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Table 1	EL51/94 Clark Valley - Previous Exploration

## 1. SUMMARY

Work completed on EL51/94 Clark Valley was limited to a helimagnetic survey and compilation of previous exploration data.

Two potential target areas occur on this EL:

1. The southern extension of Lower Tyndall Group correlates, on the eastern margin of the Middle Clark Valley.

2. The under-explored ?Tyndall Group volcanics in the Lower Clark Valley.

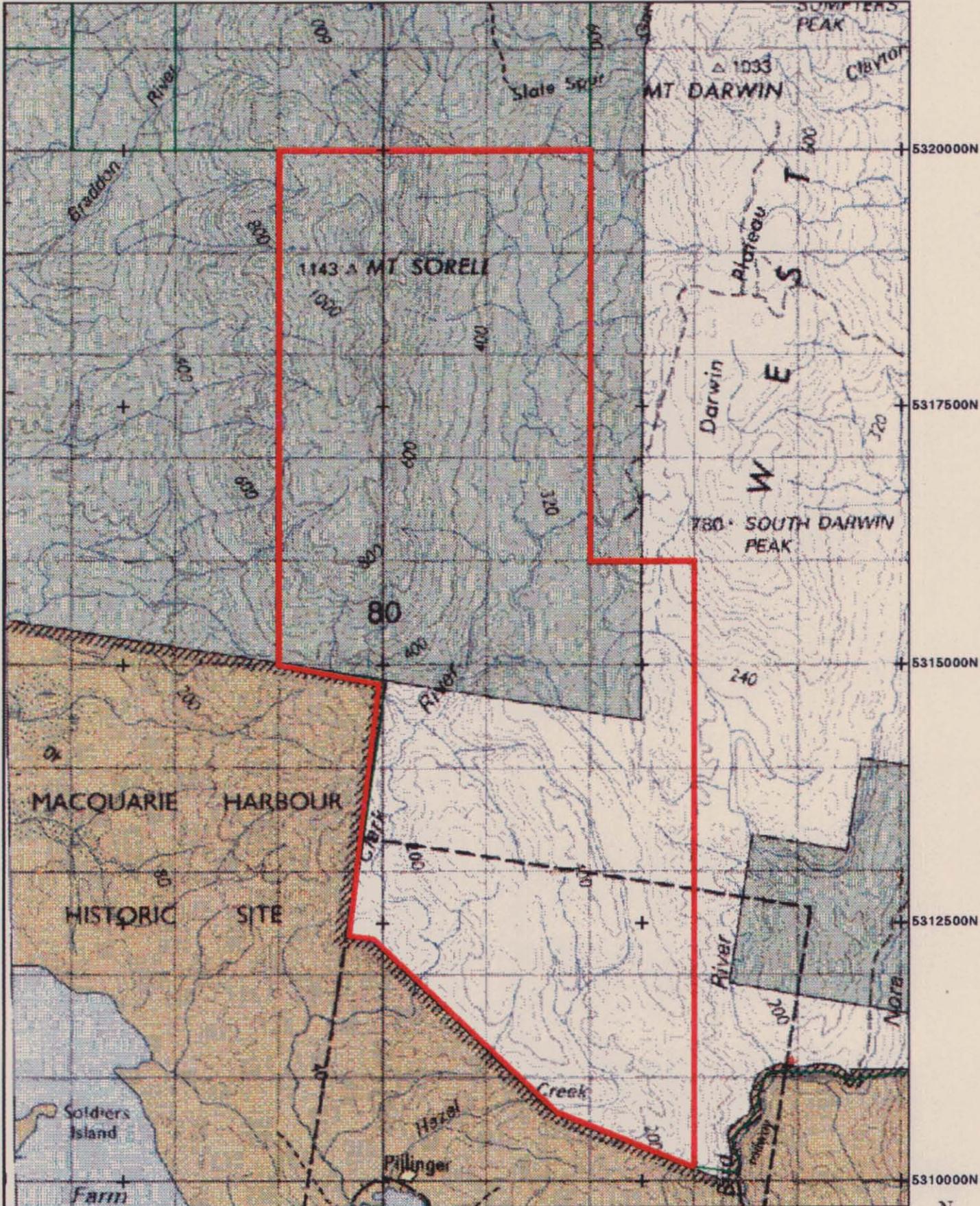
These areas were not adequately tested by the current exploration program. However, they have a lower perceived prospectivity than targets on other Aberfoyle tenements and this, coupled with high exploration (access) costs and distance to infrastructure has seriously downgraded their prospectivity. It is therefore recommended that EL 51/94 be relinquished.

## 2. INTRODUCTION

Exploration licence 51/94 Clark Valley, 29 Sq. Km, was granted to Aberfoyle Resources Ltd. on 20 January 1995 following a partial composite relinquishment of ELs 102/87, 55/89, and 12/92, by BHP and RGC. The licence is located 20km south of Queenstown and covers the Middle to Upper Clark River catchment from the eastern slopes of Mount Sorell to the western slopes of the Darwin Plateau (Fig.1).

The area was taken up on the basis that probable Tyndall Group time equivalent sequences were present in the Middle-Upper Clark Valley, indicating prospectivity for Cambrian VHMS style mineralisation of Hellyer-Rosebery type. Further VHMS potential was seen in the poorly understood and underexplored volcanoclastic-epiclastic sequence of the Lower Clark Valley.

No new work has been undertaken since the last annual report; Lewis (1995), and as EL 51/94 is to be relinquished, this report summarises exploration since the EL was granted in January, 1995.



**ABERFOYLE RESOURCES LIMITED**  
EXPLORATION DIVISION

TASMANIA  
EL51/94 Clark Valley

Locality Map  
Algorithm: CLV1

Compiled: RHL  
Printed: EX-730  
Traced:  
Checked: RHL  
Plate No. CLV1

REVISIONS			
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Map Projection: TMAG255  
Datum: AGD66  
Scale Code:      Scale: 1:50000      Date: October 1995

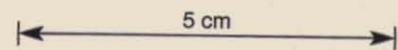


Figure 1

### 3. PREVIOUS EXPLORATION

Modern exploration of the current EL51/94 area began in 1956-57 when Mount Lyell flew a helicopter EM-magnetic survey over the Middle Clark Valley, west of the South Darwin workings.

Reconnaissance exploration for Rosebery style VHMS deposits was conducted by BHP-EZ on EL13/65 from 1968-75 and included a helicopter TURAIR-magnetic survey, geological mapping and limited stream sediment sampling of the Upper Clark Valley.

The area was taken up by Mount Lyell as EL21/76, which was subsequently merged into an enlarged EL9/66 in 1978. Work in the Clark Valley included gridding, stream sediment, soil and rock chip geochemistry, IP and ground magnetics with most geophysical anomalies attributed to black shales (Hutton 1978).

From 1983-1989 parts of the Clark Valley were held as EL31/83 (Cyprus-Amoco), EL6/85 (EZ) and EL30/87 (New Holland Mining NL) but no exploration was conducted.

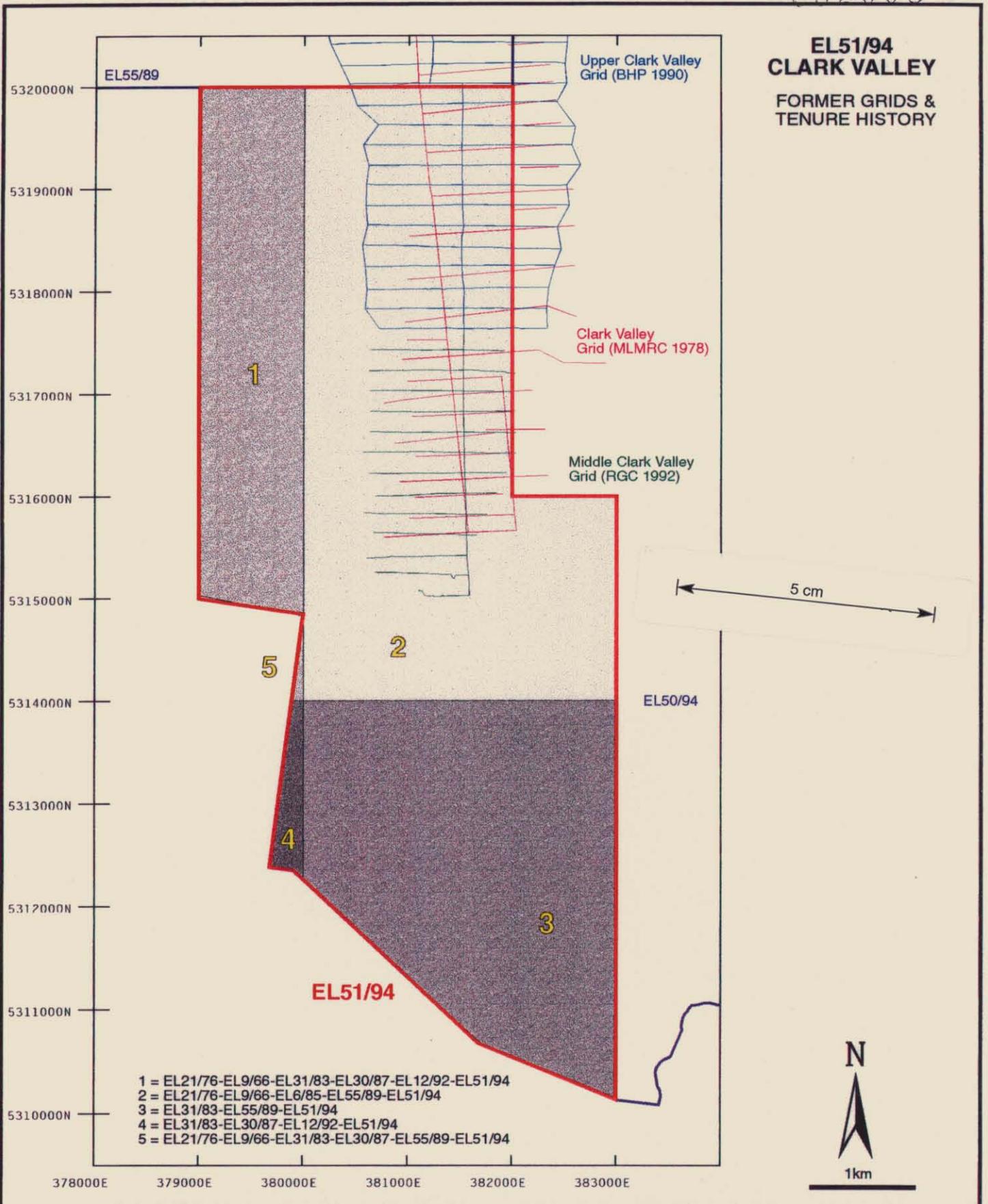
BHP returned to the area in 1989, when they were granted EL55/89. This EL was combined for reporting purposes with an adjacent EL102/87 covering the Garfield Valley and areas to the north. Exploration was primarily directed at massive PbZn sulfides, with particular emphasis on the Western Sequence. A large 200m-spaced grid was established over the Garfield area and Upper Clark Valley with geological mapping and some rock chip sampling completed. A blanket UTEM survey of the grid, as far south as 17600N, was completed in 1990 and covered CVC, Western Sequence, and Tyndall Group lithologies. No anomalies attributable to massive sulfides were recognised in the Clark Valley (Cameron & Read 1991).

After 1991 work in the Clark Valley area was conducted by RGC as part of a joint venture with BHP on ELs 55/89 and 102/87. The focus of exploration shifted to establishing a detailed understanding of the geology, through a multi-disciplinary approach, with the aim of recognising particular stratigraphic targets. The Clark Valley grid was extended south to 15000N and soil and rock chip sampling and geological mapping completed (Halley 1994).

Former tenement holdings over the current licence area and the location of previous exploration grids is shown in Figure 2. Details of previous exploration are given in Table 1.

**EL51/94  
CLARK VALLEY**

**FORMER GRIDS &  
TENURE HISTORY**



**Aberfoyle Resources Limited**  
EXPLORATION DIVISION

**FIGURE 2: EL51/94 Clark Valley  
Former Grids &  
Tenure History**

Compiled: RHL  
 Drawn: JX730  
 Checked :  
 File Name: c\_cv5.cdr  
 Plate No.: C\_CLV5

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Location Code :

Scale: 1:50000

Date: December 1995

TABLE 1: EL51/94 - PREVIOUS EXPLORATION					
Years	EL	Company	Work	Details	Reference
1956-57		Mount Lyell	Geophysics:	RONKA helicopter EM, aeromagnetic survey	
1957-72	No work in this period				
1968-69	EL13/65	BHP	Geochemistry:	limited stream sediment	
1972-74	EL13/65	BHP	Geophysics: Geochemistry:	helicopter TURAIR-magnetic survey stream sediment	Ruddock 1974
1974-75	EL13/65	EZ	Access: Geology: Geochemistry:	gridding, camp mapping stream sediment	Williams 1975
1975-77	No work in this period				
1977-78	EL21/76	Mount Lyell	Access: Geology: Geophysics: Geochemistry:	track cutting, gridding (Imperial Clark Valley Grid) mapping, sampling, petrology gradient array IP (Scintrex), proton magnetics (Scintrex) detailed soil, rockchip	Hutton 1978
1978-79	EL9/66	Mount Lyell	Access: Geophysics: Geochemistry:	grid extension gradient array IP (Scintrex), proton magnetics (Scintrex) detailed soil, rockchip, stream sediment	Reid et al 1979
1979-90	No work in this period				
1990-91	EL55/89	BHP	Access: Geology: Geophysics: Geochemistry:	gridding (Upper Clark Valley - Garfield Valley Grid) mapping, sampling, petrology UTEM survey (Lamontagne) rockchip	Cameron & Read 1991
1991-94	EL55/89	RGC	Access: Geology: Geochemistry:	grid extension (Middle Clark Valley Grid) mapping, sampling soil, rockchip	Halley 1994
1994-95	EL51/94	Aberfoyle	Geophysics: Geology:	helimagnetic survey (UTS) data compilation	Lewis, 1995

## 4. GEOLOGY

### 4.1 STRATIGRAPHY

The Regional geology of the Clark Valley area is shown in Figure 3 (based on Corbett and McNeill, 1987).

The oldest rocks in the area are feldspar-phyric CVC rhyolitic-dacitic lavas which are interbedded with narrow bands of black siltstone and are locally intruded by the Cambrian Darwin Granite. Haematite-magnetite veining is present and the sequence has been sheared and metamorphosed to lower greenschist facies. Disseminated copper mineralisation is associated with this

sequence on the crest of the West Coast Range, adjacent to the Darwin Granite.

To the west, the CVC interfingers with but is largely overlain by the Western Sequence: a mixed west facing succession of quartz feldspar phyric rhyolitic lavas, mica-bearing conformable sub-volcanic sills, epiclastics and mass flow crystal-rich volcanoclastics.

A review of previous mapping, soil geochemistry and IP data indicates that a 50-100m thick black shale unit is present at the base of the Western Sequence from 15600N to 17000N and marks the transition from feldspar phyric to quartz-feldspar phyric volcanics. Soil geochemistry from this shale unit suggests the presence of a suite II type (high Ti/Zr and moderate  $P_2O_5/TiO_2$ ; Crawford, et al. (1992)) andesite or basalt. This package appears to be terminated to the south by a large dextral fault zone (see below).

Tyndall Group volcanoclastic conglomerates conformably overly the Western Sequence on the lower slopes of Mount Sorell. Minor volcanoclastic sandstone and siltstone are present in this sequence to the north. The conglomerates form a distinctive magnetic unit with magnetic intensity apparently decreasing to the south.

Siliciclastic conglomerate and sandstone of the Owen Conglomerate conformably overlies the Tyndall Group on the lower slopes of Mount Sorell. In the southeast of the licence, Owen Conglomerate and Gordon Limestone form a south plunging anticline and appear to directly overlie the CVC.

A poorly understood sequence of ?volcanoclastics/epiclastics is mapped in the Lower Clark Valley. This package has been correlated with the Western Sequence and is covered by Tertiary sediments to the southwest.

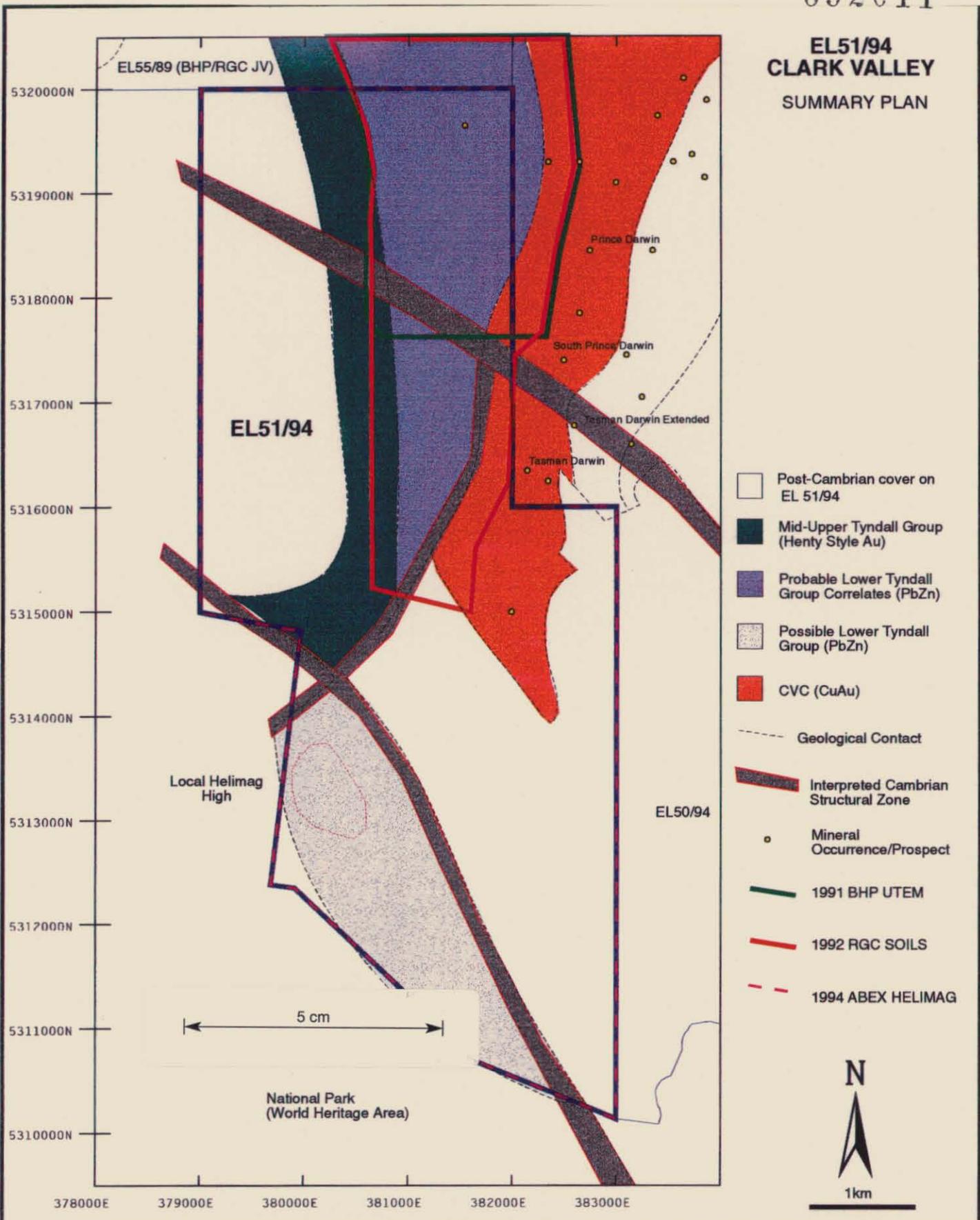
## **4.2 STRUCTURE**

The Clark Valley sequence is a broadly conformable steeply west dipping and facing succession from CVC to Owen Conglomerate. Bedding indicators are rare and the dominant fabric is a NNW trending regional Devonian cleavage.

Mapped faults are shown in Figure 3. A NW trending fault set at the southern end of the Darwin Granite is also evident as a prominent magnetic feature which continues to the northwest.

The NE trending fault ("Clark Fault") mapped at the southern end of the Darwin Granite is a major feature which continues as a magnetic and Landsat TM lineament to the southwest. The zone has consistent dextral offset and juxtaposes two discrete stratigraphic domains: to the north approximately 1000m of Western Sequence - Tyndall Group stratigraphy is present, but to the

**EL51/94  
CLARK VALLEY  
SUMMARY PLAN**



**Aberfoyle Resources Limited**  
EXPLORATION DIVISION

**FIGURE 3**  
**EL51/94 Clark Valley**  
**SUMMARY PLAN**

Compiled: RHL  
 Drawn: JX730  
 Checked: RHL  
 File Name: c\_clv3-2.cdr  
 Plate No.: C\_CLV3(2)

REVISIONS			
Init.	Date	Init.	Date

Location Code :

Scale: 1:50000

Date: July 1996

south the CVC is apparently overlain directly by Owen Conglomerate. This stratigraphic variation may indicate early syn-depositional activity on this structure.

#### **4.3 CORRELATION**

The Western Sequence of the Clark Valley occupies the same stratigraphic interval as the Lower-Middle Tyndall Group elsewhere in the MRV, ie. between felsic CVC volcanics and Upper Tyndall Group volcanoclastic conglomerates.

The shale-?andesite package at the base of the Western Sequence marks the transition from feldspar phyric CVC rhyodacites to quartz-feldspar phyric rhyolites and is thus a possible Lower Tyndall Group correlate of similar epiclastic horizons at Basin Lake and White Spur.

Most of the Western Sequence in the Clark Valley area consists of massive rhyolite which is similar to the Middle Tyndall Group stratigraphy in the Henty-Newton Creek area.

Preliminary inspection of recently acquired helimag data strongly suggests that volcanoclastics in the Lower Clark Valley includes magnetic Upper Tyndall Group units and thus may include the regionally prospective Lower Tyndall Group stratigraphic interval.

### **5. WORK COMPLETED**

#### **5.1 HELIMAGNETIC SURVEY**

Helimagnetics has been used by Aberfoyle elsewhere in the MRV as an aid to geological and structural interpretation for areas with glacial cover, poor exposure or limited access.

Initial interpretation of the 1981 Mines Department aeromagnetic data indicated that significant lithological and structural information would be gained from a detailed survey of the Clark Valley.

Details of this survey are given in Lewis (1995) and no further interpretation of the data has been completed.

## 6. CONCLUSIONS.

A low level exploration program, involving helimagnetics and compilation of previous exploration data, has been completed on EL 51/94.

A preliminary interpretation of the helimag data suggests that Tyndall Group stratigraphy mapped on the eastern slopes of Mount Sorell continues south into the Lower Clark Valley.

Compilation and re-interpretation of previous exploration data has defined a narrow 800m long zone of anomalous Zn soil geochemistry associated with shale and possible mafic volcanics at the Western Sequence (Tyndall Group) - CVC contact. The southern strike extent of this zone has not been tested by ground EM.

These two target areas were not adequately tested by the current exploration program. However, they have a lower perceived prospectivity than targets on other Aberfoyle tenements and this, coupled with high exploration (access) costs and distance to infrastructure, has seriously downgraded their prospectivity. It is therefore recommended that EL 51/94 be relinquished.

## 7. REFERENCES

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