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ANTHONY, McKENNA AND PARTNERS PTY. LTD.

STAGE 1 EXPLORATION REPORT

and

STAGE 2 EXPLORATION AND BUDGET REPORT

ON

HAMPSHIRE PROJECT

E. L. 39/70 TASMANIA

by

ANTHONY JANNINK

January 21, 1971

Accompanying Plans :

Scale

Location Plan		1 inch to 33.3 miles
Geological Plan	approx.	1 inch to 2000 ft.
Assay Results for Copper	"	" " " " "
Assay Results for Lead	"	" " " " "
Assay Results for Tungsten	"	" " " " "
Proposed Sampling Grids	"	" " " " "

SUMMARY

Minefields Exploration N. L. holds an Exploration Licence number 39/70 of 14 square miles approximately 20 miles south of Burnie, NW Tasmania.

Stage 1 Exploration of the area has shown that the region contains Cambrian volcanics and slates, Ordovician conglomerates, quartzites and limestones, Devonian granite and Tertiary basalt in an interesting structural environment. The rock sequence and geological setting are similar, and in some cases the same, as those in the Zeehan - Rosebery district only 40 miles to the south-west. Especially of interest are the Mt. Read Volcanics which outcrop in the southern half of the Exploration Licence, and which contain the Zeehan and Rosebery orebodies.

Limited geochemical sampling has found two anomalous areas, one has high Lead values within the Mt. Read Volcanics, one has high Tungsten values in limestones near a Devonian ||? granite intrusion.

Stage 2 Exploration is to be carried out on these two target areas, and will involve geological mapping, geochemical sampling and ground magnetic surveying. The cost of this programme is estimated at \$6000.

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INTRODUCTION

Minefields Exploration N. L. applied for an Exploration Licence of 90 square miles in the Hampshire region of Tasmania in May 1970. Due to conflicting prior applications an area of 14 square miles was subsequently granted.

A field geologist, G. Granger, conducted regional air - photo geological mapping with some geochemical sampling over the area in December 1970.

LOCATION AND ACCESS

The prospect lies 20 miles south of Burnie in north western Tasmania.

Access is generally poor due to the rugged topography. Dirt roads cross the north - eastern corner and run down the western side of the area. Some bush tracks have been cut in the southern half of the prospect.

A railway and ports are on the north coast of Tasmania at Burnie and Ulverstone within 20 miles of prospect.

POWER AND WATER RESOURCES

Power is available at Burnie and within 20 miles of the Exploration Licence. A permanently flowing river, the River Leven, runs through the north - eastern portion of the area.

TENEMENTS

An Exploration Licence, number 39/70, of 14 square miles was granted to Minefields Exploration N. L. on the 9th of July 1970 for an extendable period of 6 months.

No other mineral tenements are known to occur within the Licence area.

GEOLOGY

The "Hampshire Project" lies in the north-north-east trending Dundas Trough of north western Tasmania, between the Precambrian Tyennan and Rocky Cape geanticlines. The area contains the same rock types and a similar geological environment to the rift valley through the Zeehan - Rosebery mineralized field.

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GEOLOGY - cont'd

The oldest rocks, occurring in the southern half of the Exploration Licence, are Cambrian keratophyres of the Mt. Read Volcanics, with interbedded slates of the Dundas formation. These formations are overlain unconformably by the Ordovician Owen conglomerate and quartzites, and then by the Gordon Limestones. Tertiary basalts have flown over the north western corner of the area predominantly obscuring the older contact of the Ordovician with the Devonian intrusions of the Hampshire Hills Granite.

Structurally the Cambrian sequence is overlain unconformably by the Ordovician conglomerate in a domal form. The Cambrian rocks strike NNE and dip to the west at about 30°; the Ordovician dips away from the Cambrian "dome".

A major fault cuts through the Licence area in a NW-SE direction, swinging to a northerly direction in the north of the area before being covered by Tertiary basalt. The fault is post-Ordovician since it has Ordovician rocks to the north east, and Cambrian and Ordovician sequences to the south west. Dragging on the fault indicates that the SW block has moved NW, and the NE block moved SE. It appears likely that the fault is of Tabberabberan age, and the granite was intruded soon after the faulting occurred, near the zone of weakness.

The conglomerates and limestones to the north east of the major fault are also gradually folded, parallel to the fault, from a NW - SE strike in the south to a NE - SW strike in the north. These rocks dip to the east.

GEOCHEMISTRY

It was intended that a regional stream sediment sampling programme be conducted over the Exploration Licence, but due to the rugged topography and limited access, only 15 samples were taken. As a result, two traverses of soil samples were taken, one in the north eastern, and one in the southern section of the area. Forty-five (45) residual soil samples were taken.

All samples were analysed for Copper, Lead and Tungsten, the first two elements by Atomic Absorption ( ± 15% relative accuracy ), the tungsten by Colorimetric Dithiol.

Assay results are plotted on the accompanying plans and are tabulated as follows :

	Cambrian (Keratophyres & Slates)			Ordovician (Limestones & Conglomerates)		
	Max.	Min.	Background	Max.	Min.	Background
<u>Stream Sediments</u>			(1 (2) Samples)			(13 (14) Samples)
<u>Samples</u>						
Copper	15 (35)	15		30 (35)	<5	15
Lead	25	25		70	5	30
Tungsten	<2	<2		5	<2	2
<u>Residual Soil</u>			(27 Samples)			(18 Samples)
<u>Samples</u>						
Copper	40	5	25	40	<5	10
Lead	555	45	100	145	5	80
Tungsten	56	<2	3	66	<2	5

The bracketed sample relates to a stream sediment sample draining both Cambrian and Ordovician rocks.

Assay results in ppm,

It can be seen from the above Table that highly anomalous values were obtained for both Lead and Tungsten, the former predominantly in the Cambrian rocks, the latter in the Ordovician.

### DISCUSSION

From the exploration work conducted over the Hampshire Project to date ( no other previous exploration has been conducted on the area ) it appears that the area is definitely favourable, on both geological and geochemical evidence, for deposits of Lead and associated minerals in the Cambrian rocks, and Tungsten/Tin in the Ordovician rocks. These two targets for exploration will be discussed here in slightly more detail.

#### 1. Lead Deposits

A comparison of the geological environment of the area with the Zeehan - Rosebery district has already been indicated above. Almost all the orebodies of that region have been mined from just below the Ordovician basal contact ( the Owen Conglomerate ) and within the Mt Read Volcanics. ( It should be noted that almost 90% of Tasmania's mineral production has come from this stratigraphic level ). The best concentrations of minerals have been found close to faults on the edges of the "rift valleys" where the volcanics have extruded through the mechanically weaker zones. The mineralisation is generally thought to be of exhalative volcanic origin, but some think that it may originate from the Devonian granites.

All these factors are present in the Hampshire region : the Ordovician/Cambrian contact, the Mt Read Volcanics, a major fault structure, and Devonian granites. Coupled with this favourable geological environment are the interesting and anomalous geochemical results for Lead already obtained.

It should also be noted that Lead and Copper have been mined from the Penguin - Dial Range Mineral Field only a few miles north of the Exploration Licence.

#### 2. Tungsten/Tin Deposits

A favourable geological environment exists in the northern half of the area for Tungsten and Tin deposits. The Hampshire Hills Granite of Devonian age has intruded the Ordovician rocks just on the western boundary of the Licence area. Granites of this age have originated nearly all the Tin and Tungsten deposits of Tasmania, and the Hampshire Hills Granite is the cause of the Tin/Tungsten deposits found to the west of the Exploration Licence around Hampshire.

Tungsten/Tin Deposits - Cont'd

A major fault zone lies adjacent to the granite and is thought to be pre - granite or possibly contemporaneous. Fracturing around this zone could produce channels for mineralised fluids flowing out from the granite intrusion.

Favourable host rocks to contain contact-type mineralisation lie within half a mile of the granite intrusion. These are the limestones ( Gordon Limestones ) in the north and north-east of the area which could be altered to skarn rocks close to the granite, but have not yet been inspected.

No analysis has been undertaken for Tin, however at the base of the hill which forms the fault line, highly anomalous values in soil samples have been obtained for Tungsten. These samples were taken some two miles east of the granite contact.

*(where?)*

The next stage of exploration is to be conducted in endeavouring to locate possible Lead - Copper occurrences of the Zeehan - Rosebery type in the Mt Read Volcanics, and Tungsten - Tin occurrences of vein or skarn type in the Gordon Limestones.

EXPLORATION PROGRAMME

The Stage 2 Exploration Programme is to entail regional "grid" geological mapping, geochemical sampling and ground magnetics. Pegging grids in the rough terrain of the area is thought impracticable at this stage of exploration. The proposed grid lines shown on the accompanying plan are for reference only, and sampling will be conducted approximately on these lines, with locations plotted on the aerial photographs ( scale approximately 1 inch to 2000 ft as per plan ).

In the southern area, over the Cambrian rocks, 6 grid lines are to be sampled, mapped and traversed by ground magnetometer. The lines are spaced 1000, 2000 and 4000 ft apart, and samples and magnetometer readings are to be taken on 200 ft and 400 ft intervals as shown on the accompanying plan. The samples will be analysed for Copper, Lead and Silver by Atomic Absorption methods. Approximately 12 miles of traversing is planned.

In the northern area, over the Ordovician rocks, 5 grid lines, 2000 ft apart are to be traversed. Geological mapping and geochemical sampling is to be conducted over this area, the samples being taken on 200 ft spacings, and analysed for Copper, Lead and Tungsten. The tungsten is to be analysed by colorimetric dithiol. Six (6) miles of traversing is planned.

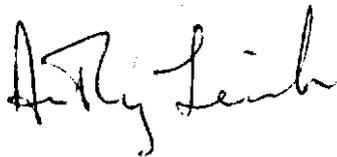
About 1 month's field work is envisaged to carry out the Stage 2 Exploration Programme. The personnel involved will be a Supervising Geologist, a Field Geologist and a Field Assistant. Any anomalies that are discovered and warrant follow-up work in the Stage 3 programme will involve a much greater expenditure in bulldozing, gridding, detailed geological, geochemical and geophysical work ( including induced polarization surveys ) prior to diamond or percussion drilling.

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PROPOSED BUDGET

To cover the proposed exploration programme outlined above, the following budget has been drawn up :

Professional Services	\$ 2,720
Labour	250
Vehicles	270
Field Living	470
Freight, sample bags, flagging tape etc.	50
Magnetometer hire	300
Assaying ( approx. 500 samples )	1,200
Air fares	110
Drafting, printing etc.	200
	<hr/>
Total	\$ 5,570
Contingencies 10%	557
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BUDGET ESTIMATE TOTAL	\$ 6,127

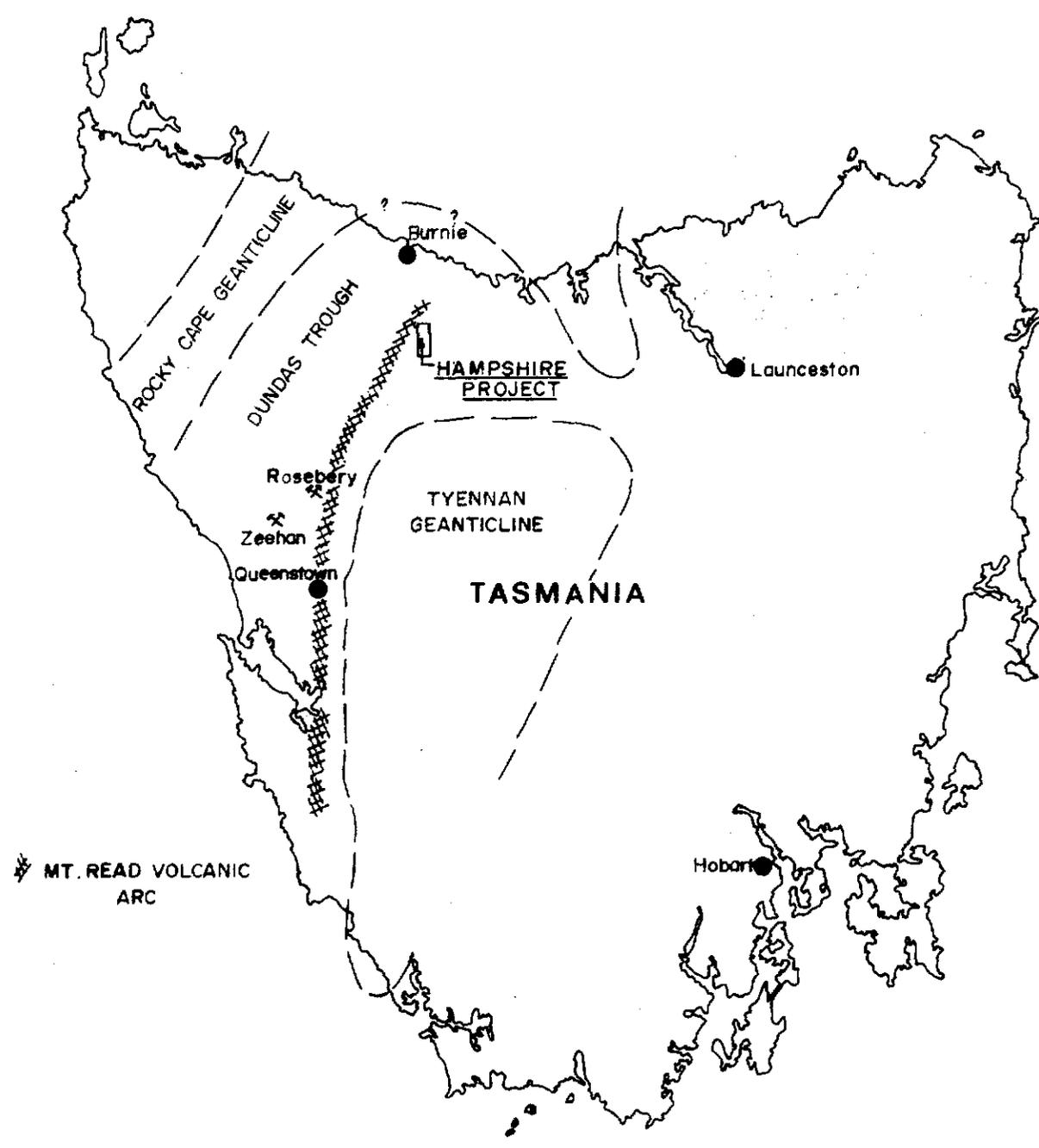


ANTHONY JANNINK

Anthony, McKenna and Partners Pty. Ltd.

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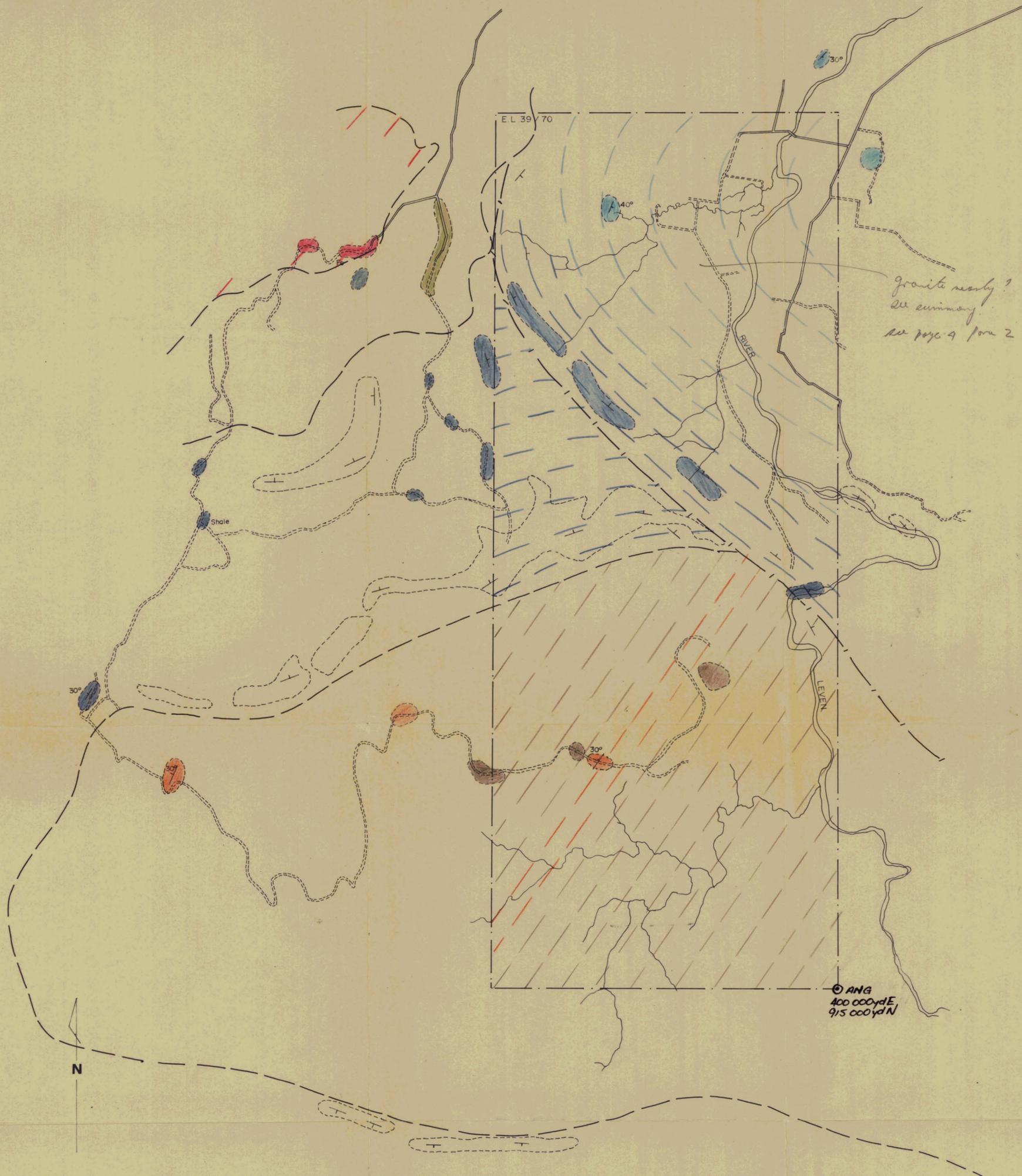


MT. READ VOLCANIC ARC



5 cm

MINEFIELDS EXPLORATION N.L.		
HAMPSHIRE PROJECT		
E.L. 39 / 70 TAS.		
LOCATION PLAN		
Compiled	Drawn : D.M.W.	Drq.Nº
Scale : 1 in - 33.3 mls.	Date : JAN . 1971	7005-6

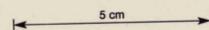


**LEGEND**

TERTIARY		BASALT		INFERRED FAULT
UPPER DEVONIAN		GRANITE		GEOLOGICAL BOUNDARY (Photo interpretation)
ORDOVICIAN		LIMESTONES		OUTCROP (Uncoloured outcrop from photo interpretation)
		CONGLOMERATES & QUARTZITES		STRIKE & DIP OF STRATA (Some from photo interpretation)
CAMBRIAN		SLATES & SHALES		E.L. BOUNDARY
		KERATOPHYRES		

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**MINEFIELDS EXPLORATION. N.L.**

**HAMPSHIRE PROJECT E.L. 39 / 70  
TAS.**

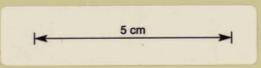
**GEOLOGICAL PLAN 2095**

COMPILED: G. GRANGER	SCALE: 1" = 2000' approx.	DRG. NO:
DRAWN: D. M. W.	DATE: JANUARY 1971	7005 - 4



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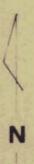


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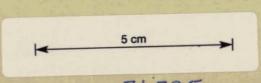
- Residual soil samples - HS.1-45
- Stream sediment samples - HA.1-15
- 25 PPM Copper

<b>MINEFIELDS EXPLORATION. N.L.</b>		
<b>HAMPSHIRE PROJECT EL 39 / 70</b>		
<b>TAS. 2090</b>		
<b>ASSAY RESULTS FOR COPPER</b>		
COMPILED: G. GRANGER	SCALE: 1" = 2000' approx.	DRG.No: 7005-3
DRAWN: D.M.W.	DATE: JANUARY 1971	

E.L. 39 / 70



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- Residual soil samples - HS.1-45
- Stream sediment samples - HA1-15
- 55 PPM Lead

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**MINEFIELDS EXPLORATION. N.L.**

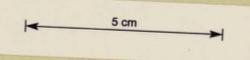
**HAMPSHIRE PROJECT EL 39 / 70**  
**TAS.**  
**ASSAY RESULTS FOR LEAD** 2097

COMPILED: G. GRANGER	SCALE: 1" = 2000' approx.	DRG. NO: 7005-5
DRAWN: D.M.W.	DATE: JANUARY 1971	



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- Residual soil samples - HS.1-45
- Stream sediment samples - HA1-15
- 3 PPM Tungsten

**MINEFIELDS EXPLORATION. N.L.**

**HAMPSHIRE PROJECT EL 39 / 70**  
**TAS. 2098**  
**ASSAY RESULTS FOR TUNGSTEN**

COMPILED: G. GRANGER	SCALE: 1" = 2000' approx.	DRG. NO:
DRAWN: D. M. W.	DATE: JANUARY 1971	7005-2

