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CRA EXPLORATION PTY.LIMITED.

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D. DIR.	24 JUL 1984			E & IL
	DEPT. OF MINES			
REF. No.	7498/84			

O'CONNORS PEAK E.L. 42/82

EXPLORATION REPORT FOR THE YEAR ENDING 21ST JUNE, 1984.

FIRST AND FINAL REPORT

OPEN FILE

MICROFILMED

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2.

INTRODUCTION

EL 42/82 covers an area of 470 sqr km in central Tasmania, and is immediately west of Campbell Town on the Midland Highway. It encompasses the eastern margin of the Central Plateau in its western portion, and to the east, the Tertiary age Midlands Graben.

The foothills of the Western Tiers provide a rugged terrain, and topographic features include O'Connors Peak, Millers Bluff, Stevensons Lookout and Molly Yorks Nightcap, all of which are formed by Jurassic dolerite.

Major drainage is via the north flowing Lake and Isis rivers, draining in to the Macquarie River to the north of the EL.

The EL is entirely located within the Lake River 1:50 000 scale geological sheet, published by the Geological Survey of Tasmania.

Field activities in the EL consist of reconnaissance traverses along both private and public roads, plus numerous compass traverses between the Mitford Hills and Molly Yorks Nightcap.

3.

EXPLORATION OBJECTIVES

CRAE Pty. Ltd. require a black coal deposit with the following characteristics:

1. An in situ resource of 50 million tonnes
2. Individual coal seam widths of $\geq 1.0\text{m}$
3. A depth of overburden sufficiently thin to allow extraction by open pit mining. In practise this effectively means a maximum thickness of overburden of $\leq 50\text{m}$.

COAL POTENTIAL

1. LOWER FRESHWATER SEQUENCE OF PARMEENER SUPERGROUP

(a) Distribution and Lithologies

This unit is termed the Liffey Group in this area, and has good exposure in the central part of the EL between the Mitford Hills and Barra Barra.

The Liffey Group consists of fine grained quartz sandstone which is often gritty and containing worm casts, massive bedded quartz ⁺feldspar sandstone, and very minor, discontinuous grey mudstone lenses.

Its thickness is approximately 20 - 25m, and the distribution is depicted in Figure 1, along with the associated marine Parmeener sediments.

Jurassic age dolerite has intruded the top of the Parmeener Super Group, and accordingly an area of inferred Liffey Group is also depicted in Figure 1. beneath the dolerite and overlying, younger marine sequences.

(b) Coal Potential

The salient features of the Lower Freshwater Sequence (LFW) are contained in ^{Summers (1984)} ~~the Appendix~~, and the major factors bearing on the coal potential are:

- (i) Thickness of the LFW Sequence
- (ii) Thickness of the contained lutites
- (iii) The nature and size of the faunizone hiatus
- (iv) The inferred palaeo geography.

The LFW Sequence in the EL is \approx 20 - 25m thick, and the only shale/mudstones

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seen were discontinuous, and thus have an effective zero thickness.

The EL lies within the faunizone 2 - 9 hiatus, in which no coal has been recorded in the state, and none was seen during the field work.

The inferred palaeo environment of deposition appears to have been either an alluvial plain subjected to a marine incursion during LFW Sequence time, or a coastal plain/delta margin; no evidence of lakes/lagoons or embayments were seen in the field.

(c) Comments

In the event that a facies change exists west and south of the outcrops and coal bearing shales occur, the physical constraints are as follows:

- (i) Area of Liffey Group beneath younger marine sediments \approx 50sqr km
- (ii) Area of Liffey Group inferred beneath dolerite \approx 38sqr km.

The area required to host 50 million tonnes of coal with RD of 1.3 is \approx 38.5sqr km (for a 1m thick seam), and thus both the above categories would appear eligible in this respect.

However, there is an overburden thickness of between 200 and 500m of combined dolerite and younger marine rocks and this aspect, in conjunction with the inherent features of the Liffey Group in the area, combine to produce a very low coal potential for EL 42/82.

2. UPPER FRESHWATER SEQUENCE OF THE PARMEENER SUPER GROUP

(a). PERMIAN

(i) Distribution and Lithologies

The basal unit of the Upper Freshwater Sequence in the EL is termed the Jackey Shale/Formation. It occurs as discontinuous outcrops near Parson and Clerk Mountain in the western portion of EL 42/82, (Figure 2).

The unit is widespread in central Tasmania, and may be reasonably inferred to underlie the Triassic age sandstone described below in section 2(b).

Lithologies consist of quartz sandstone and shale, both of which are variably carbonaceous and micaceous.

(ii) Coal Potential

Although no coal is recorded from the Jackey Shale in the area of EL 42/82 its probable lithocorrelates west of the Central Plateau, south at Cygnet, and in the north west at Preolenna are coal bearing.

The inferred extent of Jackey Shale beneath dolerite near Parson and Clerk Mountain is \approx 6 sqr km, while to the south of Jacobs Sugarloaf the inferred area of this unit beneath the thinnest* cover of Triassic age sandstone is 15 sqr km.

The Triassic sandstone in the latter area dips from 3° to 10° to the south west, which is interpreted to be due to the emplacement of numerous dolerite sills and dykes.

This sandstone (Ross Sandstone lithocorrelate), averages \approx 200m in thickness

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in this part of the state, and erosion of it below the base of the Jacobs Sugarloaf dolerite appears to have removed $\approx 100\text{m}$; thus suggesting a remnant thickness of $\approx 100\text{m}$.*

In summary, although there is a moderate potential for the occurrence of coal in the Jackey Shale in EL 42/82, both the areas described above are too small in extent, and too deep to satisfy the stated coal resource objectives.

(b) TRIASSIC

(i) Distribution and Lithologies

The Triassic age rocks in the area occur generally in the eastern portion of the EL, (Figure 2), and consist of quartz sandstone.

These rocks are litho correlates of the Ross Sandstone.

(ii) Coal Potential

The early Triassic Ross Sandstone and correlates have a zero potential for coal.

8.

CONCLUSIONS AND RECOMMENDATIONS

1. The Permian age freshwater rocks have a very low to zero potential for the coal target as defined.
2. The Triassic age freshwater rocks have a zero coal potential.
3. It is recommended that EL 42/80 be relinquished.

5. KEYWORDS

Coal - Sub Bituminous, Permian, Reconnaissance

6. LOCATION

Oatlands SK55-6

7. LIST OF PLANS

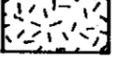
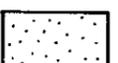
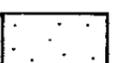
1. EL 42/82 O'Connors Peak, Distribution of Lower
Freshwater Sequence Parmeener Super Group TASH 1771
2. EL 42/82 O'Connors Peak Distribtuion of Upper
Freshwater Sequence Parmeener Super Group TASH 1772

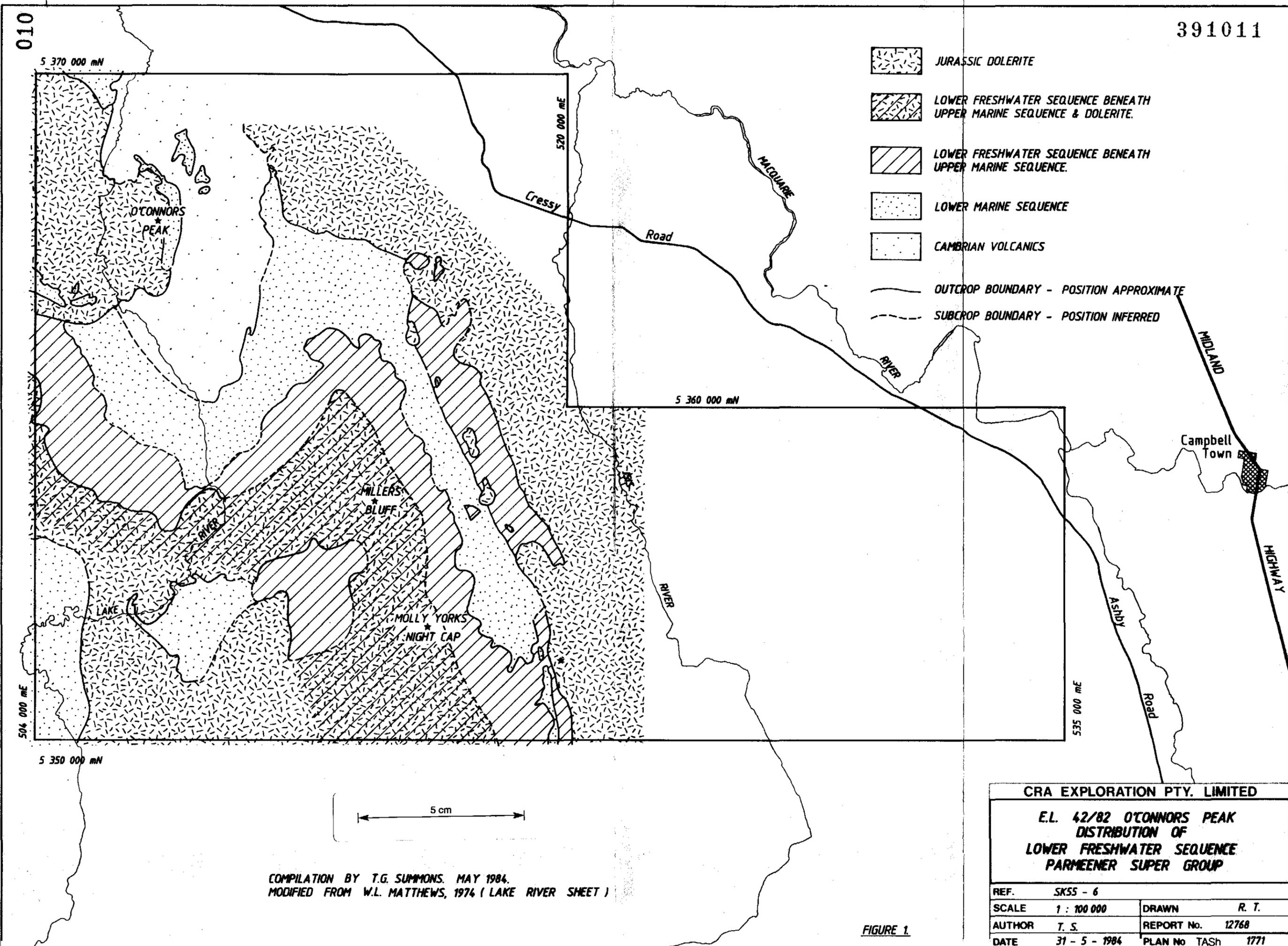
8. REFERENCES

Summons T.G. (1982). The Lower Freshwater Sequence of the Parmeener Super Group - Tasmania. Summons Geoservices P/L. for CRA Exploration Pty.Limited . CRAE Report No. 12767.

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-  JURASSIC DOLERITE
-  LOWER FRESHWATER SEQUENCE BENEATH UPPER MARINE SEQUENCE & DOLERITE.
-  LOWER FRESHWATER SEQUENCE BENEATH UPPER MARINE SEQUENCE.
-  LOWER MARINE SEQUENCE
-  CAMBRIAN VOLCANICS
-  OUTCROP BOUNDARY - POSITION APPROXIMATE
-  SUBCROP BOUNDARY - POSITION INFERRED



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FIGURE 1.

CRA EXPLORATION PTY. LIMITED			
E.L. 42/82 O'CONNORS PEAK DISTRIBUTION OF LOWER FRESHWATER SEQUENCE PARMEENER SUPER GROUP			
REF.	SK55 - 6		
SCALE	1 : 100 000	DRAWN	R. T.
AUTHOR	T. S.	REPORT No.	12768
DATE	31 - 5 - 1984	PLAN No	TASH 1771

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5 370 000 mN

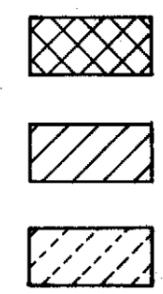
520 000 mE

5 360 00 mN

504 000 mE

5 350 000 mN

535 000mE



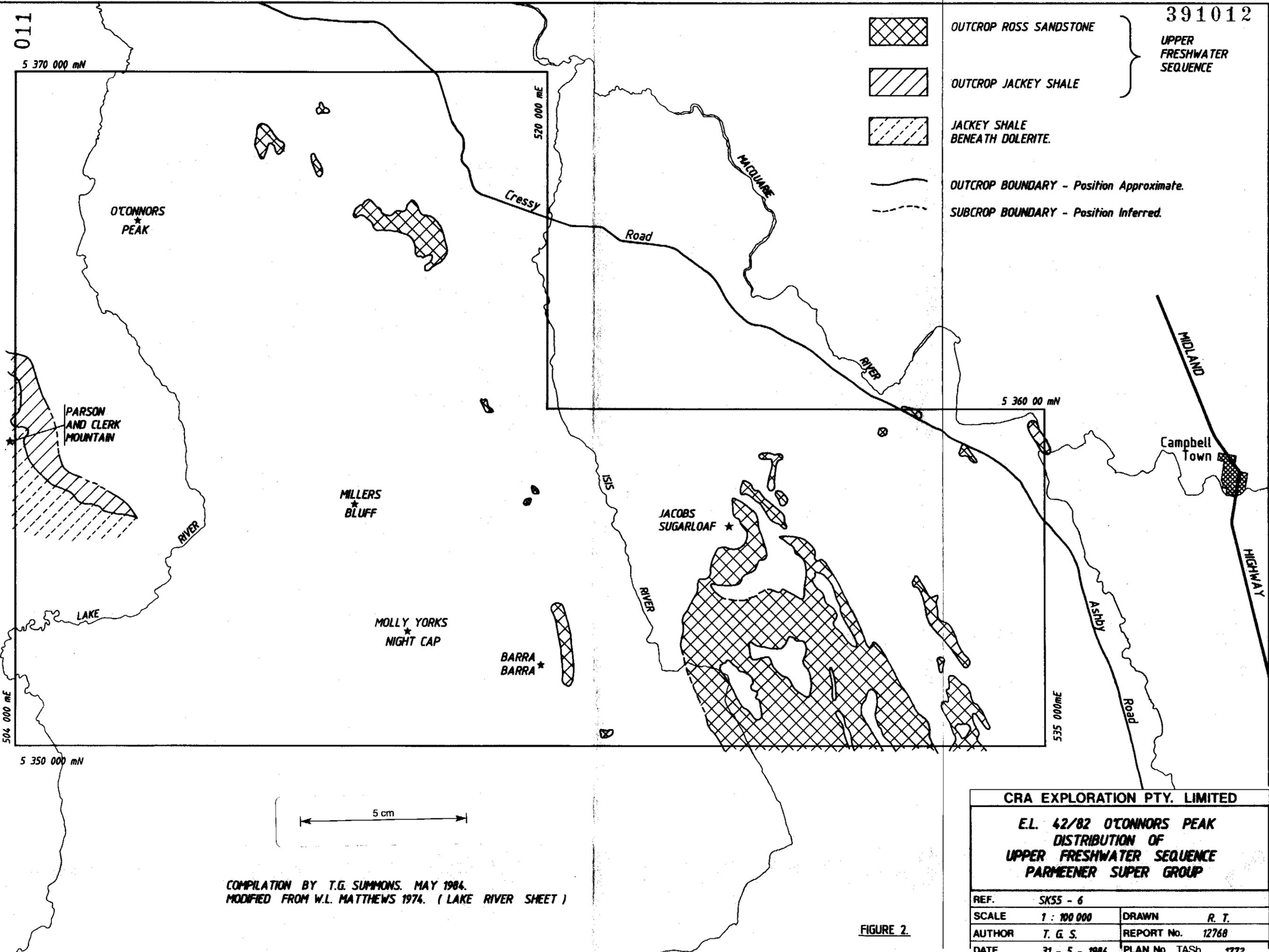
OUTCROP ROSS SANDSTONE } UPPER FRESHWATER SEQUENCE

OUTCROP JACKEY SHALE

JACKEY SHALE BENEATH DOLERITE.

OUTCROP BOUNDARY - Position Approximate.

SUBCROP BOUNDARY - Position Inferred.



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FIGURE 2.

CRA EXPLORATION PTY. LIMITED			
E.L. 42/82 O'CONNORS PEAK DISTRIBUTION OF UPPER FRESHWATER SEQUENCE PARMEENER SUPER GROUP			
REF.	SK55 - 6		
SCALE	1 : 100 000	DRAWN	R. T.
AUTHOR	T. G. S.	REPORT No.	12768
DATE	31 - 5 - 1984	PLAN No	TASH 1777