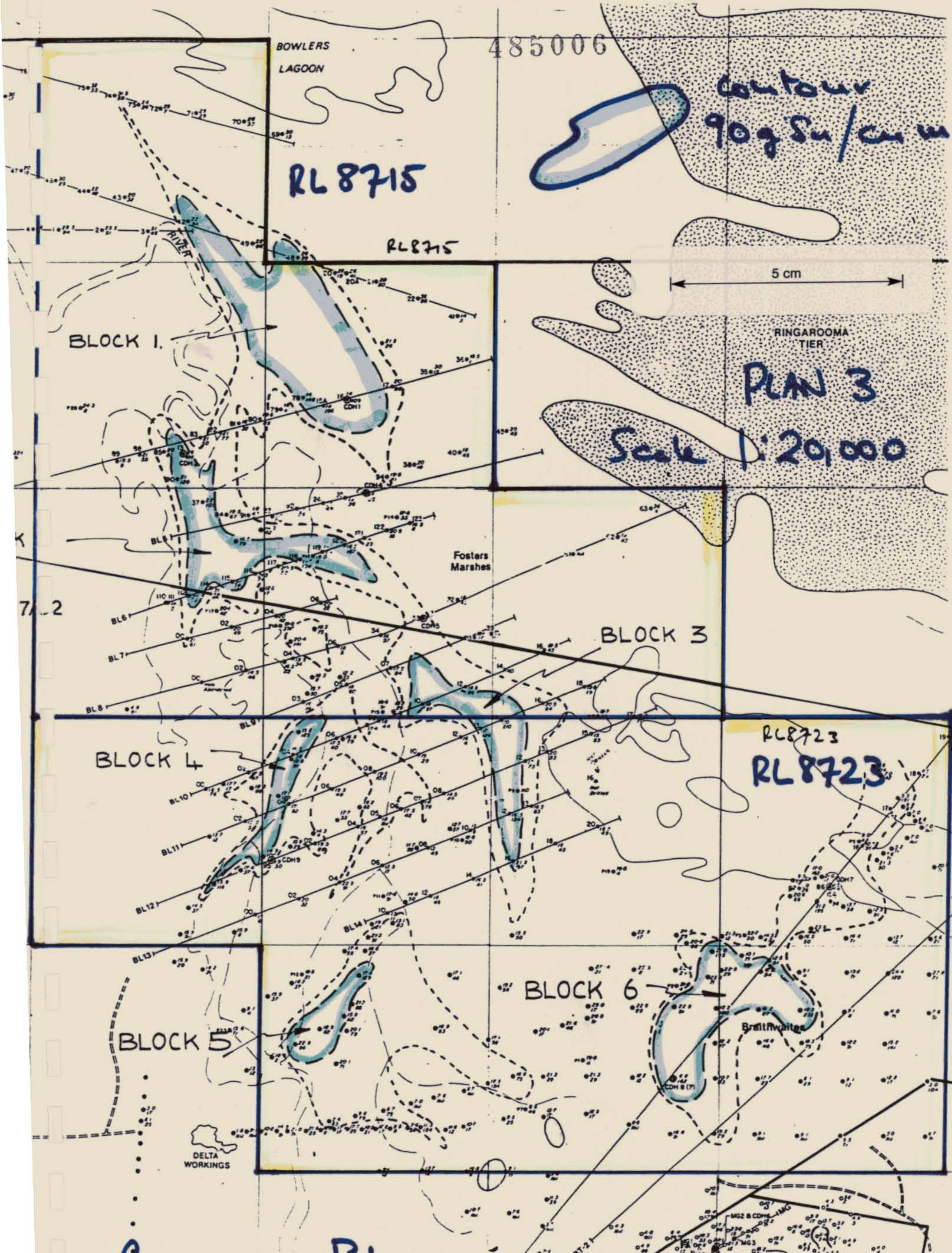
0 1 2 3 4 5
KILOMETRES

Compiled by: N.MacArthur
Drawn by: Roz Davies

Date: July, 1994

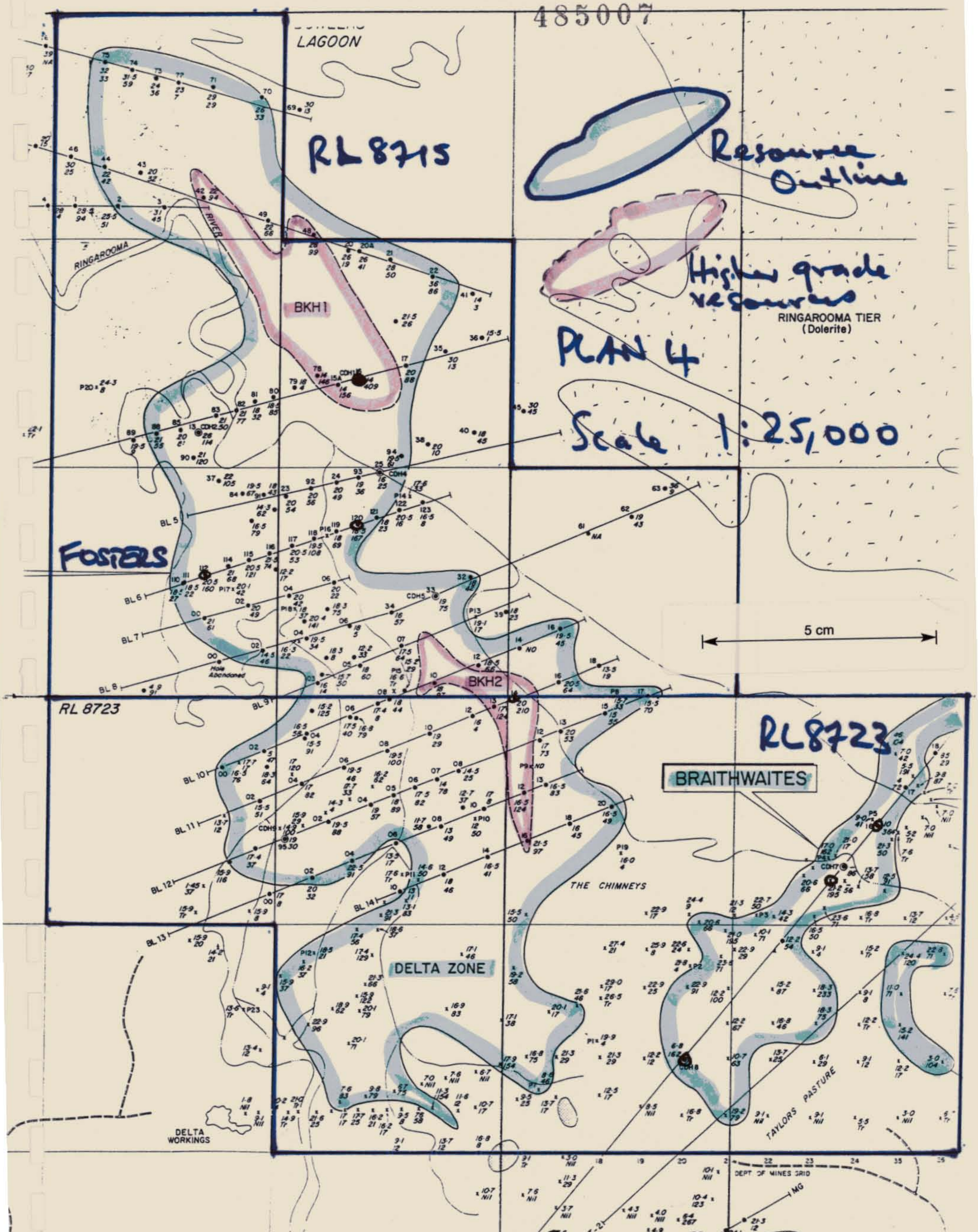
5 cm

485005



Resource Blocks – Gt Northern Plains
(after Shaw, 1993)

485007



Resource Blocks - Gt Northern Plains
(after MacArthur, 1995)

Accessory minerals known to be present are gold, rutile, ilmenite, zircon, monazite, topaz, sapphires and perhaps diamond (still to be proved).

3.0 Current Exploration

While waiting for a rise in the tin price, attempts have been made (in conjunction with the offshore ELs) to interest potential joint venture partners in the Ringarooma Tin Project. Companies approached included Murchison, Rio Tinto and RZM and L&M Mining from New Zealand who actually visited the site but eventually declined to become involved.

Following a question from Rio Tinto about the radioactivity of the main heavy mineral suite, particularly cassiterite, it was decided to commission Amdel to carry out a study on the uranium and thorium content of a concentrate previously sluiced some years ago from the Great Northern Plains. The full report is contained in the Appendix.

The conclusion was that the uranium and thorium are almost exclusively present in discrete grains of monazite, xenotime and zircon and that the other minerals (particularly cassiterite) have not acquired U and Th from contact or association with these minerals in the alluvial deposits. There would therefore be no problem with radioactivity associated with the separation, stockpiling or transporting of cassiterite or ilmenite in any future operation.

As a result of the global association of diamonds with sapphires, it was decided to evaluate some of the concentrates, middlings and tails in the Great Northern Plains for diamonds and indicator minerals in the hope that a positive result would make the alluvial project more attractive to potential joint venturers. No diamonds have yet been found from the early results but the study is continuing.

Monitoring of the tin price shows that throughout 1998 the metal showed some resilience in the range US$5,300-5,500/t (say A$8,300-8,700). Over the past few years, the prevailing prices have forced many tin producers out of business and forced those who have survived to cut costs, bring in new technology and increase production in order to meet a demand that has been driven by environmental legislation restricting the use of lead. These trends are the elimination of lead from solder, the expanding use of tin in shotgun and handgun ammunition and the increased use of tin in flame retardants. An optimistic view of these trends could mean a boost in tin demand of 15-20% by year 2000 (Mining Journal, London, October 23,1998).

4.0 Future Program

Previous studies have shown that these resources are sub-economic at present. Retention licences are therefor the appropriate tenement to secure them pending an increase in the tin price. Extension of these licences is being applied for to keep the onshore tin resources within the Ringarooma Tin Project and so ensure the maximum possible size of the resource for the future attraction of potential developers.

Marketing of the project will continue to secure appropriate joint venture partners in conjunction with the offshore areas where bulk sampling of alluvials is planned. The mineralogical study of formerly processed alluvials will continue. Capture of the previous information, particularly the drilling in the resource blocks for the GIS, will be carried out to help in the interpretation, presentation and marketing of the Fosters Marshes licences.

REFERENCES

MacArthur, N. A. 1995. Pre-feasibility Review, Ringarooma Alluvial Project. Report to Mineral Holdings Australia Pty Ltd

Shaw, R. W. L. 1993. Retention Licences 8715 & 8723, Great Northern Plains, Tin Resource Review

APPENDIX

: **Report- Location of Radioactivity (Uranium and Thorium) in a Sluice Concentrate, Mineral Services, Amdel Ltd**

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17 July 1998

485010

Mineral Holdings Australia Pty Limited
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MELBOURNE VIC 3000

Attn: Mr Neil Thomas,
Chairman

REPORT G167HL98

LOCATION OF RADIOACTIVITY (URANIUM AND THORIUM) IN A SLUICE CONCENTRATE

YOUR REFERENCE:	Letter of 26 June 1998
SAMPLE IDENTIFICATION:	KL 87234 87156 EL 20/97, Tasmanian Great North Alluvial Plain, representative samples of alluvial concentrates by sluicing, containing tin, rutile, ilmenite, zircon and monazite
MATERIAL:	Sluice concentrate of alluvial deposits
LOCATION:	Areas in the Great Northern Plains of Tasmania within Licences RL.8715 and RL.8723
DATE SAMPLES RECEIVED:	29 June 1998
DATE AUTHORISATION RECEIVED:	29 June 1998
WORK REQUIRED:	Determine location of radioactivity
INVESTIGATION AND REPORT BY:	Dr Keith J Henley

Keith Henley

Dr Keith J Henley
Manager, Mineralogy

cjc

The results contained in this report relate only to the sample(s) submitted for testing
Amdel Limited accepts no responsibilities for the representivity of the sample(s) submitted.

amdel
Mineral Holdings of Australia Pty Limited 485011

LOCATION OF RADIOACTIVITY (URANIUM AND THORIUM) IN A SLUICE CONCENTRATE

SUMMARY

A sluice concentrate derived from alluvial deposits in the Great Northern Plains of Tasmania has been investigated mineralogically to determine the location of radioactivity (uranium (U) and thorium (Th)).

The concentrate assays 61.6% Sn, 350 ppm Th, 50 ppm U, 0.126% Ce, 0.039% Y, 0.60% Zr and 5.72% TiO_2. Mineralogically the concentrate consists predominantly of cassiterite with minor silicates and ilmenite and traces of monazite, xenotime, zircon, rutile, chrome spinel and other minerals.

Overall, monazite accounts for about 97% of the Th and 53% of the U, xenotime accounts for virtually none of the Th but 20% of the U, and zircon accounts for 5% of the Th and 19% of the U. These three minerals collectively account for all of the Th and 93% of the U. The remaining 7% of the U occurs in other forms with about 2% associated with ilmenite and 3% associated with cassiterite, although because of analytical uncertainties the true figures could be less than these.

Approximate Th and U contents of these minerals are as follows:

	Th	U
Monazite	6.59%	3860 ppm
Xenotime	-	7360 ppm
Low-density zircon	2350 ppm	1525 ppm
High-density zircon	680 ppm	340 ppm
Ilmenite	≤41 ppm	≤16 ppm
Cassiterite	≤43 ppm	≤6 ppm

The Th and U contents of the ilmenite and cassiterite concentrates prepared by heavy liquid, magnetic and magnetohydrostatic separation, with the proportions of the total Th and U in the head sample they contain, are as follows:

	Assay, ppm		Distribution, %	
	Th	U	Th	U
Ilmenite concentrate	41	16	1	3
Cassiterite concentrate	43	6	8	10

It appears from this investigation that U and Th are almost exclusively present in discrete grains of monazite, xenotime and zircon and that the other minerals, particularly cassiterite, have acquired negligible Th and U from contact with the monazite, xenotime and zircon in the alluvial deposits in which they occur.

LOCATION OF RADIOACTIVITY (URANIUM AND THORIUM) IN A SLUICE CONCENTRATE

1. INTRODUCTION

Following discussions between N Thomas of Mineral Holdings Australia Pty Limited and K J Henley of Amdel Limited, Mineral Holdings submitted a 2 kg sample of alluvial concentrate derived from sluicing areas in the Great Northern Plains of Tasmania within their licences RL.8715 and RL.8723.

The objective of the investigation was to determine whether the valuable minerals, particularly cassiterite, had acquired any radioactivity from contact in the alluvium with radioactive minerals such as monazite which were known to be present.

A proposal (No. LG0311.98; see Appendix 1) from Amdel covers the work program.

Preliminary results were faxed to Mineral Holdings on 15 July 1998 and this report completes the investigation.

2. PROCEDURE

A riffled portion of the sluice concentrate was analysed chemically for a range of elements.

A further riffled portion of the sluice concentrate was separated in heavy liquids of specific gravities (sp. gr.) 3.3, 4.0 and 4.3 and the 4.0 – 4.3 sp. gr. and >4.3 sp. gr. products were separated magnetically using a Frantz isodynamic magnetic separator at a side slope of 15° and at current settings of 0.5A for the 4.0 – 4.3 sp. gr. product and 0.2, 0.5 and 1.2A for the >4.3 sp. gr. product. The >4.3 sp. gr. 1.2A non-magnetic product was separated magneto-hydrostatically to give an effective separation sp. gr. of ~5.5. The objective of this procedure was to concentrate specific minerals into particular separation products, as follows:

Specific Gravity Product	Magnetic Product	Minerals Concentrated in Product
<3.3		Various silicate gangue minerals
3.3 – 4.0		Various silicate gangue minerals
4.0 – 4.3	0.5A magnetics	Ilmenite (xenotime)
4.0 – 4.3	0.5A non-magnetics	Rutile, low-density zircon
>4.3	0.2A magnetics	Ilmenite
>4.3	0.2 – 0-.5A	Ilmenite, xenotime
>4.3	0.5 – 1.2A	Monazite
4.3 – 5.5	1.2A non-magnetics	High-density zircon
>5.5	1.2A non-magnetics	Cassiterite

The various >4.0 sp. gr. separation products were assayed for U, Th, Ce, Y, Zr, Sn, TiO_2 and P_2O_5 and the element distributions calculated.

Polished sections (PS 57958 – 57961) were prepared of the >4.0 sp. gr. separation products and examined mineragraphically to identify the opaque minerals present. The separation products were also examined under a stereobinocular microscope and in temporary oil mount under a petrographic microscope.

The data was used to calculate the distributions of U and Th among the minerals.

3. RESULTS

Concentrated

Table 1 gives the chemical analysis of the head sample and shows that the concentrate contains 50 ppm U, 350 ppm Th, 0.126% Ce, 0.04% Y and 0.60% Zr, 61.6% Sn, 5.72% TiO_2 and 0.05% P_2O_5.

Table 2 gives the assays and element distributions in the >4.0 sp. gr. products. The <3.3 and 3.3 – 4.0 sp. gr. products are assumed to contain negligible proportions of the elements of interest and the similarity of the calculated element contents in Table 2 and the actual element contents in the head (Table 1) supports this.

It can be seen from Table 2 that the bulk of the weight (65%) is in the cassiterite-rich product (>5.5 sp. gr. 1.2A non-mags) with small weight proportions in the other separation products. The main minerals present listed in Table 2 are based on the chemical analyses and microscopy.

The distributions of Th and U among the various minerals were calculated using the following assumptions:

1. All Ce, Y and Zr are contained in monazite, xenotime and zircon (low-density and high-density).

2. Monazite has the same composition in all separation products in which it occurs.

3. Xenotime has the same composition in all separation products in which it occurs.

4. Two populations of zircon are present – a low-density zircon (sp. gr. <4.3) with high Th and U contents and a high-density zircon (sp. gr. 4.3 – 5.5) with lower Th and U contents.

5. All Ce is in monazite containing 24.4% Ce (typical of monazite).

6. In the >4.3 sp. gr. 0.5 – 1.2A magnetic product all the Ce, Y, Th and U are contained in monazite, which therefore has Y, Th and U contents of 1.84% Y, 6.59% Th and 3860 ppm U.

7. In the >4.3 sp. gr. 0.2 – 0.5A magnetic product all the Y, Th and U not in monazite are in xenotime, which, assuming a Y content of 33.1% (typical of xenotime), contains no Th and 7360 ppm U. (Note that there is sufficient monazite in this product to account for all the Th.)

8. In the 4.0 – 4.3 sp. gr. 0.5A non-magnetic product all the Zr and all Th and U not in monazite and xenotime are in (low-density) zircon, which, assuming a Zr content of 48.1% Zr (typical of zircon), contains 2350 ppm Th and 1525 ppm U.

9. In the 4.3 – 5.5 sp. gr. 1.2A non-magnetic product all the Zr and all the Th and U not in monazite and xenotime are in (high-density) zircon, which, assuming a Zr content of 48.1% Zr, contains 680 ppm Th and 340 ppm U.

Using the above assumptions, the distributions of Th and U among the minerals can be calculated (Tables 3 and 4). It can be seen from Table 3 that monazite accounts for about 97% of the total Th with zircon (particularly low-density zircon) accounting for the remaining 3%. There is no evidence that ilmenite or cassiterite contains Th, although if they did the levels would be less than about 45 ppm Th (as indicated in the Th assays of the relevant separation products in Table 2).

The U is more widely distributed than the Th, with monazite containing ~53%, xenotime ~20%, zircon ~19% and other minerals ~7% of the total U. The U levels of the ilmenite and cassiterite concentrates are very low (16 ppm and 6 ppm respectively – Table 2) and these concentrates contain only minor proportions of the total U.

A summary of the Th and U assays and distributions (as % of the total Th and U in the head) in the ilmenite and cassiterite concentrates is as follows:

	Assay, ppm		Distribution, %	
	Th	U	Th	U
Ilmenite concentrate	41	16	1	3
Cassiterite concentrate	43	6	8	10

No comment can be made about Th and U in rutile because the rutile 'concentrate' (4.0 – 4.3 sp. gr. 0.5A non-magnetic product) consists mainly of low-density zircon. However, rutile is a trace component only of the head sample (<0.1%).

Overall, there is no evidence that minerals such as ilmenite and cassiterite have absorbed/ adsorbed any Th or U from being in contact with monazite, xenotime and zircon in the alluvial deposits and both minerals contain very low levels of Th and U, as discussed above.

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TABLES

TABLE 1 : CHEMICAL ANALYSIS OF THE HEAD SAMPLE

Element	Assay
U	50 ppm
Th	350 ppm
Ce	0.126%
Y	0.039%
Zr	0.60%
Sn	61.6%
TiO_2	5.72%
Al_2O_3	7.66%
CaO	0.11%
Fe_2O_3*	5.69%
K_2O	0.04%
MgO	0.60%
MnO	0.30%
Na_2O	0.02%
P_2O_5	0.05%
SiO_2	7.19%

TABLE 2: ANALYSES AND ELEMENT DISTRIBUTIONS IN THE SLUICE CONCENTRATE

Separation Product	Main Minerals Present *	Weight Distn. %	Assay: Th ppm	U ppm	Ce %	Y %	Zr %	Sn %	TiO2 %	P2O5 %
<3.3 sp. gr.		2.55								
3.3-4.0 sp. gr.		13.65								
4.0-4.3 sp. gr. 0.5A mags	I, S, X	3.19	550	145	0.205	0.41	0.14	0.06	39.40	0.63
4.0-4.3 sp. gr. 0.5A non mags	Z, R, M	0.49	6350	1500	1.690	0.16	36.50	4.14	8.67	1.96
>4.3 sp. gr. 0.2A mags	I	7.89	41	16	<0.020	<0.002	0.07	2.51	49.10	0.02
>4.3 sp. gr. 0.2-0.5A mags	I, X, C	1.49	2700	470	1.090	1.42	0.07	38.20	13.40	2.59
>4.3 sp. gr. 0.5-1.2A mags	M, C	3.24	7350	430	2.720	0.20	0.02	59.30	0.13	3.06
4.3-5.5 sp. gr. 1.2A non-mags	Z, C	2.13	290	93	0.050	0.04	11.00	49.90	0.25	0.06
>5.5 sp. gr. 1.2A non-mags	C	65.37	43	6	<0.020	0.00	0.03	73.90	0.12	0.02
Total		100.00	365	40	0.120	0.05	0.44	52.08	5.46	0.18

Separation Product	Main Minerals Present	Weight Distn %	Distribution, %: Th	U	Ce	Y	Zr	Sn	TiO2	P2O5
<3.3 sp. gr.		2.55								
3.3-4.0 sp. gr.		13.65								
4.0-4.3 sp. gr. 0.5A mags	I, S, X	1.19	4.8	11.5	5.4	28.3	1.0	0.0	23.0	11.0
4.0-4.3 sp. gr. 0.5A non mags	Z, R, M	0.49	8.5	18.3	6.9	5.0	40.6	0.0	0.8	5.2
>4.3 sp. gr. 0.2A mags	I	7.89	0.9	3.2	0.0	0.0	1.2	0.4	70.9	0.9
>4.3 sp. gr. 0.2-0.5A mags	I, X, C	1.49	11.0	17.5	13.5	46.3	0.2	1.1	3.7	21.0
>4.3 sp. gr. 0.5-1.2A mags	M, C	3.24	65.3	34.8	73.3	14.5	0.1	3.7	0.1	54.1
4.3-5.5 sp. gr. 1.2A non-mags	Z, C	2.13	1.7	4.9	0.9	1.7	53.2	2.0	0.1	0.7
>5.5 sp. gr. 1.2A non-mags	C	65.37	7.7	9.8	0.0	4.1	3.7	92.8	1.4	7.1
Total		100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* C = Cassiterite; I = Ilmenite; M = Monazite; R = Rutile; S = Spinel; X = Xenotime; Z = Zircon

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TABLE 3 : MINERALOGICAL DISTRIBUTION OF THORIUM

Separation Product	Main Minerals Present	Th Units (ppm) in Mineral					Th Distribution % in Separation Product					Th Distribution % in Head				
		Monazite	Xenotime	Zircon	Other	Total**	Monazite	Xenotime	Zircon	Other	Total	Monazite	Xenotime	Zircon	Other	Total
4.0 – 4.3 sp. gr. 0.5A mags	I, S, X	554	-	-	-	550	100	-	-	-	100	4.8	-	-	-	4.8
4.0 – 4.3 sp. gr. 0.5A non-mags	Z, R, M	4566	-	1784	-	6350	72	-	28	-	100	6.1	-	2.4	-	8.5
>4.3 sp. gr. 0.2A mags	I	<54	-	1	-	41	98	-	2	-	100	0.9	-	<0.1	-	0.9
>4.3 sp. gr. 0.2 - 0.5A mags	I, X, C	2945	-	-	-	2700	100	-	-	-	100	11.0	-	-	-	11.0
>4.3 sp. gr. 0.5 – 1.2A mags	M, C	7350	-	-	-	7350	100	-	-	-	100	65.3	-	-	-	65.3
4.3 – 5.5 sp. gr. 1.2A non-mags	Z, C	135	-	155	-	290	47	-	53	-	100	0.8	-	0.9	-	1.7
>4.5 sp. gr. 1.2A non-mags	C	<54	-	-	-	43	100	-	-	-	100	7.7	-	-	-	7.7
Total		(353)	(-)	(12)	(-)	(365)	(97)	(-)	(3)	(-)	100	(96.6)	(-)	(3.3)	(-)	100.0

* C – Cassiterite; I = Ilmenite; M = Monazite; R = Rutile; S = Spinel; X = Xenotime; Z = Zircon

** Th assay of separation product.

TABLE 4 : MINERALOGICAL DISTRIBUTION OF URANIUM

Separation Product	Main Minerals Present	U Units (ppm) in Mineral					U Distribution % in Separation Product					U Distribution % in Head				
		Monazite	Xenotime	Zircon	Other	Total**	Monazite	Xenotime	Zircon	Other	Total	Monazite	Xenotime	Zircon	Other	Total
4.0 – 4.3 sp. gr. 0.5A mags	I, S, X	32	87	7	19	145	22	60	5	13	100	2.5	6.9	0.6	1.5	11.5
4.0 – 4.3 sp. gr. 0.5A non-mags	Z, R, M	267	75	1158	-	1500	18	5	77	-	100	3.3	0.9	14.1	-	18.3
>4.3 sp. gr. 0.2A mags	I	<3	<1	<1	12	16	19	2	3	76	100	0.6	0.1	0.1	2.4	3.2
>4.3 sp. gr. 0.2 - 0.5A mags	I, X, C	172	298	-	-	470	37	63	-	-	100	6.4	11.1	-	-	17.5
>4.3 sp. gr. 0.5 – 1.2A mags	M, C	430	-	-	-	430	100	-	-	-	100	34.8	-	-	-	34.8
4.3 – 5.5 sp. gr. 1.2A non-mags	Z, C	8	7	78	-	93	9	7	84	-	100	0.4	0.4	4.1	-	4.9
>4.5 sp. gr. 1.2A non-mags	C	<3	<1	<1	2	6	50†	12†	3†	35	100	4.9†	1.2†	0.3†	3.4	9.8
Total		(21)	(8)	(8)	(3)	(40)	(53)	(21)	(19)	(7)	100	(52.9)	(20.5)	(19.2)	(7.4)	100.0

* C – Cassiterite; I = Ilmenite; M = Monazite; R = Rutile; S = Spinel; X = Xenotime; Z = Zircon

** U assay of separation product

† Calculated assuming U level at detection limit

485019

APPENDIX

485021

amdel

Amdel Limited
Mineral Services

A.C.N. 008 127 802

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Thebarton
South Australia 5031
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PO Box 338
Torrensville Plaza
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QUALITY MANAGEMENT SYSTEM

FACSIMILE TRANSMISSION

Date:	25 June 1998	Total pages including cover sheet:	6
To:	Neil Thomas	Fax No:	(03) 9650 3855
Company:	Mineral Holdings	City/Country:	Melbourne
From:	Keith Henley	Offer/Quotation No:	LG0311.98
Department:	Mineralogy	Project/Job No:	

Dear Neil,

LOCATION OF RADIOACTIVITY

I understand from our discussion that you have a pan concentrate containing ilmenite, rutile, zircon, monazite and cassiterite and that you need to find out whether the ilmenite, rutile, zircon and cassiterite contain any radioactivity (uranium (U) and thorium (Th)) and, if so, how much.

To do this I propose the following program, for which we will require ~1 kg of unpulverised pan concentrate:

(1) Separate out high grade concentrates of the ilmenite, rutile, zircon, monazite and cassiterite, using a combination of heavy liquid, magnetic and magneto-hydrostatic separation.

(2) Examine these concentrates microscopically to assess their purity.

(3) Analyse the concentrates for TiO_2, ZrO_2, Y_2O_3, CeO_2, P_2O_5, U and Th.

(4) Calculate the U and Th contents of monazite and zircon.

(5) Using the data from (4), calculate the U and Th contents attributable to any monazite or zircon which may report in the other mineral concentrates.

(6) Calculate the U and Th contents of ilmenite, rutile and cassiterite.

If there is a problem with this transmission please phone 08 8416 5257

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485022

The estimated cost of this work is $2,500 - $3,000 and the time for completion is estimated to be approximately 3 – 4 weeks from sample receipt and authorisation to proceed.

Work will be done under out standard terms and conditions of contract, which are attached.

I hope the above is clear but please phone if you have any queries or want to modify the proposed program.

Kind regards

Keith J Henley
Group Leader, Mineralogy