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EXPLORATION LICENCE EL 20/80 LAUNCESTON  
EXPLORATION PROGRESS REPORT FOR  
THREE MONTH PERIOD  
ENDED 22ND AUGUST, 1983.

**OPEN FILE**

P. Ellis

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1. SUMMARY

Three brown coal deposits and one brown coal prospect, collectively called the Rosevale Coalfield, have been delineated north-east of Westbury. They are the Loatta, Pipers Lagoons, and Selbourne Deposits and the Hillcrest Prospect.

Exploration drilling to date has identified 118 million tonnes (in situ) of indicated Class I and Class II brown coal reserves and small tonnages of inferred coal. Reserves remain unchanged since the last reporting period. The coal occurs in up to 9 brown coal seams ranging in thickness from 1.5 to 8.5 metres and at depths generally less than 60 metres. Substantial reserves of brown coal occur at depths of less than 30 metres.

Analyses of core samples show the coal to be a moderately high ash, low sulphur brown coal. The average in situ quality of the brown coal reserves of the Loatta, Pipers Lagoons and Selbourne Deposits is presented in Table 1.

No exploratory drilling was conducted during the three month period, however, the Rosevale coalfield has been subject to ongoing engineering and geological evaluation, and a drilling programme is planned for late 1983.

A sedimentary analysis and the identification and correlation of brown coal lithotypes of the Rosevale coalfield is continuing. Preliminary results indicate that the lithotype distribution within the coal seams of the Rosevale coalfield can be correlated.

TABLE 1  
EL 20/80 LAUNCESTON  
IN SITU COAL RESERVES - AND WEIGHTED  
AVERAGE COAL QUALITY OF INDIVIDUAL DEPOSITS  
(Total Moisture Basis)

Deposit	Relative Density gm/cc	Total Moisture %	Volatile Matter %	Ash %	Fixed Carbon %	Specific Energy MJ/kg	Total Sulphur %	Indicated Reserves Tonnes x 10 <sup>6</sup>
Loatta	1.32	48.1	18.0	21.8	12.1	7.6	0.17	56
Pipers Lagoons	1.33	46.3	18.0	21.9	13.8	7.6	0.11	43
Selbourne	1.33	46.4	18.0	23.7	11.9	7.2	0.18	19
Total/Average	1.33	47.2	18.0	22.1	12.7	7.5	0.13	118

## 2. INTRODUCTION

### 2.1 Scope of Report

This report documents the evaluation of the Rosevale coalfield by CSR Limited during the three month period ended 22nd August, 1983.

### 2.2 Tenement Details

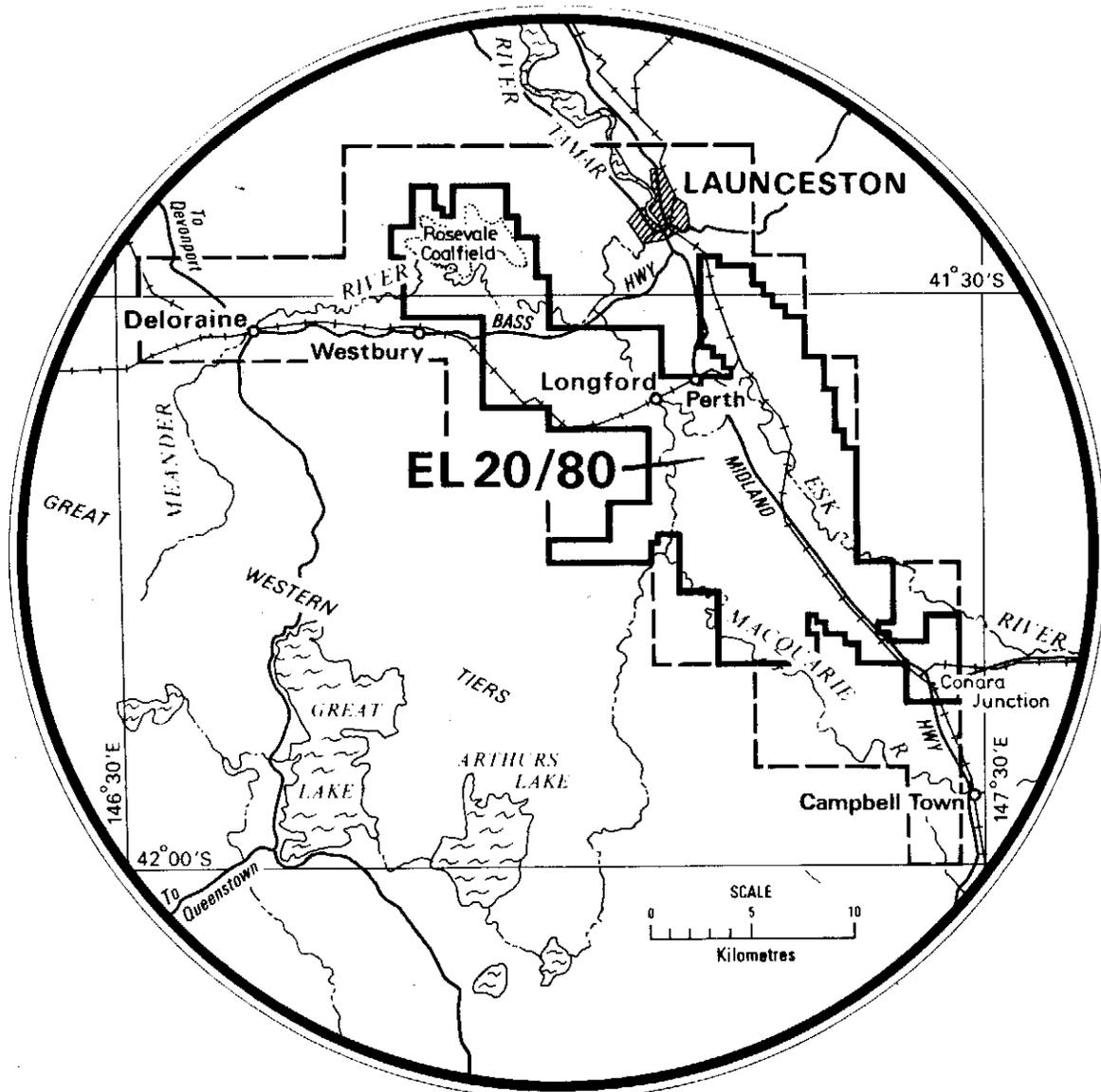
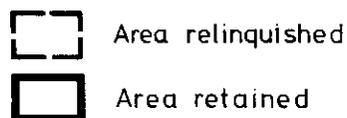
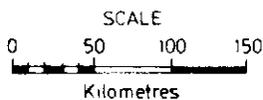
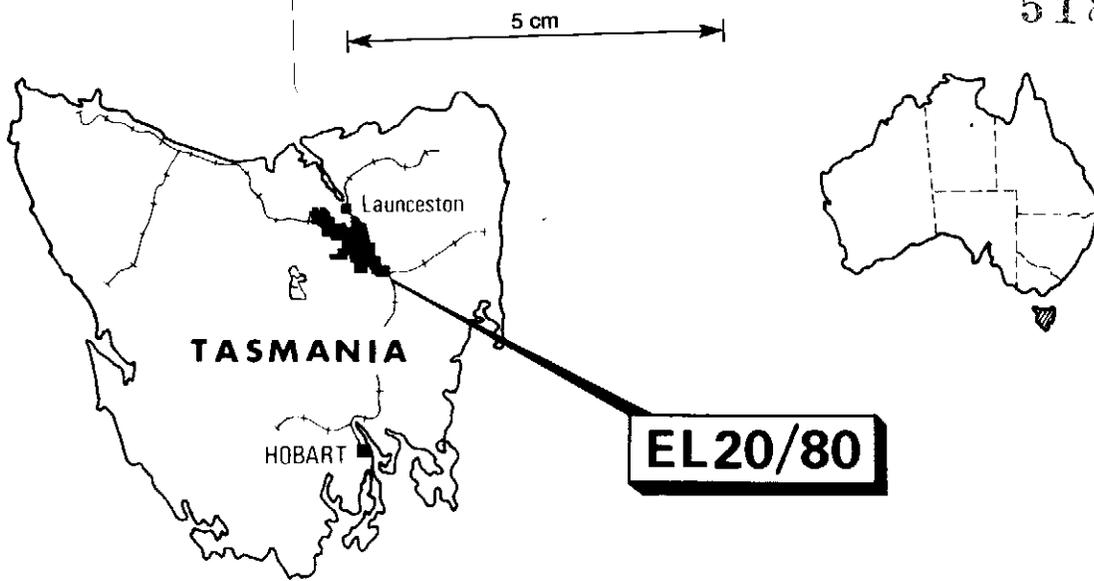
EL 20/80 covering an area of 2,339 km<sup>2</sup> was granted to AAR Limited, a wholly-owned CSR subsidiary, on 19th September, 1980 for a six month period. The EL has been progressively renewed and is current until the 22nd August, 1984.

In February 1983, title to EL 20/80 was transferred from AAR Limited to CSR Limited and a total area of 1,385 km<sup>2</sup> relinquished from it. The EL currently covers an area of 984 km<sup>2</sup>.

### 2.3 Location, Access, Climate, Physiography and Land Use

EL 20/80 Launceston extends northwards from Conara Junction to the southern suburbs of Launceston, and continues northwest of Longford and north of Westbury. (Figure 1).

For further details describing location, access, climate, physiography and land use of EL 20/80 Launceston, refer to Ellis, (1983b).



**EXPLORATION LICENCE 20/80  
TASMANIA**

### 3. GEOLOGY OF EL 20/80 LAUNCESTON

#### 3.1 Regional Geological Setting of EL 20/80

Within EL 20/80 Cambrian, Ordovician and Silurian strata are unconformably overlain by Permo-Triassic Parmeener Supergroup strata. Tertiary Launceston Beds, (Johnson, 1888) crop out over approximately three-quarters of the licence area and unconformably overlie Jurassic Dolerite and Parmeener Supergroup strata.

Parmeener Supergroup strata cropout along the margins of the Launceston Basin and in a discontinuous central horst forming the Hummocky Hills and hills to the north of Perth extending north-westerly to Carrick.

Tertiary sediments consist of non-marine clays, silts, sands and gravels with minor marine or brackish environment influences.

The pre-Tertiary and Tertiary regional geology of EL 20/80 has been outlined in previous exploration reports (Osborne, 1981; Ellis, 1982a, 1982b, 1982c, 1982d, 1982e, 1982f, and 1983b).

#### 3.2 Geology of the Rosevale Coalfield

##### 3.2.1 Introduction

The Loatta, Pipers Lagoons and Selbourne brown coal deposits, known collectively as the Rosevale Coalfield (refer to Figures 3 and 4), are situated 15 km west of Launceston and approximately 10 km north and north-east of Westbury, in the north of EL 20/80. The Meander River flows along the southern boundary of the Selbourne Deposit.

The Pipers Lagoons and Loatta Deposits are two discrete and separate deposits. The Selbourne and Loatta Deposits may be connected through the Hillcrest Prospect, which presently contains inferred and potential reserves.

### 3.2.2 Geology of the Loatta, Pipers Lagoons and Selbourne Coal Deposits

Up to four major brown coal horizons, referred to, in descending order, as A, B, C and D have been intersected in the Loatta, Pipers Lagoons and Selbourne Deposits. Up to twelve individual seams have been intersected.

The three stratigraphically highest coal horizons, A, B and C comprise up to nine coal seams and have been included in the reserve calculations. The structure and stratigraphy of coal seams in the three deposits is outlined in previous exploration reports, (Ellis, 1982a to f inclusive and 1983b).

### 3.2.3 Geology of the Hillcrest Prospect

The Hillcrest Prospect is located southwest of the Loatta Deposit, and adjoins the Selbourne Deposit along its northern and eastern boundaries. Coal seams thicker than 1.5 metres have been intersected at depths ranging between 15 and 42 metres. The coal seams are possibly stratigraphic equivalents of the LAO and LBO seams of the Loatta Deposit.

#### 4. EXPLORATION AND GEOLOGICAL EVALUATION

##### 4.1 Previous Exploration and Evaluation

During 1981, AAR Limited conducted an exploration programme to investigate the occurrence of oil shale, primarily in the Carrick-Longford area. Their investigations showed that thin oil shales are present in the Tertiary sequence in the Carrick area and that ligneous facies including brown coal of significant thicknesses occur in the Rosevale-Westwood area.

Two follow-up exploration programmes have been conducted by CSR Limited. One was in conjunction with AAR Limited in late 1981 to delineate the extent of brown coal and oil shale occurrences in the Rosevale-Westwood and Carrick-Longford areas respectively. The second exploratory drilling programme, in early 1982, provided further information on deposit boundaries and seam correlations within the prospects outlined in the 1981 programme.

Exploration for oil shale by AAR Limited and brown coal by CSR Limited within EL 20/80 Launceston is discussed in Osborne (1981), and Ellis (1982a, b, c, and 1983b) respectively.

A summary of Exploration statistics is presented in Table 2.

TABLE 2

EL 20/80

Summary of Exploration Statistics

Exploration Programme	Number of Holes					
	Total Holes	Drilled Rotary Chip	Wireline Cored	Metres Logged	Metres Chipped	Metres Cored
March-April 1981	25	21	4	22	1,568	54.5
Oct-Dec. 1981	42	35	7	41	2,373.5	218.8
March-April	39	34	5	37	2,558	115.49
Totals	106	90	16	100	6,499.5	388.79

#### 4.2 Evaluation During the Three Month Period May to August 1983.

##### 4.2.1 Ash Estimates From Geophysical Logs

An empirical relationship has been established between relative density obtained from geophysical logs and corresponding analysed coal core samples. This relationship has enabled an estimate of the ash content of coal seams intersected in rotary chip holes to be made. Estimated ash contents of coal seams in the Loatta and Pipers lagoons Deposits were reported in Ellis, (1983b).

Further work has been directed at refining the empirical relationships established between parameters obtained from geophysical logs and corresponding analysed coal core samples.

CSR is currently liaising with the CSIRO who are currently developing the SIROLOG downhole logging system. It is anticipated that the SIROLOG system will be used to log future drill holes in the Rosevale coalfield to assess the suitability of the SIROLOG system for use in brown coal logging.

##### 4.2.2 Brown Coal Lithological Logging

Identification and deposit-wide correlation of brown coal lithotypes within seams is continuing. The lithotype distribution within brown coal seams of the Rosevale coalfield can be correlated.

Further work and liaison with the State Electricity Commission of Victoria (SECV) is required to classify the brown coal lithotypes and to develop a brown coal logging system, incorporating brown coal lithotypes, suitable for use in the Rosevale coalfield. The results of the brown coal lithological correlation will be reported upon completion.

#### 4.2.3 Sedimentary Analysis

A sedimentary analysis of the Rosevale coalfield commenced during the three month period ended 22nd February 1983. The sedimentary analysis is continuing. The Loatta, Pipers Lagoons and Selbourne Deposits appear to be separated by areas of sand-rich sediments. The sands may interfinger and/or lens out in the vicinity of the interpreted deposit boundaries.

Artesian groundwater conditions were recorded during exploration drilling at nine locations in the Rosevale coalfield, seven of which are associated with sand-rich fluviatile sediments. One of the aims of the sedimentary analysis is to map the distribution of sand-rich sediments and aquifers in relation to proposed open-cut areas.

The results of the sedimentary analysis will be used to relate the brown coal lithotype distribution to environments of deposition, to aid coal seam correlations, and to delineate areas where further exploratory drilling is required.

Results of the sedimentary analysis will be reported when the study is completed.

#### 4.2.4 Rosevale Coalfield Search of Titles

A total of 19 original land grants cover the area outlined by the Loatta and Pipers Lagoons coal deposits. A search of titles to ascertain ownership of mineral rights is being carried out by the Hobart law firm of Murdock, Clarke, Cosgrove and Drake.

The findings of the title search will be reported when results are available.

### 4.3 Future Exploration and Evaluation

#### 4.3.1 Exploratory Drilling

An exploration drilling programme is proposed for late 1983. Work will be directed at upgrading reserve status of the Loatta and Pipers Lagoons Deposits to Measured Status.

The Department will be advised of future exploration.

#### 4.3.2 Hydrogeology

Thirteen piezometers are installed at seven sites in the Rosevale coalfield, (Ellis 1982b). The Tasmanian Department of Mines Hydrology Section has monitored the piezometers at monthly intervals since installation, and six sets of readings have been received, these were reported in Ellis, (1982f).

The findings of the piezometric study will be integrated with the sedimentary analysis of the Rosevale coalfield (Section 4.4.3), and reported in detail when all results are available.

5. COAL RESOURCES5.1 Brown Coal Reserves

118 Mt in situ Class I and II Indicated Reserves and very small inferred reserves have been defined in the Loatta, Piper Lagoons and Selbourne Deposits, as previously reported (Ellis, 1982f and 1983b). Very small inferred and potential reserves have been outlined in the Hillcrest Prospect. Coal reserves are tabulated in Table 3.

Reserve figures have been calculated using Geological Survey of Queensland Guidelines, after Mengel, 1977, and Australian Standard 2519 - 1982.

TABLE 3

EL 20/80 Coal Reserves

Deposit or Prospect	In Situ Reserves - Milion Tonnes			
	Indicated			Inferred
	Class I	Class II	Total	
Loatta Deposit	33	23	56	Very Small
Pipers Lagoons Deposit	23	20	43	-
Selbourne Deposit	14	5	19	Very Small
Hillcrest Prospect	-	-	-	Very Small
Totals	70	48	118	Very Small

NB. "Very small" inferred reserves are for those less than 20 mt.

Seam isopachs have been given in Ellis (1983b), and detailed reserve calculations are reported in Ellis, (1982f).

Reserves have been calculated for seams with a minimum 1.5m thickness and a weighted average dry basis specification of less than 50% ash. Ply samples greater than 50 cm thick, containing greater than 50% dry basis ash have been excluded from reserve calculations.

A relative density (RD) of 1.2 has been assigned to brown coal where no laboratory determinations are available. Where analyses are available, the weighted average RD for each seam was used in calculating reserves.

Details of reserve calculations and reserve classifications were reported previously in Ellis (1983b).

## 5.2 Brown Coal Quality

The brown coal of the Launceston Basin is a typical brown coal with a high in situ moisture content. It has a low specific energy, a moderately high ash and a low sulphur content.

The weighted average in situ coal quality of the Loatta, Pipers Lagoons and Selbourne Deposits is summarised in Table 1. Further weighted average qualities of individual seams have been reported previously in Ellis, (1982f and 1983b).

6. PRELIMINARY MINING STUDY

A Preliminary Mining Study, based on a 240 MW development (2 x 120 MW units) and a 320 MW development (4 x 80 MW units), has been completed.

The Preliminary Mining Study details a mine plan for the Loatta Deposit in the Rosevale coalfield. The mine plan presented is conceptual, in line with the limited geological and quality information available. Indicated reserves of 118 million tonnes have been outlined for the three Rosevale deposits, however further geological and engineering evaluation work needs to be undertaken to establish measured reserves, carry out small scale combustion testing, assess geotechnical and ground water conditions, establish infrastructure costs and assess environmental aspects.

The Preliminary Mining Study indicates that the most suitable coal supply arrangement is to mine the Loatta deposit first and if additional coal is required, to transfer operations to the Pipers Lagoons deposit. However, it is considered that sufficient reserves exist in the Loatta deposit to fuel a 240 MW power station over a nominal thirty year life.

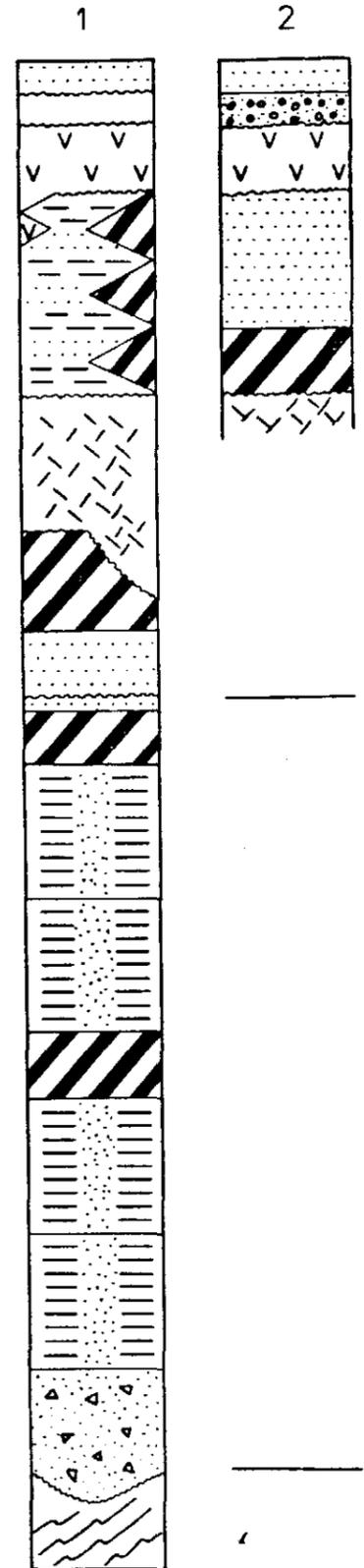
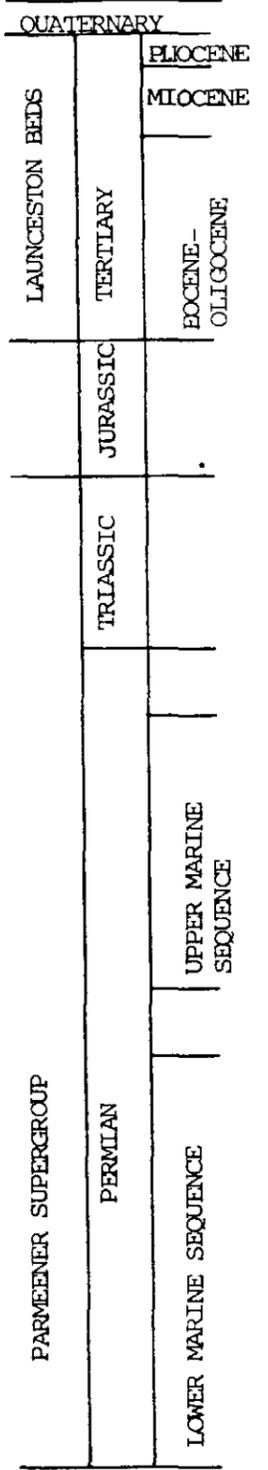
The Preliminary Mining Study was included as Appendix 1 to Ellis, (1983c).



- Ellis, P. 1982f Three Monthly Report for the Period Ending 22nd November 1982. Exploration Licence 20/80 Launceston, AAR Limited. (Unpublished Company Report).
- Ellis, P. 1983a Report on Area Relinquished. 22nd February 1983. Exploration Licence 20/80 Launceston, Tasmania. AAR Limited. (Unpublished Company Report).
- Ellis, P. 1983b Exploration Licence 20/80 Launceston, Annual Exploraion Progress Report and Exploraion Progress Report for Three Month Period Ended 22nd February 1983. CSR Limited. (Unpublished Company Report).
- Ellis, P. 1983c Exploration Licence 20/80 Launceston, Exploration Progress Report for Three Month Period Ended 22nd May 1983. CSR Limited. (Unpublished Company Report).
- Johnston, R.M. 1873 Regarding the Composition and Extent of Certain Tertiary Beds In and Around Launceston. Proc. Roy. Soc. Tas. 1873 pp 39-47.
- Johnston, R.M. 1888 Systematic Account of the Geology of Tasmania. Government Printer: Hobart.
- Matthews, W.L. 1974 The Geology and Groundwater Resources of the Longford Tertiary Basin. Bull. Geol. Surv. Tasm. 59.

- Mengel, D.C.            1977        "The Roles of the Geological Survey of Queensland in Exploratory Coal Drilling" in the Aus. I.M.M. Sourthern Queensland Branch Symposium of Coal Borehole Evaluation, October 1977.
- Middleton, T.W.        1973        Launceston Basin Project, Report on Phase I Exploration Drilling in the Launceston Basin Area, Tasmania.        Getty Oil Development Co. Limited. Open File Mines Department, Tasmania.
- Osborne, R.            1981        Six Monthly Report for the Period Ending 23rd August, 1981.        Exploration Licence 20/80 Launceston, Tasmania. AAR Limited.        (Unpublished Company Report).

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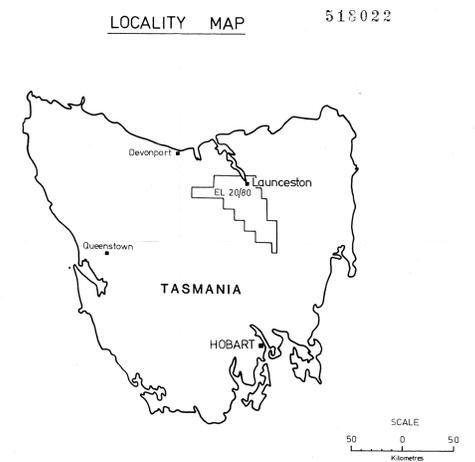
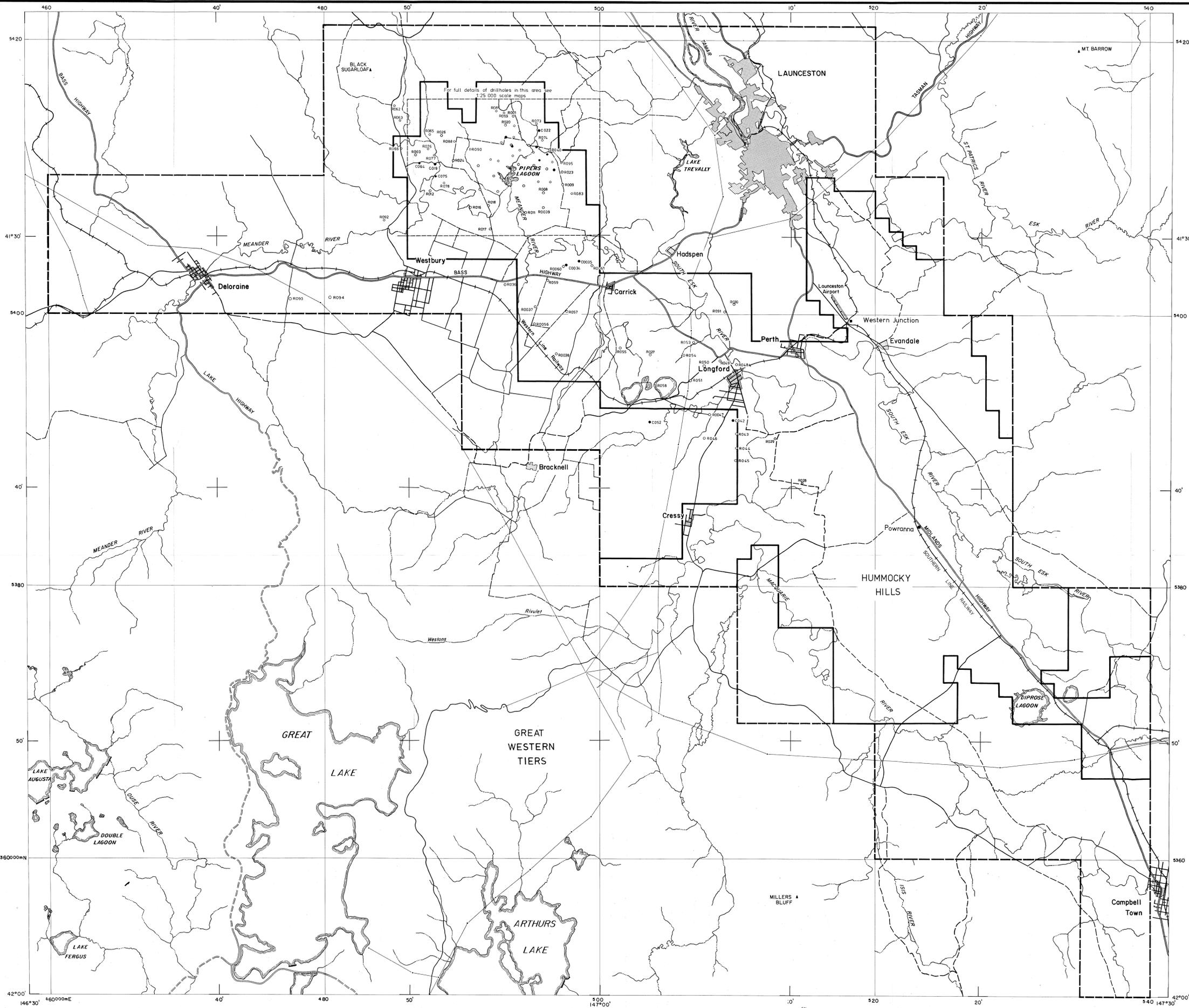


Stratigraphic Name	Lithological Description	Prospective Area in EL 20/80	Thickness Range
Upper Zone	Alluvium Gravel, boulder beds		
Middle Zone	Alkali - Olivine basalts  Clay, Silt, Sand Brown Coal and Oil Shale	Loatta, Pipers Lagoons and Selbourne Deposits	Up to 60m  0-1,000m
Lower Zone		Breadalbane Lignite	
Dolerite Intrusion	Medium to course grained, tholeiitic dolerite		0-305m
Fingal or Newtown Coal Measures	Feldspathic Sandstone Black coal Seams	Longford Coal Field Norwich and Pateena Mines	0-200m
Knocklofty or Ross Sandstone	Quartzose Sandstone		60-100m
Cygnat Coal Measures Jackey Formation	Carbonaceous Sandstone and Shale with Plant Fragments,	thin coal seams	less than 45m
Bogan Gap Group	Predominantly unfossiliferous mudstone		up to 200m
Poatina Group	Fossiliferous Mudstone and Sandstone		40-100m
Mersey Coal Measures Liffey Group	Carbonaceous Quartz-Mica Sandstone and Shale, thin coal seams		30-49m
Golden Valley Group	Unfossiliferous erratic rich mudstone, shale limestone and sandstone		45-60m
Quamby Mudstone	Unfossiliferous, dark grey pyritic mudstone. Includes Tasmanite Oil Shales of Railton-Latrobe Area		75-120m
Stockers Tillite	Tillite and erratic rich mudstone		0-140m
Basement	Silurian Ordovician Cambrian Precambrian Turbidite sequences, dominately shale and siltstone Siliceous conglomerate Turbidite sequences containing quartzite Quartzite		

Note: Column 2 after Johnson 1873 only applies to Stratigraphy of Launceston Area

Compiled from information contained in Mathews (1974).

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING	DATE	STRATIGRAPHY OF THE PARMEENER SUPERGROUP AND LAUNCESTON BASIN IN EL 20/80		SCALE
DRAWN	C. J. Nov. '82			FIGURE 2
CHECKED				
REVISED			70020 - 90	



**LEGEND**

O 093 CSR drillhole, coal cored.  
 O 094 CSR drillhole, chip sampled.

Compiled from Tasmania 1:100 000 Topographic  
 Survey Series 8219, 8219, 8219, 8219, 8219, 8219,  
 8214 South Esk, 8214 Meander, Edition 3, 1979.



GRID CONVERGENCE 0.2"  
 GRID/MAGNETIC ANGLE 13.1"  
 TRUE NORTH, GRID NORTH AND MAGNETIC NORTH ARE SHOWN DIAGRAMMATICALLY FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS CURRENTLY 10.1° AND MOVES EAST BY 0.1° IN ABOUT THREE YEARS.

**LEGEND**

HIGHWAY SEALED, UNSEALED  
 ROAD SEALED, UNSEALED  
 RAILWAY  
 POWER TRANSMISSION LINE

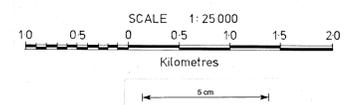
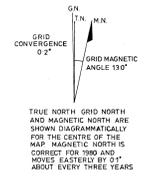
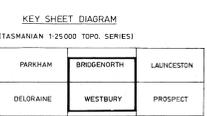
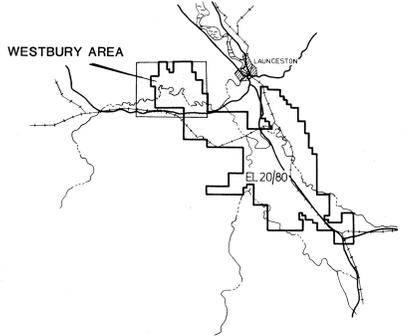
<b>CSR Limited Coal Division</b>		<b>EXPLORATION AND EVALUATION GROUP</b>		
DRAWN	B. A. W.	DATE	JULY '81	SCALE 1:100 000
CHECKED				<b>FIGURE 3</b>
REVISED		March '83		DRAWING NO. 70020-7

EL 20/80 LAUNCESTON  
 LOCATION OF DRILLHOLES



- LEGEND**
- ==== Highway, sealed road
  - ==== Unsealed road, vehicular track, lane
  - +— Railway
  - Homestead
  - Drain
  - C033 CSR drillhole coal cored
  - R009 CSR drillhole chip sampled
  - Deposit Outline
  - - - Prospect Outline
  - - - Outline of Potential Reserves
  - - - Outline of Basement Rock

518023



<b>CSR Limited</b>		<b>EXPLORATION AND EVALUATION GROUP</b>		
DRAWN	DATE	EL 20/80 LAUNCESTON		SCALE 1:25000
A. Y.	Sept '82	WESTBURY AREA		FIGURE 4
CHECKED		BROWN COAL DEPOSITS & PROSPECTS		DRAWING No. 70020-72
REVISED	1W, Mar '83			