

E.L. 2/70

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D. DIR.	20 JAN 1986			E & IL
DEPT. OF MINES				
REF. No.	526/86			

ABERFOYLE EXPLORATION PTY. LTD.

**OPEN FILE**

**MICROFILMED**

SUMMARY OF EXPLORATION  
IN THE  
MACKINTOSH DISTRICT

E.L. 2/70 | 86-2521

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SUMMARY OF EXPLORATION  
IN THE MACKINTOSH DISTRICT  
1969 to 1985

1969 TO 1985



FOR THE DIRECTOR OF MINES  
JANUARY, 1986



1.

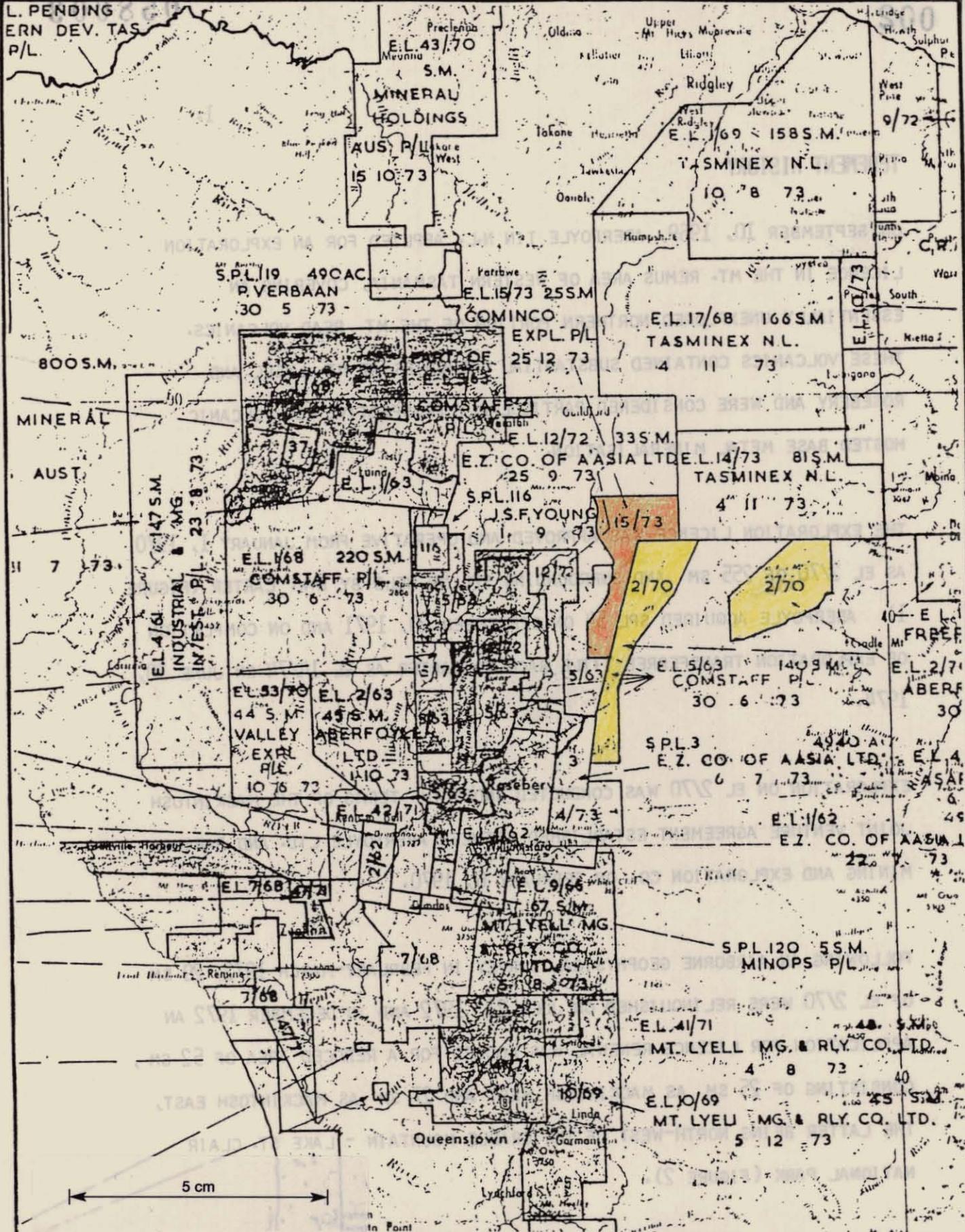
**TENEMENT HISTORY**

ON SEPTEMBER 10, 1969, ABERFOYLE TIN N.L. APPLIED FOR AN EXPLORATION LICENCE IN THE MT. REMUS AREA OF WESTERN TASMANIA, COVERING AN ESSENTIALLY UNEXPLORED NORTHERN PORTION OF THE MT. READ VOLCANICS. THESE VOLCANICS CONTAINED SUBSTANTIAL OREBODIES AT MT. LYELL AND ROSEBERY AND WERE CONSIDERED PARTICULARLY PROSPECTIVE FOR VOLCANIC HOSTED BASE METAL MINERALISATION.

THE EXPLORATION LICENCE WAS APPROVED AND OPERATIVE FROM JANUARY 1, 1970 AS EL 2/70 OF 255 SM AND SURROUNDING SPL 54 HELD BY R.W. CARTER (FIGURE 1). ABERFOYLE ACQUIRED SPL 54 ON SEPTEMBER 20, 1971 AND ON COMPLETION OF EXPLORATION TRANSFERRED TITLE BACK TO CARTER AS EL 14/74 ON JUNE 30, 1974.

EXPLORATION ON EL 2/70 WAS CONDUCTED UNDER THE TERMS OF THE MACKINTOSH JOINT VENTURE AGREEMENT ESTABLISHED BETWEEN ABERFOYLE LTD. AND PARINGA MINING AND EXPLORATION CO. ON FEBRUARY 6, 1970.

FOLLOWING AN AIRBORNE GEOPHYSICAL SURVEY IN FEBRUARY-MARCH 1972, 29 SM OF EL 2/70 WERE RELINQUISHED ON JULY 21, 1972 AND IN DECEMBER 1972 AN APPLICATION FOR LICENCE RENEWAL WAS LODGED FOR A REDUCED AREA OF 52 SM, CONSISTING OF 25 SM AS MACKINTOSH WEST AND 27 SM AS MACKINTOSH EAST, THE LATTER BEING NORTH-WEST OF THE CRADLE MOUNTAIN - LAKE ST. CLAIR NATIONAL PARK (FIGURE 2).



 **Aberfoyle Exploration Pty Ltd**

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 Revised by:      Date:

Extract From Mines Dept.  
 Tenure Plan dated July 2, 1973

Location code:  
 Date:  
 Scale: 1 : 500 000  
 Plate No Figure 2

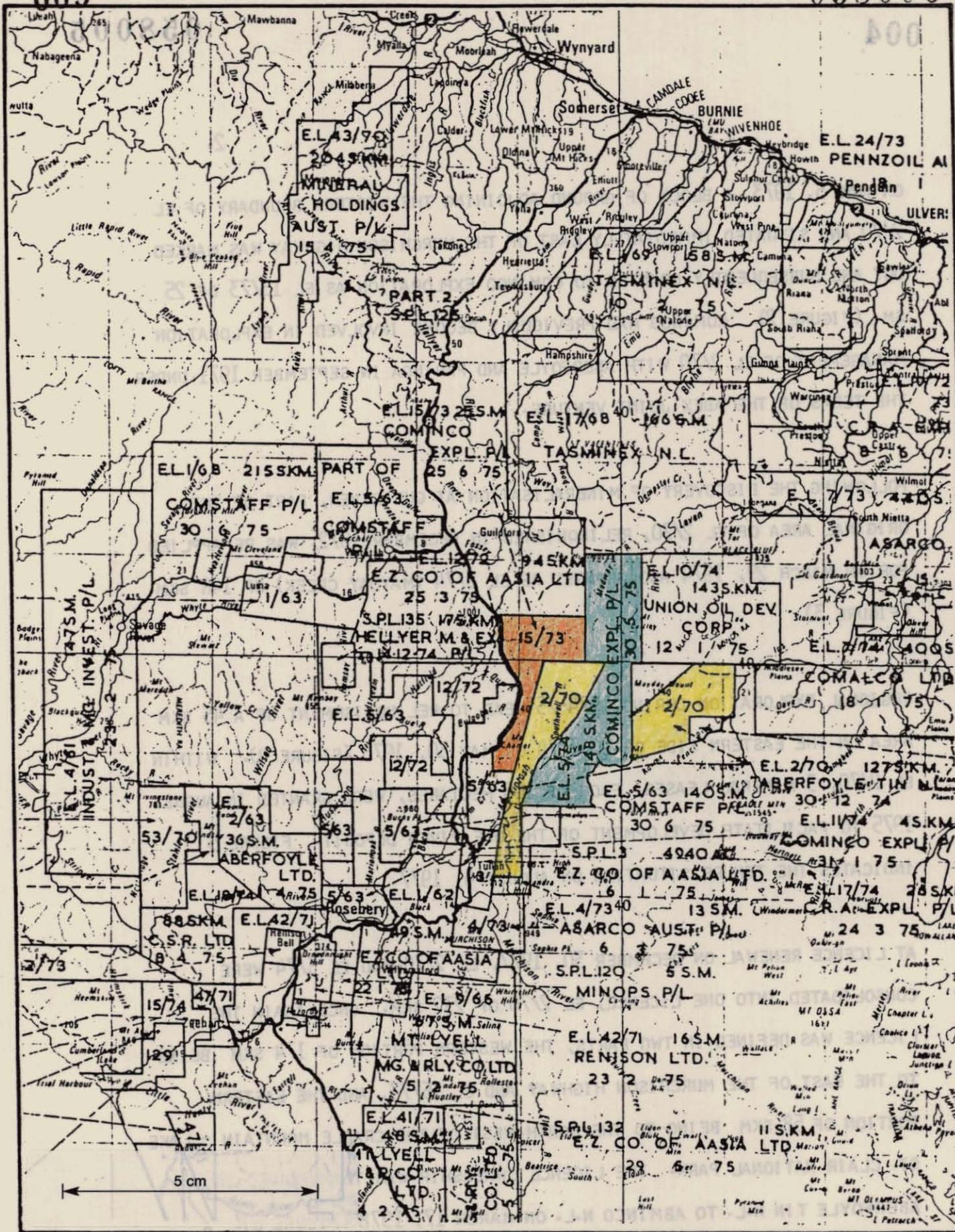
2.

ON MAY 5, 1973, A BLOCK OF GROUND ADJOINING THE WESTERN BOUNDARY OF EL 2/70 AND SITUATED IMMEDIATELY EAST OF THE MURCHISON HIGHWAY WAS MARKED OUT AND SUBSEQUENTLY GRANTED TO COMINCO EXPLORATION AS EL 15/73 OF 25 SM. (FIGURE 2). COMINCO HAD PREVIOUSLY BECOME INVOLVED IN EXPLORATION MANAGEMENT OF EL 2/70 WITH ABERFOYLE AND PARINGA IN SEPTEMBER 1971 UNDER THE TERMS OF THE ABEX JOINT VENTURE.

FOLLOWING THE DISCOVERY OF MINERALISATION AT QUE RIVER, PART OF THE ORIGINAL AREA OF EL 2/70, RELINQUISHED IN DECEMBER 1972, WAS RE-APPLIED FOR ON MARCH 29, 1974 AND GRANTED AS EL 5/74 (MAYDAY CREEK) OF 148 SKM. (FIGURE 3).

REGIONAL EXPLORATION DURING 1974-75 LEAD TO RELINQUISHMENT OF A 45 SKM AREA ON THE EASTERN SIDE OF EL 5/74 ON MAY 30, 1976 (FIGURE 4). WITHIN EL 2/70, 3 MINERAL LEASES, EACH OF 100 HECTARES, WERE GRANTED IN AUGUST 1975 TO FACILITATE DEVELOPMENT OF THE QUE RIVER DEPOSIT. FIGURE 5 INDICATES THE TENURE SITUATION ON AUGUST 4, 1977.

AT LICENCE RENEWAL ON DECEMBER 30, 1977, EL 2/70 AND EL 5/74 WERE CONSOLIDATED INTO ONE LICENCE, EL 2/70 OF 232 SKM. ONCE AGAIN THE LICENCE WAS DEFINED IN TWO PARTS, THE WESTERN PORTION OF 174 SKM BEING TO THE EAST OF THE MURCHISON HIGHWAY AND EL 15/73, AND THE EASTERN PORTION OF 58 SKM BEING TO THE NORTH-WEST OF THE CRADLE MOUNTAIN - LAKE ST. CLAIR NATIONAL PARK. THE LICENCE OWNERSHIP WAS TRANSFERRED FROM ABERFOYLE TIN N.L. TO ABMINCO N.L. ON MARCH 17, 1978 (FIGURE 6). A FURTHER TRANSFER TO CLEVELAND TIN LTD. TOOK PLACE ON MARCH 28, 1979.

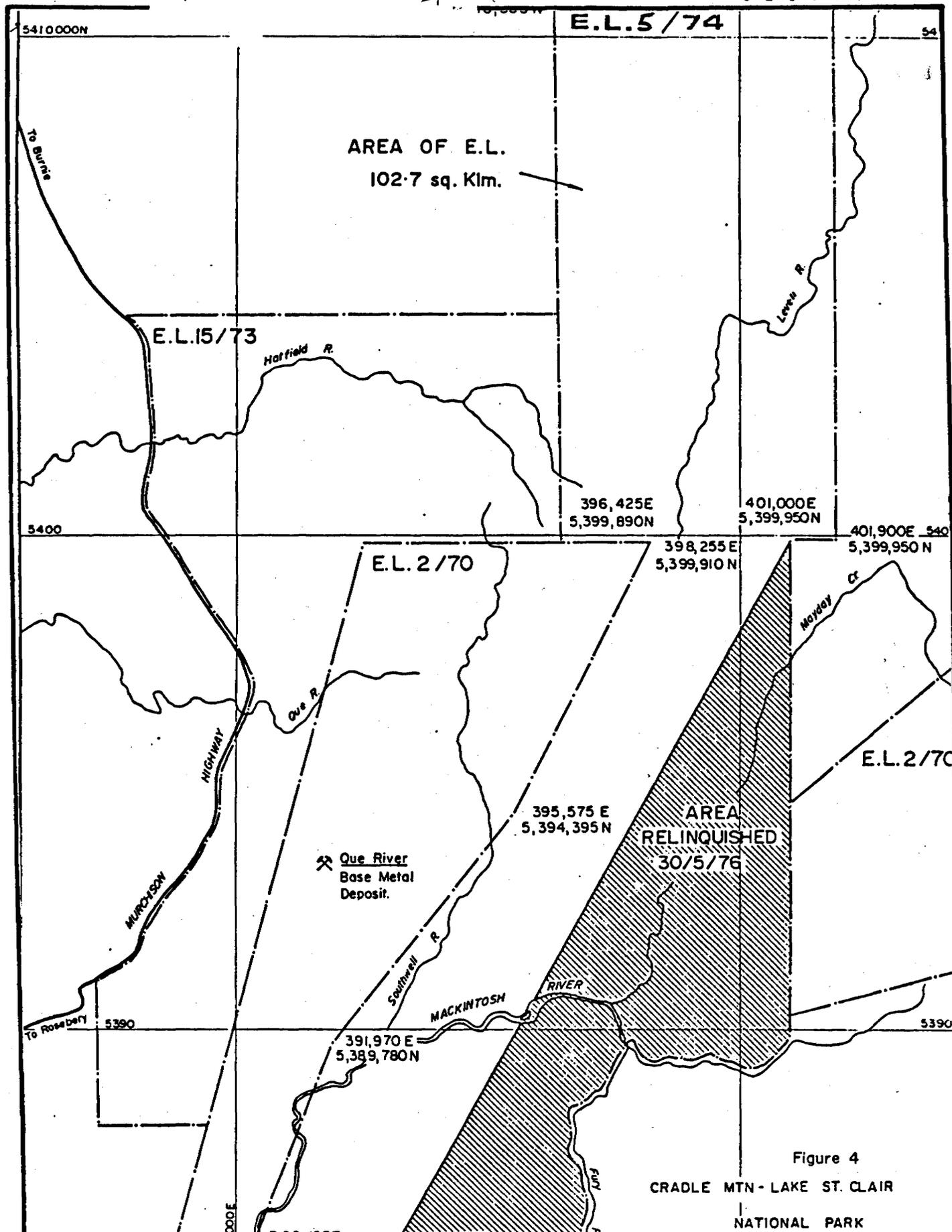


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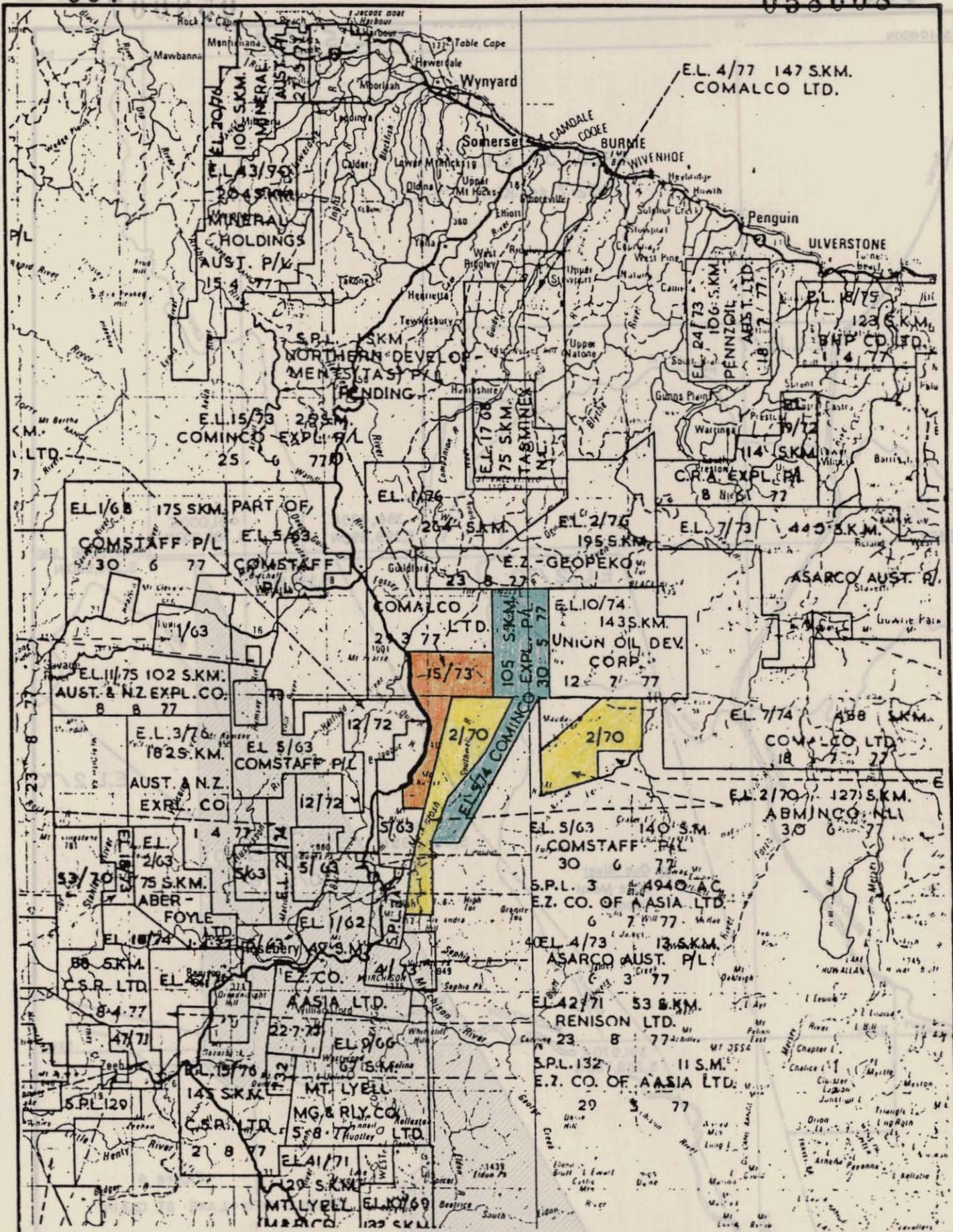
Extract From Mines Dept.  
 Tenure Plan dated December 16, 1974

Location code:  
 Date:  
 Scale: 1 : 500 000  
 Plate No Figure 3



**A Aberfoyle Exploration Pty Ltd**

Drawn by : R. K. Y.	NORTH WEST TASMANIA MAYDAY CK. E.L. 5/74 Locality Map showing Area Relinquished - 30/5/76	Scale : 1 : 100,000
Traced by : R. J. E.		Date : May, 1976
Checked by :		Plate : MC 12

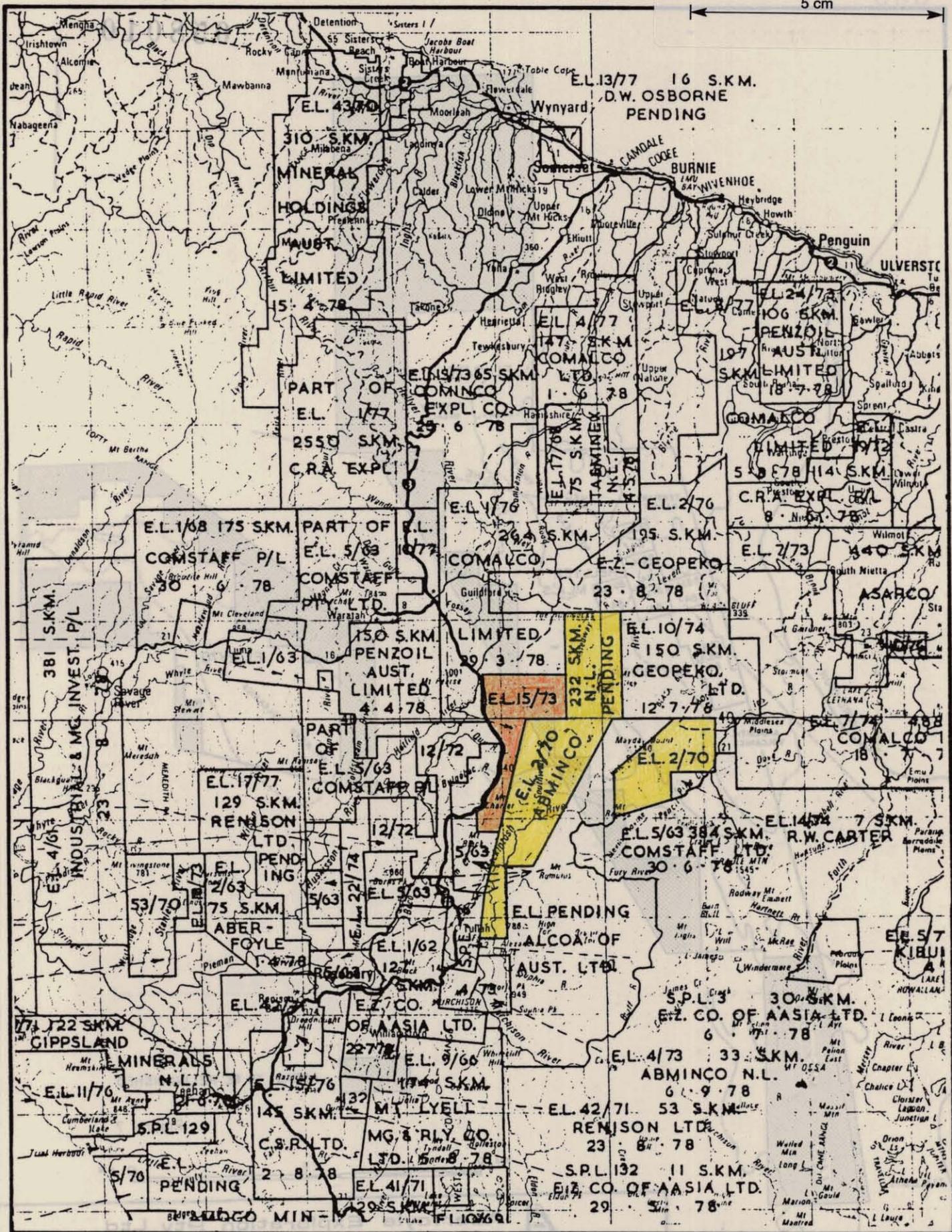


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 Revised by:      Date:

Extract From Mines Dept.  
 Tenure Plan Dated August 4, 1977

Location code:  
 Date:  
 Scale: 1:500 000  
 Plate No Figure 5

5 cm



**Aberfoyle Exploration Pty Ltd**

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 Revised by:      Date:

Extract From Mines Dept.  
 Tenure Plan Dated March 20, 1978

Location code:  
 Date:  
 Scale: 1 : 500 000  
 Plate No: Figure 6

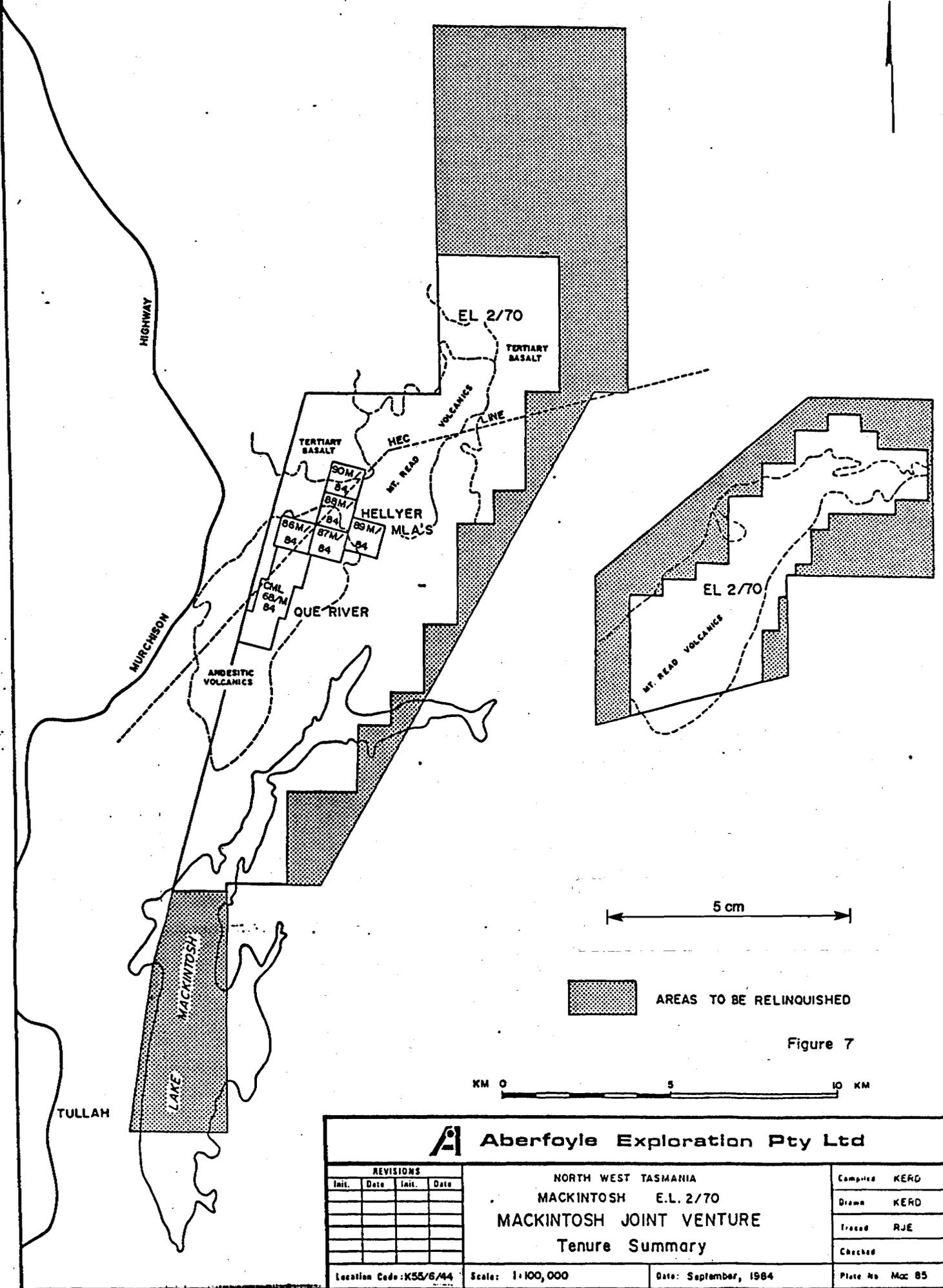


Figure 7

**Aberfoyle Exploration Pty Ltd**

REVISIONS			
Init.	Date	Init.	Date

NORTH WEST TASMANIA  
 MACKINTOSH E.L. 2/70  
 MACKINTOSH JOINT VENTURE  
 Tenure Summary

Compiled	KERD
Drawn	KERD
Traced	RJE
Checked	

3.

WORK IS NOW MANAGED BY ABERFOYLE EXPLORATION PTY. LTD. CURRENT EQUITIES IN THE MACKINTOSH JOINT VENTURE ARE ABERFOYLE 90%, PARINGA 10%.

ON OCTOBER 1, 1979, THE EASTERN PORTION OF EL 2/70 (MACKINTOSH EAST) BECAME THE SUBJECT OF A JOINT VENTURE AGREEMENT BETWEEN PEKO-WALLSEND OPERATIONS, CLEVELAND TIN LTD. AND PARINGA. THE JOINT VENTURE WAS MANAGED BY GEOPEKO, A DIVISION OF PEKO-WALLSEND. GEOPEKO INTRODUCED AMOCO MINERALS (NOW CYPRUS MINERALS AUSTRALIA CO.) INTO THE JOINT VENTURE AS JOINT MANAGER IN 1985. CURRENT EQUITIES ARE GEOPEKO-CYPRUS 80%, CLEVELAND TIN 18%, PARINGA 2%.

REVISED CONDITIONS GOVERNING EXPLORATION LICENCES WERE INTRODUCED BY THE DEPARTMENT OF MINES ON JULY 1, 1982. THIS RESULTED IN THE AREA OF EL 2/70 BEING REDUCED TO THE MAXIMUM PERMITTED SIZE OF 125 SKM AT THE DECEMBER 30, 1984 RENEWAL DATE. MACKINTOSH WEST NOW OCCUPIES 90 SKM, AND MACKINTOSH EAST 35 SKM. THE FINAL EXPIRY DATE OF EL 2/70 IS DECEMBER 30, 1987. FIGURE 7 INDICATES THE AREAS INVOLVED IN THE MACKINTOSH REDUCTION, THE QUE RIVER CML 68M/84, AND THE LOCATION OF 5 MINERAL LEASES, EACH OF 100 HECTARES, PEGGED ON AUGUST 9, 1984 TO COVER THE HELLYER DEPOSIT AND DEVELOPMENT AREAS. THESE LEASES HAVE YET TO BE GRANTED.

EL 15/73 (HATFIELD) IS NOW MANAGED 100% BY ABERFOYLE EXPLORATION PTY LTD. NO LAND REDUCTION IS REQUIRED BEFORE THE FINAL EXPIRY DATE OF JUNE 25, 1988. THE CURRENT TENURE SITUATION IS DEPICTED ON FIGURE 8.



## EXPLORATION HISTORY

THIS BRIEF REVIEW WITH ACCOMPANYING FIGURES DESCRIBES THE ON-GOING SEQUENCE OF EXPLORATION ACTIVITIES WHICH HAS LEAD TO THE PROGRESSIVE DEVELOPMENT OF ABERFOYLE'S EXPLORATION LICENCES IN THE MACKINTOSH DISTRICT AND THE DELINEATION OF TWO WORLD CLASS HIGH GRADE POLYMETALLIC MASSIVE SULPHIDE DEPOSITS. PROGRESS IS DIVIDED INTO PHASES :

- PHASE 1 : NOVEMBER 1969 TO JANUARY 1972
  - EARLY REGIONAL EXPLORATION
  
- PHASE 2 : FEBRUARY 1972 TO MARCH 1974
  - A/EM AND ANOMALY FOLLOW-UP
  
- PHASE 3 : APRIL 1974 TO JUNE 1975
  - QUE RIVER DISCOVERY AND DELINEATION
  
- PHASE 4 : JULY 1975 TO DECEMBER 1981
  - IP/SOIL GEOCHEM./MAPPING ERA
  
- PHASE 5 : JANUARY 1982 TO NOVEMBER 1983
  - UTEM PROGRAMME/HELLYER DISCOVERY
  
- PHASE 6 : DECEMBER 1983 TO NOVEMBER 1984
  - HELLYER DELINEATION ERA
  
- PHASE 7 : JANUARY 1985 TO PRESENT
  - TARGET/STRATIGRAPHIC DRILLING PHASE

5.

**PHASE 1 : NOVEMBER 1969 TO JANUARY 1972****NOVEMBER 1969 - MARCH 1970**

PARINGA MINING AND EXPLORATION CO. LTD. AS THE EXPLORATION OPERATOR OF ABERFOYLE LTD., COMMENCED EXPLORATION ON THE BACK PEAK PROSPECT IN NOVEMBER 1969. THE SUMMER FIELD PROGRAMME THROUGH TO MARCH 1970 COMPRISED GEOLOGICAL MAPPING, GEOCHEMICAL SAMPLING AND THE EXCAVATION OF 4 TRENCHES ON THE BACK PEAK GRID. SEVERAL WELL DEFINED LEAD ANOMALIES WERE OUTLINED OVER A STRIKE LENGTH OF 2000 FEET. A TOTAL OF 402 SOIL AND CHANNEL SAMPLES WERE COLLECTED.

**NOV. 1970 - MARCH 1971**

STREAM SEDIMENT SAMPLING COVERED THE AREA NORTH OF THE NATIONAL PARK BOUNDARY AND ALL GROUND WEST OF THE MACKINTOSH RIVER. DETAILED GRID SOIL SAMPLING REVEALED AN AREA OF ANOMALOUS LEAD VALUES TO THE SOUTH OF THE OLD BACK PEAK LEAD-SILVER PROSPECT. THE PROGRAMME INVOLVED 270 STREAM SEDIMENT SAMPLES, 695 SOIL SAMPLES AND 6000 FEET OF GROUND MAGNETICS.

**SEPT. 1971**

COMINCO EXPLORATION PTY. LTD. BECAME INVOLVED IN EXPLORATION MANAGEMENT OF THE PROPERTY, INITIALLY IN A CONSULTING ROLE, AND DESIGNED THE 1971-72 FIELD PROGRAMME.

014

058015

810

113660

Hostings R

Licence Boundary

QUE RIVER

MURCHISON HIGHWAY

MACKINTOSH RIVER

RIVER

Cu }  
 Pb } Geochemical Results  
 Zn } in ppm  
 - 20 +  
 HClO<sub>4</sub> digestion  
 AAS Analysis

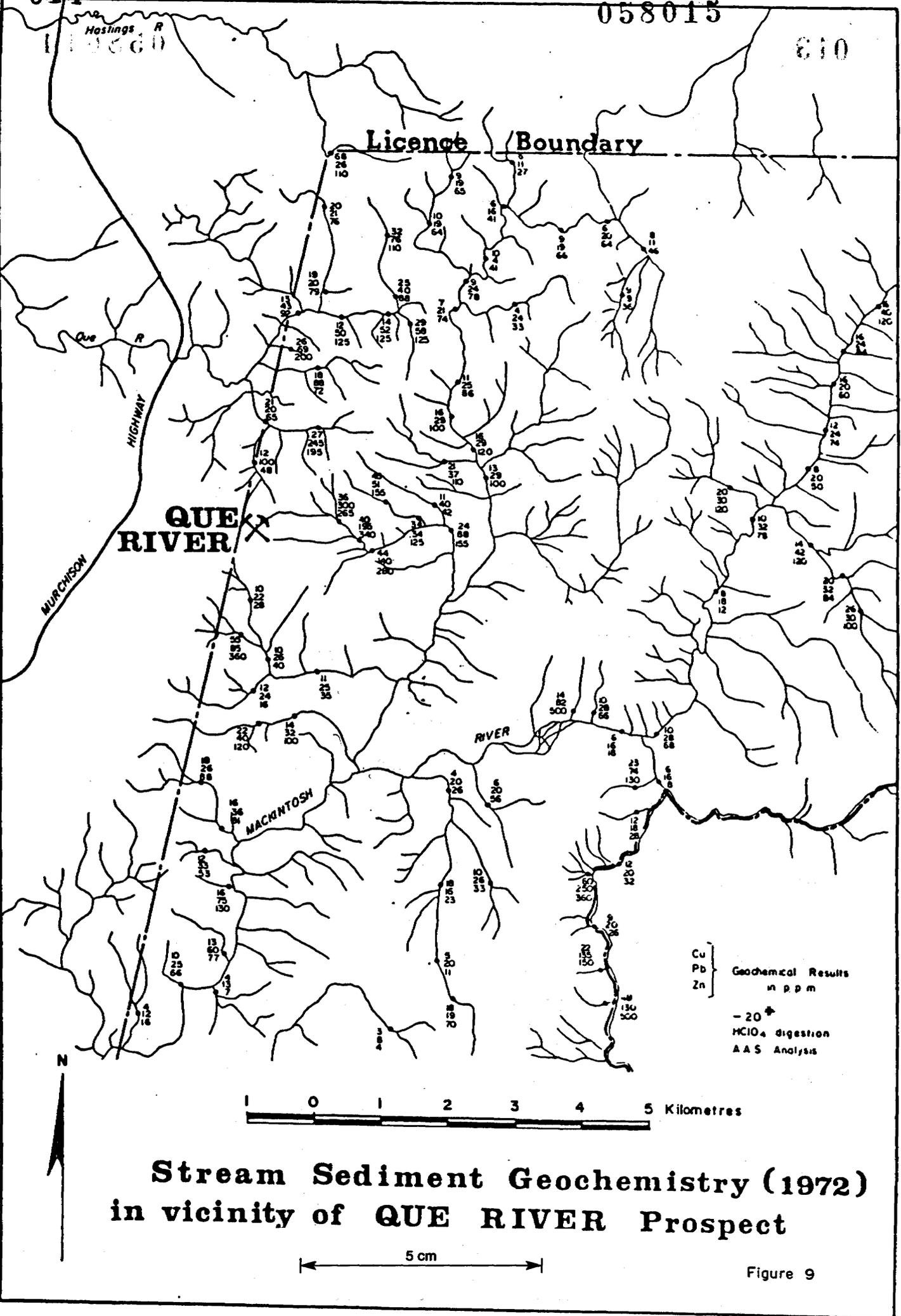


0 1 2 3 4 5 Kilometres

**Stream Sediment Geochemistry (1972)  
in vicinity of QUE RIVER Prospect**

5 cm

Figure 9



6.

NOV. 1971 - JAN. 1972

REGIONAL STREAM SEDIMENT SAMPLING OVER APPROXIMATELY 60 SM IN THE  
NORTHERN HALF OF THE LICENCE WAS COMPLETED (FIGURE 9). LINE CUTTING,  
GRIDDING AND SOIL SAMPLING WAS COMPLETED ON THE EASTERN HALF OF SPL 54.  
A TOTAL OF 1,380 STREAM AND SOIL SAMPLES WERE COLLECTED AND ANALYSED FOR  
CU, PB, ZN.

72 / 881

## PHASE 2 : FEBRUARY 1972 TO MARCH 1974

**FEB. 1972**

PROGRESS OF THE RECONNAISSANCE PROGRAMME AND FOLLOW-UP INVESTIGATIONS WAS BEING HAMPERED BY DENSE RAIN FOREST AND RUGGED TERRAIN.

ACCORDINGLY, AN AIRBORNE ELECTROMAGNETIC SURVEY WAS FLOWN BETWEEN 19-27 FEBRUARY, 1972. A TOTAL OF 400 SKM WERE FLOWN WITH A 320M LINE SPACING BY MCPHAR GEOPHYSICS USING THE H 400 EM SYSTEM AND A BARRINGER PROTON MAGNETOMETER MOUNTED IN A BELL JETRANGER. A NUMBER OF ANOMALIES WERE FOUND COINCIDENT WITH CAMBRIAN VOLCANICS AND REQUIRING FURTHER INVESTIGATION ON THE GROUND.

DEFINITION BY DETAILED SOIL GEOCHEMISTRY CONTINUED IN THE BACK PEAK - MT. REMUS AREA.

**AUG. - DEC. 1972**

ALL AVAILABLE DATA WAS REVIEWED. A COMINCO GEOPHYSICIST EXAMINED THE A/EM DATA AND RECOMMENDED FOLLOW-UP WITH EM OR SP.

**JAN. - NOV. 1973**

IT WAS RECOGNISED THAT EM ANOMALY NO. 8 PLOTTED CLOSE TO HIGH STREAM GEOCHEMICAL VALUES AND OLD WORKINGS AT GOLD HILL. ON MARCH 1, 1973, THE ABEX JOINT VENTURE COMMENCED WHICH FORMALLY INVOLVED THE ABERFOYLE GROUP AND COMINCO EXPLORATION IN JOINT INVESTIGATION OF THIS PROPERTY. A PROGRAMME WAS DESIGNED TO FOLLOW-UP A/EM ANOMALIES ON THE GROUND.

8.

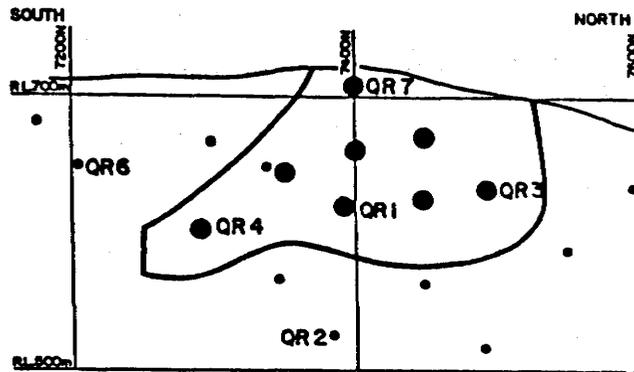
BLACK AND WHITE 1:25,000 PHOTOGRAPHY WAS FLOWN OVER THE MT. READ -  
DUNDAS TROUGH BELT FROM MACQUARIE HARBOUR TO THE HELLYER GORGE.

EXPENDITURE IN THE 6 MONTHS TO JUNE 30, 1973 WAS \$15,272.

DEC. 1973 - MARCH 1974

ON DEC. 1, 1973 GRIDDING CREWS WENT INTO MACKINTOSH ANOMALY NO. 8.  
EXPLORATION WORK ESTABLISHED A SURVEYED GRID AND DEFINED THE ANOMALY BY  
VHEM, MAGNETICS, SOIL GEOCHEMISTRY AND MAPPING. SULPHIDES (5%Zn, 1%Cu)  
WERE FOUND IN 1 METRE DEEP PITS - DIAMOND DRILLING WAS REQUIRED.

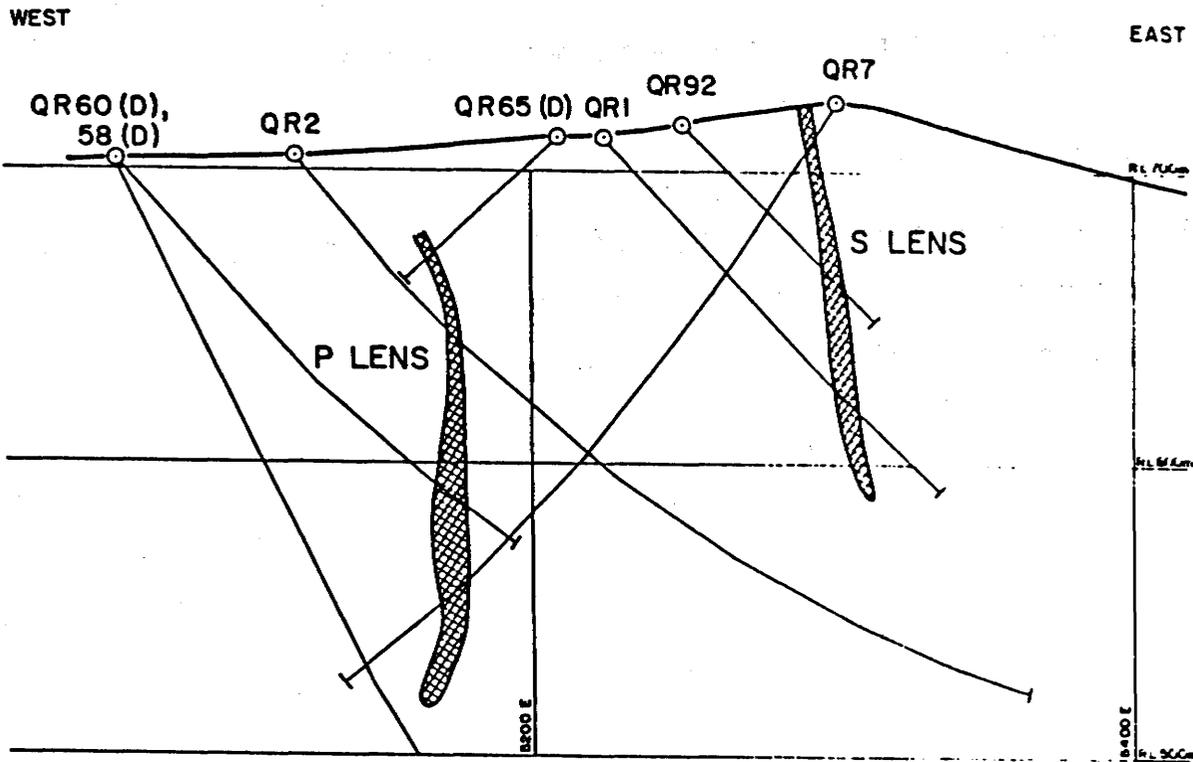
AN EXTENSIVE SUMMER PROGRAMME IN OTHER PARTS OF THE PROPERTY SAW  
DETAILED GRIDDING AND FOLLOW-UP OF 6 A/EM ANOMALIES LOCATED THE PREVIOUS  
YEAR. (ON MACKINTOSH EAST DEFINITION OF ANOMALIES 9, 10 AND 11 INVOLVED  
11.8 LKM OF GRID, 7.4 LKM EM AND 6.8 LKM MAGNETICS).



LEGEND

- ORE
- SUB-ORE

Longitudinal section "S" lens - 1975



Section at 7400<sup>N</sup> - 1975

**Aberfoyle Exploration Pty Ltd**

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Revised by:      Date:

**QUE RIVER SECTIONS**

Location code:
Date:
Scale:    As Shown
Plate No    Figure 10

## PHASE 3 : APRIL 1974 TO JUNE 1975

## APRIL 1974 - JUNE 1974

A 7 HOLE DIAMOND DRILLING PROGRAMME COMMENCED ON APRIL 23, 1974 IN THE ANOMALY NO. 8 AREA. THE FIRST HOLE QR1 RETURNED AN INTERSECTION OF 11.44 M OF 2% CU, 5% PB AND 7% ZN IN WHAT IS NOW THE S LENS (FIGURE 10). THIS PROGRAMME WAS COMPLETED ON JULY 9 FOR 1,431.85 M.

ON THE ADJACENT HATFIELD LICENCE TRENCHING, ACCESS, MAPPING AND STREAM SEDIMENT SAMPLING HAD COMMENCED.

EXPENDITURE ON BOTH PROPERTIES FOR THE YEAR TO JUNE 30, 1974 AMOUNTED TO \$136,310.

## JULY - DECEMBER 1974

DRILLING CONTINUED AT THE QUE RIVER PROSPECT, AS WELL AS A CONCENTRATED EXPLORATION EFFORT ON THE ADJACENT PROPERTIES. 18.4 LKM OF GRID WAS CUT AND SURVEYED. 2269 'A' AND 'C' HORIZON SOIL SAMPLES WERE COLLECTED AND ANALYSED FOR CU, PB, ZN (1559 FOR FE). WATER SAMPLES WERE ANALYSED FOR HG, SE, CD, CU, PB, ZN AND SULPHATE. GEOPHYSICAL EXPLORATION INVOLVED 2.5 LKM IP, 8 LKM SP, 17 LKM OF MAGNETICS, 11.5 LKM VHEM AND MISE'-A-LA-MASSE IN QR'S 1,2,7.

IN THE MT. CHARTER AREA OF THE HATFIELD LICENCE 2 LKM OF TRACK WAS CONSTRUCTED AND MAPPED.

TOTAL EXPENDITURE IN THE DISTRICT FOR THE SIX MONTH PERIOD WAS \$235,544.

**JAN. - JUNE 1975**

BETWEEN FEBRUARY AND MARCH 1975 A DETAILED A/EM SURVEY WAS FLOWN OVER AN AREA WITHIN THE WESTERN PORTION OF THE MACKINTOSH LICENCE AND THE ADJOINING HATFIELD LICENCE. LINE SPACING AND TERRAIN CLEARANCE WERE BOTH NOMINALLY 160 M. 11 ANOMALIES WERE SELECTED FOR FOLLOW-UP. 7.5 LKM OF GRID WAS CUT AND MAPPED AND 750 SOIL SAMPLES COLLECTED AND ANALYSED FOR CU, PB, ZN.

ON MACKINTOSH EAST, 4 LINES OF IP WERE CONDUCTED BY GEOQUEST AND ON THE ADJOINING MAYDAY LICENCE A HELICOPTER SUPPORTED GEOLOGICAL MAPPING AND STREAM SEDIMENT PROGRAMME WAS CARRIED OUT IN THE ROMULUS PUP-BACKWATER CREEK AREA.

A MAJOR RECONNAISSANCE PROGRAMME ON THE HATFIELD LICENCE INVOLVED 11.5 LKM OF GRID CUTTING AND MAPPING, 1135 SOIL SAMPLES AND 154 STREAM SEDIMENT SAMPLES, ALL ANALYSED FOR CU, PB, ZN.

EXPENDITURE FOR THE SIX MONTHS TO JUNE 30, 1975 WAS \$59,815.



## PHASE 4 : JULY 1975 TO DECEMBER 1981

## JULY 1975 - JUNE 1976

DURING THIS PERIOD THERE WAS EXTENSIVE EXPLORATION CONDUCTED ON THE MACKINTOSH AND HATFIELD LICENCES EXCLUDING THE QUE RIVER MINERAL LEASES\*. ON MACKINTOSH, 19.9 LKM OF GRIDDING AND 22 LKM OF MAPPING (INCLUDING PREPARATION OF 42 THIN SECTIONS, T/S) WAS COMPLETED ALONG WITH THE COLLECTION OF 1680 SOIL SAMPLES FOR CU, PB, ZN ANALYSIS. A MAJOR PROGRAMME OF IP COVERAGE WAS COMMENCED WITH 11 LKM. GRIDDING AND MAPPING ON THE ADJACENT HATFIELD PROPERTY INVOLVED 11.1 LKM AND 20 LKM RESPECTIVELY, WITH 30 T/S. 1190 SOIL SAMPLES WERE COLLECTED AND 22 LKM OF IP COMPLETED. 3 DIAMOND HOLES ACCOUNTED FOR 494.3 M OF DRILLING.

IP AT 2 TO 2.5 KM INTERVALS TO MEASURE THE THICKNESS OF THE BASALT, STREAM SAMPLING AND GRID MAPPING WAS CARRIED OUT ON THE MAYDAY LICENCE.

TOTAL EXPENDITURE IN THE DISTRICT DURING THE 12 MONTHS WAS \$188,381.

\* 3 MINERAL LEASES EACH OF 100 HECTARES WERE GRANTED OVER THE QUE RIVER AREA IN AUGUST 1975 (FIGURE 11). BY SEPTEMBER 30, 1975 A TOTAL OF 71 HOLES FOR 16,338.78 M HAD BEEN COMPLETED ON THE QUE RIVER PROSPECT. EXPLORATION EXPENDITURE FROM NOV. 28, 1974 WAS \$1,224,922. DEVELOPMENT AND PRODUCTION ASSISTANCE DRILLING BROUGHT THIS TOTAL TO 25,504.65 M IN 108 DRILL HOLES BY DEC. 6, 1976. PRODUCTION COMMENCED IN FEBRUARY 1981.

023

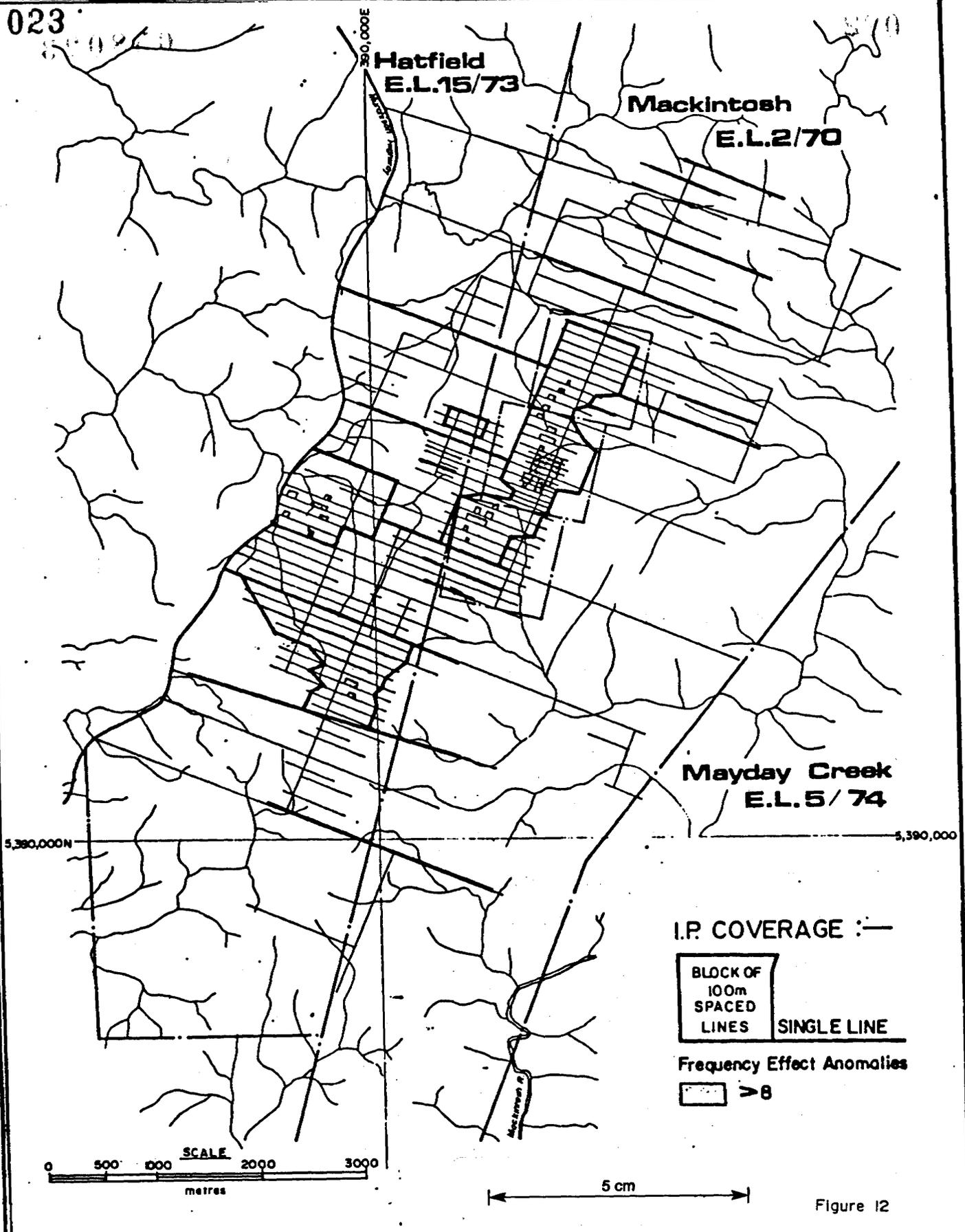


Figure 12

**A Aberfoyle Exploration Pty Ltd**

<p>Drawn CHY</p> <p>Traced JD</p> <p>Checked</p> <p>Revised by JJB Date 11/7/77</p>	<p>Mackintosh West / Hatfield Licence Areas</p> <p><b>GEOPHYSICAL SUMMARY PLAN</b></p>	<p>Location code</p> <p>Date June 1977</p> <p>Scale 1:50,000</p> <p>Plate No QR 98</p>
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024

020

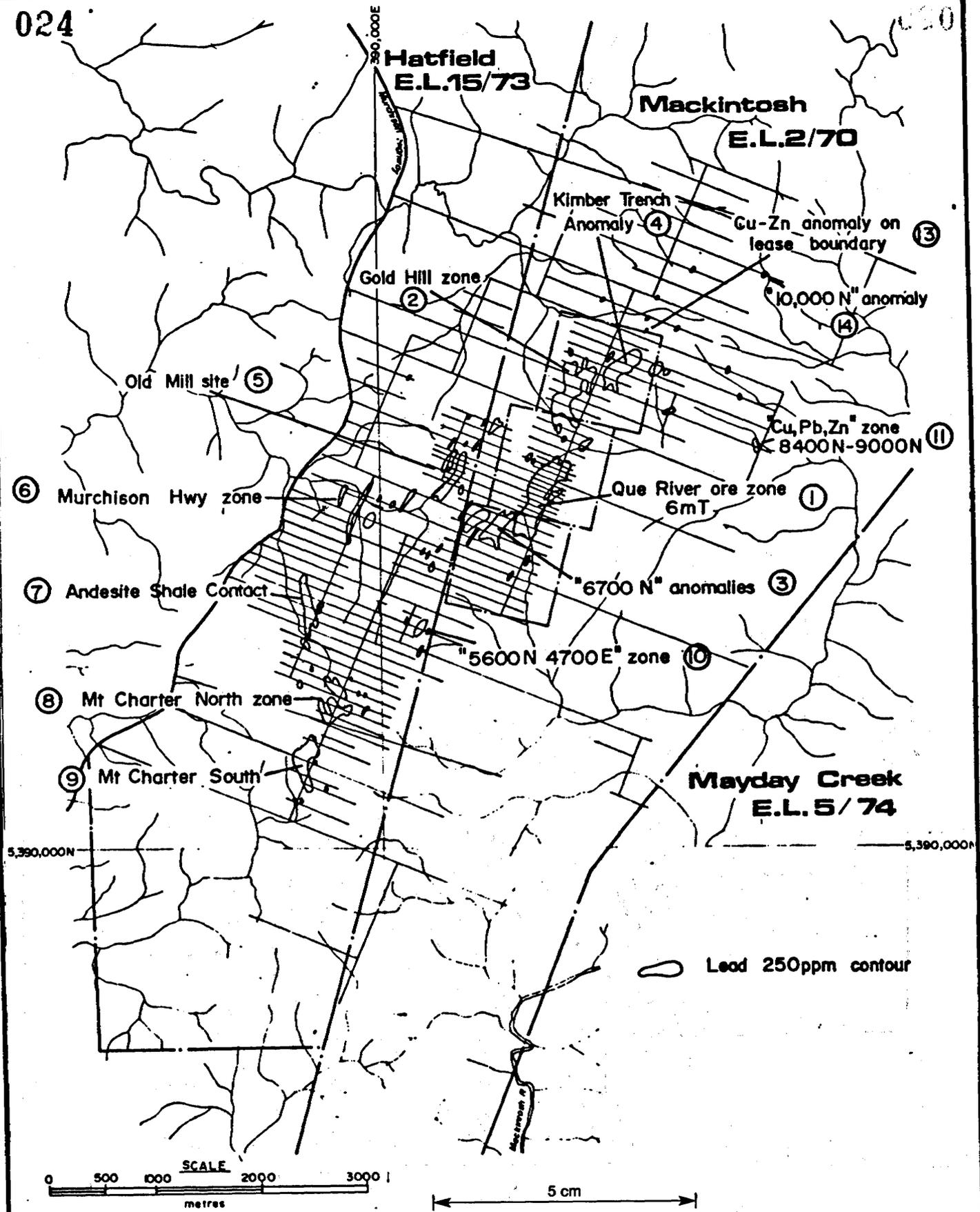
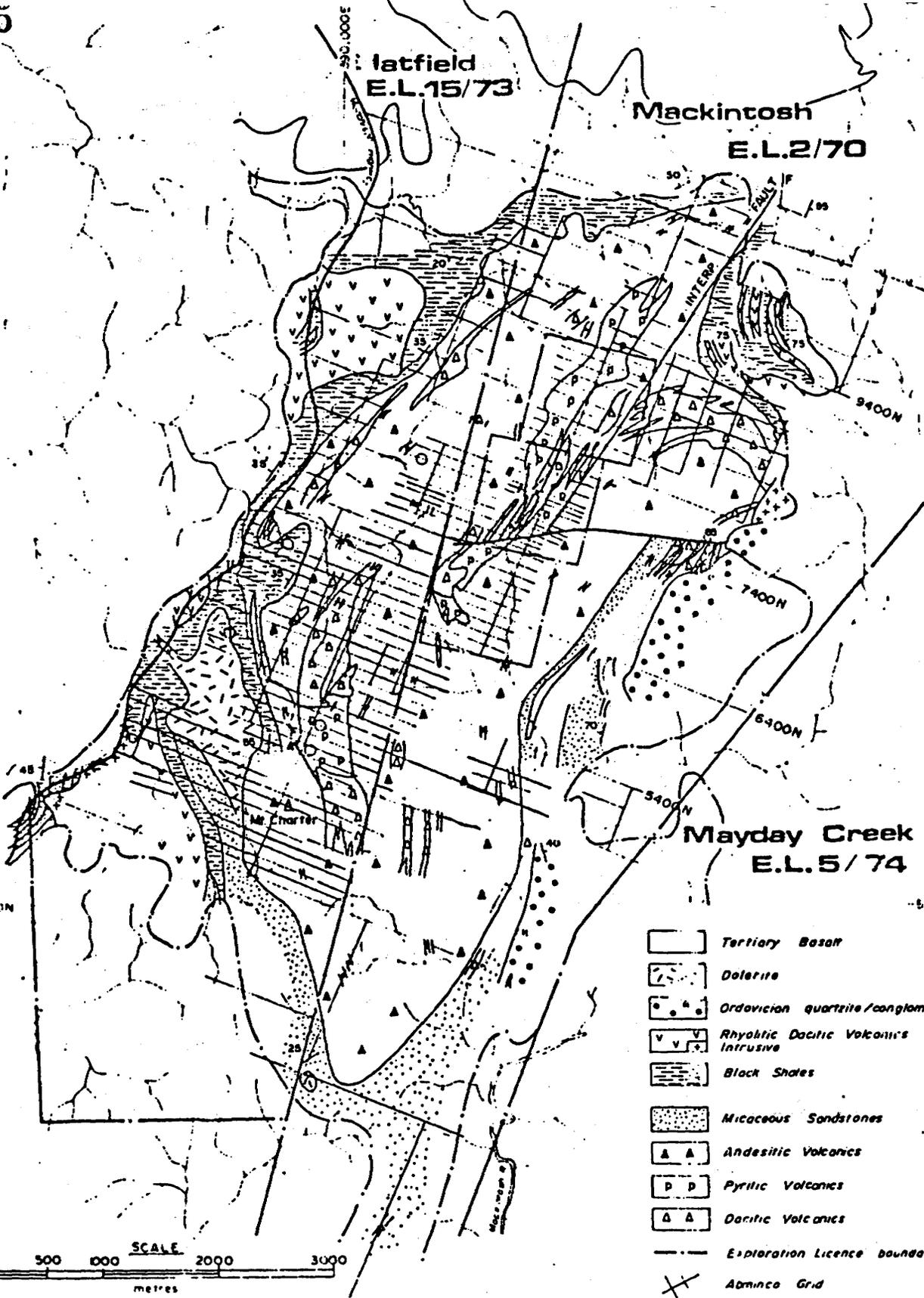


Figure 13

**Aberfoyle Exploration Pty Ltd**

Drawn Traced Checked Revised by	CHY RKY  Date	Mackintosh West / Hatfield Licence Areas  <b>GEOCHEMICAL SUMMARY PLAN</b>	Location code Date Scale Plate No	 June 1977 1:50,000 QR 100
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025



- Tertiary Basin
- Dolerite
- Ordovician quartzite/conglomerate
- Rhyolitic Dacitic Volcanic Intrusive
- Black Shales
- Micaceous Sandstones
- Andesitic Volcanics
- Pyritic Volcanics
- Dacitic Volcanics
- Exploration Licence boundary
- Admin Grid
- Boundary of mapped area

○ Diamond drill hole beyond Que River environs.

Figure 14

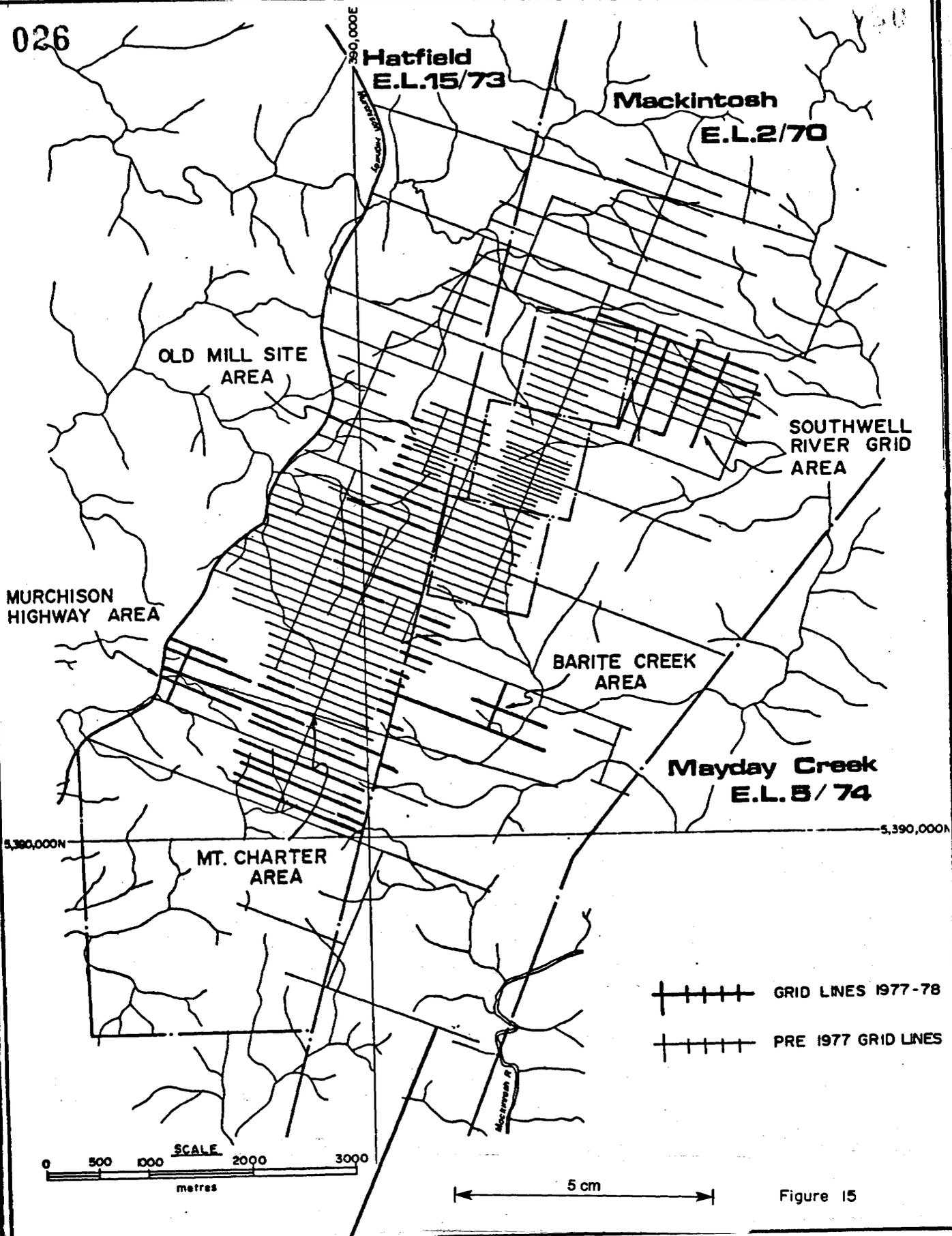
**Aberfoyle Exploration Pty Ltd**

Drawn	C.H.Y.
Checked	R.J.E.
Reviewed by	Date

NORTH WEST TASMANIA  
 QUE RIVER REGIONAL GEOLOGY  
 SUMMARY MAP

Licence code	
Date	June, 1977
Scale	1:50,000
Plate No	Mnr 53

026



**A Aberfoyle Exploration Pty Ltd**

Drawn	C.H.Y.	<b>NORTH WEST TASMANIA</b> <b>Mackintosh West/ Hatfield Licence Areas</b> <b>GRID &amp; SOIL GEOCHEM. COVERAGE 1977-78</b>	Location code	
Traced	R.J. E.		Date	June, 1978
Checked			Scale	1: 50,000
Revised by	Date		Plate No	Moc. 63

580870

058028

5 cm

027

S90,000E

Hatfield  
E.L.15/73

Mackintosh  
E.L.2/70

Mayday Creek  
E.L.5/74

S390,000N

S390,000N

TOTAL I.P. COVERAGE



BLOCK OF LINES  
1977-78



SINGLE LINE 1977-78



PRE 1977 SINGLE LINE



PRE 1977 BLOCK OF LINES



Figure 16



**Aberfoyle Exploration Pty Ltd**

Drawn C.H.Y.

Traced R.J.E.

Checked

Revised by Date

NORTH WEST TASMANIA  
Mackintosh West/ Hatfield Licence Areas  
I.P. COVERAGE 1977-1978

Location code

Date June, 1978

Scale 1 : 50, 000

Plate No Mac 62

028

058029

12.

**JULY 1976 - JUNE 1977**

REGIONAL AND DETAILED EXPLORATION WITH THE EMPHASIS ON DETAILED MAPPING, SOIL GEOCHEMISTRY AND IP GEOPHYSICS WAS MAINTAINED IN THE MACKINTOSH DISTRICT. GRIDDING INVOLVED A FURTHER 27.35 LKM AND MAPPING AT 1:10,000 AND 1:2,500 SCALES SOME 32 LKM (WITH 14 T/S). 1630 'c' HORIZON SOIL SAMPLES WERE COLLECTED AND ANALYSED FOR CU, PB, ZN AND STATISTICAL ANALYSIS OF RESULTS WAS INITIATED. IP SURVEYS WERE CONDUCTED OVER 8.6 LKM OF GRID. 2 DIAMOND DRILL HOLES ON THE HATFIELD LICENCE WERE COMPLETED FOR 350.5 M.

BY JUNE 1977 THE TOTAL GRIDDED AREA COVERED 32 SKM AND INVOLVED 148.6 LKM. IP COVERAGE, SOIL GEOCHEMICAL ANOMALIES AND REGIONAL GEOLOGY ARE SHOWN ON FIGURES 12 TO 14 RESPECTIVELY.

EXPENDITURE FOR THE YEAR WAS \$114,296.

**JULY 1977 - JUNE 1978**

A FURTHER 47.1 LKM OF GRID CUTTING AND DETAILED MAPPING WAS UNDERTAKEN ON THE ADJACENT PROPERTIES (FIGURE 15), FOLLOWED UP WITH 35.6 LKM OF IP GEOPHYSICS (FIGURE 16) AND 450 M OF TRENCHING; THE LATTER PREDOMINANTLY ON MACKINTOSH EAST TO EXAMINE PREVIOUSLY IDENTIFIED SOIL ANOMALIES WITH WEAK COINCIDENT IP. RESEARCH WORK BY THE FEDERAL INSTITUTE OF GEOSCIENCES AND NATURAL RESOURCES OF THE GOVERNMENT OF THE FEDERAL REPUBLIC OF GERMANY COMMENCED WITH THE ANALYSIS OF 46 SAMPLES FOR WHOLE ROCK SILICATES AND RARE EARTH ELEMENTS.

COMBINED EXPENDITURE FOR THE 12 MONTHS WAS \$102,134.



**JULY 1978 - JUNE 1979**

EXPLORATION FOCUSED ON THE HATFIELD LICENCE WITH 2 DIAMOND DRILL HOLES BEING COMPLETED FOR 462.4 M AT MT. CHARTER. LITHO-GEOCHEMICAL PARAMETERS WERE ASCRIBED TO THE MAIN ROCK TYPES ON THE PROPERTIES. ABERFOYLE BROUGHT THE NEW UTEM SYSTEM INTO AUSTRALIA FROM CANADA AND CONDUCTED 9 LKM OF EXPERIMENTAL SURVEY NEAR MT. CHARTER.

EXPENDITURE FOR THE YEAR TO JUNE 30, 1979 WAS \$69,506.

**JULY 1979 - JUNE 1980**

ACTIVITIES THIS YEAR CONCENTRATED ON THE RESEARCH OF THE GERMAN GOVERNMENT AGENCY INTO EVALUATING PARAMETERS FOR A GENETIC APPROACH TO MINERAL EXPLORATION. DETAILED PETROLOGY AND GEOCHEMISTRY WAS PERFORMED ON 143 ROCK SAMPLES FROM THE MACKINTOSH-HATFIELD AREA (FIGURE 17). NEGOTIATIONS WERE COMMENCED WITH THE CSIRO TOWARDS COLLABORATIVE STUDIES WHICH COULD BE INSTRUMENTAL IN THE DISCOVERY OF FURTHER MINERALISATION.

A JOINT VENTURE WITH GEOPEKO ON MACKINTOSH EAST INVOLVED STREAM SEDIMENT SAMPLING, DETAILED MAPPING, SOIL SAMPLING AND A HELICOPTER SUPPORTED DIGHEM SURVEY.

EXPENDITURE FOR THE YEAR TO JUNE 30, 1980 WAS \$51,575.

031

058032

Hatfield  
E.L. 15/73

Mackintosh  
E.L. 2/70

Mayday Creek  
E.L. 5/74

5,390,000N

5,390,000N

— GRID LINES 1980-81  
 — PRE 1980 GRID LINES

0 500 1000 SCALE 2000 3000  
 metres

5 cm

Figure 18



**Aberfoyle Exploration Pty Ltd**

Drawn: J.R.S.  
 Traced: J.L.R.  
 Checked:  
 Revised by: Date.

NORTH WEST TASMANIA  
 Mackintosh West / Hatfield Licence Areas  
 GRID & SOIL GEOCHEM. COVERAGE 1980-81

Location code  
 Date: May, 1981  
 Scale 1:50,000  
 Plate No Mac 63

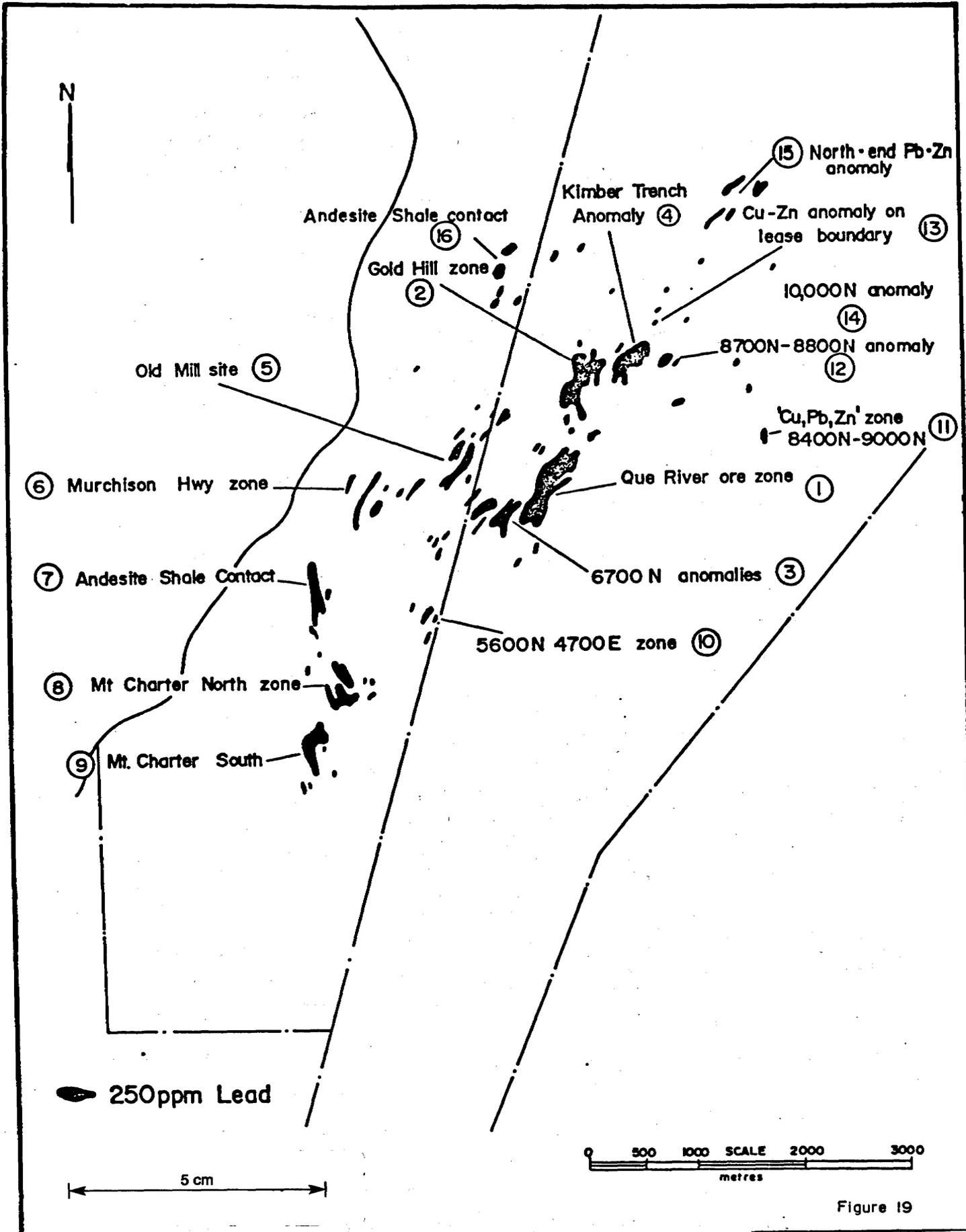


Figure 19

**A Aberfoyle Exploration Pty Ltd**

Drawn: J.R.S.  
 Traced: R.J.E.  
 Checked:  
 Revised by: Date:

NORTH WEST TASMANIA  
 MACKINTOSH / HATFIELD E.L. AREAS  
 GEOCHEMICAL SUMMARY PLAN

Location code:  
 Date: July, 1981  
 Scale: 1:50,000  
 Plate No: QR 100

033

058034

Hatfield  
E.L. 15/73

Mackintosh  
E.L. 2/70

Mayday Creek  
E.L. 5/74

I.P. Chargeability Contours 1980-81  
(contour interval 25 milliseconds)

TOTAL I.P. COVERAGE

SINGLE LINE 1980-81

PRE 1980 SINGLE LINE

PRE 1980 BLOCK OF 100 M  
SPACED LINES



Figure 20



# Aberfoyle Exploration Pty Ltd

Drawn JRS

Traced JLR

Checked

Revised by Date

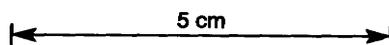
NORTH WEST TASMANIA  
Mackintosh West / Hatfield Licence Areas  
I.P. COVERAGE 1980-81

Location code

Date May, 1981

Scale 1:50,000

Plate No Mac 62



**JULY 1980 - JUNE 1981**

EXPLORATION DURING THE 1980-81 SUMMER SEASON INVOLVED 32 LKM OF GRIDDING AND DETAILED MAPPING (FIGURE 18) AND THE COLLECTION AND ANALYSIS FOR CU, PB, ZN OF 3250 'c' HORIZON SOIL SAMPLES. VALUES WERE CONTOURED AND ANOMALIES DEFINED (FIGURE 19). 15.7 LKM OF 100 M SPACED DIPOLE-DIPOLE IP WAS COMPLETED ACROSS A BELT OF PROSPECTIVE VOLCANIC STRATIGRAPHY SITUATED TO THE NORTH-WEST OF THE QUE RIVER MINE AREA (FIGURE 20). TARGET DEFINITION CONTINUED ON MACKINTOSH EAST.

EXPENDITURE FOR THE 12 MONTHS WAS \$147,578.

15.

**JULY - DEC. 1981**

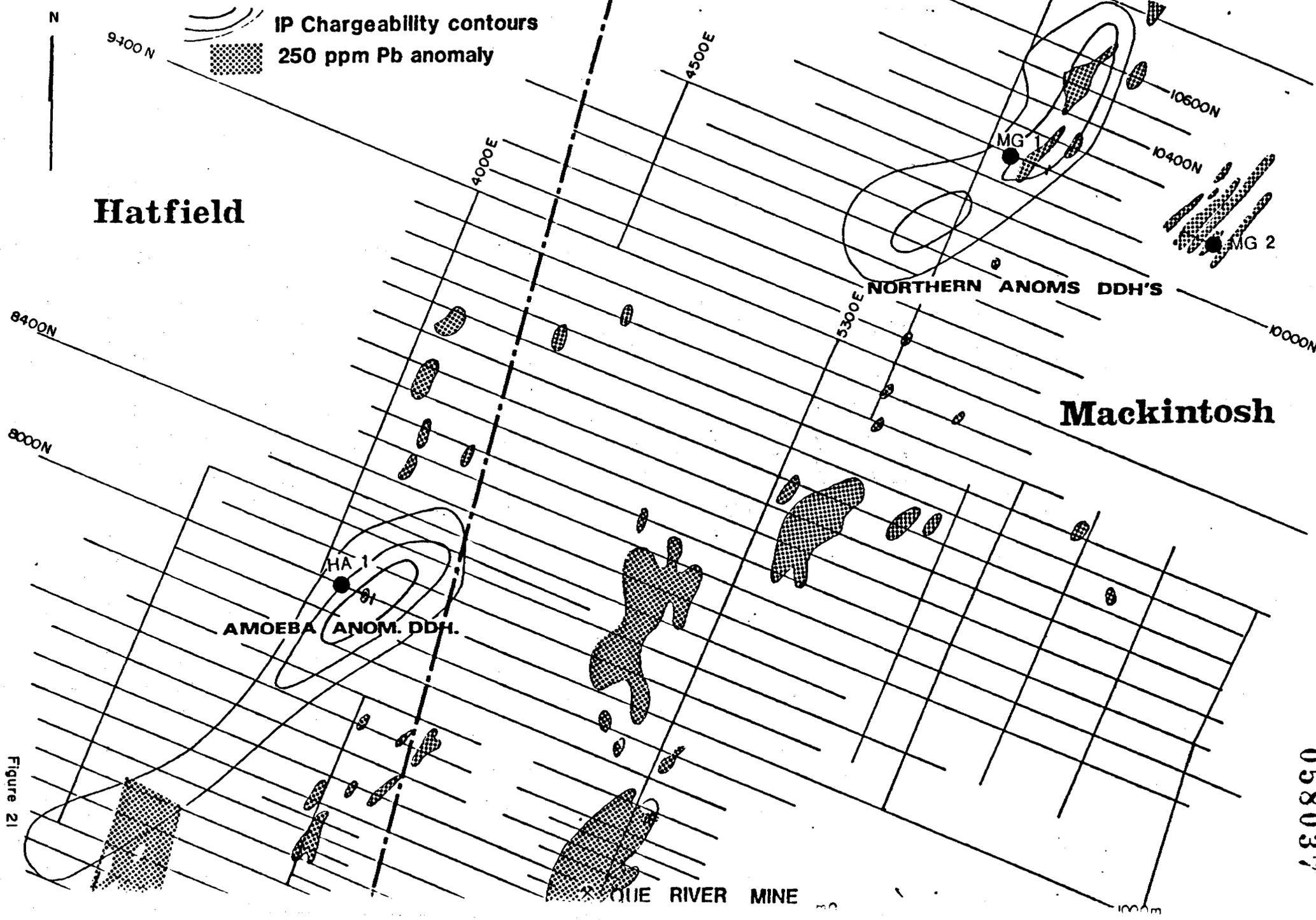
A FOLLOW-UP PROGRAMME CONSISTED OF 3.75 LKM OF GRID CUTTING, COLLECTION OF 380 'c' HORIZON SOIL SAMPLING AND DETAILED 50 M SPACED DIPOLE-DIPOLE IP (12.95 LKM) WITH 1.62 LKM USING 100 M ARRAYS. THREE DRILL TARGETS WITH COINCIDENT IP AND SOIL GEOCHEMISTRY WERE DEFINED IN THE MACKINTOSH WEST - HATFIELD AREA. FOR THE FIRST TIME ON THE PROPERTY LEAD ISOTOPE ANALYSES WERE USED TO HELP DISCRIMINATE ANOMALIES ASSOCIATED WITH CAMBRIAN MASSIVE SULPHIDES.

ON MACKINTOSH EAST, 1 DIAMOND DRILL HOLE WAS COMPLETED FOR 156.0 M, FOLLOWING TARGET DEFINITION BY POWER AUGER SAMPLING.

EXPENDITURE FOR THE 6 MONTHS TO DEC. 30, 1981 WAS \$104,169.

(FIRST DERIVATIVE EXPLORATION OF THE ATTRACTIVE VOLCANIC STRATIGRAPHY WITHIN THE MACKINTOSH-HATFIELD PROPERTIES WAS NOW VIRTUALLY COMPLETE USING DETAILED GRID MAPPING, SOIL GEOCHEMISTRY AND IP GEOPHYSICS, AS WELL AS A/EM. NO COINCIDENT FIRST ORDER SOIL GEOCHEMICAL, IP OR EM TARGETS OF A MAGNITUDE SIMILAR TO THAT AT GIE RIVER HAD BEEN DETECTED. FUTURE EXPLORATION WILL REQUIRE TECHNIQUES SUCH AS TRACE ELEMENT GEOCHEMISTRY, ALTERATION STUDIES AND DEEP SEARCHING GEOPHYSICAL TECHNIQUES).

# HATFIELD/MACKINTOSH SUMMARY PLAN



036

200201

Figure 21

058037

037

058038

1880

Hatfield  
E.L. 15/73

Mackintosh  
E.L. 2/70

Loop 12

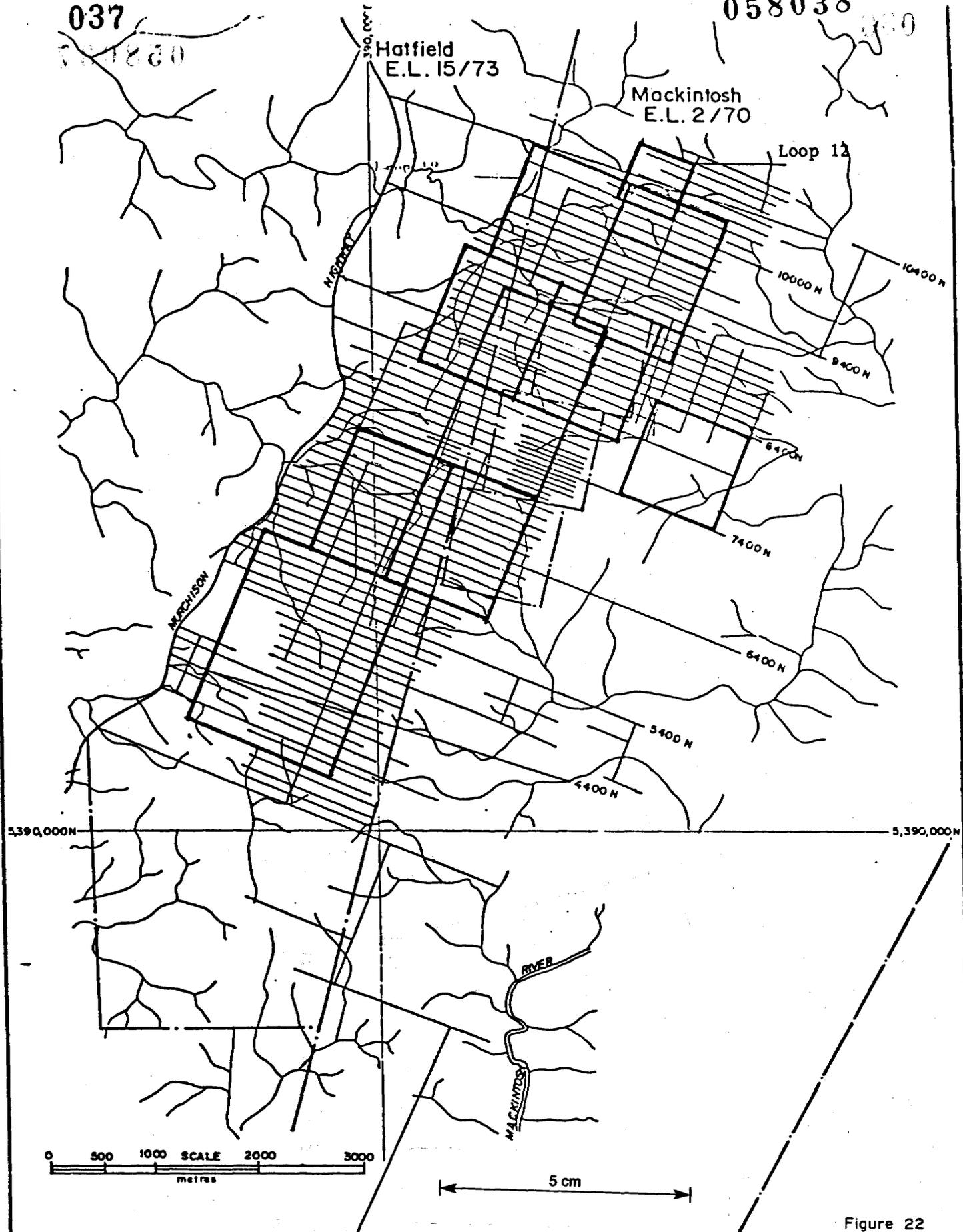


Figure 22

 **Aberfoyle Exploration Pty Ltd**

Drawn: J.R.S	NORTH WEST TASMANIA Mackintosh West / Hatfield Licence Areas ORIENTATION OF UTEM LOOPS - 1983	Location code
Traced: J.L.R.		Date: May, 1981
Checked:		Scale 1:50,000
Revised by:      Date:		Plate No

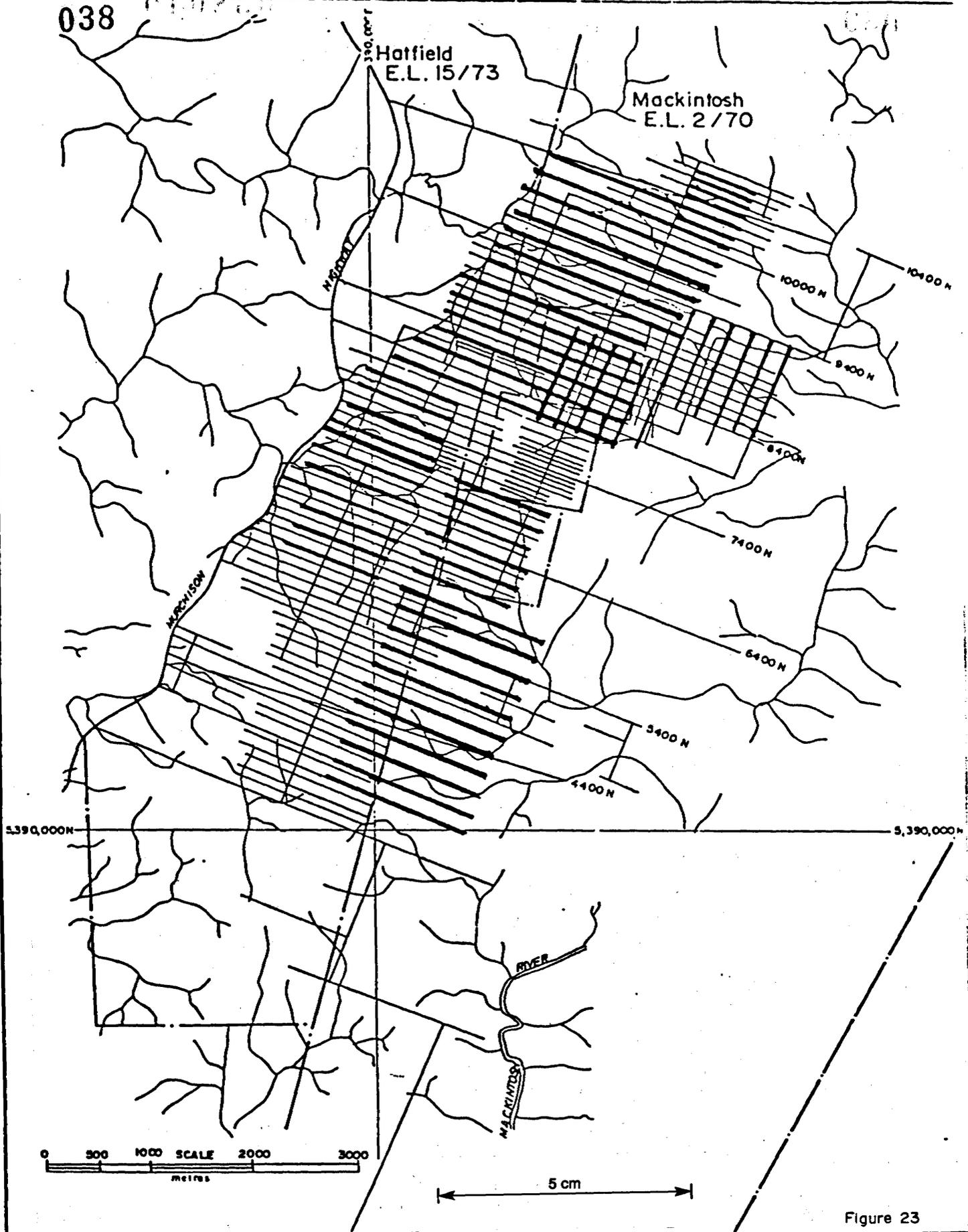


Figure 23

 **Aberfoyle Exploration Pty Ltd**

Drawn: J.R.S	<b>NORTH WEST TASMANIA</b> Mackintosh West / Hatfield Licence Areas Lines Read by UTEM - 1983	Location code:
Traced: J.L.R.		Date: May, 1981
Checked:		Scale: 1 50,000
Revised by: Date:		Plate No:

Hatfield  
E.L. 15/73

Mackintosh  
EL 2/70

# QUE RIVER AREA Regional Geology SUMMARY

5 cm

390,000N

- 390,000N

- Tertiary Basalt
- Diorite
- Ordovician quartzite / conglomerate
- Rhyolite Dacite Volcanics intrusives
- Black Shales
- Micaceous Sandstones
- Andesitic Volcanics
- Pyritic Volcanics
- Dacitic Volcanics  
Andesitic Dacitic Pyroclastics
- Exploration Licence boundary
- Aberfoyle Grid



Figure 24

## Aberfoyle Exploration Pty Ltd

Drawn	JRS
Field	JLR
Checked	
Issued by	Date

**NORTH WEST TASMANIA**  
Mackintosh West / Hatfield Licence Areas

Location code:
Date: May, 1981
Scale 1:50,000
Plan No Mac. 53

040

16.

## PHASE 5 : JANUARY 1982 TO NOVEMBER 1983

## JAN. - DEC. 1982

THE MAIN ACTIVITY FOR THE YEAR WAS THE DRILLING OF 3 DIAMOND HOLES ON COINCIDENT SOIL GEOCHEMICAL AND IP ANOMALIES FOR A TOTAL OF 495.7 M. ALL HOLES WERE READ WITH DOWN-HOLE EM (DHEM). 1.5 KM OF ACCESS TRACK WAS REQUIRED. NO SIGNIFICANT SULPHIDES WERE INTERSECTED (FIGURE 21).

AN EVALUATION TOOK PLACE OF AVAILABLE DEEP SEARCHING GEOPHYSICAL SYSTEMS. UTEM WAS CHOSEN, AND TRIALS CONDUCTED OVER THE QUE RIVER MINERALISATION.

EXPENDITURE FOR THE YEAR WAS \$71,221.

## JAN. - MAY 1983

DURING THE SUMMER OF 1983 A SUBSTANTIAL PART OF THE PROSPECTIVE VOLCANIC BELT ON THE MACKINTOSH-HATFIELD LICENCES WAS SURVEYED USING UTEM, THE DEEP SEARCHING GEOPHYSICAL SYSTEM FAVOURED BY ABERFOYLE. TO FACILITATE THIS SURVEY : 1.3 KM OF ACCESS TRACK WAS CONSTRUCTED, 47.3 LKM OF NEW GRID CUT, 17.3 LKM OF OLD GRID REHABILITATED AND 102.9 LKM OF GRID WAS RE-SURVEYED AND MARKED TO CONFORM WITH THE 10 UTEM SURVEY LOOPS AND READING LINES (FIGURE 22). 79.5 LKM WERE READ WITH UTEM (FIGURE 23). NEW EXPOSURE WAS MAPPED WITH SOME REVISION OF LOCAL GEOLOGY (FIGURE 24).

EXPENDITURE FOR THE 6 MONTH PERIOD WAS 174,168.

# MACKINTOSH - HATFIELD SUMMARY PLAN

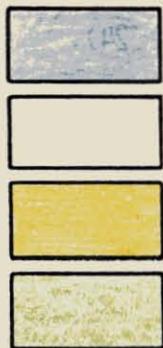
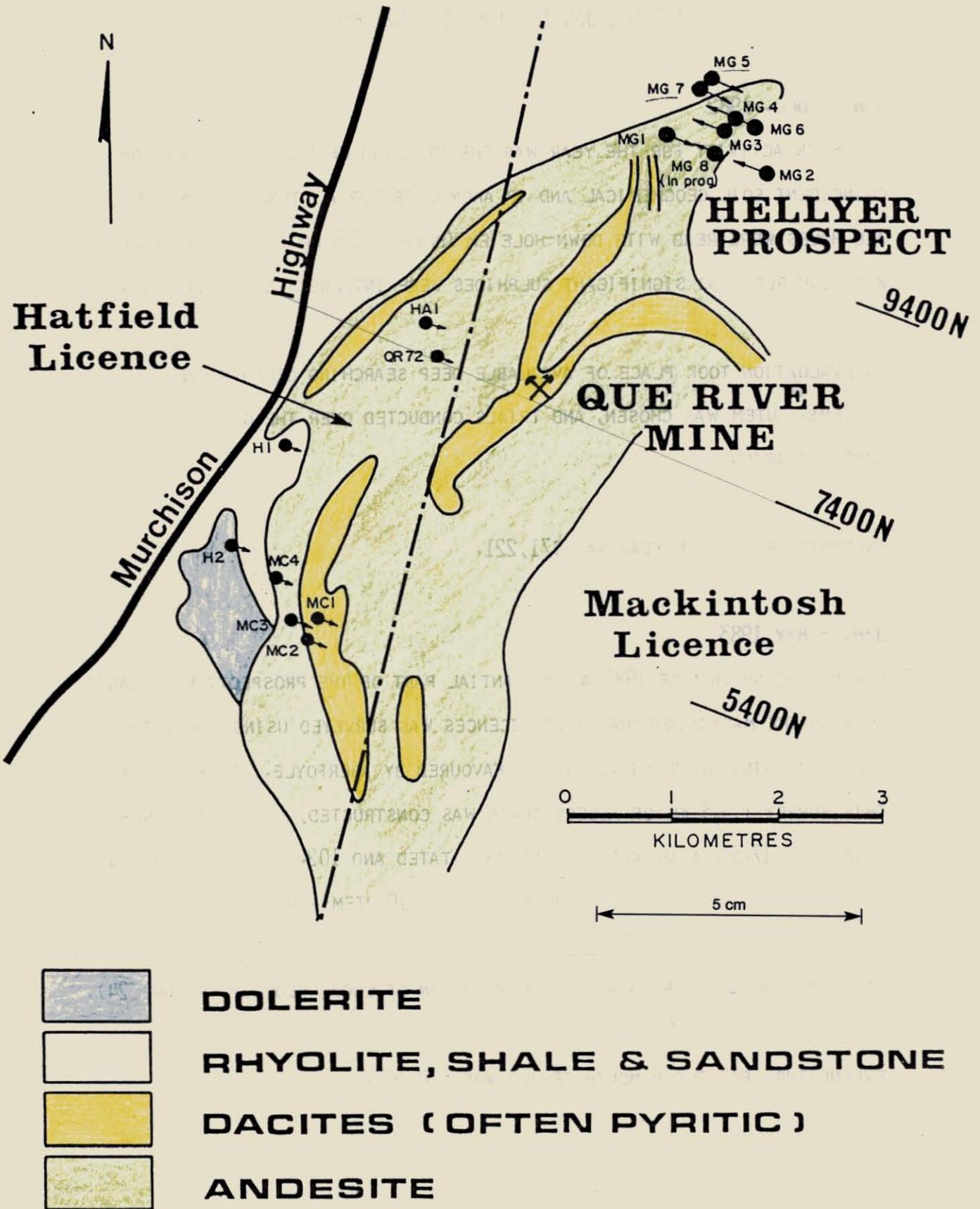
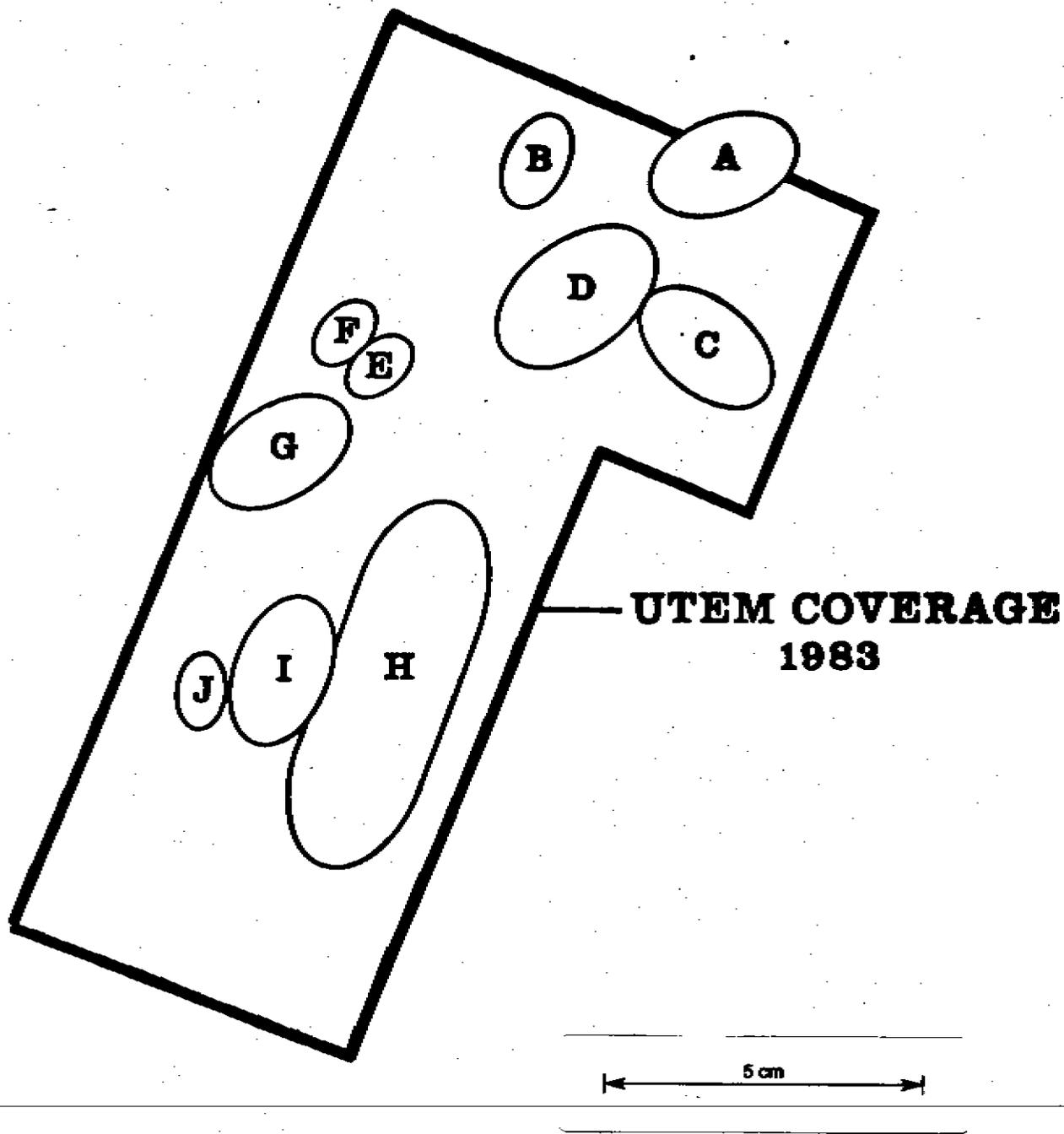
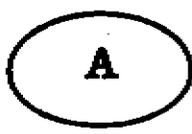
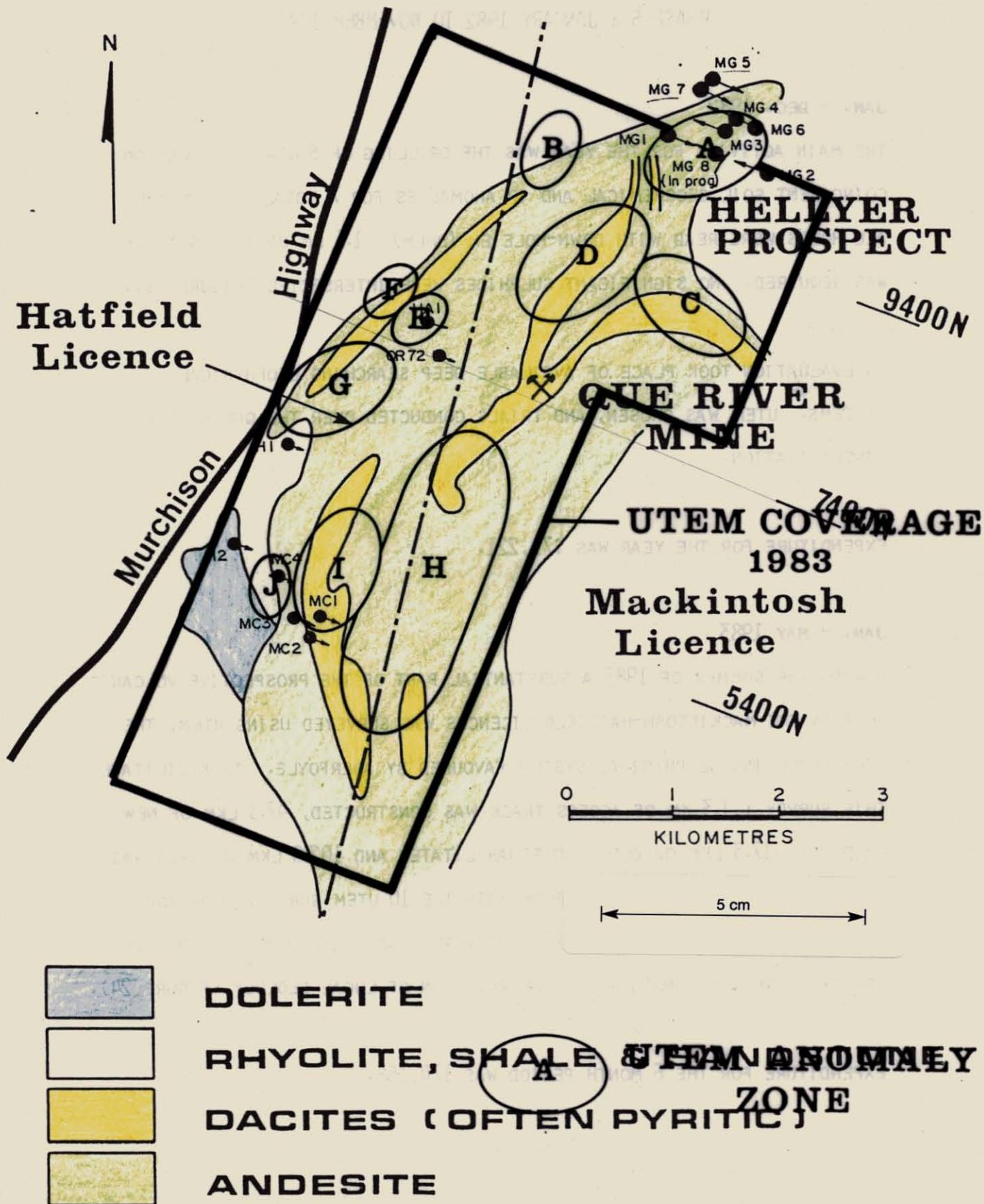


Figure 25 with overlay



 **UTEM ANOMALY ZONE**

# MACKINTOSH - HATFIELD SUMMARY PLAN



- DOLERITE**
- RHYOLITE, SHALE & UTEM ANOMNEY ZONE**
- DACITES (OFTEN PYRITIC)**
- ANDESITE**

Figure 25 with overlay

**JUNE - NOV. 1983**

INTERPRETATION OF THE UTEM SURVEY DATA REVEALED 34 CONDUCTORS IN 10 ZONES ON THE MACKINTOSH-HATFIELD PROPERTY (FIGURE 25). THESE WERE CATEGORISED AND RATED. ONE ANOMALOUS TREND, COINCIDENT WITH HIGH SOIL GEOCHEMISTRY, HIGH CHARGEABILITY, BARITE AND FUCHSITE ALTERATION WARRANTED IMMEDIATE DRILLING (FIGURE 26). A 3 HOLE PROGRAMME COMMENCED ON JULY 20, 1983, WITH THE FIRST HOLE MAKING THE DISCOVERY INTERSECTION OF 24.4 M OF 0.3% CU, 4.4% PB, 12.6% ZN, 157G/T AG AND 1.9G/T AU.

BY NOV. 1983 11 HOLES WERE COMPLETED FOR 4,206.4 M.

ELSEWHERE IN THE DISTRICT TRENCHING OF ANOMALOUS ZONES BETWEEN QUE RIVER AND HELLYER, AND AT MT. CHARTER WAS UNDERTAKEN. TWO AREAS WERE SELECTED FOR COVERAGE BY EM 37 TO CLARIFY UTEM RESPONSES. 12.25 LKM OF GRID WAS CUT IN PREPARATION FOR THIS SURVEY.

EXPENDITURE FOR THIS PERIOD WAS \$418,378.



045800

058046

Mackintosh E.L.

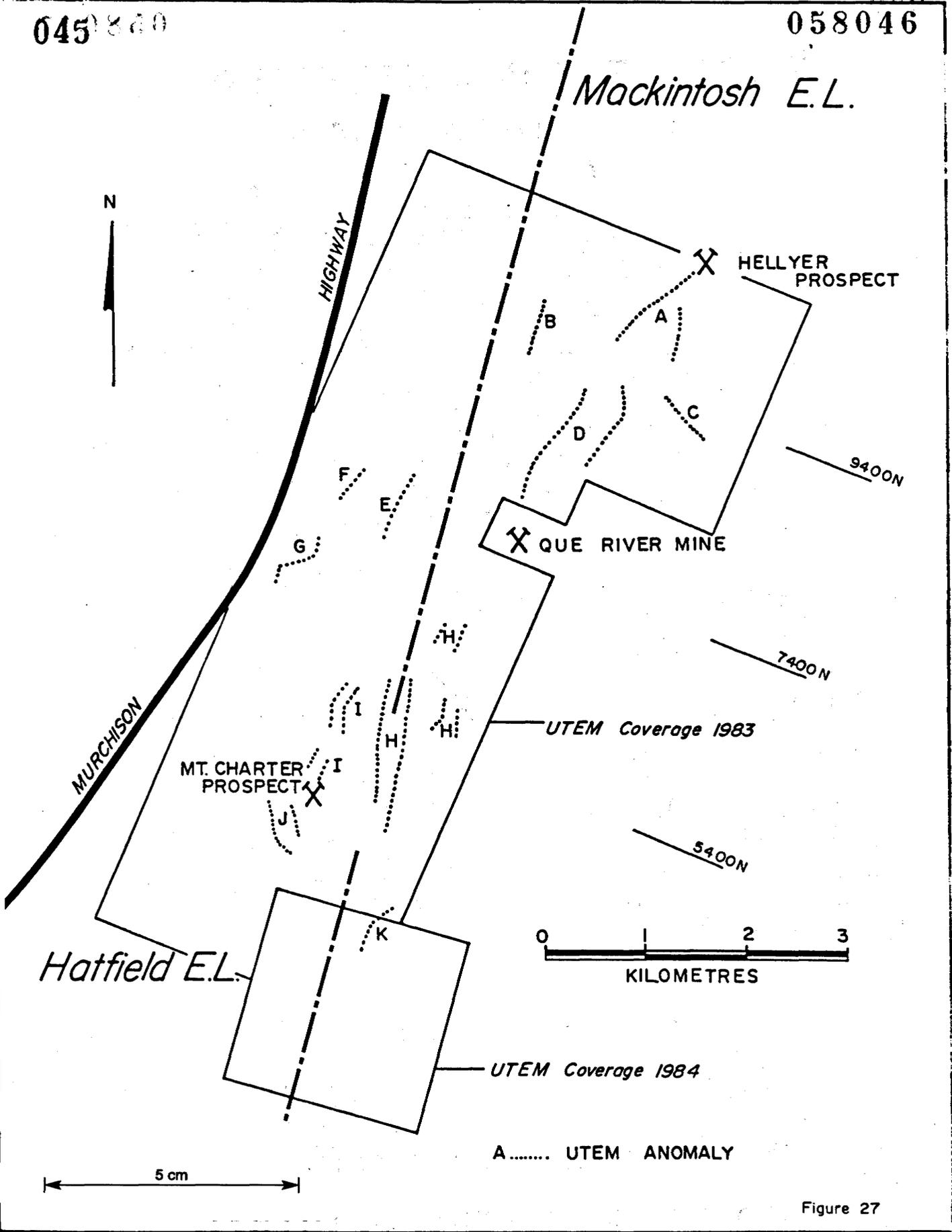


Figure 27



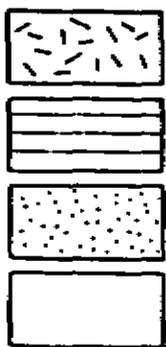
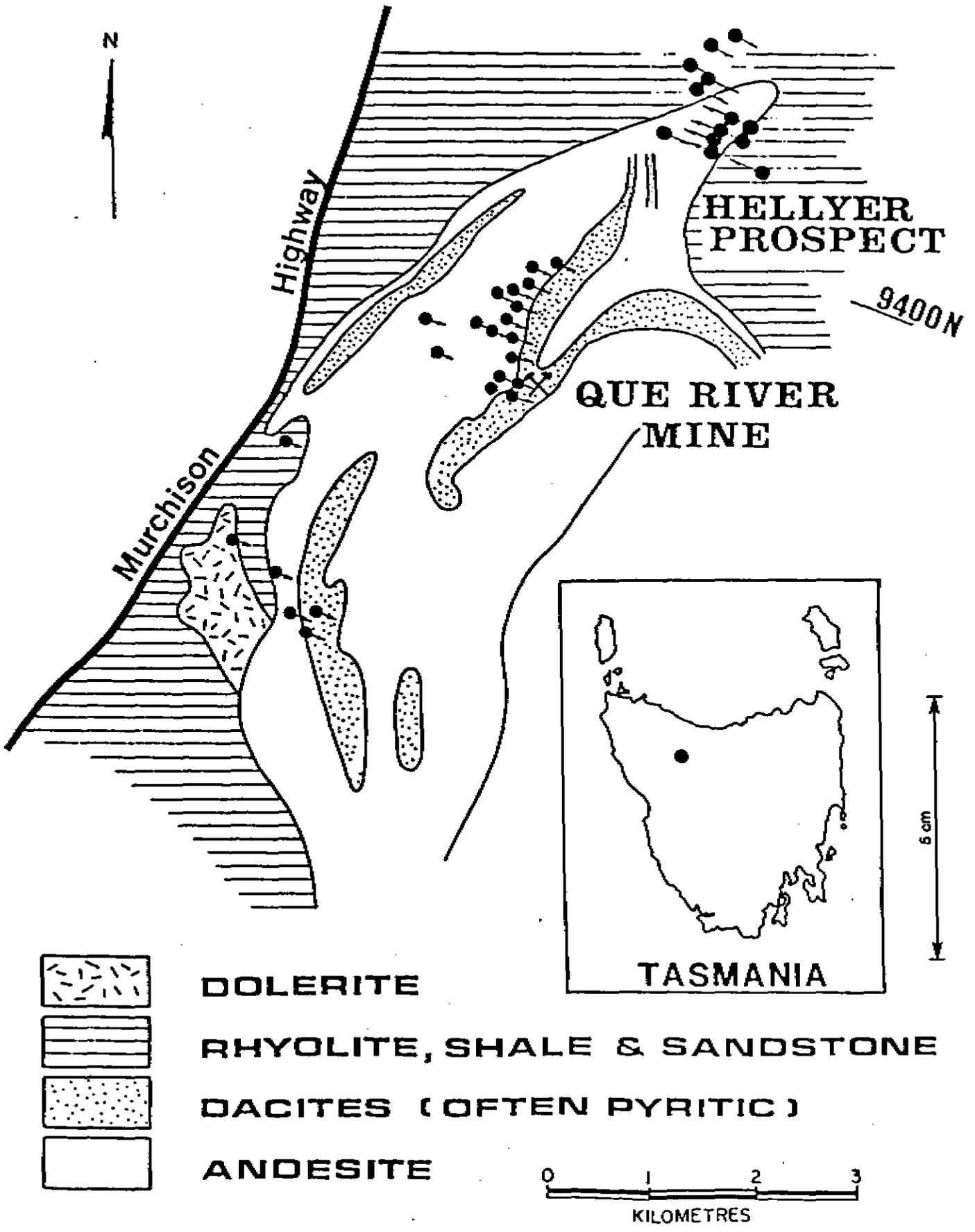
**Aberfoyle Exploration Pty Ltd**

Drawn:	E.T.E.
Traced:	R.J.E.
Checked:	
Revised by:	RJE Date: 5/84

NORTH WEST TASMANIA  
 MACKINTOSH - HATFIELD  
**UTEM SUMMARY PLAN**

Location code:	K55/6/44
Date:	April, 1984
Scale:	1:50,000
Plate No:	Moc. 81

# MACKINTOSH - HATFIELD SUMMARY PLAN



**DOLERITE**  
**RHYOLITE, SHALE & SANDSTONE**  
**DACITES (OFTEN PYRITIC)**  
**ANDESITE**



• LOCATION AND GEOLOGY OF HELLYER-QUE RIVER AREA

Figure 28

## PHASE 6 : DECEMBER 1983 TO NOVEMBER 1984

## DEC. 1983 - MAY 1984

AT HELLYER, THE EFFECTS OF AN INDUSTRIAL DISPUTE AT QUE RIVER REDUCED THE DRILLING TO 4,345.5 M IN 12 HOLES. THE UTEM ZONE D BETWEEN QUE RIVER AND HELLYER WAS TESTED BY 3 HOLES FOR 823.9 M.

THE 1984 UTEM PROGRAMME INVOLVED 26 LKM IN THE SOUTH OF THE LICENCES AS WELL AS 7.2 LKM OF EM 37 (FIGURE 27). 3 KM OF ACCESS TRACK WAS CONSTRUCTED SOUTH FROM MT. CHARTER TO AID UTEM COVERAGE. COSTEAMING AT MT. CHARTER INVOLVED 2.1 KM OF TRENCHING.

COLOUR AERIAL PHOTOGRAPHY AT 1:10,000 SCALE WAS FLOWN OVER THE PROPERTY AS A MAPPING AID. ROUTINE SAMPLING OF NEW GRID AND CORE GRINDING WAS CONTINUED. SUMMARY GEOLOGY AND DRILL HOLES (FIGURE 28).

EXPENDITURE FOR THIS PERIOD WAS \$828,689.

# MT. CHARTER AREA

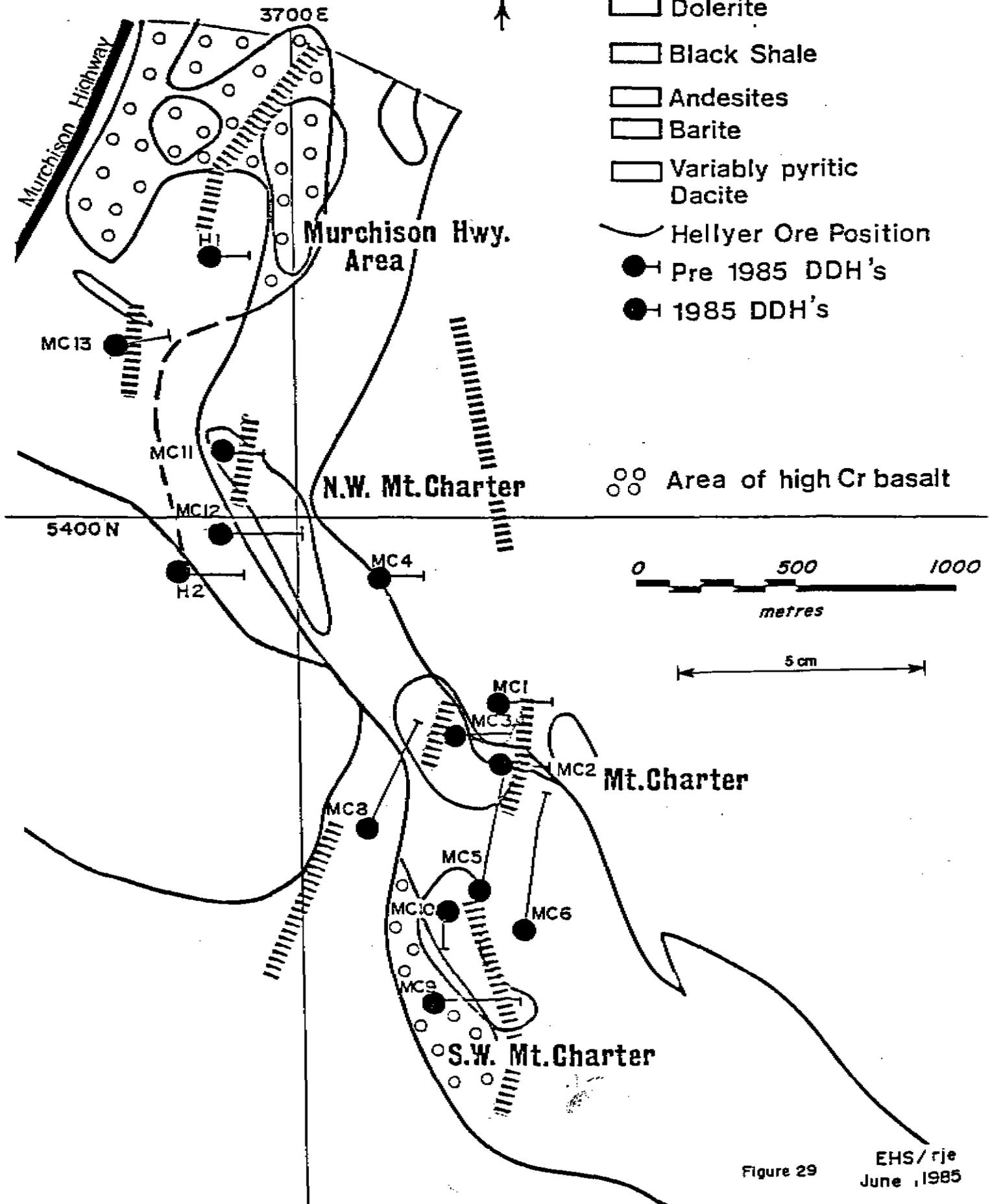


Figure 29

EHS/rje  
June, 1985

**JUNE - NOV. 1984**

AT HELLYER, EXPLORATION AND ORE RESOURCE DELINEATION DRILLING INVOLVED A FURTHER 72 HOLES FOR 19,087.3 M. DRILLING WAS SUSPENDED ON NOV. 13, 1984. ON AUGUST 9, 5 MINING LEASES, EACH OF 100 HECTARES, WERE PEGGED OVER THE HELLYER DEPOSIT AND ENVIRONS.

AT MT. CHARTER, 6 DIAMOND HOLES WERE COMPLETED FOR 1,410.9 M AND READ WITH DHEM (FIGURE 29). DETAILED PETROLOGY AND CORE GRINDING WAS UNDERTAKEN. A COSTEAM WAS DUG ACROSS UTEM ZONE B AND THE PORTAL ACCESS ROAD MAPPED. 6.2 LKM OF UTEM WAS READ NEAR MT. CHARTER.

EXPENDITURE FOR THE 6 MONTH PERIOD WAS \$1,848,587.

Mackintosh E.L.

N

HIGHWAY

HELLYER PROSPECT

UTEM Coverage 1985

1985

9400N

QUE RIVER MINE

7400N

UTEM Coverage 1983

MURCHISON

MT. CHARTER PROSPECT

1985

5400N

Hatfield E.L.



UTEM Coverage 1984

A..... UTEM ANOMALY

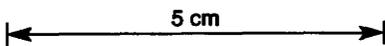


Figure 30



**Aberfoyle Exploration Pty Ltd**

Drawn. E.T.E.

NORTH WEST TASMANIA

Location code K 55/6/44

Traced R.J.E.

MACKINTOSH - HATFIELD

Date April, 1984

Checked

UTEM SUMMARY PLAN

Scale 1:50,000

Revised by: RJE Date: 5/84

Plate No Mac. 81

PHASE 7 : JANUARY 1985 TO PRESENT

JAN. - MAY 1985

AT HELLYER, 3 EXPLORATION HOLES WERE COMPLETED FOR 1385.2 M. (THE TOTAL EXPLORATION AND DELINEATION PROGRAMME AT HELLYER SINCE DISCOVERY HAS BEEN 96 HOLES FOR 29,089.3 M). A RESOURCE WAS CALCULATED AT 15 MT OF 0.3% CU, 7% PB, 13% ZN, 160G/T AG AND 2.3G/T AU.

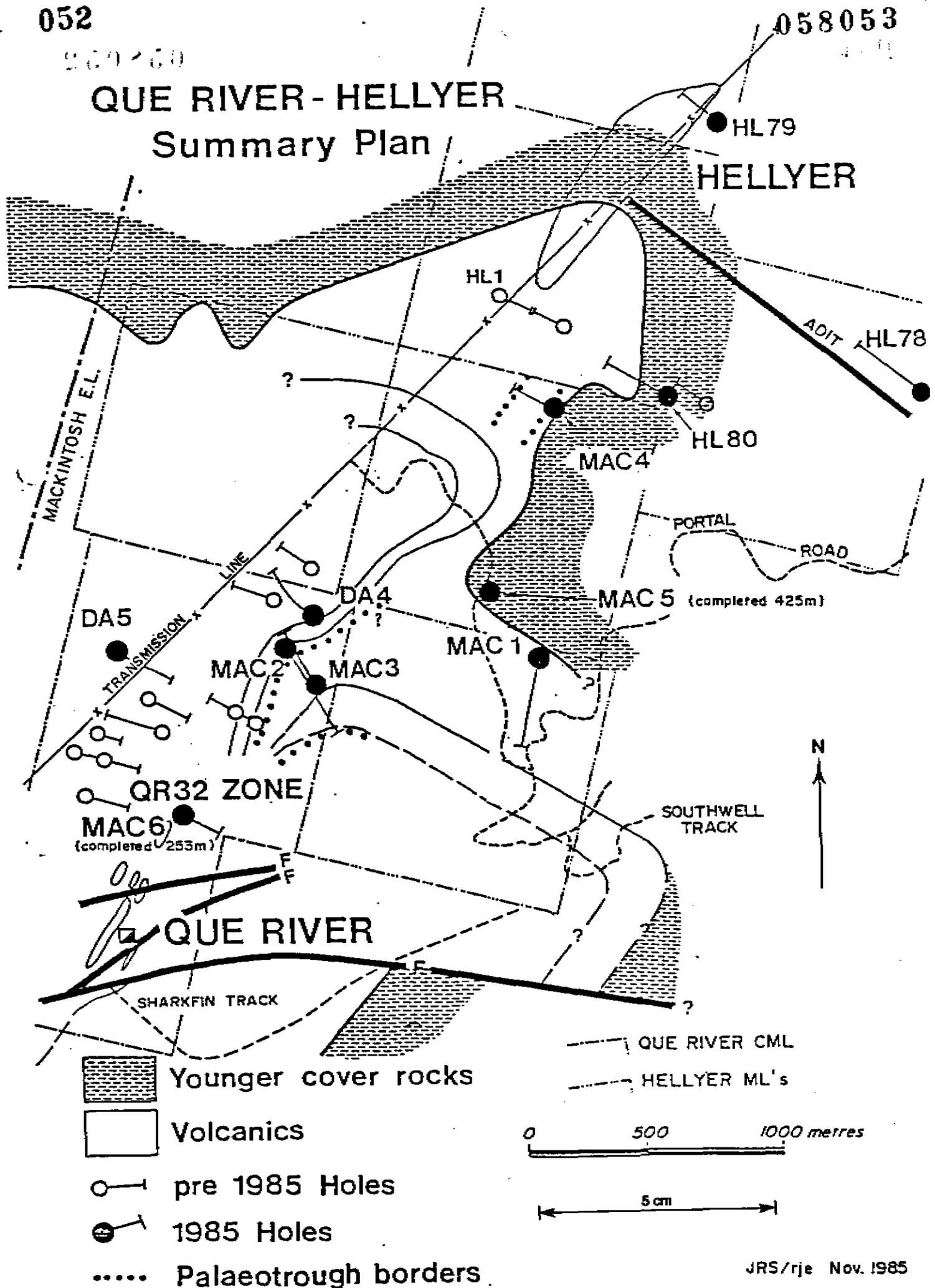
VARIOUS DOWN-HOLE GEOPHYSICAL SYSTEMS WERE EVALUATED OVER THE DEPOSIT.

ELSEWHERE IN THE DISTRICT 6 DIAMOND HOLES WERE COMPLETED FOR 2,550.8 M. EACH HOLE WAS READ WITH DHEM AND CORE GROUND. ROUTINE PETROLOGY, TRENCHING, CHIP SAMPLING AND ANALYSIS FOR INDICATOR ELEMENTS WERE CONDUCTED.

THE 1985 UTEM SURVEY REQUIRED 60 LKM OF GRIDGING AND 50 LKM OF UTEM READING (FIGURE 30).

EXPENDITURE FOR THIS 6 MONTH PERIOD WAS \$857,764.

# QUE RIVER - HELLYER Summary Plan



JUNE - NOV. 1985

7 EXPLORATION DIAMOND HOLES FOR 2,573.8 M WERE DRILLED IN THE MACKINTOSH AREA DURING THE SIX MONTH PERIOD (FIGURE 31). EACH HOLE WAS PETROLOGICALLY LOGGED AND READ WITH DHEM. 3253 M OF DRILL CORE WAS GROUND AND ANALYSED FOR CU, PB, ZN, AG, AU, AS, BA AND SELECTED INDICATOR ELEMENTS. 325 CORE SAMPLES WERE ANALYSED FOR WHOLE ROCK AND RARE EARTH ELEMENTS.

3.8 KM OF ACCESS TRACK WAS CONSTRUCTED TO THE SOUTHWELL AREA. ROUTINE TRENCHING (610 M) AND ROCK CHIP (70) SAMPLING CONTINUED. SAMPLES OF THE MT. CHARTER DOLERITE WERE SENT FOR K/AR DATING. DETAILED GEOLOGICAL SECTION WERE CONSTRUCTED FOR THE PROPERTY AND THE REGIONAL GEOLOGY REVISED (SUMMARY FIGURE 32). ALL SOIL GEOCHEMICAL INFORMATION WAS ENTERED ONTO THE MACKINTOSH DATA BASE AND MERGED WITH ROCK DESCRIPTIONS.

ON THE MACKINTOSH EAST PROPERTY, JOINT VENTURE PARTNER CYPRUS MINERALS CONDUCTED 25 LKM OF EM 37 GEOPHYSICAL SURVEYS WHICH REQUIRED 26 LKM OF GRID CUTTING. SELECTED AREAS WERE MAPPED AND CHIP SAMPLED.

TOTAL EXPENDITURE IN ALL AREAS FOR THE 6 MONTHS WAS \$563,854.

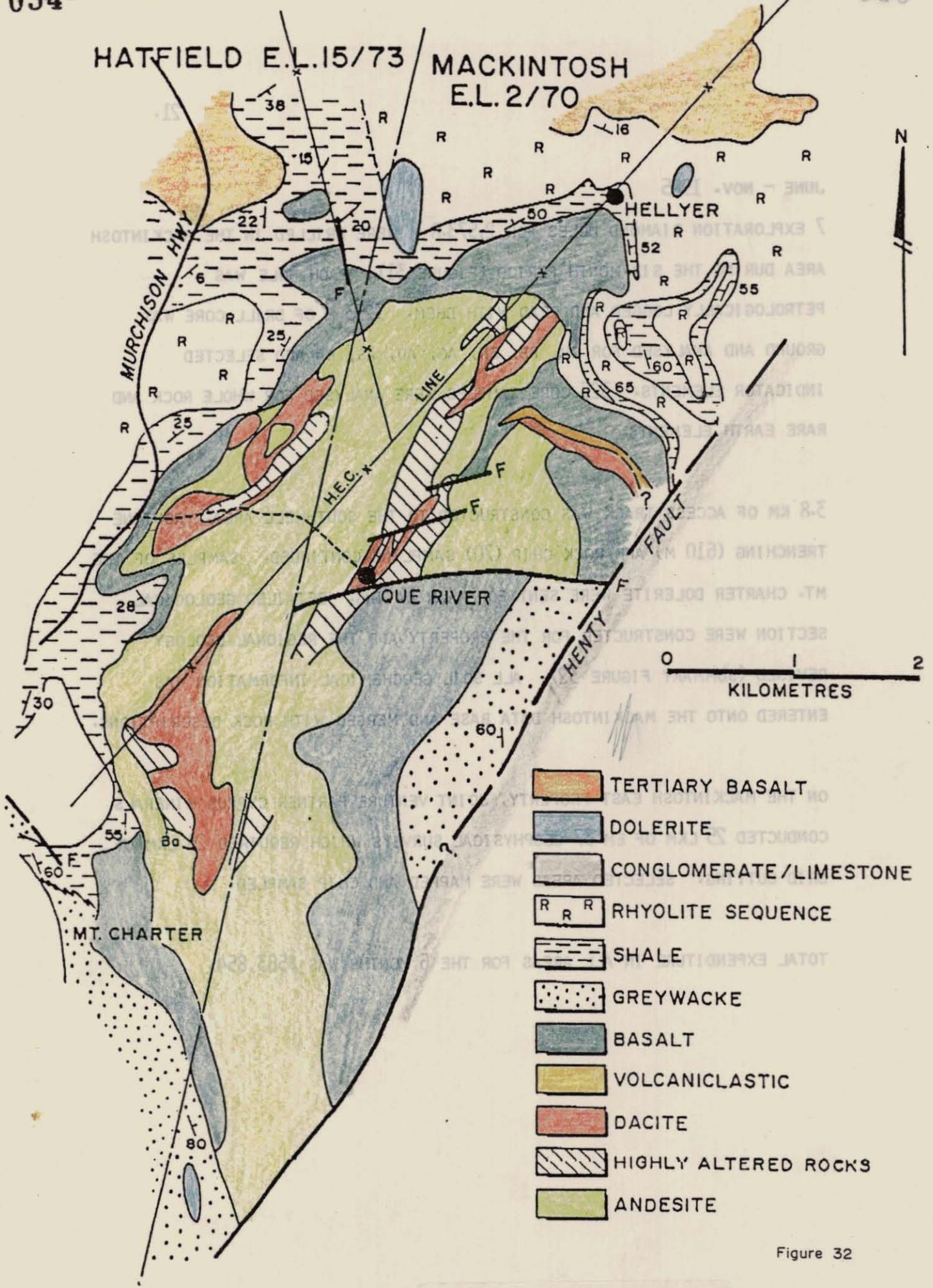
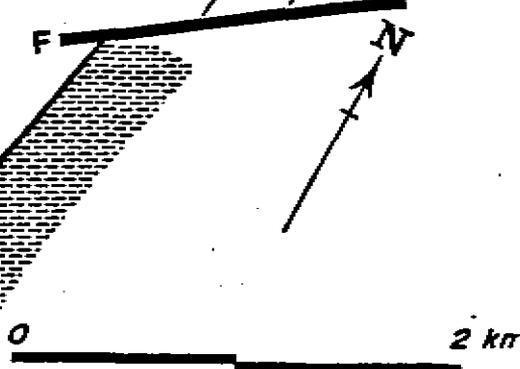
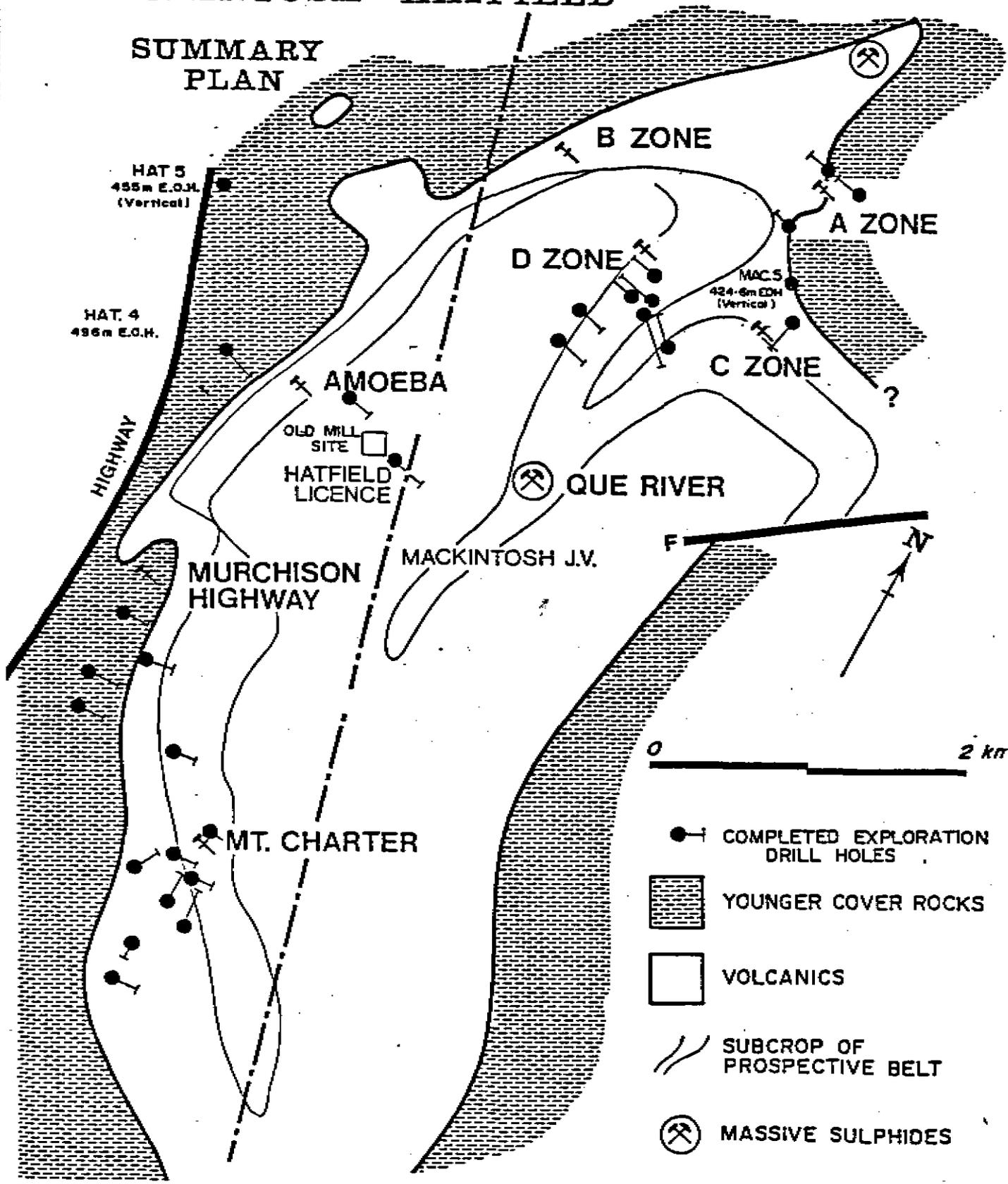


Figure 32

# MACKINTOSH-HATFIELD

HELLYER  
79 holes completed

## SUMMARY PLAN



- COMPLETED EXPLORATION DRILL HOLES
- ▨ YOUNGER COVER ROCKS
- VOLCANICS
- ~ SUBCROP OF PROSPECTIVE BELT
- ⊗ MASSIVE SULPHIDES
- ⚡ PROSPECTS



HATFIELD E.L.15/73 MACKINTOSH E.L.2/70

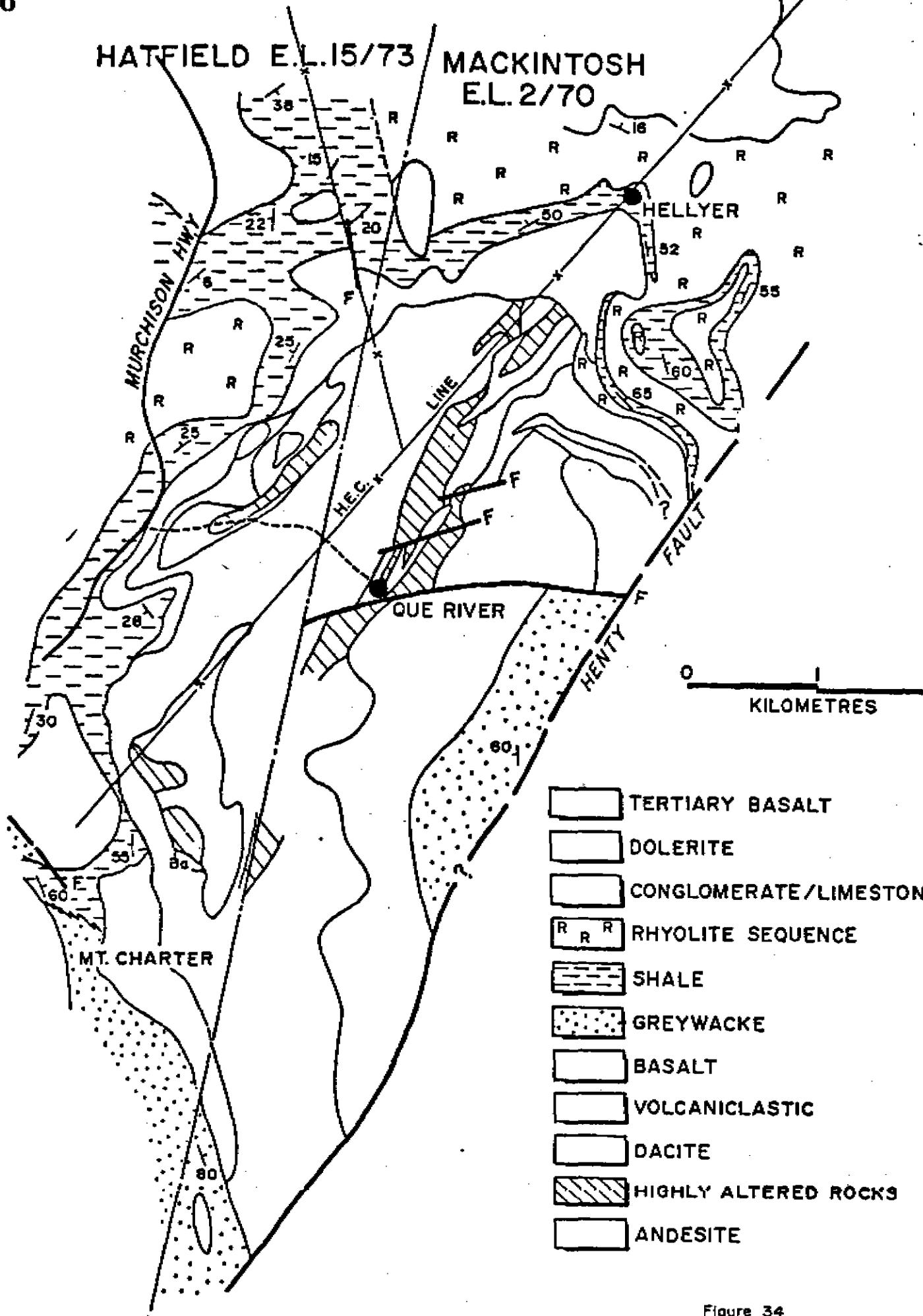
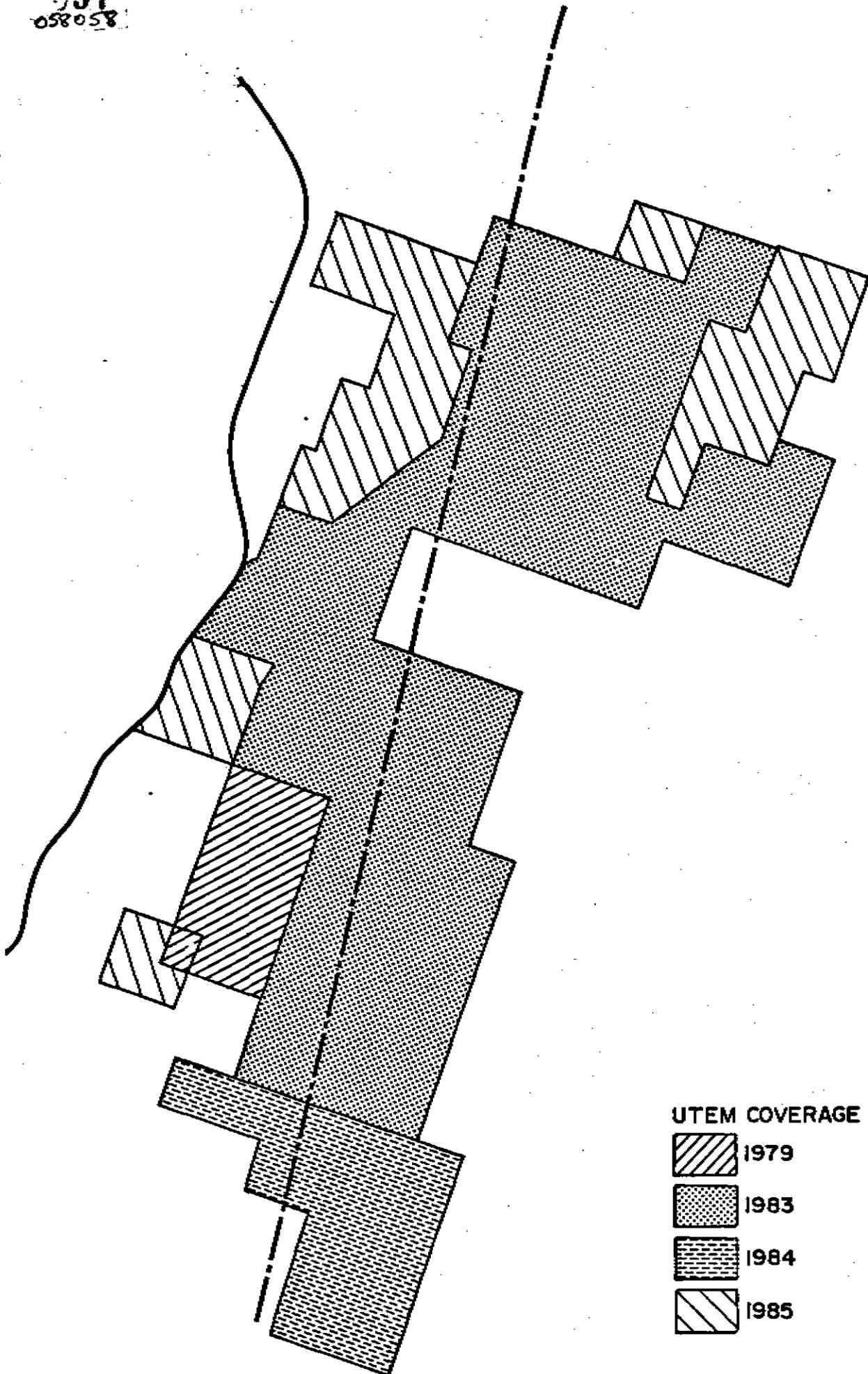


Figure 34 with overlay

057  
058058



UTEM COVERAGE

-  1979
-  1983
-  1984
-  1985

5 cm

HATFIELD E.L.15/73 MACKINTOSH  
E.L.2/70

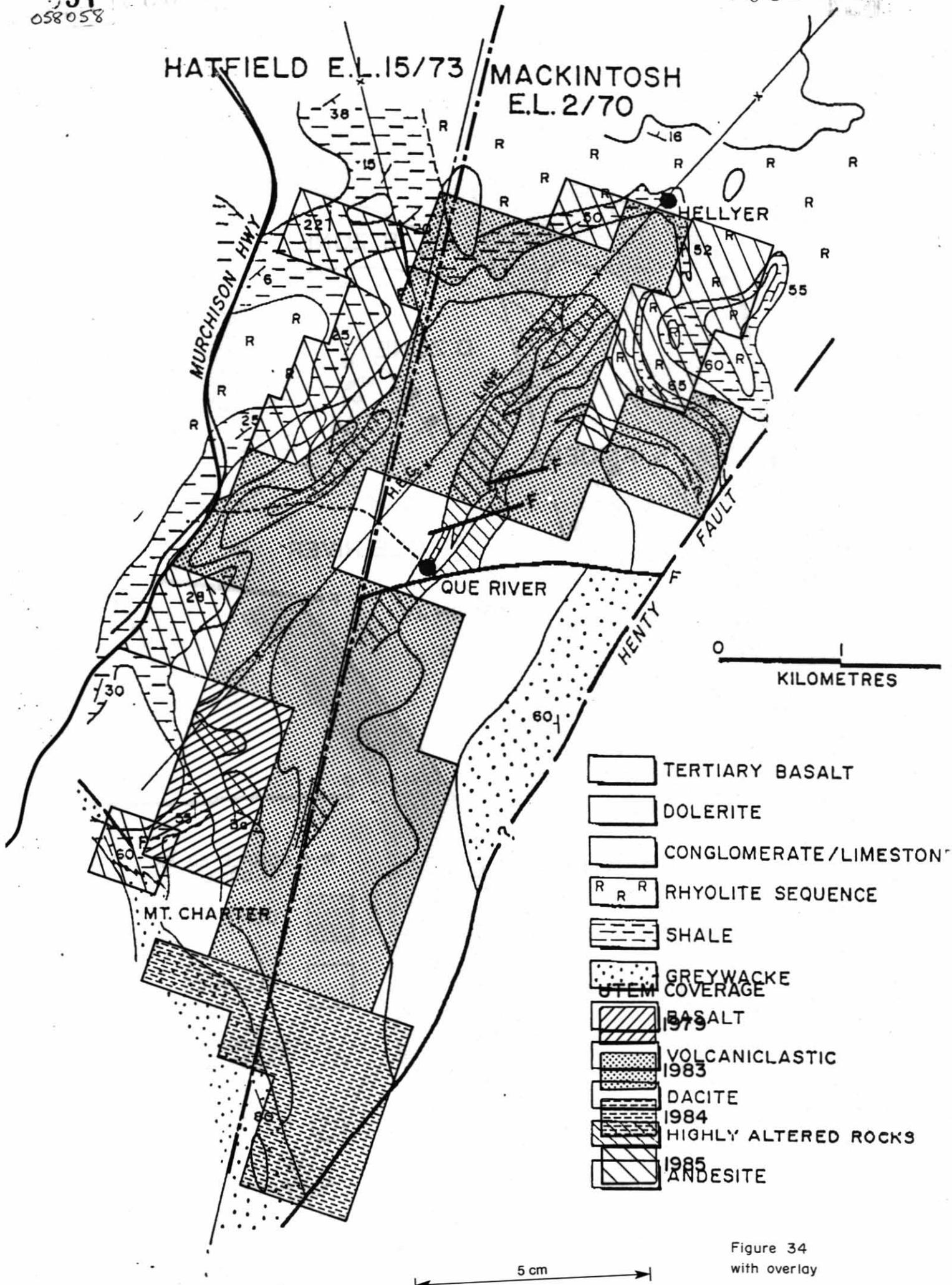


Figure 34  
with overlay

22.

DEC. 1985 -

THE LOCATION OF ALL DRILL HOLES OUTSIDE THE QUE RIVER AND HELLYER MINERAL LEASES IS SHOWN ON FIGURE 33; THE UTEM AND SOIL GEOCHEMICAL COVERAGE ON FIGURES 34 AND 35 RESPECTIVELY.

THE 1986 PROGRAMME, NOW IN PROGRESS, WILL CONCENTRATE ON THE DETAILED EXPLORATION OF THE SOUTHWELL AREA TO THE EAST OF THE QUE RIVER - HELLYER ZONE, MAPPING AND SAMPLING IN THE SOUTHERN PART OF THE HATFIELD LICENCE AND TO THE NORTH OF HELLYER. NEW COLOUR AERIAL PHOTOGRAPHY WILL AID THE REGIONAL MAPPING OF THE ENTIRE PROPERTY.

THE MAIN COMPONENTS OF THE PROGRAMME ARE GRIDDING 89 LKM, MAPPING 25 LKM WITH 335 T/S INCLUDING DRILL CORE, 28.8 LKM UTEM, 3 KM TRENCHING. 5983 SOIL SAMPLES WILL EITHER BE COLLECTED OR RE-ANALYSED FOR ADDITIONAL INDICATOR ELEMENTS. 2,450 M OF DIAMOND DRILLING IS PLANNED INCLUDING 550 M ON MACKINTOSH EAST.

AN EXPENDITURE OF \$820,000 IS ANTICIPATED ON ALL MACKINTOSH DISTRICT PROJECTS.

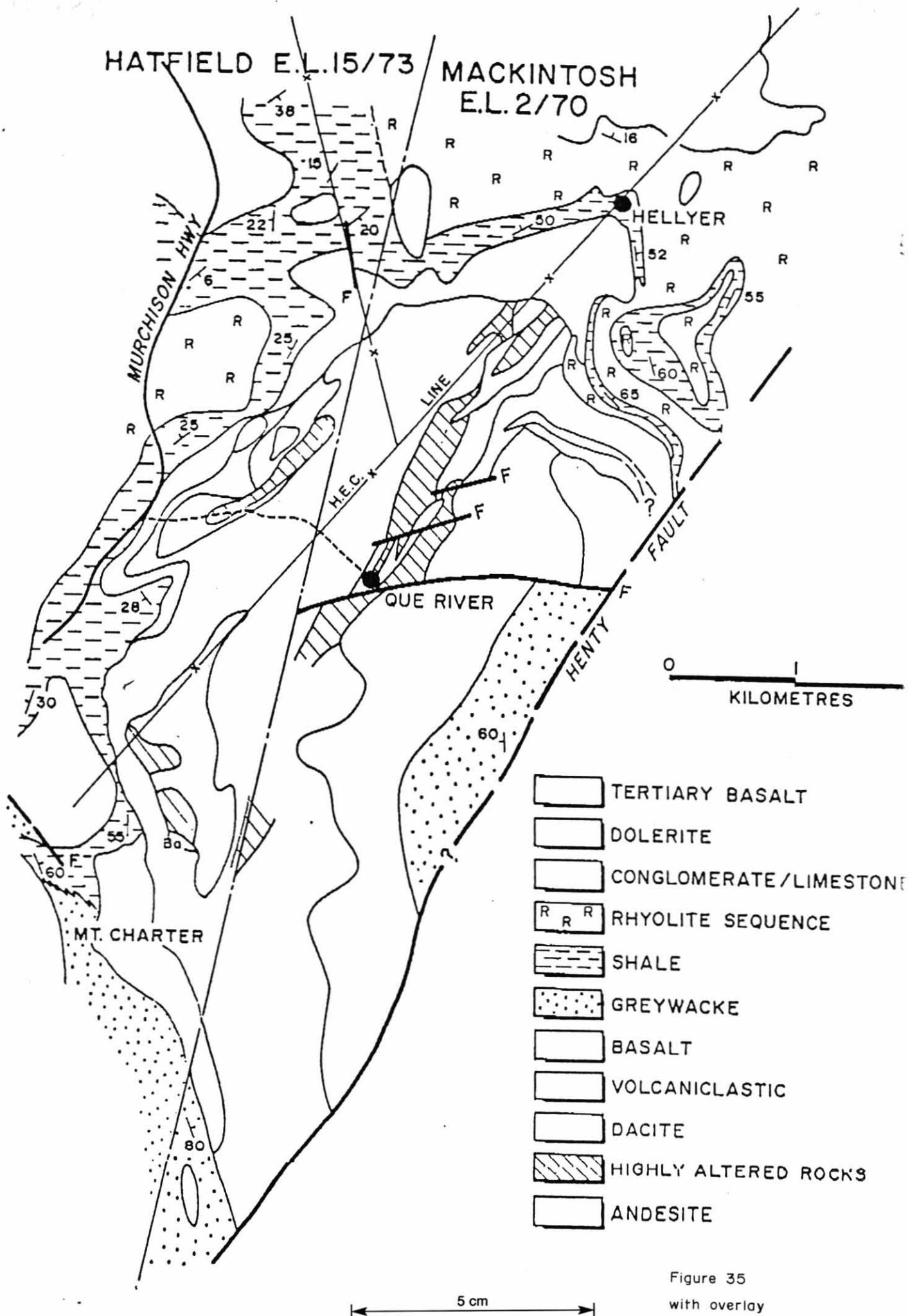


Figure 35  
with overlay

060  
058061



SOIL GEOCHEM. Cu, Pb, Zn

 Pb >250 ppm.

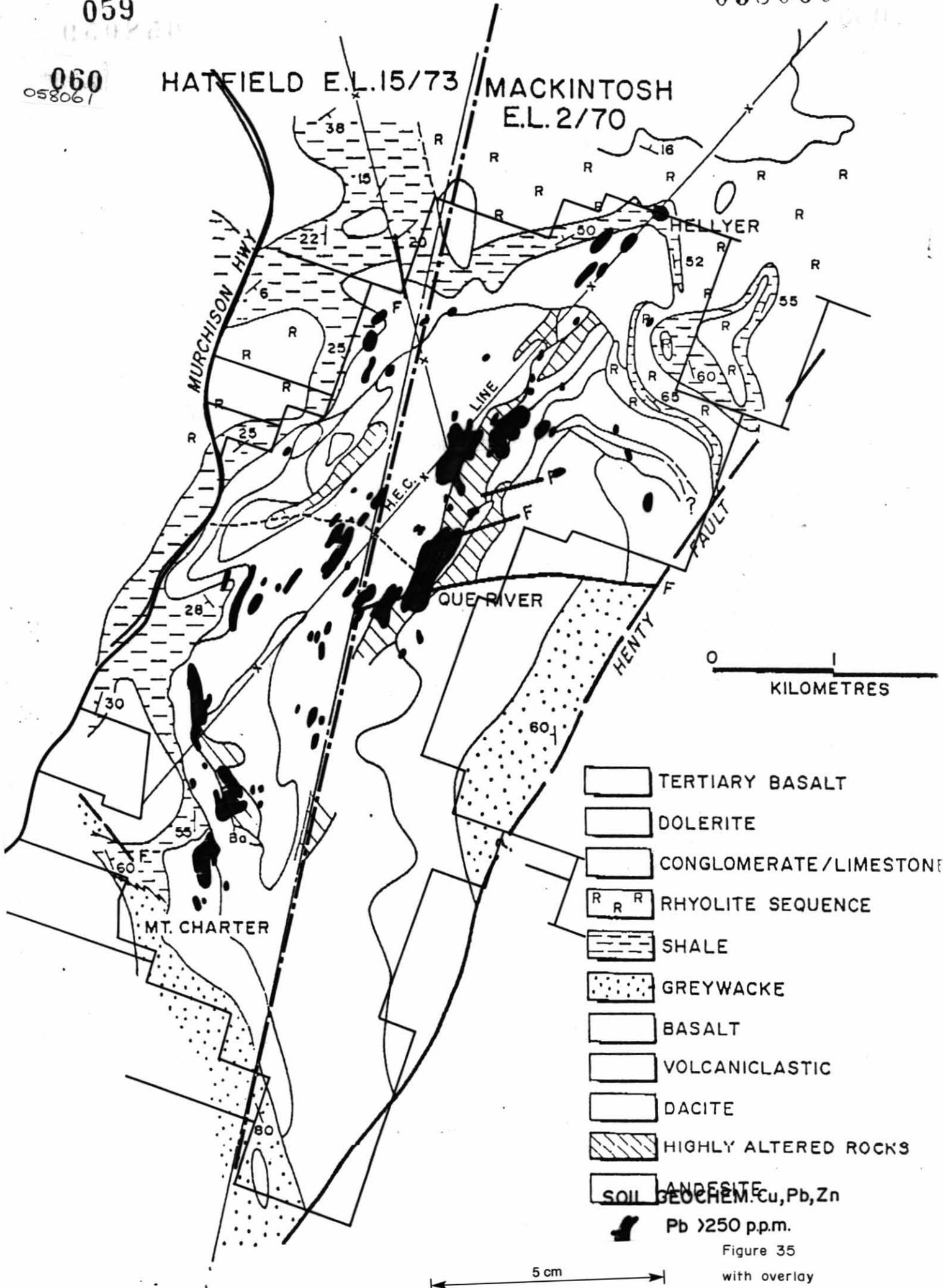
5 cm

059

058060

060  
058061

HATFIELD E.L.15/73 MACKINTOSH  
E.L.2/70



0 1  
KILOMETRES

- TERTIARY BASALT
- DOLERITE
- CONGLOMERATE/LIMESTONE
- R R R RHYOLITE SEQUENCE
- SHALE
- GREYWACKE
- BASALT
- VOLCANICLASTIC
- DACITE
- HIGHLY ALTERED ROCKS
- SOIL ANDESITE  
GEOCHEM. Cu, Pb, Zn
- Pb > 250 p.p.m.

Figure 35  
with overlay

5 cm

## PRINCIPAL EXPLORATION EXPENDITURE - MACKINTOSH DISTRICT

PERIOD	MACKINTOSH WEST	MACKINTOSH EAST-MAYDAY	QUE RIVER EXPLORATION	HELLYER EXPLORATION	HATFIELD
JAN. - JUNE 1973	15,272				
YEAR TO JUNE 1974			125,308		11,002
SIX MONTHS TO DEC. 1974					14,157
JULY TO NOV. 1974			221,387		
NOV. 1974 TO SEPT. 1975			1,224,922		
SIX MONTHS TO JUNE 1975	24,157	7,494			28,164
YEAR TO JUNE 1976	63,570	3,969			120,842
YEAR TO JUNE 1977	38,861				75,435
YEAR TO JUNE 1978	36,304				65,831
YEAR TO JUNE 1979	8,022				61,484
YEAR TO JUNE 1980	7,133	41,783			2,659
YEAR TO JUNE 1981	41,830	62,031			43,717

**PRINCIPAL EXPLORATION EXPENDITURE - MACKINTOSH DISTRICT**

PERIOD	MACKINTOSH WEST	MACKINTOSH EAST-MAYDAY	QUE RIVER EXPLORATION	HELLYER EXPLORATION	HATFIELD
SIX MONTHS TO DEC. 1981	23,848	64,184			16,137
YEAR TO DEC. 1982	35,875				35,346
JAN. TO MAY 1983	100,184				73,984
JUNE TO NOV. 1983	399,390				18,988
JAN. TO MAY 1984	148,930			554,706	125,053
JUNE TO NOV. 1984	31,869			1,629,039	187,679
JAN. TO MAY 1985	363,985			307,289	186,490
JUNE TO NOV. 1985	244,715	79,302	67,435		172,402
TOTAL TO NOV. 1985	1,583,945	258,763	1,639,052	2,491,034	1,239,370
<b>TOTAL FOR MACKINTOSH DISTRICT : \$7,212,164</b>					
PROPOSED 1985/86	376,609	60,000	106,873	75,000	200,000

## EXPLORATION DRILLING SUMMARY

QUE RIVER	HELLYER	MACKINTOSH	HATFIELD
25,505 M (108 DDH'S)	29,089 M (96 DDH'S)	3,856 M (11 DDH'S)	4,841 M (19 DDH'S)
TOTAL : 63,291 M (234 DDH'S)			