

CRA EXPLORATION PTY. LIMITED.

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BRACKNELL EL 40/82EXPLORATION REPORT FOR THE YEAR ENDING 12TH AUGUST 1984**OPEN FILE**

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Date: 20th July, 1984.

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CRAE Hobart
MINES DEPARTMENT, HOBART

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INTRODUCTION

EL 40/82 covers an area of 500 sqr km in central Tasmania, and is immediately north of EL 42/82. It is located between Westbury and Cressy to the east, and has the Great Western Tiers of the Central Plateau as the western boundary.

Minor towns in the EL include Cluan, Liffey, Bracknell and Poatina, and access is provided by numerous public roads.

Drainage is principally directed north and east off the Central Plateau, the main stream being the Liffey River.

Physiography varies from elevated dolerite covered Central Plateau to the flat Longford Graben of Tertiary age.

Intermediate relief is represented by dolerite covered fault bounded blocks (e.g. Cluan Tiers.).

Major faulting has occurred between the Great Western Tiers and the Longford Basin, such that Parmeener Super Group rocks are exposed in NW orientated fault blocks, which usually have the east block thrown down.

This faulting has a Tertiary component of movement since the Longford Graben is similarly aligned.

El 40/82 covers three 1:63 360 scale geological sheets (Quamby, Great Lake, and Longford), and part of the 1:50 000 scale Lake River sheet, all published

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by the Geological Survey of Tasmania.

Field activities in the EL consisted of traverses along most of the public roads in the area.

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 POTENTIALA. LOWER FRESHWATER SEQUENCE OF THE PARMEENER SUPER GROUP1. Distribution and Lithologies

The Lower Freshwater Sequence (LFW) is represented by the Liffey Sandstone/ Group in the EL, the distribution of which occurs as both erosional remnants, and in fault bounded blocks as follows:

(a) Poatina - Blackwood Creek Block

This comprises the foot of the Great Western Tiers around Poatina, and is the type area for the Liffey Group; Mackellar (1957) described it in terms of four formations:

- (i) Flat Top Formation: 6 - 10m thick, micaceous quartz sandstone, with dark grey shale bands, and minor worm casts in the sandstones.
- (ii) Kopanica Formation: 1 - 6m thick, grey and carbonaceous shales, minor quartz sandstone.
- (iii) Woodside Formation: 8 - 12m thick, quartz mica sandstone, minor black shale bands.
- (iv) Creekton Formation: 2 - 4m thick, worm cast quartz sandstone; this unit forms the top of the section.

Total area of this block is \approx 11 sqr km.

(b) Bullock Holes Creek Block

This is situated between the Liffey River and Blackwood Creek at the foot of the Great Western Tiers; round exposures are poor, and Barton et al (1969)

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described the Liffey Sandstone as consisting of quartz sandstone, which in places may be seen to be carbonaceous and worm cast, with lesser carbonaceous shale. Total area is ≈ 12 sqr km.

(c) Drys Bluff Block

This is located to the north and west of Drys Bluff and is cut by the Liffey River.

Road exposures are poor, and it is inferred to be similar to the Bullock Holes Creek block. Total area is ≈ 20 sqr km.

(d) Cluan Tiers Block

This is located between Cluan Tiers and Cluan; Liffey Group rocks do not crop out, but may be reasonably inferred beneath the younger marine sediments present in the district. Total area is ≈ 26 sqr km.

Block localities are shown in Figure 1.

2. Coal Potential

The relevant features of the LFW sequence are contained in the Appendix, and the coal potential is influenced by the following:

- (a). Thickness of the LFW Sequence
- (b). Thickness of the contained lutites
- (c). The nature and size of the faunizone hiatus
- (d). The inferred palaeogeography.

The LFW Sequence in EL 40/82 is ≥ 30 m thick, with ≤ 6 m of shale, (Kopanica Formation).

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It lies in the faunizone 2 - 9 hiatus, in which no in situ coal is recorded, although coal fragments are recorded at the northern end of Cluan Tiers.

The inferred depositional environment was a coastal plain (?lower delta plain), which was subjected to several marine transgressions during LFW time. Although the marine depositional hiatus was of similar duration to the prospective 1 - 8 hiatus, it appears the region covered by EL 40/82 was more prone to marine flooding, which may also reflect closer proximity to the trough axis (see Appendix).

The record of "oil shale" in the log of a water bore (W.L. Matthews, pers. comm.) near Osmaston, although unconfirmed, is sufficiently close to the inferred boundary of the 1 - 8 and 2 - 9 hiatus, and to the Mersey Coal Basin (including the Don Valley Black Shale), for the log to assume some credibility.

Accordingly, a moderate coal potential is implied by the oil shale and coal fragments for the north western portion of the EL, adjacent to the Mersey Coal Basin.

The appropriate blocks in this regard would be the northern parts of the Cluan Tiers and Drys Bluff blocks, both of which have $\leq 300\text{m}$ of younger marine sediment overburden.

The only block with relatively little overburden to the LFW rocks is the Bullock Holes Creek block, but with an area of 12 sq km, would require a 3.2m coal seam to be present. This value is unlikely to be attained in a total LFW thickness of $\approx 30\text{m}$, even in the prospective 1 - 8 faunizone hiatus.

B. UPPER FRESHWATER SEQUENCE OF THE PARMEINER SUPER GROUP

1. PERMIAN

(a). Distribution and Lithologies

The basal unit of the Upper Freshwater Sequence is the Jackey Formation/Shale, which is present north of Projection Bluff, and inferred to occur around Drys Bluff and east of Cluan Tiers. It consists of variably carbonaceous quartz sandstone and shale. Further details are shown in Figure 2.

Total area beneath younger freshwater rocks is \approx 30 sqr km.

(b). Coal Potential

Although no coal is recorded from this unit in the area of the EL, thin coal seams (\leq 0.15m) occur to the west (Middlesex Quadrangle) in the same horizon.

The chance of a coal seam 1.1m thick being present in EL 40/82 is indeterminate at present, but if present, the overburden to such coal would appear excessively thick.

2. TRIASSIC

The section seen along the Lake Highway in the west of the EL consisted of a lower micaceous feldspathic quartz sandstone with minor dark grey siltstone; this sandstone is massive bedded and contains graphite, and the succession is \approx 50m thick. Overlying the sandstone is a sub lithic, micaceous quartz sandstone with mud pellets, khaki coloured siltstone and mudstone; the sandstone and siltstone in this section are also graphite bearing, and the succession is \leq 150m thick.

These two successions appear to correlate with the Rp (Ross Sandstone) and

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Rm units recognised by S.M.Forsyth (pers. comm.) in the Midlands area.

Elsewhere, similar feldspathic (to sub Lithic) quartz sandstone occurs beneath the Cluan Tiers, and in the dolerite intruded down faulted block NW and SE of Bracknell.

Both sequences have a zero coal potential.

4. CONCLUSIONS AND RECOMMENDATIONS

1. Although the Lower Freshwater Sequence rocks appear to have a moderate coal potential in the north western portion of EL 40/82, excessive overburden thicknesses downgrade the prospectivity of the area.
2. Similar comments apply to the Permian age section of the Upper Freshwater Sequence rocks in EL 40/82.
3. The Triassic age section of the Upper Freshwater Sequence rocks in EL 40/82 have a zero coal potential.
4. It is recommended that any further work be done on the LFW rocks in EL 40/82 be planned in conjunction with the work program for EL 39/82 to the north.

5. REFERENCES

- | | |
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| MACKELLAR, J.B.A., 1957: | Geology of portion of the Western Tiers;
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| Summons T.G. 1984: | The Lower Freshwater Sequence of the
Permian Super Group - Tasmania
CRAE Report 12767 |

6. KEYWORDS

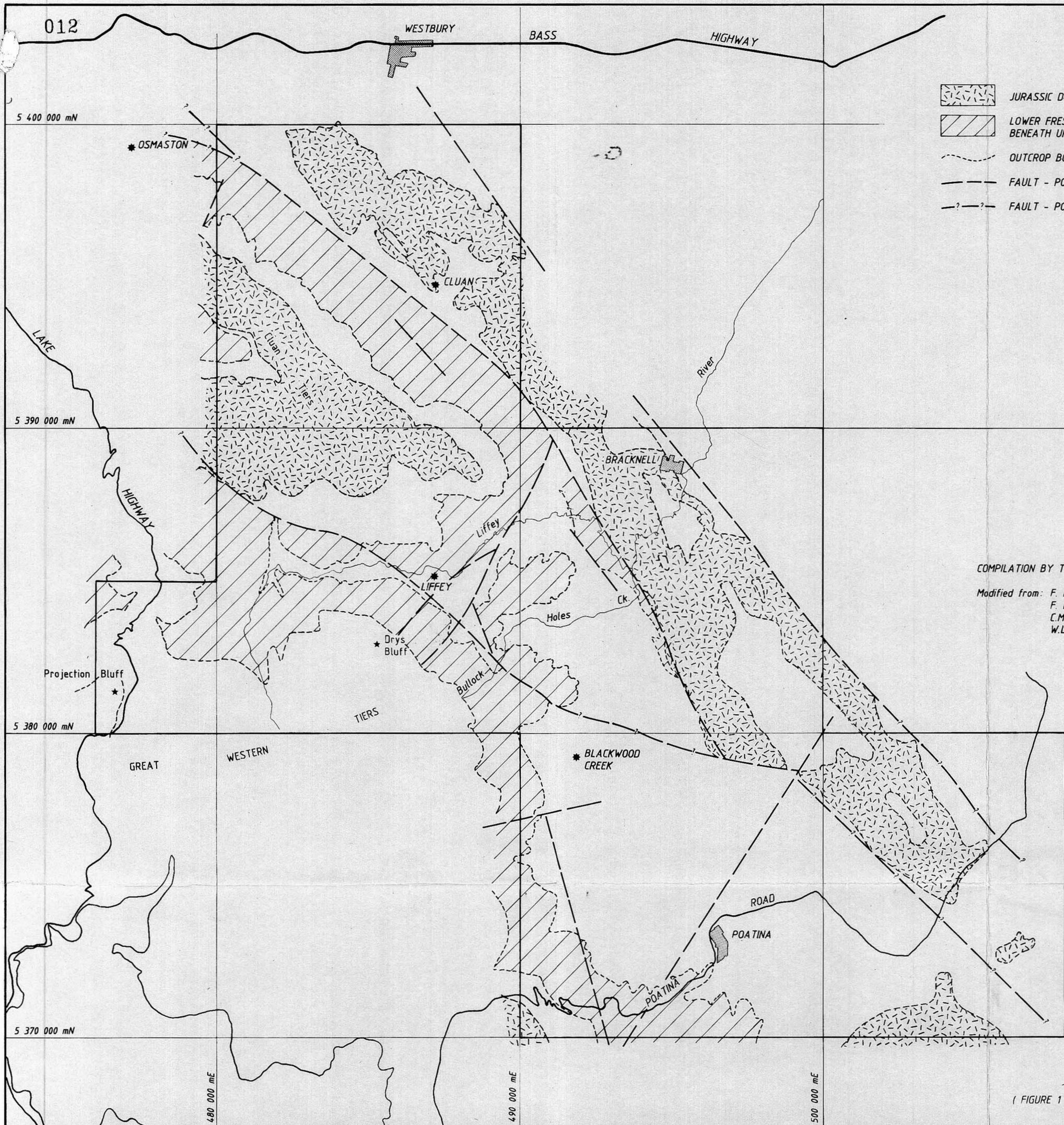
Coal, Sub Bituminous, Permian, Reconnaissance

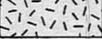
7. LOCATION

Launceston SK55-4
Oatlands SK55-6

8. LIST OF PLANS

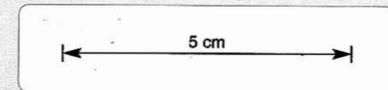
1. Bracknell EL 40/82 Distribution of Lower Freshwater Sequence TASH 1799
Parmeener Super Group
2. Bracknell EL 40/82 Distribution of Upper Freshwater Sequence TASH 1800
Parmeener Super Group



-  JURASSIC DOLERITE
-  LOWER FRESHWATER SEQUENCE-
BENEATH UPPER MARINE SEQUENCE
-  OUTCROP BOUNDARY - POSITION APPROXIMATE
-  FAULT - POSITION APPROXIMATE
-  FAULT - POSITION INFERRED

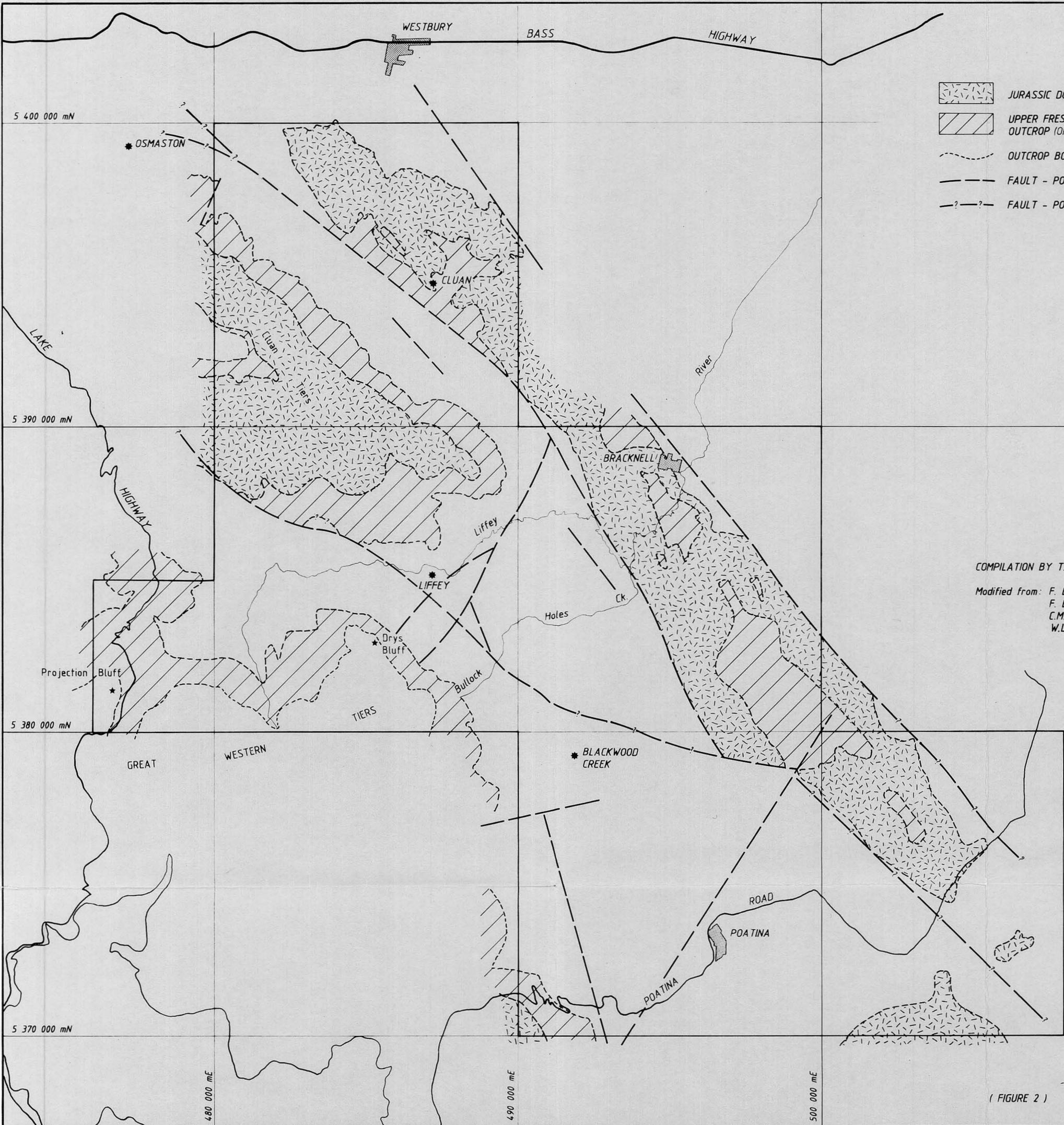
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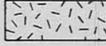
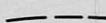
Modified from: F. Blake et.al. 1956, (GREAT LAKE SHEET)
 F. Blake 1959 (LONGFORD SHEET)
 C.M. Barton et.al. 1969 (QUAMBY SHEET)
 W.L. Matthews 1974, (LAKE RIVER SHEET)



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BRACKNELL E.L. 40/82	
DISTRIBUTION OF	
LOWER FRESHWATER SEQUENCE	
PARMEENER SUPER GROUP	
Ref:	SK55 - 4
Scale:	1 : 100,000
Author:	T.G.S.
Date:	6 - 8 - 1984
Drawn:	I.F.W. & R.T.
Report No.	12774
Plan No.	TASH 1799

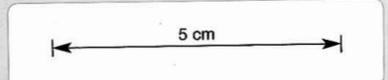
(FIGURE 1)



-  JURASSIC DOLERITE
-  UPPER FRESHWATER SEQUENCE OUTCROP (OR SUBCROP BENEATH SUPERFICIAL COVER).
-  OUTCROP BOUNDARY - POSITION APPROXIMATE
-  FAULT - POSITION APPROXIMATE
-  FAULT - POSITION INFERRED

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(FIGURE 2)