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EXPLORATION LICENCE EL 20/80 LAUNCESTON

EXPLORATION PROGRESS REPORT FOR

THREE MONTH PERIOD ENDED 22ND MAY, 1983.

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 from 10 to 30 metres. The reserves of the three deposits are shown in Table 1.

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.

All analytical data has been encoded onto the CSR Coal Database, and verified.

The sedimentary analysis of the Rosevale coalfield is continuing. Correlation of brown coal lithotype within seams was commenced during the three month period. Preliminary results indicate that the lithotype distribution within the coal seams of the Rosevale coalfield can be correlated.

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TABLE 1

EL 20/80 LAUNCESTONIN SITU COAL RESERVES - AND WEIGHTEDAVERAGE 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 ⁶
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

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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 May, 1983.

2.2 Tenement Details

EL 20/80 covering an area of 2,339 km² 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, 1983.

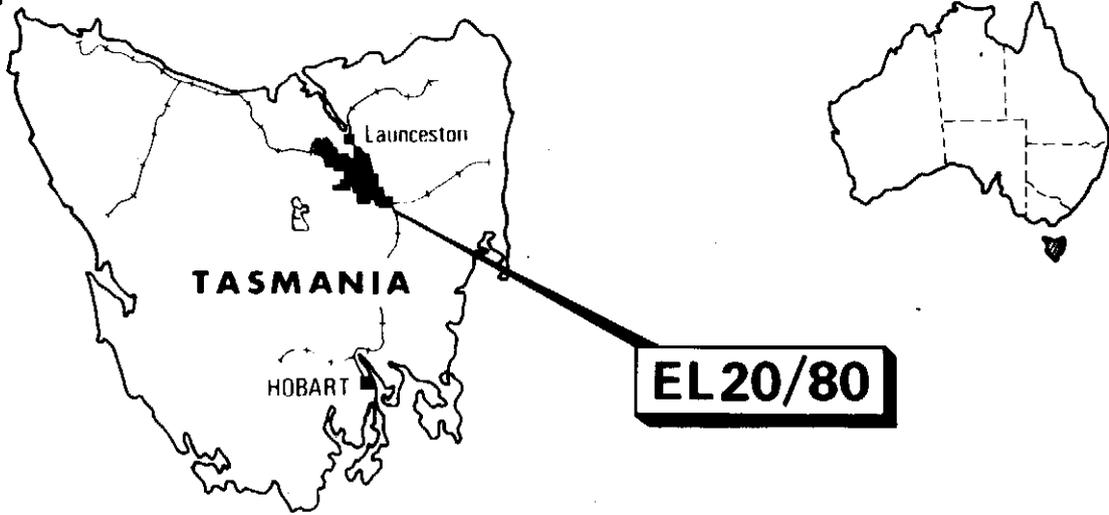
In February 1983, title of EL 20/80 was transferred from AAR Limited to CSR Limited and a total area of 1,385 km² relinquished from it. The EL currently covers an area of 984 km².

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).

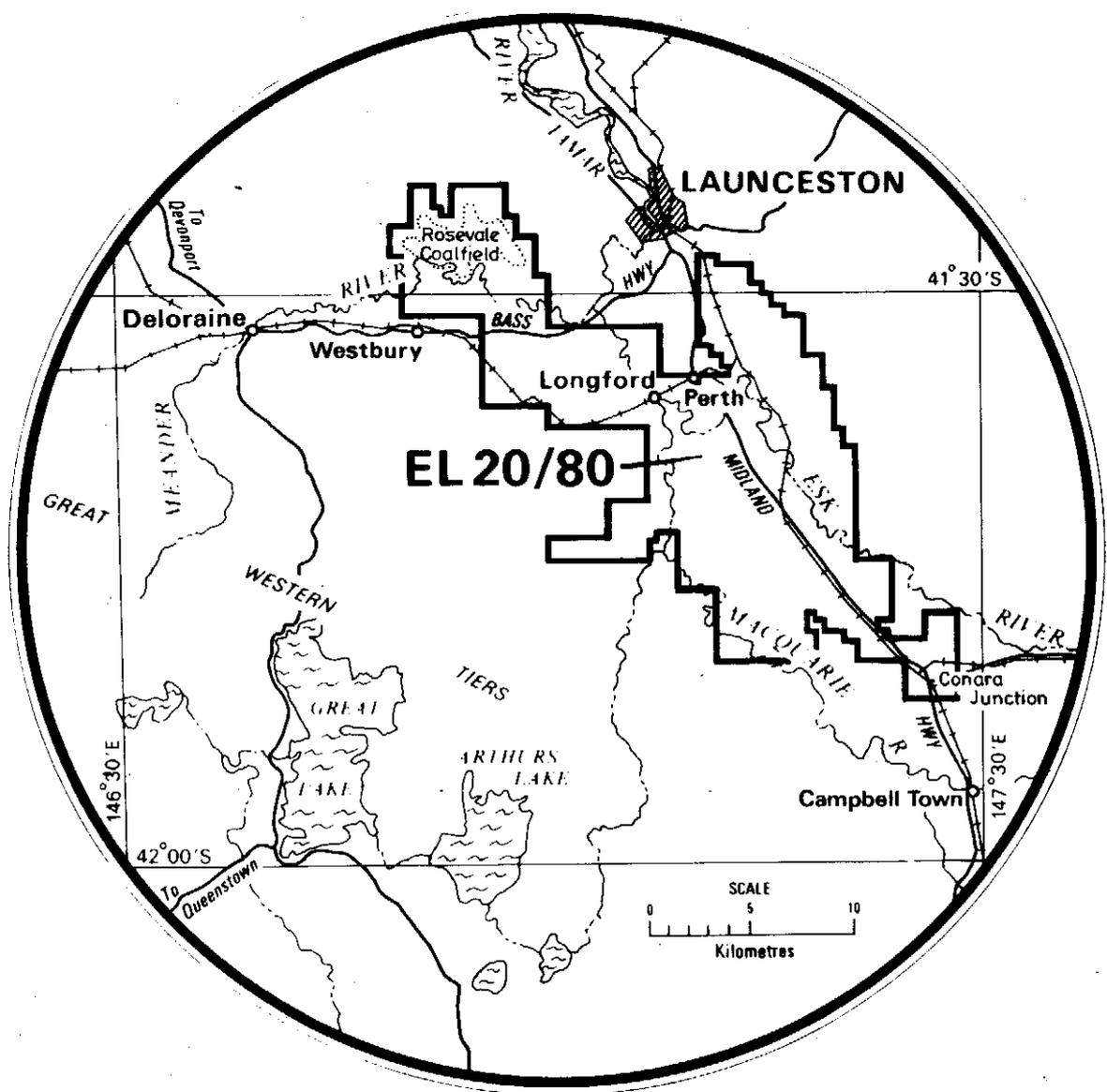
For further details describing location, access, climate, physiography and land use of EL 20/80 Launceston, refer to Ellis, (1983b).

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5 cm

SCALE
0 50 100 150
Kilometres



EXPLORATION LICENCE 20/80 TASMANIA

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3. GEOLOGY OF EL 20/80 LAUNCESTON

3.1 Regional Geological Setting of EL 20/80

Cambrian, Ordovician and Silurian strata are unconformably overlain by Permo-Triassic Parmeener Supergroup strata. Tertiary Launceston Beds, (Johnson, 1888) outcrop over approximately three-quarters of the licence area and unconformably overly Jurassic Dolerite and Parmeener Supergroup strata.

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

Deposition of Tertiary sediments commenced in the Palaeocene - Lower Eocene and continued until the Upper Oligocene (Matthews, 1974). Sediments are predominantly non-marine clays, silts, sands and gravels with minor marine or brackish environment influences.

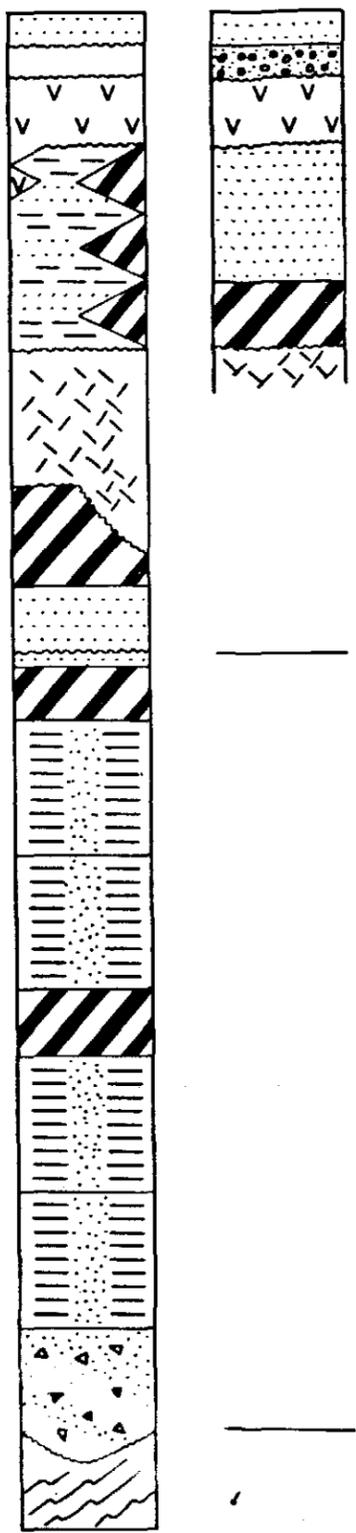
The pre-Tertiary and Tertiary regional geology of EL 20/80 has been outlined in previous exploration reports (Osborne, 1981; Ellis, 1982a, 1982b, 1982c, 1982d, 1982e, 1982f, and 1983b).

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.

		1	2	Stratigraphic Name	Lithological Description	Prospective Area in EL 20/80	Thickness Range	
LAUNCESTON BEDS	QUATERNARY			Upper Zone	Alluvium			
		PLIOCENE		Unconformity	Gravel, boulder beds			
	MIOCENE			Middle Zone	Alkali - Olivine basalts		Up to 60m	
	TERTIARY	Eocene-Oligocene			Lower Zone	Clay, Silt, Sand Brown Coal and Oil Shale	Loatta, Pipers Lagoons and Selbourne Deposits	0-1,000m
					Unconformity	Breadalbane Lignite		
	PARMEENER SUPERGROUP	JURASSIC			Dolerite Intrusion	Medium to coarse grained, tholeiitic dolerite		0-305m
					Fingal or Newtown Coal Measures	Feldspathic Sandstone Black coal Seams	Longford Coal Field Norwich and Pateena Mines	0-200m
		TRIASSIC			Knocklofty or Ross Sandstone	Quartzose Sandstone		60-100m
					Unconformity	Cygnat Coal Measures Jackey Formation	Carbonaceous Sandstone and Shale with Plant Fragments, thin coal seams	
		UPPER MARINE SEQUENCE			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	
LOWER MARINE SEQUENCE	PERMIAN			Unconformity				
				Basement	Silurian Ordovician Cambrian Precambrian	Turbidite sequences, dominately shale and siltstone Siliceous conglomerate Turbidite sequences containing quartzite Quartzite		

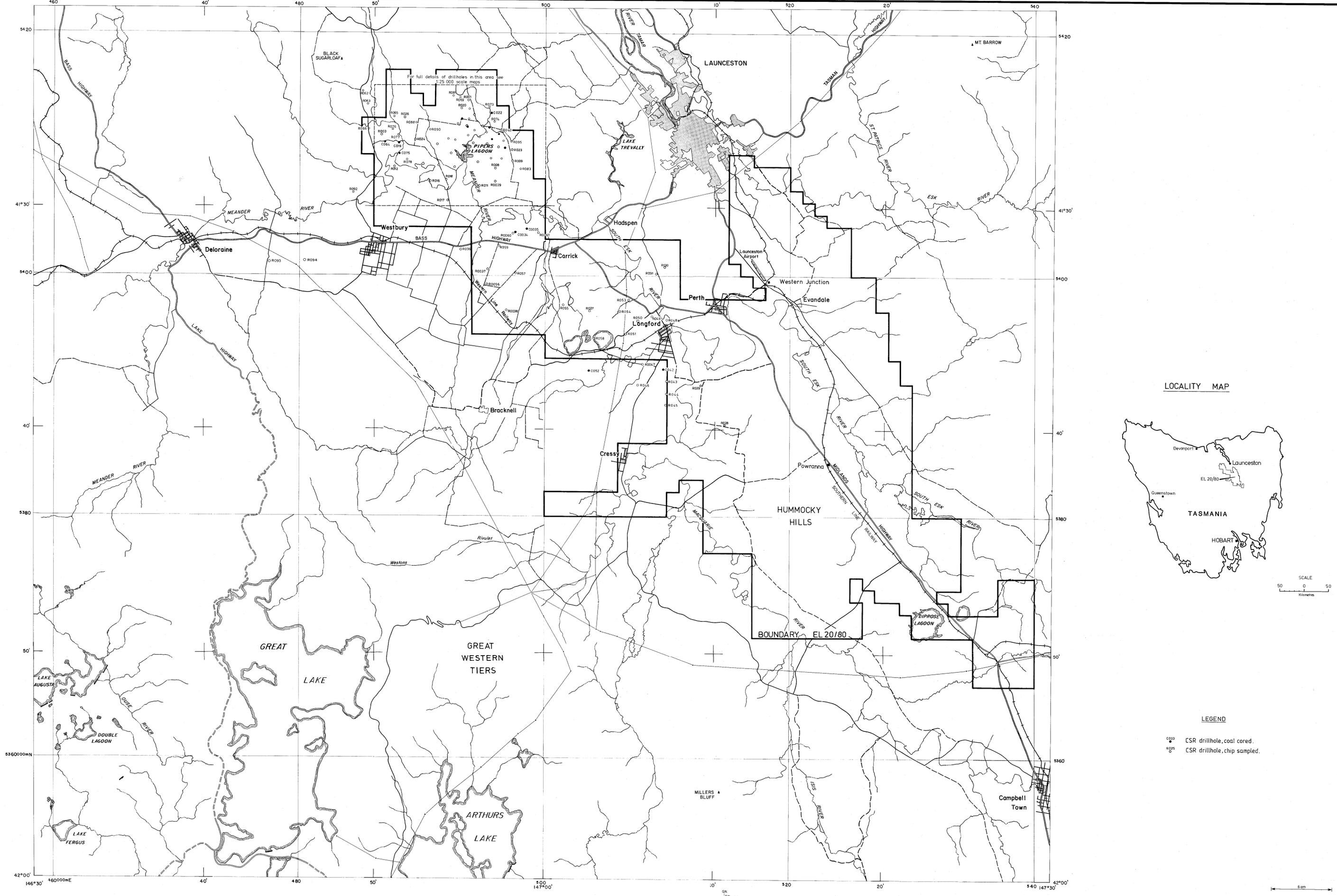


Note: Column 2 after Johnson 1873 only applies to Stratigraphy of Launceston Area

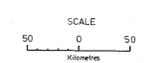
Compiled from information contained in Mathews (1974).

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CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING	DATE	STRATIGRAPHY OF THE PARMEENER SUPERGROUP		SCALE
DRAWN	C. J.	Nov. 82	AND LAUNCESTON BASIN IN EL 20/80	
CHECKED			FIGURE 2	
REVISED			DRAWING No 70020 - 90	



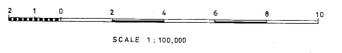
LOCALITY MAP



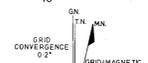
LEGEND

- C003 ● CSR drillhole, coal cored.
- R005 ○ CSR drillhole, chip sampled.

Compiled from Tasmania 1:100 000 Topographic Survey Series 8215 Tamar, 8215 St Patricks, 8214 South Esk, 8214 Meander Edition 3 1979



TRUE NORTH, GRID NORTH AND MAGNETIC NORTH ARE SHOWN DIAGRAMMATICALLY FOR THE CENTRE OF THE MAP. MAGNETIC NORTH OF COURSE FOR 1979 AND MOVES EAST BY 0.1° IN ABOUT THREE YEARS.



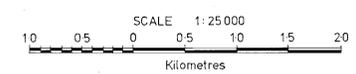
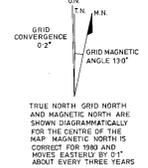
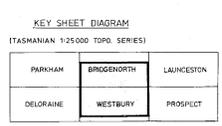
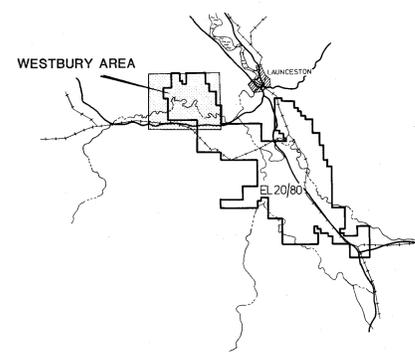
- LEGEND
- HIGHWAY SEALED, UNSEALED
 - ROAD SEALED, UNSEALED
 - RAILWAY
 - POWER TRANSMISSION LINE

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		
DRAWN	B. A. W.	DATE	JULY '81	
CHECKED				EL 20/80 LAUNCESTON LOCATION OF DRILLHOLES
REVISED		March '83		SCALE 1:100 000 FIGURE 3 DRAWING No. 70020-7

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- 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



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWN	A.Y.	DATE	Sept '82	SCALE 1:25000
CHECKED				FIGURE 4
REVISED	I.W.	DATE	Mar '83	DRAWING No. 70020-72

EL 20/80 LAUNCESTON
WESTBURY AREA
BROWN COAL DEPOSITS & PROSPECTS

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The Pipers Lagoons and Loatta Deposits are two discrete and separate deposits. The Selbourne and Loatta Deposits may be connected through the Hillcrest Prospect, 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 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 used for 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 occurred 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

Exploraion Programme	Number of Holes				Metres Chipped	Metres Cored
	Total Holes	Drilled Rotary Chip	Cored	Wireline Logged		
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

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4.2 Evaluation During the Three Month Period February to May 1983.

4.2.1 Coal Sampling and Analysis

Coal and non coal samples taken from 100 mm core cut during the October - November 1981 and March - April 1982 exploration programmes have been analysed for full proximate, relative density, total sulphur, total moisture and specific energy, according to Schedule A, (Ellis 1983b). Thirteen composite samples from the 1982 exploration programme were also analysed according to Schedule A, (Ellis 1983b).

Two composite samples simulating mining sections from cored holes C004 and C020 in the Loatta Deposit have been tested according to Schedules B and C, (Ellis 1983a). The mining dilution factor chosen for the mining section composites was 0.2m from above and below the coal seam. The dilution factor is discussed further in the Preliminary Mining Study of the Rosevale coalfield, which is included with this report as Appendix 1.

Five non coal ply samples and two non coal composites of overburen, interburden and parting material have been tested for full proximate, and ash fusion temperature in oxidising and reducing atmospheres.

Analytical results from the October - December 1981, and March - April 1982 exploration programmes are included with this report as Appendix 2.

4.2.2 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 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).

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4.2.3 Brown Coal Lithological Logging

Identification and correlation of brown coal lithotypes within seams was commenced. Preliminary results indicate that the lithotype distribution within brown coal seams of the Rosevale coalfield can be correlated.

Further work is required to classify the brown coal lithotypes. The results of the brown coal lithological correlation will be reported upon completion.

4.2.4 Sedimentary Analysis

A sedimentary analysis of the Rosevale coalfield was 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 represent fluviatile sediments associated with coal deposition, and hence may interfinger and/or lens out in the vicinity of the interpreted deposit boundaries.

Artesian groundwater conditions were recorded at nine locations in the Rosevale coalfield from exploratory drilling, 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 their 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 it is completed.

4.3 Future Exploration and Evaluation

4.3.1 Exploratory Drilling

An exploration drilling programme is proposed for late 1983 or early 1984. Work will be directed at upgrading reserves of the Loatta and Pipers Lagoons Deposits to Measured Status and delineating the extent of seams within the Selbourne Deposit and Hillcrest Prospect.

Exploration will be undertaken in other areas of the EL to identify further shallow occurrences of Tertiary brown coal and Parmeener Super Group black coal, which are outlined in Ellis, 1982d. 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, and were reported in Ellis, (1982f).

The piezometric measurements do not show a consistent trend of rising or falling throughout the Rosevale coalfield. For example the water level in one piezometer may rise and the water level in another piezometer may fall during the same period. This indicates that water recharge rates are not constant throughout the coalfield. 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 3EL 20/80 Coal Reserves

Deposit or Prospect	In Situ Reserves - Million 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 reported 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 quality of less than 50% ash. Ply samples greater than 50 cm thick, and containing greater than 50% ash, have been excluded from reserve calculations where the weighted average seam quality is greater than 50% ash.

An RD of 1.2 has been used for 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 quality of individual seams has been reported previously in Ellis, (1982f and 1983b).

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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 - 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 and if additional coal is required, to transfer operations to the Pipers Lagoon 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 is included with this report as Appendix 1.

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APPENDIX 1

Loatta, Pipers Lagoons and Selbourne Brown Coal
Deposits in the Rosevale Coalfield.
(Exploration Licence 20/80 Launceston).

PRELIMINARY MINING STUDY

(Presented under a separate cover).

APPENDIX 2

EL 20/80 Launceston
Coal Analysis From the 1981 and 1982
Exploration Programmes

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SEAM	WS	SAMPLE	TY R	BASE THICK	SIZE FRACTION	REL DENS	YIELD	PROXIMATES	% BY WEIGHT	FUEL	S.G.	TOTAL	TEST			
LAB	FIELD	PE R	DEPTH	-RESS	RAW WT	RD	YIELD	IR	ASH	FC	RAIO	CSH	MJ/KG	SULPHUR	DATE	LAB
DRILLHOLE C0004 *****																
	A60362	C2784	2 AD	17.01	1.63	R	2.32	7.0	12.7	29.1	1.7	0.1	9.36	0.05	01/81	BR
CORE LOSS FROM 12.01 TO 13.31																
LB1	A60363	C2785	2 AD	14.40	1.14	R	1.60	17.2	34.1	27.2	20.8	0.8	15.42	0.30	01/81	BR
LB1	A59376	C2786	2 AD	14.75	0.70	R	1.48	20.6	30.0	33.1	24.1	0.7	14.69	0.36	01/81	BR
LB1	A60364	C2787	2 AD	15.26	0.51	R	1.47	20.6	32.7	30.0	26.7	0.8	15.88	0.24	01/81	BR
LB1		C2788	2 AD	15.83	0.57										01/81	BR
LB1	A59377	C2789	2 AD	16.10	0.27	R	1.59	18.8	30.3	28.2	22.0	0.7	12.90	0.29	01/81	BR
LB1		C0004	2 AD	16.32	0.22										01/81	BR
COMPOSITE OF C2788 -88 C0004 -04																
LB1	A60365		2 AD	16.32	0.29	R	1.51	27.6	24.8	30.9	16.7	0.7	10.34	0.32	01/81	BR
LB1	A60366	C2790	2 AD	17.08	0.78	R	1.72	19.6	27.9	31.8	19.7	0.7	11.26	0.35	01/81	BR
	A60367	C2791	2 AD	17.77	0.69	R	1.23	19.7	19.7	30.8	14.2	0.8	8.32	0.16	01/81	BR
LB2		C2792	2 AD	19.51	0.74										01/81	BR
LB2	A59378	C2793	2 AD	18.83	0.32	R	1.51	21.0	30.2	25.3	23.0	0.8	13.08	0.24	01/81	BR
LB2		C0005	2 AD	18.98	0.15										01/81	BR
COMPOSITE OF C2792 -92 C0005 -05																
LB2	A60368		2 AD	18.98	0.29	R	1.56	21.7	27.7	31.9	19.7	0.7	11.32	0.21	01/81	BR
LB2	A60369	C2794	2 AD	19.49	0.51	R	1.55	26.0	23.1	34.1	14.3	0.6	8.98	0.17	01/81	BR
LB2	A60370	C2795	2 AD	20.49	1.00	R	1.22	13.5	22.0	33.2	16.3	0.6	10.28	0.17	01/81	BR
LB2		C2796	2 AD	21.30	0.81										01/81	BR
LB2	A59379	C2797	2 AD	21.57	0.27	R	1.50	23.1	29.3	27.1	20.3	0.7	12.62	0.27	01/81	BR
LB2		C0006	2 AD	21.75	0.18										01/81	BR

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
*

558026

LAURGESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAURGESTON

TEHEMENT 2080

SEAM	WS	LAB	FIELD	TY R PE R	BASE DEPTH	THICK -NESS	SIZE + -	FRACTION RAW WT	RD	YIELD	PROXIMATES % TK	VM	ASH	BY WEIGHT FC	FUEL RATIO	CSH	S.E. M.I/EG	TOTAL SULPHUR	TEST DATE	LAB
DRILLHOLE C0004 *****																				
COMPOSITE OF C2796 -96 C0006 -06																				
LB2		A60371		2 AD	21.75	0.99		R	1.60		11.7	34.5	29.0	25.6	0.7		15.34	0.28	01/81	BR
LB2		A60372	C2796	2 AD	22.94	0.29		R	1.68		10.6	32.1	36.2	21.1	0.7		12.96	0.26	01/81	BR
LB2		A59380	C2799	2 AD	22.27	0.23		R	1.79		9.2	29.1	47.4	16.6	0.5		9.42	0.25	01/81	BR
LB2		A60373	C2800	2 AD	22.93	0.66		R	1.58		20.5	27.9	31.2	20.4	0.7		12.36	0.22	01/81	BR
LB2			C2801	2 AD	23.25	0.32													01/81	BR
LB2		A59381	C2802	2 AD	23.54	0.29		R	1.47		20.8	32.6	20.4	26.2	0.6		15.21	0.27	01/81	BR
LB2			C0007	2 AD	24.24	0.70													01/81	BR
COMPOSITE OF C2801 -01 C0007 -07																				
LB2		A60374		2 AD	24.24	1.02		R	2.16		9.2	15.5	71.6	3.7	0.2		2.16	0.09	01/81	BR
		A60375	C2803	2 AD	24.81	0.57		R	1.73		10.3	28.9	41.0	19.8	0.7		11.70	0.28	01/81	BR
		A60376	C2804	2 AD	26.20	1.39		R	1.71		17.0	25.1	47.7	14.2	0.6		8.08	0.22	01/81	BR
LB3		A59382	C2805	2 AD	26.54	0.34		R	1.49		19.6	32.6	32.7	25.1	0.8		15.04	0.29	01/81	BR
LB3		A60377	C2806	2 AD	27.56	1.02		R	1.49		22.7	29.7	36.6	21.0	0.7		13.46	0.20	01/81	BR
LB3			C2807	2 AD	28.05	0.49													01/81	BR
LB3		A59383	C2808	2 AD	28.37	0.32		R	1.50		20.1	30.5	24.7	24.7	0.8		14.18	0.28	01/81	BR
LB3			C0008	2 AD	28.37	0.20													01/81	BR
COMPOSITE OF C2807 -07 C0008 -08																				
LB3		A60378		2 AD	28.37	0.69		R	1.64		16.8	27.2	37.2	18.8	0.7		11.46	0.22	01/81	BR
LB3			C2809	2 AD	28.78	0.21													01/81	BR
LB3		A59384	C2810	2 AD	29.06	0.28		R	1.80		12.6	25.8	52.4	9.2	0.4		7.44	0.17	01/81	BR
LB3			C0009	2 AD	29.66	0.60													01/81	BR

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
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B58027

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TENEHENT 2080

SEAM	-----SAMPLE-----			BY R	BASE THICK	SIZE FRACTION	FUEL	PROXIMATES			Z BY WEIGHT	FUEL	S.E.	TOTAL	TEST				
	WS	LAB	FIELD					FE B	DEPTH	NESS						+	RAW WT	RD	YIELD
DRILLHOLE C0004																			

COMPOSITE OF C2809 -09 C0009 -09																			
LB3	A60379			2 AD	29.66	0.81	R		1.49	29.1	23.9	30.9	16.1	0.7	9.80	0.23	01/81	BR	
	A60380	C2811		2 AD	30.73	1.07	R		1.79	17.5	20.2	53.3	8.9	0.4	5.88	0.20	01/81	BR	
CORE LOSS FROM 30.73 TO 30.74																			
	A60381	C2812		2 AD	31.93	1.17	R		1.84	14.1	20.5	54.0	9.4	0.5	5.88	0.20	01/81	BR	
	A60382	C2813		2 AD	33.10	1.17	R		1.61	24.9	21.2	42.9	11.0	0.5	7.20	0.20	01/81	BR	
	A60383	C2814		2 AD	33.74	0.64	R		1.52	19.8	30.5	28.6	21.1	0.7	13.15	0.30	01/81	BR	
	A60384	C2815		2 AD	38.37	1.20	R										01/81	BR	
NO ANALYSIS																			
	A60385	C2816		2 AD	39.57	1.20	R		1.95			62.0					01/81	BR	
	A60386	C2817		2 AD	39.95	0.39	R		1.85	9.3	24.6	51.0	15.1	0.5	9.00	0.23	01/81	BR	
		C2818		2 AD	40.32	0.36	R										01/81	BR	
	A59385	C2819		2 AD	40.57	0.25	R		1.72	14.6	25.3	41.5	18.6	0.7	9.78	0.23	01/81	BR	
		C0010		2 AD	41.32	0.75	R										01/81	BR	
COMPOSITE OF C2818 -18 C0010 -10																			
	A60387			2 AD	41.32	1.11	R		1.72	18.0	22.0	46.5	13.5	0.6	7.70	0.20	01/81	BR	
	A60388	C2820		2 AD	43.14	1.32	R		2.43	4.4	15.8	77.8	2.0	0.1	2.18	0.12	01/81	BR	

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
*

*** E N D O F R E P O R T TMS2-09 ***

025

558028

LAURCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

ATP H12080
LAURCESTON

SEQUENT 2080

SEAM	-----SAMPLE----		TY	BASE	THICK	SI	FRACTION	ASH FUSION (DEG C OXI)			ASH FUSION (DEG C RED)			MOISTURE		TEST		
	WS	LAB						FIELD	PE	DEPTH	-NESS	LE	INIT SPHER	HEAT	DEF. -ICAL	SPHERE	FLOW	HOLDING
	DRILLHOLE																	
	C0004																	

LB1	A59376	C2786		14.75	0.30		R							54.3		01/81	BR	
LB1	A59377	C2789		16.10	0.27		R							44.8		01/81	BR	
LB2	A59378	C2793		18.83	0.32		R							51.2		01/81	BR	
LB2	A59379	C2797		21.57	0.27		R							51.5		01/81	BR	
LB2	A59380	C2799		22.27	0.23		R							44.1		01/81	BR	
LB2	A59381	C2802		23.54	0.29		R							54.4		01/81	BR	
LB3	A59382	C2805		26.54	0.34		R							52.4		01/81	BR	
LB3	A59383	C2808		28.37	0.32		R							52.4		01/81	BR	
LB3	A59384	C2810		29.06	0.28		R							43.0		01/81	BR	
	A59385	C2817		40.57	0.25		R							47.4		01/81	BR	

*** E N D O F R E P O R T T 0 5 6 - 1 3 ***

026

558029

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP FL2080
LAUNCESTON

TENEKENT 2080

SEAM	WS	SAMPLE LAB	FIELD	TY R PE B	BASE DEPTH	THICK -NESS	SIZE -+	FRACTION RAW WT	RD	YIELD	PROXIMATES (K	Z VM	BY ASH	WEIGHT FC	FUEL RATIO	S.E. H/J/KG	TOTAL SULPHUR	TEST DATE	LAB
DRILLHOLE C004R *****																			
		A60438	C2884	3 AD	11.96	0.73		R	2.47		5.0	-11.8	82.6	0.6	0.1	0.26	0.02	01/81	BR
LB1		A59399	C2885	2 AD	12.26	0.30		R	1.39		27.9	30.2	18.1	23.8	0.8	14.06	0.43	01/81	BR
LB1		A60439	C2886	2 AD	13.23	0.97		R	1.51		18.0	35.3	22.0	24.7	0.7	15.92	0.28	01/81	BR
LB1		A60440	C2887	2 AD	14.05	0.82		R	1.53		21.8	29.2	28.8	20.2	0.7	12.94	0.25	01/81	BR
LB1		A59433	C2888	2 AD	14.32	0.27		R	1.61		17.0	28.4	35.0	19.6	0.7	12.0	0.24	01/81	BR
LB1		A60441	C2889	3 AD	14.9	0.58		R	1.8		10.0	27.5	45.0	17.5	0.6	10.64	0.24	01/81	BR
LB1		A60442	C2890	3 AD	15.51	0.61		R	2.14		5.5	21.0	66.6	6.9	0.3	4.38	0.16	01/81	BR
LB2		A60443	C2891	2 AD	16.18	0.67		R	1.65		10.1	34.9	32.4	22.6	0.6	14.92	0.33	01/81	BR
LB2		A59434	C2892	2 AD	16.45	0.27		R	1.67		17.2	27.4	40.4	15.0	0.5	7.84	0.18	01/81	BR
LB2		A59444	C2893	2 AD	17.73	1.28		R	1.66		19.8	24.9	38.2	17.6	0.7	10.4	0.20	01/81	BR
		A60437	C2883	2 AD	11.23	1.19		R										01/81	BR
NO ANALYSIS																			

*** END OF REPORT T052-07 ***

0271

558030

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TEHEHERT 2080

SEAM	WS	SAMPLE LAB FIELD	TY R PE B	BASE THICK DEPTH	SIZE NESS	FRACTION RAW WT	RD	YIELD	PROXIMATES TH	Z UN	BY ASH	WEIGHT FC	FUEL RATIO	S.E. KJ/KG	TOTAL SULPHUR	TEST DATE	LAB
DRILLHOLE C0019 *****																	
		A60325 C2746	2 AD	3.91	0.36	R	1.85		19.2	16.2	59.3	5.3	0.3	4.02	0.12	01/81	BR
		A59431 C2747	2 AD	4.08	0.17	R	1.82		14.1	22.1	52.3	11.6	0.5	6.74	0.21	01/81	BR
SA1		A60326 C2748	2 AD	4.80	0.72	R	1.48		29.2	23.2	33.7	13.9	0.6	8.16	0.25	01/81	BR
SA1		A60327 C2749	2 AD	5.09	0.29	R	2.25		5.8	16.0	73.0	4.8	0.3	2.92	0.13	01/81	BR
SA1		A60328 C2750	2 AD	5.37	0.29	R	1.61		20.2	27.5	37.0	15.3	0.6	10.36	0.25	01/81	BR
SA1		A59432 C2751	2 AD	5.67	0.30	R	1.45		25.4	30.5	25.9	18.2	0.6	12.38	0.32	01/81	BR
CORE LOSS FROM 5.67 TO 5.74																	
SA1		A60329 C2752	2 AD	6.58	0.84	R	1.49		14.8	37.9	19.1	28.2	0.7	17.76	0.36	01/81	BR
SA1		A59367 C2753	2 AD	6.85	0.27	R	1.40		19.0	37.7	13.6	29.7	0.8	18.32	0.35	01/81	BR
SA1		A60330 C2754	2 AD	7.38	0.53	R	1.45		25.7	30.5	16.9	26.9	0.9	15.50	0.29	01/81	BR
SA1		A60331 C2755	2 AD	7.74	0.36	R	1.59		13.0	34.1	21.8	28.1	0.8	16.30	0.31	01/81	BR
		A60332 C2756	2 AD	8.53	0.79	R	1.84		18.6	17.7	56.4	7.3	0.4	4.10	0.15	01/81	BR
		A59368 C2757	2 AD	8.83	0.30	R	1.81		8.1	28.5	49.3	14.1	0.5	9.80	0.30	01/81	BR
SA2		A60333 C2758	2 AD	10.08	1.25	R	1.75		9.1	30.3	42.2	18.4	0.6	11.70	0.28	01/81	BR
		A60334 C2759	2 AD	11.45	1.37	R	2.34									01/81	BR
CORE LOSS FROM 11.45 TO 11.56																	
SB1		A59369 C2760	2 AD	15.06	0.26	R	1.77		13.0	25.4	48.9	12.7	0.5	8.42	0.25	01/81	BR
SB2		A60335 C2761	2 AD	15.92	0.86	R	1.56		27.3	25.3	38.3	8.6	0.3	7.68	0.20	01/81	BR
		A60336 C2762	2 AD	16.55	0.63	R	1.65		25.1	19.9	45.4	8.6	0.4	5.88	0.14	01/81	BR
		A60337 C2763	2 AD	17.10	0.55	R	2.01		14.9	15.1	50.8	4.2	0.3	2.50	0.09	01/81	BR
		A60338 C2764	2 AD	17.68	0.51	R	1.95		17.4	14.7	55.6	7.3	0.2	1.90	0.16	01/81	BR

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
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028

358031

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TENEREHT 2080

SEAM	-----SAMPLE-----	TY R	BASE THICK	SIZE FRACTION		PROXIMATES % BY WEIGHT	FUEL	S.E.	TOTAL	TEST					
WS	LAB FIELD	PE B	DEPTH -NESS	++	RAW WT	RD	YIELD	IN	VM	ASH	FC	RATIO CSM	MJ/KG	SULPHUR	DATE LAB
DRILLHOLE C0019 *****															
SB3	C2765	2 AD	18.00	0.32											01/81 BR
SB3	A59370 C2766	2 AD	18.25	0.25	R	1.69		16.0	25.6	41.8	16.6	0.6	9.54	0.29	01/81 BR
SB3	C0001	2 AD	19.21	0.96											01/81 BR
COMPOSITE OF C2765 -65 C0001 -01															
SB3	A60339	2 AD	19.21	1.28	R	1.82		9.2	27.9	45.7	17.2	0.6	10.36	0.28	01/81 BR
SB3	A60340 C2767	2 AD	20.12	0.91	R	2.47		4.5	16.0	77.9	0.6	0.1	1.94	0.11	01/81 BR
	A60341 C2768	2 AD	20.70	0.58	R	1.94				55.0					01/81 BR
SB4	C2769	2 AD	21.94	1.24											01/81 BR
SB4	A59371 C2770	2 AD	22.34	0.40	R	1.61		18.2	27.7	34.2	19.9	0.7	11.68	0.27	01/81 BR
SB4	C0002	2 AD	22.58	0.24											01/81 BR
COMPOSITE OF C2769 -69 C0002 -02															
SB4	A60342	2 AD	22.58	1.48	R	1.66		15.9	27.5	39.1	17.5	0.6	11.10	0.24	01/81 BR
	A60343 C2771	2 AD	23.54	0.96	R	2.06				71.4					01/81 BR
	A60344 C2772	2 AD	25.11	1.00	R	2.11				75.7					01/81 BR
	C2773	2 AD	25.45	0.34											01/81 BR
	A59372 C2774	2 AD	25.74	0.29	R	2.04		10.6	18.7	54.6	6.1	0.3	4.20	0.13	01/81 BR
	C0003	2 AD	26.45	0.71											01/81 BR
COMPOSITE OF C2773 -73 C0003 -03															
	A60355	2 AD	26.45	1.05	R	1.62		21.7	24.1	40.2	14.0	0.6	8.76	0.18	01/81 BR
SC1	A59373 C2775	2 AD	26.78	0.33	R	1.62		17.2	29.0	34.7	19.1	0.7	11.96	0.27	01/81 BR
SC1	A60356 C2776	2 AD	27.21	0.43	R	1.56		13.4	36.8	23.5	24.3	0.7	14.50	0.27	01/81 BR
SC1	A60357 C2777	2 AD	28.42	1.21	R	1.59		12.8	33.7	27.4	26.1	0.8	15.26	0.25	01/81 BR

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
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029

558032

REPORT TC52-09

THIERS COAL SYSTEM

PAGE 3

RUN AT 10:13:14 20/ 6/83

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP 012080
LAUNCESTON

TENEHENT 2080

SEAM	WS	LAB	FILD	TY R PE B	BASE THICK DEPTH -NESS	SIZE FRACTION --+	RAW WT	RD	YIELD	PROXIMATES % IN VM	ASH	BY WEIGHT FC RATIO	FUEL CSN	S.E. M./KG	TOTAL SULPHUR	TEST DATE	LAB	
DRILLHOLE C0019 *****																		
SC1	A59374	C2778		2 AD	28.65	0.23	R		1.53	10.3	41.3	25.2	23.2	0.6	13.72	0.26	01/81	BR
SC1	A60358	C2779		2 AD	29.12	0.47	R		1.71	11.6	26.8	45.3	16.3	0.6	9.70	0.20	01/81	BR
SC1	A59375	C2780		2 AD	29.33	0.21	R		1.62	19.2	26.8	38.9	15.1	0.6	10.24	0.23	01/81	BR
SC1	A60359	C2781		2 AD	30.46	1.13	R		1.67	13.8	27.9	37.8	20.5	0.7	11.86	0.22	01/81	BR
	A60360	C2782		2 AD	32.24	1.78	R		2.40			32.9			0.2	0.05	01/81	BR
	A60361	C2783		2 AD	33.18	0.94	R		1.77	10.5	27.5	43.2	18.8	0.7	11.14	0.26	01/81	BR

*** END OF REPORT TC52-09 ***

030

558033

REPORT TC56-13

THICKS COAL SYSTEM

PAGE 1

RUN AT 10:12:01 20/ 6/83

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

ATP EL2080
LAUNCESTON

TERMINET 2080

SEAM	SAMPLE		TY	BASE PE	THICK DEPTH	SI FRACTION	ASH FUSION (DEG C DIX)		ASH FUSION (DEG C RED)		MOISTURE		TEST	
	LAB	FIELD					INIT SPHER DEF.	HEMI -ICAL SPHERE FLOW	INIT SPHER DEF.	HEMI -ICAL SPHERE FLOW	HOLDING CAPACITY	TOTAL MOIST	HGT	DATE LAB
DRILLHOLE C0019														

SA1	A59367	C2753		6.85	0.27	R					60.2		01/81	BR
	A59368	C2757		8.83	0.30	R					42.4		01/81	BR
SB1	A59369	C2760		15.06	0.26	R					41.2		01/81	BR
SB3	A59370	C2766		18.25	0.25	R					46.4		01/81	BR
SB4	A59371	C2770		22.34	0.40	R					47.4		01/81	BR
	A59372	C2774		25.74	0.29	R					31.9		01/81	BR
SC1	A59373	C2775		26.78	0.33	R							01/81	BR
SC1	A59374	C2778		28.65	0.23	R							01/81	BR
SC1	A59375	C2780		29.33	0.21	R					45.5		01/81	BR

*** END OF REPORT TC56-13 ***

031

558034

LAURCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

GTP EL2080
LAURCESTON

TENEHENT 2080

SEAM	WS	SAMPLE LAB FIELD	TY R PE R	BASE THICK DEPTH	SIZE FRACTION	RAW WT	RD	YIELD	PROXIMATES	Z BY WEIGHT	FUEL	S.E.	TOTAL	TEST					
				DEPTH	-NESS	+			TM	UN	ASH	FC	RATIO	CSH	HJ/KG	SULPHUR	DATE	LAB	
DRILLHOLE C0020 *****																			
LB1-	A62542	C0221	2 AD	8.24	0.69	R		1.71	8.0	36.1	38.9	17.0	0.5	13.14	-		02/83	BR	
COAL CHIPPED 7.50 TO 7.55 TOP OF SEAM NOT AT RL OF GEOPHYSICAL LOG																			
LB1	A62543	C0222	2 AD	9.01	0.77	R		2.09	5.7	20.0	64.6	9.7	0.5	5.76			02/83	BR	
LB1	A62544	C0223	2 AD	10.39	1.38	R		1.61	11.4	32.7	30.9	25.0	0.8	14.80			02/83	BR	
COMPOSITE OF C0221 -23																			
LB1	A64252		1 AD	10.39	2.84	R		1.78	9.4	28.4	43.0	17.2	0.2	11.46	0.51		08/82	BR	
	A62545	C0224	3 AD	11.02	0.63	R		2.32	4.1	15.0	76.6	4.3	0.3	2.42			02/83	BR	
LB2	A62546	C0225	2 AD	12.07	1.05	R		1.87	9.9	24.1	52.1	13.9	0.6	8.70			02/83	BR	
LB2	A62547	C0226	2 AD	13.07	1.00	R		1.66	13.0	31.1	35.5	20.6	0.7	12.80			02/83	BR	
COMPOSITE OF C0225 -26																			
LB2	A64253		1 AD	13.07	2.05	R		1.82	9.8	27.7	45.0	17.5	0.6	10.76	0.30		08/82	BR	
LB2	A62548	C0227	2 AD	13.22	0.15	R		2.06	5.2	24.8	61.7	8.3	0.3	6.56			02/83	BR	
LB2	A62549	C0228	2 AD	14.00	0.78	R		1.83	8.2	28.0	49.3	14.5	0.5	9.80			02/83	BR	
LB2	A62550	C0229	2 AD	15.33	1.33	R		1.61	12.1	33.4	30.6	23.2	0.7	14.70			02/83	BR	
LB2	A62551	C0230	2 AD	15.75	0.42	R		1.85	10.7	25.3	50.9	13.1	0.5	8.46			02/83	BR	
LB2	A62552	C0231	2 AD	16.54	0.79	R		1.63	11.4	32.9	31.3	24.4	0.7	14.66			02/83	BR	
CORE BARREL JAMMED. CORE GROUND AWAY. SAMPLE CORRECT LENGTH BUT DIAMETER ONLY 30% OF KMLC DIAMETER.																			
LB2	A62553	C0232	2 AD	17.04	0.50	R		1.92	8.3	24.9	54.8	17.0	0.5	8.00			02/83	BR	
LB2	A62554	C0233	2 AD	18.25	1.21	R		1.59	13.7	32.9	29.1	24.5	0.7	14.64			02/83	BR	
LB2	A62555	C0234	2 AD	19.14	0.89	R		1.73	13.4	26.7	41.9	18.0	0.7	10.58			02/83	BR	
LB2	A62556	C0235	2 AD	19.72	0.58	R		1.71	11.7	28.9	39.6	19.8	0.7	11.80			02/83	BR	
LB2	A62557	C0236	2 AD	20.33	0.61	R		1.81	11.0	25.2	47.9	15.9	0.6	9.50			02/83	BR	

032

558035

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TENERFNT 2080

SEAM	WS	LAB	FIELD	TY R PE B	BASE DEPTH	THICK -NESS	SIZE ++	FRACTION RAW WT	RD	YIELD	PROXIMATES IN	Z UM	BY WEIGHT ASH	FUEL FC	RATIO CSH	S.I.E. MJ/KG	TOTAL SULPHUR	TEST DATE	LAB
DRILLHOLE C0020 *****																			
COMPOSITE OF C0229 -36																			
LB2	A64254			1 AD	20.33	6.33	R		1.73		10.3	30.2	39.1	29.4	0.7	12.38	0.38	08/82	BR
	A62558	C0237		3 AD	21.40	1.07	R		2.19		6.5	17.4	70.4	5.7	0.3	3.92		02/83	BR
LB3	A62559	C0238		2 AD	22.14	0.74	R		1.73		8.3	31.3	41.4	19.0	0.6	12.42		02/83	BR
LB3	A62560	C0239		2 AD	23.51	1.37	R		1.63		9.3	34.3	32.6	23.8	0.7	14.92		02/83	BR
LB3	A62561	C0240		2 AD	24.51	1.00	R		1.65		11.0	32.2	34.6	22.2	0.7	13.98		02/83	BR
LB3	A62562	C0241		2 AD	25.15	0.64	R		1.54		11.5	37.0	25.8	25.7	0.7	17.02		02/83	BR
COMPOSITE OF C0238 -41																			
LB3	A64255			1 AD	25.15	3.75	R		1.64		11.8	32.7	33.1	22.4	0.7	14.36	0.33	08/82	BR
	A62563	C0242		2 AD	25.54	0.39	R		1.87		7.2	25.8	50.5	16.5	0.6	10.04		02/83	BR
PLY SAMPLE NUMBERS C0243, C0244, C0245 NOT ANALYSED.																			
LC1	A62567	C0246		2 AD	30.04	1.17	R		1.77		6.9	31.2	43.8	18.2	0.6	12.28		02/83	BR
LC1	A62568	C0247		2 AD	31.00	0.96	R		1.79		8.2	30.1	45.0	16.7	0.6	11.36		02/83	BR
LC1	A62569	C0248		2 AD	32.42	1.42	R		1.69		10.6	31.4	36.5	21.5	0.7	13.28		02/83	BR
	A62570	C0249		2 AD	32.83	0.41	R		2.06		7.7	19.8	62.8	9.7	0.5	5.68		02/83	BR
COMPOSITE OF C0246 -49																			
LC1	A64256			1 AD	32.83	3.96	R		1.76		9.9	29.2	43.3	17.6	0.6	11.58	0.30	08/82	BR
PLY SAMPLE NUMBER C0250 NOT ANALYSED CORE LOSS FROM 3.89 TO 34.09																			

*** END OF REPORT TCS2-09 ***

033

558036

REPORT TC54-11

THIERS COAL SYSTEM

PAGE 1

RUN AT 10113110 20/ 6/83

LAUNCESTON.

COAL ANALYSIS TEST NO. 2 BY HOLE

GTP FL2080
LAUNCESTON

TEHERENT 2080

SEAM	-----SAMPLE----	TY	BASE	THICK	SI	FRACTION	---ULTIMATE ANALYSIS (Z DAF)---					CO2	SULPHUR (Z AD)	MINOR CONSTITUENTS		TEST					
WS.	LAB	FIELD	PE	DEPTH	-NESS	ZF	C	H	N	S	O	(Z AD)	PYR.	SULPH.	ORG.	P(Z)	CL(Z)	AS	DATE	LAB	
																					(PPM)

DRILLHOLE C0020

COMPOSITE OF C0238 -41

LB3	A64255		1	25.15	3.75	R	65.30	6.00	1.18	0.60	26.92						0.010	0.031			11/82 BR
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SODIUM (ETSA) METHOD

*** END OF REPORT TC54-11 ***

034

558037

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HDIE

ATP EL2980
LAUNCESTON

TERMINAL 20

35

SEAM	SAMPLE	TY	RGSE	THICK	S1	FRACTION	ASH FUSION (DEG C OXI)	ASH FUSION (DEG C RED)	MOISTURE	TEST
MS	LAB FIELD	PE	DEPTH	-NESS	ZE		INIT SPHER HEMI	INIT SPHER HEMI	HOLDING TOTAL	DATE LAB
							DEF. -ICAL SPHERE FLOW	DEF. -ICAL SPHERE FLOW	CAPACITY MOIST	HGI
	DRILLHOLE C0220									
	*****2***									
LB1	A62542 C0221	2	8.24	0.69	R				45.10	06/82 BR
LB1	A62543 C0222	2	9.01	0.77	R				37.30	06/82 BR
LB1	A62544 C0223	2	10.39	1.38	R				45.40	06/82 BR
	A62545 C0224	3	11.02	0.63	R				31.00	06/82 BR
LB2	A62546 C0225	2	12.07	1.05	R				40.50	06/82 BR
LB2	A62547 C0226	2	13.07	1.00	R				47.80	06/82 BR
LB2	A62548 C0227	2	13.22	0.15	R				37.40	06/82 BR
LB2	A62549 C0228	2	14.00	0.78	R				41.40	06/82 BR
LB2	A62550 C0229	2	15.33	1.33	R				49.20	06/82 BR
LB2	A62551 C0230	2	15.75	0.42	R				41.80	06/82 BR
LB2	A62552 C0231	2	16.54	0.79	R				50.40	06/82 BR
LB2	A62553 C0232	2	17.04	0.50	R				39.80	06/82 BR
LB2	A62554 C0233	2	18.25	1.71	R				51.90	06/82 BR
LB2	A62555 C0234	2	19.14	0.89	R				45.50	06/82 BR
LB2	A62556 C0235	2	19.72	0.58	R				46.00	06/82 BR
LB2	A62557 C0236	2	20.33	0.81	R				43.20	06/82 BR
	A62558 C0237	3	21.40	1.07	R				34.50	06/82 BR
LB3	A62559 C0238	2	22.14	0.74	R				44.30	06/82 BR
LB3	A62560 C0239	2	23.51	1.37	R				49.30	06/82 BR
LB3	A62561 C0240	2	24.51	1.00	R				47.30	06/82 BR
LB3	A62562 C0241	2	25.15	0.64	R				50.00	06/82 BR
	COMPOSITE OF C0236 -41									

558038

REPORT TC56-13

THIASS COAL SYSTEM

PAGE 2 RUN AT 10:17:44 20/ 6/83

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

ATP EL2980
LAUNCESTON

TENEMENT 2080

SEAM	-----SAMPLE-----		TY	BASE PE	THICK DEPTH	SI -NESS	FRACTION ZE	ASH FUSION (DEG C OXI)				ASH FUSION (DEG C RED)				MOISTURE		TEST	
	WS	LAB						FIELD	INIT SPHER	HEFT	DEF. -ICAL	SPHERE	FLOW	INIT SPHER	HEFT	DEF. -ICAL	SPHERE	FLOW	CAPACITY
	DRILLHOLE C0020																		

LB3	A64255		1	25.15	3.75		R	1340	1600	1600	1600	1290	1600	1600	1600			11/82	BR
	A62563	C0242	2	25.54	0.39		R									43.50		06/82	BR
LC1	A62567	C0246	2	30.04	1.17		R									42.20		06/82	BR
LC1	A62568	C0247	2	31.00	0.96		R									43.30		06/82	BR
LC1	A62569	C0248	2	32.42	1.42		R									49.30		06/82	BR
	A62570	C0249	2	32.83	0.41		R									43.10		06/82	BR

*** END OF REPORT TC56-13 ***

036

558039

REPORT TCS8-15
LAUNCESTON.

THIESS COAL SYSTEM
COAL ANALYSIS TEST NO. 4 BY HOLE

PAGE 1 RUN AT 10116102 20/ 6/83
GTP EL2080 TENERENT 2080
LAUNCESTON

SEAM	-----SAMPLE-----	TY	BASE	THICK	SI	FRACTION	-----ASH ANALYSIS (Z WEIGHT)-----											TEST		
WS	LAR	FIELD	PE	DEPTH	-NESS	ZF	SI02	AL2O3	FE2O3	TI02	CAO	M60	NA2O	K2O	P2O5	MN3O4	SO3	M40	DATE	LAB
	DRILLHOLE	C0020																		

COMPOSITE OF	C0238	-41																		
LB3	A64255		1	25.15	3.75	R	49.50	35.50	3.54	0.58	2.05	1.82	0.81	0.40	0.08	0.01	1.63		11/82	HR

*** END OF REPORT TCS8-15 ***

037

558040

REPORT TC52-09
LAUNGESTON.

THIERS COAL SYSTEM
COAL ANALYSIS TEST NO. 1 BY HOLE

PAGE 1 RUN AT 10:13:51 20/ 6/83
ATP FI 2080 TERMENT 2080
LAUNGESTON

SEAM	SAMPLE	TY R	BASE THICK	SIZE	FRACTION				PROXIMATE % BY WEIGHT FUEL	S.E.	TOTAL TEST						
WS	LAB FIELD	PE B	DEPTH -NESS	+	RAW WT	RD	YIELD	TM	VM	ASH	FC	RATIO	CSN	KJ/KG	SULPHUR	DATE	LAB
DRILLHOLE C0021 *****																	
	A60389	C2821	2 AD	8.61	0.37	R											01/81 BR
				NO ANALYSIS													
	A60390	C02822	2 AD	9.76	1.15	R	1.78	18.3	21.3	50.6	9.8	0.5		5.70	0.13		01/81 BR

*** END OF REPORT TC52-09 ***

038

558041

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TENERENT 2080

SEAM	WS	LAB	FIELD	TY R	PE B	BASE DEPTH	THICK -NESS	SIZE +-	FRACTION RAW WT	RD	YIELD	PROXIMATES % BY WEIGHT FUEL				S.E.	TOTAL	TEST			
												IN	VK	ASH	FC	RATIO	CSM	KJ/KG	SULPHUR	DATE	LAB
DRILLHOLE C021R *****																					
LA4	A59390	C2842		2	AD	20.79	0.37		R		1.37	38.6	23.1	21.4	16.9	0.7	10.14	0.15	01/81	BR	
	A60391	C2823		2	AD	7.14	2.14		R										01/81	BR	
						NO ANALYSIS															
	A60392	C2824		2	AD	7.92	0.54		R										01/81	BR	
						NO ANALYSIS															
	A60393	C2825		2	AD	9.61	1.69		R	2.25				78.6					01/81	BR	
LA1		C2826		2	AD	10.16	0.55												01/81	BR	
LA1	A59386	C2827		2	AD	10.44	0.28		R	1.68		9.8	33.1	36.1	21.0	0.6	13.62	0.25	01/81	BR	
						CORE LOSS FROM 10.44 TO 10.46															
LA1		C0019		2	AD	10.97	0.51												01/81	BR	
COMPOSITE OF C2826 -26 C0019 -19																					
LA1	A60394			2	AD	10.97	1.07		R	1.53		25.1	26.1	31.5	17.3	0.7	10.52	0.20	01/81	BR	
	A60395	C2829		2	AD	11.73	0.76		R	1.75		25.3	13.4	56.1	5.2	0.4	3.32	0.12	01/81	BR	
LA2		C2830		2	AD	13.20	1.47												01/81	BR	
LA2	A59387	C2831		2	AD	13.50	0.30		R	1.63		20.9	26.2	36.8	16.1	0.6	8.88	0.19	01/81	BR	
LA2		C0020		2	AD	13.58	0.08												01/81	BR	
COMPOSITE OF C2830 -30 C0020 -20																					
LA2	A60396			2	AD	13.58	1.55		R	1.52		16.6	35.5	22.4	25.5	0.7	15.74	0.28	01/81	BR	
	A60397	C2832		2	AD	14.40	0.82		R	1.69		27.9	16.5	50.2	5.6	0.3	3.68	0.15	01/81	BR	
LA3	A60398	C2833		2	AD	15.18	0.78		R	1.66		15.4	28.7	38.8	17.1	0.6	11.22	0.23	01/81	BR	
LA3		C2834		2	AD	15.50	0.32												01/81	BR	
LA3	A59388	C2835		2	AD	15.82	0.32		R	1.59		19.3	27.9	33.1	19.7	0.7	11.94	0.19	01/81	BR	
LA3		C0021		2	AD	16.45	0.63												01/81	BR	

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
*

039

558042

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TEHEMENT 2080

SEAM	-----SAMPLE-----	TY R	BASE THICK	SIZE FRACTION		PROXIMATES	Z	BY WEIGHT	FUEL	S.E.	TOTAL	TEST					
WS.	LAB FIELD	PF B	DEPTH	-NESS	-+ RAW WT	RD	YIELD	TK	VN	ASH	FC	RATIO	CSN	KJ/KG	SULPHUR	DATE	LAB
***** DRILLHOLE C021R *****																	
COMPOSITE OF C2834 -34 C0021 -21																	
LA3	A60399		2 AD	16.45	0.95	R	1.61	18.7	27.1	36.7	17.5	0.6		10.76	0.18	01/81	BR
CORE LOSS FROM 16.45 TO 16.51																	
LA3	A60400	C2836	2 AD	16.96	0.45	R	1.71	14.2	27.4	42.3	16.1	0.6		10.06	0.17	01/81	BR
LA3	A60401	C2837	2 AD	18.30	1.34	R	1.45	18.9	36.2	16.6	28.3	0.8		18.72	0.21	01/81	BR
LA3	A59389	C2838	2 AD	18.62	0.32	R	1.53	23.1	28.2	27.6	21.1	0.7		12.58	0.16	01/81	BR
	A60402	C2839	2 AD	19.11	0.49	R	1.61	28.3	18.6	44.6	8.5	0.5		6.2	0.10	01/81	BR
CORE LOSS FROM 19.11 TO 19.50																	
	A60403	C2840	2 AD	20.34	0.84	R	1.66	26.6	17.7	46.4	9.3	0.5		5.38	0.11	01/81	BR
LA4		C2841	2 AD	20.42	0.08											01/81	BR
LA4		C0022	2 AD	21.37	0.58											01/81	BR
COMPOSITE OF C2841 -41 C0022 -22																	
LA4	A60404		2 AD	21.37	0.66	R	1.65	14.7	28.8	25.4	21.1	0.7		12.34	0.24	01/81	BR
CORE LOSS FROM 21.37 TO 21.61																	
	A60405	C2843	2 AD	22.06	0.45	R	1.65	27.5	17.0	47.7	7.8	0.5		5.14	0.14	01/81	BR
	A60406	C2844	2 AD	23.80	1.74	R	2.35			79.1						01/81	BR
	A60407	C2845	2 AD	24.75	0.95	R	1.80	23.9	18.5	53.4	4.2	0.2		3.6	0.17	01/81	BR
	A60408	C2846	2 AD	36.07	0.56	R										01/81	BR
	A60409	C2847	2 AD	40.33	1.82	R										01/81	BR
CORE LOSS FROM 40.33 TO 41.09 ROTARY CHIP FROM 41.09 TO 44.27																	
LB1		C2848	2 AD	44.98	0.71											01/81	BR
LB1	A59391	C2849	2 AD	45.32	0.34	R	1.65	13.4	29.1	37.0	20.5	0.7		12.24	0.21	01/81	BR
LB1		C0023	2 AD	46.07	0.75											01/81	BR

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
*

0400

558043

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

GTP EL 2080
LAUNCESTON

TENEMENT 2080

SEAM	WS	SAMPLE	LAB	FIELD	TY R	PE R	BASE	THICK	SIZE	FRACTION	RD	YIELD	PROXIMATES	Z	BY WEIGHT	FUEL	S.E.	TOTAL	TEST			
							DEPTH	-RESS	--	RAW WT			(M	VM	ASH	FC	RATIO	CSM	MJ/KG	SULPHUR	DATE	LAB
		DRILLHOLE		C0022																		

		A60245		C2635	2	AD	8.84	0.30		R	2.21		7.9	16.8	21.7	3.6	0.2	2.84	0.11	01/81	BR	
		A60246		C2636	2	AD	9.19	0.35		R	1.90		9.6	23.6	56.0	10.8	0.5	6.84	0.23	01/81	BR	
PB2		A59400		C2637	2	AD	9.57	0.38		R	1.59		20.8	27.7	35.1	16.4	0.6	10.80	0.29	01/81	BR	
PB2		A60247		C2638	2	AD	9.90	0.33		R	1.78		7.4	30.2	42.7	19.7	0.7	11.90	0.28	01/81	BR	
PB2		A60248		C2639	2	AD	10.64	0.74		R	1.62		20.1	26.3	37.2	16.4	0.6	10.50	0.23	01/81	BR	
PB2		A60249		C2640	2	AD	11.32	0.68		R	1.66		10.6	32.6	36.4	20.4	0.6	13.60	0.20	01/81	BR	
PB2		A59401		C2641	2	AD	11.64	0.32		R	1.36		19.9	28.4	34.7	17.0	0.6	10.90	0.23	01/81	BR	
		A60250		C2642	2	AD	12.15	0.51		R	1.64		20.1	25.5	41.0	13.4	0.5	8.84	0.21	01/81	BR	
PB3		A59402		C2643	2	AD	12.53	0.38		R	1.46		24.1	30.6	25.8	19.5	0.6	13.04	0.25	01/81	BR	
PB3		A60251		C2644	2	AD	13.27	0.74		R	1.43		25.0	30.4	23.0	21.5	0.7	13.84	0.19	01/81	BR	
PB3		A60252		C2645	2	AD	14.07	0.80		R	1.52		24.3	28.0	30.1	17.6	0.6	11.90	0.18	01/81	BR	
PB3		A60253		C2646	2	AD	14.96	0.89		R	1.68		9.6	35.3	32.3	22.8	0.6	15.38	0.26	01/81	BR	
PB3		A59403		C2647	2	AD	15.31	0.35		R	1.54		18.0	30.8	32.1	19.1	0.6	12.60	0.22	01/81	BR	
PB3		A60254		C2648	2	AD	16.18	0.87		R	1.57		23.7	25.5	37.3	13.5	0.5	9.52	0.19	01/81	BR	
PB3		A60255		C2649	2	AD	16.77	0.59		R	1.64		18.9	26.5	39.2	15.4	0.6	10.42	0.22	01/81	BR	
		A59404		C2650	2	AD	17.26	0.49		R	1.79		15.8	21.1	31.7	11.4	0.5	6.56	0.19	01/81	BR	
		A60256		C2651	2	AD	17.89	0.63		R	1.76		17.3	21.5	48.1	13.1	0.6	7.64	0.18	01/81	BR	
		A60257		C2652	2	AD	18.32	0.43		R	2.50		3.2	11.2	84.3	1.3	0.1	0.10	0.05	01/81	BR	
		A60258		C2653	2	AD	19.11	0.69		R	2.34				82.0					01/81	BR	
		A60259		C2654	2	AD	19.70	0.59		R	2.42		4.4	12.9	81.0	1.7	0.1	1.00	0.06	01/81	BR	
		A60260		C2655	2	AD	20.38	0.68		R	1.63		21.4	24.0	41.0	13.6	0.6	8.96	0.20	01/81	BR	
		A60261		C2656	2	AD	21.11	0.73		R	1.92		14.7	19.0	59.3	7.0	0.4	4.82	0.12	01/81	BR	

041

558044

LAURCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAURCESTON

RENEHEM 2080

SEAM	WS	SAMPLE	LAB	FIELD	TY R	PE B	BASE DEPTH	THICKNESS	SIZE	FRACTION	RAW WT	RD	YIELD	PROXIMATES	Z	BY WEIGHT	FUEL	S.E.	TOTAL	TEST	DATE	LAB		
														IK	UM	ASH	FC	RATIO	CSH	kJ/KG	SULPHUR			
DRILLHOLE C0022 *****																								
		A60262		C2657	2	AD	21.85	0.74		R		1.94		13.0	21.4	59.7	5.9	0.3	5.32	0.15	01/81	BR		
PB4		A60263		C2658	2	AD	22.92	1.07		R		1.54		24.1	25.7	36.2	14.0	0.5	9.44	0.27	01/81	BR		
PB4		A59405		C2659	2	AD	23.32	0.40		R		1.48		19.9	33.3	27.2	19.6	0.6	14.00	0.28	01/81	BR		
PB4		A60264		C2660	2	AD	23.83	0.51		R		1.47		21.9	31.9	23.8	22.4	0.7	13.00	0.28	01/81	BR		
PB4		A60265		C2661	2	AD	24.18	0.35		R		1.49		23.3	30.1	27.3	19.3	0.6	12.14	0.21	01/81	BR		
PB4		A59406		C2662	2	AD	24.47	0.29		R		1.50		21.3	30.6	26.5	21.6	0.7	13.44	0.24	01/81	BR		
		A60266		C2663	2	AD	25.23	0.68		R		1.60		25.0	21.2	33.2	10.6	0.5	7.56	0.15	01/81	BR		
CORE LOSS FROM 24.47 TO 24.55																								
		A60267		C2664	2	AD	26.69	1.46		R		2.36									01/81	BR		
		A60268		C2665	2	AD	27.65	0.96		R		3.14									01/81	BR		
		A60269		C2666	2	AD	48.67	1.67		R		1.99		15.7	15.7	65.8	2.8	0.2	2.30	0.13	01/81	BR		
PC4		A60270		C2667	2	AD	49.70	1.03		R		1.60		21.4	25.7	39.9	13.0	0.5	9.26	0.20	01/81	BR		
PC4		A59407		C2668	2	AD	50.11	0.41		R		1.49		21.9	31.3	25.6	21.2	0.2	13.80	0.24	01/81	BR		
PC4		A60271		C2669	2	AD	50.70	0.59		R		1.44		27.5	30.1	25.6	16.8	0.6	12.62	0.19	01/81	BR		
PC4		A59408		C2670	2	AD	51.08	0.38		R		1.52		19.9	31.6	27.4	21.1	0.7	13.80	0.20	01/81	BR		
PC4		A60272		C2671	2	AD	52.01	0.93		R		1.49		27.5	27.2	31.7	13.6	0.5	10.94	0.16	01/81	BR		
PC4		A60273		C2672	2	AD	52.80	0.79		R		1.96		13.9	19.4	61.2	5.5	0.3	4.20	0.09	01/81	BR		
PC4				C2673	2	AD	53.11	0.31													01/81	BR		
PC4		A59409		C2674	2	AD	53.43	0.32		R		1.47		31.7	28.8	18.6	20.9	0.7	13.26	0.17	01/81	BR		
PC4				C0025	2	AD	53.63	0.20													01/81	BR		

COMPOSITE OF C2673 -73 C0025 -25

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
*

042

558045

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TEHEMENT 2080

SEAM	SAMPLE	TY R	BASE THICK	SIZE FRACTION	PROXIMATES Z BY WEIGHT FUEL	S.E.	TOTAL TEST	TEST
WS	L&B FIELD	PE B	DEPTH -NESS	RAW WT	RD YIELD	IM VM ASH FC RATIO CSN	M./KG	SULPHUR DATE LAB
BRILLHOLE C0022								

PC4	A60274	2 AD	53.63	0.51	R	1.68	11.6 31.5 36.8 20.1 0.6	12.64 0.20 01/81 BR
	C2675	2 AD	53.77	0.14				01/81 BR
	C2676	2 AD	54.52	0.75				01/81 BR
	C0026	2 AD	54.73	0.21				01/81 BR
COMPOSITE OF	C2675 -75	C0026 -26						
A59410	2 AD	54.73	0.35	R	1.85	8.7 25.8 52.3 13.2 0.5	8.28 0.14	01/81 BR
	C0027	2 AD	54.76	0.03				01/81 BR
COMPOSITE OF	C2676 -76	C0027 -27						
A60275	2 AD	54.76	0.88	R	1.51	20.5 25.8 39.5 14.2 0.6	9.75 0.14	01/81 BR
A60276	C2677	2 AD	55.04	0.28	R	2.22	74.4	01/81 BR
A60277	C2678	2 AD	60.15	1.95	R	2.15	72.2	01/81 BR
A60278	C2679	2 AD	60.55	0.40	R	2.23	7.4 15.9 74.4 2.3 0.1	1.86 0.06 01/81 BR
	C2680	2 AD	60.74	0.19				01/81 BR
A60279	C2681	2 AD	61.04	0.30	R	1.76	13.2 26.5 47.2 13.1 0.5	9.48 0.16 01/81 BR
	C0028	2 AD	61.16	0.12				01/81 BR
COMPOSITE OF	C2680 -80	C0028 -28						
A59411	2 AD	61.16	0.31	R	1.77	10.1 28.5 47.5 13.9 0.5	9.64 0.16	01/81 BR
A60280	C2682	2 AD	62.19	0.76	R	1.77	17.2 22.1 49.5 11.2 0.5	7.34 0.13 01/81 BR
A60281	C2683	2 AD	63.07	0.88	R	1.79	19.9 17.9 54.0 8.2 0.5	5.06 0.10 01/81 BR
A60282	C2684	2 AD	63.55	0.48	R	1.96	14.1 19.5 59.2 7.2 0.4	4.46 0.10 01/81 BR

* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES

043

558046

REPORT TC52-09

LAUNCESTON.

THIERS COAL SYSTEM

COAL ANALYSIS TEST NO. 1 BY HOLE

PAGE 4 RUN AT 10119138 20/ 6/83

ATP EL2080
LAUNCESTON

TENEHENT 2080

*** E N D O F R E P O R T T C 5 2 - 0 9 ***

558047

04A

REPORT TCS6-13

THIASS COAL SYSTEM

PAGE 1

RUN AT 10:19:11 20/ 6/83

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

ATP F2080
LAUNCESTON

TESTMENT 2080

SEAM	-----SAMPLE-----			TY	BASE	THICK	SI	FRACTION	ASH FUSION (DEG C OXI)			ASH FUSION (DEG C RED)			MOISTURE		TEST					
	WS	LAB	FIELD						PE	DEPTH	-NESS	ZE	INIT SPHER	HEMI	DEF. -ICAL	SPHERE	FLOW	INIT SPHER	HEMI	DEF. -ICAL	SPHERE	FLOW
	DRILLHOLE		C0022		*****																	
PB2	A59400	C2637		9.57	0.38		R									45.3		01/81	BR			
PB2	A59401	C2641		11.64	0.32		R									47.6		01/81	BR			
PB3	A59402	C2643		12.53	0.38		R									49.4		01/81	BR			
PB3	A59403	C2647		15.31	0.35		R									45.5		01/81	BR			
	A59404	C2650		17.26	0.49		R									39.5		01/81	BR			
PB4	A59405	C2659		23.32	0.40		R									48.3		01/81	BR			
PB4	A59406	C2662		24.47	0.29		R									47.6		01/81	BR			
PC4	A59407	C2668		50.11	0.41		R									47.3		01/81	BR			
PC4	A59408	C2670		51.08	0.38		R									46.8		01/81	BR			
PC4	A59409	C2674		53.43	0.32		R									48.9		01/81	BR			
COMPOSITE OF C2675 -75 C0026 -26																						
	A59410			54.73	0.35		R									38.6		01/81	BR			
COMPOSITE OF C2680 -80 C0028 -28																						
	A59411			61.16	0.31		R									39.9		01/81	BR			

*** END OF REPORT TCS6-13 ***

045

558048

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

FERRENT 2080

SEAM	-----SAMPLE-----	TY R	BASE THICK.	SIZE FRACTION			PROXIMATES	Z BY WEIGHT	FUEL	S.E.	TOTAL	TEST
WS	LAB FIELD	PE B	DEPTH	-NESS	--+	RAW WT	RD	YIELD	IM VM ASH FC	RATIO CSN	KJ/KG	SULPHUR DATE-LAB
	DRILLHOLE C0032											

PC1	A59412 C2686	2 AD	36.49	0.22								01/81 BR
PC1	A60284 C2687	2 AD	37.21	0.72	R		1.77		16.6 22.2 49.0 12.2	0.5	7.44	0.22 01/81 BR
PC1	A59412 C0015	2 AD	37.48	0.27								01/81 BR
	COMPOSITE OF C2686 -86 C0015 -15											
PC1	A59412	2 AD	37.48	0.49	R		1.85		14.2 21.2 55.1 9.5	0.4	5.92	0.21 01/81 BR
	A60285 C2688	2 AD	38.41	0.93	R		1.64		26.4 17.0 47.5 7.1	0.4	5.26	0.15 01/81 BR
	A60286 C2689	2 AD	38.71	0.30	R		2.09		11.5 16.4 68.6 3.5	0.2	2.88	0.08 01/81 BR
PC2	C2690	2 AD	39.76	0.63								01/81 BR
PC2	A59413 C2691	2 AD	39.94	0.18	R		1.67		14.9 28.0 38.0 19.1	0.7	10.98	0.23 01/81 BR
PC2	C0016	2 AD	40.46	0.52								01/81 BR
	COMPOSITE OF C2690 -90 C0016 -16											
PC2	A60287	2 AD	40.46	1.15	R		1.55		28.6 19.4 47.7 4.3	0.2	5.38	0.10 01/81 BR
PC2	A60288 C2692	2 AD	40.79	0.33	R		1.64		20.3 24.8 42.2 12.7	0.5	9.66	0.16 01/81 BR
PC2	A59414 C2693	2 AD	41.03	0.24	R		1.56		15.6 33.4 31.4 19.6	0.6	14.20	0.20 01/81 BR
PC2	A60289 C2694	2 AD	41.84	0.72	R		1.72		9.1 34.7 36.3 19.9	0.6	14.08	0.17 01/81 BR
PC2	A59415 C2695	2 AD	42.02	0.18	R		1.52		22.0 29.0 26.6 22.4	0.8	13.12	0.15 01/81 BR
PC2	A60290 C2696	2 AD	42.72	0.70	R		1.77		11.4 26.5 46.4 15.7	0.6	10.30	0.13 01/81 BR
PC2	A59416 C2697	2 AD	43.02	0.30	R		1.54		20.0 31.3 27.6 21.1	0.7	13.74	0.14 01/81 BR
PC2	A60291 C2698	2 AD	43.87	0.85	R		1.70		14.5 26.9 39.8 18.8	0.7	11.72	0.11 01/81 BR
	A60292 C2699	2 AD	44.49	0.56	R		1.59		27.6 20.1 42.0 10.3	0.5	7.14	0.07 01/81 BR
	A59417 C2700	2 AD	44.77	0.28	R		1.85		11.2 23.8 53.6 11.4	0.5	7.70	0.10 01/81 BR

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
*

046

558049

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TEHEMENT 2080

SEAM	WS	SAMPLE LAB FIELD	TY R PE B	BASE THICK DEPTH -NESS	SIZE FRACTION --+	RAW WT	RD	YIELD	PROXIMATES % BY WEIGHT FUEL	S.E.	TOTAL TEST	TEST DATE LAB					
									TM	VM	ASH	FC RATIO	CSN	KJ/KG	SULPHUR	DATE LAB	
***** DRILLHOLE C0032 *****																	
PC3		C2702	- 2 AD	45.29	0.52												01/81 BR
PC3	A59418	C2701	2 AD	45.60	0.31	R	1.57		20.3	28.0	33.4	15.3	0.6	11.58	0.10	01/81 BR	
PC3		C0017	2 AD	46.16	0.56												01/81 BR
COMPOSITE OF C2702 -02 C0017 -17																	
PC3	A60293		2 AD	46.16	1.38	R	1.57		15.1	28.2	37.9	18.8	0.7	12.22	0.13	01/81 BR	
PC4		C2703	2 AD	47.82	0.60												01/81 BR
PC4	A59419	C2704	2 AD	48.26	0.44	R	1.93		14.1	18.4	59.5	8.0	0.4	4.70	0.07	01/81 BR	
PC4		C0018	2 AD	48.31	0.05												01/81 BR
COMPOSITE OF C2703 -03 C0018 -18																	
PC4	A60294		2 AD	48.31	0.65	R	1.79		18.7	18.0	56.2	7.1	0.4	4.64	0.07	01/81 BR	
	A60295	C2705	2 AD	49.53	1.22	R	1.83		20.4	14.3	61.3	4.0	0.3	2.76	0.05	01/81 BR	
	A60296	C2706	2 AD	50.21	0.68	R	2.18		11.4	12.8	74.1	1.7	0.1	0.68	0.03	01/81 BR	

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
*

*** END OF REPORT TC52-09 ***

047

558050

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

ATP EL2080
LAUNCESTON

TENERENT 2080

SEAM	-----SAMPLE-----	TY	BASE THICK	SI FRACTION	ASH FUSION (DEG C OXI)	ASH FUSION (DEG C RED)	MOISTURE	TEST	
WS	LAB FIELD	PE	DEPTH	-NESS ZE	INIT SPHER HEKI	INIT SPHER HEKI	HOLDING TOTAL	HGI	DATE LAB
					DEF. -ICAL SPHERE FLOW	DEF. -ICAL SPHERE FLOW	CAPACITY MOIST		
DRILLHOLE C0032									

PC2	A59413 C2691		39.94	0.18	R		50.2		01/81 BR
PC2	A59414 C2693		41.03	0.24	R		46.8		01/81 BR
PC2	A59415 C2695		42.02	0.18	R		48.4		01/81 BR
PC2	A59416 C2697		43.02	0.30	R		47.9		01/81 BR
	A59417 C2700		44.77	0.28	R		38.8		01/81 BR
PC3	A59418 C2701		45.60	0.31	R				01/81 BR
PC4	A59419 C2704		48.26	0.44	R		36.3		01/81 BR

*** END OF REPORT TC56-13 ***

048

558051

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					0.50	0.50		CLAY	Medium to dark brown, firm, high plasticity (clay), gradational base; Bands include: CLAY, medium to dark brown, stiff, high plasticity (clay).
					2.50	2.00		CLAY	Mottled cream - yellow, stiff, high plasticity (clay), gradational base.
					3.20	0.70		CLAY	Mottled white - cream, very stiff, high plasticity (clay), gradational base.
					5.00	1.80		CLAY	Mottled white - cream, firm, high plasticity (clay), gradational base.
				C2823	6.94	1.94		CLAY	Light grey - brown, soft, high plasticity (clay), good core - unbroken; BROWN AND ORANGE HORIZONTAL STREAKS
				C2823	7.14	0.20		CLAY	Light grey - brown, firm, high plasticity (clay), good core - unbroken.
					7.33	0.24		CORE LOSS	
				C2824	7.40	0.02		CLAY	Light grey, firm, high plasticity (clay), good core - unbroken.
				C2824	7.72	0.32		CLAY	Light to medium grey, firm, high plasticity (clay), good core - unbroken, common bioturbation.
				C2824	7.92	0.20		CLAY	Light to medium grey - brown, firm, high plasticity (clay), good core - unbroken, gradational base, common woody fragments; Additional features include: common bioturbation; WOOD CHIPS COMMON
				C2825	8.06	0.14		CLAY	Medium to dark grey - brown, firm, low plasticity (clay), good core - unbroken, coaly wisps; CARBONACEOUS WISPS COMMON

EL2080 LAUNCESTON C021R

Easting: 493630.000

Northing: 5412320.000

Grid Type: Australian Mapping Grid

Accuracy: Approximate

Cr: 174.00

Datum: Approximate Level - Not Surveyed

Sheet References:

Sheet Index:

Total Depth: 79.47

Drilling Commenced: 04/12/81

Drilling Completed: 06/12/81

Inclination:

Azimuth:

Standing Water Level:

Logging Organisation: CSR Exploration and Evaluation Group

Logged By: ELLIS

Drilling Contractor: H.J. Stacpoole

Geophysical Logging: Murdoch Geophysics

County:

Parish:

Portion:

Plug Depths:

Hole Diameter: 1500

Core Diameter: 1000

Cased Depths:

Core Barrel: Triefus Triple Barrel

Available Data: Gamma Logs

Neutron Logs

Density Logs

Self Potential Logs

Resistivity Logs

Caliper Logs

Drill Bits: Blades

Rollers

Tungsten Carbide

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

558053

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TEHERENT 3080

SEAM	WS	SAMPLE	TY R	BASE THICK	SIZE FRACTION	RD	YIELD	PROXIMATES	Z BY WEIGHT	FUEL	S.E.	TOTAL	TEST				
	LAB	FIELD	PE B	DEPTH	-NESS	RAW WT		IM	VM	ASH	FC	RATIO	CSN	HJ/KG	SULPHUR	DATE	LAB
DRILLHOLE C021R *****																	
COMPOSITE OF C2848 -48 C0023 -23																	
LB1	A60410		2 AD	46.07	1.46	R	1.58	14.4	32.3	28.0	25.3	0.8	15.70	0.21	01/81	BR	
	A60411	C2850	2 AD	46.87	0.80	R	1.77	23.8	14.6	56.7	4.9	0.3	3.24	0.08	01/81	BR	
	A60413	C2852	2 AD	48.17	0.53	R	1.57	28.8	18.4	42.4	10.4	0.6	6.78	0.14	01/81	BR	
LB2	A59392	C2853	2 AD	48.53	0.36	R	1.62	15.7	28.6	36.4	19.3	0.7	12.26	0.26	01/81	BR	
LB2	A60414	C2854	2 AD	49.39	0.86	R	1.53	22.3	27.3	32.7	17.7	0.6	11.64	0.28	01/81	BR	
LB2	A60415	C2855	2 AD	49.78	0.39	R	1.82	16.2	20.5	35.2	8.1	0.4	5.80	0.19	01/81	BR	
LB2	A60416	C2856	2 AD	50.29	0.51	R	1.43	28.5	29.3	22.5	19.7	0.7	13.08	0.31	01/81	BR	
LB2	A59393	C2857	2 AD	50.57	0.28	R	1.51	22.1	28.9	28.6	20.4	0.7	12.72	0.29	01/81	BR	
LB2	A60417	C2858	2 AD	51.58	1.01	R	1.50	29.8	21.6	33.8	12.8	0.6	7.20	0.19	01/81	BR	
LB2		C2859	2 AD	51.81	0.23											01/81	BR
LB2	A59394	C2860	2 AD	52.21	0.40	R	1.49	23.0	28.9	25.1	23.0	0.8	13.38	0.26	01/81	BR	
LB2		C0024	2 AD	52.88	0.67											01/81	BR
COMPOSITE OF C2859 -59 C0024 -24																	
LB2	A60418		2 AD	52.88	0.90	R	1.60	24.6	22.6	39.4	13.4	0.6	8.68	0.19	01/81	BR	
LB2	A60419	C2861	2 AD	53.69	0.81	R	1.63	22.8	23.2	42.0	12.0	0.5	8.46	0.18	01/81	BR	
LB2	A59395	C2862	2 AD	53.97	0.28	R	1.65	13.8	28.6	38.4	19.2	0.7	12.20	0.22	01/81	BR	
	A60420	C2863	2 AD	54.55	0.58	R	1.74	10.1	28.1	45.6	16.2	0.6	10.72	0.21	01/81	BR	
	A60421	C2864	2 AD	56.24	1.69	R	1.68	23.4	19.2	47.7	9.7	0.5	5.92	0.16	01/81	BR	
				CORE LOSS FROM 56.24 TO 56.67													
	A60422	C2865	2 AD	58.06	1.39	R	1.64	22.9	22.3	41.2	13.6	0.6	8.24	0.18	01/81	BR	
	A60423	C2866	2 AD	59.07	1.51	R	1.83	17.8	18.5	56.8	6.9	0.4	4.56	0.15	01/81	BR	

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
*

051

558054

REPORT TC52-09

LAUNCESTON.

THIERS COAL SYSTEM

COAL ANALYSIS TEST NO. 1 BY HOLE

PAGE 4 RUN 61 12559102 20/ 8/83

ATP EL2080
LAUNCESTON

TENEHENT 2080

*** E N D O F R E P O R T T C 5 2 - 0 9 ***

052

558055

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EE2080
LAUNCESTON

TENERENT 2080

SEAM	WS	SAMPLE	LAB	FIELD	TY R	PE B	BASE THICK	SIZE FRACTION	FRACTION	RD	YIELD	PROXIMATES	Z BY WEIGHT	FUEL	S.F.E.	TOTAL	TEST				
					DEPTH	-NESS	++	RAW WT				IN	VM	ASH	FC	RATIO	CSN	KJ/KG	SULPHUR	RATE	LAB
DRILLHOLE C0033 *****																					
PB3	A60297	C2707	2	AD	8.68	0.55	R	1.56	25.3	24.1	37.1	13.5	0.6	9.62	0.25	01/81	BR				
PB3	A59420	C2708	2	AD	9.10	0.42	R	1.44	24.4	31.8	24.9	18.9	0.6	13.68	0.24	01/81	BR				
PB3		C0011	2	AD	9.36	0.26											01/81	BR			
PB3	A59421	C2709	2	AD	9.90	0.54	R	1.52	22.1	26.1	36.1	13.7	0.6	10.32	0.14	01/81	BR				
PB3		C2710	2	AD	10.32	0.42											01/81	BR			
COMPOSITE OF C0011 -11 C2710 -10																					
PB3	A60298		2	AD	10.32	0.68	R	1.44	18.2	32.4	25.9	23.5	0.7	15.16	0.17	01/81	BR				
	A60299	C2711	2	AD	11.44	1.12	R	1.71	21.0	20.5	46.8	11.7	0.6	7.34	0.10	01/81	BR				
PB4	A59422	C2712	2	AD	11.84	0.40	R	1.59	19.1	28.0	35.0	17.9	0.6	11.34	0.13	01/81	BR				
PB4	A60300	C2713	2	AD	12.25	0.41	R	1.54	21.8	29.5	31.5	17.6	0.6	11.98	0.13	01/81	BR				
PB4	A59423	C2714	2	AD	12.54	0.29	R	1.51	17.8	33.4	25.8	23.0	0.7	15.30	0.13	01/81	BR				
PB4	A60301	C2715	2	AD	12.94	0.40	R	1.57	18.5	30.7	30.8	20.0	0.7	13.46	0.15	01/81	BR				
PB4	A59424	C2716	2	AD	13.22	0.28	R	1.32	19.8	30.1	28.2	21.9	0.7	15.84	0.13	01/81	BR				
PB4	A60302	C2717	2	AD	13.66	0.44	R	1.51	22.1	29.2	28.3	20.4	0.7	12.72	0.11	01/81	BR				
	A60303	C2718	2	AD	14.63	0.97	R	2.08	7.4	19.6	63.3	9.7	0.5	6.02	0.09	01/81	BR				
	A60304	C2719	2	AD	23.87	0.61	R	2.21			74.3					01/81	BR				
	A60305	C2720	2	AD	24.55	0.68	R	1.77	12.9	27.3	40.1	19.7	0.7	11.84	0.15	01/81	BR				
	A59425	C2721	2	AD	24.89	0.34	R	1.72	15.2	24.4	43.7	16.7	0.7	9.50	0.10	01/81	BR				
	A60306	C2722	2	AD	25.74	0.32	R	1.89	8.9	23.8	51.8	15.5	0.7	8.80	0.10	01/81	BR				
	A60307	C2723	2	AD	26.34	0.60	R	2.07	8.4	19.8	62.0	9.8	0.5	6.12	0.07	01/81	BR				
	A60308	C2724	2	AD	27.09	0.75	R	2.51	4.6	12.4	81.3	1.7	0.1	0.46	0.03	01/81	BR				

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
*

053

558056

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TEHEMENT 2080

SEAM	WS	SAMPLE	LAB	FIELD	TY R	PE B	BASE	THICK	SIZE	FRACTION	RD	YIELD	PROXIMATE	Z	BY	WEIGHT	FUEL	S.E.	TOTAL	TEST		
							DEPTH	-NESS	+	RAW	WT		TM	VH	ASH	FC	RATIO	CSR	KJ/KG	SULPHUR	DATE	LAB
DRILLHOLE C0033					*****																	
		A60309	C2725		2	AD	28.86	1.77		R	2.27		7.5	14.7	73.1	4.7	0.3	2.78	0.04	01/81	BR	
PC2		A60310	C2726		2	AD	29.15	0.59		R	1.79		11.7	27.5	43.0	17.8	0.6	11.38	0.10	01/81	BR	
PC2		A60311	C2727		2	AD	29.87	0.22		R	1.52		10.7	33.2	25.4	28.7	0.8	17.40	0.16	01/81	BR	
PC2		A59426	C2728		2	AD	32.14	0.35		R	1.48		20.7	32.1	23.1	24.1	0.8	14.88	0.09	01/81	BR	
PC2		A60312	C2729		2	AD	32.76	0.62		R	2.02		10.9	26.7	45.4	17.0	0.6	10.46	0.09	01/81	BR	
PC2		A59427	C2730		2	AD	33.10	0.34		R	1.67		12.7	29.3	35.4	22.6	0.8	13.18	0.09	01/81	BR	
PC2		A60313	C2731		2	AD	33.57	0.47		R	1.81		10.7	26.4	42.9	20.0	0.8	11.26	0.09	01/81	BR	
		A59428	C2732		2	AD	33.98	0.30		R	1.83		8.5	25.8	48.2	17.5	0.7	9.94	0.07	01/81	BR	
		A60314	C2733		2	AD	34.62	0.64		R	1.81		10.9	25.3	48.4	15.4	0.6	9.98	0.10	01/81	BR	
		A60315	C2734		2	AD	35.84	1.22		R	2.12				66.7						01/81	BR
PC3		A60316	C2735		2	AD	36.46	0.62		R	1.53		15.3	34.0	26.5	24.2	0.7	16.24	0.18	01/81	BR	
PC3		A59429	C2736		2	AD	36.74	0.28		R	1.48		23.8	29.7	26.0	20.5	0.7	13.30	0.12	01/81	BR	
PC3		A60317	C2737		2	AD	37.63	0.89		R	1.66		13.7	29.8	37.2	19.3	0.6	12.88	0.16	01/81	BR	
		A60318	C2738		2	AD	38.77	1.14		R	1.99		8.5	23.0	56.9	11.6	0.5	7.38	0.11	01/81	BR	
		A60319	C2739		2	AD	40.84	2.07		R	2.29		5.0	18.8	72.0	4.2	0.2	3.06	0.07	01/81	BR	
		A60320	C2740		2	AD	45.90	0.90		R	2.27				76.0						01/81	BR
PDO		A60321	C2741		2	AD	46.32	0.42		R											01/81	BR
							MISSING															
PDO		A59430	C2742		2	AD	46.57	0.25		R	1.59		15.6	29.6	33.8	21.0	0.7	13.26	0.17	01/81	BR	
PDO		A60321	C0012		2	AD	47.01	0.44		R											01/81	BR
							MISSING															
PDO		A60322	C2743		2	AD	47.95	0.94		R	1.58		25.3	21.7	38.0	15.0	0.7	8.38	0.09	01/81	BR	
		A60323	C2744		2	AD	48.86	0.78		R	1.99				66.0						01/81	BR

054

558057

REPORT TCS6-13
LAUNCESTON.

PHIESS COAL SYSTEM
COAL ANALYSIS TEST NO. 3 BY HOLE

PAGE 1 RUN AT 11127416 20/ 6/83
ATP EL2080
LAUNCESTON TERMENT 2080

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SEAM	-----SAMPLE-----			TY	BASE	THICK	SI	FRACTION	ASH FUSION (DEG C OXI)			ASH FUSION (DEG C RED)			MOISTURE		TEST					
	WS	LAB	FIELD						PE	DEPTH	-NESS	ZE	INIT SPHER	HEMI	DEF. -ICAL	SPHERE	FLOW	INIT SPHER	HEMI	DEF. -ICAL	SPHERE	FLOW
	DRILLHOLE C0033																					

PB3	A59420	C2708			9.10	0.42		R										49.2		01/81	BR	
PB3	A59421	C2709			9.90	0.54		R										44.7		01/81	BR	
PB4	A59422	C2712			11.84	0.40		R										47.9		01/81	BR	
PB4	A59423	C2714			12.54	0.29		R										48.8		01/81	BR	
PB4	A59424	C2716			13.22	0.28		R										52.5		01/81	BR	
	A59425	C2721			24.89	0.54		R										45.0		01/81	BR	
PC2	A59426	C2728			32.14	0.35		R										49.5		01/81	BR	
PC2	A59427	C2730			33.10	0.34		R												01/81	BR	
	A59428	C2732			33.98	0.30		R										39.2		01/81	BR	
PC3	A59429	C2736			36.74	0.28		R										50.6		01/81	BR	
PDO	A59430	C2742			46.57	0.25		R										44.9		01/81	BR	

*** END OF REPORT TCS6-13 ***

558059

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY ROLE

ATP EL2080
LAUNCESTON

PERCENT 2080

SEAM	-----SAMPLE-----			TY	BASE	THICK	SI	FRACTION	ASH FUSION (DEG C OXI)			ASH FUSION (DEG C RED)			MOISTURE		TEST					
	MS	LAB	FIELD						PE	DEPTH	-NESS	ZE	INIT SPHER	HEMI	DEF. -ICAL	SPHERE	FLOW	INIT SPHER	HEMI	DEF. -ICAL	SPHERE	FLOW
	DRILLHOLE C0033																					

PB3	A59420	C2708			9.10	0.42		R								49.2			01/81	BR		
PB3	A59421	C2709			9.90	0.54		R								44.7			01/81	BR		
PB4	A59422	C2712			11.84	0.40		R								47.9			01/81	BR		
PB4	A59423	C2714			12.54	0.29		R								48.8			01/81	BR		
PB4	A59424	C2716			13.22	0.28		R								52.5			01/81	BR		
	A59425	C2721			24.89	0.34		R								45.0			01/81	BR		
PC2	A59426	C2728			32.14	0.35		R								49.5			01/81	BR		
PC2	A59427	C2730			33.10	0.34		R											01/81	BR		
	A59428	C2732			33.98	0.30		R								39.2			01/81	BR		
PC3	A59429	C2736			36.74	0.28		R								50.6			01/81	BR		
PB0	A59430	C2742			46.57	0.25		R								44.9			01/81	BR		

*** END OF REPORT TC56-13 ***

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558060

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TENEMENT 2080

SEAM	WS	LAB	FIELD	TY	R	PE	R	BASE	THICK	SIZE	FRACTION	RD	YIELD	PROXIMATES	Z	BY	WEIGHT	FUEL	S.E.	TOTAL	TEST
				DEPTH	-NESS	+	RAW	WT	JK	VH	ASH	FC	RATIO	CSM	KJ/KG	SULPHUR	DATE	LAB			
DRILLHOLE C033R *****																					
		A60424	C2867	2	AD	27.79	0.75	R				2.02				59.1					01/81 BR
		A60425	C2868	2	AD	29.20	0.94	R				2.37				80.5					01/81 BR
		A60426	C2869	2	AD	31.15	1.95	R				2.25	5.0	16.0	73.2	5.8	0.4		3.18	0.07	01/81 BR
PC2		A60427	C2870	2	AD	31.62	0.47	R				1.62	19.4	25.8	37.5	17.3	0.7		10.44	0.09	01/81 BR
PC2			C2871	2	AD	31.81	0.19	R													01/81 BR
NO ANALYSIS																					
PC2		A59396	C2872	2	AD	32.09	0.28	R				1.55	18.7	29.8	31.3	20.2	0.7		12.68	0.12	01/81 BR
PC2		A60429	C2873	2	AD	32.92	0.83	R				1.83	8.0	28.4	46.4	17.2	0.6		11.42	0.12	01/81 BR
PC2		A60430	C2874	2	AD	33.20	0.28	R				2.01				60.3					01/81 BR
PC2			C2875	2	AD	34.00	0.66														01/81 BR
PC2		A59397	C2876	2	AD	34.22	0.22	R				1.60	18.1	25.8	36.4	19.7	0.8		11.30	0.08	01/81 BR
PC2			C0013	2	AD	34.64	0.42														01/81 BR
COMPOSITE OF C2875 -75 C0013 -13																					
PC2		A60431		2	AD	34.64	1.25	R				1.68	10.5	31.8	53.2	24.5	0.8		14.62	0.11	01/81 BR
PC2		A60432	C2877	2	AD	35.82	1.18	R				1.76	8.3	28.2	43.2	20.3	0.7		12.14	0.11	01/81 BR
PC2		A60433	C2878	2	AD	36.46	0.64	R				1.82				43.6					01/81 BR
PC2			C2879	2	AD	36.79	0.33														01/81 BR
PC2		A59398	C2880	2	AD	37.03	0.24	R				1.66	15.6	27.2	40.6	16.6	0.6		10.96	0.08	01/81 BR
PC2			C0014	2	AD	37.15	0.12														01/81 BR
COMPOSITE OF C2879 -79 C0014 -14																					
PC2		A60434		2	AD	37.15	0.45	R				1.85	7.9	26.4	49.6	16.1	0.6		10.48	0.11	01/81 BR
		A60435	C2881	2	AD	38.42	1.27	R				2.07	9.0	18.7	63.6	8.7	0.5		5.22	0.07	01/81 BR

* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES

058

558061

REPORT TC52-09

THIERS COAL SYSTEM

PAGE 2

RUN AT 12136149 20/ 6/83

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TENERENT 2080

SEAM	-----SAMPLE-----	TY R	BASE THICK	SIZE FRACTION		PROXIMATES % BY WEIGHT FUEL	S.E.	TOTAL TEST	
WS	LAB FIELD	PE B	DEPTH.-NESS	+- RAW WT	RD YIELD	IN VM ASH FC RATIO CSN	KJ/KG	SULPHUR DATE LAB	
DRILLHOLE C033R									

	A60436 C2882	2 AD	39.67	1.25 R	1.58	19.1 30.4 31.1 20.4 0.7	13.78	0.15	01/81 RR

*** END OF REPORT TC52-09 ***

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558062

LAURCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAURCESTON

TERRENT 2080

SEAM	WS	SAMPLE	TY	R	BASE	THICK	SIZE	FRACTION	RD	YIELD	PROXIMATES % BY WEIGHT FUEL				S.E.	TOTAL	TEST				
		LAB	FE	B	DEPTH	-RESS	++	RAW WT			IK	VN	ASH	FC	RATIO	CSH	HJ/KG	SULPHUR	DATE	LAB	
DRILLHOLE C0064																					

		A62513	C0212	3	AD	10.01	0.95	R												02/83	BR
						NOT RETESTED															
		A62534	C0213	3	AD	10.77	0.76	R	2.14		4.9	20.9	66.3	7.9	0.4		5.26			02/83	BR
SA1		A62535	C0214	2	AD	12.06	1.29	R	1.74		12.0	28.6	42.4	17.0	0.6		10.62			02/83	BR
SA1		A62536	C0215	2	AD	13.48	1.42	R	1.83		8.4	27.9	47.2	16.5	0.6		10.14			02/83	BR
COMPOSITE OF C0214 -15																					
SA1		A64248		1	AD	13.48	2.71		1.82		8.4	28.7	45.8	17.1	0.6		10.64	0.34		08/82	BR
		A62537	C0216	3	AD	14.35	0.87	R	2.38		3.4	13.3	80.0	3.3	0.2		2.18			02/83	BR
		A62538	C0217	3	AD	15.06	0.71	R												02/83	BR
SA2		A62539	C0218	2	AD	16.32	1.26	R	1.86		7.6	27.8	48.9	15.7	0.6		9.74			02/83	BR
SA2		A62540	C0219	2	AD	17.56	1.24	R	1.73		9.5	30.7	38.5	21.3	0.7		12.88			02/83	BR
COMPOSITE OF C0218 -19																					
SA2		A64249		1	AD	17.56	2.50		1.81		8.3	29.1	44.3	18.3	0.6		11.38	0.31		08/82	BR
		A62541	C0220	3	AD	18.10	0.54	R	2.48		3.5	11.8	82.8	1.9	0.2		1.02			02/83	BR
						NO T.M. ANALYSIS															

*
* RELATIVE DENSITIES SHOWN ARE THOSE OF THE ASSOCIATED RAW SAMPLES
*

*** END OF REPORT T652-09 ***

558063

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

ATF EL2080
LAUNCESTON

TEHEMERT 2080

SEAM	---SAMPLE---			TY	BASE	THICK	SI	FRACTION	ASH FUSION (DEG C (OXI))			ASH FUSION (DEG C (RED))			MOISTURE		TEST					
	WS	LAB	FIELD						PE	DEPTH	-HESS	ZE	INIT SPHER	HEMI	DEF. -ICAL	SPHERE		FLOW	INIT SPHER	HEMI	DEF. -ICAL	SPHERE
	DRILLHOLE C0064																					
		A62534	C0213	3	10.77	0.76		R									35.50				06/82	BR
SA1		A62535	C0214	2	12.06	1.29		R									43.60				06/82	BR
SA1		A62536	C0215	2	13.48	1.42		R									41.30				06/82	BR
		A62537	C0216	3	14.35	0.87		R													06/82	BR
		A62538	C0217	3	15.06	0.71		R									35.00				06/82	BR
SA2		A62539	C0218	2	16.32	1.26		R									40.10				06/82	BR
SA2		A62540	C0219	2	17.56	1.24		R									44.90				06/82	BR
		A62541	C0220	3	18.10	0.54		R													06/82	BR

*** END OF REPORT TC56-13 ***

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558064

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TEHEMENT 2080

SEAM	WS	SAMPLE LAB FIELD	TY R PE B	BASE DEPTH	THICKNESS	SIZE FRACTION	RAW WT	RD	YIELD	PROXIMATES % BY WEIGHT FUEL					S.E.	TOTAL	TEST	
										IK	UM	ASH	FC	RATIO	CSN	MJ/KG	SULPHUR	DATE LAB
DRILLHOLE C0067 *****																		
		A62476 C0154	3 AD	31.31	0.42	R												02/83 BR
						NO ANALYSIS												
		A62477 C0133	3 AD	32.07	0.59	R												02/83 BR
						NO ANALYSIS												
		A62478 C0156	3 AD	35.07	0.26	R												02/83 BR
						NO ANALYSIS												
		A62479 C0157	3 AD	35.61	0.54	R												02/83 BR
		A62457 C0135	3 AD	5.54	0.50	R												02/83 BR
		A62458 C0136	3 AD	5.95	0.41	R												02/83 BR
		A62459 C0137	3 AD	6.25	0.10	R												02/83 BR
PLY SAMPLES C0135,C0136,C0137 NOT RETESTED																		
		A62460 C0138	3 AD	6.62	0.37	R		2.27		5.2	16.0	74.3	4.5	0.3		2.86		02/83 BR
PA0		A62461 C0139	2 AD	7.40	0.78	R		1.78		8.9	28.5	43.2	19.4	0.7		11.58		02/83 BR
PA0		A62462 C0140	2 AD	8.35	0.95	R		1.82		8.0	27.6	46.0	18.4	0.7		11.04		02/83 BR
COMPOSITE OF C0139 -40																		
PA0		A62444	1 AD	8.35	1.73	R		1.76		9.3	27.4	44.6	18.7	0.7		11.06	0.27	08/82 BR
		A62463 C0141	3 AD	9.19	0.84	R		2.22		4.4	18.2	70.2	7.2	0.4		4.32		02/83 BR
ROTARY CHIP FROM 9.19 TO 22.45																		
		A62464 C0142	3 AD	23.23	0.78	R		1.97		6.2	24.1	56.2	13.5	0.6		7.88		02/83 BR
		A62465 C0143	3 AD	23.94	0.71	R		2.35		3.4	15.8	76.8	4.0	0.3		2.60		02/83 BR
PB3		A62466 C0144	2 AD	25.48	1.54	R		1.64		10.6	34.0	31.7	23.7	0.7		14.74		02/83 BR
PB3		A62467 C0145	2 AD	26.37	0.89	R		1.62		10.4	34.2	31.0	24.4	0.7		15.22		02/83 BR
PB4		A62468 C0146	2 AD	26.69	0.32	R		1.85		8.2	26.3	50.2	15.3	0.6		9.86		02/83 BR
PB4		A62469 C0147	2 AD	27.17	0.48	R		1.66		9.8	32.0	35.9	22.3	0.7		13.60		02/83 BR
PB4		A62470 C0148	2 AD	27.70	0.53	R		1.81		8.4	26.8	49.4	15.4	0.6		9.84		02/83 BR

062

528065

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TEHEMENT 2080

SEAM	WS	LAB	FIELD	TY R PE R	BASE DEPTH	THICK -NESS	SIZE +	FRACTION RAW WT	RD	YIELD	PROXIMATES IN	Z BY UM	WEIGHT ASH	FUEL FC	RATIO CSH	S.E. KJ/KG	TOTAL SULPHUR	TEST DATE	LAB
DRILLHOLE - C0067 *****																			
PB4	A62471	C0149		2 AD	28.47	0.77		R	1.71		9.3	30.3	40.7	19.7	0.7	12.78		02/83	BR
PB4	A62472	C0150		2 AD	29.45	0.98		R	1.57		11.3	34.6	27.5	26.6	0.8	16.78		02/83	BR
COMPOSITE OF C0144 -50																			
PB3	A64245			1 AD	29.45	5.51		R	1.66		10.8	32.1	35.2	21.9	0.7	14.10	0.13	08/82	BR
	A62473	C0151		2 AD	29.73	0.28		R	1.87		8.6	23.8	34.2	13.4	0.6	8.92		02/83	BR
	A62474	C0152		2 AD	30.57	0.84		R	1.93		9.5	21.2	37.3	12.0	0.6	7.56		02/83	BR
	A62475	C0153		3 AD	30.89	0.32		R	2.07		6.8	19.0	63.3	8.9	0.5	5.76		02/83	BR
	A62480	C0158		3 AD	36.45	0.84		R										02/83	BR
	A62481	C0159		3 AD	37.12	0.67		R										02/83	BR
PLY SAMPLES C0157, C0158, C0159, C0160 NOT ANALYSED.																			
	A62483	C0161		3 AD	38.05	0.50		R	2.15		4.7	19.3	67.8	8.2	0.4	5.52		02/83	BR
PC2	A62484	C0162		2 AD	39.23	1.18		R	1.70		8.4	31.0	38.4	22.2	0.7	13.54		02/83	BR
PC2	A62485	C0163		2 AD	40.10	0.87		R	1.83		7.5	28.1	47.0	17.4	0.6	11.12		02/83	BR
COMPOSITE OF C0162 -63																			
PC2	A64246			1 AD	40.10	2.05		R	1.74		9.2	29.4	41.4	20.0	0.7	12.20	0.18	08/82	BR
	A62486	C0164		2 AD	40.58	0.48		R	1.88		3.9	27.8	50.8	15.5	0.6	10.32		02/83	BR
	A62487	C0165		2 AD	41.10	0.52		R	1.92		7.4	25.9	53.1	13.6	0.5	8.66		02/83	BR
	A62488	C0166		3 AD	42.99	1.89		R	2.49		3.0	15.1	80.3	1.6	0.1	3.26		02/83	BR
PLY SAMPLE C0167 NOT ANALYSED.																			
	A62490	C0168		2 AD	44.33	0.76		R	2.00		4.6	24.9	58.2	11.8	0.5	7.84		02/83	BR
PC3	A62491	C0169		2 AD	45.52	1.19		R	1.69		8.2	32.0	36.7	23.1	0.7	14.26		02/83	BR
PC3	A62492	C0170		2 AD	46.46	0.94		R	1.68		9.2	32.3	36.0	22.5	0.7	14.22		02/83	BR
CORE LOSS FROM 46.46 TO 46.56																			
PC3	A62493	C0171		2 AD	47.02	0.46		R	1.76		8.2	30.2	40.4	21.2	0.7	13.34		02/83	BR

003

558066

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TEHEMENT 2080

SEAM	WS	LAB	FIELD	TY R PE B	BASE THICK DEPTH -RESS	SIZE --+	FRACTION RAW WT	RD	YIELD	PROXIMATES IN VM	Z BY WEIGHT ASH FC	FUEL RATIO CSN	S.E. MJ/KG	TOTAL SULPHUR	TEST DATE LAB	
DRILLHOLE C0067 *****																
PC3	A62494	C0172		2 AD	47.90	0.88	R	1.66		7.3	34.4	54.6	23.7	0.7	15.14	02/83 BR
PC3	A62495	C0173		2 AD	48.60	0.70	R	1.90		5.0	28.5	52.1	14.4	0.5	10.26	02/83 BR
COMPOSITE OF C0169 -73																
PC3	A64247			1 AD	48.60	4.27	R	1.73		9.0	31.4	58.6	21.0	0.7	13.40	0.18 08/82 BR
	A62496	C0174		3 AD	49.54	0.94	R	2.12		4.5	22.8	63.8	8.9	0.4	5.92	02/83 BR
	A62497	C0175		2 AD	49.95	0.41	R	2.03		5.5	24.2	59.3	11.0	0.5	6.98	02/83 BR
PC4	A62498	C0176		2 AD	50.90	0.95	R	1.81		8.5	29.2	45.4	16.9	0.6	11.14	02/83 BR
PC4	A62499	C0177		3 AD	51.55	0.65	R	2.46		3.1	17.3	78.4	2.2	0.1	1.58	02/83 BR
PC4	A62500	C0178		3 AD	51.96	0.41	R									02/83 BR
PLY SAMPLE C0178 NOT RETESTED																

*** END OF REPORT T052-09 ***

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558067

REPORT TCS6-13

THIERS COAL SYSTEM

PAGE 1 RUN AT 11:33:57 20/ 6/83

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

ATP EL2080
LAUNCESTON

TRUMENT 2080

SEAM	SAMPLE	TY	BASE	THICK	SI	FRACTION	ASH FUSION (DEG C OXI)	ASH FUSION (DEG C RED)	MOISTURE	TEST
MS	LAB FIELD	PE	DEPTH	NESS	ZE		INIT. SPHER HEHI	INIT SPHER HEHI	HOLDING TOTAL	HGI
	DRILLHOLE						DEF. -ICAL SPHERE FLOW	DEF. -ICAL SPHERE FLOW	CAPACITY	MOIST
	C0067									
	A62476	C0154	3	31.31	0.42	R				06/82 BR
	A62477	C0155	3	32.07	0.59	R				06/82 BR
	A62478	C0156	3	35.07	0.26	R				06/82 BR
	A62479	C0157	3	35.61	0.54	R			38.6	06/82 BR
	A62497	C0135	3	5.54	0.50	R			53.50	06/82 BR
	A62498	C0136	3	5.95	0.41	R			39.3	06/82 BR
	A62459	C0137	3	6.25	0.10	R			30.3	06/82 BR
	A62460	C0138	3	6.62	0.37	R			37.2	06/82 BR
PA0	A62461	C0139	2	7.40	0.78	R			48.2	06/82 BR
PA0	A62462	C0140	2	8.35	0.93	R			48.1	06/82 BR
	A62463	C0141	3	9.19	0.84	R			39.1	06/82 BR
	A62464	C0142	3	23.23	0.78	R			42.2	06/82 BR
	A62465	C0143	3	23.94	0.71	R			21.9	06/82 BR
PB3	A62466	C0144	2	25.48	1.34	R			48.4	06/82 BR
PB3	A62467	C0145	2	26.37	0.89	R			47.8	06/82 BR
PB4	A62468	C0146	2	26.69	0.32	R			40.9	06/82 BR
PB4	A62469	C0147	2	27.17	0.48	R			31.6	06/82 BR
PB4	A62470	C0148	2	27.70	0.53	R			41.5	06/82 BR
PB4	A62471	C0149	2	28.47	0.77	R			44.1	06/82 BR
PB4	A62472	C0150	2	29.45	0.98	R			50.0	06/82 BR
	A62473	C0151	2	29.73	0.28	R			39.7	06/82 BR
	A62474	C0152	2	30.57	0.84	R			38.3	06/82 BR

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LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

ATP EL2080
LAUNCESTON

TEHEMENT 2080-

SEAM	-----SAMPLE-----		TY	BASE DEPTH	THICK-NESS	SI FRACTION ZE	ASH FUSION (DEG C OXI)			ASH FUSION (DEG C RED)			MOISTURE		TEST DATE LAB
	WS	LAB. FIELD					INIT SPHER DEF.	HEMI SPHERE	HEMI FLOW	INIT SPHER DEF.	HEMI SPHERE	HEMI FLOW	HOLDING CAPACITY	TOTAL HOIST	
	DRILLHOLE C0067														

	A62475	C0153	3	30.89	0.32	R							33.8	06/82	BR
	A62480	C0158	3	36.45	0.84	R							27.8	06/82	BR
	A62481	C0159	3	37.12	0.67	R							34.4	06/82	BR
	A62483	C0161	3	38.05	0.50	R							37.5	06/82	BR
PC2	A62484	C0162	2	39.23	1.18	R							45.9	06/82	BR
PC2	A62485	C0163	2	40.10	0.87	R							47.4	06/82	BR
	A62486	C0164	2	40.58	0.48	R							40.1	06/82	BR
	A62487	C0165	2	41.10	0.52	R							42.8	06/82	BR
	A62488	C0166	3	42.99	1.89	R							29.5	06/82	BR
	A62490	C0168	2	44.33	0.76	R							42.0	06/82	BR
PC3	A62491	C0169	2	45.52	1.19	R							44.2	06/82	BR
PC3	A62492	C0170	2	46.46	0.94	R							44.7	06/82	BR
PC3	A62493	C0171	2	47.02	0.46	R							43.6	06/82	BR
PC3	A62494	C0172	2	47.90	0.88	R							46.1	06/82	BR
PC3	A62495	C0173	2	48.60	0.70	R							39.2	06/82	BR
	A62496	C0174	3	49.54	0.94	R							38.9	06/82	BR
	A62497	C0175	2	49.95	0.41	R							36.6	06/82	BR
PC4	A62498	C0176	2	50.90	0.95	R							42.4	06/82	BR
PC4	A62499	C0177	3	51.55	0.65	R							32.3	06/82	BR
PC4	A62500	C0178	3	51.96	0.41	R							35.5	06/82	BR

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558069

REPORT TCS6-13

THIERS COAL SYSTEM

PAGE 3

RUN AT 11134134 20/ 6/83

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

ATP EL2080
LAUNCESTON

TEHEMENT 2080

*** E N D O F R E P O R T T C S 6 - 1 3 ***

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LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TERMENT 2080

SEAM	SAMPLE	TY R	BASE THICK	SIZE FRACTION	PROXIMATES	Z BY WEIGHT FUEL	S.E.	TOTAL TEST	TEST						
WS	LAB FIELD	PE #	DEPTH -NESS	RAW WT.	RD	YIELD	IN	VM	ASH	FC	RATIO	CSR	MJ/KG	SULPHUR	DATE LAB
DRILLHOLE C0071 *****															
	A62503 C0181	2 AD	14.06	0.65	R	2.22	3.5	19.6	59.2	7.7	0.4		4.56		02/83 BR
PLY SAMPLES C0179, C0180 NOT RETESTED															
PB2	A62504 C0182	2 AD	15.44	1.38	R	1.74	7.2	31.9	41.6	19.3	0.6		12.66		02/83 BR
	A62505 C0183	2 AD	16.52	1.08	R	2.35	3.2	15.2	77.6	4.0	0.3		1.34		02/83 BR
PB3	A62506 C0184	3 AD	17.13	0.47	R										02/83 BR
PLY SAMPLE C0184 NOT RETESTED INTERVAL FROM 16.52 TO 16.66 NOT ANALYSED.															
PB3	A62507 C0186	2 AD	17.71	0.58	R	2.00	4.4	23.7	60.6	11.3	0.5		7.62		02/83 BR
PB3	A62508 C0187	2 AD	18.38	0.67	R	1.74	6.4	31.4	41.9	20.3	0.6		13.00		02/83 BR
PB3	A62509 C0188	2 AD	18.87	0.49	R	1.89	5.3	26.8	53.4	14.5	0.5		10.04		02/83 BR
PLY SAMPLE C0189 MISSING.															
PB3	A62511 C0190	2 AD	20.76	0.79	R	1.89	5.2	26.6	53.3	14.9	0.6		9.84		02/83 BR
	A62512 C0191	2 AD	21.56	0.80	R	1.93	5.0	25.0	56.7	13.3	0.5		9.04		02/83 BR
PB4	A62513 C0192	2 AD	22.14	0.58	R	1.68	11.2	30.6	59.1	20.1	0.7		13.02		02/83 BR
PB4	A62514 C0193	2 AD	23.38	1.24	R	1.68	11.6	30.4	36.9	21.1	0.7		13.16		02/83 BR
PB4	A62515 C0194	2 AD	24.03	0.65	R	1.64	12.0	31.9	33.8	22.3	0.7		14.20		02/83 BR
CORE LOSS FROM 24.03 TO 24.14															
COMPOSITE OF C0192 -94															
PB4	A64250	1 AD	24.03	2.47	R	1.69	10.0	32.2	36.1	21.7	0.7		14.10	0.13	08/82 BR
	A62516 C0195	2 AD	24.91	0.77	R	2.05	6.9	19.9	63.9	9.3	0.5		6.14		02/83 BR
	A62517 C0196	3 AD	25.56	0.65	R										02/83 BR
	A62518 C0197	3 AD	26.88	1.32	R										02/83 BR
PLY SAMPLES C0196, C0197 NOT RETESTED. ROTARY CHIP FROM 26.38 TO 37.09															
	A62519 C0198	3 AD	37.86	0.77	R	2.31	4.0	15.8	75.0	4.7	0.3		3.26		02/83 BR
PC2	A62520 C0199	2 AD	38.29	0.43	R	1.81	8.0	30.6	44.2	17.2	0.6		11.74		02/83 BR

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LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TEHEMENT 2080

069

SEAM	WS	LAB	FIELD	TY R PE R	BASE THICK DEPTH -NESS	SIZE FRACTION -- + RAW WT	RD	YIELD	PROXIMATES % IM VM	BY WEIGHT ASH	FUEL FC	RATIO CSN	S.E. KJ/KG	TOTAL SULPHUR	TEST DATE	LAB
DRILLHOLE C0071 *****																
PC2	A62521	C0200		2 AD	38.55	0.26	R	2.06	5.0	21.9	62.9	10.2	0.5	7.28		02/83 BR
PC2	A62522	C0201		2 AD	39.65	1.10	R	1.70	10.9	30.4	38.2	20.5	0.7	12.78		02/83 BR
COMPOSITE OF C0199 -99 C0201 -01																
PC2	A64251			1 AD	39.65	1.79	R	1.80	8.5	29.1	44.1	18.3	0.6	11.42	0.13	08/82 BR
	A62523	C0202		2 AD	40.12	0.47	R	1.99	5.3	23.7	58.0	13.0	0.5	8.16		02/83 BR
PLY SAMPLES C0203, C0204 NOT ANALYSED.																
	A62526	C0205		2 AD	42.95	0.59	R	1.89	5.9	28.0	50.7	15.4	0.6	10.30		02/83 BR
CORE LOSS FROM 42.95 TO 43.00																
PC3	A62527	C0206		2 AD	44.05	1.05	R	1.72	11.0	28.1	41.9	19.0	0.7	11.66		02/83 BR
	A62528	C0207		2 AD	44.78	0.73	R	1.91	9.0	23.0	57.3	10.7	0.5	7.66		02/83 BR
PLY SAMPLE C0208 MISSING.																
	A62530	C0209		2 AD	46.63	0.59	R	1.88	6.7	25.5	52.6	15.0	0.6	9.30		02/83 BR
PC4	A62531	C0210		2 AD	47.80	1.17	R	1.77	10.4	27.6	44.0	18.0	0.7	10.94		02/83 BR
	A62532	C0211		3 AD	48.73	0.93	R	2.41	2.5	14.9	78.5	4.3	0.3	2.26		02/83 BR

*** END OF REPORT TC52-09 ***

558072

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

GTP EL2080
LAUNCESTON

TEREHEM 2080

SEAM	-----SAMPLE-----	TY	BASE	THICK	SI	FRACTION	ASH FUSION (DEG C OXI)	ASH FUSION (DEG C RED)	MOISTURE	TEST
WS	LAB FIELD	PE	DEPTH	-NESS	ZE		(INIT SPHER HEHI	(INIT SPHER HEHI	HOLDING TOTAL	DATE LAB
							DEF. -ICAL SPHERE FLOW	DEF. -ICAL SPHERE FLOW	CAPACITY MOIST	HGI
	DRILLHOLE C0071									

	A62503 C0181	2	14.06	0.63		R			35.90	06/82 BR
PB2	A62504 C0182	2	15.44	1.38		R			45.50	06/82 BR
	A62505 C0183	2	16.52	1.08		R			31.50	06/82 BR
PB3	A62506 C0184	3	17.13	0.47		R			37.80	06/82 BR
PB3	A62507 C0186	2	17.71	0.58		R			38.10	06/82 BR
PB3	A62508 C0187	2	18.38	0.67		R			43.00	06/82 BR
PB3	A62509 C0188	2	18.87	0.49		R			39.50	06/82 BR
PB3	A62511 C0190	2	20.76	0.79		R			39.60	06/82 BR
	A62512 C0191	2	21.56	0.80		R			36.60	06/82 BR
PB4	A62513 C0192	2	22.14	0.58		R			41.20	06/82 BR
PB4	A62514 C0193	2	23.38	1.24		R			44.70	06/82 BR
PB4	A62515 C0194	2	24.03	0.65		R			45.30	06/82 BR
	A62516 C0195	2	24.91	0.77		R			36.00	06/82 BR
	A62517 C0196	3	25.56	0.65		R			39.20	06/82 BR
	A62518 C0197	3	26.88	1.32		R			32.10	06/82 BR
PC2	A62520 C0199	2	38.29	0.43		R			40.90	06/82 BR
PC2	A62521 C0200	2	38.55	0.26		R			34.70	06/82 BR
PC2	A62522 C0201	2	39.65	1.10		R			43.80	06/82 BR
	A62523 C0202	2	40.12	0.47		R			37.50	06/82 BR
	A62526 C0205	2	42.95	0.59		R			39.80	06/82 BR
PC3	A62527 C0206	2	44.05	1.05		R			41.80	06/82 BR
	A62528 C0207	2	44.78	0.73		R			35.00	06/82 BR

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258073

LAUNCESTON.

COAL ANALYSIS TEST NO. 3 BY HOLE

ATP EL2080
LAUNCESTON

TENEMENT 2080

SEAM	---SAMPLE---		TY	BASE	THICK	SI	FRACTION	ASH FUSION (DEG C OXID)			ASH FUSION (DEG C RED)			MOISTURE		TEST						
	WS	LAB						FIELD	PE	DEPTH	-NESS	ZE	INIT SPHER	HEMI	DEF. -ICAL		SPHERE	FLOW	INIT SPHER	HEMI	DEF. -ICAL	SPHERE
DRILLHOLE C0071 *****																						
	A62530	C0209	2	46.63	0.59		R												39.60		06/82	BR
PC4	A62531	C0210	2	47.80	1.17		R												40.30		06/82	BR

*** END OF REPORT TC56-13 ***

558074

LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP FL2080
LAUNCESTON

TEREKENT 2080

SEAM	WS	SAMPLE LAB FIELD	TY R PE B	BASE THICK DEPTH -NESS	SIZE FRACTION -- RAW WT	RD	YIELD	PROXIMATE TM VM	% BY WEIGHT ASH FC	FUEL RATIO CSR	S.E. MJ/KG	TOTAL SULPHUR	TEST DATE LAB
DRILLHOLE C0075 *****													
		A63829 C0269	3 AD	3.65 0.84	R	1.89		8.5 24.0	55.0 14.5	0.6	8.48		02/83 BR
SA1		A63830 C0270	2 AD	4.47 0.82	R	2.30		9.7 14.2	77.1 4.0	0.3	2.64		02/83 BR
SA1		A63831 C0271	2 AD	5.39 0.92	R	1.76		9.5 28.0	43.4 19.1	0.7	11.26		02/83 BR
SA1		A63832 C0272	2 AD	6.81 1.42	R	1.54		13.6 35.1	22.1 29.2	0.8	16.60		02/83 BR
		A63833 C0273	3 AD	7.05 0.24	R	2.09		6.4 19.9	65.0 8.7	0.4	5.56		02/83 BR
SA2		A63834 C0275	2 AD	9.82 1.41	R	1.75		10.4 28.4	43.6 17.6	0.6	11.24		02/83 BR
SA2		A63835 C0276	2 AD	10.30 0.48	R	1.90		8.3 24.0	53.2 14.5	0.6	8.70		02/83 BR
SB1		A63836 C0278	3 AD	12.58 0.55	R	2.11		6.2 21.0	65.0 7.8	0.4	5.44		02/83 BR
		A63837 C0279	3 AD	13.65 1.07	R								02/83 BR
NO PROXIMATE ANALYSIS, HAS T.M. ANALYSIS. CORE LOSS FROM 13.65 TO 13.67													
SB2		A63838 C0280	3 AD	14.19 0.52	R	2.19		4.9 19.1	69.7 6.3	0.3	4.44		02/83 BR
SB2		A63839 C0281	3 AD	15.82 1.63	R	1.98		7.0 23.8	57.8 11.4	0.5	7.58		02/83 BR
		A63840 C0282	3 AD	16.39 0.57	R	2.19		5.0 19.8	69.2 6.0	0.3	4.36		02/83 BR
		A63841 C0283	3 AD	16.73 0.34	R	2.15		5.0 20.5	67.1 7.6	0.4	5.22		02/83 BR
SB3		A63842 C0284	2 AD	18.28 1.55	R	1.71		11.7 29.3	40.2 18.8	0.6	11.54		02/83 BR
SB3		A63843 C0285	2 AD	18.80 0.52	R	1.83		10.0 25.7	48.4 15.9	0.6	8.48		02/83 BR
		A63844 C0286	3 AD	19.16 0.36	R	2.27		5.0 16.0	75.1 3.9	0.2	3.16		02/83 BR
SB4		A63845 C0287	3 AD	19.66 0.50	R	1.84		8.9 26.3	49.1 15.7	0.6	9.96		02/83 BR
SB4		A63846 C0288	3 AD	20.68 1.02	R	1.87		9.0 24.3	52.2 14.3	0.6	8.78		02/83 BR
		A63847 C0289	3 AD	21.13 0.45	R	2.06		7.3 18.4	65.1 9.2	0.5	5.52		02/83 BR
PLY SAMPLE C0290 NOT RETESTED.													

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REPORT TC52-09

THIERS COAL SYSTEM

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LAUNCESTON.

COAL ANALYSIS TEST NO. 1 BY HOLE

ATP EL2080
LAUNCESTON

TENEMENT 2080

*** END OF REPORT TC52-09 ***

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REPORT TC58-13.

THIENS COAL SYSTEM

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COAL ANALYSIS TEST NO. 3 BY HOLE

ATP FL2080
LAUNCESTON

TENEHENT 2080

SEAM	-----SAMPLE-----	TY	BASE THICK SI	FRACTION	ASH FUSION (DEG C OXI)	ASH FUSION (DEG C RED)	MOISTURE						
MS	LAB FIELD	PE	DEPTH	-HESS ZE	INIT SPHER HEKI	INIT SPHER HEKI	HOLDING TOTAL						TEST
					DEF. -ICAL SPHERE FLOW	DEF. -ICAL SPHERE FLOW	CAPACITY	MOIST	HGI	DATE	LAB		
	DRILLHOLE C0075												

	A63829 C0269	3	3.65	0.84	R			42.70		07/82	BR		
SA1	A63830 C0270	2	4.47	0.82	R			24.00		07/82	BR		
SA1	A63831 C0271	2	5.39	0.92	R			44.50		07/82	BR		
SA1	A63832 C0272	2	6.81	1.42	R			52.60		07/82	BR		
	A63833 C0273	3	7.05	0.24	R			36.20		07/82	BR		
SA2	A63834 C0275	2	9.82	1.41	R			45.20		07/82	BR		
SA2	A63835 C0276	2	10.30	0.48	R			40.90		07/82	BR		
SB1	A63836 C0278	3	12.58	0.55	R			27.40		07/82	BR		
	A63837 C0279	3	13.65	1.02	R			26.50		07/82	BR		
SB2	A63838 C0280	3	14.19	0.52	R			33.20		07/82	BR		
SB2	A63839 C0281	3	15.82	1.63	R			36.10		07/82	BR		
	A63840 C0282	3	16.39	0.57	R			33.40		07/82	BR		
	A63841 C0283	3	16.73	0.34	R			33.70		07/82	BR		
SB3	A63842 C0284	2	18.28	1.55	R			46.00		07/82	BR		
SB3	A63843 C0285	2	18.80	0.52	R			43.80		07/82	BR		
	A63844 C0286	3	19.16	0.36	R			30.70		07/82	BR		
SB4	A63845 C0287	3	19.66	0.50	R			43.30		07/82	BR		
SB4	A63846 C0288	3	20.68	1.02	R			41.40		07/82	BR		
	A63847 C0289	3	21.13	0.45	R			35.80		07/82	BR		

ATA

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REPORT T056-13

LAUNCESTON.

CHARTERED COAL 875-20

COAL ANALYSIS TEST NO. 3 BY HOLE

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ROSEVALE COALFIELD - TASMANIA
LOATTA, PIPERS LAGOON & SELBOURNE
BROWN COAL DEPOSITS

(Exploration Licence 20/80 Launceston)

OPEN FILE

PRELIMINARY MINING STUDY

MICROFILMED

EXPLORATION & EVALUATION GROUP
CSR COAL DIVISION

MARCH, 1983

CONTENTS

077

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1.

SUMMARY

The Rosevale Coalfield is centred approximately 25 km west of Launceston in the area held by CSR under Exploration Licence 20/80 (Figure 1-1). Three separate deposits (Loatta, Pipers Lagoons and Selbourne) and a number of promising prospects have been found in an exploration programme that has included evaluation of gravity survey data, water bore drilling records as well as drilling programmes by CSR to test specific areas of interest. A total of 106 rotary holes and 16 cored holes have been drilled to date by CSR.

The deposits lie close to the surface in fresh water sediments of Tertiary age. Weathered Tertiary basalts overlies sections of the Loatta and Selbourne deposits.

Coal occurs in four major horizons of which the three highest, comprising up to nine seams, have been used in the calculation of reserves and are considered potentially mineable. Seams range from 1.5m to 9m thick at depths from 4m to 74m. Most coal is covered by less than 60m of overburden and a significant amount by less than 30m of cover. The coal seams are almost flat lying or dip gently at less than 2 degrees, increasing to 5 degrees near the deposit margins.

This study indicates that the most suitable coal supply arrangement is to mine the Loatta deposit and if additional coal is required, to transfer operations to the Pipers Lagoon deposit. However, it is considered that sufficient reserves exist in the Loatta deposit for the 30 years life of a 240 MW power station.

081

The mining method is by Bucketwheel Excavators, loading via bandwagons when necessary, to conveyors which will transport the coal to the power station and the overburden to the overburden dump. As there is not a great depth of overburden in this mine, each Bucket Wheel Excavator will mine coal, overburden and partings material. The required outputs and low strip ratios in the first two years make it possible to supply the total mine requirements with one BWE. As the output requirements get too high for one BWE a second BWE will be introduced together with a second face conveyor and trunk conveyor. The two BWEs could load overburden through the tripper stacker simultaneously, but could only supply coal individually, as each machine will have the capability to exceed power station requirements. The overburden dump will be initially located external to the pit and will later be relocated back into the pit to fill the mined sections.

This type of mining operation would allow selective mining of coal over full seam intervals and thereby achieve maximum economic coal recovery and greatest quality control.

A conceptual power station size of 240 MW (2 x 120 MW) was initially selected for this study as being suitable for the Tasmanian grid. Coal requirements were estimated for such a power station to total 53 million tonnes over a project life of 30 years and peak at 2.33 million tonnes/annum. Although a 2 x 120 MW station size was chosen for the initial study it was found that a 4 x 80 MW burning schedule resulted in a better utilization of available bucket wheel and conveying

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equipment. The results of this study variation are indicated at the end of this report. The reserves requirements for four 80 MW units would be approximately 72 million tonnes over a 30 year period, which would exhaust the Loatta Deposit by Year 24. Mining would then transfer to the Piper's Lagoon deposit.

Location of a power station would be dependent upon a detailed siting study. However, assuming satisfactory resolution of the various site and environmental considerations, a mine site station would be the most economic. Water supply, power station ash and stack emissions would be major considerations.

Manning, construction and operational phases of the project would require a significant number of skilled people. The total construction workforce is estimated to peak at 700 (110 for the mine). The operational manning would be constant at 335 over the project life, (171 for mine).

Water supply would be dependent upon the final siting of the power station and if the mine site is chosen, would require 4,000 - 5,000 ML/a. In this case, potable quality water drawn from an existing or new supply would be required.

Heat exchange with salt water?

A high voltage power supply for normal construction purposes would be required by both the mine and the power station while the operating mine would require a 22 kV supply. This could be drawn from the power station itself or if suitable, from the existing high voltage transmission system. Some upgrading and relocation of roads will be required in the area.

083

While the permanent operational labour force would be accommodated within existing cities and towns in the area, it is likely that some good quality temporary accommodation such as a construction camp or caravan park would be required during construction.

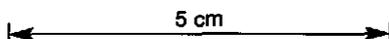
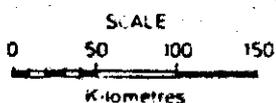
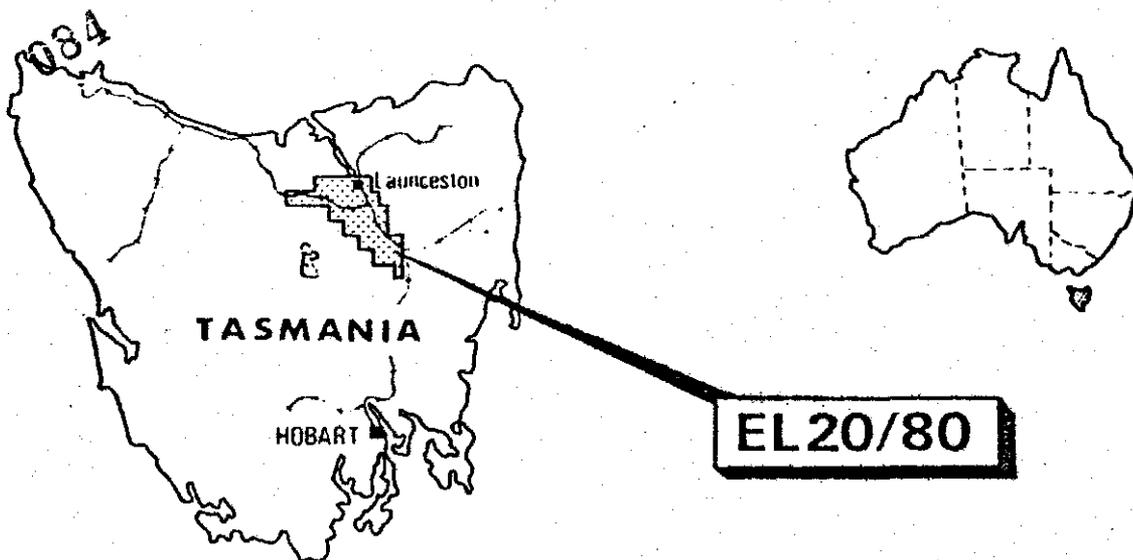
There do not appear to be any environmental considerations that would prevent a mine and power station development in the area. The coal has a very low sulphur level, indicating that sulphur dioxide emissions would not be significant.

The coal price required to achieve a 19% DCF ROR over 20 years in January, 1983, dollars is:

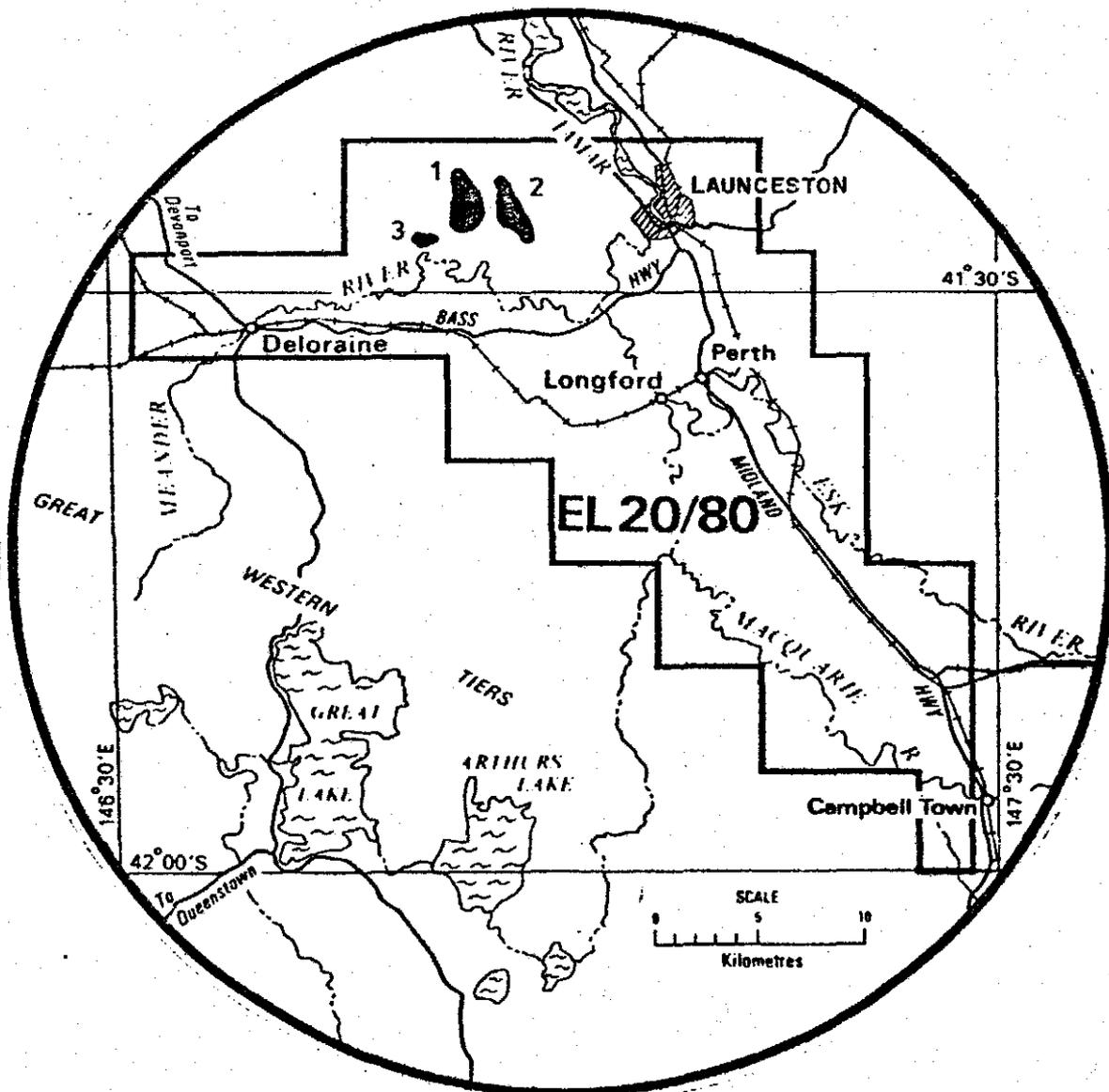
240 MW Case	\$10.40/t
320 MW Case	\$8.75/t

These prices allow for 20% contingencies on both capital and operating costs.

Initial capital required up to Year 3 is \$71.9 million for the 240 MW case.



- 1 Loatta Deposit
- 2 Pipers Lagoons Deposit
- 3 Selbourne Deposit



EL 20/80 LAUNCESTON TASMANIA
COAL RESOURCES

085

2. STUDY BACKGROUND AND OBJECTIVES

2.1 Study Background

This study follows exploratory drilling in the EL20/80 Launceston in 1981 and 1982 which delineated three brown coal deposits and one brown coal prospect in the Rosevale, Westwood and Selbourne areas. Exploration Licence 20/80 - Launceston is held by A.A.R. Limited, a subsidiary of CSR Limited. Exploration to date has delineated 118 million tonnes (in-situ) of indicated Class I and Class II brown coal reserves.

This report details a mine plan for the Loatta Deposit in the Rosevale Prospect. The mine plan presented is conceptual, in line with the limited geological and quality information available. It has been assumed that the lignite would be used to supply a nearby thermal power station operated by the H.E.C.

This study has been developed by the Exploration and Evaluation Group, Coal Division, CSR Limited and includes manning, equipment types and numbers, production schedules and costs.

Exploration history and detailed bore logs have been summarised in the quarterly report to the Tasmanian Mines Department for the six month period ending 22 August, 1982 and are not repeated in this report.

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2.2 Study Objectives

The objectives of this study are:

- . To establish a conceptual mine plan for the supply of coal to a 240 MW power station at Rosevale.
- . To delineate the costs and manpower requirements associated with the mine development.

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3. MINING STUDY INPUT PARAMETERS

3.1 Location and Physiography

The Loatta, Pipers Lagoons and Selbourne brown coal deposits, known collectively as the Rosevale coal deposits are situated 15km West of Launceston and approximately 10km north and northeast of Westbury. Towns within a 50km radius of the Rosevale coal deposits include Devonport, Deloraine, Beaconsfield and Longford. Sealed roads connect most towns and villages in the area. The Rosevale brown coal deposits are located up to 6km north of the Meander River. The Meander River flows along the southern boundary of the Selbourne Deposit. (Figure 1.1)

The climate of the area is temperate. The average annual rainfall ranges from approximately 600 to 1,000mm and generally falls during the winter months.

The Rosevale Deposits are situated in a valley surrounded by older basement rocks. The topography of the area is flat to undulating. The major land use of the area is farming, predominantly sheep and cattle grazing, with some intense cultivation of peas, beans, opium poppy and cereal crops.

3.2 Basis for Study

The basis of the mining study has been on the assumption that a 240MW Power Station will be constructed on site.

Coal requirements for the 2 x 120 MW Power station development have been determined on the following basis:

088

- | | | |
|-------|--|------------|
| (i) | Economical power station life: | 30 years. |
| (ii) | Peak ACF For Guaranteed Annual Mine Capability: | 75% |
| (iii) | Average ACF for 8 to 10 year period after commissioning: | 70% |
| (iv) | Turbine Heat Rate at maximum continuous rating of 250 MW | 7.9 GJ/MWh |
| (v) | Average annual station heat rate factor to allow for poorer performance at outputs less than 120 MW: | 1.05 |
| (vi) | Relative annual coal consumptions are set out in Section 7. | |

These factors have been integrated with the Geological and Geotechnical factors to develop the mine plan.

3.3 Structural Geology and Stratigraphy

The Rosevale coal deposits occur in the north of the Tertiary Launceston Basin. No formal stratigraphic nomenclature exists for the Launceston Basin and a basin wide correlation of brown coal horizons has not been established.

The Tertiary sediments of the Launceston Basin are predominately clays, sand and silt, with carbonaceous clay, ligneous clay and brown coal.

089

Drillhole information is scant, with information available from 27 holes within the mining areas. Of these eleven holes have been cored and chemically analysed. All holes have been geophysically logged. Seventy nine additional holes have been drilled in the licence area.

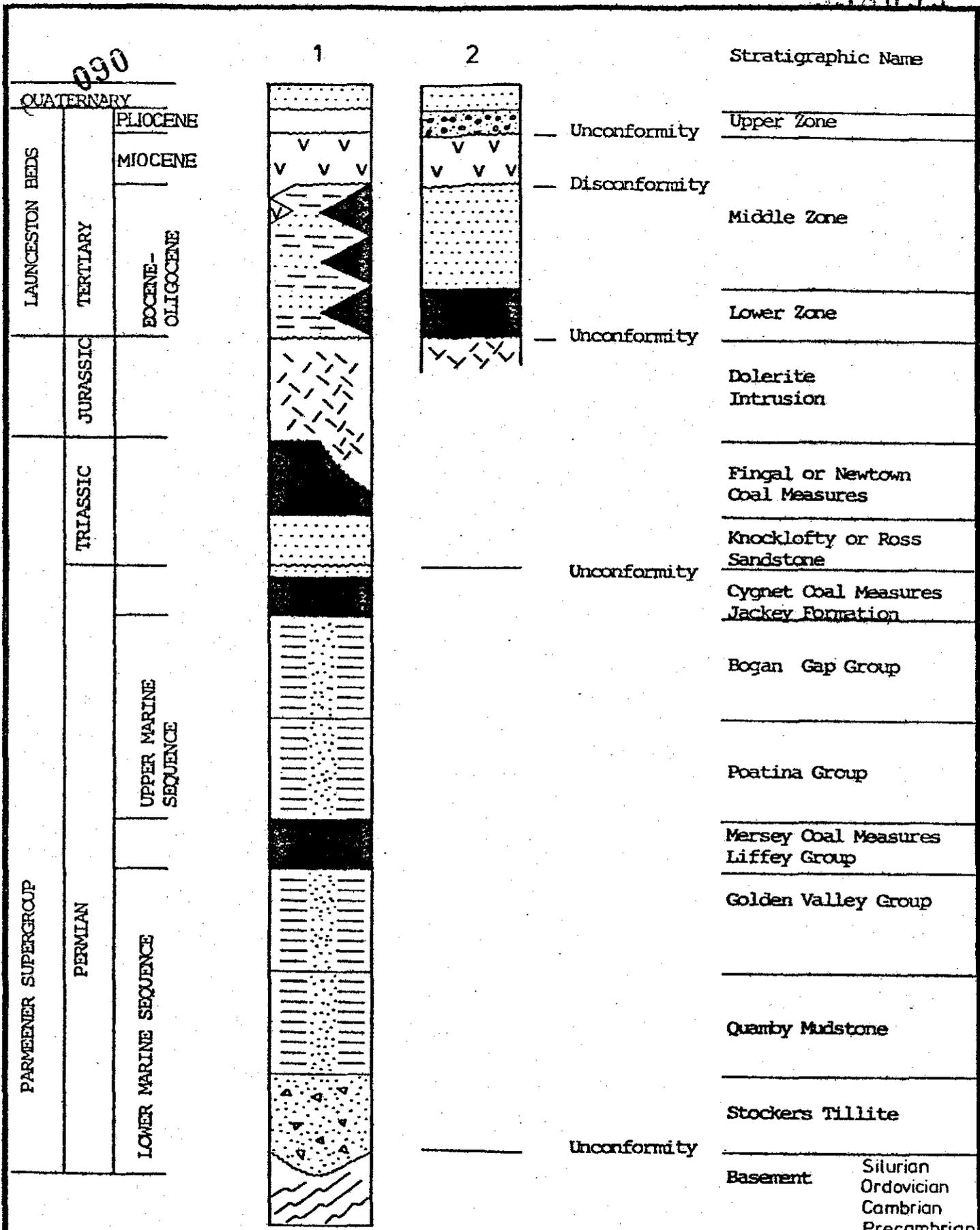
Up to four major brown coal horizons, referred to as A, B, C and D, comprising up to twelve individual coal seams have been intersected. The typical stratigraphy of the deposit is shown in Figure 3.1.

Typical Cross sections are shown in Figures 3.2 to 3.5.

The coal seams are generally flat lying and range in thickness from 1.5 metres to 8.5 metres and occur at depths ranging from 4 to 75 metres.

Cumulative seam thickness in the Loatta deposit ranges from 1.5m to 15.0m and averages 7.8m. (Figure 4.1.)

The seam correlations and reserve calculations used in this study require further drilling on a closer spacing to confirm that the assumptions are correct. The concepts developed and conclusions drawn from this study may be substantially altered by subsequent drilling.



090

QUATERNARY	
LAUNCESTON BEDS	PLIOCENE
	MIOCENE
TERTIARY	EOCENE-OLIGOCENE
JURASSIC	
TRIASSIC	
PERMIAN	UPPER MARINE SEQUENCE
	LOWER MARINE SEQUENCE
PARMEENER SUPERGROUP	

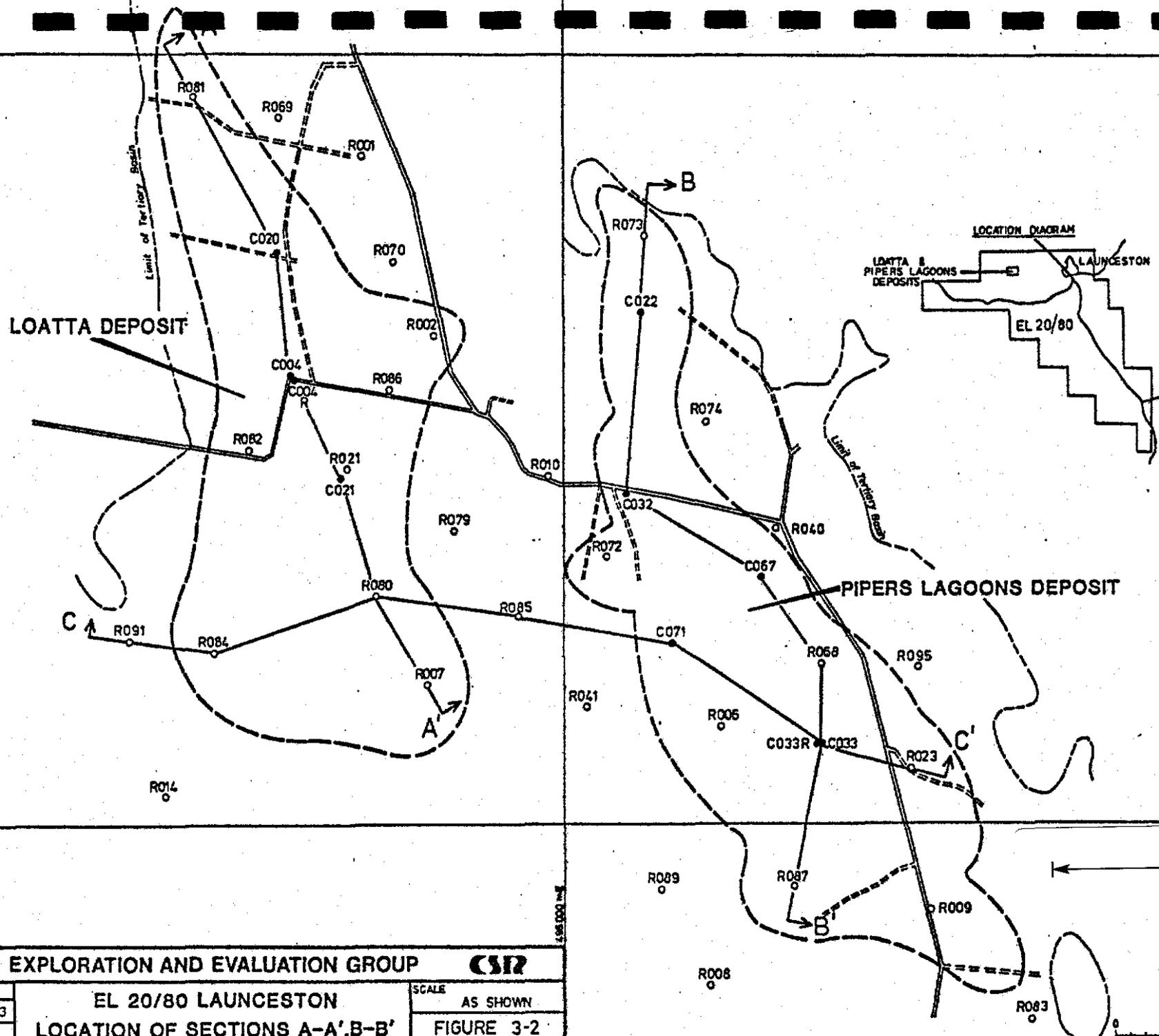
Note: Column 2 after Johnson 1873 only applies to Stratigraphy of Launceston Area

Compiled from information contained in Mathews (1974).

STRATIGRAPHY OF THE PARMEENER SUPERGROUP AND LAUNCESTON BASIN IN EL 20/80.

5 415 000 m.N

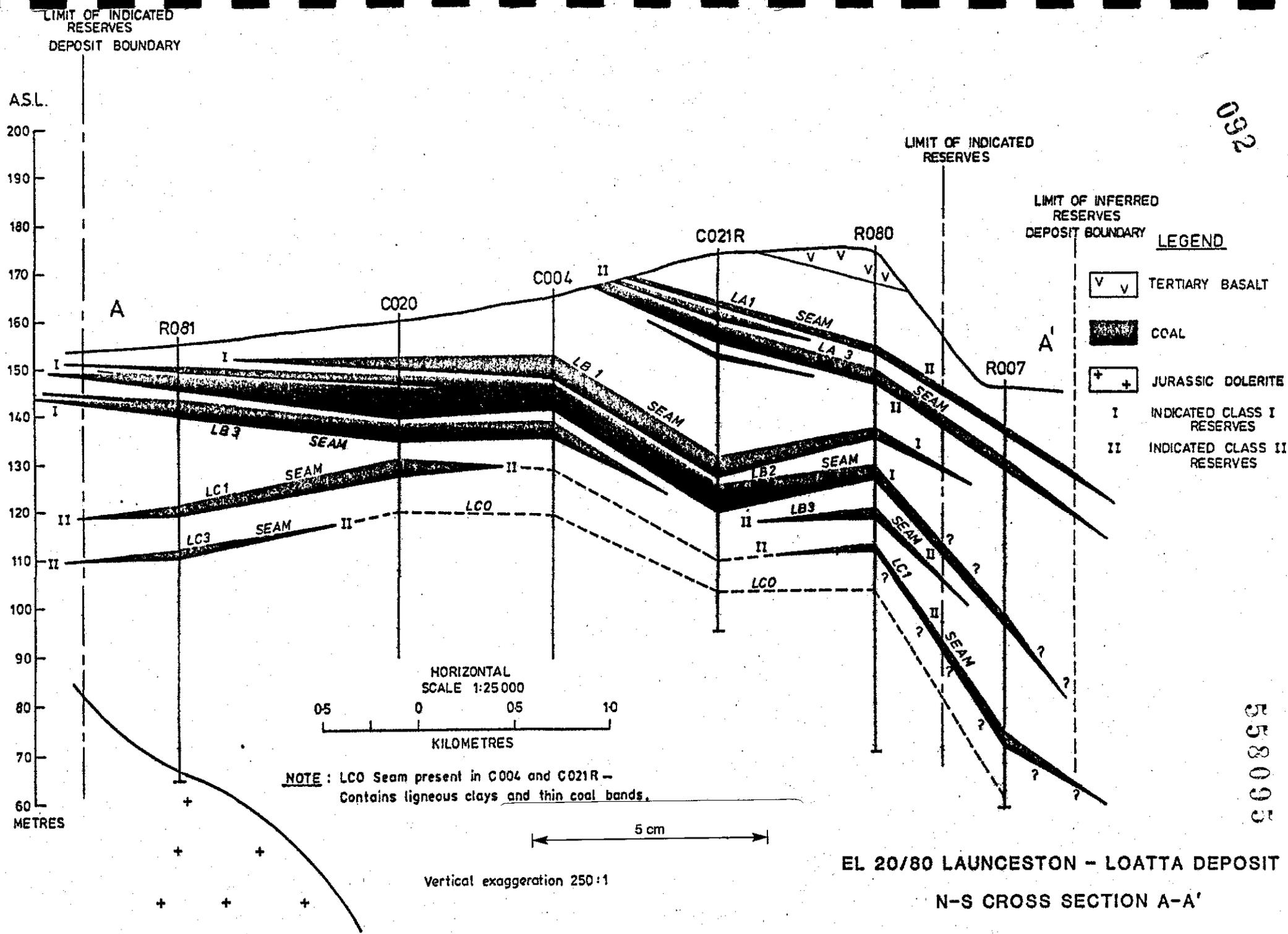
5 410 000 m.N



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING	DATE	EL 20/80 LAUNCESTON		SCALE	AS SHOWN
DRAWN	C.J.	LOCATION OF SECTIONS A-A', B-B'		FIGURE 3-2	
CHECKED	Feb. '33	AND C-C'		DRAWING No.	
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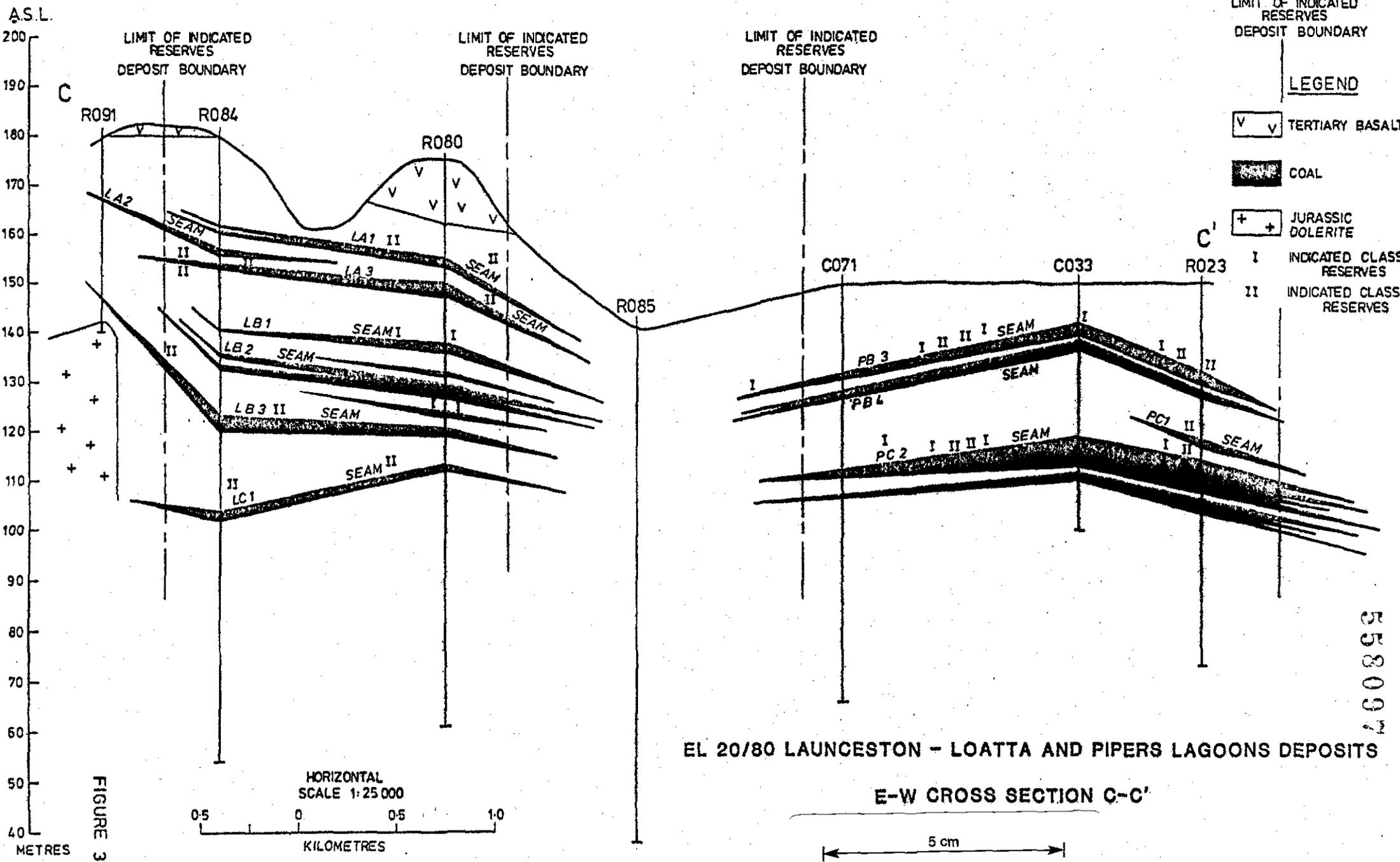


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EL 20/80 LAUNCESTON - LOATTA DEPOSIT
N-S CROSS SECTION A-A'

FIGURE 3-3

094



LIMIT OF INDICATED RESERVES DEPOSIT BOUNDARY

LEGEND

v TERTIARY BASALT

COAL

+ JURASSIC DOLOERITE

I INDICATED CLASS RESERVES

II INDICATED CLASS RESERVES

FIGURE 3-5

EL 20/80 LAUNCESTON - LOATTA AND PIPERS LAGOONS DEPOSITS

E-W CROSS SECTION C-C'

528007

Vertical exaggeration 250:1

095

3.4 Geotechnical Factors

Ground Conditions

Lignitic horizons occur between depths of 4 and 75m with the overburden dominated by ferruginous to mottled clays and sandy/silty clay. Interburden sediments in turn are dominated by ligneous clay with minor inferior lignite. The three deposits designated to date (Selbourne, Loatta, Pipers Lagoon) appear to be separated by elongate areas of sand rich interburden with much reduced lignite. The sands may represent fluvial sediments associated with coal deposition, and hence may interfinger and lens out in the vicinity of the deposit boundaries.

Groundwater lies at or within 6m of the surface, commonly within 3m. Results of monitoring piezometers installed between October 1981 and April 1982 revealed artesian groundwater conditions at nine locations, seven of which are associated with sand rich (fluvial) interburden.

Thus, saturated overburden and interburden conditions can be expected with artesian groundwater pressures associated with porous, sand rich beds which may penetrate but lens out at proposed mine limits.

Stability Conditions

The high standing water levels and pressurised aquifers present a more severe stability condition than found in Tertiary lignite basins in South Australia but are comparable to deeper conditions found in the Latrobe Valley in Victoria. Here the pit configuration includes 15m high benches, 50m wide to a depth approaching 85m for an overall slope of 2.5 to 3.1 (18° to 22°). Individual batter angles are about 65° in lignite, 50° in overburden.

Using saturated strength parameters for an undrained slope as would be encountered in either of the three deposits, overall slope angle could vary between 35° to 15° for a 20m to 60m slope respectively at a design factor of safety of 1.2. The major geotechnical issues for stable slope design include:

- (i) determining representative effective strength parameters for clay rich strata
- (ii) delineating the location and extent of aquifers relative to initial pit slopes.
- (iii) measure groundwater pressures and pressure source, particularly artesian conditions.

Flood protection measures are likely to be required for mine development, and due to the near surface water table, roads, hardstand areas and building foundations will need to be elevated, hence a source of suitable fill needs to be located.

Groundwater flow

Apart from the influence pressurised aquifers may have on pit design, pit inflow rates need to be evaluated and schemes devised to control and dispose of collected drainage.

Mathews (1979) reports artesian pressures approaching 6m of head above ground surface. There is some speculation as to whether the artesian condition relates to recharge of confined aquifers outcropping elsewhere at higher elevations, or that primary consolidation of the sediment stack is still an active geological process.

Implications for mine design is for the former to represent a regional groundwater condition, for which a continuous pumping operation around the mine perimeter may be required to control flow rate and pressure. For the latter possibility, a more local groundwater condition is indicated, requiring dewatering schemes to control pressure, not flow volume.

Mathews (1979) describes a confined aquifer in Tertiary sediments which when pumped at 150 to 300 l/min resulted in a 30 to 50m drawdown. A similar pump rate would appear adequate for conceptual mine design.

Water quality data (Mathews, 1979) resulting from borehole measurement over a 30 month period indicates TDS varying between 890 and 1570 mg/l, Na varying 175 to 330 mg/l, Ca + Mg + K varying 130 to 220 mg/l. A study of water quality versus aquifer depth is required to determine disposal strategies.

Excavatability

Material descriptions found in issued reports to date suggest excavation by large scale stripping machines (BWE, DRW) is possible without the need for blasting.

However, the likely saturated condition of clay sediments may mean some materials handling problems, particularly with bucket and/or conveyor chute blockages should the moist clays be sticky.

Detailed analysis of batter slopes less than 20m high would need to be undertaken to ensure face angles exceeding 45° to 50° can be maintained for efficient bucketwheel operation. Analysis would also need to be undertaken to determine the safe slope angles on the overburden dump.

3.5 Mining Concept

The factors affecting the mining method are:

- . Depth of deposit. The shallow depth of much of the coal indicates that Bucket Wheel Excavators or Truck and Shovel may be the most economical means of removing overburden and winning coal.
- . The softness of the sediments lends itself to excavation with Bucket Wheel Excavators.

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. The reasonable seam thickness and the flat nature of the deposit allows large equipment to be used to mine the coal.

. There is significant groundwater in the area.

Considering the above factors an open cut mining method was chosen utilising Bucket Wheel Excavators for both overburden removal and coal mining.

The coal seams are separated by clay partings and it is envisaged that these will be removed during the mining of the coal. As most of the partings are ligneous clays and there is not a sharp boundary between coal and parting, but rather a gradational boundary, it has been decided that partings will be mined exclusively outside the coal seam.

The lack of knowledge of the deposit at this time has meant that assumptions have been made in the mining method and further work is required to determine the following:

- . the planar nature and lateral continuity of the coal seams
- . the economic cut-off boundary on the edge of the deposit
- . correlation of the coal seams
- . nature and engineering properties of the materials
- . excavatability of materials

- . pit floor conditions
- . groundwater control and disposal

3.6 Coal Quality & Dilution

The in situ quality determined from analysis of drill core samples is:

Total Moisture	47%	Dry Coal?
Ash	22%	10%
Volatile Matter	18%	20%
Fixed Carbon	13%	25%
Specific Energy	7.5 MJ/kg	18%
Sulphur	0.15%	10.0 MJ/kg
Chlorine		8.20
Sodium		

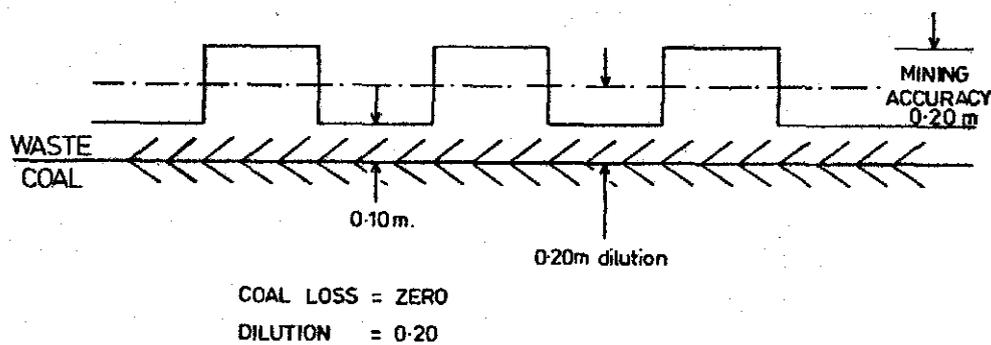
Ash fusion temperatures	Deformation	1290
(reducing atmosphere °)	Spherical	1600 +
	Hemisphere	1600 +
	Flow	1600 +

Cored holes CO04, CO20, CO21 were used to determine average coal quality for Loatta deposit, and the effect of dilution.

Table 3.1 shows the summarised results, and Tables A1, A2 and A3 show details of coal plies included in working sections.

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In determining the amount of diluting material tests on BWEs in the Gulf States in the USA have indicated that the unwanted vertical movement when excavating with a BWE is 0.2m. Therefore mining exclusively outside the seam leads to per seam boundary an average dilution of 0.2m per seam boundary and zero coal loss, as shown below:



Dilution with 0.2 metres of partings material from directly above and below each working section has been included in the mining schedule. It was assumed that there would be no coal loss to partings or overburden material. (However, coal around the margins of the deposit with a strip ratio greater than 7 : 1 was excluded from reserves).

If later studies indicate that it is more economic to mine to the coal/waste boundary this is possible, with a consequent reduction in dilution to 0.1m.

The effect of dilution is to reduce specific energy from 7.79 GJ/t to 7.10 GJ/t, increase tonnage by 14.0%, and to increase the overall heat content by 3.9%. The in situ ash content increases from 22.1% to 25.4%.

TABLE 3.1

Coal Quality and Dilution Analysis
Loatta Deposit

<u>Hole and Component</u>	<u>Thickness</u> (m)	<u>Specific</u> <u>Energy</u> MJ/kg	<u>Moisture</u> %	<u>Ash</u> %	<u>Volatile</u> <u>Matter</u> %	<u>Fixed</u> <u>Carbon</u> %	<u>Sulphur</u> %	<u>Relative</u> <u>Density</u>
4 Undiluted coal	14.96	7.6	46.1	23.0	18.5	12.4	0.15	1.33
Dilution		2.1	33.6	50.9	12.2	3.3	0.09	1.64
20 Undiluted Coal	17.52	7.7	46.4	22.9	18.5	12.2	0.13	1.33
Dilution		3.5	36.4	44.7	13.3	5.5	0.09	1.56
21 Undiluted Coal	12.58	8.2	48.1	19.9	18.9	13.1	0.14	1.30
Dilution		3.0	83.4	44.0	13.0	4.6	0.10	1.54
<u>Average all Holes *</u>								
Undiluted coal	15.02	7.8	46.8	22.1	18.2	12.5	0.14	1.32
Coal including 0.1m Dilution	16.09	7.4	46.0	24.0	18.2	11.8	0.14	1.34
Coal including 0.2m Dilution	17.15	7.1	45.3	25.4	17.8	11.5	0.13	1.36

* Weighted average assuming equal areas of influence

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4. MINING RESERVES ASSESSMENT

The computer program output shown in Table A4 was used to determine the bottom mining horizon at each borehole, with incremental and cumulative strip ratios at each seam horizon within each hole being used as a basis.

The following Table summarises the results:

Hole	Bottom Seam	Depth to Bottom	In Situ Coal Thickness
R081	LB3	15.2	7.8
CO20	LC1	32.5	17.5
CO04	LB3	29.7	14.96
RO02	LB1	33.0	3.7
RO86	LB2	39.1	10.5
RO82	LC4	76.8	14.3
CO21	LB2	50.57	12.6
RO80	LB3	56.0	11.4
RO84	LA3	27.1	3.3
RO07	LB3	52.6	8.7

These values, in conjunction with the 1.5m thickness limit boundary defining the outer edge of the deposit, were used to produce thickness contours in Figure 4.1.

The reduced level of the base of the bottom seam in each hole was then used to determine the approximate RL of the mining floor at the deposit boundaries. These were then subtracted from surface contours to produce the contours of the depth to the mining floor in Figure 4.2.

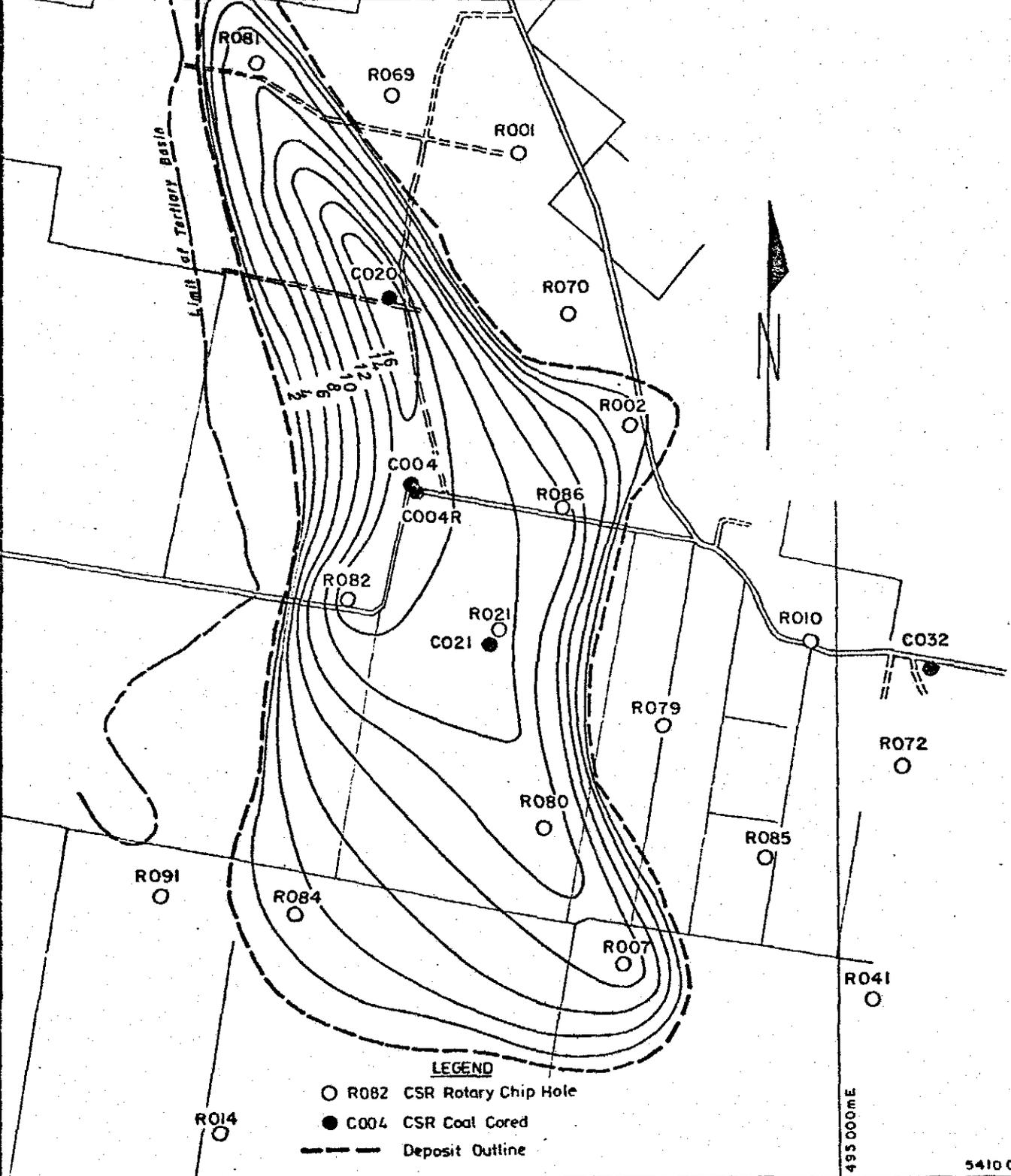
105

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5 cm

5415 000mN

Limit of Tertiary Basin



LEGEND

- R082 CSR Rotary Chip Hole
- C004 CSR Coal Cored
- - - Deposit Outline

Scale 1:25000

0 1.0

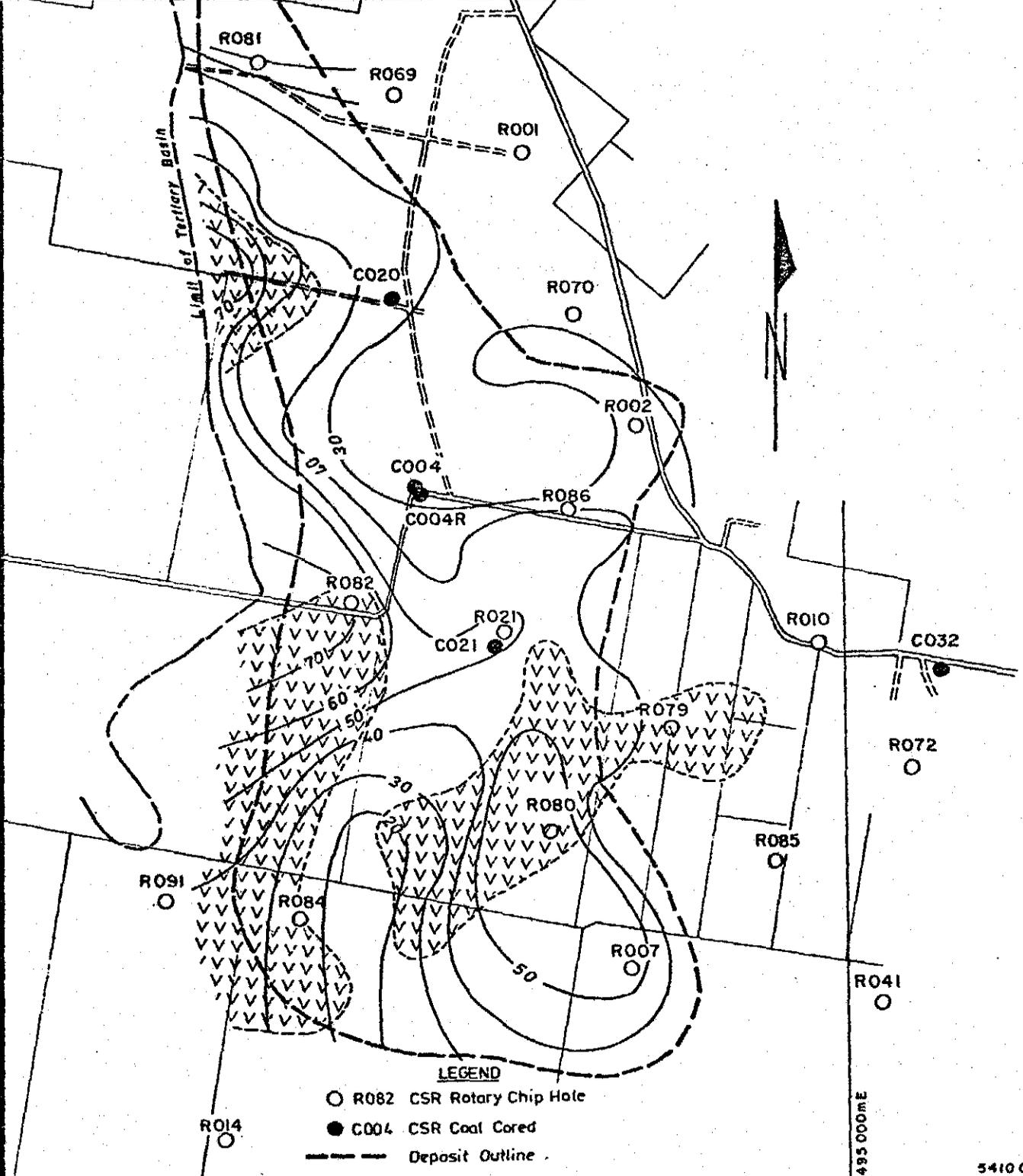
Kilometres

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		DRAWN		SCALE
Aug '82		Aug '82		1 : 25 000
CHECKED		REVISED		FIGURE 4-1
				DRAWING No
				70020 - 120

EL 20/80 LAUNCESTON
LOATTA DEPOSIT
IN INSITU THICKNESS

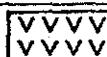
5 cm

5415 000mN



LEGEND

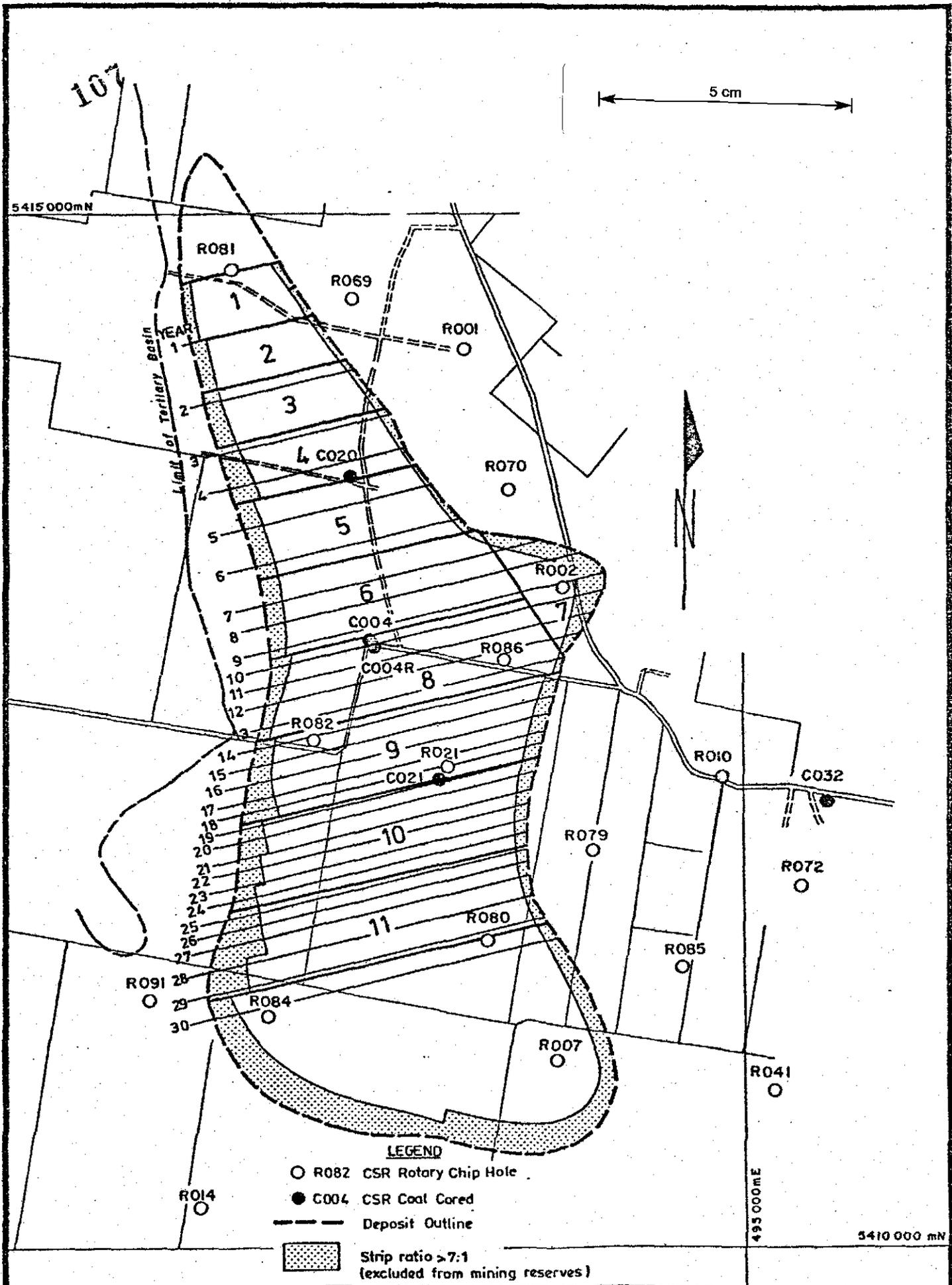
- R082 CSR Rotary Chip Hole
- C004 CSR Coal Cored
- - - Deposit Outline

 Areas of Basalt

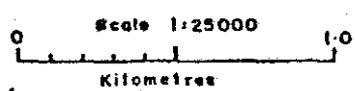
Scale 1:25000
 0 ————— 1.0
 Kilometres

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		SCALE		
DRAWN	Aug '82	1 : 25 000		
CHECKED		FIGURE 4-2		
REVISED		DRAWING No		
C 1	Feb '83	70020 - 121		

EL 20/80 LAUNCESTON
 LOATTA DEPOSIT
 DEPTH TO BASE OF COAL
 MINING SECTION



- LEGEND**
- R082 CSR Rotary Chip Hole
 - C004 CSR Coal Cored
 - - - Deposit Outline
 - ▨ Strip ratio > 7:1 (excluded from mining reserves)



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP CSL	
DRAWING / DATE DRAWN C.J. Feb. '83		LOATTA DEPOSIT MINING RESERVES BLOCKS & 240 MW SCHEDULE	
CHECKED			
REVISIONS			
		SCALE 1 : 25 000	FIGURE 4-3
		DRAWING No 70020-144	

Loatta Mining Block Quantities

	1	2	3	4	5	6	7	8	9	10	11	12	Total
<u>In Situ</u>													
Area (m ² x 1,000)	156.7	174.2	208.4	237.3	388.3	430.9	177.9	519.2	576.9	592.2	619.8	1460.7	5,542.5
Av. coal thickness (m)	5.90	7.29	8.40	9.08	9.0	10.7	3.5	10.4	10.5	8.8	6.5	5.2	7.8
In situ Tonnes (sg 1.32) (MT)	1.22	1.68	2.31	2.84	4.61	6.09	0.82	7.13	8.0	6.88	5.32	10.03	56.92
In situ Cumulative (MT)	1.22	2.90	5.21	8.05	12.66	18.75	19.57	26.70	34.70	41.57	46.89	56.92	-
<u>Margins Rejected</u>													
Area excluded (7 : 1 S.R.)	22.2	25.9	31.1	42.9	50.5	32.5	74.0	30.6	83.2	69.9	87.2	407.0	957.0
Av. coal thickness excluded (m)	1.9	3.0	3.0	3.0	2.5	2.7	1.75	3.8	4.0	3.2	2.7	2.2	2.6
Tonnes excluded (MT) (sg 1.32)	0.06	0.10	0.12	0.17	0.17	0.12	0.17	0.15	0.44	0.30	0.31	1.18	3.29
<u>Mineable Coal</u>													
Tonnes In Situ	1.16	1.58	2.19	2.67	4.44	5.97	0.65	6.98	7.56	6.58	5.01	8.85	53.63
Mined (0.2m dilution)	1.30	1.78	2.46	3.00	4.99	6.71	0.73	7.85	8.50	7.40	5.63	9.95	60.28
Area (m ² x 1,000)	134.5	148.3	177.3	194.4	337.8	398.4	103.9	488.6	493.7	522.3	532.6	1053.7	4585.5
<u>Overburden & Partings</u>													
Depth to base of mining (m)	25.0	35.0	36.0	40.0	33.0	30.0	30.0	40.4	53.0	47.0	35.0	40.0	39.8
Av. coal thickness (in situ) (m)	6.5	8.1	9.4	10.4	10.0	11.4	4.7	10.8	11.6	9.5	7.1	6.4	8.9
O/B & partings thickness (in situ)	18.5	26.9	26.6	29.6	23.0	18.6	25.3	29.6	41.4	37.5	27.9	33.6	-
O/B & partings thickness (mined)	17.8	26.0	25.6	28.5	21.9	17.4	24.8	28.4	40.2	36.5	27.1	32.9	-
O/B & partings volume (mined) (MBCM)	2.39	3.86	4.54	5.54	7.40	6.93	2.58	13.88	19.85	19.06	14.43	34.67	135.13
Ratio Waste m ³ /coal T.	1.84	2.17	1.85	1.85	1.48	1.03	3.53	1.77	2.33	2.57	2.56	3.48	2.24
<u>Basalt</u>													
Basalt Area (m ² x 1,000)	-	-	10.0	31.9	-	-	-	-	140.0	205.0	336.0	238.0	-
Basalt Thickness	-	-	3.0	5.0	-	-	-	-	10.0	6.0	14.0	8.0	-
Basalt Volume (MBCM)	-	-	0.03	0.16	-	-	-	-	1.40	1.23	4.70	1.90	9.42
BWE Waste Volume (MBCM)	2.39	3.86	4.51	5.38	7.40	6.93	2.58	13.88	18.45	17.83	9.73	32.77	125.71
Batters (45°) (MBCM)	0.25	0.46	0.47	0.62	0.58	0.46	0.48	0.87	1.50	1.18	0.69	1.70	9.26
Net Waste (MBCM)	2.64	4.32	4.98	6.00	7.98	7.39	3.06	14.75	19.95	19.01	10.42	34.47	133.17

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29.

The rising surface topography along the western edge of the deposit, combined with the coal seam thinning, results in high strip ratios along the western edge of the defined deposit. Areas with a strip ratio of more than 7 : 1 were excluded from the mining reserves. These are shown as shaded areas around the edges of the deposit, in Figure 4.3.

Areas of basalt are also shown in Figure 4.2. It has been assumed in the costs that this material would be mined by contractor, and has been excluded from the BWE quantities.

Table 4.2 summarises mining block quantities. Mineable coal tonnes were obtained by multiplying in situ tonnes by 1.124 to account for dilution. Partings volume was decreased accordingly.

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5. MINE DEVELOPMENT

The initial opening will be at the northern end of the Loatta Deposit. The trunk conveyor and face conveyor will be erected on the surface and the BWE and bandwagon will excavate a slot along the line of the face conveyor to a depth of 10 metres. The face conveyor will then be moved aside and the access ramp and a gullet approximately 1 km long will be excavated.

The face conveyor and trunk conveyor will then be relocated down into the slots. The initial openings will then be deepened to 20 metres, which will be sufficient to reach the base of the LB3 seam in the area of Hole R081.

The overburden will be delivered to a tripper stacker external to the pit.

The mode of operation in pit will then be as described in Section 6 which considers mining by either two small BWEs or one larger BWE.

If the two BWE method is adopted then the required outputs and low strip ratios in the first two years make it possible to supply the total mine requirements with one BWE. As the output requirements get too high for one BWE a second BWE will be introduced together with a second face conveyor and trunk conveyor. The two BWEs will load overburden through the tripper stacker simultaneously, but will only supply coal individually, as each machine has the capability to exceed power station requirements.

The overburden dump will be initially located external to the pit and will later be relocated back into the pit to fill the worked out section of the pit.

6. OVERBURDEN AND COAL MINING

6.1 Bucketwheel Methods Considered

Two alternative mining approaches have been considered. The first uses two BWEs, each mining both coal and waste, and each with its associated face conveyor and bandwagon. This approach provides continuity and reliability of supply, and coal stockpile requirements are minimal.

The second method would use one larger BWE and one face conveyor system. This would require a larger coal stockpile as insurance against BWE breakdowns.

Each of the methods is described in further detail below.

6.2 Two Bucketwheel Method

In this mine, as there is not a great depth of overburden, each Bucket Wheel Excavator will mine both coal and overburden with the transport systems conveying the material to either the power station or the overburden dump as appropriate.

Mode of Operation

Stage 1

BWE No. 1 will excavate both coal and overburden onto the face conveyor and then to the trunk conveyor. The coal would be conveyed directly to the power station and the overburden to a tripper stacker on an external dump (Figure 6.1 and 6.2).

POWER STATION
11^{kV} CONVEYOR

5 cm

DUMP CONVEYOR ← COAL DELIVERY EX-MINE

5 415 000 m N

FACE CONVEYOR

QR081

Advance
of Face

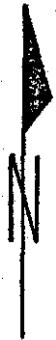
LINE OF

C020

SECTION

C004

LOATTA
DEPOSIT



5 410 000 m N

5 495 000 m E

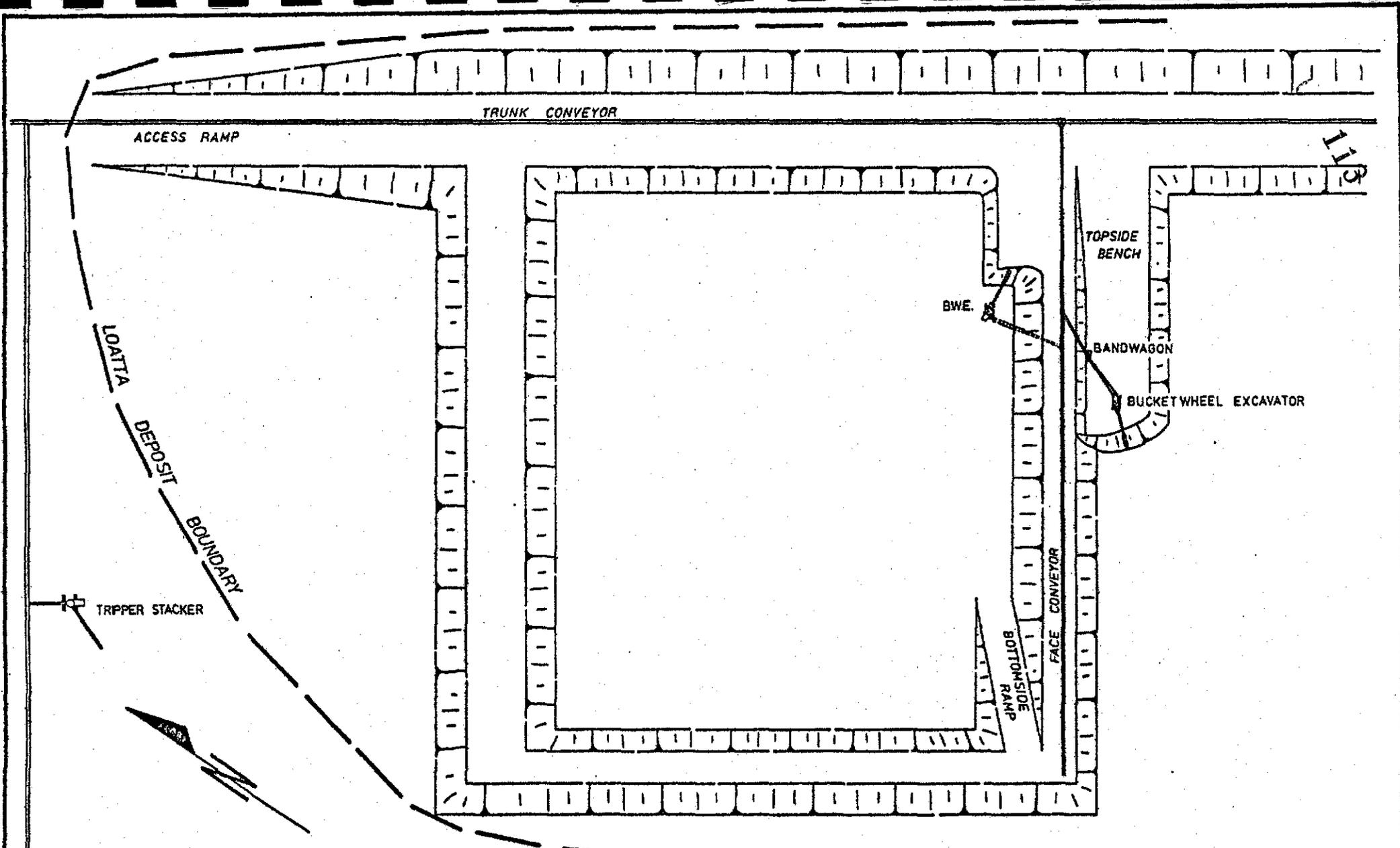
SCALE 1:25000
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Kilometres

CSR Limited Coal Division EXPLORATION AND EVALUATION GROUP CSR

DRAWING / DATE	
DRAWN C.J.	Feb. '83
CHECKED	
REVISED	

EL 20/80 LAUNCESTON
LOATTA DEPOSIT
CONVEYOR LAYOUT

SCALE	1:25000
FIGURE 6-1	
DRAWING No	70020-140



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSIR
DRAWING	DATE	EL 20/80 LAUNCESTON - LOATTA DEPOSIT		SCALE
DRAWN	J.M.	Feb. 83	PROPOSED PIT LAYOUT	FIGURE 6-2
CHECKED			STAGE 1	DRAWING No.
REVISED				70020-118

520116

114

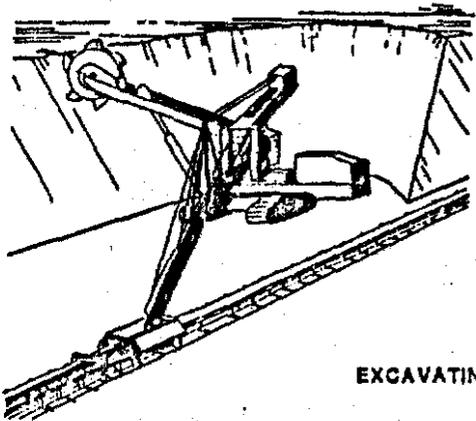
BWE No. 1 would excavate on three faces. It would firstly ramp up from the conveyor level and excavate the overburden overlying the coal, utilising the bandwagon to reach the face conveyor from the upper bench (Figure 6.3).

After the upper bench had been excavated BWE No. 1 would then excavate the topside bench at conveyor level supplying coal to the power station and delivering any overburden or parting material to the overburden dump. After this pass had been completed BWE No. 1 would travel bottomside and excavate the coal and partings on the level below the conveyor, either loading directly to the conveyor or via a bandwagon, depending on the depth of the seam. After this level had been excavated BWE No. 1 would travel topside, the face conveyor would be beltshifted and the sequence of operation would be repeated. When required BWE No. 1 would extend the trunk conveyor gullet, loading via the bandwagon.

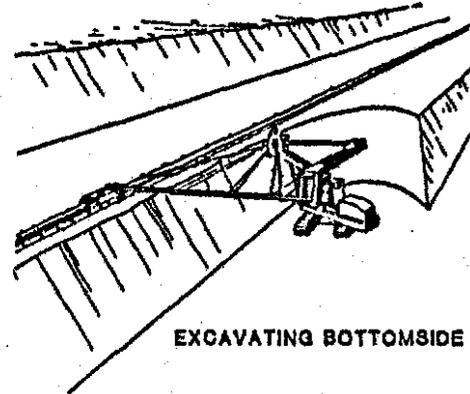
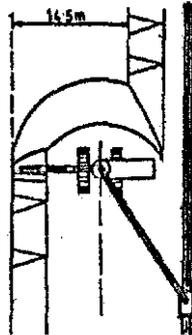
This sequence of operation would be carried out during the first two years of the mine's operation after which time the output requirements would necessitate the introduction of a second BWE.

Stage 2

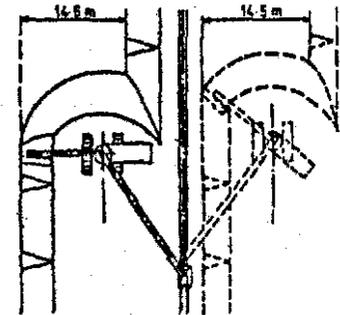
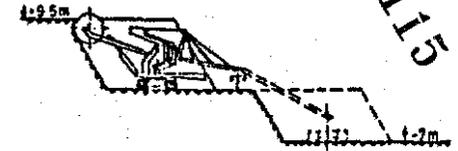
BWE No. 1 would excavate the upper bench as previously described and the face conveyor for BWE No. 2 would be installed on this bench. A second trunk conveyor would be installed such that it could be loaded by both face conveyors. (Figure 6.4). It would carry overburden to the dump conveyor.



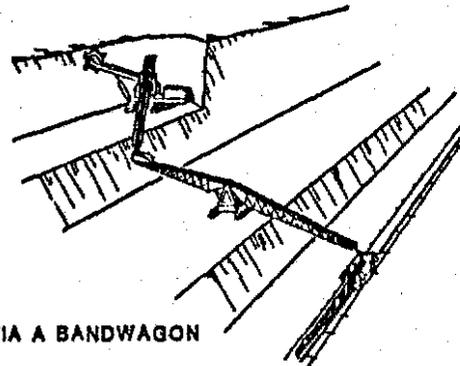
EXCAVATING TOPSIDE



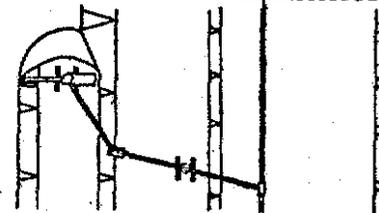
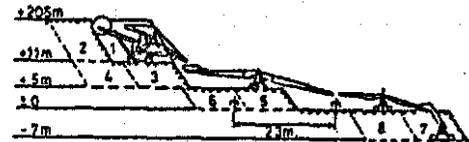
EXCAVATING BOTTOMSIDE



EXCAVATING RANGE TOPSIDE AND BOTTOMSIDE



EXCAVATING TOPSIDE VIA A BANDWAGON

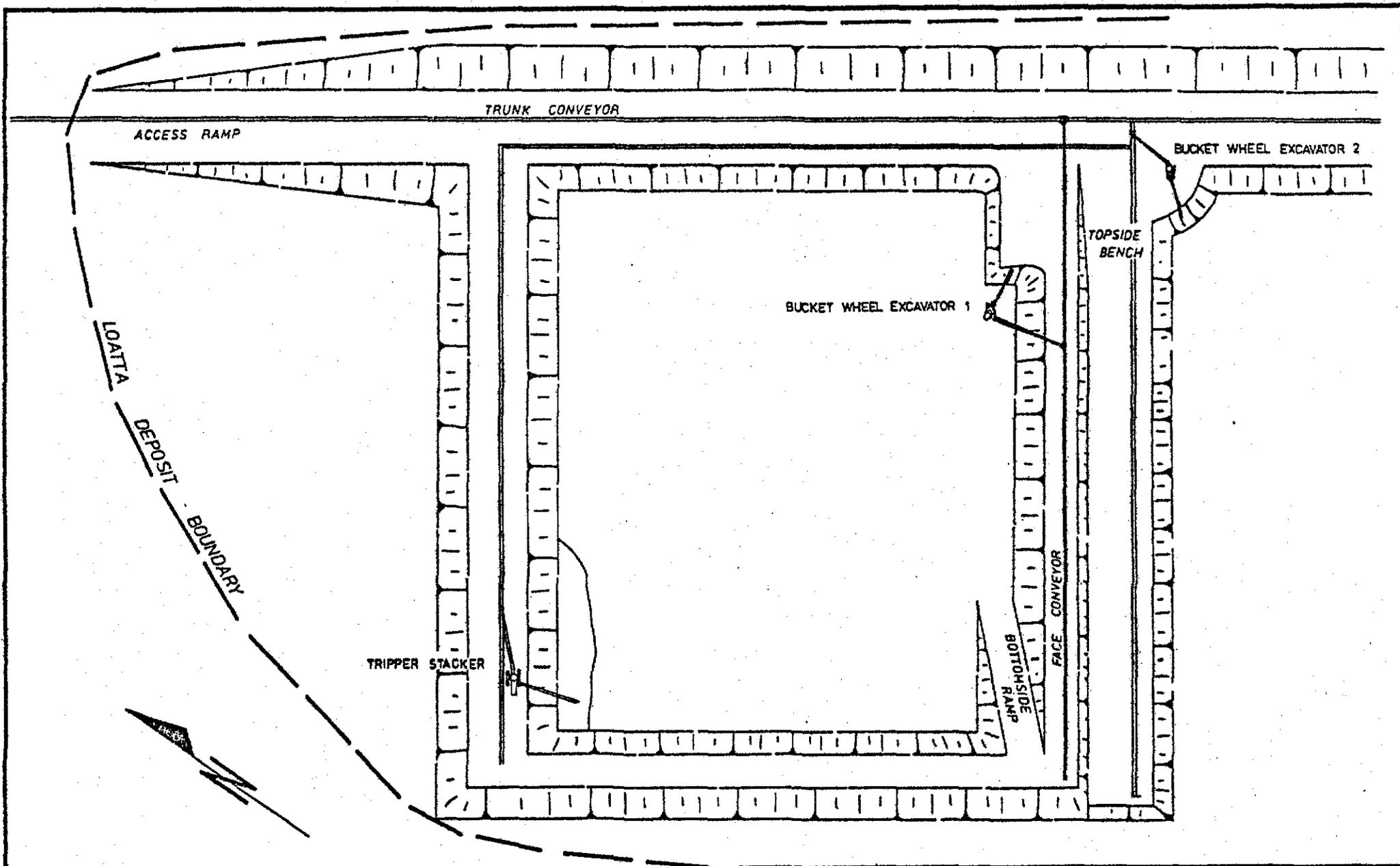


EXCAVATING RANGE
TOP AND BOTTOMSIDE VIA A BANDWAGON

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CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP	CSIR
DRAWING	DATE	EL 20/80 LAUNCESTON OPERATING MODES WITH A BUCKET WHEEL EXCAVATOR	SCALE
DRAWN C.J.	Feb. '83		FIGURE 6.3
CHECKED			DRAWING No 70020-139
REVISED			

208115



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING	DATE	EL 20/80 LAUNCESTON - LOAITA DEPOSIT		SCALE
DRAWN C. J.	Feb. 83	PROPOSED PIT LAYOUT		FIGURE 6-4
CHECKED		STAGE 2		DRAWING No. 70020-141R
REVISED				

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The sequence of operation would then be as follows:

BWE No. 2 would excavate overburden from the top bench loading it directly onto its face conveyor. After each pass along the face, the face conveyor would be beltshifted and BWE No. 2 would then repeat the operation. If the overburden thickness became too great to allow removal in one pass BWE No. 2 would ramp up and load via a bandwagon to the face conveyor when removing the overheight material. When BWE No. 2 was required to supply coal it would travel bottomside, ramp down and excavate coal down to the second face conveyor level. It would also extend the trunk conveyor slot as necessary.

BWE No. 1 would excavate the topside bench on its face conveyor level. This is the same bench which BWE No. 2 would excavate if it travelled bottomside. After BWE No. 1 had excavated the topside bench it would travel bottomside and excavate that bench either loading directly to the face conveyor or via a bandwagon depending on the depth of the bottomside bench.

This mode of operation would allow the full depth of the seams to be excavated by the two BWEs. (Figure 6.5)

Overburden Dumping

As described previously the overburden would be dumped at an external dump. This dump would progress toward the worked out portion of the pit. When the dump conveyor reached the top of the access ramp the dump

BWE's have a lot of travelling to do!

NORTH WEST

SOUTH EAST

Direction of Mining



VERTICAL SCALE

1:100

0

2

4

6

8

10

12

14

16

18

Metres

R081

C020

C004

ACCESS RAMP

BWE. 2

BWE. 1 or BWE. 2

BWE. 1

HORIZONTAL SCALE

20

0

20

40

60

80

Metres

5 cm

CSR Limited
Coal Division

EXPLORATION AND EVALUATION GROUP



DRAWING	DATE
DRAWN C.J.	Feb. '83
CHECKED	
REVISED	

LOATTA DEPOSIT
OPERATING LEVELS FOR
BUCKET WHEEL EXCAVATORS

SCALE

FIGURE 6-5

DRAWING NO.

70020-142

118

558121

conveyor would be relocated down into the worked out section of the pit. (Figure 6.4). The tripper stacker would then fill the worked out section of the pit up to the original surface level. The overburden trunk and dump conveyors would be large enough to take the output from both BWEs if they were excavating overburden simultaneously.

Coal Mining

Each BWE has the capability of supplying the total power station requirements by itself, therefore, the coal conveyors have been designed to convey the output of one BWE. If one BWE is unavailable for coal mining the other BWE will be scheduled to supply coal. There is enough capacity to recover from any coal shortages.

6.3 One Bucketwheel Method

Mode of Operation

Stage 1

The BWE will excavate both coal and overburden onto the face conveyor and then to the trunk conveyor. The coal would be conveyed directly to the power station and the overburden to a tripper stacker on an external dump. (Figures 6.1 and 6.2).

The BWE would initially excavate on three faces. It would firstly ramp up from the conveyor level and excavate the overburden overlying the coal, utilising the bandwagon to reach the face conveyor from the upper bench (Figure 6.3).

After the upper bench had been excavated the BWE would then excavate the topside bench at conveyor level supplying coal to the power station and delivering any overburden or parting material to the overburden dump. After this pass had been completed the BWE would travel bottomside and excavate the coal and partings on the level below the conveyor, either loading directly to the conveyor or via a bandwagon, depending on the depth of the seam. After this level had been excavated the BWE would travel topside, the face conveyor would be beltshifted and the sequence of operation would be repeated. When required the BWE would extend the trunk conveyor slot, loading via the bandwagon.

This sequence of operation would be carried out until the seam depth necessitated the introduction of extra benches.

Stage 2

As the seam depth became greater an extra bottomside bench would be introduced. The sequence of operation would then be as follows: (Figure 6.3).

The BWE would ramp up from the upper bench and excavate the top 17 metres of material, which may be overburden or overburden and coal, utilising the Bandwagon to reach the face conveyor. It would then excavate the coal and overburden on the level above the face conveyor once again utilising the bandwagon.

The BWE would then excavate the topside bench of the conveyor level loading coal to the power station and partings to the dump. After the completion of topside digging the BWE would travel bottomside and excavate the coal and partings loading either directly to the face conveyor or via the bandwagon.

If necessary another bottomside pass at a lower level could be made loading via the bandwagon so that the total depth of seam could be excavated.

After the completion of this sequence the face conveyor would be beltshifted and the sequence would be repeated. When necessary the trunk conveyor gullet would be extended.

Overburden Dumping

As described previously the overburden would be dumped at an external dump. This dump would progress toward the worked out portion of the pit. When the dump conveyor reached the top of the access ramp the dump conveyor would be relocated down into the worked out section of the pit (Figure 6.4). The tripper stacker would then fill the worked out section of the pit up to the original surface level.

Coal Mining

As one BWE excavates both coal and overburden the coal will be delivered at approximately 2500 tph and will be stockpiled and reclaimed as required by the power station. A stockpile would be required to accommodate the intermittent nature of the coal supply and to insure against equipment breakdowns.

7. MINE SCHEDULE

Table 7.1 shows the mine schedule developed for the Loatta deposit. It was estimated that a 240 MW power station would require 2.26 million tonnes of coal per year, based on an assumed S.E. of 7.10 GJ/t.

The annual coal consumptions used were:

Year -1	0.24
Year 1	1.07
Year 2	2.01
Years 3 to 9	2.26
Years 11	2.01
Year 12	1.98
Years 13 to 15	1.83
Years 16 to 19	1.72
Years 20 to 30	1.22
TOTAL	51.57

This forms the basis of the schedule in Table 7.1, which shows that the peak annual BWE quantities are 6.25 MBCM (overburden plus coal) for years 2, 3 and 4, reducing to 5.0 MBCM to Year 14, then 5.4 MBCM to Year 20, with 3.5 to 4.0 MBCM in the last 10 years.

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TABLE 7.1
LOATTA DEPOSIT MINING SCHEDULE

Year	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COAL DELIVERED (Actual)(mt)	0.24	1.07	2.01	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.23	2.01	1.98	1.83	1.83	1.82
Coal Stockpile	0.12	0.26	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.27	0.27	0.24	0.24	0.24	0.23
Blocks (proportion)	1	1	2,3	3,4	4	4,5	5	5,6	6	6	6,7,8	8	8	8	8,9	9
WASTE (Mm ³)	(.18)	(.82)	(.09)	(.01)	(.75)	(.24)	(.45)	(.24)	(.34)	(.34)	(.16)	(0.26)	(.25)	(.23)	(.21)	(.21)
Ramps	0.2	-	-	-	-	(.31)	-	(.16)	-	-	(.05)	-	-	-	-	(.02)
O/B advance stripping	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waste from Coal Mining	0.49	2.15	4.76	4.59	4.50	3.91	3.59	3.09	3.33	3.33	3.33	3.84	3.69	3.39	3.50	4.12
									(2.51)	(2.51)	(4.98)					
COAL VOLUME	0.18	0.80	1.50	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.67	1.50	1.48	1.37	1.37	1.36
TOTAL BWE VOLUME	1.77	2.95	6.26	6.28	6.19	5.60	5.28	4.78	5.02	5.02	5.00	5.34	5.17	4.76	4.87	5.48
BWE VOLUME SMOOTHED	1.77	3.00	6.25	6.25	6.25	5.60	5.30	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.40
Out of Pit Spoil Mm ³	1.77	1.23														
In Pit Spoil Mm ³		0.92	4.76	4.75	4.50	3.91	3.59	3.09	3.33	3.33	3.33	3.84	3.69	3.39	3.75	4.37
Basalt Mm ³			.03	0.16											0.25	0.25

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TABLE 7.1 - Cont'd

LOMTA DEPOSIT MINING SCHEDULE

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Year	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
COAL DELIVERED (Actual)	1.72	1.72	1.72	1.72	1.65	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	51.57
Coal Stockpile	0.23	0.23	0.23	0.23	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	-
Blocks (proportion)	9	9	9	9,10	10	10	10	10	10	10,11	11	11	11	11	11,12	
	(.2)	(.2)	(.2)	(.17)	(.22)	(0.16)	(0.16)	(0.16)	(0.16)	(.1)	(.22)	(.22)	(.22)	(.22)	(.03)	
				(0.04)						(.09)					(0.1)	
Ramps	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
O/B advance stripping	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Waste from Coal Mining	3.99	3.99	3.99	4.15	4.18	3.04	3.04	3.04	3.04	2.84	2.29	2.29	2.29	2.29	3.76	
Coal Volume	1.28	1.28	1.28	1.28	1.23	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	38.51
Total BWE Volume	5.27	5.27	5.27	5.43	5.41	3.95	3.95	3.95	3.95	3.75	3.20	3.20	3.20	3.20	4.67	
BWE Volume Smoothed	5.40	5.40	5.40	5.40	5.40	4.00	4.00	4.00	4.00	3.75	3.50	3.50	3.50	3.50	3.50	
Out of Pit Spoil Mm ³																
In Pit Spoil Mm ³	4.24	4.24	4.24	4.40	4.43	3.29	3.29	3.54	3.54	3.34	3.02	3.02	3.02	3.02	4.55	
Basalt Mm ³	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.50	0.50	0.50	0.75	0.75	0.75	0.75	0.75	7.69

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DEWATERING REQUIREMENTS AND MINE WATER DISPOSALGroundwater Flow

The ground conditions as discussed in Section 3 indicated that artesian groundwater conditions exist on the site, and that saturated overburden and interburden conditions can be expected with artesian groundwater pressures associated with porous, sand rich beds, which may penetrate but lens out at proposed mine limits.

Mathews (1979) reports artesian pressures approaching 6m of head above ground surface. There is some speculation as to whether the artesian condition relates to recharge of confined aquifers outcropping elsewhere at higher elevations, or that primary consolidation of the sediment stack is still an active geological process.

Implications for mine design is for the former to represent a regional groundwater condition, for which a continuous pumping operation around the mine perimeter may be required to control flow rate and pressure. For the latter possibility, a more local groundwater condition is indicated, requiring dewatering schemes to control pressure, not flow volume. However, it is considered that the artesian condition is the major source of water.

Dewatering Requirements

As previously discussed a continuous pumping operation around the pit perimeter is envisaged.

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Mathews (1979) describes confined aquifers in Tertiary sediments which when pumped at 150 to 300 l/min resulted in a 30 to 50m drawdown. A similar pump rate would appear adequate for conceptual mine design.

The perimeter dewatering system will be designed to dewater the sediments such that artesian pressure and water inflow are controlled to allow relatively dry and stable mining conditions.

There may also be a need to dewater specific areas within the mine in order to relieve localised groundwater pressures within the pit.

Mine Drainage

The area has an average rainfall of 600 to 1000mm per annum. This rainfall, plus some groundwater inflow and water used in fire protection, make an in-pit water disposal system necessary.

The water will be drained into the worked out section of the pit where electric pumps will be installed and sumps excavated to collect the water and pump it out of the mine. Some of the water may be used in the mine fire protection system.

Water Disposal

Disposal by other than controlled release to local drainage does not appear feasible. The shallow groundwater table excludes re-injection, whilst a mean average evaporation rate of 750mm is likely to be insufficient, depending on quantities for disposal and availability of stored water area e.g. ash ponds.

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Water quality data (Mathews, 1979) resulting from borehole measurement over a 30 month period indicated TDS varying between 890 and 1570 mg/l, Na varying 175 to 330 mg/l, Ca + Mg + K varying 130 to 220 mg/l. Disposal by controlled discharge could be argued as an acceptable option due to present day discharge of groundwater to the ground surface (springs and soaks) hence to drainage courses. However, this would need verification by an analysis of water quality versus aquifer depth.

Flood Protection

As the Rosevale deposits are in the catchment area of the Meander River and the Meander is known to flood it may be necessary in the later years of the project (after Year 20), to carry out flood protection works to ensure that the mine does not flood. More investigation will be required in this area before definitive judgements can be made.

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9.MANNING REQUIREMENTS

The manning numbers required are shown in Table 9.1 over.

Table 9.2 shows more detail on shift rosters.

Including allowance for absentees, the total manpower required to operate the mine in Year 4 has been determined to be a total of 171 employees. Of the total, 59 are staff and 112 are wages employees.

Manpower requirements decrease to about 130 after year 20.

The mine staff total has been subdivided into senior staff, which includes executives and professionals, who are generally on a "no-overtime basis", and supervisory and junior staff, who are generally on an overtime basis. The wages group of employees are those who are either operating equipment, undertaking maintenance or providing a general service to the mining operation. No attempt has been made to categorise employees into specific unions.

The structure of the manning chart shown on Table 9.1 is as follows:

- . an executive level, which divides the mine into four main groups; production, engineering, administration and stores and personnel
- . a superintendent level, which subdivides each main department into functional groups

OPERATIONS MANAGER (1)		CHIEF ENGINEER (1)		FINANCIAL CONTROLLER (1)		PERSONNEL MANAGER (1)	
MANAGEMENT	Sen. Mining Eng. (1)	Mech. & Elect. Supt. (1)	Elect. Foreman (3)	Manag/Acct. (1)	Warehouse Supt. (1)	Assistant (1)	
Mine Supt. (1)				Admin/Plan/MIS (1)			
TOPSOIL	Mining Engineer (1)	Eng. Draftsman (1)	Electrician (3)	Cost Clerk (2)	Purchasing Off. (1)	First Aid (3)	
Loader Oprs. (1)		Tech. Assist (1)	Elect. Linesmen (1)	Paymaster (1)	Expeditor (1)		
Truck Drivers (1)	Data Processing (1)	Clerks Records (1)		Pay Clerk (1)	Senior Stormen (3)		Total 4
OVERBURDEN & COAL	Surveyor (1)	T.A's (1)	Apprentices (1)	Secretary/General Manager (1)	Storemen (3)		
Pit Foreman (3)	Survey Assist (1)	Shift Maint. Fmen (3)	SHIFT CREW		Clerks (2)		
BWE Operators (6)	Draftsmen (1)	Crane Driver T/A (3)	Electricians (3)	Reception (1)	Total 11		
BWE Oilers (6)	Geologist (1)	Riggers (3)	T.A.s (2)	Typist (2)			
B'Wagon/Dozer Op (6)	Sampler/ (1)	Fitters (3)	Total 14	Telex/Mail (1)			
Hopper/Att. (6)	Coal Quality (1)	T.A's (2)		Tea/Printroom (1)			
Loader Oprs (2)	Environmental Officer (1)	Relief Tradesmen (3)					
C'veyr/Patrol (6)		Workshop Foremen (1)					
Stacker Oprs. (6)		Fitters (3)					
Dzr Oprs.(Stkrs) (3)		Machinists (1)					
DEWATERING		Welders (2)					
Pumpmen (3)		Servicemen (1)					
MINE SERVICES	Total 9	Apprentices (2)					
Mine Service Fmn (1)		T.A's (3)					
Grader/Water tank Drivers (1)		Mechanics (1)					
Coal Drill Oprs. (2)		Auto Electricians (1)					
Loader Oprs. (1)		Bath Attendants (1)					
Truck Driver (1)		Labourers (1)					
Dozer Oprs. (2)							
Conveyor C'trol (3)							
Other Operators (2)							
Day Labour Pool (3)							
Safety Officer (1)							
RELIEF OPERATORS (8)							
Total 76		Total 39		Total 13			

SUMMARY BY DEPARTMENT

DEPARTMENTS	SALARY	WAGES	TOTAL
General Manager	1	-	1
Mining Department	14	71	85
Mech/Elec. Department	12	41	53
Accounting/Purchasing	24	-	24
Industrial	5	-	5
Staff Absentee	3	-	3
Grand Total	59	112	171
Including relief & absentees allowances	3	11	14
Actual Manning	56	101	157

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TABLE 9.2Manning - Overburden and Coal Removal

	<u>D/S</u>	<u>A/S</u>	<u>Rost.Off</u>	<u>Total</u>
BWE Operator	2	2	2	6
BWE Oiler	2	2	2	6
Bandwagon/Dozer Op.	2	2	2	6
Hopper Attendant	2	2	2	6
Loader Operator	2	-	-	2
Conveyor Patrol	2	2	2	6
Stacker Operator	2	2	2	6
Dozer Operator (Stacker)	1	1	1	3
Relief Operator	2	2	2	6
	<u>17</u>	<u>15</u>	<u>15</u>	<u>47</u>

Shift Maintenance on Coal and Overburden

	<u>D/S</u>	<u>A/S</u>	<u>Rost.Off</u>	<u>Total</u>
Fitters	2	2	2	6
Crane Driver/TA	1	1	1	3
Rigger	1	1	1	3
Electrician	1	1	1	3
T/A	2	1	1	4
Relief Tradesmen	1	1	1	3
	<u>8</u>	<u>7</u>	<u>7</u>	<u>22</u>

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. a foreman level, which further subdivides each department into sections such as stripping, coal mining and mine services in the mining department.

. a worker level, which reports to each foreman and includes the operators, mechanics, labourers, etc.

The engineering and most of the administration departments, apart from stores would be on single shift, five day week roster. A nominal amount of overtime has been assumed in calculating annual salaries for the shift supervisory staff. Coal and waste mining will be on a 7 day per week, 2 shifts per day continuous shift roster, initially, although after Year 6, the second BWE reduces to 5 days by 2 shifts until Year 20, then 5 days by 1 shift until it is no longer required in Year 25. From Year 25 onwards, one crew on 7 days by 3 shifts can achieve the production targets, alternating between BWEs. Maintenance and service workers will vary in their shift roster depending on the equipment they are servicing. For example, some maintenance workers will be required on a continuous roster to service the coal mining and stripping equipment whereas, general workshop maintenance will have the largest number on day shift with lesser numbers on afternoon shift. An allowance for maintenance of surface facilities has been included in the mine services section.

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To estimate the overall manpower numbers the following approach was used:

- . the various functions were categorised and placed in their logical departments following normal practice in mining operations
- . the staff numbers in areas such as engineering and administration were estimated by referring to operations of a similar size and using similar numbers of people
- . the operators required to man the various mining equipment were allocated
- . service personnel such as storemen were estimated by reviewing existing mining operations.
- . the maintenance workers were estimated by reviewing existing mining operations.
- . the maintenance worker numbers were then estimated by considering the numbers of people that should be required and comparing that to the maintenance cost generated from the equipment cost model; (cost allowances were also made for the component of maintenance that would be completed off-site by others)
- . the specified allowance for relief men is considered sufficient to cover any absenteeism because of employees who are on annual leave, sick leave or compassionate leave.

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10. EQUIPMENT REQUIREMENTSEquipment Selected

All major equipment, such as BWES, conveyors and the Tripper Stacker, has been sized according to the duty required, the estimated time available for operation, and their estimated operational efficiency. Details are given later in this section. Auxiliary equipment has been assigned to the major activity centres based on experience in similar operations. A full list of all equipment estimated to be on site at full production is given in Table 10.1.

Productivity

Two different rosters will be worked: 7 x 2 shift roster and a 5 x 1 shift roster.

Each roster will have a different number of scheduled days, as shown below in Table 10.2.

TABLE 10.2

	7 x 2	5 x 1
Days per week	7	5
Working days possible	365	261
Less:		
Public Holidays	2	10
Industrial Delays	12	12
Weather and External Delays	16	10
<u>Scheduled Days</u>	335	229

Production Hours per Year

The overburden BWE's are scheduled to operate on a 7 x 2 roster 335 days per year. Operating hours are 3397 hours per year and production hours are 3057 hours. There is an allowance for a two week overhaul on each BWE per year in the figures.

The assumptions used to derive production hours are as follows:

Scheduled hours per shift	7.8 hours
Shifts per day	2 shifts
Manned hours per year	5226 hours
Scheduled maintenance	5%
Mechanical/electrical delays	15%
Available hours per year	4181 hours
Operational Delays	15%
Operating hours per year	3397 hours
Operator efficiency	90%
Production hours per year	3057 hours

Unscheduled delays include 12 days due to industrial disputes and 16 days due to bad weather. Operational delays include travelling and delays on associated plant such as conveyors and stacker. The figure of 3057 production hours per year arrived at above is in line with West German and Latrobe Valley (Vic) overburden systems comprising BWE, conveyors and stacker.

Operator efficiency of 90% allows for inefficient digging, trimming batters and other delays caused by not operating at optimum efficiency.

Production hours per year when multiplied by the effective production rate per hours, gives the annual production rate.

Production Rates

The BWEs selected are of the O&K SH630 type which have a theoretical output of 3100 m³/h and an effective output of 800 to 1500 Bm³/h, depending on the type of material being dug. For this study an effective output of 1150Bm³/h has been assumed.

The swell is taken as 40% for the application. The productivity factor of 0.53 takes into account production losses due to slew reversal, changing terraces etc. The table below summarises machine parameters and production rates.

•	Maximum face height	15.0m
•	Length of bucket wheel boom	15.0m
•	Length of discharge boom	25.0m
•	Number of buckets	12
•	Bucket plus half ring capacity	0.63m ³
•	Discharges per minute	60 to 82
•	Theoretical capacity	3100m ³ /h(loose)
•	Swell (estimated)	40%
•	Productivity Factor	0.53
•	Effective Production	
	per hour	800-1500m ³ /h(bank)
•	Yearly production (approx)	3,500,000 (Bm ³)

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Overburden Conveyors

The overburden conveyors have been sized at 1600mm wide with 45° troughing. They will run at 5.2m/s. With a 15° surcharge the theoretical capacity is:

$$\begin{aligned} \text{Theoretical capacity } m^3/h &= \text{cross sectional area} \\ &\quad \times \text{belt} \\ &\quad \text{speed } \times 3600 \\ &= 0.276 \times 5.2 \times 3600 \\ &= 5167m^3/h \text{ (loose)} \end{aligned}$$

The cross sectional area has been obtained from manufacturers' data. The theoretical output is such that the overburden conveyors can carry the output from both BWEs.

Coal Conveyors

The coal conveyors have been sized at 1200mm wide with 45° troughing. They will run at 4.2 m/s. With a 15° surcharge the theoretical capacity is:

$$\begin{aligned} \text{Theoretical capacity } m^3/h &= \text{cross sectional area} \\ \text{speed } \times 3600 &\quad \times \text{belt} \\ &= 0.157 \times 4.2 \times 3600 \\ &= 2378 m^3/h \text{ (loose)} \end{aligned}$$

which is approximately 2100 t/h (bank) of coal.

Overburden Tripper Stacker

The theoretical capacity of the overburden stacker is 6600m³/h loose which deliberately exceeds the capacity of the conveyors. The specification of the stacker is based closely on one of suitable size operating for the SECV.

11. SITE ESTABLISHMENT AND INDUSTRIAL AREA

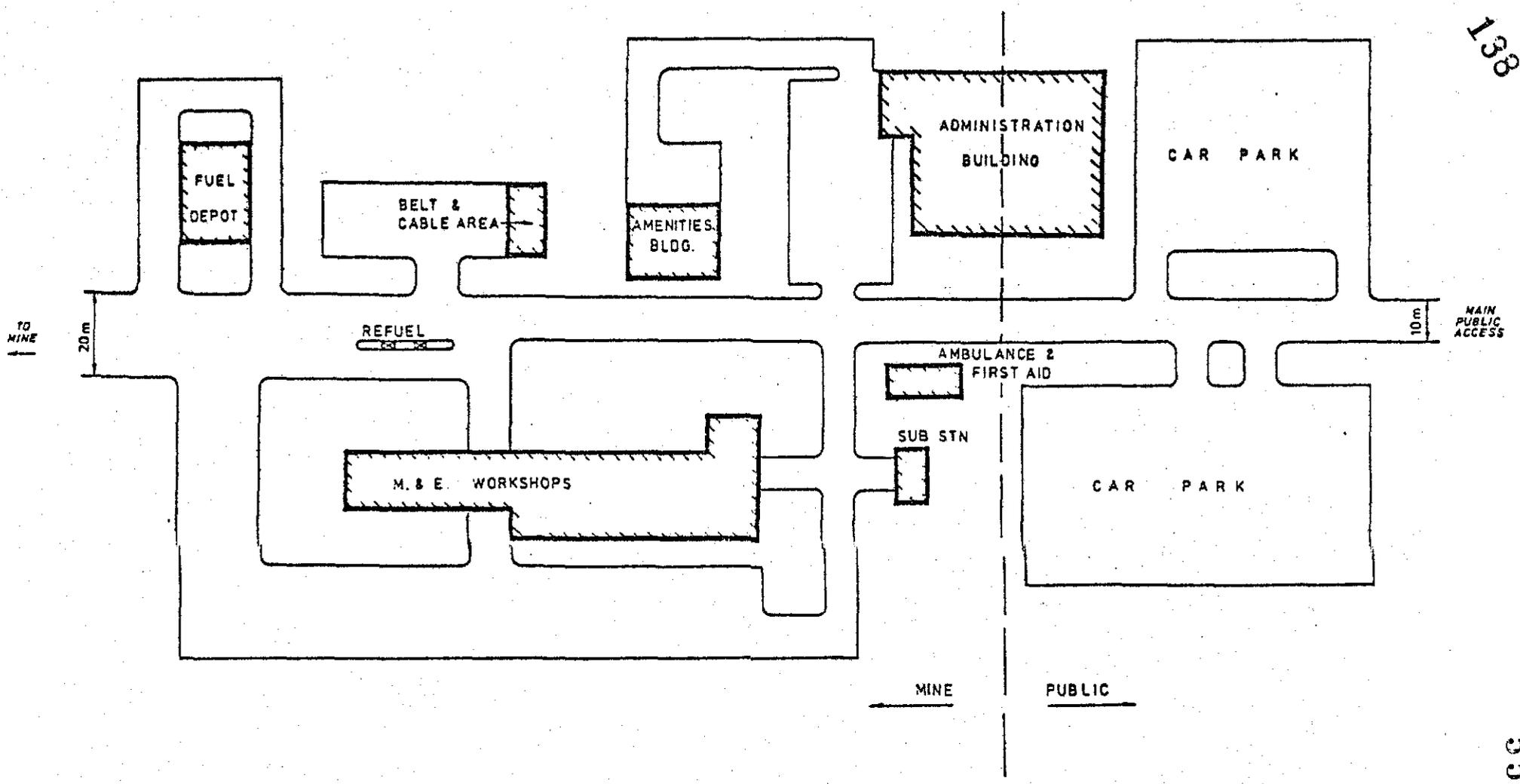
11.1 General

Surface facilities and services for a 2.33 Mt/pa mine at Rosevale have been planned based on experience with similar mining operations in Australia.

In establishing site requirements, the following assumptions have been made:

- . there is easy access to Launceston where a full range of engineering and support facilities are available. This reduces the requirement for extensive mechanical workshops, some stores and service facilities
- . minimal outside services and support facilities will be available in the immediate area of the mine
- . a high voltage power supply will be available from the proposed power station
- . water supply will be available from the power station supply.
- . all sewage and effluents will be treated before discharge
- . all spoil material needed for site development of the industrial area will come from early mine development and allowances have only been made for stripping and compaction. Only local site draining has been allowed.

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MAIN PUBLIC ACCESS

TO MINE

20 m

10 m

MINE

PUBLIC

5 cm

SCALE

20 0 20 40
Metres

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CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CS12
DRAWING	DATE			SCALE
MF	Mar 83			
CHECKED				FIGURE 11-1
REVISED				DRAW No. 70020-148 R
			LOATTA DEPOSIT PROPOSED MINE INDUSTRIAL AREA	

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11.2 Ancilliary and Mine Service Equipment

Miscellaneous plant and equipment to support the mining operation will be based in the mine industrial area and allocated as required. They would fulfill the following functions:-

- . maintenance of mine, mine equipment, services and buildings
- . road construction and civil maintenance
- . General service , administration, supervision and back up equipment.

11.3 Mine Industrial Area

A suitable site adjacent to the mine with ready access to roads, operational areas of mine and services has been chosen. All buildings shown are standard for the purposes nominated and are costed to include appropriate equipment. The proposed layout of the area is shown on Figure 11.1.

The industrial area includes the following facilities:-

- . Mechanical and Electrical Workshops, which include mobile plant shop, boilermakers shop, civil workshop and stores area
- . Fuel Storage and Fuelling Point

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- . Conveyor Belt Storage Area
- . Amenities Building including canteen, bathhouse and changing facilities
- . Administration Building
- . Ambulance and First Aid Station
- . Electrical substation and area lighting.
- . Carparks and paved road area including washdown pad
- . Fencing and Carparks.

Water Supply

Water supply for the mine industrial area will be taken from the power station.

Sewage and Industrial Waste Disposal

Domestic waste water and sewage will be treated and the effluent used for landscape irrigation or run into evaporation ponds. Industrial waste, including oil, which is not suitable for disposal through the sewage treatment plant will be collected for dumping or recycling.

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11.4 Power Supply

For the operating mine a 22 kV supply directly from the power station switchboard is proposed. In general, the following supply voltages have been allowed as follows:

.	for	BWES	11kV
.	for	substation to supply conveyors and the industrial area.	11kV

11.5 General Civil Works

11.5.1 Drainage

Towards the end of the mine life, major drainage works may be required to prevent flooding of the mine, in the form of levee banks, which would protect the mine from ingress from the Meander River. In the earlier years, minor earthworks would be required to divert water from the catchment to the north of the mine site.

11.5.2 Roads

Mine site roads are briefly discussed below:

Access to Industrial Area

The main access to the mine will be a 7m wide sealed road of highway standard to the site.

Interconnection with Power Station

This will be a direct connection between the mine industrial area and the power station is included in the mine site estimates.

Service Roads

A heavy duty access and service road will run along the east side of the mine trunk conveyors and into the Industrial Area. Crossings are planned at suitable points to give truck and crane clearance where necessary.

12. INFRASTRUCTURE REQUIREMENTS

12.1 Water Supply

Water is required for both the mine and the power station with the power station having the most significant effect on total needs. If a mine site power station is selected total requirements are estimated to be 4,000 - 5,000 ML/a. This water would be of potable quality and could be obtained from an existing major supply or by construction of a suitable reservoir.

12.2 Waste Water Disposal

Waste water from the project area will include domestic sewage, industrial waste water and groundwater from mine dewatering. Conventional treatment methods will be used and if feasible, the water will be re-used.

In general, the project will attempt to maximise the re-use of water within economic and technical limits and in this way, will minimise both water requirements and waste water discharges.

12.3 Power Supply

Power supply requirements were outlined in Section 11.4

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12.4 Roads

During the construction period, a major "heavy load" road will be required for the transport of heavy, pre-fabricated items of equipment. At the conclusion of construction, it is likely this road would become the major mine access. Such a road would probably branch off the Bass Highway. Some upgrading and sealing of other roads in the area of the mine and power station would also be required to give suitable access.

12.5 Accommodation

During construction, a high proportion of the workforce will be contractor-employed and likely to be relatively mobile. Based on experience with similar projects, it can be expected that the greater proportion would be accommodated in the Launceston area in local caravan parks or in a construction camp near the project area.

The operational workforce would be drawn from the inhabitants of Launceston and surrounding communities. It is envisaged that only minimal new housing will be required for mine and power station personnel.

13 ENVIRONMENTAL ASPECTS13.1 General

Ultimately, the environmental impacts of both the mine and the power station will need to be assessed interactively and their significance evaluated for the northern Tasmanian locality against Tasmanian standards - legislative and otherwise. At this preliminary stage, the most likely significant effects have been identified and it is concluded that environmental conditions are unusually favourable for the development of a mine at the Loatta deposit. The following favourable factors apply:

- . land already cleared - virtually no impact on natural ecology
- . final rehabilitated land surface would be at approximately the same level as the original ground surface. The mining method facilitates rehabilitation soon after mining
- . noise and dust levels would be exceptionally low
- . low sulphur content of coal would give low stack emissions.

The mine environmental impacts are well understood for this type of operation and procedures for their minimisation well established. They include topographic, soil and land use impacts caused by the

physical presence of the mining operation; noise and dust emissions caused by the operations and some disturbance of existing groundwater, surface water, flora and fauna.

In particular, it should be emphasized that noise emission from the proposed operation would be very low, as there would be no blasting and very few items of mobile equipment. Dust generation would also be negligible, as there would be no haulroads, no blasting, and the groundwater would assist in dust suppression.

The relative importance of environmental impacts on the power station will be dependent upon siting and the major considerations are expected to be stack emissions, water supply and ash disposal. Other factors such as ground and surface water influences, visual and acoustic impacts, the effect on land use and the impact on local flora and fauna are expected to be minimised by satisfactory siting and design procedures.

Before finalisation of design and the commencement of site work, a comprehensive environmental monitoring programme would be undertaken as follows:

- . A three year duration meteorological survey to establish atmospheric conditions at ground level and at altitude. The survey would establish local precipitation, temperature, humidity, prevailing winds, the frequency and duration of inversion conditions and any local atmospheric anomalies.

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Surveys to establish the "baseline" biological, economic and social environment including flora and fauna, land use, ground water quality and the presence of sites of archeological interest.

13.2 Mine Rehabilitation

The Loatta deposit presents a unique opportunity for mining in that the impact on the environment is expected to be minimal. It lies in an area already cleared of trees and is currently used for grazing. It is surrounded by forest, (including state forest), on the west, north and east, but this will not be disturbed by the mining operation in the Loatta deposit. To the south the country opens out into well established grazing properties.

Mining would commence at the northern end of the Loatta deposit with an out of pit spoil volume of 3 million Bm^3 being created prior to commencement of in-pit spoiling in Year 1. Once in-pit spoiling commences, the rehabilitated land surface would be at approximately the same level as the original surface.

Prior to mining, topsoil would be removed by loader and truck for placement on the levelled spoil. Dozers would operate in conjunction with the tripper stacker to produce a rehabilitated surface. The rehabilitation crew would consist of an environmental officer and truck and shovel operators. Allowance has been made for replanting materials, including seedlings, seeds, fertilizers etc.

Mine dewatering will produce quantities of water which, if of sufficiently high quality will be allowed to drain into the existing drainage systems.

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14. CAPITAL AND OPERATING COSTS

14.1 Capital Costs

The capital expenditure schedule allows 10 years for investigations, power station construction and mine development.

Costs were estimated by referring to similar projects which had been costed in detail. 20% for contingencies has been included. Tables 14.1 to 14.3 show infrastructure costs.

14.2 Mine Equipment Capital

For major items of equipment such as Bucketwheel Excavators, budget quotes were obtained from equipment suppliers.

For conveyors, costs were based on those obtained for similar projects for which detailed cost estimates have been made.

Costs for mobile and light equipment items were based on manufacturer's budget estimates. Spares for mine equipment are included in the equipment capital costs.

Tables 14.1 to 14.4 show capital costs.

TABLE 14.1Summary of Initial Capital Costs - 240 MW Case

(A\$'000 at January, 1983)

For Years -10 to +3

	\$
Exploration & Evaluation	7,708
Pre-mining Engineering Management	2,771
Land Purchase	2,000
Infrastructure & Surface Facilities	5,958
 SUB TOTAL NON-EQUIPMENT	 18,437
 Bucketwheels, Bandwagons & Stackers	 24,348
Conveyors	15,942
Heavy Mobile Equipment	4,683
Other Equipment	2,265
 SUB TOTAL EQUIPMENT	 47,238
 GRAND TOTAL (includes spares & 20% contingency)	 65,675 *

* This does not include capitalised operating costs or working capital other than spares.

TABLE 14.2

Initial Capital Costs 240 MW Case

Page 1 of 2

(A\$'000 at 1st January, 1983)

Item	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	1	2	3	Total Initial Capital
A. EXPLORATION & EVALUATION														
Project Administration			70	70	70	70	70	70	70	70				560
Trial Pit Excavation			250											250
Geotechnics			250											250
Geology	200	200	100	100	50	50	50	50	50					850
Mine Design & Engineering		400	400					100	150	300				1350
EIS & Industrial			400	200	50	50	50	50	50	50				900
Insurance							240	348	1433	250	12			2263
Sub Total	200	400	1470	370	170	170	410	618	1735	650	12			6423
Contingency 20%	40	120	294	74	34	34	82	124	351	130	2			1285
TOTAL	240	720	1764	444	204	204	492	782	2104	780	14			7708
B. PRE-MINING ENGINEERING MANAGEMENT														
Mine (Engineering & Management)							176	821	102	475	49			1623
Infrastructure (Engineering & Mgmt)				156	210	191	123	6						686
Sub Total				156	210	367	944	108	475	49				2309
Contingency 20%				31	42	73	189	22	95	10				462
TOTAL				187	252	440	1133	130	570	59				2771
C. LAND PURCHASE														
Purchase Price H.A. 2050 86175/HA - (Includes Contingency)								1000			1000			2000

NOTE: For capital expenditure beyond Year 3, see Table 14.2 for summary, or computer printouts for detail.

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TABLE 14.2

Initial Capital Costs 240 MW Case

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(A\$'000 at 1st January, 1983)

Item	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	1	2	3	Total Initial Capital
D. INFRASTRUCTURE & SURFACE FACILITIES														
Water Supply								100						100
Waste Water Disposal								150						150
Accommodation								200	200	200				600
Construction Labour Transport								100	50	50				200
Construction Camp (100 men) plus operation of Camp							300	100	300	200				900
Power Supply							600	200	120					920
Communications								50						50
Site Preparation								100						100
Roads - relocation							300							300
- access									70					70
Mine Fencing										15				15
Admin & Workshop Area								500	700	260				1460
Stream Diversion & Levees									100					100
Sub Total							1300	1400	1540	725				4965
Contingency 20%							260	280	308	145				993
TOTAL							1560	1680	1848	870				5958
E. BUCKETWHEELS, BANDWAGONS & STACKERS (incl. spares & 20% contingency)														
									3120	13488	180	7560		24348
F. CONVEYORS (incl. spares & 20% contingency)														
									1481	5629	1200	6312	1320	15942
G. HEAVY MOBILE EQUIPMENT (incl. spares & 20% contingency)														
										4271		412		4683
H. OTHER EQUIPMENT (incl. spares & 20% contingency)														
									683	1339	65	10	168	2265
I. GRAND TOTAL (incl. spares & 20% contingency)														
	240	720	1764	444	391	456	2492	4555	9366	26947	2518	14294	1488	65675

NOTE: For capital expenditure beyond Year 3, see Table 14.2 for summary, or computer printouts for detail.

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TABLE 14.3

Summary of Capital Expenditure Beyond Year 3
(240 MW Case) (A\$'000 at January, 1983)

Year	C Land Purchase	D Infrastructure & Surface Facilities	E BWE Bandwagons Stackers	F Conveyors	G Heavy Mobile Equipment	H Other Equipment	I Grand Total
4						50	50
5				1320		10	1330
6	1000				132	551	1683
7		600		360		112	1072
8		(Road re- location)		960	194	67	1221
9				360		768	1128
10	3500					50	3550
11						289	289
12					132	514	646
13				960	1091	112	2163
14					364	71	435
15					701	168	869
16					700	108	808
17						10	10
18					132	490	622
19				960		650	1610
20						61	61
21					122	278	400
22						330	330
23						-	-
24					326	563	889
25						50	50
26				960	1454		2414
27						220	220
28					364	112	476
29							
30							

TABLE 14.4

Mine Equipment Items

Page 1 of 2

	<u>UNIT</u>	<u>NO. OF</u>	<u>UNIT</u>	<u>UNIT</u>
	<u>TYPE</u>	<u>UNITS</u>	<u>COST</u>	<u>LIFE</u>
A. <u>Bucketwheels,</u>				
<u>Bandwagons & Stackers</u>				
Bucketwheel No. 1		1	4500	LOM
Bucketwheel No. 2		1	4500	LOM
Bandwagon		2	3000	LOM
Stacker		1	5500	LOM
B. <u>Conveyors</u>				
Conveyor Control Centre		1	200	LOM
Face Conveyor 1		1	1000	LOM
Face Conveyor 2		1	1000	LOM
Trunk Conveyor 1		1	3000	LOM
Trunk Conveyor 2		1	4000	LOM
Dump Conveyor		1	1500	LOM
Trunk Conv. Ext (500M)		7	800	LOM
Face Conv. Ext. (2x200M)		5	300	LOM
C. <u>Heavy Mobile Equipment</u>				
Mayhew 1000 Mack PM		1	280	40,000 hrs
Front End Loader	CAT 988	1	415	15,000 hrs
Front End Loader	CAT 920	2	104	8 yrs
Dozer	CAT D8L	4	340	15,000 hrs
Grader	CAT 14G	1	280	15,000 hrs
Rear Dump 35T	CAT 769C	2	340	15,000 hrs
Water Truck 10T		1	120	20,000 hrs
Crane 20T		1	160	30,000 hrs
Pit Pumps & Pipes		4	25	6 yrs
Stand Pipe & Pump		1	10	6 yrs
Mobile Generator		1	200	16 yrs

TABLE 14.4Mine Equipment Items

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	<u>UNIT</u>	<u>NO. OF</u>	<u>UNIT</u>	<u>UNIT</u>
	<u>TYPE</u>	<u>UNITS</u>	<u>COST</u>	<u>LIFE</u>
D. <u>Other Equipment</u>				
Bobcat Loader		1	20	8 yrs
Tractor Seeder		1	30	8 yrs
Service/Lube Truck		1	60	11 yrs
Fire Truck		1	60	11 yrs
Ambulance		1	35	11 yrs
Sedans		10	10	3 yrs
4WD Sedan		2	10	3 yrs
4WD Utility		2	9	3 yrs
Utility	F100	8	12	3 yrs
10T Truck & HIAB Crane		2	53	6 yrs
Forklift Gen. Purpose	6T	2	57	7 yrs
Portable Welder		2	6	6 yrs
Lighting Plants		2	21	11 yrs
Technical Equipment		1	80	6 yrs
Workshop Tools & Equip.		1	100	35 yrs
Warehouse Equipment Etc.		1	10	35 yrs
Mine Office Equipment		1	80	6 yrs
Mini Computer & Software		1	200	11 yrs
Crib Hut		1	25	12 yrs

14.3 Operating Costs

Manpower costs per man year were calculated from awards similar to those which would apply in Tasmania. Staff costs allow for a base salary depending on job grade, overtime in special cases such as supervisory staff on continuous roster, and overheads including: travel allowances, payroll tax (5%), workers' compensation (3%), superannuation (12%) and miner's pension (\$1,172 p.a).

Award labour costs take into account the basic award weekly rate, overtime ranging from 10% to 40%, shift allowance and shift premium, travel allowance, special work allowances, annual leave loading (20%), payroll tax (5%), workers' compensation (3%) and miners' pension. No allowance was made for a bonus.

Equipment operating costs per hour were based on information from operating mines and from previous detailed costing studies

Power and Fuel costs used were:

Power Demand	\$8.05/Kwh/month
Power Usage	\$0.023/Kwh
Fuel	28.2 cents/litre

Operating costs are summarized in Tables 14.5 to 14.7. These tables do not include royalties, excise, levees, operating insurance or head office costs which are taken into account in the financial evaluation section of this report.

In summary the mine operating costs range from \$3.60/t at full production, to \$7.50/t in later years when sales reduce and strip ratio increases.

It was assumed that basalt would be removed by contractor at a cost of \$3.00 per Bm^3 .

		UNIT COSTS (\$/UNIT)									
		-2	-1	1	2	3	4	5	6	7	8
1.1	MANAGEMENT	0.00	1.37	0.31	0.17	0.15	0.15	0.15	0.15	0.15	0.15
1.2	ACCOUNTING OFFICE	0.00	1.14	0.39	0.27	0.24	0.24	0.24	0.24	0.24	0.24
1.3	WAREHOUSE	0.00	1.00	0.33	0.21	0.19	0.19	0.19	0.19	0.19	0.19
1.4	PERSONNEL	0.00	0.52	0.23	0.12	0.11	0.11	0.11	0.11	0.11	0.11
1.5	MINING ENGINEERING	0.00	2.00	0.46	0.24	0.22	0.22	0.22	0.22	0.22	0.22
1. MANAGEMENT & ADMIN. TONNES		0.00	6.02	1.72	1.01	0.90	0.90	0.90	0.90	0.90	0.90
2.1	TURBINE RECLAMATION	0.00	0.60	0.10	0.08	0.07	0.07	0.07	0.07	0.07	0.07
2.2	DWE OPERATION	0.00	5.66	2.30	2.16	1.90	1.90	1.93	1.84	1.79	1.85
2.3	DAGALL REMOVAL	0.00	0.00	0.00	0.04	0.21	0.00	0.00	0.00	0.00	0.00
2. O/D & COAL MINING TONNES		0.00	6.34	2.45	2.29	2.27	2.06	2.00	1.91	1.86	1.92
3.1	DEWATERING	0.00	1.16	0.29	0.15	0.14	0.14	0.14	0.14	0.14	0.14
3.2	MINE SERVICES	0.00	1.93	0.75	0.53	0.47	0.47	0.47	0.47	0.17	0.47
3. MINE SERVICES TONNES		0.00	3.09	1.03	0.68	0.60	0.60	0.60	0.60	0.60	0.60
4.1	ENGINEERING OFFICE	0.00	0.76	0.23	0.12	0.11	0.11	0.11	0.11	0.11	0.11
4.2	FIELD MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.3	WORKSHOP	0.00	0.64	0.16	0.09	0.08	0.08	0.08	0.08	0.08	0.08
4.4	ELECT. MAINTENANCE	0.00	0.12	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01
4. MAINT. ENGINEERING TONNES		0.00	1.52	0.42	0.22	0.20	0.20	0.20	0.20	0.20	0.20
PROJECT UNIT OPERATING COST TONNES		0.00	16.97	5.63	4.20	3.97	3.76	3.70	3.62	3.56	3.62

ALLOC. MAINT. LABOUR TONNES		0.00	2.96	0.82	0.59	0.52	0.52	0.52	0.52	0.52	0.52
(INCLUDED IN THE ABOVE COSTS)											

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Unit Operating Costs (\$/tonne)

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		UNIT COSTS (\$/UNIT)										
		9	10	11	12	13	14	15	16	17	18	
1.1	MANAGEMENT	0.15	0.15	0.17	0.17	0.18	0.18	0.18	0.20	0.20	0.20	
1.2	ACCOUNTING OFFICE	0.24	0.24	0.27	0.27	0.29	0.29	0.30	0.31	0.31	0.31	
1.3	WAREHOUSE	0.19	0.19	0.21	0.21	0.23	0.23	0.23	0.25	0.25	0.25	
1.4	PERSONNEL	0.11	0.11	0.12	0.13	0.14	0.14	0.14	0.14	0.14	0.14	
1.5	MINING ENGINEERING	0.22	0.22	0.22	0.22	0.24	0.24	0.24	0.26	0.26	0.26	
1.	MANAGEMENT & ADMIN.	TONNES	0.90	0.91	0.99	1.00	1.08	1.08	1.09	1.15	1.15	1.15
2.1	TOPSOIL&RECLANATION	0.07	0.07	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.10	
2.2	BWE OPERATION	1.86	1.88	2.09	2.12	2.36	2.36	2.44	2.59	2.59	2.59	
2.3	BASALT REMOVAL	0.00	0.00	0.00	0.00	0.00	0.41	0.41	0.44	0.44	0.44	
2.	O/B & COAL MINING	TONNES	1.93	1.95	2.17	2.20	2.45	2.86	2.95	3.12	3.12	3.12
3.1	DEWATERING	0.14	0.14	0.15	0.15	0.17	0.17	0.17	0.18	0.18	0.18	
3.2	MINE SERVICES	0.47	0.47	0.53	0.53	0.58	0.58	0.58	0.61	0.61	0.61	
3.	MINE SERVICES	TONNES	0.60	0.61	0.68	0.69	0.74	0.74	0.75	0.79	0.79	0.79
4.1	ENGINEERING OFFICE	0.11	0.11	0.12	0.12	0.14	0.14	0.14	0.14	0.14	0.14	
4.2	FIELD MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4.3	WORKSHOP	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10	
4.4	ELECT. MAINTENANCE	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
4.	MAINT. ENGINEERING	TONNES	0.20	0.20	0.22	0.23	0.25	0.25	0.25	0.26	0.26	0.26
PROJECT UNIT OPERATING COST		TONNES	3.63	3.68	4.06	4.12	4.52	4.93	5.03	5.32	5.32	5.32

ALLOC. MAINT. LABOUR (INCLUDED IN THE ABOVE COSTS)		TONNES	0.52	0.53	0.59	0.59	0.64	0.64	0.65	0.68	0.68	0.68

Unit Operating Costs (\$/tonne)

TABLE 14.5 (page 2 of 4)

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UNIT COSTS BY COST CENTRE
 ROSEVALE COAL DEPOSITS
 TONNES

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		UNIT COSTS (\$/UNIT)									
		19	20	21	22	23	24	25	26	27	28
1.1	MANAGEMENT	0.20	0.09	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
1.2	ACCOUNTING OFFICE	0.31	0.28	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
1.3	WAREHOUSE	0.25	0.24	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
1.4	PERSONNEL	0.14	0.11	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
1.5	MINING ENGINEERING	0.26	0.20	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
1.	MANAGEMENT & ADMIN.	1.15	0.92	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
2.1	TOPSOIL&RECLAMATION	0.10	0.10	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
2.2	BWE OPERATION	2.54	2.65	3.08	3.08	3.08	3.08	3.16	3.08	3.08	3.08
2.3	BASALT REMOVAL	0.44	0.45	0.61	0.61	1.23	1.23	1.23	1.84	1.84	1.84
2.	O/B & COAL MINING	3.07	3.20	3.83	3.83	4.44	4.44	4.52	5.06	5.06	5.06
3.1	DEWATERING	0.18	0.18	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
3.2	MINE SERVICES	0.61	0.64	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
3.	MINE SERVICES	0.79	0.83	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
4.1	ENGINEERING OFFICE	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
4.2	FIELD MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.3	WORKSHOP	0.10	0.10	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.4	ELECT. MAINTENANCE	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.	MAINT. ENGINEERING	0.26	0.27	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	PROJECT UNIT OPERATING COST	5.28	5.22	6.22	6.22	6.84	6.84	6.92	7.46	7.46	7.46

	ALLOC. MAINT. LABOUR	0.68	0.71	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
	(INCLUDED IN THE ABOVE COSTS)										

Unit Operating Costs (\$/tonne)

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 VERSION: 1.00

UNIT COSTS BY COST CENTRE
 ROSEVALE COAL DEPOSITS
 TONNES

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 CREATED: 25/ 2/83 09:38:44

		UNIT COSTS (\$/UNIT)	
		29	30
1.1	MANAGEMENT	0.12	0.12
1.2	ACCOUNTING OFFICE	0.38	0.38
1.3	WAREHOUSE	0.32	0.32
1.4	PERSONNEL	0.15	0.15
1.5	MINING ENGINEERING	0.27	0.27
-----		-----	
1.	MANAGEMENT & ADMIN. TONNES	1.25	1.25
-----		-----	
2.1	TOPSOIL&RECLAMATION	0.13	0.13
2.2	BWE OPERATION	3.08	3.09
2.3	BASALT REMOVAL	1.84	1.84
-----		-----	
2.	O/B & COAL MINING TONNES	5.06	5.07
-----		-----	
3.1	DEWATERING	0.25	0.25
3.2	MINE SERVICES	0.60	0.60
-----		-----	
3.	MINE SERVICES TONNES	0.85	0.85
-----		-----	
4.1	ENGINEERING OFFICE	0.15	0.15
4.2	FIELD MAINTENANCE	0.00	0.00
4.3	WORKSHOP	0.14	0.14
4.4	ELECT. MAINTENANCE	0.00	0.00
-----		-----	
4.	MAINT. ENGINEERING TONNES	0.30	0.30
-----		-----	
	PROJECT UNIT OPERATING COST TONNES	7.46	7.47
-----		-----	
	ALLOC. MAINT. LABOUR TONNES	0.67	0.67
-----		-----	
	(INCLUDED IN THE ABOVE COSTS)		

----- END OF UNIT COSTS BY COST CENTRE REPORT -----

Unit Operating Costs (\$/tonne)
 TABLE 14.5 (page 4 of 4)

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OPERATING COSTS BY COST CENTRE
ROSEVALE COAL DEPOSITS
TONNES

	OPERATING COSTS (\$,000)									
	-2	-1	1	2	3	4	5	6	7	8
1.1 MANAGEMENT	162.4	328.0	335.5	335.5	335.5	335.5	335.5	335.5	335.5	335.5
1.2 ACCOUNTING OFFICE	42.7	273.0	416.1	537.9	537.9	537.9	537.9	537.9	537.9	537.9
1.3 WAREHOUSE	7.6	239.2	351.0	424.0	424.0	424.0	424.0	424.0	424.0	424.0
1.4 PERSONNEL	0.0	124.7	248.6	248.6	248.6	248.6	248.6	248.6	248.6	248.6
1.5 MINING ENGINEERING	0.0	479.3	489.3	489.3	489.3	489.3	489.3	489.3	489.3	489.3
1. MANAGEMENT & ADMIN.	212.7	1444.2	1840.5	2035.3						
2.1 TOPSOIL RECLAMATION	0.0	163.9	163.9	163.9	163.9	163.9	163.9	163.9	163.9	163.9
2.2 BWE OPERATION	0.0	1358.6	2462.6	4339.4	4481.3	4481.3	4353.0	4161.1	4046.9	4170.5
2.3 BASALT REMOVAL	0.0	0.0	0.0	90.0	480.0	0.0	0.0	0.0	0.0	0.0
2. O/B & COAL MINING	0.0	1522.5	2626.5	4593.3	5125.2	4645.2	4516.9	4325.0	4210.8	4334.4
3.1 DEWATERING	181.7	278.2	305.2	305.2	305.2	305.2	305.2	305.2	305.2	305.2
3.2 MINE SERVICES	0.0	463.9	799.7	1056.2	1056.2	1056.2	1056.2	1056.2	1056.2	1056.2
3. MINE SERVICES	181.7	742.1	1104.9	1361.4						
4.1 ENGINEERING OFFICE	0.0	182.2	247.1	247.1	247.1	247.1	247.1	247.1	247.1	247.1
4.2 FIELD MAINTENANCE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.3 WORKSHOP	105.7	152.7	171.8	171.8	171.8	171.8	171.8	171.8	171.8	171.8
4.4 ELECT. MAINTENANCE	24.0	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9
4. MAINT. ENGINEERING	129.7	364.8	448.8							
TOTAL	524.1	4073.6	6020.7	8438.8	8970.7	8490.7	8362.4	8170.5	8056.3	8179.9
***** (INCLUDES MAINTENANCE LABOUR FROM EQUIPMENT HOURLY COSTS)										
ALLOC. MAINT. LABOUR (FOR COMPARATIVE PURPOSES, FROM MANPOWER CHART)	0.0	709.4	875.9	1178.0	1178.0	1178.0	1178.0	1178.0	1178.0	1178.0

Operating Costs by Cost Centre.
TABLE 14.6 (page 1 of 4)

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OPERATING COSTS BY COST CENTRE
ROSEVALE COAL DEPOSITS
TONNES

	OPERATING COSTS (\$,000)									
	9	10	11	12	13	14	15	16	17	18
1.1 MANAGEMENT	335.5	335.5	335.5	335.5	335.5	335.5	335.5	335.5	335.5	335.5
1.2 ACCOUNTING OFFICE	537.9	537.9	537.9	537.9	537.9	537.9	537.9	537.9	537.9	537.9
1.3 WAREHOUSE	424.0	424.0	424.0	424.0	424.0	424.0	424.0	424.0	424.0	424.0
1.4 PERSONNEL	248.6	248.6	248.6	248.6	248.6	248.6	248.6	248.6	248.6	248.6
1.5 MINING ENGINEERING	489.3	489.3	439.3	439.3	439.3	439.3	439.3	439.3	439.3	439.3
1. MANAGEMENT & ADMIN.	2035.3	2035.3	1985.3							
2.1 TOPSOIL&RECLAMATION	163.9	163.9	163.9	163.9	163.9	163.9	163.9	163.9	163.9	163.9
2.2 BWE OPERATION	4193.0	4193.0	4193.0	4193.0	4316.7	4316.7	4448.3	4448.3	4448.3	4448.3
2.3 BASALT REMOVAL	0.0	0.0	0.0	0.0	0.0	0.0	750.0	750.0	750.0	750.0
2. O/B & COAL MINING	4356.9	4356.9	4356.9	4356.9	4480.6	5230.6	5362.2	5362.2	5362.2	5362.2
3.1 DEWATERING	305.2	305.2	305.2	305.2	305.2	305.2	305.2	305.2	305.2	305.2
3.2 MINE SERVICES	1056.2	1056.2	1056.2	1056.2	1056.2	1056.2	1056.2	1056.2	1056.2	1056.2
3. MINE SERVICES	1361.4	1361.4	1361.4	1361.4	1361.4	1361.4	1361.4	1361.4	1361.4	1361.4
4.1 ENGINEERING OFFICE	247.1	247.1	247.1	247.1	247.1	247.1	247.1	247.1	247.1	247.1
4.2 FIELD MAINTENANCE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.3 WORKSHOP	171.8	171.8	171.8	171.8	171.8	171.8	171.8	171.8	171.8	171.8
4.4 ELECT. MAINTENANCE	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9
4. MAINT. ENGINEERING	448.8	448.8	448.8	448.8	448.8	448.8	448.8	448.8	448.8	448.8
TOTAL	8202.4	8202.4	8152.4	8152.4	8276.1	9026.1	9157.7	9157.7	9157.7	9157.7
***** (INCLUDES MAINTENANCE LABOUR FROM EQUIPMENT HOURLY COSTS)										
ALLOC. MAINT. LABOUR (FOR COMPARATIVE PURPOSES, FROM MANPOWER CHART)	1178.0	1178.0	1178.0	1178.0	1178.0	1178.0	1178.0	1178.0	1178.0	1178.0

OPERATING COSTS BY COST CENTRE
ROSEVALE COAL DEPOSITS
TONNES

	OPERATING COSTS (\$'000)									
	19	20	21	22	23	24	25	26	27	28
1.1 MANAGEMENT	335.3	150.9	150.9	150.9	150.9	150.9	150.9	150.9	150.9	150.9
1.2 ACCOUNTING OFFICE	537.9	467.5	467.5	467.5	467.5	467.5	467.5	467.5	467.5	467.5
1.3 WAREHOUSE	424.0	388.6	388.6	388.6	388.6	388.6	388.6	388.6	388.6	388.6
1.4 PERSONNEL	248.6	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8
1.5 MINING ENGINEERING	439.3	330.7	330.7	330.7	330.7	330.7	330.7	330.7	330.7	330.7
1. MANAGEMENT & ADMIN.	1985.3	1520.5								
2.1 TOPSOIL&RECLAMATION	163.9	163.9	163.9	163.9	163.9	163.9	163.9	163.9	163.9	163.9
2.2 BWE OPERATION	4371.3	4371.3	3754.6	3754.6	3754.6	3754.6	3849.6	3759.0	3759.0	3759.0
2.3 BASALT REMOVAL	750.0	750.0	750.0	750.0	1500.0	1500.0	1500.0	2250.0	2250.0	2250.0
2. O/B & COAL MINING	5285.2	5285.2	4668.5	4668.5	5418.5	5418.5	5513.5	6172.9	6172.9	6172.9
3.1 DEWATERING	305.2	305.2	305.2	305.2	305.2	305.2	305.2	305.2	305.2	305.2
3.2 MINE SERVICES	1056.2	1056.2	737.3	737.3	737.3	737.3	737.3	737.3	737.3	737.3
3. MINE SERVICES	1361.4	1361.4	1042.5							
4.1 ENGINEERING OFFICE	247.1	247.1	183.3	183.3	183.3	183.3	183.3	183.3	183.3	183.3
4.2 FIELD MAINTENANCE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.3 WORKSHOP	171.8	171.8	171.8	171.8	171.8	171.8	171.8	171.8	171.8	171.8
4.4 ELECT. MAINTENANCE	29.9	29.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
4. MAINT. ENGINEERING	448.8	448.8	361.0							
TOTAL	9080.7	8615.9	7592.5	7592.5	8342.5	8342.5	8437.5	9096.9	9096.9	9096.9
***** (INCLUDES MAINTENANCE LABOUR FROM EQUIPMENT HOURLY COSTS) *****										
ALLOC. MAINT. LABOUR (FOR COMPARATIVE PURPOSES, FROM MANPOWER CHART)	1178.0	1178.0	811.7	811.7	811.7	811.7	811.7	811.7	811.7	811.7

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OPERATING COSTS (\$,000)

	29	30
1.1 MANAGEMENT	150.9	150.9
1.2 ACCOUNTING OFFICE	467.5	467.5
1.3 WAREHOUSE	388.6	388.6
1.4 PERSONNEL	182.8	182.8
1.5 MINING ENGINEERING	330.7	330.7
1. MANAGEMENT & ADMIN.	1520.5	1520.5
2.1 TOPSOIL&RECLAMATION	163.9	163.9
2.2 BWE OPERATION	3759.0	3775.4
2.3 BAGALT REMOVAL	2250.0	2250.0
2. O/B & COAL MINING	6172.9	6189.3
3.1 DEWATERING	305.2	305.2
3.2 MINE SERVICES	737.3	737.3
3. MINE SERVICES	1042.5	1042.5
4.1 ENGINEERING OFFICE	183.3	183.3
4.2 FIELD MAINTENANCE	0.0	0.0
4.3 WORKSHOP	171.8	171.8
4.4 ELECT. MAINTENANCE	5.9	5.9
4. MAINT. ENGINEERING	361.0	361.0
TOTAL	9096.9	9113.3

(INCLUDES MAINTENANCE LABOUR FROM EQUIPMENT HOURLY COSTS		
ALLOC. MAINT. LABOUR	811.7	811.7
(FOR COMPARATIVE PURPOSES, FROM MANPOWER CHART)		

COST CENTRE: ALL COST CENTRES

OPERATING COSTS (\$,000)

	-2	-1	1	2	3	4	5	6	7	8
EQUIPMENT (EX. MAINTENANCE LABOUR)										

DIESEL CONSUMPTION(L/PD) (1)	3.6	109.0	149.3	268.9	345.0	345.0	421.1	421.1	421.1	502.9
POWER DEMAND (KW MAX) (2)	48.3	312.0	312.0	525.5	542.9	542.9	560.3	560.3	568.0	577.6
POWER USAGE (KW.HR/HR) (3)	41.4	80.7	188.3	306.0	309.2	309.2	279.6	271.9	257.9	257.9
GREASE & LUBE (4)	12.6	48.1	93.4	134.1	135.4	135.4	126.6	124.3	119.2	120.6
TYRES & GROUND EQUIPMENT (5)	1.2	39.1	56.0	67.8	67.8	67.8	67.8	67.8	67.8	67.8
MAINTENANCE PARTS (6)	43.0	290.1	624.6	936.5	952.4	952.4	887.0	867.1	830.1	841.7
EQUIPMENT CONSUMABLES (8)	0.0	60.9	169.9	297.0	309.1	309.1	289.4	281.9	269.6	277.2
DRILL STORES (9)	0.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
OUTSIDE OVERHAULS(\$/PD) (10)	0.0	20.4	50.2	75.2	75.2	75.2	67.2	65.2	61.2	61.2
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EQUIPMENT SUBTOTAL	150.1	969.3	1652.7	2620.0	2746.0	2746.0	2708.0	2668.6	2603.9	2715.9
MANPOWER										

DIRECT LABOUR (FROM COST/MANYEAR)	306.0	2502.8	3253.6	4137.5	4137.5	4137.5	4137.5	4011.1	4011.1	4011.1
ALLOCATED LABOUR (FROM EQUIPMENT HOURS)	43.0	316.5	744.4	1131.3	1147.2	1147.2	1056.9	1030.8	981.3	992.9
MANPOWER SUBTOTAL	349.0	2819.3	3998.0	5268.8	5284.7	5284.7	5194.4	5041.9	4992.4	5004.0
OTHER EXPENSES										

OFFICE EXPENSES (38)	10.0	15.0	50.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
CLEANING CONTRACT (40)	5.0	10.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
CANTEEN (42)	10.0	15.0	20.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
OTHER EXPENSES (34)	0.0	35.0	65.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
DRILLING CONTRACTS (17)	0.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
OUTSIDE SERVICES (33)	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
REHABILITATION MATERIALS (29)	0.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
CONTRACT BASALT REMOVAL (21)	0.0	0.0	0.0	90.0	480.0	0.0	0.0	0.0	0.0	0.0
ROAD MAINT. MATERIALS (20)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MINE AREA EXPENSES (16)	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
OTHER EXPENSE SUBTOTAL	25.0	285.0	370.0	550.0	940.0	460.0	460.0	460.0	460.0	460.0
TOTAL	524.1	4073.6	6020.7	8438.8	8970.7	8490.7	8362.4	8170.5	8056.3	8179.9
****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****

Operating Costs by Expense Type

TABLE 14.7 (page 1 of 4)

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COST CENTRE: ALL COST CENTRES

	9	10	11	12	13	14	15	16	17	18
OPERATING COSTS (\$,000)										
EQUIPMENT (EX. MAINTENANCE LABOUR)										

DIESEL CONSUMPTION(L/PD) (1)	502.9	502.9	502.9	502.9	584.7	584.7	584.7	584.7	584.7	584.7
POWER DEMAND (KW MAX) (2)	585.3	585.3	585.3	585.3	595.0	595.0	595.0	595.0	595.0	595.0
POWER USAGE (KW.HR/HR) (3)	260.4	260.4	260.4	260.4	260.4	260.4	276.0	276.0	276.0	276.0
GREASE & LUBE (4)	120.6	120.6	120.6	120.6	122.1	122.1	127.2	127.2	127.2	127.2
TYRES & GROUND EQUIPMENT (5)	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8
MAINTENANCE PARTS (6)	845.8	845.8	845.8	845.8	857.4	857.4	897.1	897.1	897.1	897.1
EQUIPMENT CONSUMABLES (8)	281.3	281.3	281.3	281.3	288.8	288.8	303.8	303.8	303.8	303.8
DRILL STORES (9)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
OUTSIDE OVERHAULS(\$/PD) (10)	61.2	61.2	61.2	61.2	61.2	61.2	65.2	65.2	65.2	65.2
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EQUIPMENT SUBTOTAL	2734.3	2734.3	2734.3	2734.3	2846.4	2846.4	2925.8	2925.8	2925.8	2925.8
MANPOWER										

DIRECT LABOUR (FROM COST/MANYEAR)	4011.1	4011.1	4011.1	4011.1	4011.1	4011.1	4011.1	4011.1	4011.1	4011.1
ALLOCATED LABOUR (FROM EQUIPMENT HOURS)	997.0	997.0	997.0	997.0	1008.6	1008.6	1060.8	1060.8	1060.8	1060.8
MANPOWER SUBTOTAL	5008.1	5008.1	5008.1	5008.1	5019.7	5019.7	5071.9	5071.9	5071.9	5071.9
OTHER EXPENSES										

OFFICE EXPENSES (38)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
CLEANING CONTRACT (40)	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
CANTEEN (42)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
OTHER EXPENSES (34)	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
DRILLING CONTRACTS (17)	35.0	35.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OUTSIDE SERVICES (33)	25.0	25.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
REHABILITATION MATERIALS (29)	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
CONTRACT BASALT REMOVAL (21)	0.0	0.0	0.0	0.0	0.0	750.0	750.0	750.0	750.0	750.0
ROAD MAINT, MATERIALS (20)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MINE AREA EXPENSES (16)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
OTHER EXPENSE SUBTOTAL	460.0	460.0	410.0	410.0	410.0	1160.0	1160.0	1160.0	1160.0	1160.0
TOTAL	8202.4	8202.4	8152.4	8152.4	8276.1	9026.1	9157.7	9157.7	9157.7	9157.7

Operating Costs by Expense Type

TABLE 14.7 (page 2 of 4)

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COST CENTRE: ALL COST CENTRES

	19	20	21	22	23	24	25	26	27	28
OPERATING COSTS (\$,000)										
EQUIPMENT (EX. MAINTENANCE LABOUR)										

DIESEL CONSUMPTION(L/PD) (1)	548.0	545.5	524.8	524.8	524.8	524.8	524.8	547.4	547.4	547.4
POWER DEMAND (KW MAX) (2)	597.0	597.0	597.0	597.0	597.0	597.0	597.0	606.6	606.6	606.6
POWER USAGE (KW.HR/HR) (3)	271.3	271.3	216.2	216.2	216.2	216.2	216.2	200.5	200.5	200.5
GREASE & LUBE (4)	126.5	126.1	103.3	103.3	103.3	103.3	103.3	98.6	98.6	98.6
TYRES & GROUND EQUIPMENT (5)	67.8	67.2	57.6	57.6	57.6	57.6	57.6	57.6	57.6	57.6
MAINTENANCE PARTS (6)	884.2	882.2	716.6	716.6	716.6	716.6	716.6	680.1	680.1	680.1
EQUIPMENT CONSUMABLES (8)	292.7	292.7	238.3	238.3	238.3	238.3	238.3	225.4	225.4	225.4
DRILL STORES (9)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
OUTSIDE OVERHAULS(\$/PD) (10)	65.2	65.2	51.2	51.2	51.2	51.2	51.2	47.2	47.2	47.2
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EQUIPMENT SUBTOTAL	2861.7	2856.2	2514.0	2514.0	2514.0	2514.0	2514.0	2472.4	2472.4	2472.4
MANPOWER										

DIRECT LABOUR (FROM COST/MANYEAR)	4011.1	3588.8	3166.8	3166.8	3166.8	3166.8	3261.8	3261.8	3261.8	3261.8
ALLOCATED LABOUR (FROM EQUIPMENT HOURS)	1047.9	1045.9	836.7	836.7	836.7	836.7	836.7	787.7	787.7	787.7
MANPOWER SUBTOTAL	5059.0	4634.7	4003.5	4003.5	4003.5	4003.5	4098.5	4049.5	4049.5	4049.5
OTHER EXPENSES										

OFFICE EXPENSES (38)	100.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
CLEANING CONTRACT (40)	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
CANTEEN (42)	30.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
OTHER EXPENSES (34)	95.0	95.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
DRILLING CONTRACTS (17)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OUTSIDE SERVICES (33)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
REHABILITATION MATERIALS (29)	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
CONTRACT BASALT REMOVAL (21)	750.0	750.0	750.0	750.0	1500.0	1500.0	1500.0	2250.0	2250.0	2250.0
ROAD MAINT. MATERIALS (20)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MINE AREA EXPENSES (16)	100.0	100.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
OTHER EXPENSE SUBTOTAL	1160.0	1125.0	1075.0	1075.0	1825.0	1825.0	1825.0	2575.0	2575.0	2575.0
TOTAL	9080.7	8615.9	7592.5	7592.5	8342.5	8342.5	8437.5	9096.9	9096.9	9096.9
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****

Operating Costs by Expense Type

TABLE 14.7

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COST CENTRE: ALL COST CENTRES

OPERATING COSTS (\$,000)

	29	30
EQUIPMENT (EX. MAINTENANCE LABOUR)		

DIESEL CONSUMPTION(L/PD) (1)	547.4	547.4
POWER DEMAND (KW MAX) (2)	606.6	614.3
POWER USEAGE (KW.HR/HR) (3)	200.5	202.0
GREASE & LUBE (4)	98.6	98.6
TYRES & GROUND EQUIPMENT (5)	57.6	57.6
MAINTENANCE PARTS (6)	680.1	682.5
EQUIPMENT CONSUMABLES (8)	225.4	227.8
DRILL STORES (9)	9.0	9.0
OUTSIDE OVERHAULS(\$/PD) (10)	47.2	47.2
	0.0	0.0
EQUIPMENT SUBTOTAL	2472.4	2486.4

MANPOWER		

DIRECT LABOUR	3261.8	3261.8
ALLOCATED LABOUR	787.7	790.1
MANPOWER SUBTOTAL	4049.5	4051.9

OTHER EXPENSES		

OFFICE EXPENSES (38)	70.0	70.0
CLEANING CONTRACT (40)	25.0	25.0
CANTEEN (42)	25.0	25.0
OTHER EXPENSES (34)	75.0	75.0
DRILLING CONTRACTS (17)	0.0	0.0
OUTSIDE SERVICES (33)	10.0	10.0
REHABILITATION MATERIALS (29)	50.0	50.0
CONTRACT BASALT REMOVAL (21)	2250.0	2250.0
ROAD MAINT. MATERIALS (20)	0.0	0.0
MINE AREA EXPENSES (16)	70.0	70.0
OTHER EXPENSE SUBTOTAL	2575.0	2575.0

TOTAL	9096.9	9113.3

Operating Costs by Expense Type

TABLE 14.7 (page 4 of 4)

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15. 320 MW ALTERNATIVE (4 x 80 MW)

15.1 Sizing of Equipment

The bucketwheel and conveyors chosen for the base case (240 MW) were of sufficient capacity to meet the peak tonnages on a 7 x 2 shift basis, with considerable excess capacity available after Year 6.

It was found that the same equipment working on a 7 x 3 shift basis was well matched to the mining schedule required for a 4 x 80 MW power station, with some excess capacity still available (about 15% excess). This results in a much more economical mining operation and consequently a considerable reduction in coal selling price.

15.2 Burning Schedule

Coal:	S.E.	7.10	MJ/kg	(as mined)
	Moisture	14.3	%	(as mined)
	Ash	25.4	%	(as mined)

Power Station: 4 x 80 MW

Introduced in 1 year intervals

82% max. coal rate Year 1

92% max. coal rate Year 2

100% max. coal rate Year 3

100% coal rate is 0.83 Mtpy @ 70% acf per unit.

Burning Schedule

Year 1	0.68	Mtpy	
Year 2	1.44	Mtpy	
Year 3	2.27	Mtpy	
Year 4	3.10	Mtpy	
Year 5	3.25	Mtpy	
Year 6	3.32	Mtpy	
Year 7-10	3.32	Mtpy	
Year 11-12	2.99	Mtpy	(90%)
Year 13-15	2.66	Mtpy	(80%)
Year 16-20	2.49	Mtpy	
Year 21-30	1.83	Mtpy	
<hr/>			
	72.05	Mt	(30 years)
<hr/>			
	53.75	Mt	(20 years)

15.3 Mining Schedule

Table 15.1 shows the mining schedule over the 30 year mine life. It can be seen that with one BWE working 7 x 3 shifts and the second BWE working 7 x 2 shifts, the burning schedule can be met. The tapering off of coal requirements from Year 11 onwards is offset by the progressive increase in strip ratio, so that equipment utilization remains fairly constant after Year 4.

15.4 Capital Costs

Capital costs for this case remain virtually the same as for the base case, except for small changes in the rate of replacement of some of the mobile plant, and for some additional land purchase costs in the Piper's Lagoon area. Total initial capital up to Year 3 would be around \$68 million.

15.5 Operating Costs

Annual operating costs increase from around \$8.5 million p.a. in the base 240 MW case to about \$9.6 million (Years 3 to 8) p.a. This results in a reduction in cost per tonne from \$3.80/tonne to \$3.00/tonne in the early years. In the later years, the operating cost is around \$6.00/tonne, compared with more than \$7.00/tonne in the base case.

15.6 Manpower

Manpower requirements in Year 4 are for 184 persons compared with 171 persons in the base case.

TABLE 15.1

Loatta Deposit - Mining Schedule for 4 x 80 MW Case

Year	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
POWER STATION REQUIREMENT:																
Coal Burned (MT)	0.10	0.68	1.44	2.27	3.10	3.25	3.32	3.32	3.32	3.32	3.32	2.99	2.99	2.66	2.66	2.66
Coal Stockpile (MT)	0.10	0.15	0.20	0.30	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30
Stockpile Change (MT)	0.10	0.05	0.05	0.10	0.10	-	-	-	-	-	-	-	-	(0.10)	-	-
COAL DELIVERED (MT)	0.20	0.73	1.49	2.37	3.20	3.25	3.32	3.32	3.32	3.32	3.32	2.99	2.99	2.56	2.66	2.66
BLOCKS MINED (& Proportion)	1(.15)	1(.15)	1(.30) 2(.61)	2(.39) 3(0.67)	3(.33) 4(.78)	4(.22) 5(.51)	5(.49) 6(.12)	6(.49)	6(.39) 7(.9)	7(.1)	8(.42)	8(.17) 9(.19)	9(.35)	9(.30)	9(.16) 10(.17)	10(.35)
BUCKETWHEEL VOLUMES (Mm³)																
Ramps	0.02															
O/B Advance Stripping	0.9															
Waste from Coal Mining	0.4	1.45	3.43	5.02	6.32	5.39	4.80	3.62	5.64	6.35	6.20	6.30	6.98	5.99	6.42	6.65
Coal Volume (sq 1.36)	0.15	0.54	1.10	1.74	2.35	2.39	2.44	2.44	2.44	2.44	2.44	2.20	2.20	1.88	1.96	1.96
TOTAL BWE	1.65	1.99	4.53	6.76	8.67	7.78	7.24	6.06	8.08	8.79	8.64	8.50	9.18	7.87	8.38	8.61
BWE Volume Smoothed	1.65	2.02	4.50	7.73	7.73	7.73	7.73	7.73	7.73	7.73	8.36	8.36	8.36	8.36	8.36	8.36
BASALT (Mm ³)				0.02	0.13	0.04						0.27	0.49	0.42	0.43	0.43
BASALT (Smoothed Mm ³)				0.02	0.13	0.04						0.27	0.43	0.43	0.43	0.43
BWE No. 1 Shifts	5x2	5x2	7x3	7x3	7x3	7x3	7x3	7x3	7x3	7x3	7x3	7x3	7x3	7x3	7x3	7x3
BWE No. 2 Shifts				7x2	7x2	7x2	7x2	7x2	7x2	7x2	7x2	7x2	7x2	7x2	7x2	7x2

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TABLE 15.1

Loatta Deposit - Mining Schedule for 4 x 80 MW Case

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Year	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL
POWER STATION REQUIREMENT:																
Coal Burned (MT)	2.49	2.49	2.49	2.49	2.49	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	72.15
Coal Stockpile (MT)	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	
Stockpile Change (MT)	-	-	-	-	-	(0.10)	-	-	-	-	-	-	-	-	-	
COAL DELIVERED (MT)	2.49	2.49	2.49	2.49	2.49	1.73	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	72.35
BLOCKS MINED (& Proportion)	10(.33)	10(.15)	11(.44)	11(.32)	12(.24)	12(.17)	12(.18)	12(.18)	12(.15)	end of Loatta Pipers Lagoon starts Yr 24						
		11(.24)		12(.07)												
BUCKETWHEEL VOLUMES (Mm ³)																
Ramps																
O/B Advance Stripping	6.27	5.35	4.58	5.75	8.51	5.86	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	
Waste from Coal Mining	1.83	1.83	1.83	1.83	1.83	1.27	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	53.2
Coal Volume (sq 1.36)																
TOTAL BWE	8.10	7.18	6.41	7.58	10.34	7.13	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	
BWE Volume Smoothed	8.36	7.68	7.68	7.68	7.68	7.68	7.68	7.68	7.55	7.55	7.55	7.55	7.55	7.55	7.55	
BASALT (Mm ³)	0.40	1.31	2.06	1.64	0.46	0.32	0.34	0.34	0.29							
BASALT (Smoothed Mm ³)	0.43	1.67	1.67	1.67	0.35	0.35	0.35	0.35	0.35							
BWE No. 1 Shifts	7x3	7x3	7x3	7x3	7x3	7x3										
BWE No. 2 Shifts	7x2	7x2	7x2	7x2	7x2	7x2										

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16. SENSITIVITY TO MINING RECOVERY ASSUMPTIONS16.1 240MW Base Case

The base case schedule assumed that, apart from 5.8% coal losses around the margins of the Loatta deposit, there would be no further coal losses during mining. This was consistent with the generous dilution assumptions outlined in Section 3.6, but does not account for possible coal losses which could arise as a result of:

- . errors in identification of coal and partings
- . lack of continuity of working sections ie., errors in reserve calculations
- . inability to selectively mine areas with poor ground conditions etc.

Although the 20% capital and operating cost contingencies used in the financial evaluation may cover such unexpected coal losses, the sensitivity of the coal price to coal recovery assumptions has been approximately analysed as set out below:

- . Based on the average mining thicknesses, the strip ratio increases as mining recovery decreases as follows:

Recovery	0.95	Ratio increases	7%
Recovery	0.90	Ratio increases	14%
Recovery	0.85	Ratio increases	23%

In the 240MW case, the effect of 0.85 recovery is to increase the BWE shifts worked:

<u>FROM</u>	Yr. 2 to 5	Yr. 6 to 20	Yr. 21 to 24	Yr. 25 to 30
BWE 1	7 x 2	7 x 2	7 x 2	7 x 3
BWE 2	7 x 2	5 x 2	5 x 1	Nil

<u>TO</u>	Year 2 to 5	Year 6 to 20	Year 21 to 30
BWE 1	7 x 3	7 x 2	Not calculated
BWE 2	7 x 2	7 x 2	Not calculated

So in the worst possible case, the mining equipment has sufficient capacity to cope with the increased quantities, which means that capital costs would not increase. Operating costs would increase by:

Labour approx. 25 men @ \$30,000	=	\$ 750,000
Parts, materials, power	say	200,000
		<hr/>
		\$ 950,000

Based on 1.8 Mtpa this is \$0.53/t increase in operating costs, or about \$0.47/t increase in the coal price (4.5% price increase) for an exceptionally low mining recovery of 85%.

This 15% mining loss is in addition to the 5.8% already included in the study.

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16.2 320MW Case

In this case, the excess capacity in the BWEs is as follows:

Years 3 to 9	16% excess capacity
Years 10 to 16	8% excess capacity
Years 17 to 23	17% excess capacity
Years 24 to 30	19% excess capacity

So, without any increase in capital, the mining recoveries which could be accommodated range from 87% to 94% (in addition to the 5.8% already included).

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17. ACKNOWLEDGEMENTS

Contributions to this study were as follows:

Mining	:	J. Harrison	CSR	E & E
		R. Hoskings	Dick Hoskings & Associates	
Study Management	:	J. Jamieson	CSR	E & E
Geology	:	P. Ellis	CSR	E & E
Coal Quality	:	P. Cameron	CSR	E & E
		P. Ellis	CSR	E & E
Financial Evaluation	:	A Morse	CSR Coal H.Q.	

HOLE DEPTH	TEMP.	CORR. TEMP.	S.G.	WATER	SAND	COLOR	Dry ASH FREE			IN SITU						
							Wt. %	V.M.	F.C.	T.P.	S.G.M.	R.D.	ASH	V.M.	F.C.	LOG
20 10.00	14.21	42.7	34.5	22.6	0.24		24.70	22.0	32.0	42.1	7.64	1.329	23.2	21.0	10.1	0.12
20 11.00	14.21	42.7	34.5	22.6	0.24		24.21	27.3	32.0	41.7	7.62	1.331	43.0	13.3	2.4	0.12
20 12.00	14.21	42.7	34.5	22.6	0.24		24.7	32.7	32.2	41.6	7.61	1.328	19.0	20.2	15.4	0.12
20 13.00	14.21	42.7	34.5	22.6	0.24		24.14	32.7	32.3	41.7	7.62	1.328	25.1	10.0	2.1	0.12
20 14.00	14.21	42.7	34.5	22.6	0.24		24.21	32.4	32.2	41.6	7.62	1.328	14.4	10.9	4.8	0.12
20 15.00	14.21	42.7	34.5	22.6	0.24		24.7	26.4	32.1	42.1	7.23	1.317	21.3	18.7	12.2	0.12
20 16.00	14.21	42.7	34.5	22.6	0.24		24.22	31.9	32.1	41.4	7.23	1.315	40.7	16.4	5.8	0.12
20 17.00	14.21	42.7	34.5	22.6	0.24		24.21	32.3	31.1	41.1	7.23	1.315	31.5	17.9	9.2	0.11
20 18.00	14.21	42.7	34.5	22.6	0.24		24.21	32.3	31.7	41.2	7.23	1.315	17.7	19.3	13.5	0.11
20 19.00	14.21	42.7	34.5	22.6	0.24		24.23	32.9	32.1	41.0	7.23	1.327	21.2	16.0	2.1	0.11
20 20.00	14.21	42.7	34.5	22.6	0.24		24.23	32.4	32.6	41.4	7.21	1.324	17.5	16.4	13.7	0.11
20 21.00	14.21	42.7	34.5	22.6	0.24		24.23	32.5	32.5	41.3	7.23	1.329	36.0	16.3	7.2	0.10
20 22.00	14.21	42.7	34.5	22.6	0.24		24.24	32.5	32.5	41.4	7.14	1.321	16.2	16.3	13.5	0.13
20 23.00	14.21	42.7	34.5	22.6	0.24		24.27	32.7	32.7	41.0	7.16	1.322	26.4	16.8	11.2	0.12
20 24.00	14.21	42.7	34.5	22.6	0.24		24.23	32.3	32.7	41.0	7.23	1.320	24.2	17.2	12.1	0.12
20 25.00	14.21	42.7	34.5	22.6	0.24		24.27	32.3	32.7	41.2	7.23	1.315	49.3	12.2	4.0	0.12
20 26.00	14.21	42.7	34.5	22.6	0.24		24.29	32.2	32.8	41.3	7.24	1.325	25.1	19.0	11.0	0.12
20 27.00	14.21	42.7	34.5	22.6	0.24		24.28	32.0	31.0	41.3	7.24	1.326	18.2	19.2	13.2	0.12
20 28.00	14.21	42.7	34.5	22.6	0.24		24.70	32.2	32.2	41.2	7.23	1.324	20.5	19.1	12.1	0.14
20 29.00	14.21	42.7	34.5	22.6	0.24		24.23	32.2	31.0	41.0	7.22	1.324	14.4	20.9	14.5	0.14
20 30.00	14.21	42.7	34.5	22.6	0.24		23.74	31.0	32.0	41.0	6.11	1.295	30.7	15.7	10.0	0.10
20 31.00	14.21	42.7	34.5	22.6	0.24		24.21	32.3	32.9	41.1	7.23	1.320	27.2	18.4	11.2	0.12
20 32.00	14.21	42.7	34.5	22.6	0.24		24.27	34.3	32.7	41.3	7.23	1.320	27.0	18.6	10.3	0.12
20 33.00	14.21	42.7	34.5	22.6	0.24		24.23	32.4	32.0	41.1	7.23	1.321	20.7	17.8	12.1	0.12
20 34.00	14.21	42.7	34.5	22.6	0.24		24.25	32.1	31.8	41.1	7.14	1.321	37.4	11.6	5.8	0.05
AVERAGE OF HOLE NO. 20							24.71	29.3	32.7	40.4	7.22	1.326	22.9	16.5	12.2	0.12

HOLE CO20 Working Section Analysis

TABLE A2

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HOLE	DEPTH	THICK	WS	C	DRY BASIS					SOD	CHLOR	DRY ASH FREE			IN SITU						
					S.EN.	ASH	V.M.	F.C.	SUL			S.EN.	V.M.	F.C.	T.H.	S.EN.	R.D.	ASH	V.M.	F.C.	SUL
21	9.76	1.15	0	-	5.98	41.9	26.1	12.0	0.16			18.33	68.5	31.5	40.1	4.18	1.474	37.1	15.6	7.2	0.10
21	9.81	1.69	0	-	0.60	84.9	14.5	0.6	0.09			4.49	96.2	3.8	29.7	0.48	1.731	59.7	10.2	0.4	0.05
21	10.16	0.55	1	*	14.05	42.1	34.8	23.1	0.27			24.24	60.1	39.9	47.2	7.42	1.323	22.2	18.4	10.2	0.14
21	10.44	0.28	1	*	15.10	40.0	36.7	23.3	0.20			25.18	61.2	38.8	48.7	7.75	1.299	20.5	18.9	11.9	0.14
21	10.97	0.51	1	*	14.05	42.1	34.8	23.1	0.27			24.24	60.1	39.9	47.2	7.42	1.323	22.2	18.4	10.2	0.14
21	11.73	0.76	2	-	4.44	75.1	17.9	7.0	0.16			17.85	72.0	28.0	38.0	2.75	1.552	46.5	11.1	4.2	0.10
21	13.20	1.47	3	*	18.87	26.9	42.6	30.6	0.34			25.80	58.2	41.8	50.5	9.33	1.254	13.3	21.1	15.1	0.17
21	13.50	0.30	3	*	11.23	46.5	33.1	20.4	0.24			20.99	61.9	38.1	46.2	6.04	1.357	25.0	17.8	11.9	0.13
21	13.58	0.08	3	*	18.87	26.9	42.6	30.6	0.34			25.80	58.2	41.8	50.5	9.33	1.254	13.3	21.1	15.1	0.17
21	14.40	0.82	4	-	5.10	69.6	22.6	7.8	0.21			14.86	74.4	25.6	40.2	3.05	1.512	41.6	13.5	4.6	0.12
21	15.18	0.78	5	*	13.26	45.9	33.9	20.2	0.27			24.50	62.7	37.3	44.5	7.37	1.353	25.5	18.8	11.2	0.15
21	15.50	0.32	5	*	13.23	45.1	33.3	21.5	0.22			24.13	60.8	39.2	45.2	7.25	1.343	24.7	18.3	11.8	0.12
21	15.82	0.32	5	*	14.80	41.0	34.6	24.4	0.24			25.08	58.6	41.4	51.1	7.24	1.290	20.1	14.9	11.9	0.12
21	16.45	0.63	5	*	13.23	45.1	33.3	21.5	0.22			24.13	60.8	39.2	45.2	7.25	1.343	24.7	18.3	11.8	0.12
21	16.96	0.45	5	*	11.72	49.3	31.9	18.8	0.20			23.13	63.0	37.0	43.2	6.67	1.380	28.0	18.2	10.7	0.11
21	18.30	1.34	5	*	23.08	20.5	44.6	34.9	0.26			29.02	58.1	43.9	52.7	10.92	1.221	9.7	21.1	18.5	0.12
21	18.62	0.32	5	*	16.36	35.9	36.7	27.4	0.21			25.52	57.2	42.8	51.6	7.92	1.279	17.4	17.7	13.5	0.10
21	19.11	0.49	6	-	8.65	62.2	25.9	11.9	0.14			22.88	68.6	31.4	42.3	4.99	1.439	35.9	15.0	6.8	0.08
21	20.34	0.84	6	-	7.33	63.2	24.1	12.7	0.15			19.93	65.6	34.4	41.6	4.28	1.462	36.9	14.1	7.4	0.09
21	20.42	0.08	7	*	14.47	41.5	33.8	24.7	0.28			24.73	57.7	42.3	45.7	7.85	1.335	22.5	18.3	13.4	0.15
21	20.79	0.37	7	*	16.51	34.9	37.6	27.5	0.24			25.35	57.7	42.3	52.5	7.84	1.244	16.6	17.9	13.1	0.12
21	21.37	0.58	7	*	14.47	41.5	33.8	24.7	0.28			24.73	57.7	42.3	45.7	7.85	1.335	22.5	18.3	13.4	0.15
21	22.06	0.45	8	-	7.09	65.8	23.4	10.8	0.19			20.73	68.5	31.5	41.1	4.17	1.470	38.7	13.8	6.3	0.11
21	23.80	1.74	8	-	0.54	85.3	14.3	0.3	0.03			3.68	97.6	2.4	29.5	0.38	1.776	60.2	10.1	0.2	0.02
21	24.75	0.55	8	-	4.73	70.2	24.3	5.5	0.22			15.86	81.5	18.5	39.0	2.88	1.553	42.6	14.8	3.4	0.14
21	44.98	0.71	9	*	18.34	32.7	37.7	29.6	0.25			27.26	56.1	43.9	48.5	9.45	1.284	16.9	19.4	15.2	0.13
21	45.32	0.34	9	*	14.13	42.7	33.6	23.7	0.24			24.68	58.7	41.3	48.1	7.34	1.309	22.2	17.4	12.3	0.13
21	46.07	0.75	9	*	18.34	32.7	37.7	29.6	0.25			27.26	56.1	43.9	48.5	9.45	1.284	16.9	19.4	15.2	0.13
21	46.87	0.80	10	-	4.25	74.4	19.2	6.4	0.10			16.62	74.9	25.1	37.8	2.64	1.551	46.3	11.9	4.0	0.07
21	47.64	0.54	10	-	11.34	54.1	28.7	17.2	0.21			24.70	62.5	37.5	41.4	6.65	1.423	31.7	16.8	10.1	0.12
21	48.17	0.53	11	-	9.52	59.6	25.8	14.6	0.20			23.54	63.9	36.1	43.1	5.42	1.421	33.9	14.7	8.3	0.11
21	48.53	0.36	11	*	14.54	43.2	33.9	22.9	0.31			25.59	59.7	40.3	51.4	7.07	1.283	21.0	16.5	11.1	0.15
21	49.39	0.86	11	*	14.98	42.1	35.1	22.8	0.36			25.87	60.7	39.3	46.7	7.98	1.322	22.4	18.7	12.1	0.19
21	49.78	0.39	11	*	6.92	65.9	24.5	9.7	0.23			20.28	71.7	28.3	38.4	4.27	1.496	40.6	15.1	6.0	0.14
21	50.29	0.51	11	*	18.29	31.5	41.0	27.6	0.43			26.69	59.8	40.2	50.5	9.05	1.263	15.6	20.3	13.6	0.21
21	50.57	0.28	11	*	16.33	36.7	37.1	26.2	0.37			25.80	58.6	41.4	50.6	8.07	1.273	18.1	18.3	12.9	0.18
21	51.58	1.01	11	-	10.26	51.0	30.8	18.2	0.27			20.93	62.8	37.2	45.6	5.58	1.349	27.8	16.7	9.9	0.15
21	51.81	0.23	11	-	11.51	52.3	30.0	17.8	0.25			24.11	62.8	37.2	44.2	6.42	1.384	29.1	16.7	9.9	0.14
21	52.21	0.40	11	-	17.38	32.6	37.5	29.8	0.34			25.78	59.7	41.3	53.2	8.13	1.250	15.3	17.6	14.0	0.16
21	52.88	0.67	11	-	11.51	52.3	30.0	17.8	0.25			24.11	62.8	37.2	44.2	6.42	1.384	29.1	16.7	9.9	0.14
21	53.69	0.81	11	-	10.94	54.4	30.1	15.5	0.23			24.03	65.9	34.1	43.3	6.22	1.397	30.9	17.1	8.8	0.13
21	53.97	0.28	11	-	14.15	44.5	33.2	22.3	0.26			25.52	59.8	40.2	47.6	7.42	1.315	23.3	17.4	11.7	0.13
21	54.55	0.58	12	-	11.92	50.7	31.3	18.0	0.23			24.20	63.4	36.6	41.9	6.93	1.379	29.5	18.2	10.5	0.14
21	56.24	1.69	0	-	7.73	62.3	25.1	12.7	0.21			20.48	66.4	33.6	41.1	4.55	1.451	36.7	14.8	7.5	0.12
21	58.06	1.39	0	-	10.69	53.4	28.9	17.6	0.23			22.95	62.1	37.9	43.6	6.03	1.400	30.2	16.3	10.0	0.13
21	59.57	1.51	0	-	5.55	69.1	22.5	8.4	0.18			17.95	72.8	27.2	37.8	3.45	1.523	43.0	14.0	5.2	0.11
AVERAGE of HOLE No: 21																					
21	50.57	12.58	0	*	15.78	38.4	36.5	25.2	0.28			25.60	59.2	40.8	48.1	8.19	1.302	19.9	18.9	13.1	0.14

Hole C021 Working Sections Analysis

TABLE A3

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HOLE	SEAM	DEPTH	THICK	INC RATIO	CUM RATIO	CUM D/B	CUM SEAM
C019	SA1	7.74	3.59	0.87	0.87	4.15	3.59
C019	SB4	22.58	1.88	5.18	2.35	17.11	5.47
C019	SC1	30.46	4.01	0.73	1.66	20.98	9.48
C064	SA1	13.48	2.71	2.99	2.99	10.77	2.71
C064	SA2	17.56	2.50	0.48	1.78	12.35	5.21
C075	SA1	6.81	2.34	1.44	1.44	4.47	2.34
C075	SA2	10.30	1.89	0.64	1.08	6.07	4.23
C075	SB3	18.80	2.07	2.34	1.49	12.50	6.30
R078	SA1	72.80	2.10	25.31	25.31	70.70	2.10
R006	PB2	25.20	2.70	6.27	6.27	22.50	2.70
R006	PB4	29.40	2.40	0.56	2.58	24.30	5.10
R006	PC3	56.00	3.60	4.80	4.09	47.30	6.70
R009	PB1	20.20	1.95	7.04	7.04	18.25	1.95
R009	PB2	26.25	2.45	1.10	3.73	21.85	4.40
C022	PE2+PE3	16.77	7.58	0.91	0.91	9.19	7.58
C022	PB4	24.47	2.62	1.46	1.05	14.27	10.20
C022	PC1	38.10	1.90	4.64	1.62	26.00	12.10
C022	PC4	53.63	4.94	1.61	1.61	36.59	17.04
R023	PB3	20.20	2.50	5.32	5.32	17.70	2.50
R023	PB4	23.17	1.87	0.44	3.23	18.80	4.37
R023	PC1	34.00	1.60	4.34	3.53	28.03	5.97
R023	PC2	42.40	5.90	0.32	1.93	30.53	11.87
R023	PC3	47.00	3.50	0.24	1.55	31.63	15.37
C032	PC2	43.87	4.11	7.27	7.27	39.76	4.11
C033	PB3	10.32	2.19	2.79	2.79	8.13	2.19
C033	PB4	13.66	2.22	0.38	1.58	9.25	4.41
C033	PC2	33.57	4.71	2.43	2.02	24.45	9.12
C033	PC3	37.63	1.79	0.95	1.84	26.72	10.91
C047	PA0	8.35	1.73	2.88	2.88	6.62	1.73
C047	PB3+4	29.45	5.51	2.13	2.31	22.21	7.24
C047	PC2	40.10	2.05	3.15	2.49	30.81	9.29
C047	PC3	48.60	4.27	0.74	1.94	35.04	13.56
R048	PB3	17.80	2.90	3.86	3.86	14.90	2.90
R048	PC1	38.10	3.90	3.16	3.46	31.30	6.80
C071	PB4	24.03	2.47	6.56	6.56	21.56	2.47
R072	PA0	16.70	2.00	5.53	5.53	14.70	2.00
R072	PC2	51.50	1.50	16.69	10.31	48.00	3.50
R072	PC3	56.30	2.30	0.82	6.55	50.50	5.60
R072	PC4	58.40	2.10	0.00	4.81	50.50	7.90
R073	PB3	18.60	8.50	0.89	0.89	10.10	8.50

Lastta - Incremental & Cumulative Strip Ratios in each Hole

TABLE A4 (page 1)

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HOLE	SEAM	DEPTH	THICK	INC RATIO	CUM RATIO	CUM D/B	CUM SEAM
RD73	FB4	25.20	3.70	0.59	0.80	13.00	12.20
RD73	FC4	54.00	2.00	10.00	2.11	39.00	14.20
RD67	FA0	10.40	2.70	2.14	2.14	7.70	2.70
RD02	LE1	33.00	3.70	5.95	5.95	29.30	3.70
RD07	LA1	9.90	1.75	3.50	3.50	8.15	1.75
RD07	LA3	17.50	2.70	1.36	2.20	13.05	4.45
RD07	LB2	49.90	2.30	9.84	4.81	43.15	6.75
RD07	LE3	52.55	1.95	0.27	3.79	43.85	8.70
RD21	LA1	10.30	2.45	2.41	2.41	7.85	2.45
RD21	LA2	15.10	2.40	0.70	1.59	10.25	4.85
RD21	LB1	39.90	3.75	4.22	2.74	31.30	8.60
RD80	LA1	21.60	1.60	9.40	9.40	20.00	1.60
RD80	LA3	27.80	3.00	0.80	3.79	23.20	4.60
RD80	LB1	39.20	2.00	3.53	3.71	32.60	6.60
RD80	LE2	52.00	2.80	2.69	3.41	42.60	9.40
RD80	LB3	56.00	2.00	0.75	2.94	44.60	11.40
RD81	LE2	9.60	4.00	1.05	1.05	5.60	4.00
RD81	LE3	15.20	3.80	0.36	0.71	7.40	7.80
RD81	LC1	35.70	2.30	5.95	1.91	25.60	10.10
RD81	LC2	42.00	1.50	2.41	1.97	30.40	11.60
RD81	LC3	44.50	1.90	0.24	1.73	31.00	13.50
RD82	LA2	33.90	2.90	8.04	8.04	31.00	2.90
RD82	LA3	37.40	2.20	0.44	4.76	32.30	5.10
RD82	LB3	65.10	2.60	7.26	5.60	57.40	7.70
RD82	LC1	69.80	1.60	1.46	4.89	60.50	9.30
RD82	LC2	72.40	1.60	0.47	4.24	61.50	10.90
RD82	LC3	74.70	1.85	0.18	3.65	61.95	12.75
RD82	LC4	76.80	1.55	0.27	3.29	62.50	14.30
RD84	LA2	24.50	1.60	10.76	10.76	22.90	1.60
RD84	LA3	27.10	1.70	0.40	5.42	23.80	3.30
RD84	LB3	59.90	2.60	8.73	6.88	54.00	5.90
RD84	LC1	79.50	1.50	9.07	7.83	72.10	17.40
CD04	LB1	17.08	3.77	2.65	2.65	13.31	3.77
CD04	LB2	22.93	5.16	0.10	1.18	14.00	8.93
CD04	LB3	29.66	3.46	0.71	1.05	17.27	12.39
CD20	LB1	10.39	2.84	2.00	2.00	7.55	2.84
CD20	LB2	20.33	9.31	0.05	0.51	8.18	12.15
CD20	LB3	25.15	3.75	0.21	0.44	9.25	15.90
CD20	LC1	32.42	3.55	0.79	0.50	12.97	19.45
CD21	LA2	13.58	1.85	4.77	4.77	11.73	1.85
CD21	LA3	18.62	4.16	0.16	1.58	12.61	6.01
CD21	LB1	46.07	1.80	10.71	3.68	38.26	7.81
CD21	LB2	50.57	2.40	0.66	2.97	40.36	10.21
RD86	LA1	9.40	1.80	3.17	3.17	7.60	1.80
RD86	LB1	32.90	3.15	4.86	4.25	27.95	4.95
RD86	LB2	39.10	5.55	0.07	2.05	36.60	10.50

Loatta - Incremental & Cumulative Strip Ratios in each Hole

TABLE A4 (page 2)

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