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EXPLORATION LICENCE 30/80

SOUTH EAST TASMANIA

REPORT FOR THE SIX MONTHS ENDED 15th OCTOBER, 1982

OPEN FILE

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FIG. 1

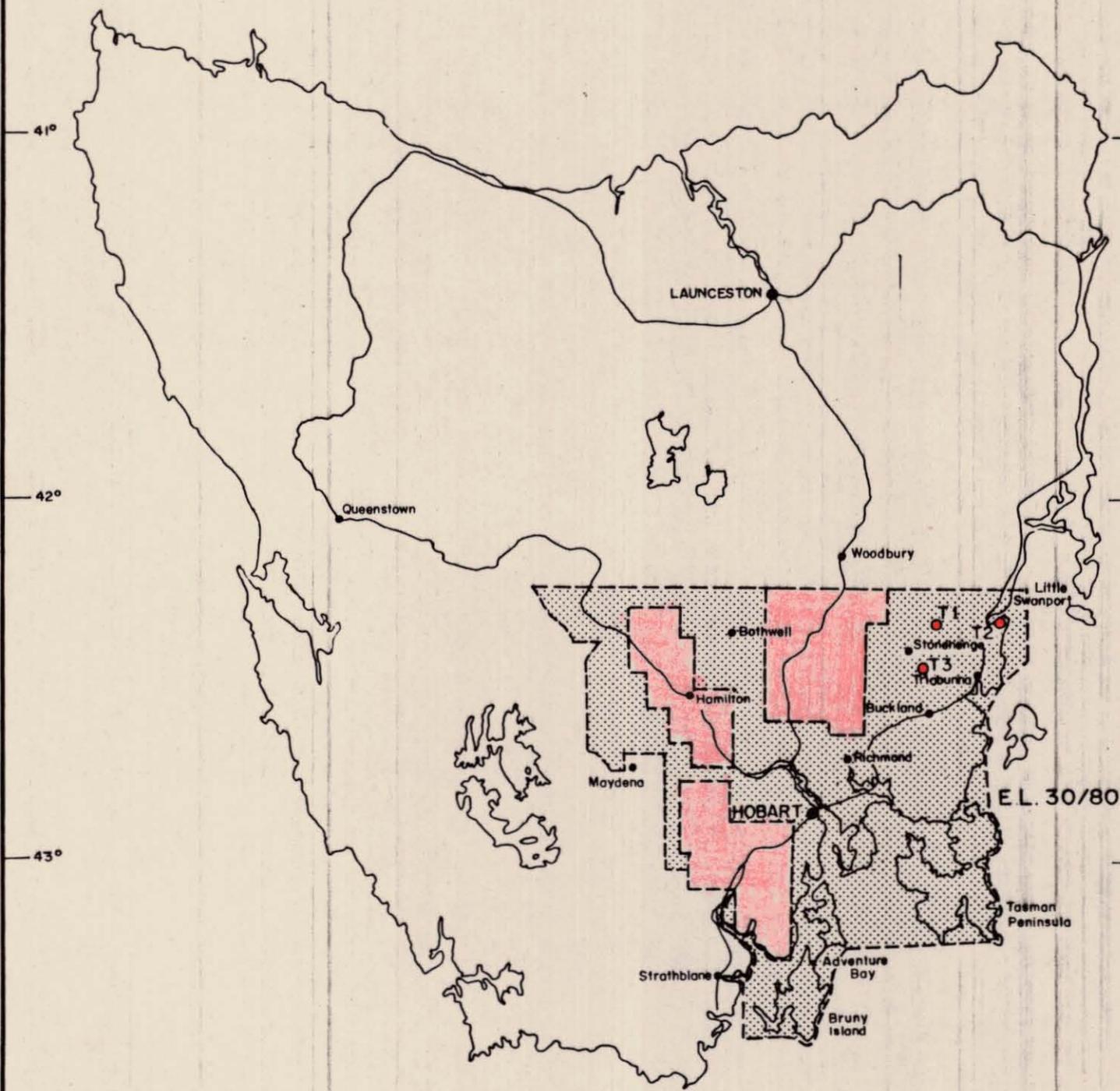
145°

146°

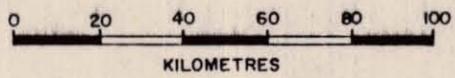
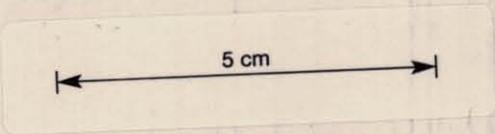
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- EL 30/80 held for oil and oil shale
- " " held for coal, oil and oil shale
- T2 Diamond drill hole.



Centre
Melbourne

Date
OCT 1981

THE BROKEN HILL PROPRIETARY CO. LTD.
E.L. 30/80
SOUTHEAST TASMANIA
LOCALITY MAP

Project No.
C350-2

Drawing No.
A4-2261

SUMMARY

Exploration in E.L. 30/80 is directed to both Triassic and Permian coal. Photointerpretation of three portions of the northern half of the E.L. was completed and some of this work checked in the field. Records of ground water boreholes for the region were studied and coal intersections noted.

BHP is applying for renewal of E.L. 30/80 for another six months with a reduction in area from 12,000 to 3,214 square kilometres. The programme planned for this period would involve field checking of drilling targets, and a nominal ten x 100 metre rotary/core drill programme.

EXPLORATION LICENCE 30/80SOUTH EAST TASMANIAREPORT FOR THE SIX MONTHS ENDED 15th OCTOBER 19821. TITLE

The Broken Hill Proprietary Company Limited was granted Exploration Licence E.L. 30/80, covering 12,900 square kilometres in southeast Tasmania, on 15th April, 1981 for six months. The licence was renewed for twelve months to 15th October, 1982.

E.L. 30/80 is held for three minerals - coal, oil and oil shale. The latter two minerals are valid for the entire E.L. The licence with respect to coal covers a smaller area because of pre-existing coal tenements within the boundary of E.L. 30/80, as shown in Figure 1.

The Department of Mines introduced new regulations on 1st July, 1982, governing the size of E.Ls', rentals, expenditure commitments and length of tenure. Approval was given for continuance of BHP's programme under the old conditions until 15th October, 1982, because the new regulations entail high rentals and the introduction of expenditure commitments. BHP has applied for renewal of E.L. 30/80 with a reduction in size to 3,214 square kilometres (Figure 2) for the six months to 15th April, 1983.

2. EXPLORATION PHILOSOPHY

Soon after E.L. 30/80 was granted, it was decided to drill three wildcat holes to test for Upper Triassic coal measures. The holes were drilled in the northeast portion of the E.L., which was poorly mapped, and were sited so as to be high in the Triassic sequence. Only Middle Triassic quartzose sandstones and mudstones were intersected by the drilling. Upper Triassic lithic sandstones were not encountered and are believed to have been removed by erosion. No coal was found.

The programme for the current period has been designed firstly to eliminate a large portion of the E.L. from further exploration, and secondly to define targets for coal exploration in the area remaining. Attention is being given to both Triassic and Permian coal.

The initial drilling showed that large areas of Upper Triassic lithic sandstones are likely to have been removed by erosion unless preserved either by downward block faulting, as at Woodbury, or by dolerite or basalt cover. Exploration is being focussed on the recognition of graben structures within the Triassic sequence, which are large enough to contain sufficient volumes of coal measures free of dolerite or basalt. This is a simplistic

model, as minor coal seams do occur in the underlying quartz sandstones also, but it does provide a method for rapid screening of the licence area.

Much less is known about the Permian coal measures or their equivalents in the northern half of E.L. 30/80 than is known about the Triassic. In view of the generally accepted equivalence of the Permian sequence in Tasmania with those of the Sydney and Bowen Basins, and because Tasmanian Permian coals have been of better quality than those of the Triassic, it is considered worthwhile drilling several stratigraphic holes in the Permian sequence within E.L. 30/80.

Disincentives include the high sulphur content of Permian coals in Tasmania, the thinness and poor extent of the seams. Also, the Mersey Coal Measures are present as a marine facies in the southeast around Hobart, so the search for coal of that age would be confined to the north and west of the E.L.

3. SUMMARY OF PREVIOUS WORK

- i) Literature survey and review of available data.
- ii) Drilling of three scout diamond drill holes, T1, T2 and T3 (52.0, 83.0 and 98.3 metres respectively) in the Buckland - Little Swanport area.
- iii) Sampling and analysis of selected intervals of drill core.
- iv) Petrographic examination of seven core samples from drill hole T3.
- v) Reassessment of the potential of the Permo - Triassic sequence in E.L. 30/80 for coal was begun. Officers of the Department of Mines were consulted and field reconnaissance was carried out. One result was the recommendation that work should concentrate on the northern half of the E.L.

Details of previous work were submitted in the Reports for the Six Months Ended 15th October, 1981 and 15th April, 1982.

4. WORK DURING THE SIX MONTHS ENDED 15th OCTOBER, 1982

- i) Further discussions with officers of the Department of Mines on regional mapping and on coal potential.
- ii) Landsat interpretation was attempted in order to define different sedimentary rock units. However, it proved very difficult even to discriminate dolerite from sedimentary rocks due to the deep

weathering and to wide spread pastoral and other cultural activity. Discrimination between Permian and Triassic units was out of the question.

- iii) Preliminary photointerpretation maps for three portions (Figure 2) of the northern half of the E.L. were prepared. In general photointerpretation was carried out over those areas not covered by 1:50,000 or 1:63,360 scale geological maps.

The aims were to distinguish the various sedimentary units, in particular the Upper Triassic coal measures, to delineate the dolerite, looking in particular for windows of sedimentary rocks, and to detect photolinears and faults which, in conjunction with morphological expression, could indicate graben structures.

- iv) Some field checking of the photointerpretation was carried out. It is already clear that it was not possible to distinguish Permian from Triassic rocks in the study, nor to detect Upper Triassic coal measures.

Two sedimentary lithotypes were recognised in the study: - one is a soft, poorly resistant unit with few bedding traces and little expression, the other is more resistant, with many bedding traces and more prominent topographic expression.

In the field it was found that the most common rock type in both photolithological units is clean quartz sandstone of the Middle Triassic. It is likely that the two photolithotypes reflect relative differences in the proportions of mudstones and possibly of lithic sandstones (both of which would weather easily and give poor topographic expression) compared to the quartz sandstones.

The study was useful in defining areas of possible sedimentary rocks which are shown on existing maps as dolerite, and also, in defining several possible grabens of sufficient size to warrant investigation.

- v) Nearly 800 records of ground water bores drilled in and around E.L. 30/80 were examined at the Department of Mines. Their locations were traced off compilation sheets and relevant information, such as total depth and presence of coal or carbonaceous clay, was plotted.

It is noteworthy that in at least four ground water bores which were drilled at Woodbury, coaly material in seams about 3 metres thick was reported. Other coalfields such as York Plains, Langloh, Jericho, Colebrook, Richmond and Triabunna are all detectable from ground water bore records.

The distribution of these bore holes, as expected, is highly uneven, as they are concentrated on pastoral land. For this reason they can be used as an exploration tool in a positive sense only and not in a negative sense.

- vi) Discussion with geophysicists with experience of Tasmanian conditions led to the conclusion that gravity surveys would have no practical value at this stage. There would be no cost advantage using gravity to confirm graben structures or to detect dolerite at shallow depths, as compared with actually drilling, particularly when the expense of accurately surveying stations through moderately hilly country is considered. Ground magnetics can be used to help detect dolerite.
- vii) To bring the E.L. down to a more manageable size, an area of 9686 square kilometres is being surrendered. Much of this comprises the off-shore parts and those portions of the E.L. which were superimposed on pre-existing coal tenements.

Of the other ground being relinquished, the southern half, consisting of the Tasman and Forestier Peninsulas, Bruny Island and the Sandford area, is considered to have little scope for extensions or additions to the known coal deposits. The eastern portion to be surrendered does contain the Triabunna coalfield and areas of Triassic coal measures north along the coast. Although potential there cannot be ruled out, the area is also given a low priority.

The western portion is largely overlain by dolerite, and is relatively inaccessible. A strip of Permian sediments in the Florentine valley is ruled out because of very steep dips and because the terrestrial sedimentary rock types have no recorded coal. A larger area of unmapped Permo-Triassic in the Counsel River catchment is retained as Part II of the reduced E.L. because of the much more gentle dip of the strata, the resulting large area exposed, and because of its proximity to the Permian coal deposits to the north at Barns Bluff and Mount Pelion.

In summary, the retained portion of the E.L. is less well known, and has potential for Permian and Triassic coal measures.

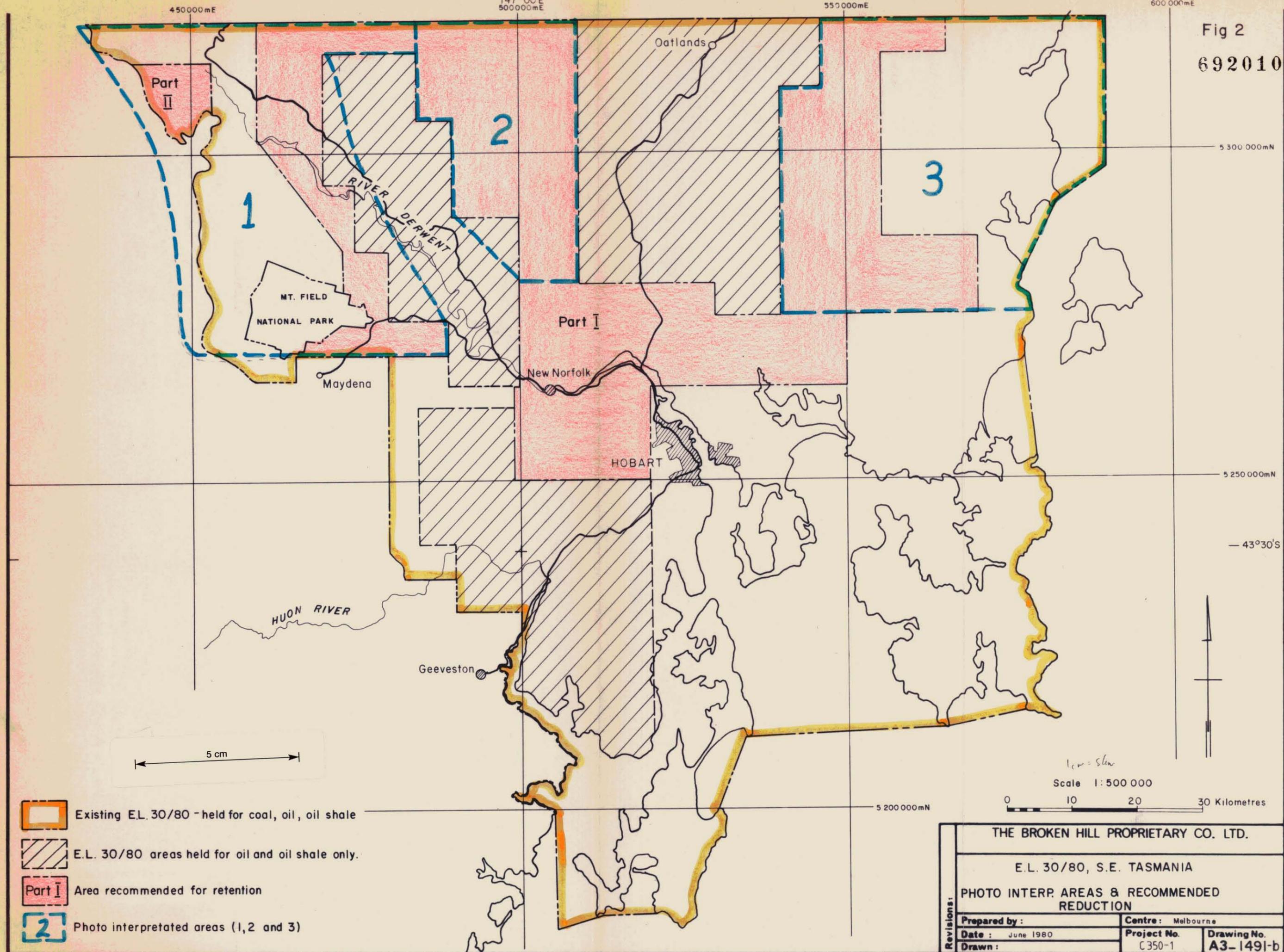
5. SUMMARY OF WORK PROPOSED

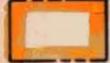
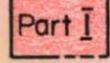
The programme of work planned for the six months to 15th April, 1983, on the reduced E.L. 30/80 would consist of:

- i) Continuing acquisition, compilation and assessment of geological and drilling data relevant to the E.L.
- ii) Field inspection and mapping to check possible drilling targets defined by the study of geological maps, existing borehole data and photointerpretation. Helicopter reconnaissance may be considered for Part II of the E.L.
- iii) Selection of drill sites and obtaining the requisite approvals from landowners and government agencies.
- iv) Drilling: Nominally a 1000 metre (ten x 100 metre) programme is planned, predominantly using rotary methods, with coring of significant intersections.
- v) Geophysics: Preliminary ground magnetometer traverses to help screen potential drill sites for dolerite. A down-hole logging unit will be used on each drill hole.
- vi) Analysis of any core coal intersections.
- vii) Preliminary assessment of results.
- viii) Possible further reduction in the size of the E.L.

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Fig 2
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-  Existing E.L. 30/80 - held for coal, oil, oil shale
-  E.L. 30/80 areas held for oil and oil shale only.
-  Part I Area recommended for retention
-  Photo interpreted areas (1, 2 and 3)

THE BROKEN HILL PROPRIETARY CO. LTD.		
E.L. 30/80, S.E. TASMANIA		
PHOTO INTERP. AREAS & RECOMMENDED REDUCTION		
Revisions:	Prepared by :	Centre : Melbourne
	Date : June 1980	Project No. C350-1
	Drawn :	Drawing No. A3-1491-b