

732001

MICROFILMED

of M	A.O.	C.G.	E.O.	D.S.M.E
				Registrar
Received	28 SEP 1982			E & L
Answered				
DEPT. OF MINES				
REF. No. 7949/82				

OPEN FILE

CSR COAL DIVISION

FOR

AAR LIMITED

EXPLORATION LICENCE 20/80 - LAUNCESTON

EXPLORATION PROGRESS REPORT

FOR SIX MONTH PERIOD

ENDED 22 AUGUST 1982

Prepared by:

Exploration and Evaluation Group
 CSR Energy Division
 13th Floor,
 AMP Place
 10 Eagle Street
 BRISBANE QLD 4000

P.R. Ellis

CONTENTS

	<u>Page No.</u>
1. SUMMARY	1
2. INTRODUCTION	
2.1 Scope of Report	2
2.2 Tenement Details	2
2.3 Location and Access	2
2.4 Climate, Physiography and Land Use	2
3. GEOLOGY OF EL20/80 LAUNCESTON	
3.1 Introduction	4
3.2 Regional Stratigraphy, and Stratigraphy of the Launceston Basin	4
3.3 Formation of the Launceston Basin	6
3.4 Sedimentation in the Launceston Basin	6
3.5 Geology of the Loatta, Pipers Lagoons and Selbourne Coal Deposits	6
3.6 Geology of the Hillcrest Prospect	7
4. EXPLORATION AND GEOLOGICAL EVALUATION	
4.1 Previous Exploration	8
4.2 Future Exploration	9
4.3 Evaluation during the six month period	9
4.3.1 Summary	9
4.3.2 CSR Coal Database System	9
4.3.3 Coal Analysis	10
4.4 Future Evaluation	
4.4.1 Coal Analysis	10
4.4.2 Hydrogeology	10
4.4.3 Mining Studies	10
5. COAL RESOURCES	
5.1 Brown Coal Reserves	11
5.2 Brown Coal Quality	12
6. REFERENCES	15

TABLES

			<u>Page No.</u>
1.	EL20/80	Weighted Average In situ Coal Reserves (Indicated Class I & II) and Quality of Individual Deposits	1
2.	EL20/80	Regional Stratigraphy	5
3.	EL20/80	Revised Seam Correlations	7
4.	EL20/80	Summary of Exploration Statistics	8
5.	EL20/80	Coal Reserves	11
6.	EL20/80	Weighted Average Insitu Coal Quality	12
7.	EL20/80	Insitu Quality for some Tertiary Brown Coals	13
8.	EL2080	Comparison of Coal Quality Results 22nd May and 22nd August, 1982	14
9.	EL20/80	Weighted Average Coal Quality of Individual Seams (Air Dried Basis)	Appendix 6
10.	EL20/80	Weighted Average Insitu Quality of Individual Seams	Appendix 6
11.	EL20/80	Weighted Average Quality of Individual Seams (Dry Basis)	Appendix 6
12.	EL20/80	Weighted Average Insitu Seam Quality	Appendix 6
13.	EL20/80	Weighted Average Seam Quality (Dry Basis)	Appendix 6

FIGURES

FIGURE NO	TITLE .	<u>DRAWING NO.</u>
1.	Exploration Licence 20/80 Launceston	70020-8
2.	EL20/80 Location of Exploration	70020-07
3.	EL20/80 Schematic Stratigraphic Diagramme	70020-74
4.	EL20/80 Location of Brown Coal Deposits and Prospects	70020-72
5.	EL20/80 Location of Cross Sections A-A' and C-C'	70020-64
6.	EL20/80 Loatta Deposit N-S Cross Section A-A'	70020-67
7.	EL20/80 Location of Cross Sections B-B' and C-C'	70020-65
8.	EL20/80 Pipers Lagoons Deposit N-S Cross Section B-B'	70020-68
9.	EL20/80 Loatta and Pipers Lagoons Deposits E-W Cross Section C - C'	70020-69
10.	EL20/80 Selbourne Deposit location of Cross Section D-D'	70020-66
11.	EL20/80 Selbourne Deposit Cross Section D-D'	70020-70
12.	EL20/80 Seam Isopach Legend	70020-63
13.	EL20/80 Loatta Deposit LA1 Seam Isopach	70020-48
14.	EL20/80 Loatta Deposit LA2 Seam Isopach	70020-49
15.	EL20/80 Loatta Deposit LA3 Seam Isopach	70020-50
16.	EL20/80 Loatta Deposit LB1 Seam Isopach	70020-51
17.	EL20/80 Loatta Deposit LB2 Seam Isopach	70020-52
18.	EL20/80 Loatta Deposit LB3 Seam Isopach	70020-53
19.	EL20/80 Loatta Deposit LC1 Seam Isopach	70020-54
20.	EL20/80 Loatta Deposit LC2 Seam Isopach	70020-55
21.	EL20/80 Loatta Deposit LC3 Seam Isopach	70020-56

FIGURE NO.	TITLE	DRAWING NO.
22.	EL20/80 Pipers Lagoons Deposit PA0 Seam Isopach	70020-38
23.	EL20/80 Pipers Lagoons Deposit PB1 Seam Isopach	70020-39
24.	EL20/80 Pipers Lagoons Deposit PB2 Seam Isopach.	70020-40
25.	EL20/80 Pipers Lagoons Deposit PB3 Seam Isopach	70020-41
26.	EL20/80 Pipers Lagoons Deposit PB4 Seam Isopach	70020-42
27.	EL20/80 Pipers Lagoons Deposit PC1 Seam Isopach	70020-43
28.	EL20/80 Pipers Lagoons Deposit PC2 Seam Isopach	70020-44
29.	EL20/80 Pipers Lagoons Deposit PC3 Seam Isopach	70020-45
30.	EL20/80 Pipers Lagoons Deposit PC4 Seam Isopach	70020-46
31.	EL20/80 Selbourne Deposit SA1 Seam Isopach	70020-58
32.	EL20/80 Selbourne Deposit SA2 Seam Isopach	70020-59
33.	EL20/80 Selbourne Deposit SB3 Seam Isopach	70020-60
34.	EL20/80 Selbourne Deposit SB4 Seam Isopach	70020-61
35.	EL20/80 Pipers Lagoons Deposit SC1 Seam Isopach	70020-62

APPENDICES

1. EL20/80 Launceston
Copies of English Logs of Bore Holes
Drilled during March-April, 1982
Presented under a separate cover.
2. EL20/80 Launceston
Graphic Logs of Bopreholes Drilled during
March-April, 1982
Presented under a separate cover
3. EL20/80 Launceston
Coal Analysis from the 1981 Exploration
Programme
Presented under a separate cover
4. EL20/80 Launceston
Coal Seam Isopachs
Figures 12 to 35 inclusive
5. EL20/80 Launceston
Reserve Calculations
 - 5A. - Loatta Deposit
 - 5B. - Pipers Lagoons Deposit
 - 5C. - Selbourne Deposit
6. EL20/80 Launceston
Weighted Average
Coal Quality of Individual Seams
 - Air Dried Basis
 - In situ Basis
 - Dry Basis

1. SUMMARY

Three brown coal deposits, and one brown coal prospect have been delineated in the Rosevale, Westwood and Selbourne areas of EL20/80 Launceston.

Exploratory drilling to date has identified 118 million tonnes (insitu) of indicated Class I and Class II brown coal reserves and small inferred reserves. 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.

TABLE 1

EL 20/80 LAUNCESTON

WEIGHTED AVERAGE IN SITU COAL RESERVES

(Indicated Class I & II)

AND COAL QUALITY OF INDIVIDUAL DEPOSITS.

DEPOSIT	RELATIVE DENSITY gm/cc	TOTAL MOISTURE %	VOLATILE MATTER %	ASH %	FIXED CARBON %	SPECIFIC ENERGY MJ/kg	TOTAL SULPHUR %	INDICATED RESERVES Tonnes 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								118

2. INTRODUCTION

2.1 Scope of Report

This report documents the evaluation of the brown coal deposits within EL20/80 Launceston by CSR Limited on behalf of AAR Limited during the six month period ended 22 August 1982.

2.2 Tenement Details

EL20/80 Launceston, covering an area of 2,339km², was granted to AAR Limited on 19 September 1980 for a term of one year.

An extension for a 6 month period was granted on 22 August, 1981. A further application for a twelve month extension of EL20/80 Launceston was made, and the EL was granted for the period 22 February, 1982 to 22 February, 1983.

2.3 Location and Access

EL20/80 Launceston extends from Campbell Town in the south-east, west to Deloraine, and north to Launceston, (Figure 1). It is located on the Meander, South Esk, and Tamar 1:100,000 Topographic Map Series.

The Bass and Midlands Highways traverse the area from east to west and north-west to south-east, respectively. The Western Line Railway also crosses the area in an east-west direction, through Perth, Longford and Westbury. The Southern Line Railway parallels the Midlands Highway between Powranna and Campbell Town, and junctions with the Western Line Railway at Western Junction (Figure 2).

Access in the northern sections of the EL (Westbury, Rosevale, Selbourne) is generally via sealed shire roads and well maintained farm tracks which enable good dry weather access. However, access can only be gained to some sites in the summer months as pastures are extremely boggy when wet. January through March is the ideal time for an exploration programme in the north of the EL.

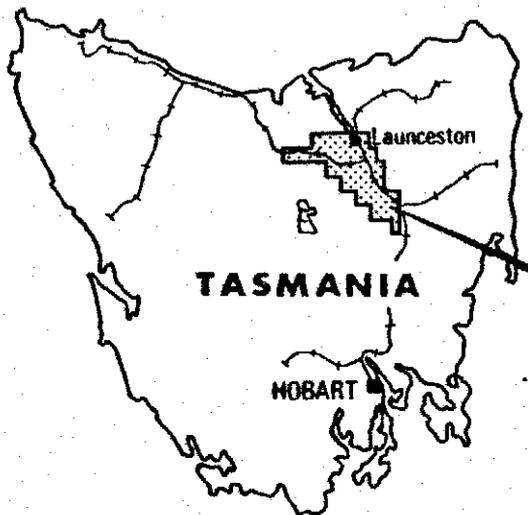
Access in the southern sections of the EL (Conara, Campbell Town), where farms are larger, is predominantly through pastures, once off the sealed shire roads. The southern areas of the EL are drier than the north, and exploration is possible from January through to May.

2.4 Climate, Physiography and Land Use

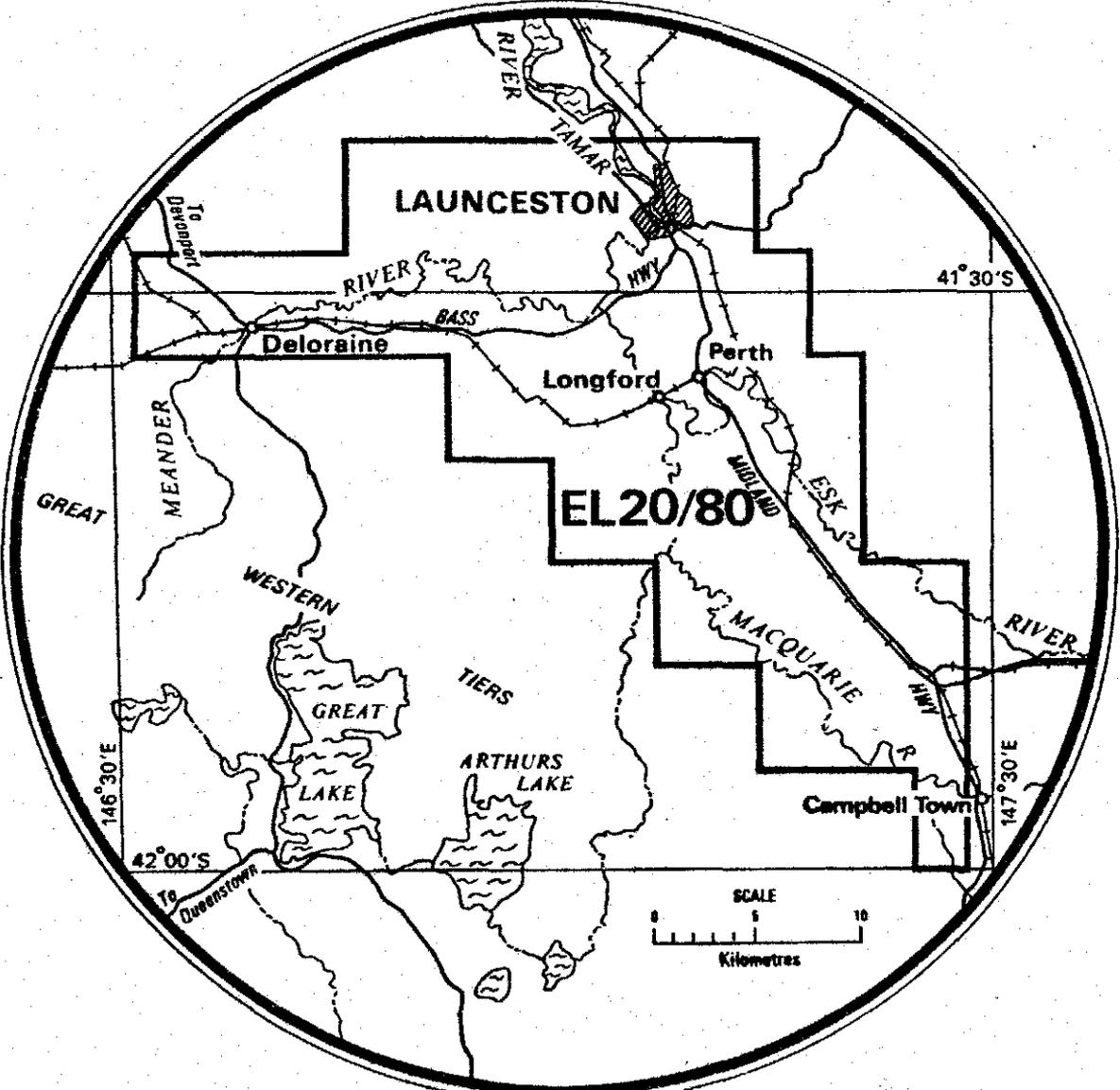
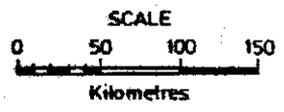
The climate of the area is temperate. The annual average rainfall throughout the area ranges from approximately 500 to 1,000mm, and generally falls during the winter months, (Mathews, 1974).

732009

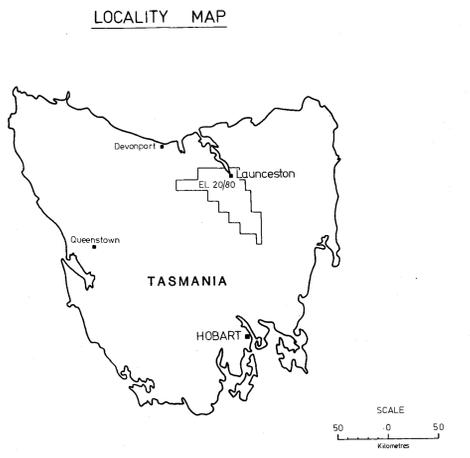
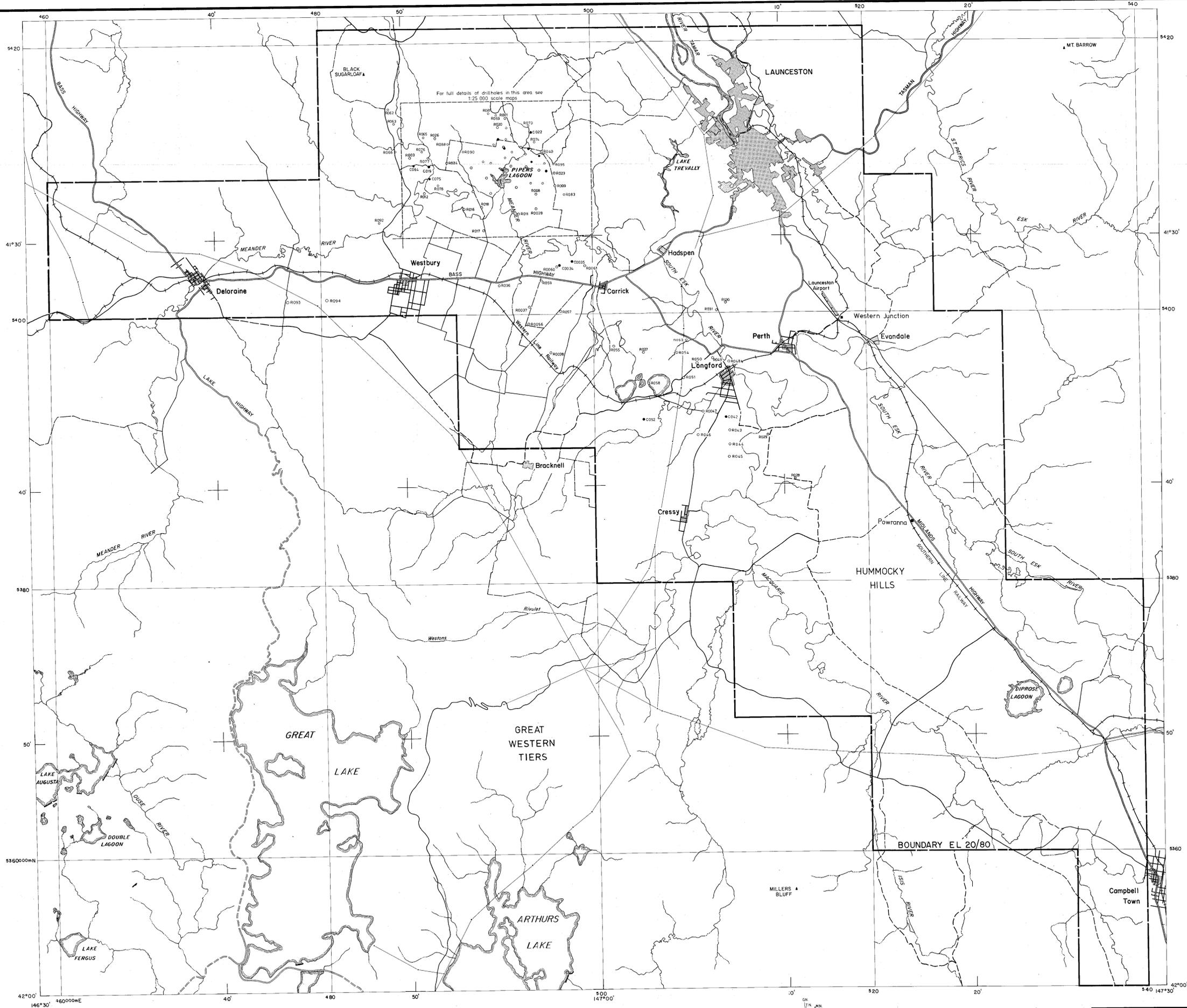
5 cm



EL20/80



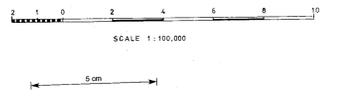
**EL 20/80 LAUNCESTON
TASMANIA**



LEGEND

● CSR drillhole, coal cored.
 ○ CSR drillhole, chip sampled.

Compiled from Tasmanian 1:100 000 Topographic Survey Series 8210, Tamar, 8315 St Patrick's, 8316 South Esk, 8214 Meander Edition 3 1979



GN
 MN
 TRUE NORTH, GRID NORTH AND MAGNETIC NORTH ARE SHOWN GRAPHICALLY FOR THE BENEFIT OF THE READER. MAGNETIC NORTH IS CORRECT FOR 1975 AND MOVES EASTWARD 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		
DRAWING	DATE	EL20/80 LAUNCESTON		SCALE 1:100 000
B. A. W.	JULY 81	LOCATION OF EXPLORATION		FIGURE 2
CHECKED				DRAWING No. 70020-7
REVISED	S. M. C. June 82			

The Launceston Basin is flat to gently undulating. It is surrounded on all sides by much higher terrain, notably the Great Western Tiers to the west and Ben Lomond to the east.

The major land use of EL20/80 Launceston is farming, predominantly sheep and cattle grazing. The Carrick-Westbury area is notable for its large number of horse, cattle and sheep studs, and intense cultivation of peas, beans, opium poppy, and cereal crops.

3. GEOLOGY OF EL20/80 LAUNCESTON

3.1 Introduction

The Launceston Basin, contains the largest continuous area of unconsolidated Tertiary sediments in Tasmania. The sediments are primarily fluvial in origin and have been unconformably deposited on Permian and Triassic sediments and Jurassic dolerites.

Three brown coal deposits and one brown coal prospect * occur in discrete sub-basins of the Launceston Basin in the Rosevale, Westwood and Selbourne areas. They are known as the Loatta, Pipers Lagoons and Selbourne Deposits and the Hillcrest Prospect, (Figure 4). Their outline is defined by the 1.5m coal isopachs.

(*the term prospect refers to an area containing inferred tonnage of coal which has potential for delineation of coal reserves with further exploration drilling.)

3.2 Regional Stratigraphy and Stratigraphy of the Launceston Basin.

The regional stratigraphy of EL20/80 Launceston is summarised in Table 2. Figure 3 schematically shows the spatial relationships between rock types of the Launceston Basin.

A basin wide correlation of Tertiary strata, in particular brown coal horizons, has not been published. A formal intrabasinal stratigraphic sequence has not been established for the Launceston Basin. The term Launceston beds, as used by Johnson (1888), to describe the Tertiary strata of the Launceston Basin is adopted.

Further discussions of the geology of EL20/80 Launceston was outlined in previous exploration reports, (Osborne, 1981; Ellis, 1982a, 1982b)

TABLE 2

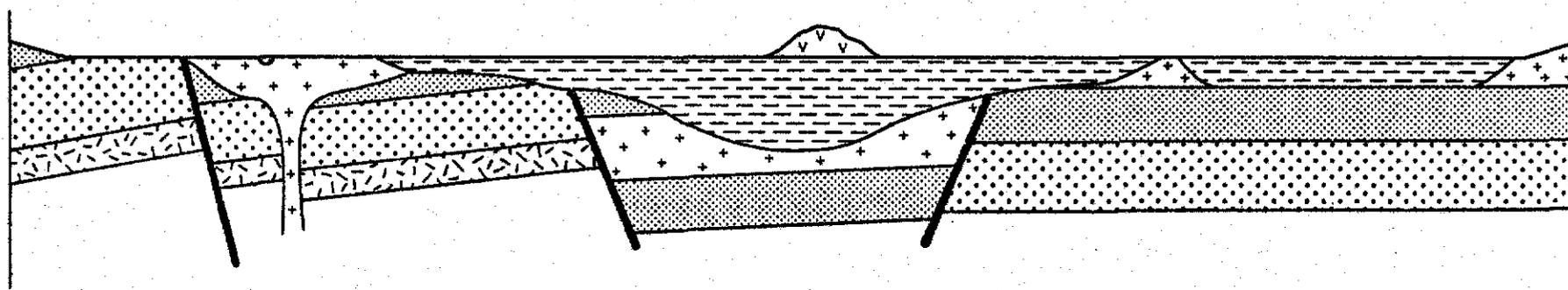
732013

EL20/80 LAUNCESTONRegional Stratigraphy

AGE	STRATIGRAPHIC NAME	LITHOLOGY
Quaternary		Alluvium, terrace deposits, marsh and swamp deposits, boulder beds and gravel.
		Talus and scree derived from Permian, Triassic, Jurassic and Basalt.
Tertiary Quaternary		Lag Deposits of ferruginous buckshot gravel and ferricrete.
Tertiary		Mid to Dark grey, commonly vesicular alkali-olivine basalts. These volcanic rocks are mainly confined lavas.

Disconformity		
Tertiary		clay silt, sand, lignite and oil shale
Palaeocene - Upper Oligocene	Launceston Beds	

Unconformity		
Jurassic		Medium to coarse grained mid grey-green tholeiitic dolerite which has intruded into Permian and Triassic strata.
Triassic	Upper Pameener Supergroup	Feldspathic sandstone, quartz sandstone, with coal measures occurring in the Upper Triassic.
Upper Permian	"	Cygnets Coal measures underlain by glacio-marine sequence of pebbly mudstone and pebbly sandstone.
Lower Permian	"	Freshwater strata including Mersey Coal Measure sandstones and shales, underlain by a glacio-marine sequence of pebbly mudstone, pebbly sandstone, minor limestone and commonly basal tillite.



LEGEND

-  Tertiary Basalt
-  Launceston Beds
clay, silt, sand, lignite and oil shale
-  Jurassic Dolerite
-  Triassic
lithic sandstone, quartzose sandstone, shale
-  Permian
glaciomarine sequence, pebbly mudstone and sandstone,
tillite
-  Cambrian Basic Volcanics

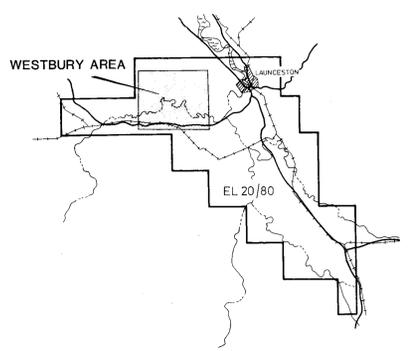
5 cm

732014

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE
DRAWN C.J. Sept. 82		SCHEMATIC STRATIGRAPHIC DIAGRAM		—
CHECKED				FIGURE 3
REVISED				DRAWING No. 70020-74

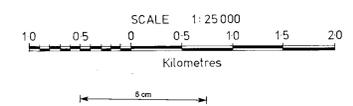
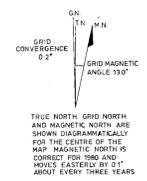


- LEGEND**
- Highway, sealed road
 - Unsealed road, vehicular track, lane
 - Railway
 - Homestead
 - Drain
 - C033 CSR drillhole coal cored
 - R009 CSR drillhole chip sampled
 - Deposit Outline
 - Prospect Outline
 - Outline of Basement Rock.



KEY SHEET DIAGRAM
(FASHMANIAN 1:25 000 TOPO. SERIES)

PARKHAM	BRIDGEMOUTH	LAUNCESTON
DELRORANE	WESTBURY	PROSPECT



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

3.3 Formation of the Launceston Basin

The main structural elements of the Launceston Basin were formed by pre-Tertiary and Tertiary faulting producing two grabens, the Cressey and Tamar Troughs. These are separated by a discontinuous central horst which is expressed in the Hummocky Hills and hills to the north of Perth extending north westerly to Carrick.

The Cressey Trough extends from Campbell Town through Cressey to Westbury, and the Tamar Trough extends from the present mouth of the Tamar River, through Launceston to Campbell Town.

Although the initial formation of the basin was structurally controlled, erosional processes and isostatic subsidence in response to loading of the land surface by Tertiary sediments may have played a secondary role.

3.4 Sedimentation in the Launceston Basin

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

Environments of deposition were in a state of constant flux during the Tertiary, alternating from fluvial to lacustrine, with swamps and subaerial facies. This is reflected by the rapid lateral facies changes interpreted from exploratory drilling.

The primary source of the inorganic sediments was the sandstones, siltstones and mudstones of the Permian and Triassic strata, and the Jurassic dolerite.

Conceptual models of coal development were discussed in Ellis 1982 a.

3.5 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 are used for reserve calculations. The structure and stratigraphy of coal seams in the three deposits is shown in simplified cross sections, figures 5 to 11 inclusive.

Correlation of brown coal seams has been established through the use of characteristic downhole geophysical log signatures and examination of cross sections. Correlation between boreholes towards the margins of the Loatta and Selbourne deposits is not positive. In particular, between rotary chip holes R080 and R007 (Loatta Deposit), and between cored hole C075 and rotary chip hole R078 (Selbourne Deposit).

The coal seams range in thickness from 1.5 to 8.5 metres, and occur at depths ranging from 4 to 75 metres.

Most coal seams are relatively flat lying, and dip at less than 2°. Near the deposit margins, in particular, where correlations are uncertain seams dip up to 5°. Coal Seams of the Loatta Deposit are essentially flat lying north of cored hole C004. South of C004, coal seams dip and split, especially between rotary chip holes R080 and R007. In the Pipers Lagoons Deposit, coal seams dip towards the sub-basin depocentre. Coal seams in the Selbourne Deposit are flay lying except where correlations are uncertain near the deposit margin.

Most coal seams occur at depths less than 60 metres. Substantial reserves occur at depths ranging between 10 and 30 metres. Close to deposit margins, and in areas of uncertain correlation, seams are intersected between 60 and 75 metres depth.

Minor revisions have been made since the previous progress report, to seam correlations within the Pipers Lagoons Deposit. The revised correlations are shown in Table 3. Correlation changes mainly effect the seam nomenclature of cored hole C022.

TABLE 3

EL20/80 LAUNCESTON

REVISED SEAM CORRELATIONS

Seam Nomenclature for 3 monthly period ended 22nd May, 1982	Revised Nomenclature 6 monthly period ended 22nd August, 1982
---	PBI
---	PB2
PB1	PB3
PB2	PB4
PCO (C022)	PB0
PDO (C022)	PCO

3.6 Geology of the Hillcrest Prospect

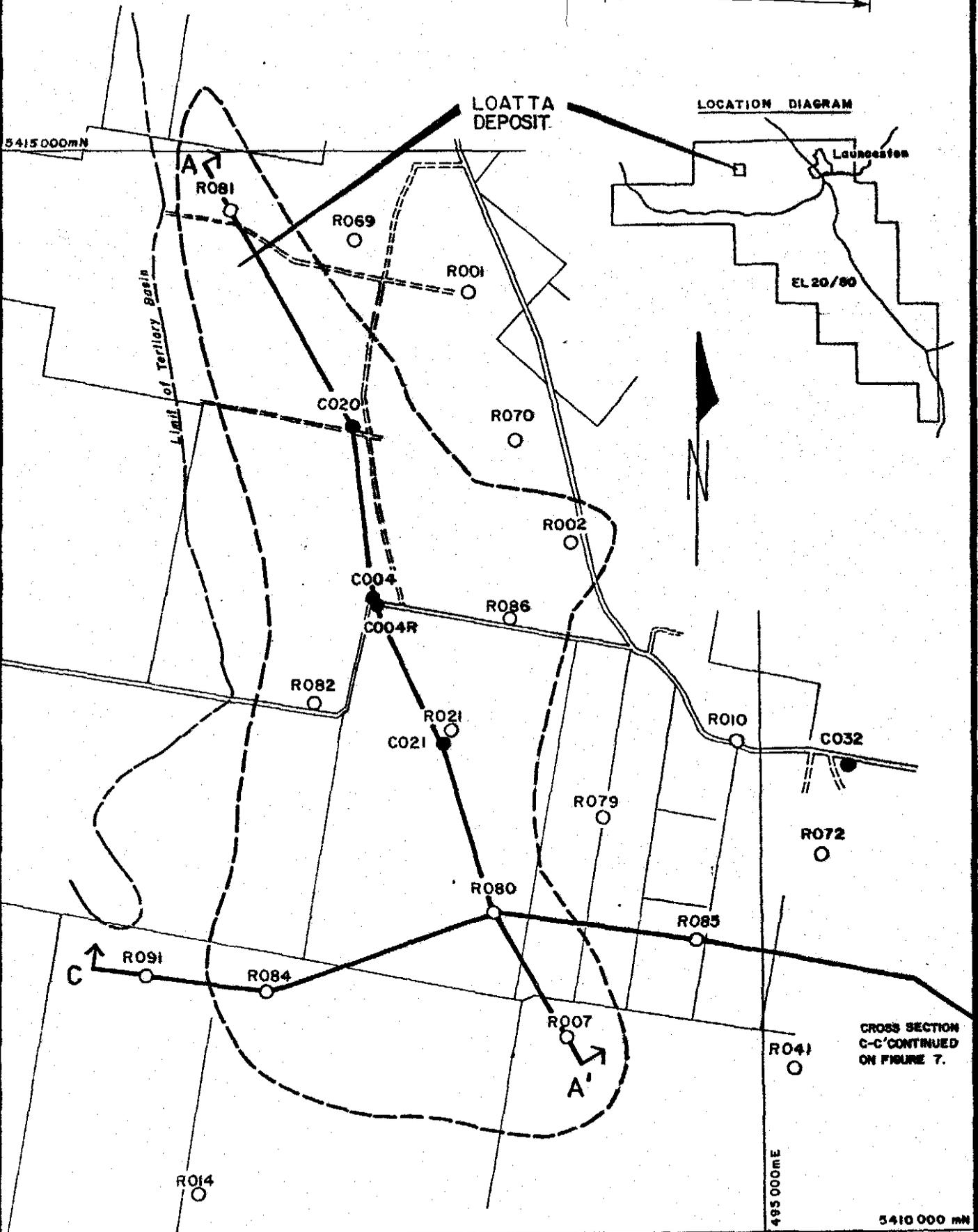
The Hillcrest Prospect is situated between the Loatta and Selbourne Deposits, figure 4. Coal seams thicker than 1.5 m have been intersected in rotary chip holes R018, R025, and R090, at depths ranging between 15m and 42m.

The coal seams are possible stratigraphic equivalents of A and B seams of the Loatta Deposit.

Inferred Reserves have been calculated. Further exploratory drilling is required to assess the geology of this prospect.

732018

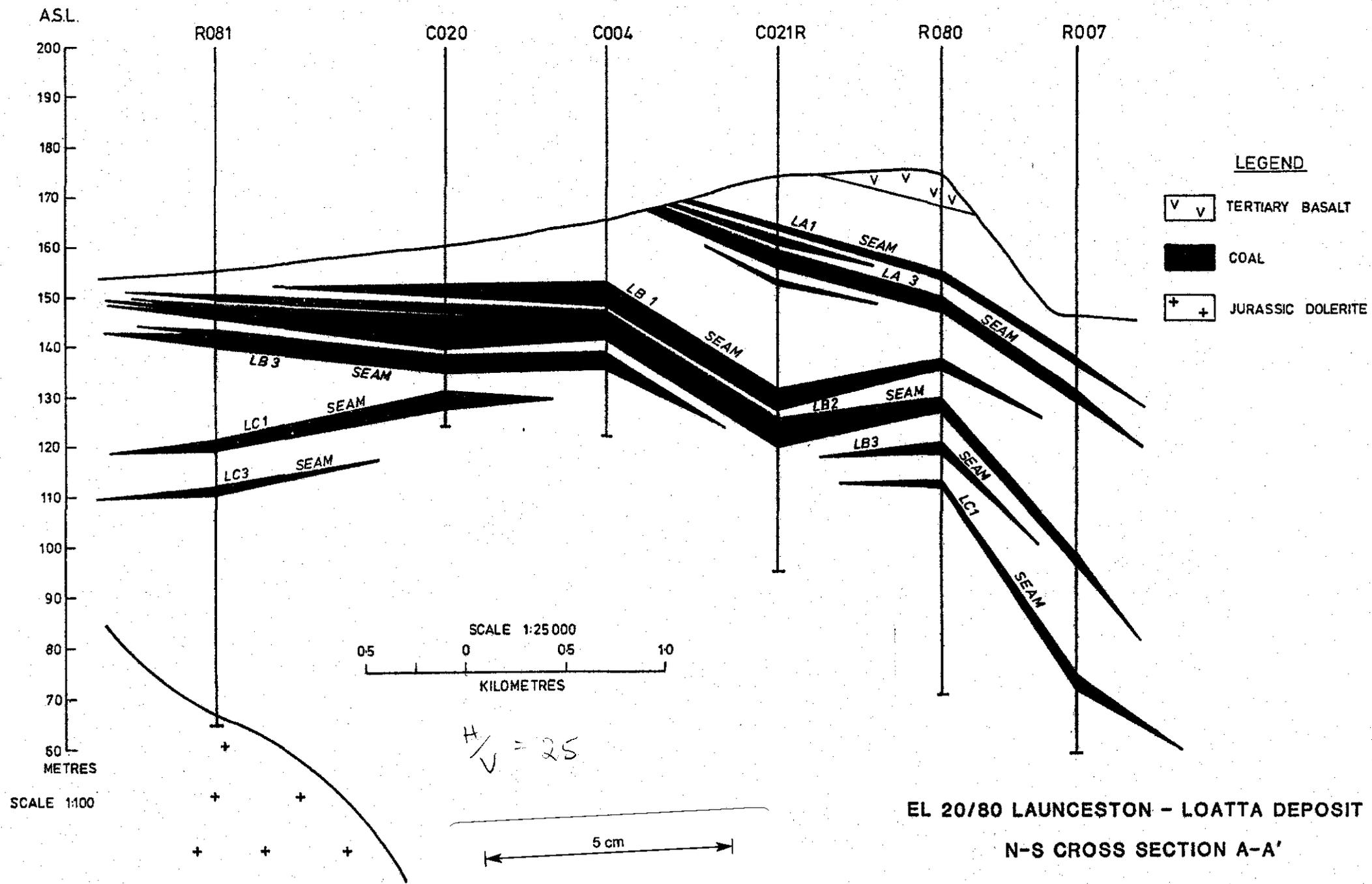
5 cm



CROSS SECTION C-C' CONTINUED ON FIGURE 7.

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 5	
REVISED		DRAWING No 70020 - 64	
		EL 20/80 LAUNCESTON LOATTA LOCATION OF SECTIONS A-A' & C-C'	



732019

732020

5 cm

495 000 ME

LOCATION DIAGRAM

Launceston

EL20/80

PIPERS LAGOONS DEPOSIT

Limit of Territorial Basins



R010

B

R0730

C022

OR074

R040

R072

O

C067

CROSS SECTION C-C' CONTINUED ON FIGURE 5.

OR041

OR006

C071

R068

OR095

C033R C033

R023

C'

5 410 000 MN

O R089

R087

B'

OR009

O R008

OR083

Scale 1:25000
0 1.0
Kilometres

CSR Limited
Coal Division

EXPLORATION AND EVALUATION GROUP



DRAWING / DATE

DRAWN B.H. Aug '82

CHECKED

REVISED

EL 20/80 LAUNCESTON

PIPERS LAGOONS

LOCATION OF SECTIONS B-B' & C-C'

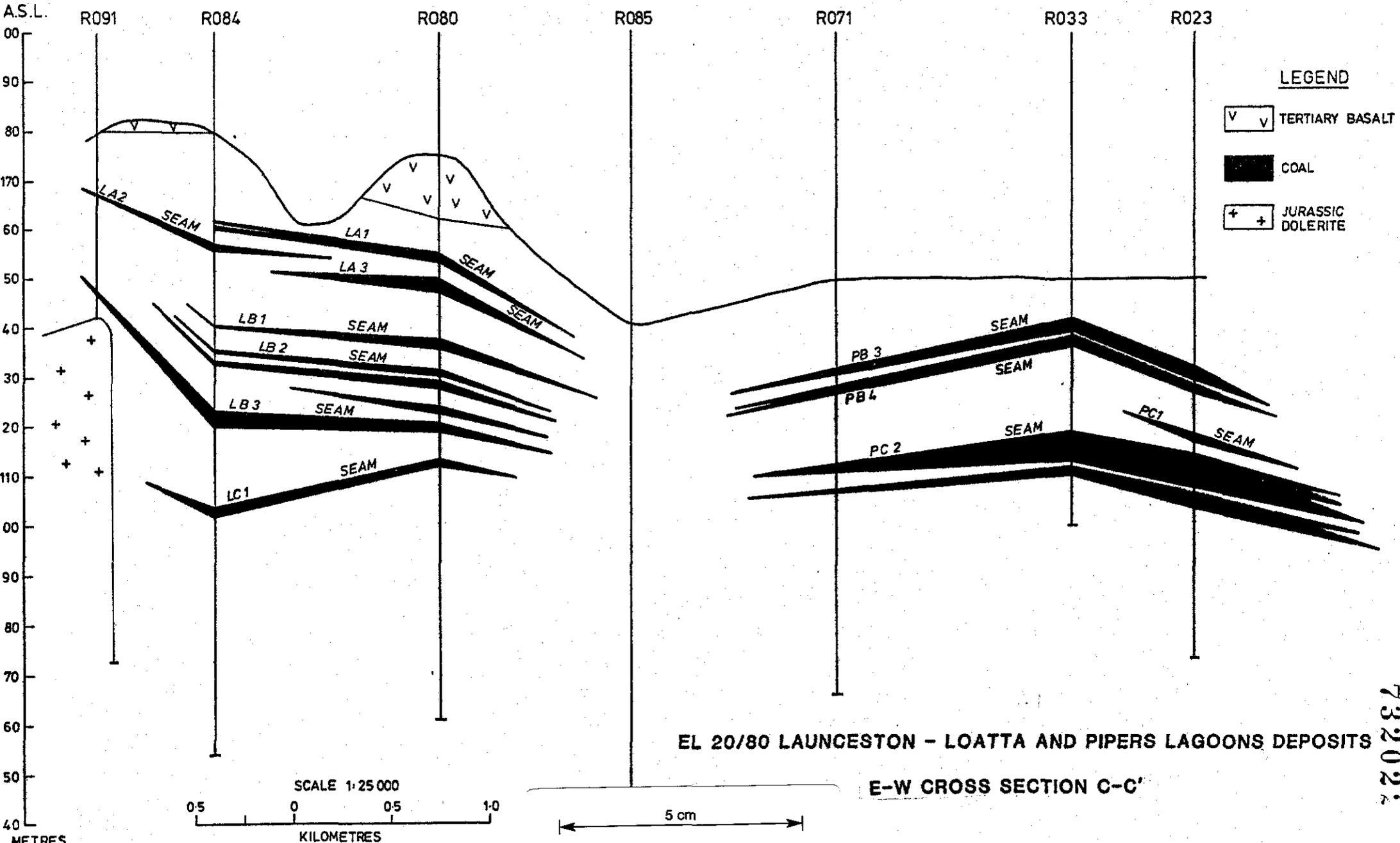
SCALE

1 : 25 000

FIGURE 7

DRAWING No

70020 - 65



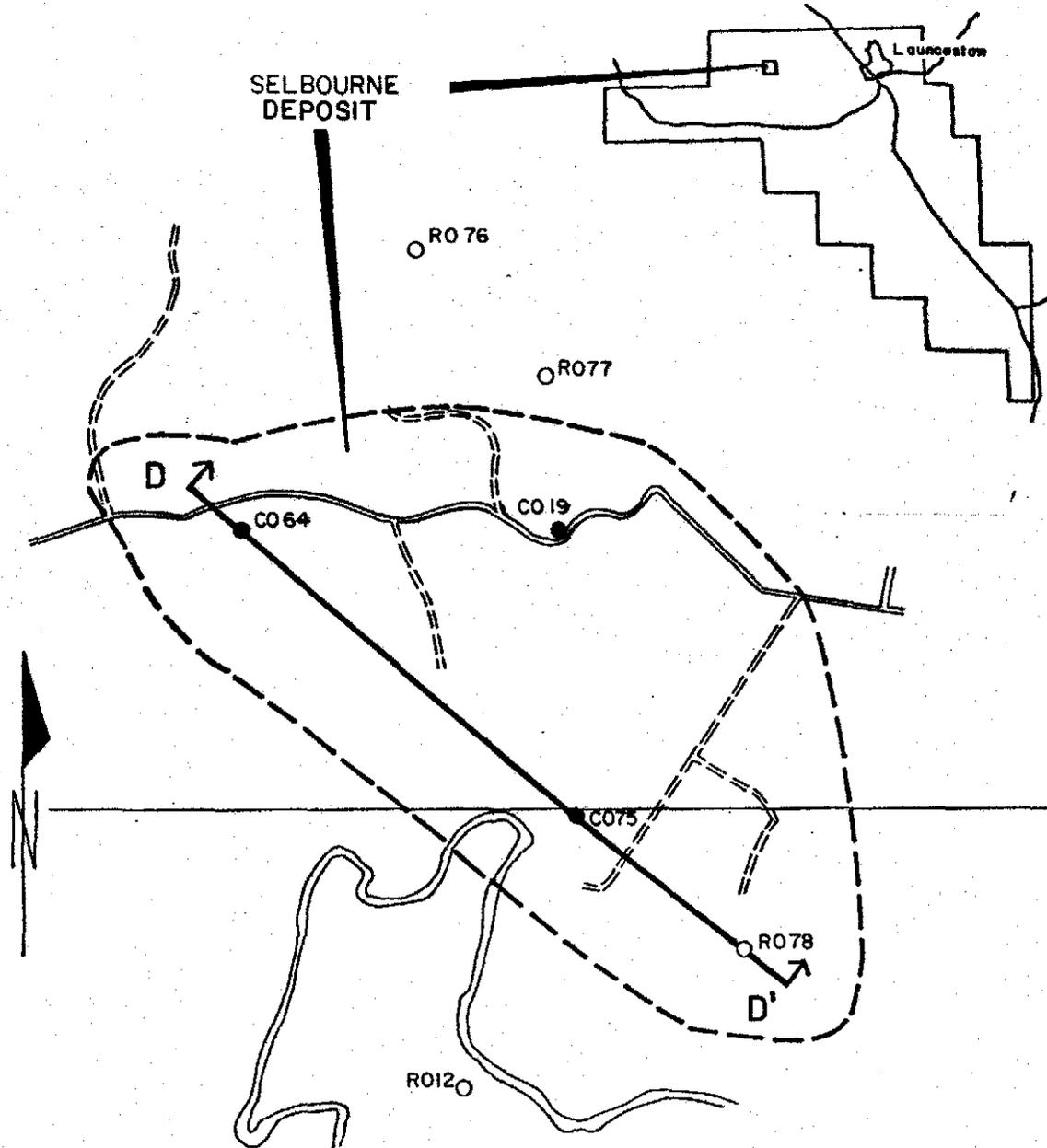
EL 20/80 LAUNCESTON - LOATTA AND PIPERS LAGOONS DEPOSITS

E-W CROSS SECTION C-C'

732022

732023

LOCATION DIAGRAM

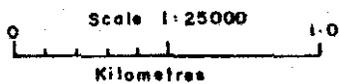


Legend

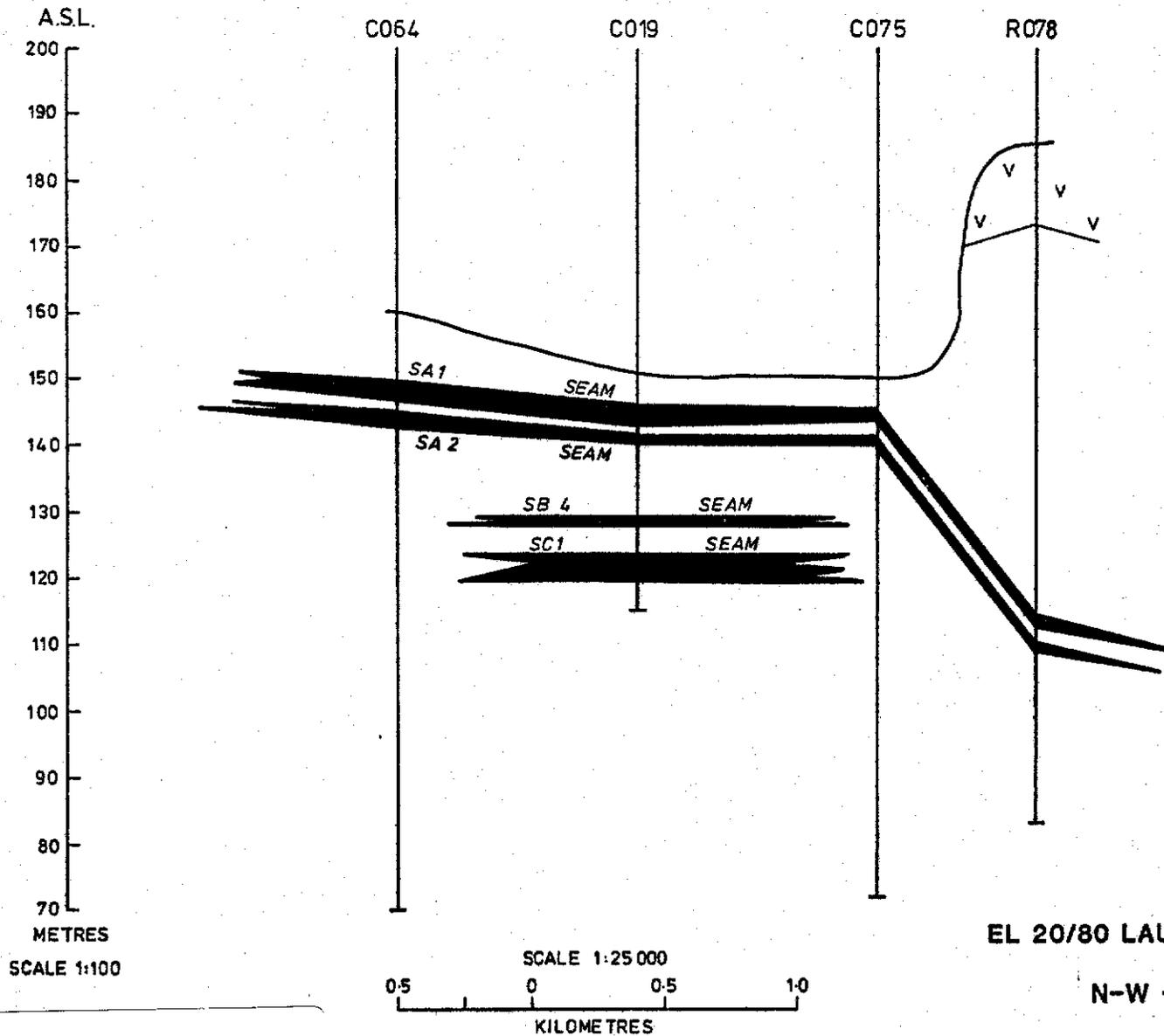
- R068 Rotary Chip Hole
- C068 Cored Hole
- R068 Coal Thickness
2.16
- R069 Horizon Intersected
- No Coal
- R070 Seams Not Intersected

5 cm

490 000mE



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON SELBOURNE		SCALE 1: 25 000	
DRAWN Sept '82		LOCATION OF SECTION D-D'		FIGURE 10	
CHECKED				DRAWING No 70020 - 66	
REVISED					



EL 20/80 LAUNCESTON - SELBOURNE DEPOSIT

N-W - S-E CROSS SECTION D-D'

732024

4. EXPLORATION AND GEOLOGICAL EVALUATION

4.1 Previous Exploration

Previous exploration for oil shale by AAR Limited and brown coal by CSR Limited within EL20/80 Launceston is discussed in Osborne (1981) and Ellis (1982 a, b) respectively.

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 reach a maximum thickness of 10 metres, yielding 49 litres/tonne at zero moisture. AAR Limited intersected ligneous facies including brown coal of significant thicknesses in the Rosevale-Westwood area.

Two follow up exploration programmes have been conducted by CSR Limited. One 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 programme, in early 1982, provided further information on deposit boundaries and seam correlations within the prospects outlined in the 1981 programme.

A summary of Exploration statistics is presented in Table 4.

TABLE 4

EL20/80

SUMMARY OF EXPLORATION STATISTICS

EXPLORATION PROGRAMME	NUMBER OF HOLES				METRES METRES CHIPPED CORED	
	TOTAL HOLES	DRILLED ROTARY CHIP	CORED	WIRELINE LOGGED		
March-April 1981	25	21	4	22	1,568	54.5
October-December 1981	42	35	7	41	2,373.5	218.8
March-April 1982	39	34	5	37	2,558	115.49
TOTALS	106	90	16	100	6,499.5	388.79

4.2 Future Exploration

An exploration drilling programme is proposed for early 1983. Work will be directed at delineating the extent of seams within all three Deposits and the Hillcrest Prospect, and producing core samples for further detail testing.

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.

4.3 Evaluation During the Three Month Period

4.3.1 Summary

During the three month period the results of the October-December 1981 and March-April 1982 exploration programmes have been assessed. No exploratory drilling was undertaken during the quarter.

4.3.2 CSR Coal Database System

All drillhole data has been encoded onto the CSR Database System. Lithological logs have been depth corrected using geophysical logs. Detailed English and computer generated graphic logs of these drill holes will be forwarded at a later date as Appendices 1 and 2 respectively.

Analytical data from the 1981 drilling programme has been encoded onto the Database system, while analytical data from the 1982 drilling programme will be encoded shortly. Computer generated analytical data will be forwarded as Appendix 3 at a later date.

4.3.3 Coal Analysis

Brown Coal samples taken from the 100mm core during the March-April 1982 exploration programme were analysed for in situ moisture and ash. Selected working section composites were submitted for full proximate, total sulphur and specific energy analysis.

Two weighted composite samples from the LB3 seam of cored hole C020 were prepared. One sample will be analysed by the SECV Herman Research Laboratory as part of the Standards Association of Australia's programme to test the reliability and accuracy of analytical methods used on brown coals and char. The second sample will be analysed by the CSR Materials Laboratory in Brisbane for the following:- Ultimate Analysis, Ash Analysis, Sodium, Phosphorus, Chlorine and Ash Fusion Temperatures.

4.4 Future Evaluation

4.4.1 Coal Analysis

Further coal analysis will involve composite samples of proposed mining sections to be tested for:-

- Proximate Analysis
- Specific Energy
- Total Sulphur
- Sodium
- Chlorine
- Phosphorus
- Ultimate Analysis
- Ash Analysis
- Ash Fusion Temperatures

4.4.2 Hydrogeology

It was reported in the previous three monthly report that thirteen piezometers were installed at seven sites in the Loatta, Pipers Lagoons and Selbourne Deposits. The Tasmanian Department of Mines, Hydrology Section is currently monitoring the piezometers. No results have been received to date.

4.4.3 Mining Studies

A preliminary mining study will be commenced shortly. The study will investigate the possibilities of an opencut mine based on the brown coal resources identified in the three deposits, and the likely impact on the local environment of such a proposal. The resources suitability for combustion in a power station will also be investigated.

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, Pipers Lagoons and Selbourne Deposits and the Hillcrest Prospect (Table 5).

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

TABLE 5
EL20/80 COAL RESERVES

DEPOSIT OR PROSPECT	INSITU RESERVES			
	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	

N.B. Very small inferred reserves up to 20Mt

Reserves were previously quoted as 54Mt in Ellis, (1982b).

Seam Isopachs are presented as figures 12 to 35 inclusive.

Detailed reserve calculation are included as Appendix 5.

Reserves have been calculated for seams with a minimum 1.5m thickness. Stone bands greater than 0.5m and coal seams containing greater than 50% ash on a dry basis, have been excluded from calculations.

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 specific seam was used in calculating reserves.

In areas of the Loatta and Selbourne Deposits where seam correlations are uncertain Inferred Reserves have been calculated. Reserves of the Hillcrest Prospect are classified as Inferred because the spacing between drillholes exceeds 0.5km to 1km. A drillhole spacing between 0.5km to 1km is considered to be the upper confidence level of geological observations for the style of brown coal deposit found in EL20/80.

Further exploration, as outlaid in Section 4.2 will be directed at identifying further reserves of brown and black coal with EL20/80.

5.2 Brown Coal Quality

The brown coal of the Launceston Basin is a typical brown coal with a high insitu 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 6.

Weighted average quality of individual seams is presented in Appendix 6.

TABLE 6

EL20/80 LAUNCESTON

WEIGHTED AVERAGE IN SITU COAL QUALITY

RELATIVE DENSITY gr/cc	TOTAL MOISTURE %	VOLATILE MATTER %	ASH %	FIXED CARBON %	SPECIFIC ENERGY MJ/kg	TOTAL SULPHUR %	INSITU RESERVES TONNES x 10 ⁶
1.33	47.2	18.0	22.1	12.7	7.5	0.15	118

NOTE: Cored holes are assumed to have an equal area of influence in their respective deposits. Analysis has been weighted for detailed tonnage for each of the three deposits.

The insitu brown coal quality of the Launceston Basin, Latrobe Valley, and a Murray Basin deposit is compared in Table 7.

TABLE 7

INSITU QUALITY OF SOME TERTIARY BROWN COALS

BROWN COAL AREA/DEPOSIT	TOTAL MOISTURE %	VOLATILE MATTER %	ASH %	SPECIFIC ENERGY MJ/kg	TOTAL SULPHUR %
Launceston Basin	47	18	22.1	7.5	0.15
Yallourn (Latrobe Valley)	60 - 70	16 - 19	0.5-1.5	6 - 9	0.2 - 0.5
Sedan (Murray Basin)	59	18	7.8	9.1	2.2

Launceston Basin coal has a lower total moisture and sulphur content, but a significantly higher ash content than the Yallourn and Sedan Deposits. The specific energy of Launceston Basin coal is lower than Sedan coal, but similar to Yallourn coal.

Table 8 compares the coal quality reported for the three month period ended 22nd May, 1982 with the latest quality figures. Reserves have increased significantly since the last reporting period, however this has resulted in a slight decline in the average coal quality. Reserves have been calculated from coal seams containing up to 50% dry basis ash. By calculating reserves for seams containing up to 40% dry basis ash the reported average coal quality will be improved. It is estimated that 90Mt of coal is present within the three deposits with a average ash istel of 20% and a specific energy of 8MJ/kg. However, the proposed mining study and future exploration will hopefull advise the effect that quality cut-offs will have on total minable reserves.

TABLE 8
EL20/80 LAUNCESTON
COMPARISON OF COAL QUALITY RESULTS
22ND MAY AND 22ND AUGUST, 1982

END OF REPORT PERIOD	RELATIVE DENSITY gm/cc	TOTAL MOISTURE %	VOLATILE MATTER %	ASH %	FIXED CARBON %	SPECIFIC ENERGY MJ/kg	TOTAL SULPHUR %	INSITU RESERVES TONNES x 10 ⁶
22 May 1982	1.31	48.1	N/C	20.2	N/C	8.1	0.14	54
22 Aug 1982	1.33	47.2	18.0	22.1	12.7	7.5	0.15	118

N/C Not calculated

Note: difference due to inclusion of 1982 coal analysis and a significant increase in the reserves total which includes slightly lighter ash coal.

7. REFERENCES

- AUSTRALIAN STANDARD 2519 - 1982 Guide to the Evaluation of Hard Coal Deposits Using Borehole Techniques.
- BURNS, S.D. 1981 A Review of the Longford Basin, Tasmania Australia. Mines Administration Pty. Limited.
- ELLIS, P. 1982 a Six Monthly Report for the Period Ending 19th January, 1982. Exploration Licence 20/80 Launceston, Tasmania AAR Limited
- ELLIS, P. 1982 b Three Monthly Report for the Period Ending 22nd May, 1982. Exploration Licence 20/80 Launceston, Tasmania. AAR Limited
- JOHNSTON, R.M. 1888 Systematic Account of the Geology of Tasmania. Government Printer: Hobart
- MATHEWS, W.L. (In Press) The Geology and Groundwater Resources of the Longford Tertiary Basin. Bull. Geol. Surv. Tasm. 59
- MENGEL, D.C. 1977 "The Roles of the Geological Survey of Queensland in Exploratory Coal Drilling" in the Aus. I.M.M. Southern Queensland Branch Symposium of Coal Borehole Evaluation, October 1977.
- MIDDLETON, T.W. 1973 Launceston Basin Project, Report on Phase I Exploration Drilling in the Launceston Basin Area, Tasmania. Getty Oil Development Co. Limited. Open File Mines Department, Tasmania.
- OSBORNE, R. 1981 Six Monthly Report for the Period Ending 23rd August, 1981. Exploration Licence 20/80 Launceston, Tasmania. AAR Limited



P. Ellis, Geologist, Coal
Exploration and Evaluation Group,
CSR Energy Division.

APPENDIX 1

EL20/80 LAUNCESTON

COPIES OF ENGLISH LOGS OF BOREHOLES DRILLED DURING

MARCH-APRIL 1982

BOREHOLES: R0062 to R0095 inclusive,
C0020, C0064, C0067, C0071,
C0075

(Presented under a separate cover)

Vol. 5 & 6
Appendix 6.

of 83-1918

APPENDIX 2

EL20/80 LAUNCESTON

GRAPHIC LOGS OF BOREHOLES DRILLED

DURING MARCH - APRIL, 1982

BOREHOLES: R0062 to R0095 inclusive,
C0020, C0064, C0067, C0071, C0075

(Presented under Separate Cover)

Vol 7

Appendix 7

Report -

83-1918

APPENDIX 3

EL20/80 LAUNCESTON

COAL ANALYSIS RESULTS FROM THE

1981 EXPLORATION PROGRAMME

(Presented under a separate cover)

Vol. 8

app 8

83 - 1918

APPENDIX 4

EL20/80 LAUNCESTON

COAL SEAM ISOPACHS

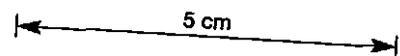
FIGURES 12 to 35 INCLUSIVE

LEGEND

- R068 Rotary Chip Hole
- C068 Cored Hole
- R068
2-16 Rotary Chip Hole Showing Coal Thickness
- R069 Rotary Chip Hole Showing Seam Horizon Intersected
- R070
x Rotary Chip Hole Showing Seam Horizon Not Present

COAL ISOPACHS

- Deposit Outline
- 1.5m
- 2.0m
- 3.0m
- 4.0m
- 5.0m
- 6.0m
- 7.0m
- 8.0m

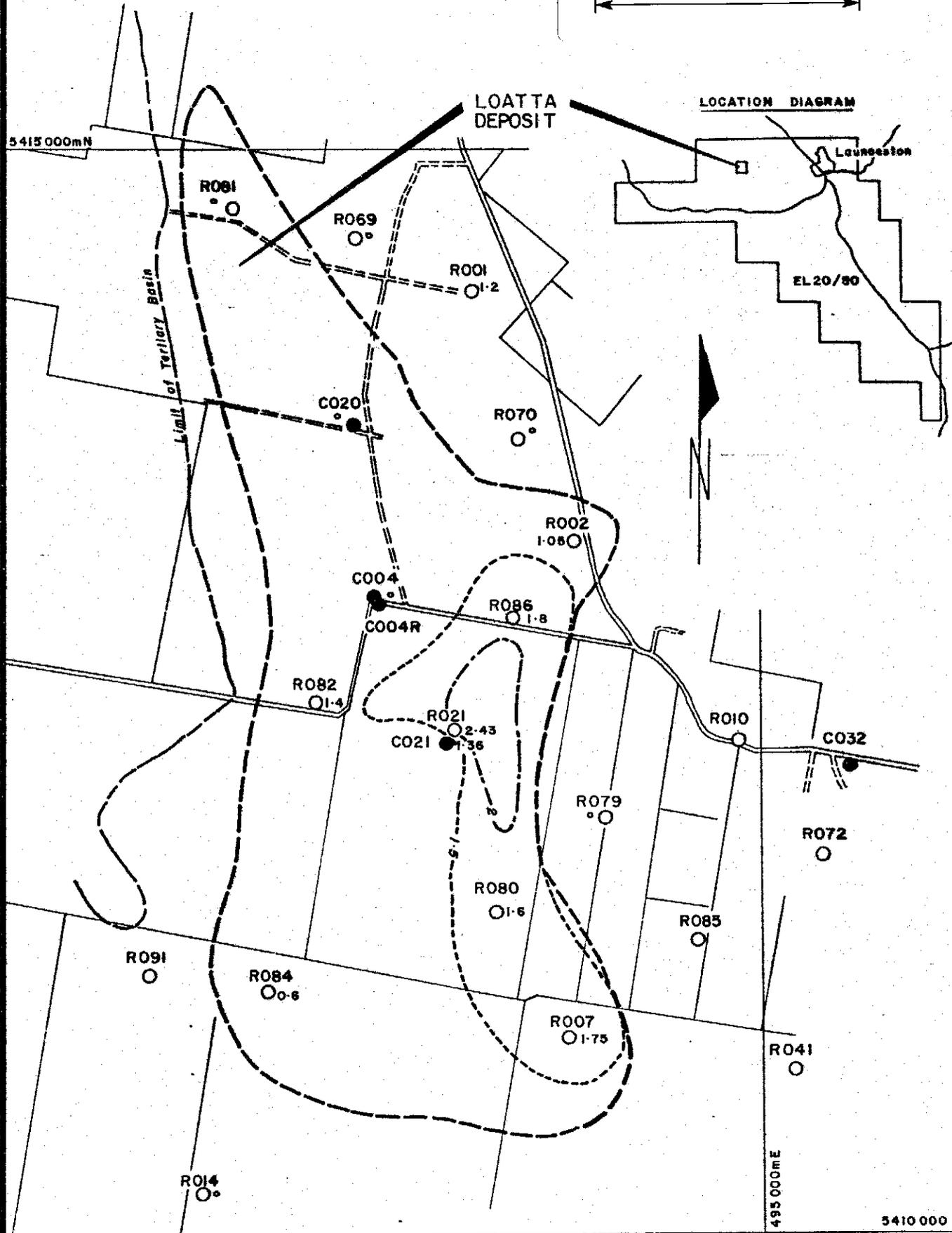


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP CSR	
DRAWING / DATE		SCALE	
DRAWN Sept '82		FIGURE 12	
CHECKED		DRAWING No	
REVISED		70020-63	

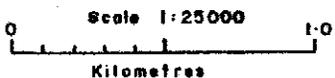
EL20/80 LAUNCESTON
SEAM ISOPACH
LEGEND

732038

5 cm

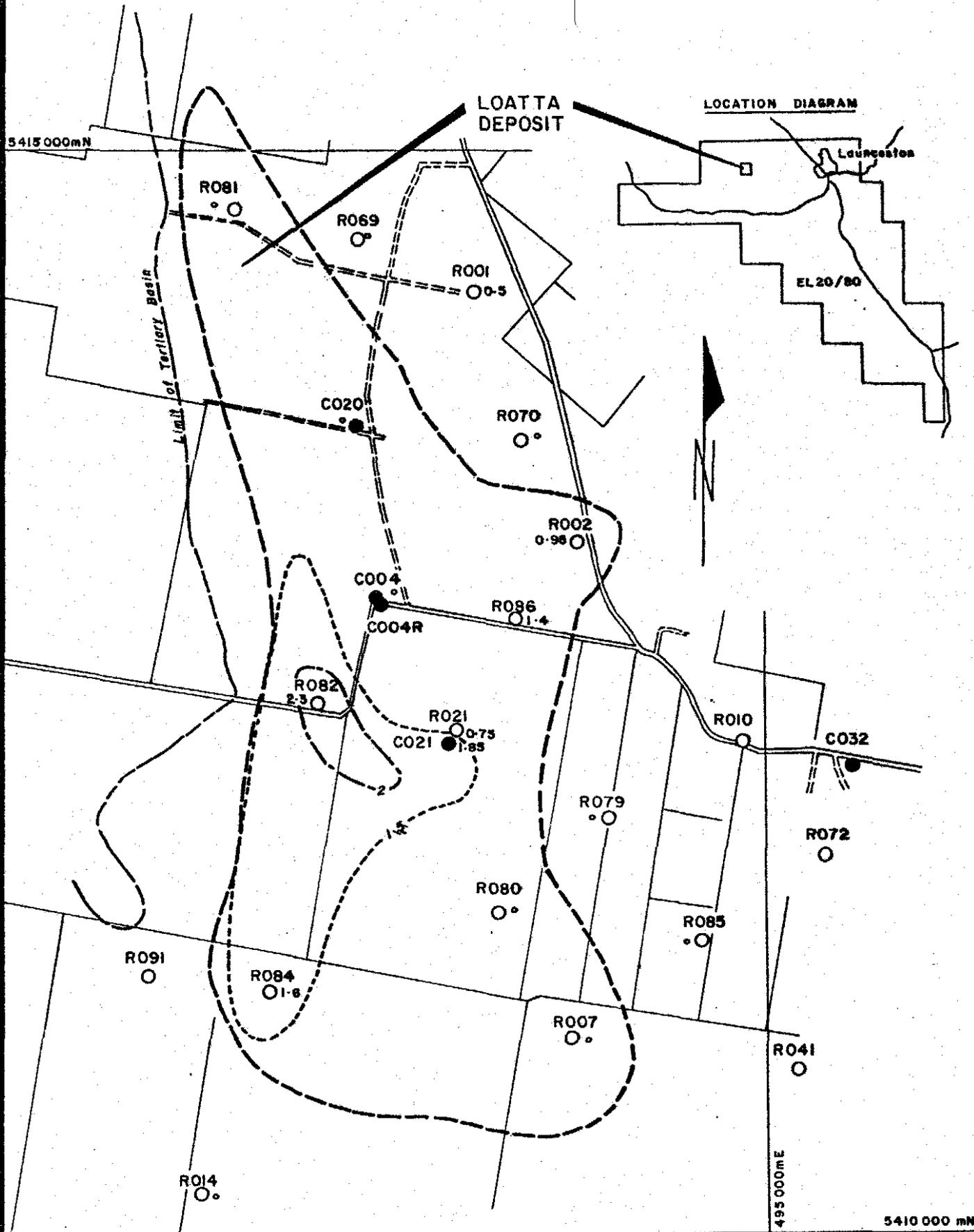


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE	
DRAWN Aug '82		LOATTA		1 : 25 000	
CHECKED		LAI SEAM ISOPACHS		FIGURE 13	
REVISED				DRAWING No 70020 - 48	

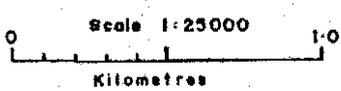


732039

5 cm



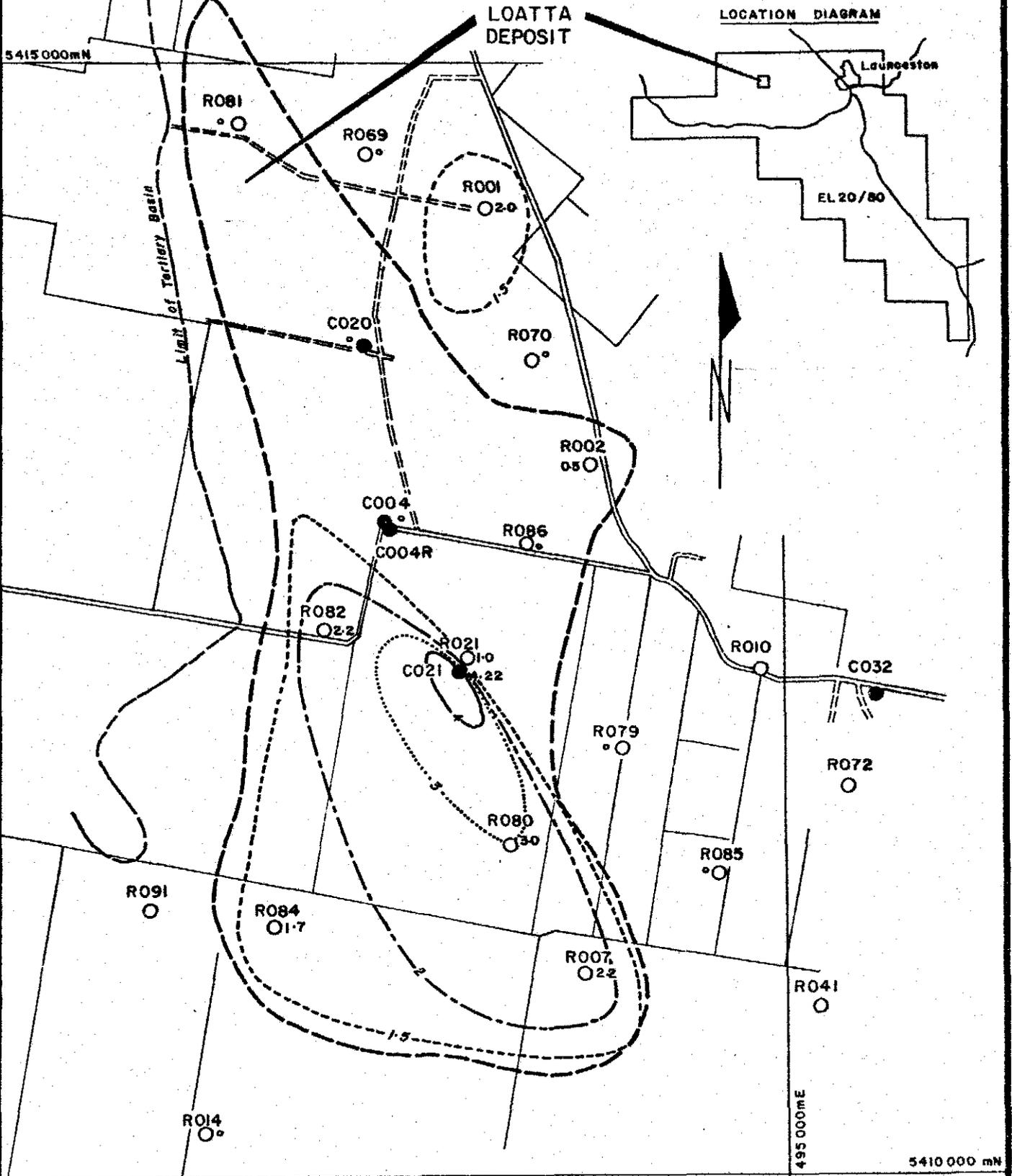
CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP 	
DRAWING / DATE		SCALE	
DRAWN	Aug '82	1 : 25 000	
CHECKED		FIGURE 14	
REVISED		DRAWING No 70020 - 49	



EL 20/80 LAUNCESTON
 LOATTA
 LA2 SEAM ISOPACHS

732040

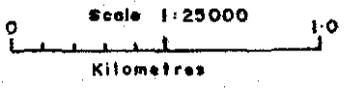
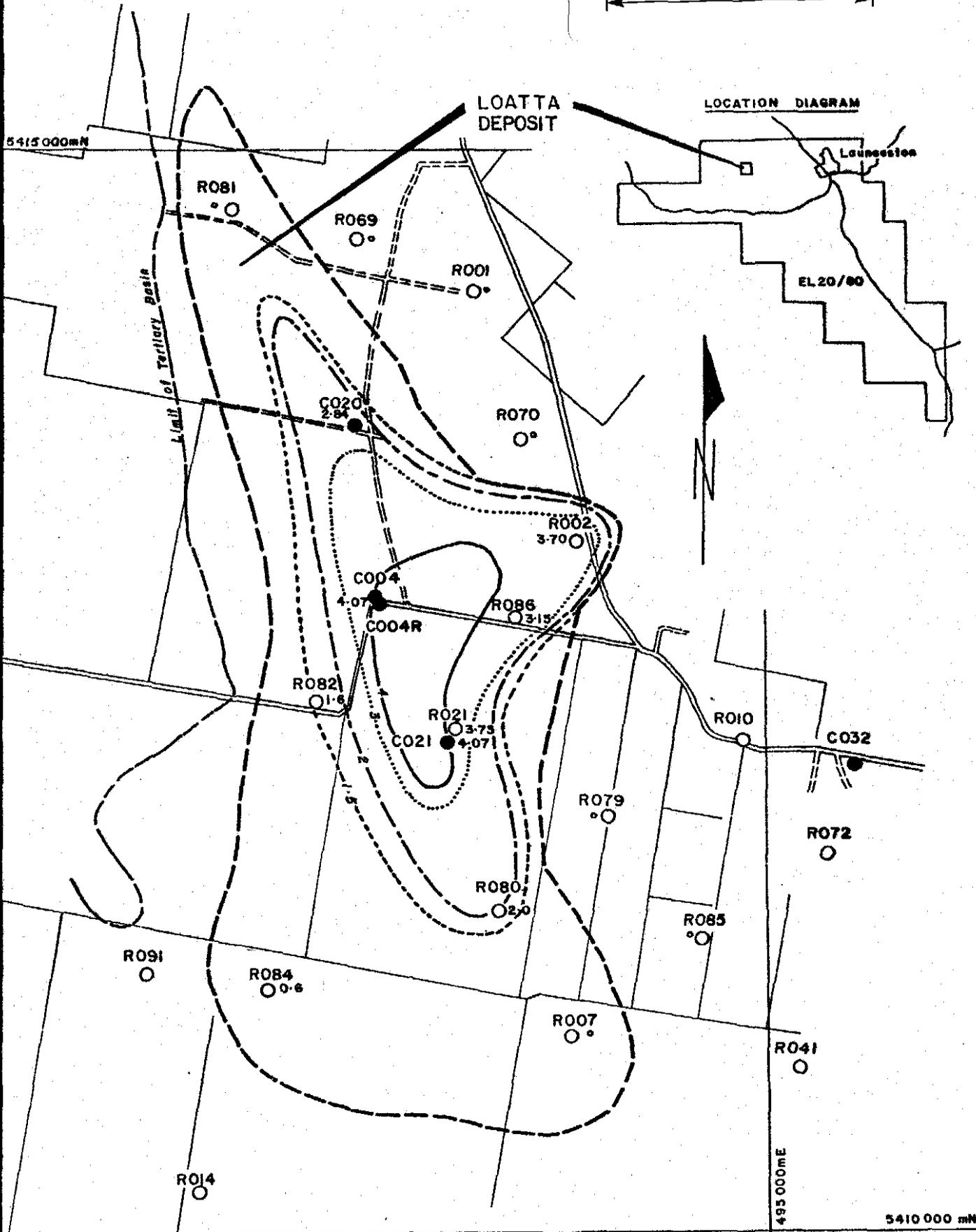
5 cm



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE	
DRAWN Aug '82		LOATTA		1 : 25000	
CHECKED		LA3 SEAM ISOPACHS		FIGURE 15	
REVISED				DRAWING No 70020-50	

732041

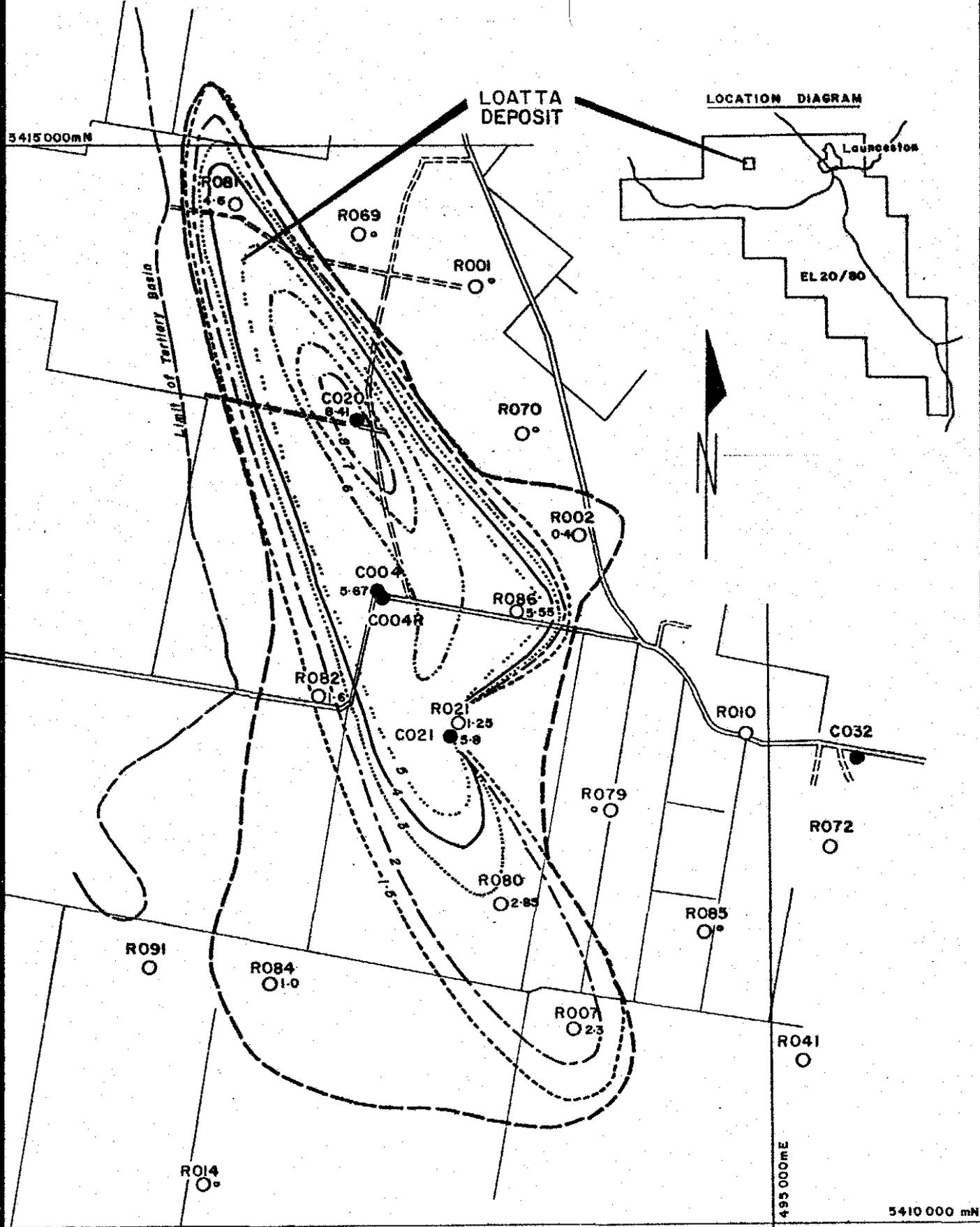
5 cm



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		EL 20/80 LAUNCESTON		
DRAWN	Aug '82	LOATTA		
CHECKED		LBI SEAM ISOPACHS		
REVISED		SCALE 1 : 25 000		
		FIGURE 16		
		DRAWING No 70020 - 51		

732042

5 cm

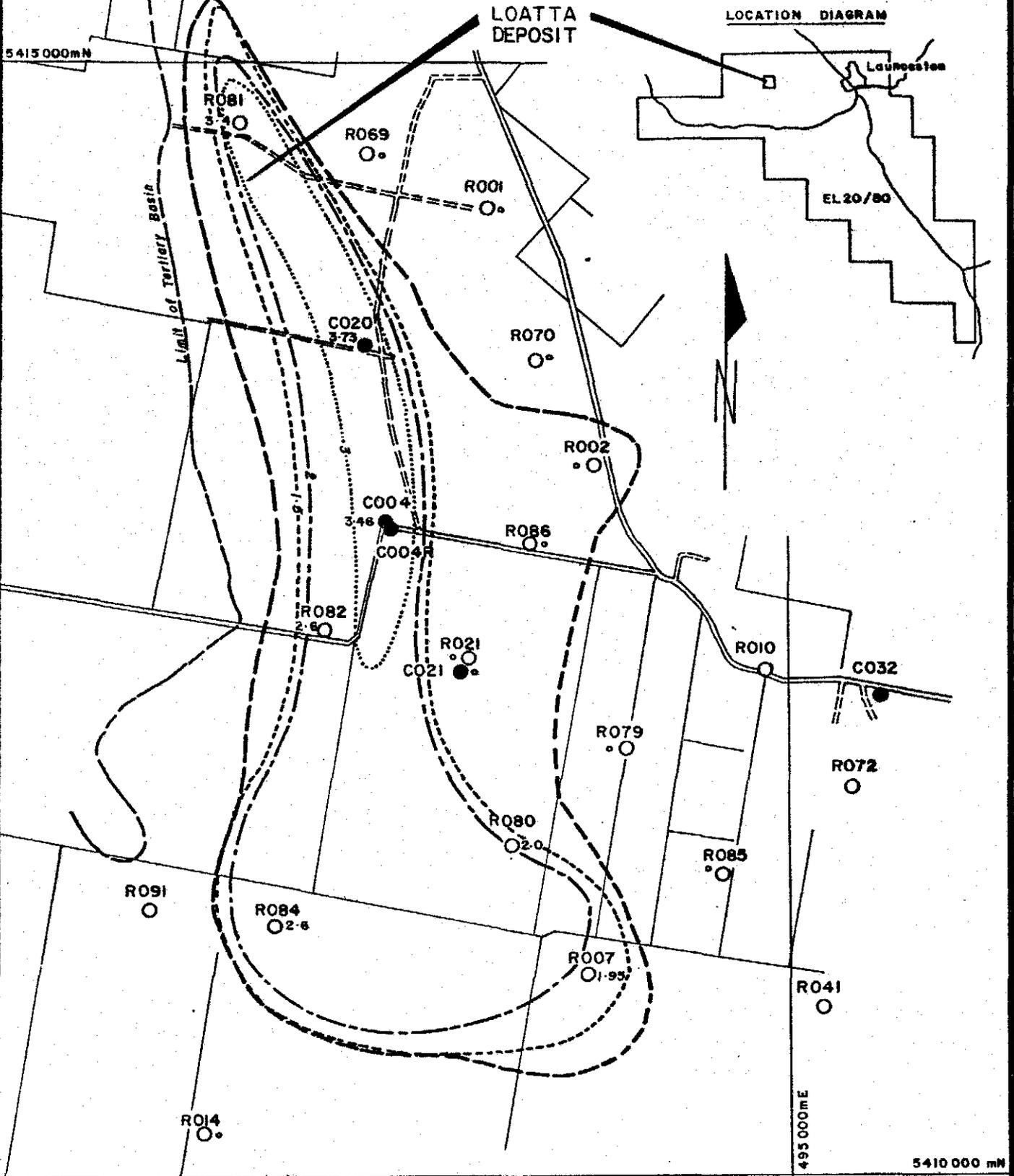


Scale 1:25000
 0 ————— 1.0
 Kilometres

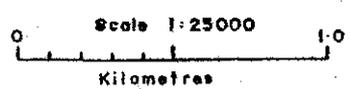
CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE 1 : 25 000	
DRAWN Aug '82		LOATTA		FIGURE 17	
CHECKED		LB2 SEAM ISOPACHS		DRAWING No 70020-52	
REVISED					

732043

5 cm

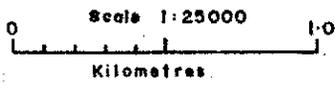
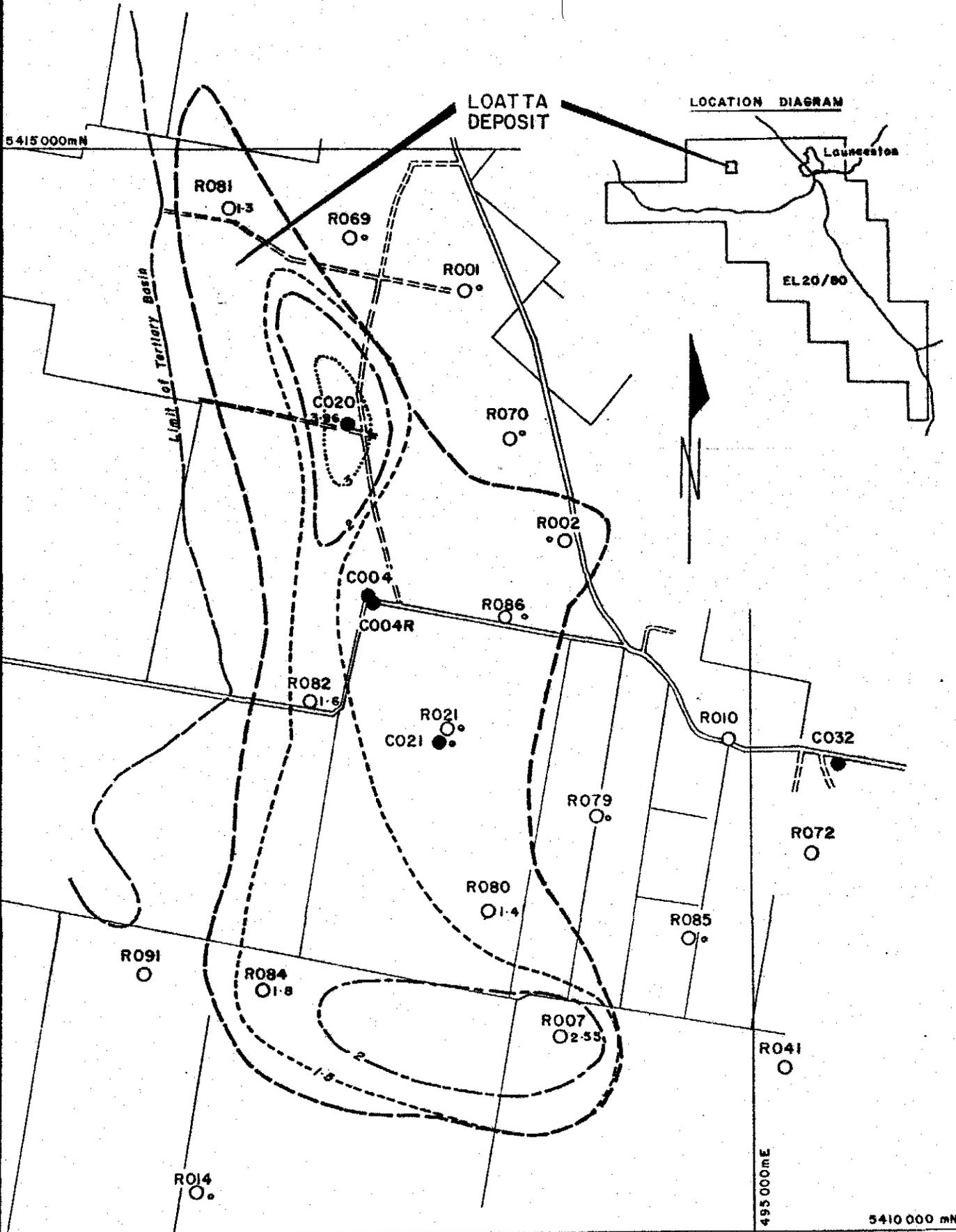


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP	
DRAWING / DATE		SCALE	
DRAWN	Aug '82	1 : 25 000	
CHECKED		FIGURE 18	
REVISED		DRAWING No 70020 - 53	
EL 20/80 LAUNCESTON LOATTA LB3 SEAM ISOPACHS			



732044

5 cm

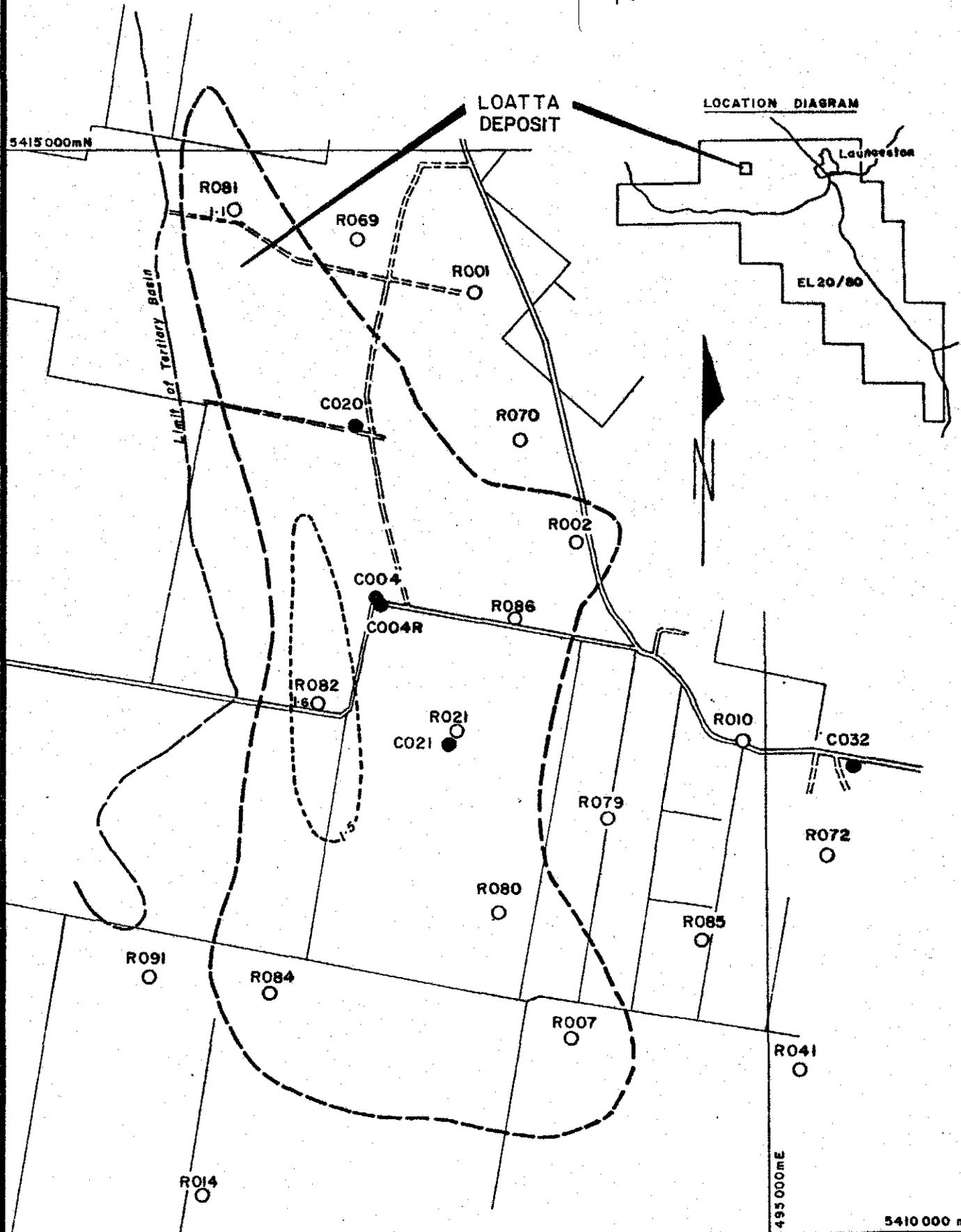


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP CSIR	
DRAWING / DATE		SCALE	
DRAWN	Aug '82	1 : 25 000	
CHECKED		FIGURE 19	
REVISED		DRAWING No 70020 - 54	

EL 20/80 LAUNCESTON
LOATTA
LCI SEAM ISOPACHS

732045

5 cm



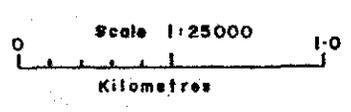
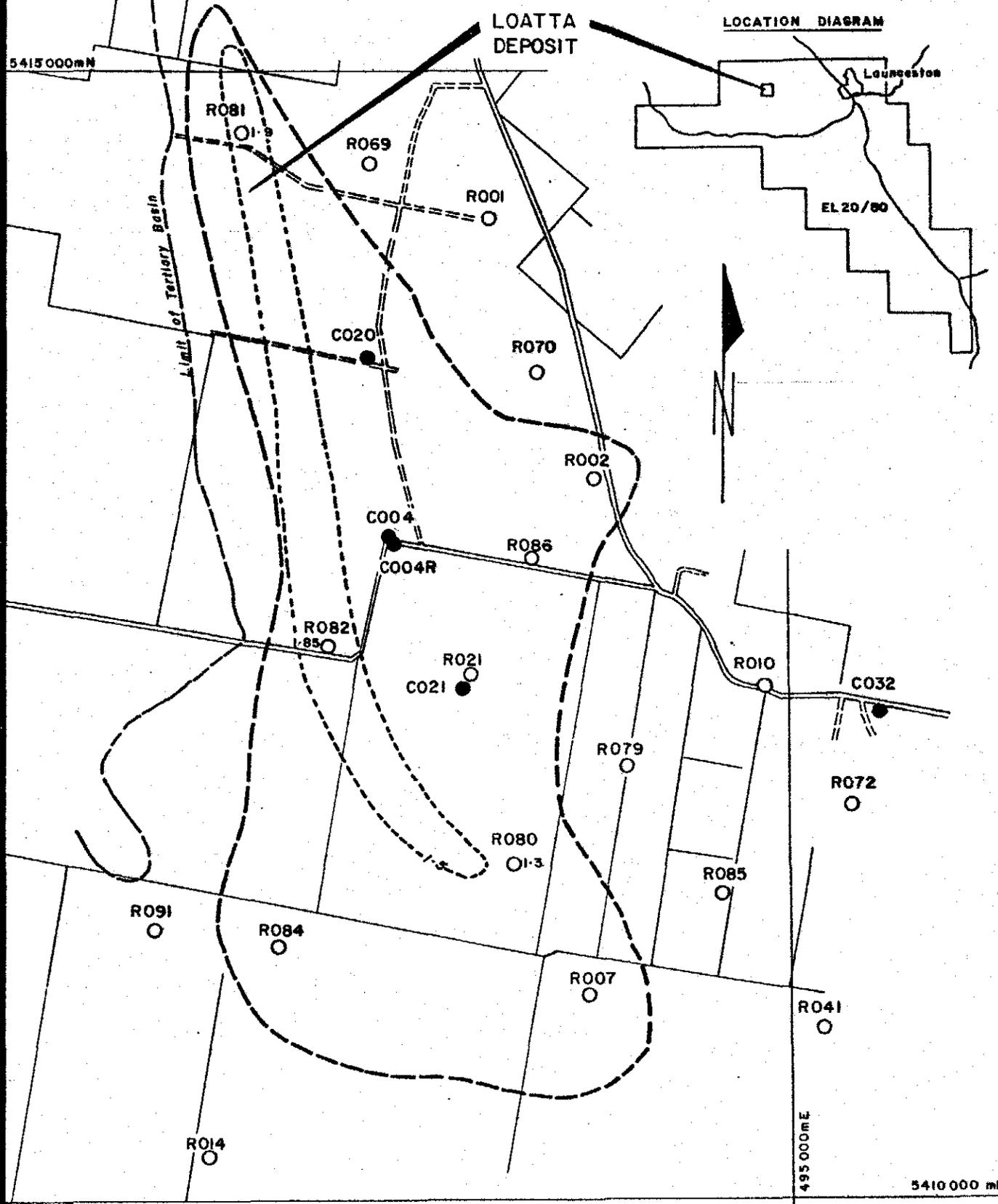
Scale 1:25000
 0 1.0
 Kilometres

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP CSR	
DRAWING / DATE		SCALE	
DRAWN	Aug '82	1 : 25 000	
CHECKED		FIGURE 20	
REVISED		DRAWING No 70020-55	

EL 20/80 LAUNCESTON
 LOATTA
 LC2 SEAM ISOPACHS

732046

5 cm



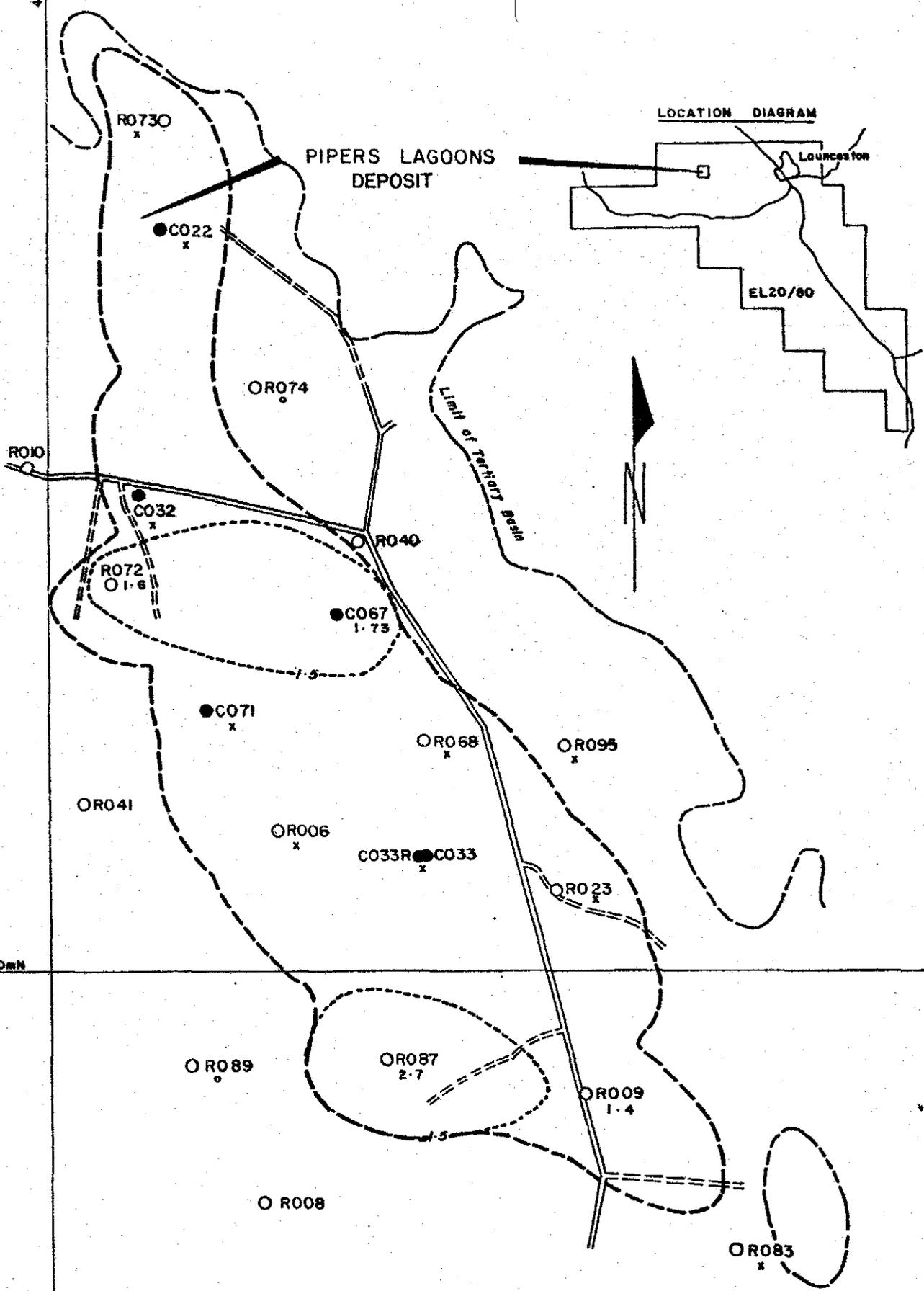
CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP CSR	
DRAWING / DATE		SCALE	
DRAWN	Aug '82	1 : 25 000	
CHECKED		FIGURE 21	
REVISED		DRAWING No 70020 - 56	

EL 20/80 LAUNCESTON
LOATTA
LC3 SEAM ISOPACHS

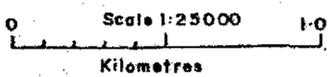
732047

496 000 ME

5 cm



5410000mN

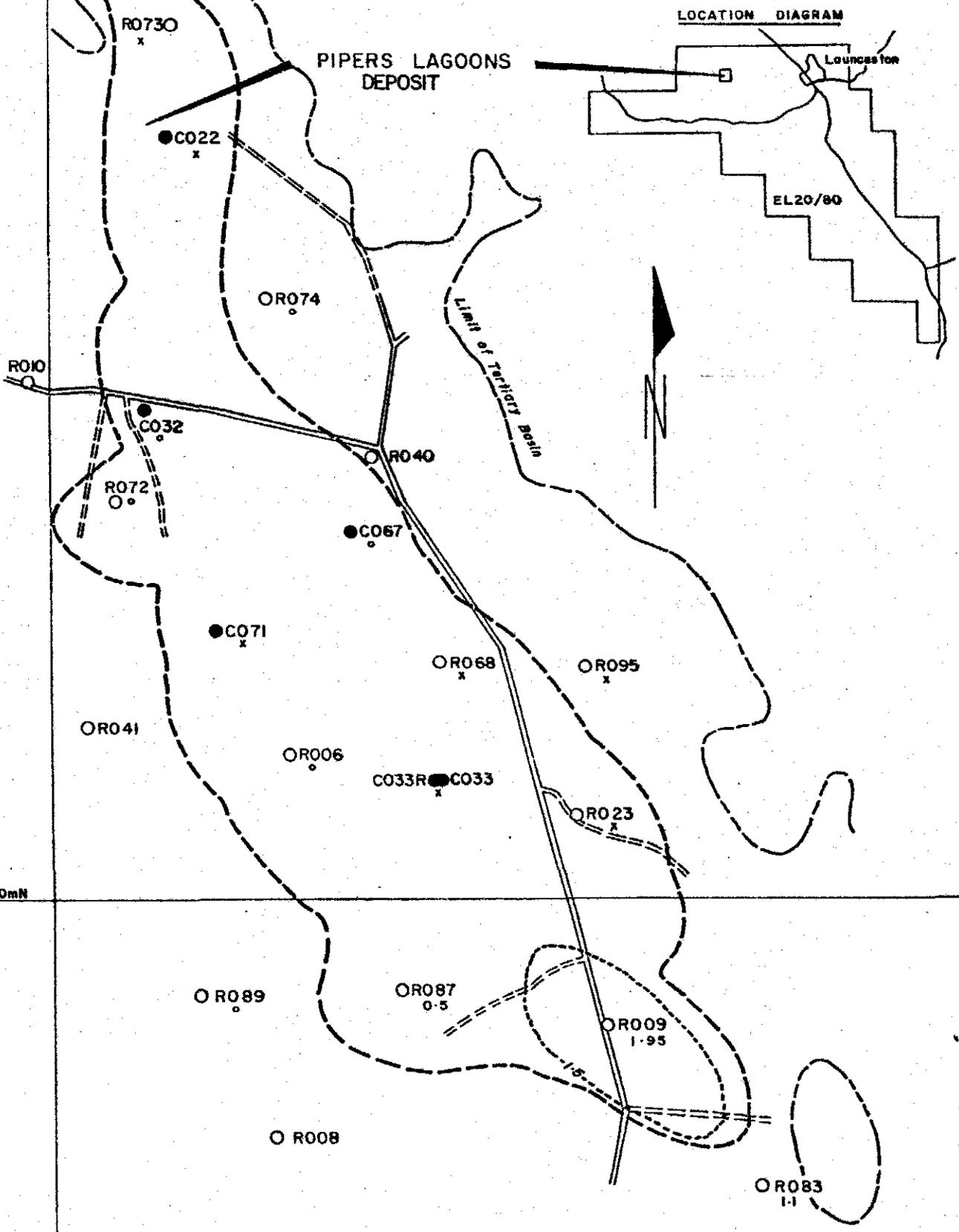


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE
DRAWN B.H. Aug '82		PIPER'S LAGOONS		1 : 25 000
CHECKED		PAO SEAM ISOPACHS		FIGURE 22
REVISED				DRAWING No 70020-38

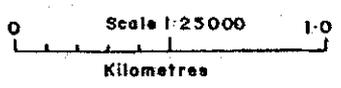
732048

5 cm

495 000 ME



5 410 000 mN

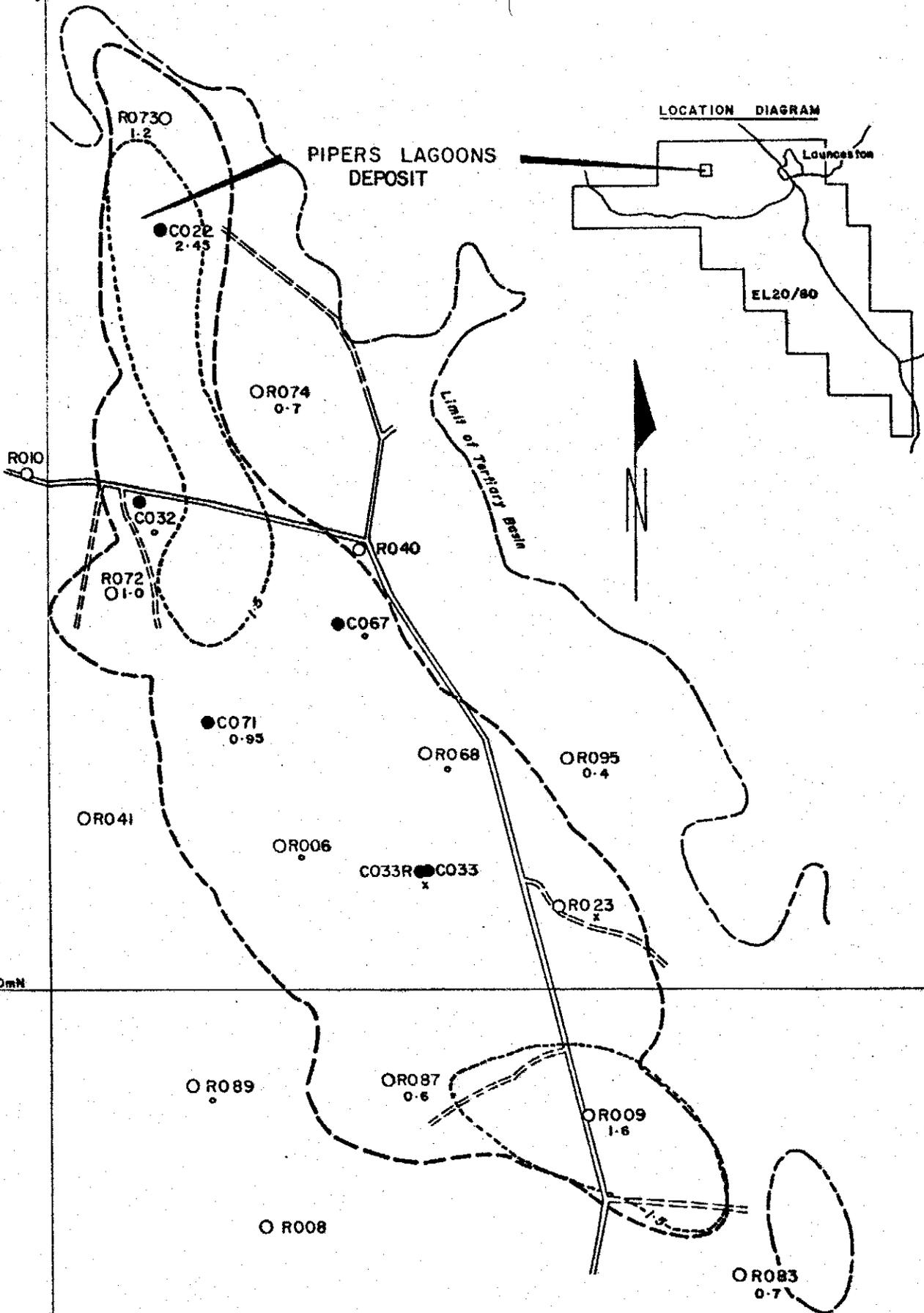


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CS17
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE
DRAWN B.H. Aug '82		PIPERS LAGOONS		1:25000
CHECKED		PBI SEAM ISOPACHS		FIGURE 23
REVISED				DRAWING No
				70020-39

732049

495 000 ME

5 cm



5410000mN

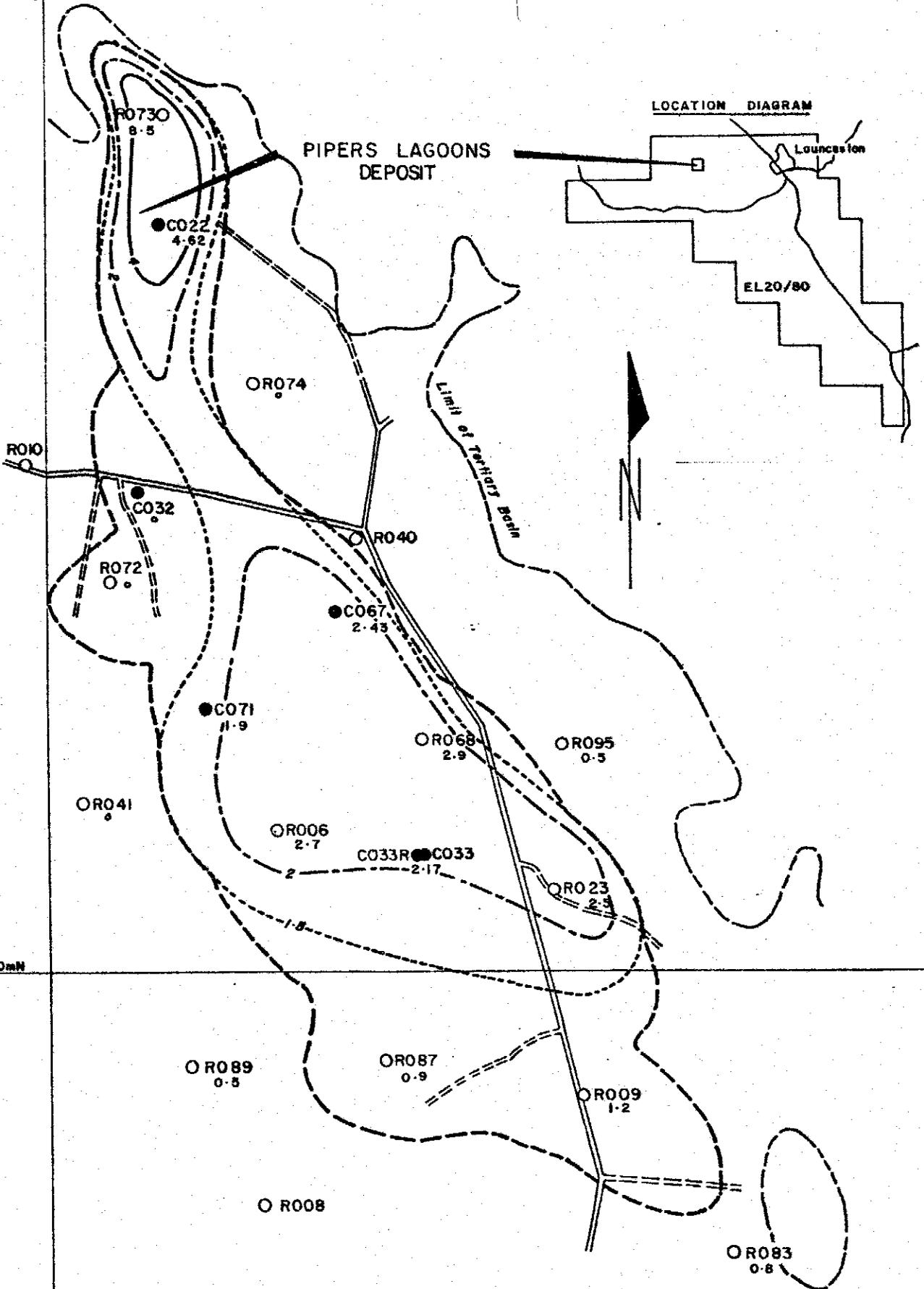
0 Scale 1:25000 1.0
 Kilometres

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON PIPERS LAGOONS PB2 SEAM ISOPACHS		SCALE	
DRAWN B.H. Aug '82				1 : 25 000	
CHECKED				FIGURE 24	
REVISED				DRAWING No 70020-40	

732050

495 000 ME

5 cm



Launceston

EL20/80

Limit of Tertiary Basin

R0730

C022

PIPERS LAGOONS DEPOSIT

OR074

R010

C032

R072

R040

C067

C071

OR068

OR095

OR041

OR006

C033R

C033

OR023

5 410 000 MN

OR089

OR087

OR009

OR008

OR083

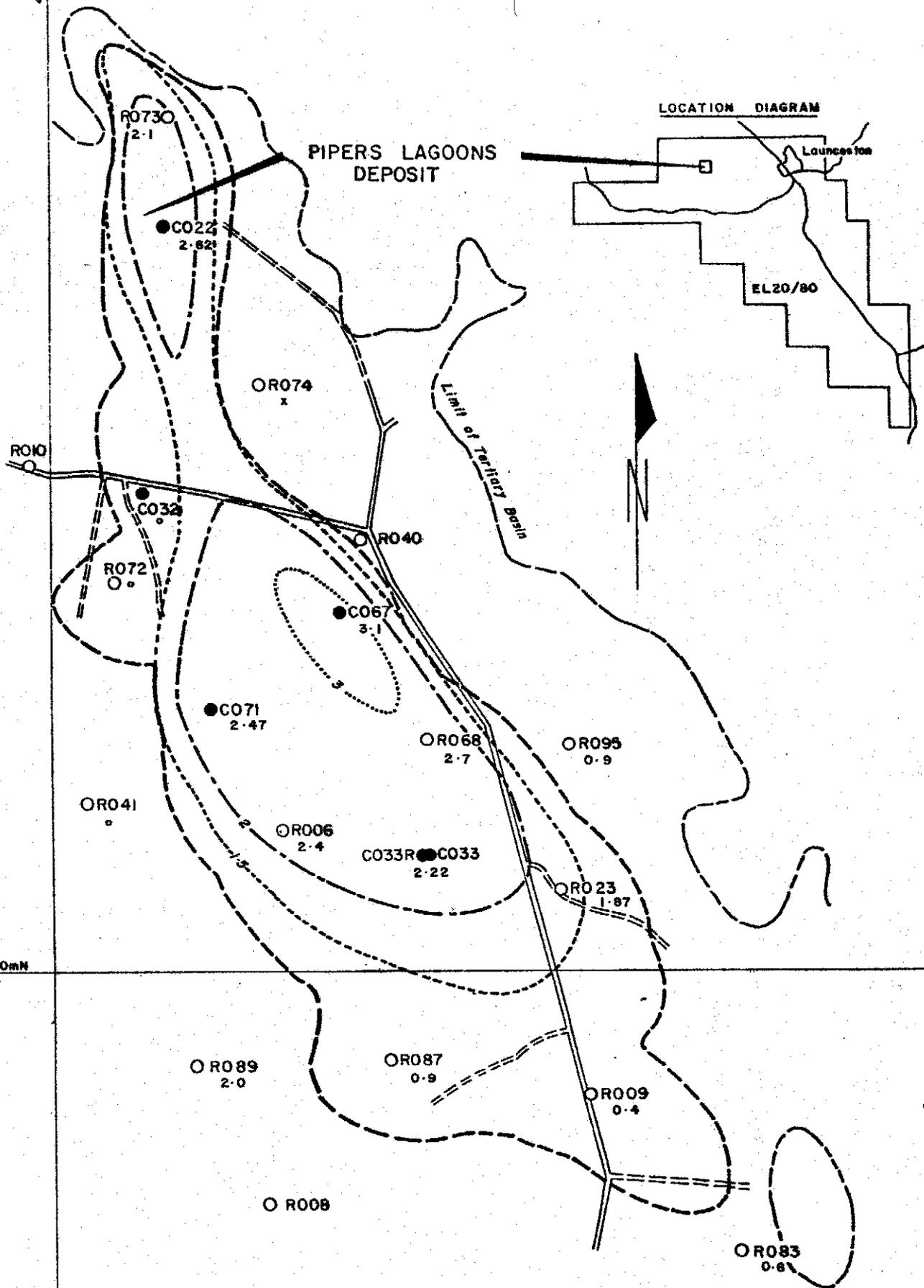
CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON PIPERS LAGOONS PB3 SEAM ISOPACHS		SCALE	
DRAWN B.H. Aug '82				1 : 25 000	
CHECKED				FIGURE 25	
REVISED				DRAWING No 70020 - 41	

Scale 1:25000
Kilometres

732051

495000mE

5 cm



5410000mN

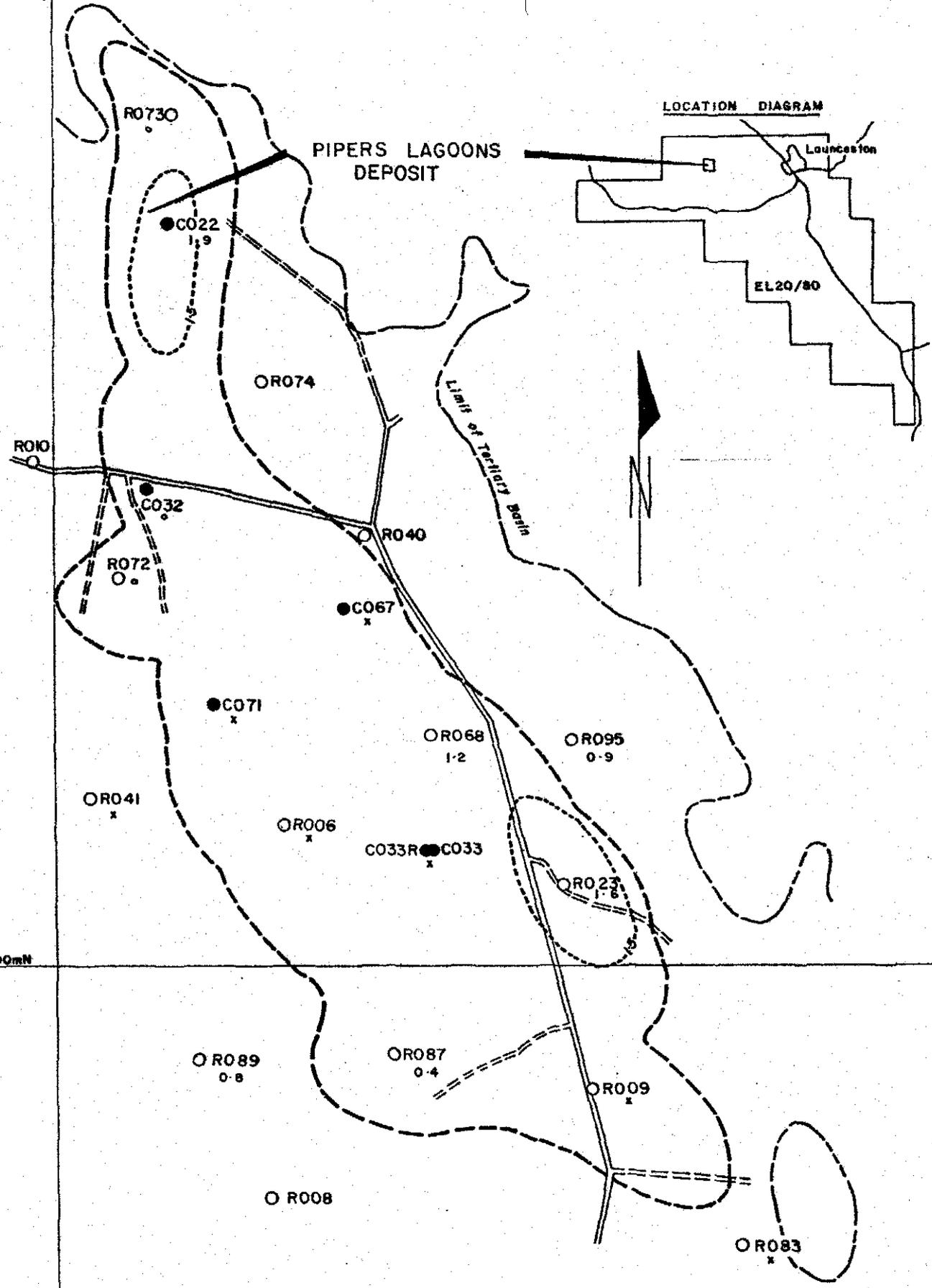
Scale 1:25000
 0 ————— 1.0
 Kilometres

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE	
DRAWN B.H. Aug '82		PIPERS LAGOONS		1 : 25 000	
CHECKED		PB4 SEAM ISOPACHS		FIGURE 26	
REVISED				DRAWING No 70020 - 42	

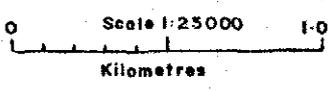
732052

495000 mE

5 cm



5410000mN



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE	
DRAWN B.H. Aug '82		PIPERS LAGOONS		1 : 25 000	
CHECKED		PCI SEAM ISOPACHS		FIGURE 27	
REVISED				DRAWING No 70020-43	

732053

496 000 mE

5 cm

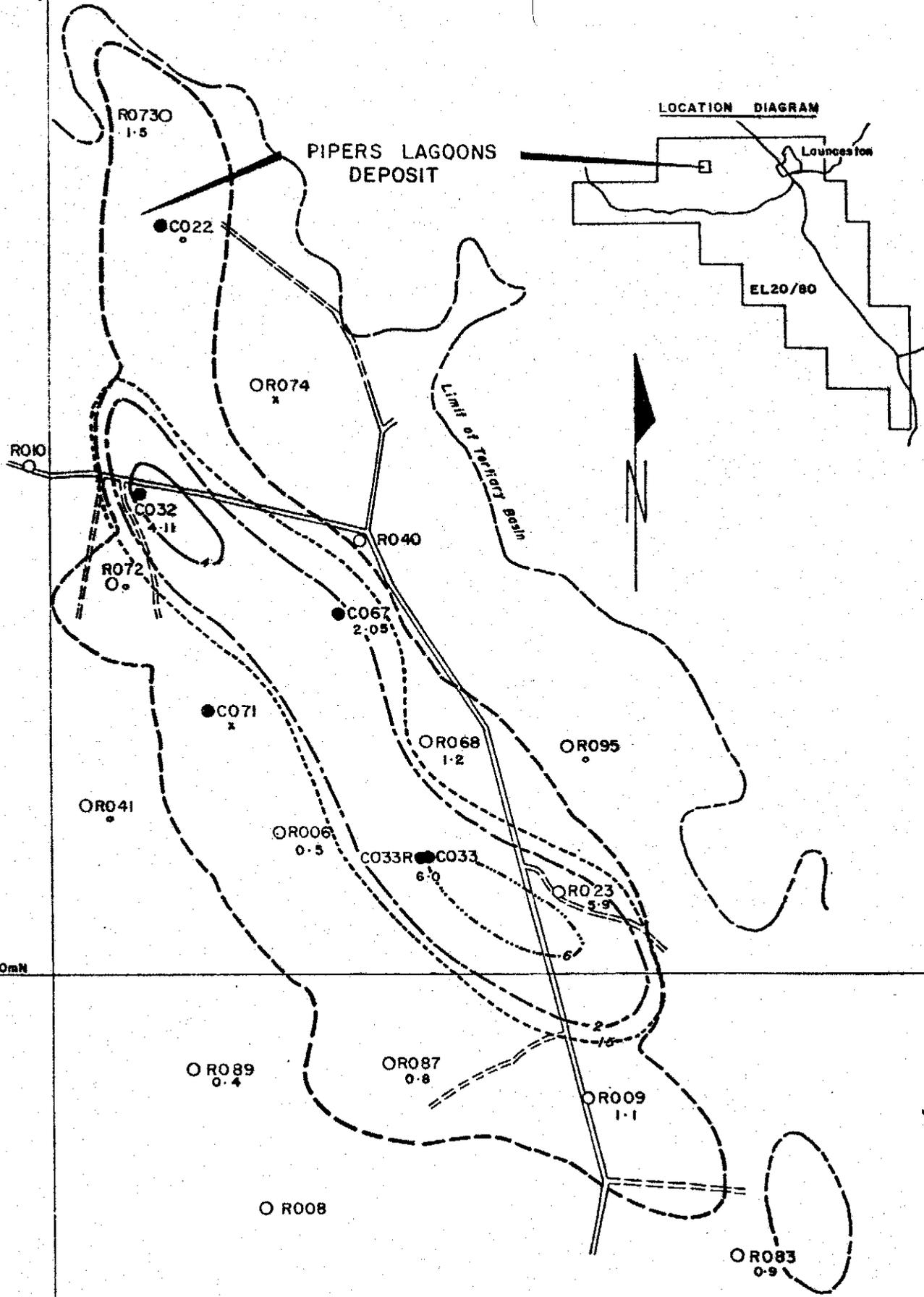
LOCATION DIAGRAM

Launceston

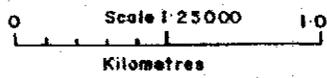
PIPERS LAGOONS DEPOSIT

EL20/80

Limit of Tertiary Basin



5410000mN



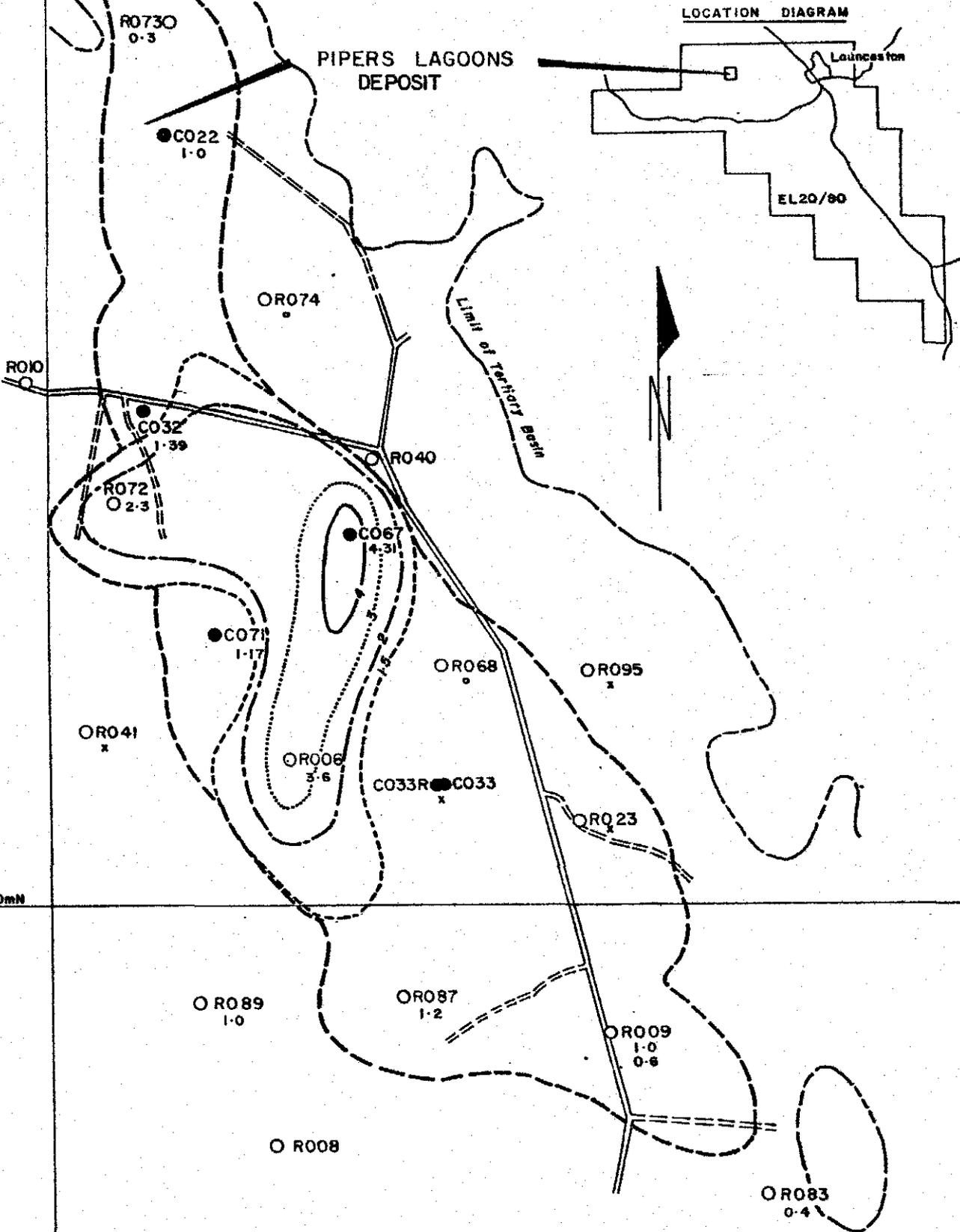
CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		
DRAWING / DATE		SCALE		
DRAWN B.H. Aug '82		1 : 25 000		
CHECKED		FIGURE 28		
REVISED		DRAWING No 70020-44		

EL 20/80 LAUNCESTON
PIPERS LAGOONS
PC2 SEAM ISOPACHS

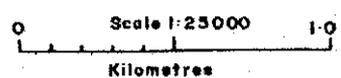
732054

495 000 ME

5 cm



5 410 000mN



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON PIPERS LAGOONS PC3 SEAM ISOPACHS		SCALE	
DRAWN B.H. Aug '82				1 : 25 000	
CHECKED				FIGURE 29	
REVISED				DRAWING No 70020-45	

732055

495 000 mE

5 cm

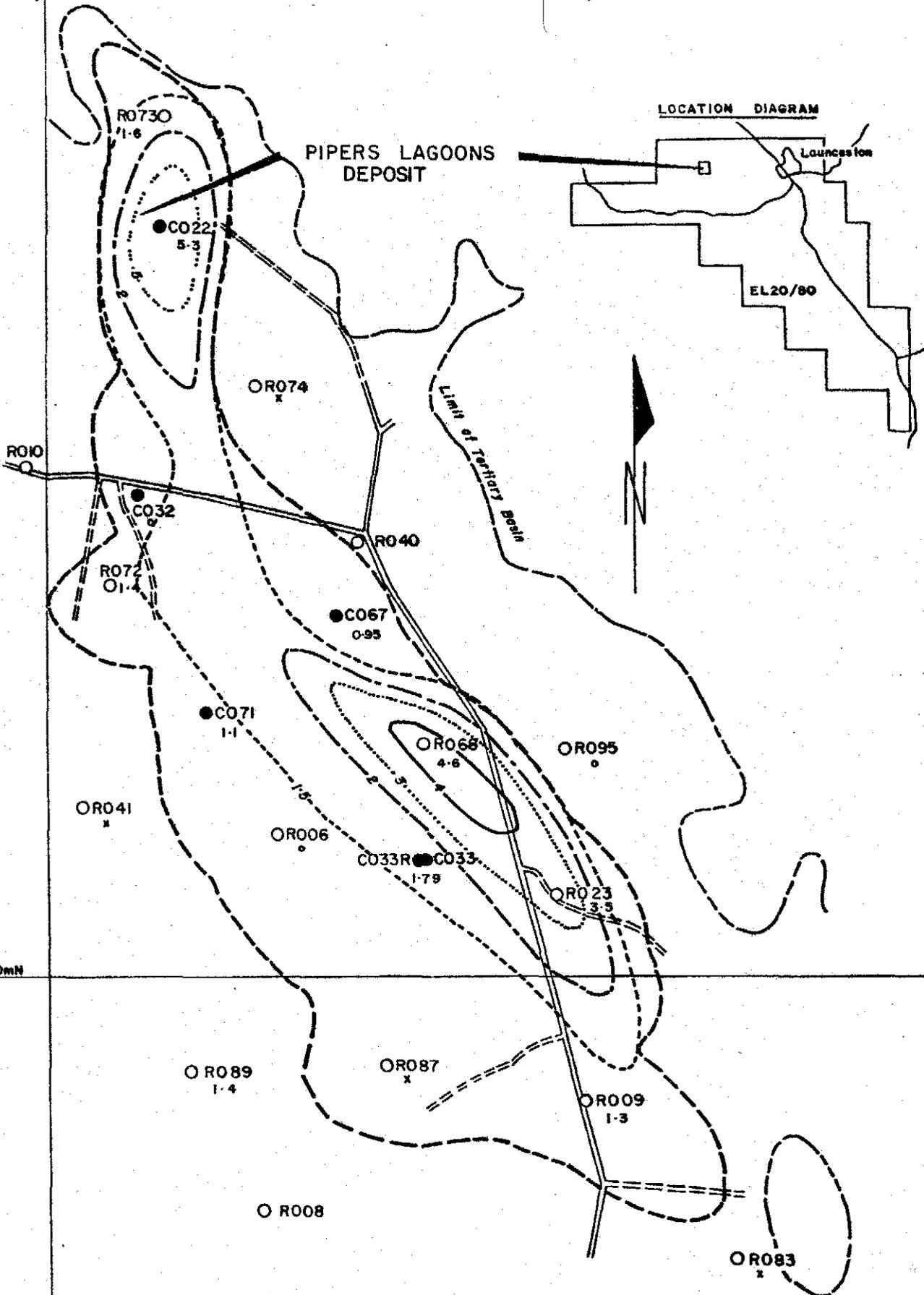
LOCATION DIAGRAM

PIPERS LAGOONS DEPOSIT

Launceston

EL20/80

Limit of Tertiary Basin



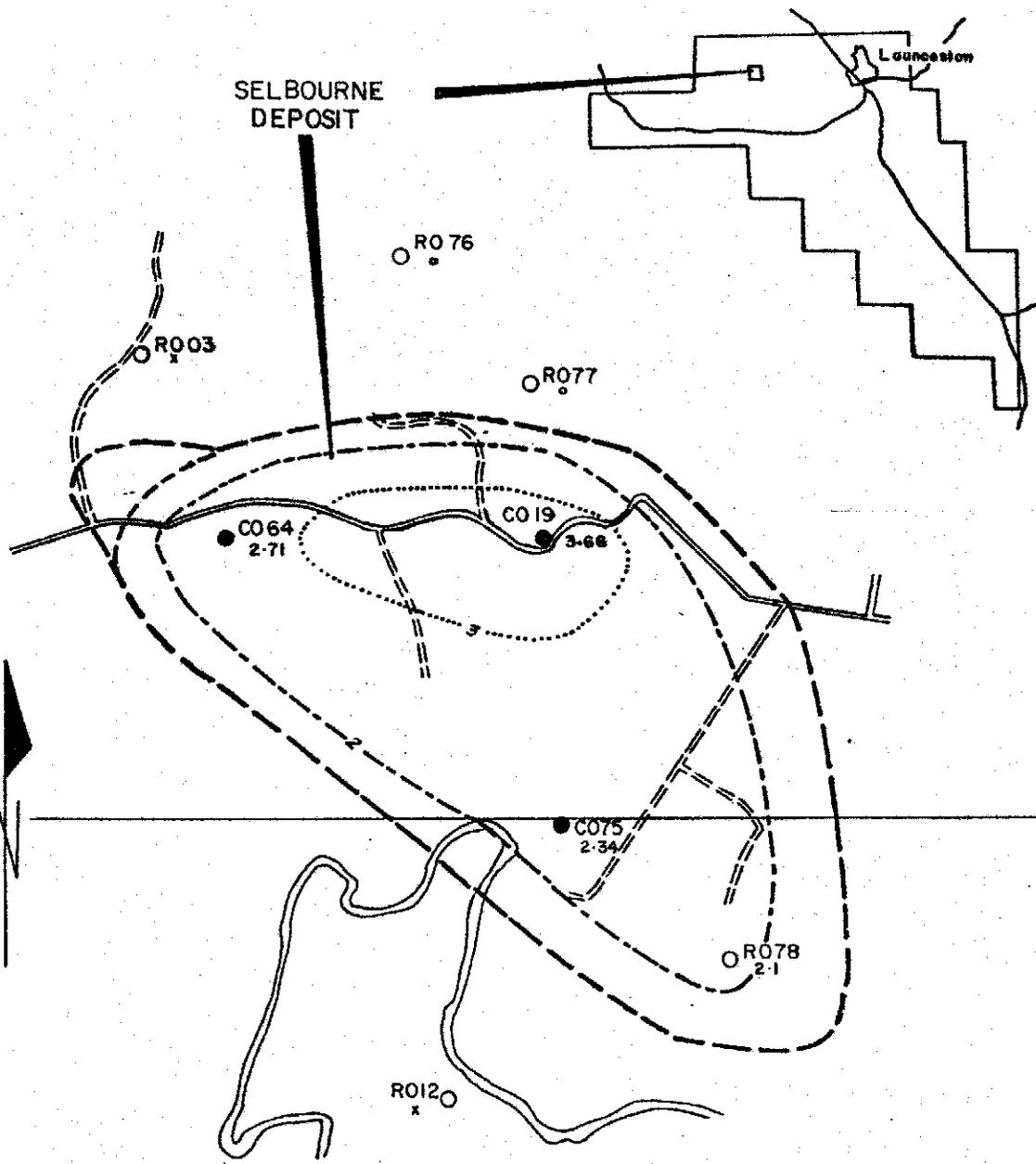
5 410 000 mN

0 Scale 1:25000 1.0
Kilometres

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON PIPERS LAGOONS PC4 SEAM ISOPACHS		SCALE	
DRAWN B.H. Aug '82				1 : 25 000	
CHECKED				FIGURE 30	
REVISED				DRAWING No 70020 - 46	

732056

LOCATION DIAGRAM



Legend

- RO68 Rotary Chip Hole
- CO68 Cored Hole
- RO68 Coal Thickness
2-16
- RO69 Horizon Intersected
- No Coal
- RO70 Seams Not Intersected
x

5 cm

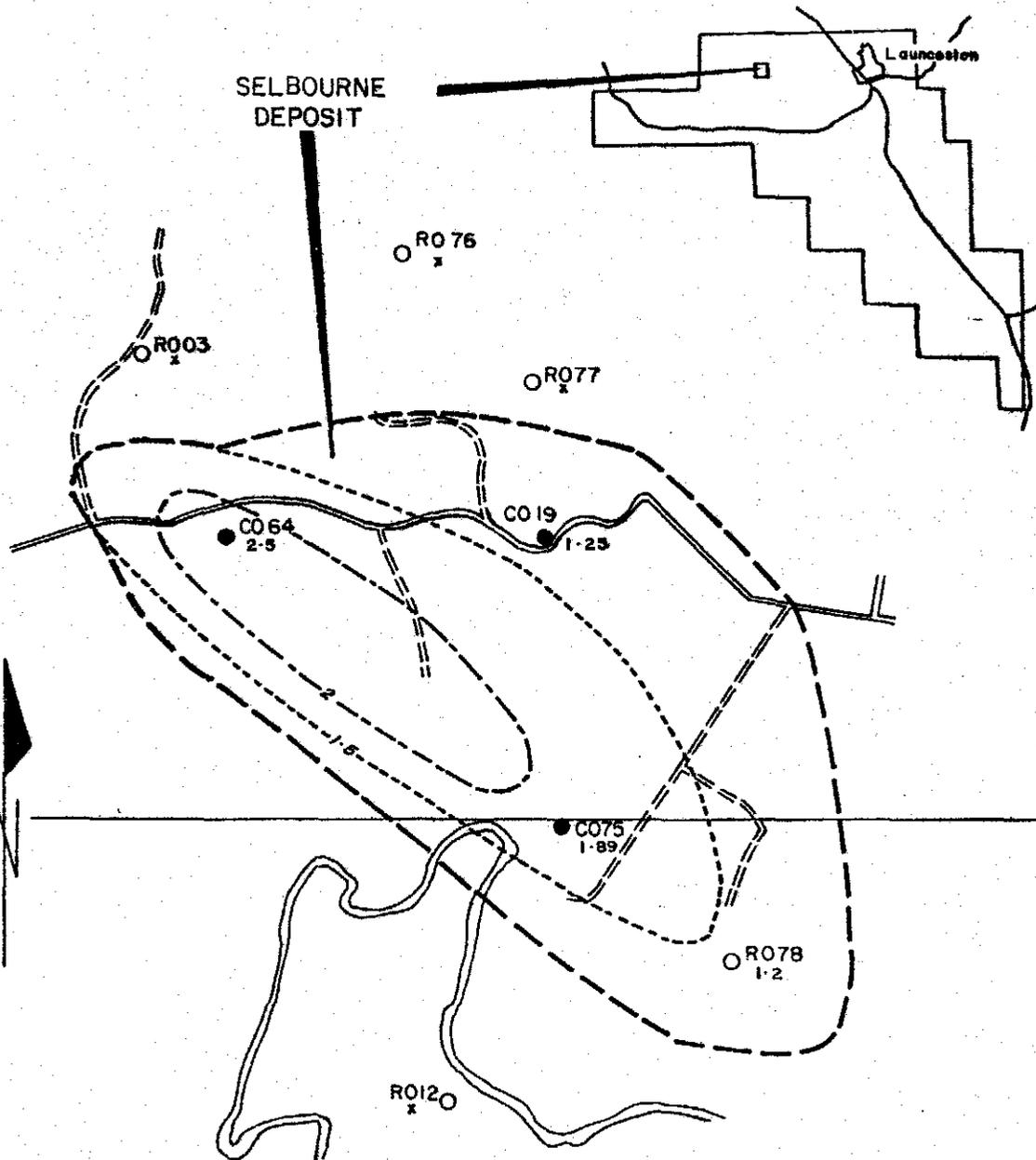
490 000mE

Scale 1:25000
0 1.0
Kilometres

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		SCALE		1:25000
DRAWN	Sept '82	FIGURE 31		
CHECKED		DRAWING No		70020-58
REVISED		EL 20/80 LAUNCESTON SELBOURNE SAI SEAM ISOPACHS		

732057

LOCATION DIAGRAM

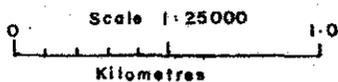


Legend

- RO 68 Rotary Chip Hole
- CO 68 Cored Hole
- RO 68 2.16 Coal Thickness
- RO 69 Horizon Intersected - No Coal
- RO 70 x Seams Not Intersected

5 cm

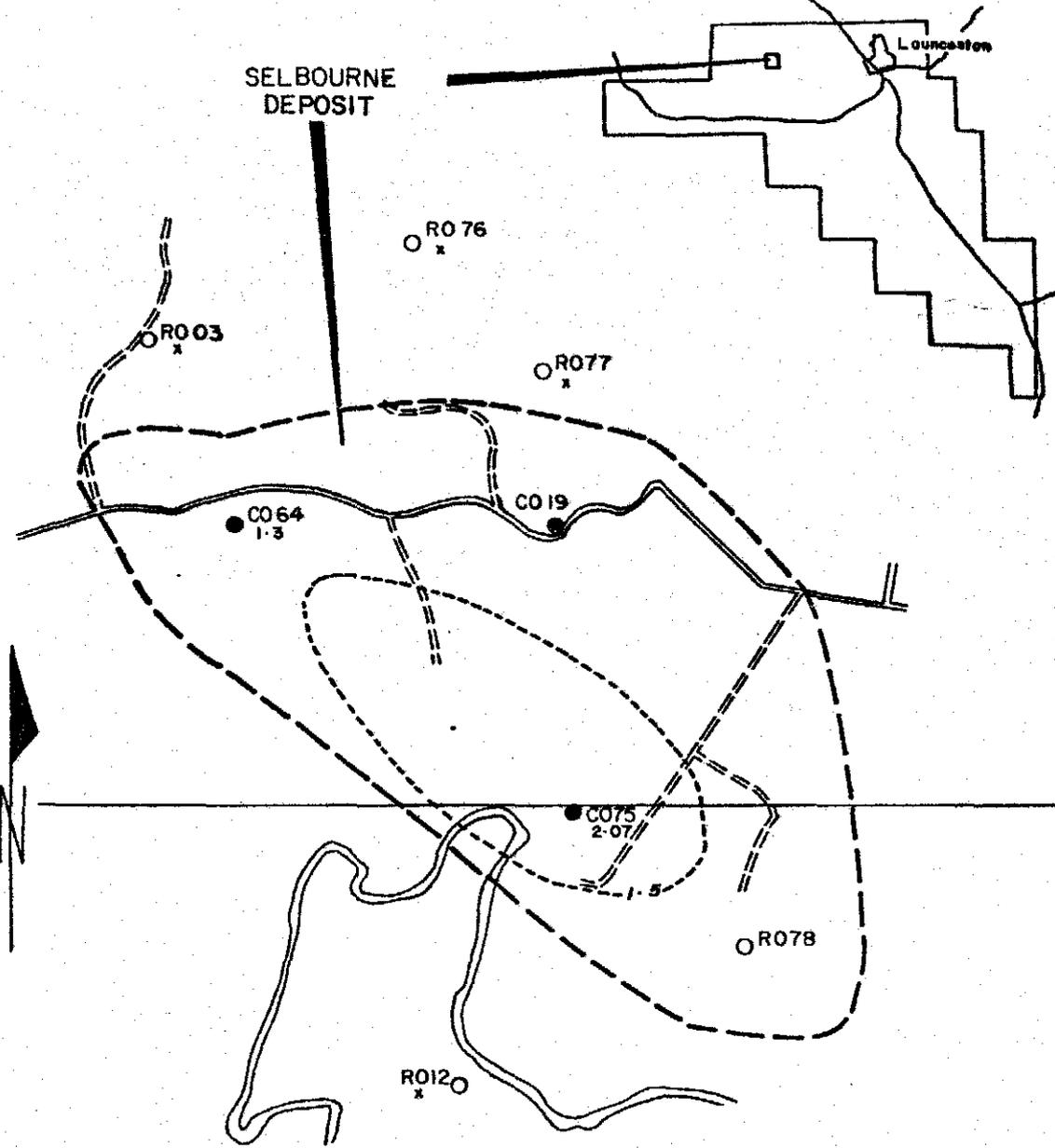
490 000mE



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE 1:25000
DRAWN	Sept '82	SELBOURNE		FIGURE 32
CHECKED		SA2 SEAM ISOPACHS		DRAWING No 70020-59
REVISED				

732058

LOCATION DIAGRAM



Legend

- RO68 Rotary Chip Hole
- CO68 Cored Hole
- RO68 2-16 Coal Thickness
- RO69 Horizon Intersected - No Coal
- RO70 x Seams Not Intersected

5 cm

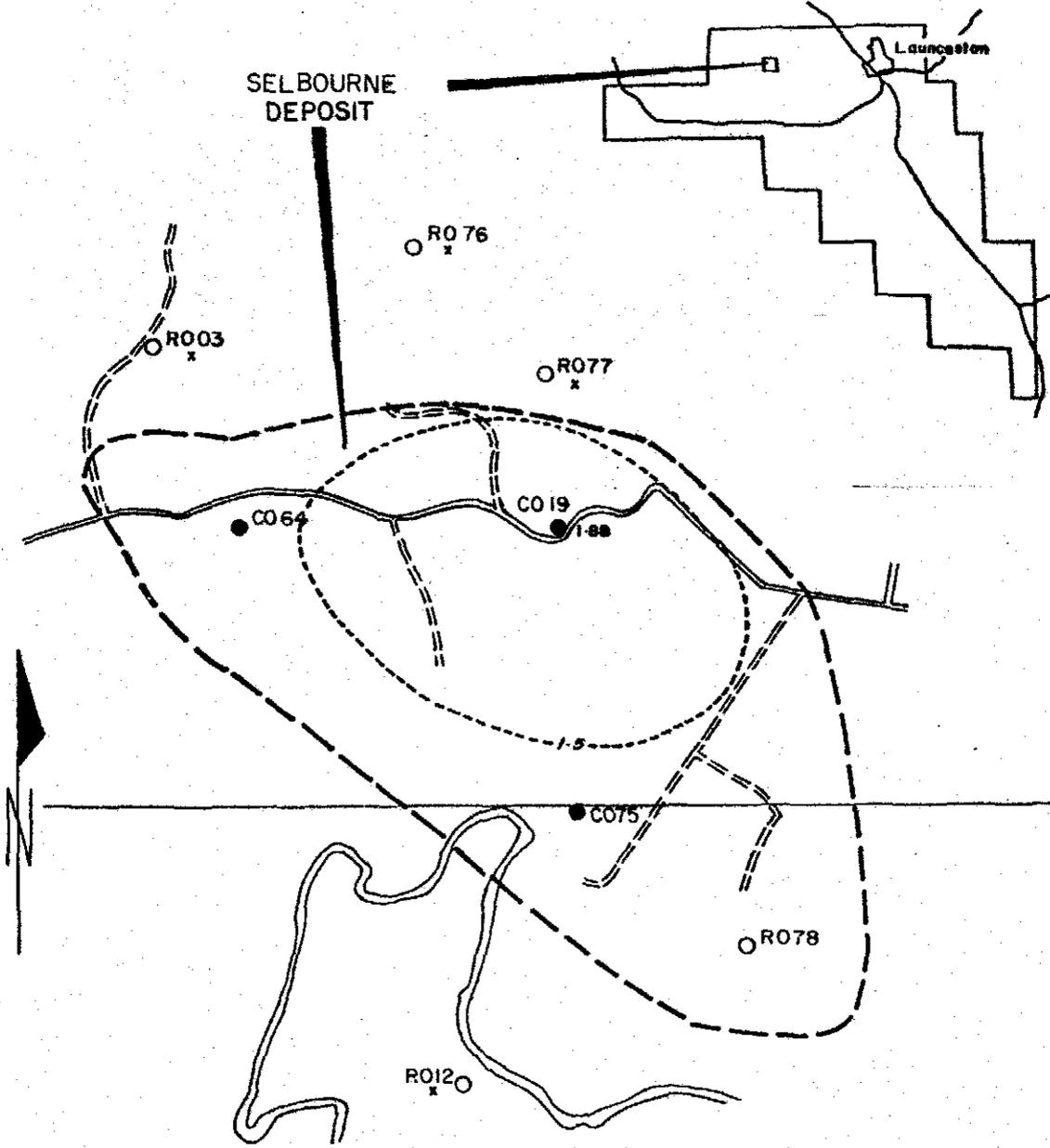
Scale 1:25000
0 1.0
Kilometres

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE	
DRAWN Sept '82		SELBOURNE		1:25000	
CHECKED		SB3 SEAM ISOPACHS		FIGURE 33	
REVISED				DRAWING No 70020 - 60	

490 000mE

732059

LOCATION DIAGRAM

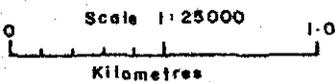


Legend

- R068 Rotary Chip Hole
- C068 Cored Hole
- R068 Coal Thickness 2-16
- R069 Horizon Intersected - No Coal
- R070 Seams Not Intersected

5 cm

490 000mE

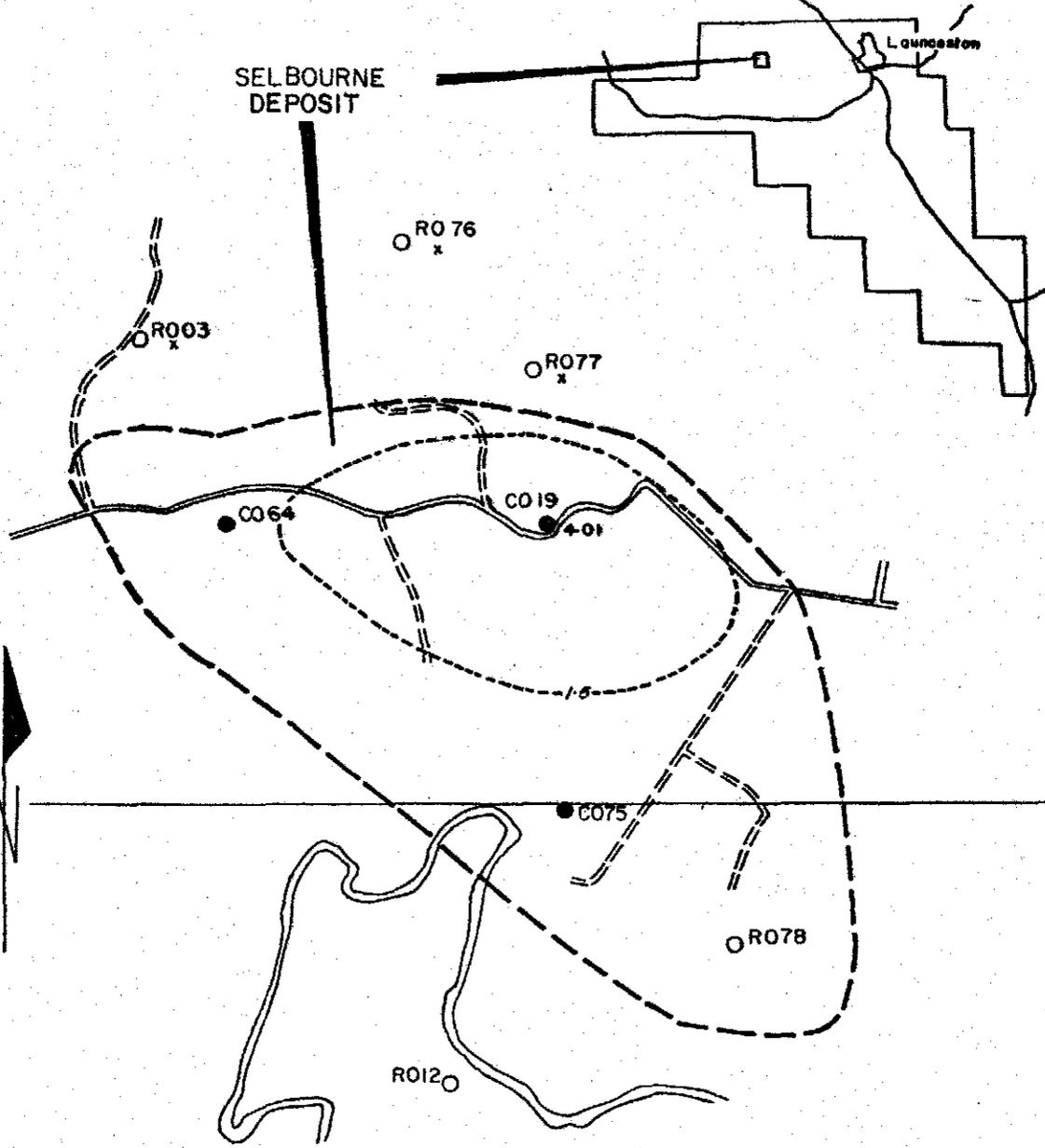


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		DRAWN		SCALE	
		Sept '82		1: 25 000	
CHECKED		REVISED		FIGURE 34	
				DRAWING No	
				70020 - 61	

EL 20/80 LAUNCESTON
SELBOURNE
SB4 SEAM ISOPACHS

732060

LOCATION DIAGRAM

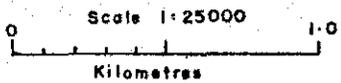


Legend

- RO 68 Rotary Chip Hole
- CO 68 Cored Hole
- RO 68 Coal Thickness 2-16
- RO 69 Horizon Intersected - No Coal
- RO 70 Seams Not Intersected

5 cm

490 000 mE



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE	
DRAWN	Sept '82	SELBOURNE		1 : 25 000	
CHECKED		SCI SEAM ISOPACHS		FIGURE 35	
REVISED				DRAWING No	
				70020 - 62	

APPENDIX 5EL20/80 LAUNCESTONRESERVE CALCULATIONS

- 5A Loatta Deposit
- 5B Pipers Lagoons Deposit
- 5C Selbourne Deposit

NOTE TO APPENDIX 5

The figures I and II in the Reserve Status column refer to Class I and Class II indicated reserves respectively, (Mengel 1977)

APPENDIX 5A
RESERVE CALCULATIONS EL20/80 LAUNCESTON
LOATTA DEPOSIT - INDICATED AND INFERRED RESERVES

CUMULATIVE COAL THICKNESS (m)				INDICATED RESERVES IN SITU COAL				
SEAM	RANGE m	VALUE USED m	AREA m ² x 10 ⁶	COAL VOLUME m ³ x 10 ⁶	RD gm/cc	RESERVE STATUS	TONNES x 10 ⁶	SEAM TOTAL TONNES x 10 ⁶
LA1	1.5 - 2	1.5	1.07	1.61	1.30	II	2.09	2.56
	2 - 3	2	0.18	0.36	1.30	II	0.47	
LA2	1.5 - 2	1.5	1.02	1.53	1.30	II	1.99	2.35
	2 - 3	2	0.14	0.28	1.30	II	0.36	
LA3	1.5 - 2	1.5	1.11	1.67	1.27	II	2.11	6.79
LA3	2 - 3	2	1.33	2.66	1.27	II	3.38	
LA3	3 - 4	3	0.29	0.87	1.27	II	1.10	
LA3	4 - 5	4	0.04	0.16	1.27	II	0.20	
LB1	1.5 - 2	1.5	0.56	0.84	1.33	I	1.12	8.19
LB1	2 - 3	2	0.76	1.52	1.33	I	2.02	
LB1	3 - 4	3	0.72	2.15	1.33	I	2.87	
LB1	4 - 5	4	0.41	1.64	1.33	I	2.18	
LB2	1.5 - 2	1.5	0.49	0.74	1.32	I	0.97	16.89
LB2	2 - 3	2	0.55	1.10	1.32	I	1.45	
LB2	3 - 4	3	0.33	0.99	1.32	I	1.31	
LB2	4 - 5	4	0.38	1.52	1.32	I	2.01	
LB2	5 - 6	5	1.0	5.0	1.32	I	6.60	
LB2	6 - 7	6	0.34	2.04	1.32	I	2.69	
LB2	7 - 8	7	0.11	0.77	1.32	I	1.02	
LB2	8 - 9	8	0.08	0.64	1.32	I	0.84	
LB2	1.5 - 2	1.5	0.21	0.32	1.32	Inferred	0.42	
LB2	2 - 3	2	0.29	0.58	1.32	Inferred	0.77	
LB3	1.5 - 2	1.5	0.42	0.63	1.3	I	0.82	8.15
LB3	2 - 3	2	1.74	3.48	1.3	I	4.52	
LB3	3 - 4	3	0.72	2.16	1.3	I	2.81	
LB3	1.5 - 2	1.5	0.30	0.45	1.3	II	0.59	2.05
LB3	2 - 3	2	0.56	1.12	1.3	II	1.46	
LC1	1.5 - 2	1.5	2.10	3.15	1.35	II	4.25	6.83
LC1	2 - 3	2	0.79	1.58	1.35	II	2.13	
LC1	3 - 4	3	0.11	0.33	1.35	II	0.45	
LC2	1.5 - 2	1.5	0.38	0.57	1.2	II	0.68	0.68
LC3	1.5 - 2	1.5	0.82	1.23	1.2	II	1.48	1.48
TOTALS						I	33.23	
						II	22.74	
						I & II	55.97	
						Inferred	small	

APPENDIX 5B
RESERVE CALCULATIONS EL20/80 LAUNCESTON

PIPERS LAGOONS DEPOSIT - INDICATED RESERVES

SEAM	CUMULATIVE COAL THICKNESS (m)			INDICATED RESERVES INSITU COAL				
	RANGE m	VALUE USED m	AREA m ² x 10 ⁶	COAL VOLUME m ³ x 10 ⁶	RD gm/cc	RESERVE STATUS	TONNES x 10 ⁶	SEAM TOTAL TONNES x 10 ⁶
PA0	1.5 - 2	1.5	1.27	1.9	1.3	II	2.48	2.48
PB1	1.5 - 2	1.5	0.42	0.63	1.33	II	0.84	0.84
PB2	1.5 - 2	1.5	1.38	2.07	1.33	II	2.75	2.75
PB3	1.5 - 2	1.5	1.53	2.30	1.30	I	2.98	
PB3	2 - 4	2	0.23	0.46	1.30	I	0.60	
PB3	2 - 3	2	1.57	3.14	1.30	I	4.08	
PB3	4 - 5	4	0.24	0.96	1.30	I	1.25	8.91
PB4	1.5 - 2	1.5	1.29	1.94	1.32	I	2.55	
PB4	2 - 3	2	1.94	3.88	1.32	I	5.12	
PB4	3 - 4	3	0.18	0.54	1.32	I	0.71	8.38
PC1	1.5 - 2	1.5	0.48	0.72	1.2	II	0.86	0.86
PC2	1.5 - 2	1.5	0.61	0.92	1.33	I	1.22	
PC2	2 - 3	2	1.53	3.06	1.33	I	4.07	
PC2	4 - 5	4	0.09	0.36	1.33	I	0.48	5.77
PC3	1.5 - 2	1.5	0.63	0.95	1.33	II	1.26	
PC3	2 - 3	2	0.86	1.72	1.33	II	2.29	
PC3	3 - 4	3	0.33	0.99	1.33	II	1.32	
PC3	4 - 5	4	0.07	0.28	1.33	II	0.37	5.24
PC4	1.5 - 2	1.5	1.56	2.34	1.36	II	3.18	
PC4	2 - 5	2	0.21	0.42	1.36	II	0.57	
PC4	5 - 6	5	0.15	0.75	1.36	II	1.02	
PC4	2 - 3	2	0.36	0.72	1.36	II	0.98	
PC4	3 - 4	3	0.32	0.96	1.36	II	1.31	
PC4	4 - 5	4	0.11	0.44	1.36	II	0.60	7.66
TOTALS						I II I & II		23.06 19.83 42.89

APPENDIX 5C
RESERVE CALCULATIONS EL20/80 LAUNCESTON

SELBOURNE DEPOSIT - INDICATED AND INFERRED RESERVES

SEAM	CUMULATIVE COAL THICKNESS (m)			INDICATED RESERVES INSITU COAL				
	RANGE m	VALUE USED m	AREA m ² x 10 ⁶	COAL VOLUME m ³ x 10 ⁶	RD gm/cc	RESERVE STATUS	TONNES x 10 ⁶	SEAM TOTAL TONNES x 10 ⁶
SA1	1.5 - 2	1.5	1.26	1.89	1.31	I	2.48	9.57 Small
SA1	2 - 3	2	2.0	4.0	1.31	I	5.24	
SA1	3 - 4	3	0.47	1.41	1.31	I	1.85	
						Inferred	Small	
SA2	1.5 - 2	1.5	1.30	1.95	1.39	I	2.71	4.18 Small
SA2	2 - 3	2	0.53	1.06	1.39	I	1.47	
						Inferred	Small	
SB4	1.5 - 2	1.5	1.39	2.09	1.33	II	2.77	2.77
SC1	1.5 - 2	1.5	1.1	1.65	1.32	II	2.18	2.18
TOTALS						I		13.75
						II		4.95
						I & II		18.70
						Inferred		Small

APPENDIX 6

EL 20/80 LAUNCESTON

COAL QUALITY OF INDIVIDUAL SEAMS

Air Dried Basis

Insitu Basis

Dry Basis

NOTE TO APPENDIX 6

1. Cored holes are assumed to have equal areas of influence over their respective deposits
2. Coal seams are a minimum of 1.5 metres thick, and may contain stone bands up to 0.5 metres thick, provided that the dry basis ash of the seam is less than 50%
3. Weighted average coal quality was calculated on an "as analysed", or air dried basis and then converted to in situ and dry basis results.
4. The following equation was used to calculate in situ relative densities from air dried results:-

$$RD(T) = \frac{RD(ad) \left(1 - \frac{IM}{100}\right)}{1 - RD(ad) \frac{IM}{100} + (RD(ad) - 1) \frac{TM}{100}}$$

RD(T)	Relative Density In situ
RD (ad)	Relative Density Air Dried Basiss
IM	Inherent Moisture
TM	Total Moisture

APPENDIX 6
TABLE 9
EL20/80 LAUNCESTON

WEIGHTED AVERAGE COAL QUALITY
OF INDIVIDUAL SEAMS
(Air Dried Basis)

SEAM	RELATIVE DENSITY gm/cc	INHERENT MOISTURE %	VOLATILE MATTER %	ASH %	FIXED CARBON %	SPECIFIC ENERGY MJ/kg	TOTAL SULPHUR %
LA1	1.55	21.69	27.66	32.49	18.12	11.21	0.16
LA2	1.54	17.37	33.84	24.95	23.83	14.52	0.24
LA3	1.57	17.90	30.26	31.12	20.83	13.31	0.20
LA4	1.55	22.32	26.98	30.88	19.76	11.64	0.21
LB1	1.63	15.85	30.26	33.42	22.20	13.40	0.31
LB2	1.66	15.50	27.68	38.22	18.07	11.21	0.28
LB3	1.60	16.23	30.44	32.49	20.83	13.06	0.28
LC1	1.76	9.90	29.20	43.3	17.60	11.58	0.30
PA0	1.76	9.30	27.40	44.60	18.70	11.06	0.27
PB2	1.64	15.65	29.11	37.14	18.08	11.67	0.24
PB3	1.57	17.94	29.99	32.65	19.12	12.82	0.19
PB4	1.61	15.29	30.98	33.22	20.29	13.41	0.16
PC2	1.70	11.74	28.21	41.15	18.84	11.91	0.13
PC3	1.67	11.82	30.48	36.81	20.54	13.31	0.16
PC4	1.59	22.09	27.98	34.60	15.98	11.18	0.18
SA1	1.65	14.23	29.22	37.50	20.15	11.76	0.31
SA2	1.79	8.56	29.49	43.58	18.30	11.48	0.30
SB4	1.65	16.37	27.54	38.09	18.0	11.22	0.26
SC1	1.62	13.57	31.15	33.36	21.98	13.10	0.24

TABLE 10

EL20/80 LAUNCESTON
WEIGHTED AVERAGE INSITU QUALITY
OF INDIVIDUAL SEAMS

SEAM	RELATIVE DENSITY gr/cc	TOTAL MOISTURE %	VOLATILE MATTER %	ASH %	FIXED CARBON %	SPECIFIC ENERGY MJ/kg	TOTAL SULPHUR %	INSITU RESERVES TONNES x 10 ⁶
LAI	1.30	48.70	18.26	21.44	11.60	7.40	0.11	2.56
LA2	1.30	46.20	22.0	16.22	15.58	9.44	0.16	2.35
LA3	1.27	51.35	17.85	18.36	12.44	7.85	0.12	6.80
LB1	1.33	45.55	19.67	21.72	13.06	8.71	0.20	8.19
LB2	1.32	48.87	16.88	23.31	10.94	6.84	0.17	18.07
LB3	1.30	48.59	18.57	19.82	13.02	7.97	0.17	10.19
LC1	1.35	45.65	17.52	25.98	10.85	6.95	0.18	6.83
PA0	1.33	48.13	15.62	25.42	10.83	6.30	0.17	2.48
PB2	1.33	46.25	18.63	23.77	11.25	7.47	0.15	2.75
PB3	1.30	47.49	19.19	20.9	12.42	8.20	0.12	8.91
PB4	1.32	46.26	17.04	18.44	18.26	7.38	0.09	8.39
PC2	1.33	46.24	14.67	21.40	17.69	6.19	0.07	5.77
PC3	1.33	45.82	18.59	22.45	13.14	8.12	0.10	5.24
PC4	1.36	44.07	20.15	24.91	10.87	8.05	0.13	7.66
SA1	1.31	48.20	17.53	22.50	11.77	7.06	0.19	9.57
SA2	1.39	42.24	18.58	27.46	11.72	7.23	0.19	4.18
SB4	1.33	47.4	17.35	24.0	11.25	7.07	0.16	2.77
SC1	1.32	45.5	19.62	21.02	13.86	8.25	0.15	2.18

APPENDIX 6TABLE 11EL20/80 LAUNCESTONWEIGHTED AVERAGE SEAM QUALITYOF INDIVIDUAL SEAMS
(DRY BASIS)

SEAM	VOLATILE MATTER %	ASH %	FIXED CARBON %	SPECIFIC ENERGY MJ/kg	TOTAL SULPHUR %	INSITU RESERVES TONNES x 10 ⁶
LA1	35.40	41.59	23.19	14.35	0.20	2.56
LA2	40.95	30.19	28.83	17.57	0.29	2.35
LA3	36.92	37.67	25.41	16.24	0.24	6.80
LB1	36.01	39.77	26.42	15.95	0.37	8.19
LB2	32.66	45.10	21.32	13.25	0.33	18.07
LB3	36.22	38.66	24.79	15.54	0.33	10.19
LC1	32.41	48.06	19.54	12.85	0.33	6.83
PA0	30.14	44.60	20.57	11.06	0.27	2.48
PB2	34.64	49.06	21.52	12.17	0.30	2.75
PB3	36.59	39.83	23.33	15.64	0.23	8.91
PB4	36.56	39.20	23.94	15.82	0.19	8.38
PC2	31.88	46.50	21.29	13.46	0.15	5.77
PC3	34.44	41.60	23.21	15.04	0.18	5.24
PC4	31.62	39.10	18.06	12.63	0.20	7.66
SA1	34.19	43.88	23.58	13.76	0.36	9.57
SA2	32.14	47.50	19.95	12.51	0.33	4.18
SB4	33.05	45.71	21.60	13.46	0.31	2.77
SC1	36.13	38.70	25.50	15.20	0.28	2.18

APPENDIX 6

TABLE 12

EL20/80 LAUNCESTON

WEIGHTED AVERAGE INSITU SEAM QUALITY

SEAM	RELATIVE DENSITY gn/cc	TOTAL MOISTURE %	VOLATILE MATTER %	ASH %	FIXED CARBON %	SPECIFIC ENERGY MJ/kg	TOTAL SULPHUR %	INSITU RESERVES TONNES x 10 ⁶
LAO	1.28	49.74	18.77	18.60	12.89	8.07	0.13	11.71
LBO	1.32	48.05	17.98	21.99	11.98	7.58	0.18	36.45
LCO	1.35	45.65	17.52	25.98	10.85	6.95	0.18	6.83
PAO	1.33	48.13	15.62	25.42	10.83	6.30	0.17	2.48
PBO	1.31	46.82	18.21	20.27	14.70	7.76	0.11	20.04
PCO	1.35	45.38	18.08	23.21	13.33	7.52	0.10	18.61
SAO	1.33	46.39	17.85	24.01	11.75	7.11	0.19	13.75
SBO	1.33	47.40	17.35	24.0	11.25	7.07	0.16	2.77
SCO	1.32	45.50	19.62	21.02	13.86	8.25	0.15	2.18

APPENDIX 6
TABLE 13
EL20/80 LAUNCESTON

WEIGHTED AVERAGE SEAM QUALITY

(DRY BASIS)

SEAM	VOLATILE MATTER %	ASH %	FIXED CARBON %	SPECIFIC ENERGY MJ/kg	TOTAL SULPHUR %	INSITU RESERVES TONNES x 10 ⁶
LAO	37.40	37.03	25.61	16.09	0.24	11.71
LBO	34.41	42.10	23.44	14.50	0.34	36.45
LCO	32.41	48.06	19.54	12.85	0.33	6.83
PAO	30.14	44.60	20.57	11.06	0.27	2.48
PBO	36.31	40.83	23.34	15.24	0.22	20.04
PCO	32.60	42.22	20.57	13.61	0.18	18.61
SAO	33.57	44.98	22.48	13.38	0.35	13.75
SBO	33.05	45.71	21.60	13.46	0.31	2.77
SCO	36.13	38.70	25.50	15.20	0.28	2.18

732072

8 SEP 1982

MICROFILMED

CSR Coal Division

Summary of Exploration

to September 1982

EL20/80

TASMANIA

RESOURCE LOCATION

EL 20/80 is situated to the south and west of Launceston in the Tamar Valley of northern Tasmania. Three brown coal deposits have been delineated in the north-eastern part of EL 20/80, near Westbury approximately 25 km by road, West of Launceston.

EXPLORATION TO DATE

EL 20/80 is held by AAR Limited, a wholly owned CSR subsidiary. Exploration during the past two years has included the drilling of 106 rotary chip and 16 partly cored holes, of which 100 have been geophysically logged. Over 400 samples of brown coal and parting material have been submitted for analysis at CSR's NATA registered Materials Laboratory in Brisbane.

COAL RESERVES AS AT SEPTEMBER 1982

Exploratory drilling to date has identified 118 million tonnes (in situ) of indicated Class I and II brown coal at depths of generally less than 60 metres in three deposits. The coal occurs in up to 12 seams ranging in thickness from 1.5 to 8.5 metres. The reserves by deposit are shown in the following Table:-

Deposit	Depth (metres)	Indicated Reserves (in situ)		Total Mt
		Class I Mt	Class II Mt	
Loatta	0 - 60	33	23	56
Pipers Lagoons	0 - 60	23	20	43
Selbourne	0 - 70	14	5	19
		<u>70</u>	<u>48</u>	<u>118</u>

Further small tonnages of inferred category coal have been identified in the area, with indications of Triassic coal also occurring at several localities within the licence area.

The deposits will be amenable to open-cut mining, with the total reserves identified occurring at generally less than 60 metres. Initial mining would probably be from the Loatta deposit with overburden depths ranging from 10 - 30 metres.

Overburden and parting material consists of clay, silt, sand and high ash brown coal. Approximately 20% of the Loatta deposit is covered by up to 20 metres of basalt, a large part of which has weathered to clay. The topography of the three deposits is generally flat to undulating, except for a basalt capped hill covering part of the Loatta deposit. Several creeks traverse the deposits.

RESOURCE COAL QUALITY

Based on work undertaken to date, the brown coal identified within EL 20/80 has the following average in situ quality:-

Total Moisture	47%
Ash	22%
Specific Energy	7.5 MJ/kg
Total Sulphur	0.15%

The ash content is moderately high and the sulphur content is low compared to other brown coals. The likely combustion characteristics of the brown coal resource will be ascertained over the next six months. Preliminary indications are that there is no technical impediment to burning this high ash coal in conventional thermal power stations.

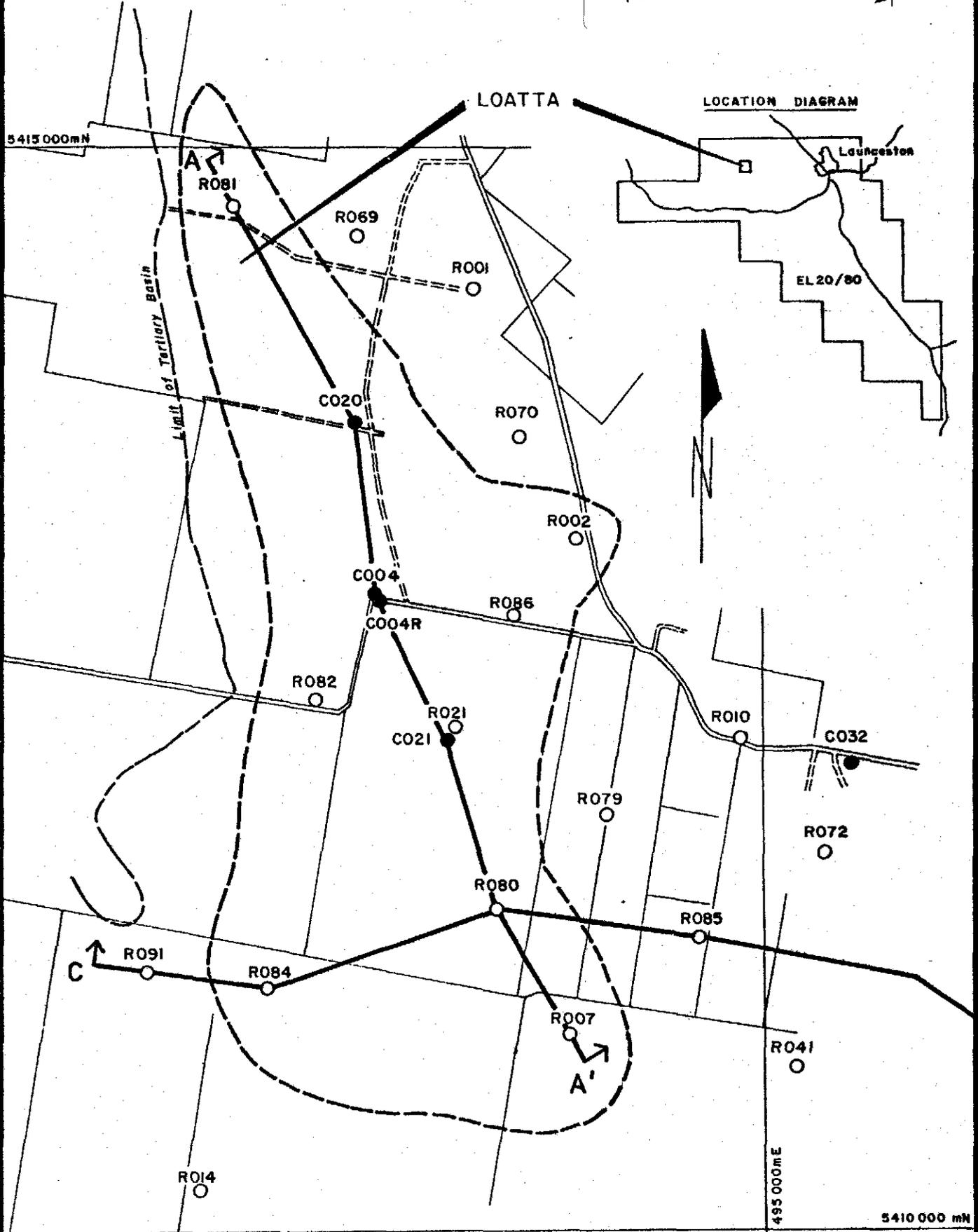
RESOURCE UTILIZATION

The brown coal identified in the three deposits would appear to be suitable for combustion in an onsite or nearby thermal power station. A brief study will be conducted on the deposits over the next six months to ascertain mining methods, workforce numbers, infrastructure requirements and costs.

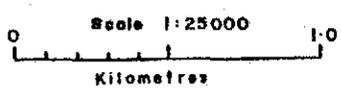
Depending on the results of this study and techniques now being developed in Europe for the transport and utilisation of brown coal, it is possible that this resource could be a fuel source for a converted Bell Bay station, or a new thermal onsite power station.

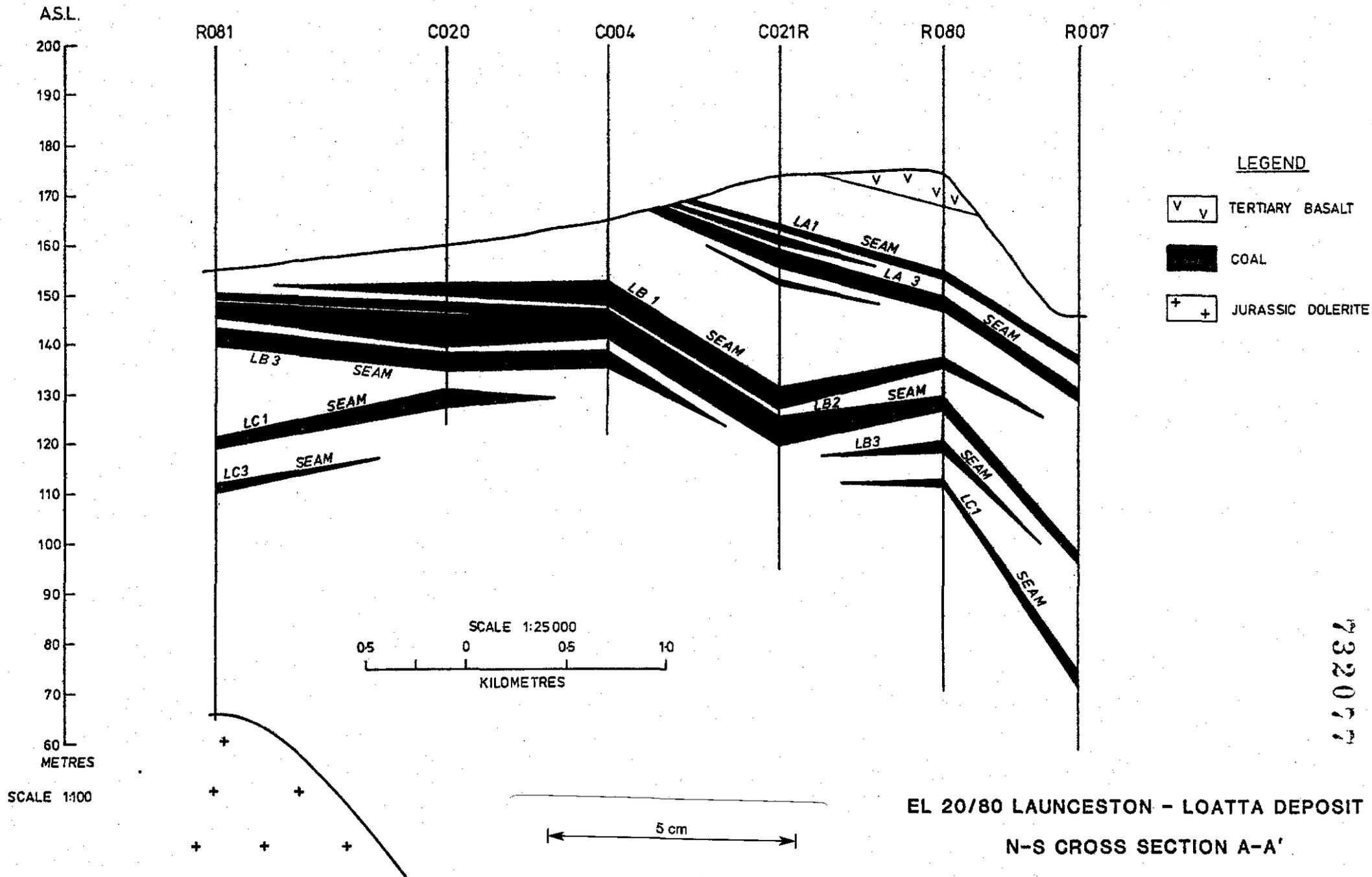
732076

5 cm



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE 1 : 25 000	
DRAWN Aug '82		LOATTA		FIGURE	
CHECKED		LOCATION OF SECTIONS A-A' & C-C'		DRAWING No 70020 -	
REVISED					





FIGURE

732078

5 cm

495000 mE

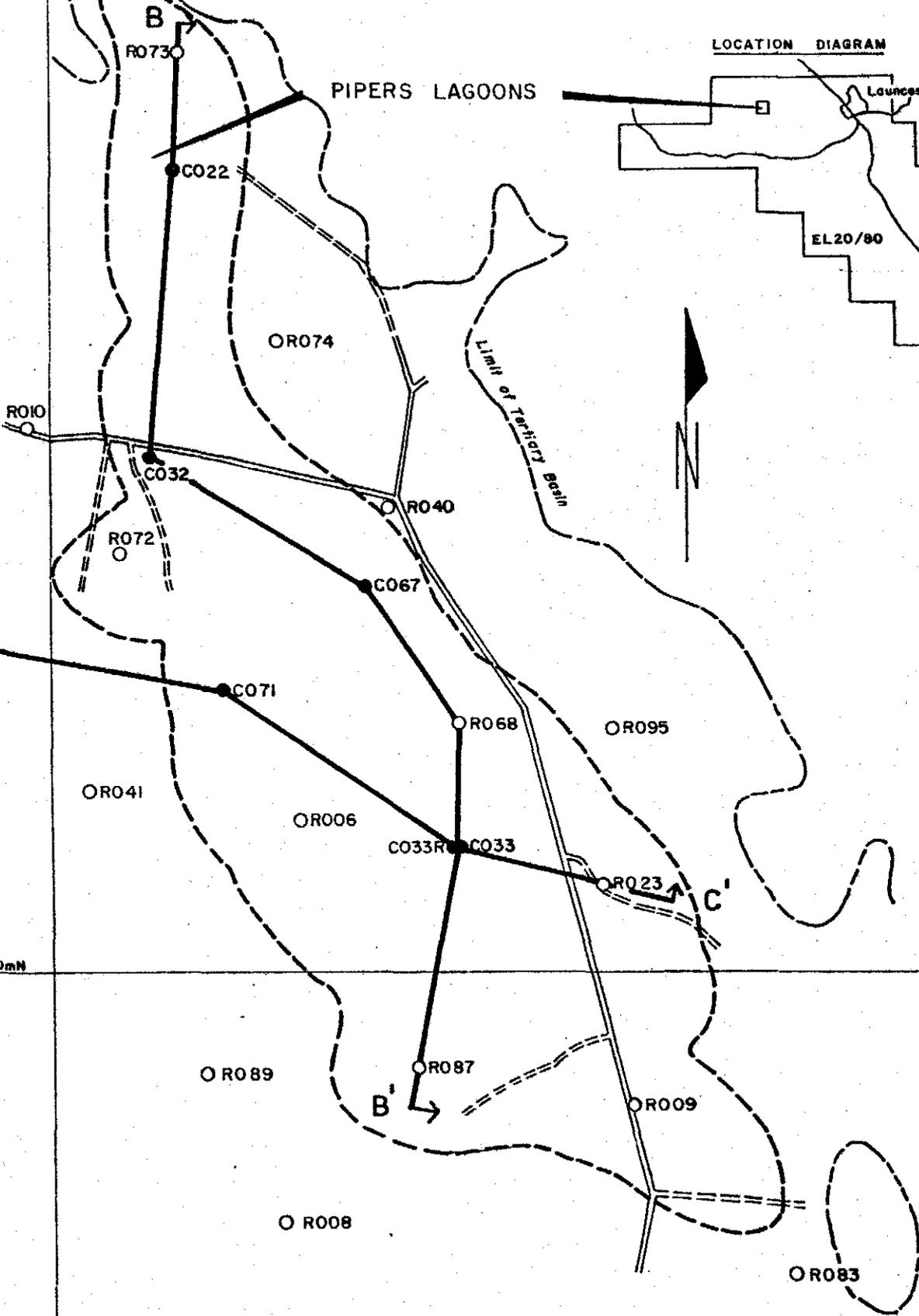
LOCATION DIAGRAM

Launceston

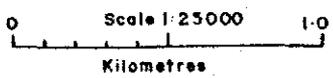
PIPERS LAGOONS

EL20/80

Limit of Tertiary Basin

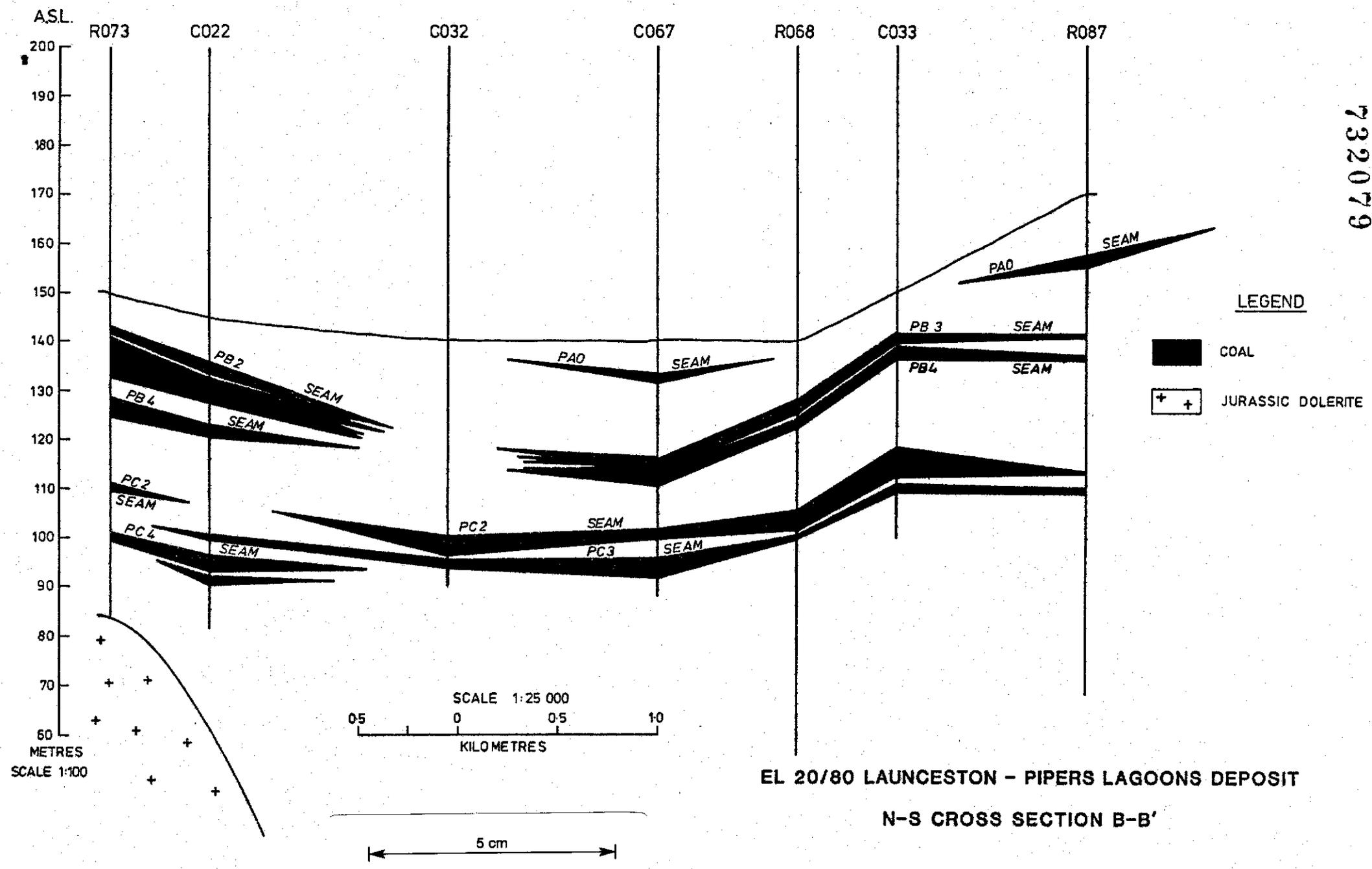


5410000 mN

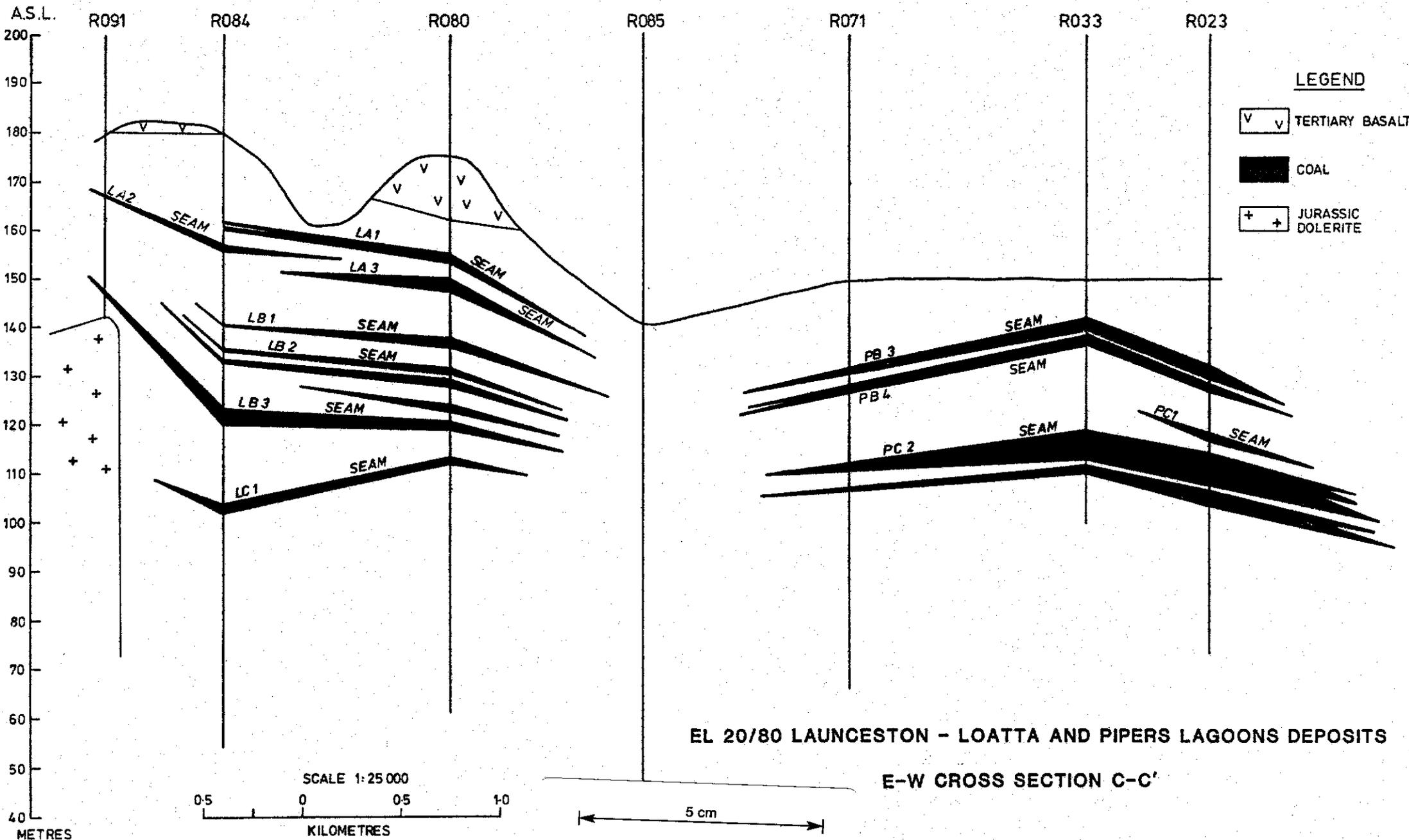


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE
DRAWN B.M. Aug '82		PIPERS LAGOONS		1 : 25 000
CHECKED		LOCATION OF SECTIONS B-B' & C-C'		FIGURE
REVISED				DRAWING No 70020

732079



FIGURE

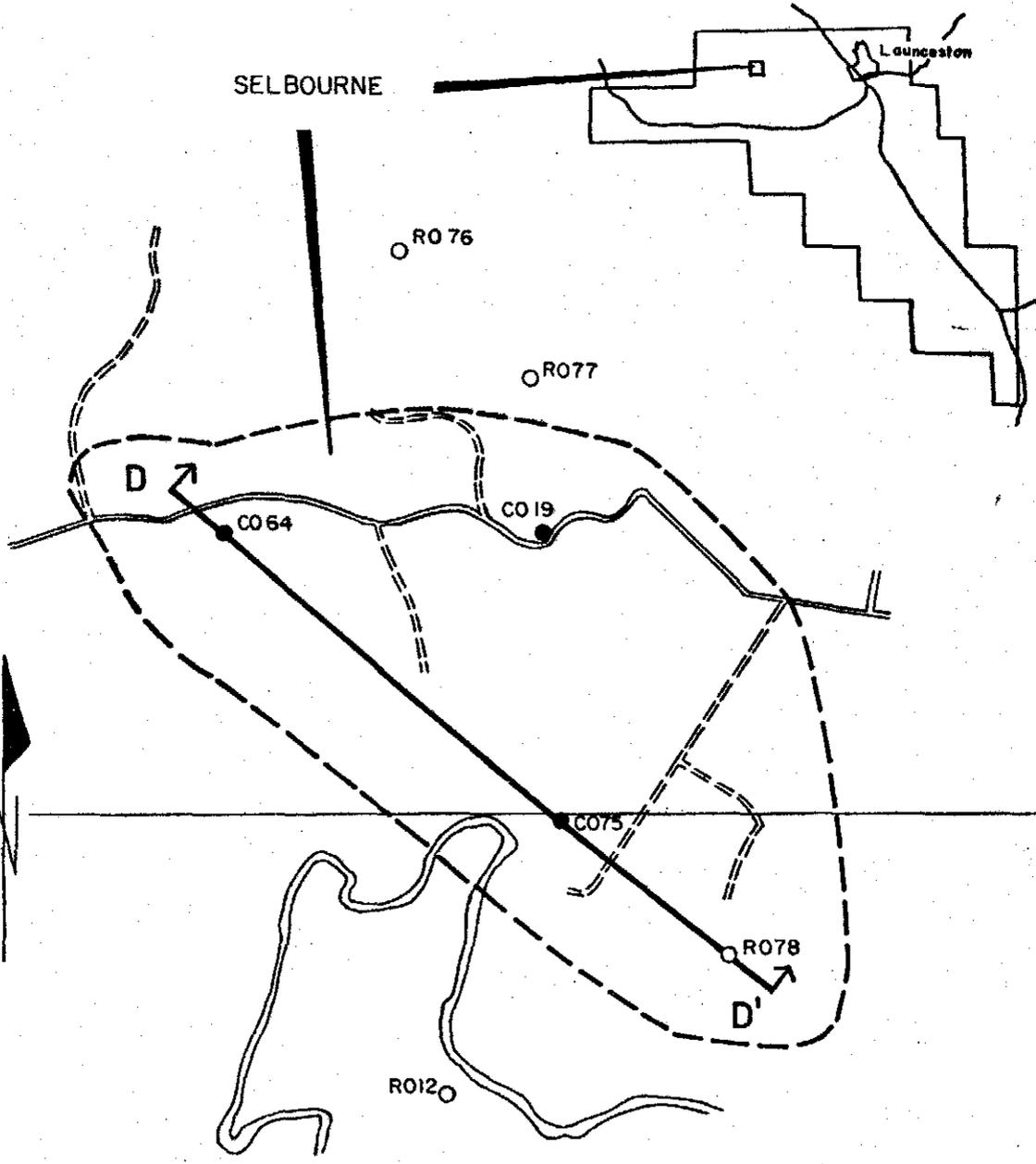


EL 20/80 LAUNCESTON - LOATTA AND PIPERS LAGOONS DEPOSITS

E-W CROSS SECTION C-C'

732081

LOCATION DIAGRAM



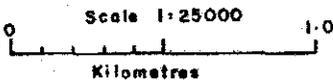
5410000 mN

490 000 mE

Legend

- R068 Rotary Chip Hole
- C068 Cored Hole
- R068 2.16 Coal Thickness
- R069 Horizon Intersected - No Coal
- R070 x Seams Not Intersected

5 cm



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSL
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE
DRAWN Sept '82		SELBOURNE		1:25000
CHECKED		LOCATION OF SECTION D-D'		FIGURE
REVISED				DRAWING No
				70020

732082

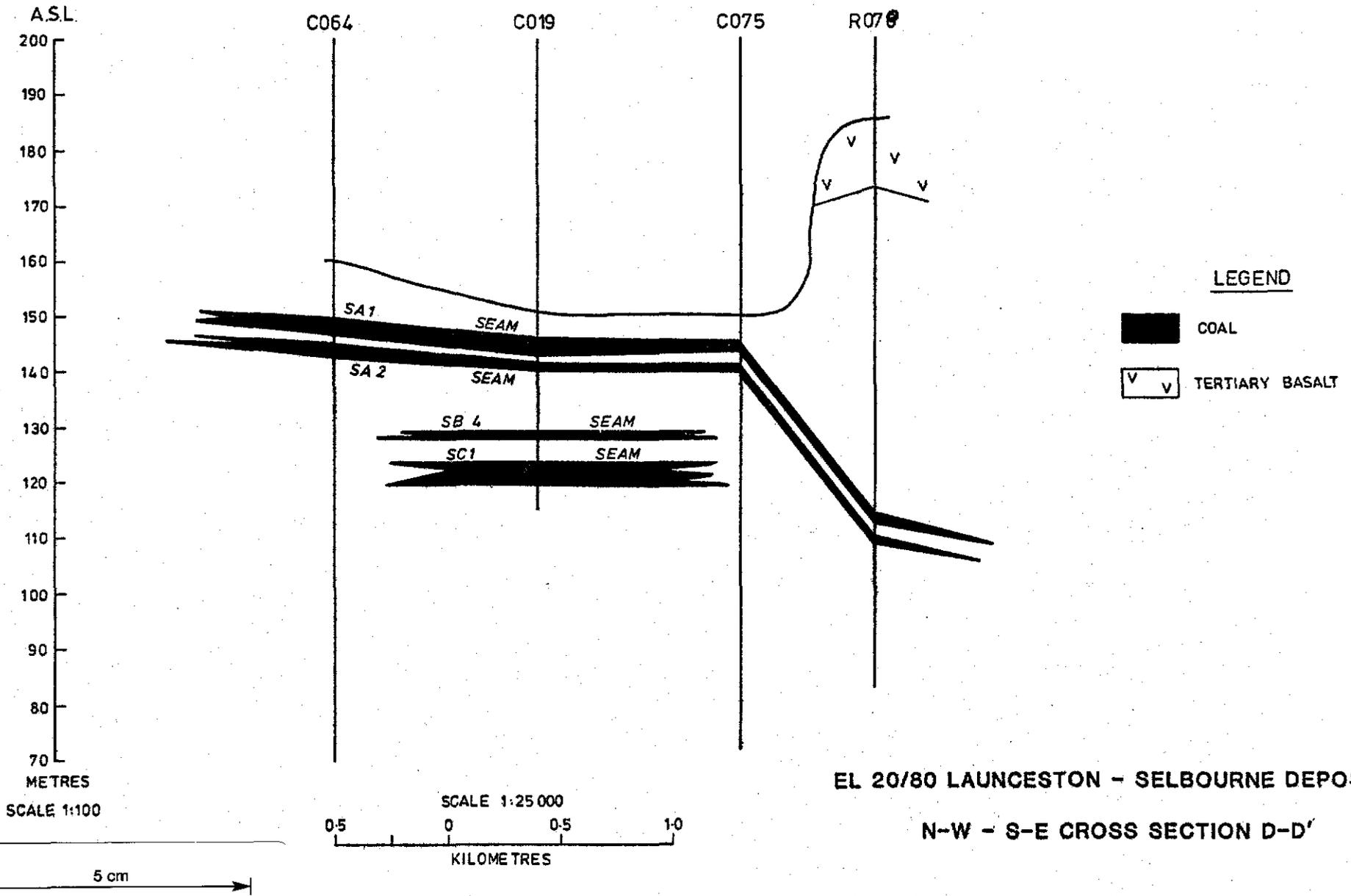


FIGURE 4

LEGEND

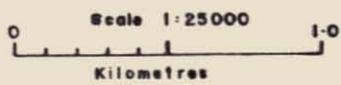
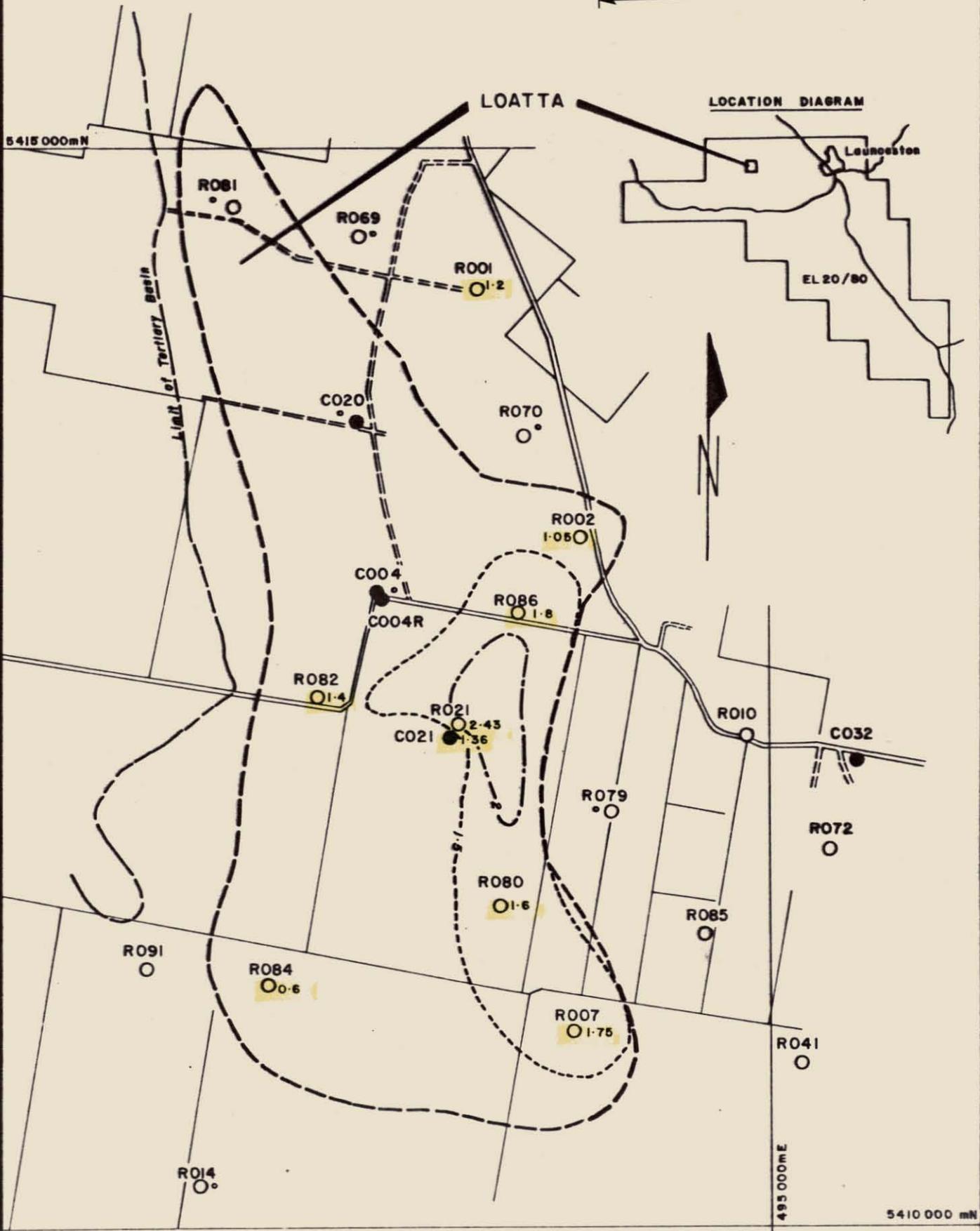
- R068 Rotary Chip Hole
- C068 Cored Hole
- R068
2-16 Coal Thickness
- R069
○ Horizon Intersected
 - No Coal
- R070
x Seams Not Intersected
- 1.5m
- 2.0m
- 3.0m
- 4.0m
- 5.0m
- 6.0m
- 7.0m
- 8.0m
- Deposit Outline

5 cm

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP	CSR
DRAWING / DATE		EL 20/80 LAUNCESTON SEAM ISOPACHS	SCALE
DRAWN	FIGURE		
CHECKED	DRAWING No		
REVISED			
Sept '82			

732084

5 cm



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE
DRAWN Aug '82		LOATTA		1:25000
CHECKED		LAI SEAM ISOPACH		FIGURE
REVISED				DRAWING No
				70020



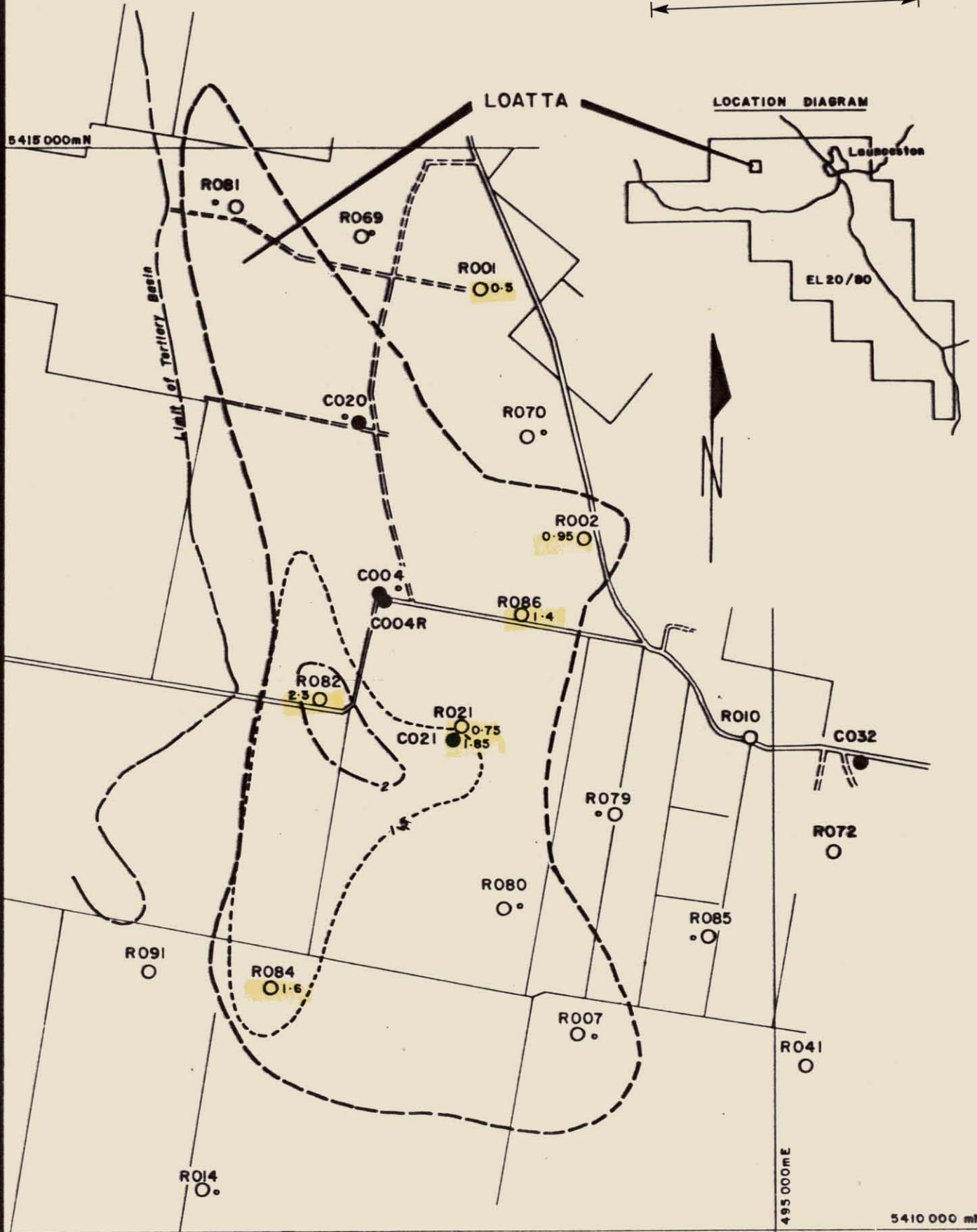
732085

5 cm

LOATTA

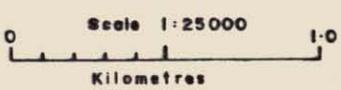
LOCATION DIAGRAM

5415 000mN



495 000mE

5410 000 mN

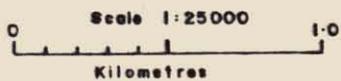
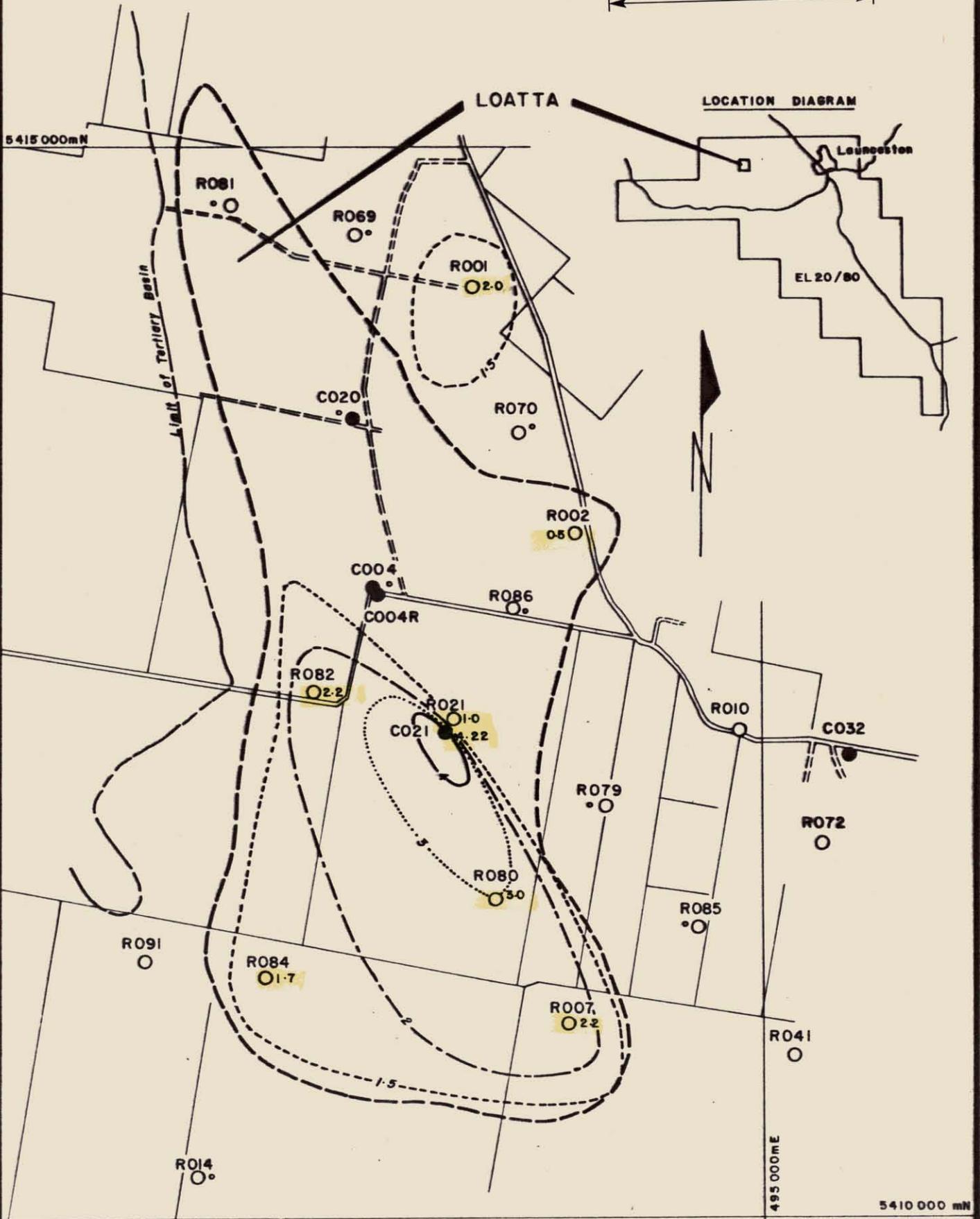


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP CSR	
DRAWING / DATE		SCALE	
DRAWN	Aug '82	1 : 25 000	
CHECKED		FIGURE	
REVISED		DRAWING No	
EL 20/80 LAUNCESTON LOATTA LA2 SEAM ISOPACH		70020	



732086

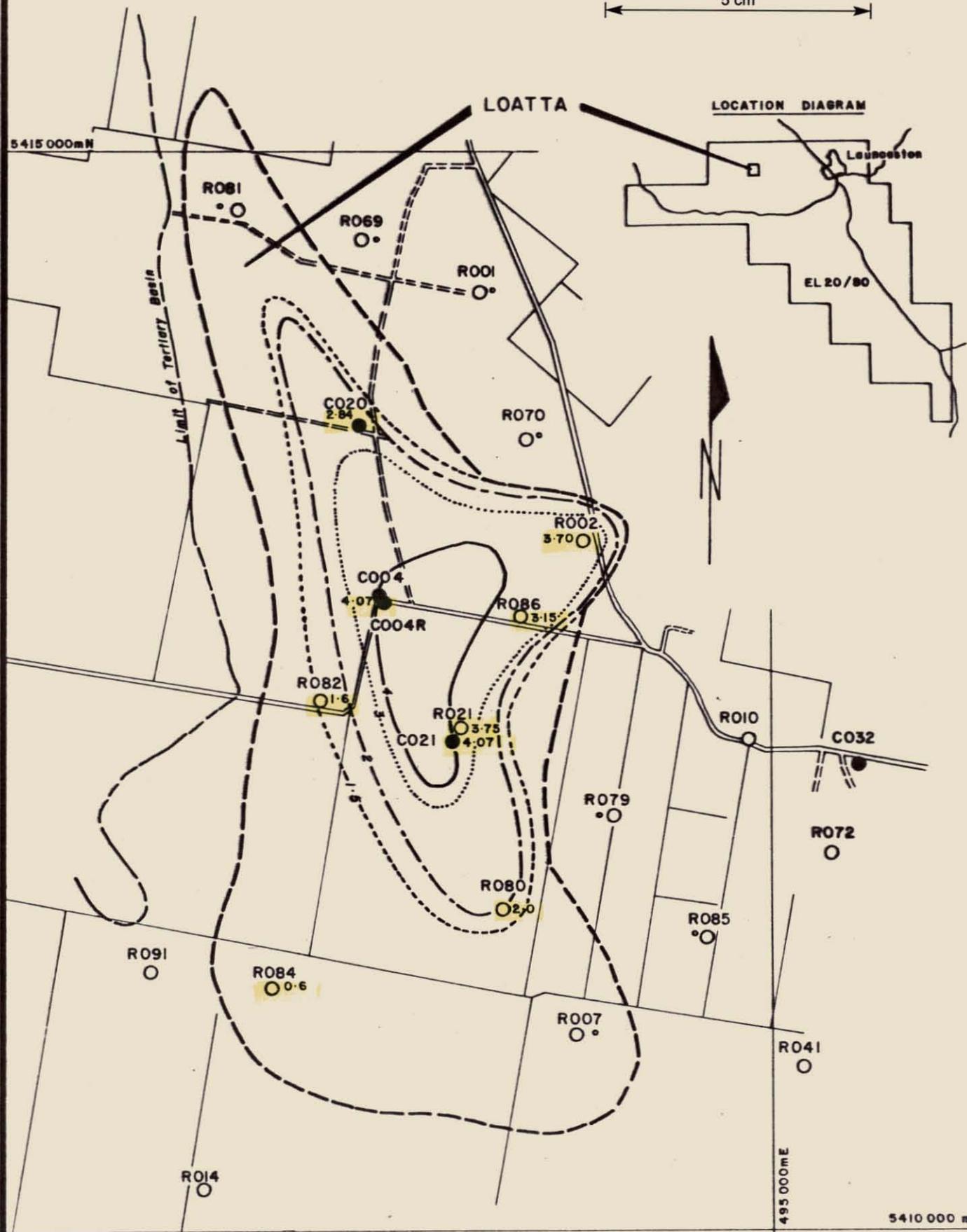
5 cm



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP	CSR
DRAWING / DATE		EL 20/80 LAUNCESTON	
DRAWN Aug '82		LOATTA	
CHECKED		LA3 SEAM ISOPACH	
REVISED		SCALE	1 : 25 000
		FIGURE	
		DRAWING No 70020	

732087

5 cm

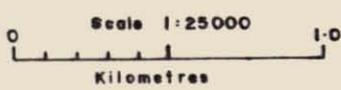
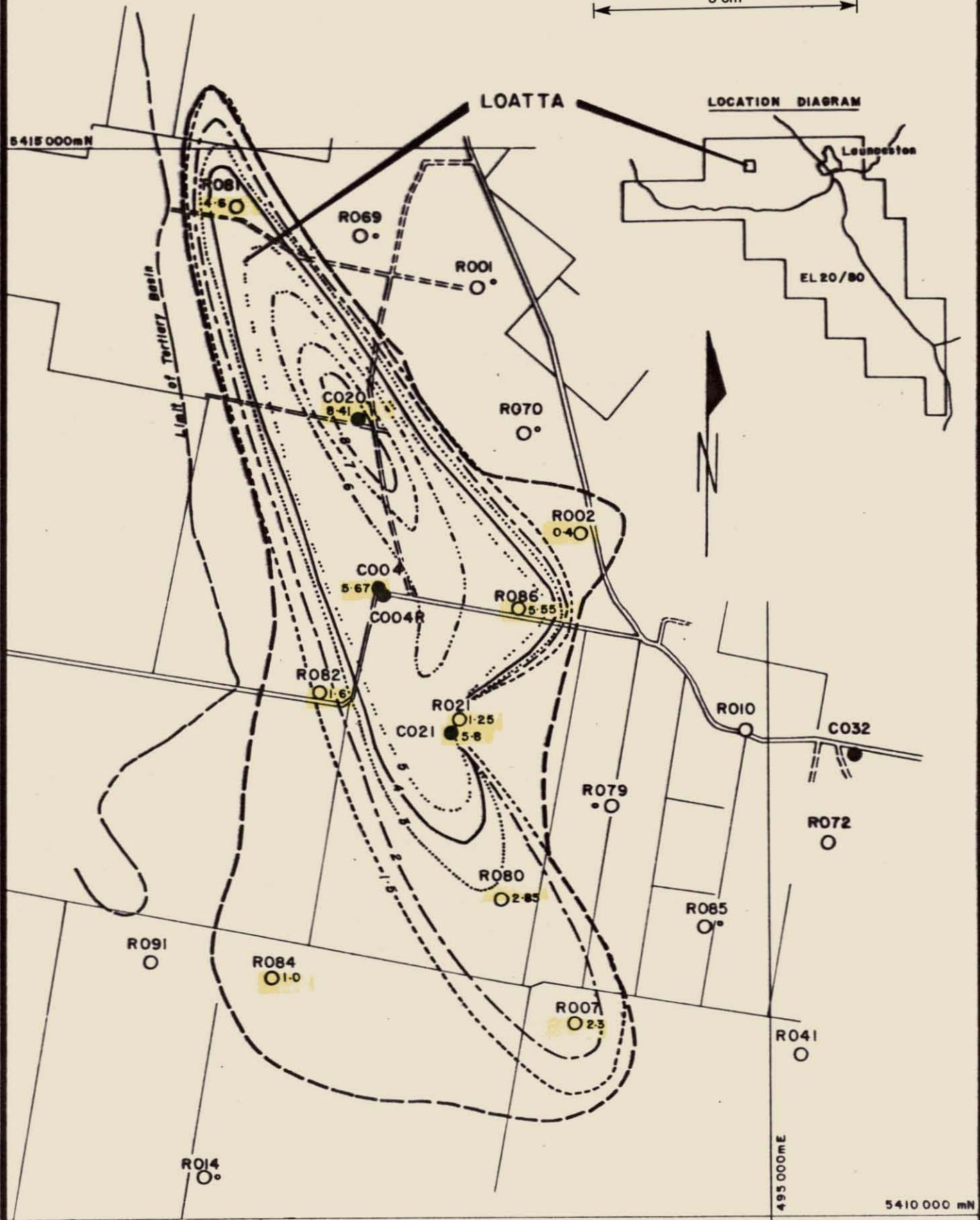


Scale 1:25000
 0 1.0
 Kilometres

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE 1:25000	
DRAWN Aug '82		LOATTA		FIGURE	
CHECKED		LBI SEAM ISOPACH		DRAWING No 70020	
REVISED					

732088

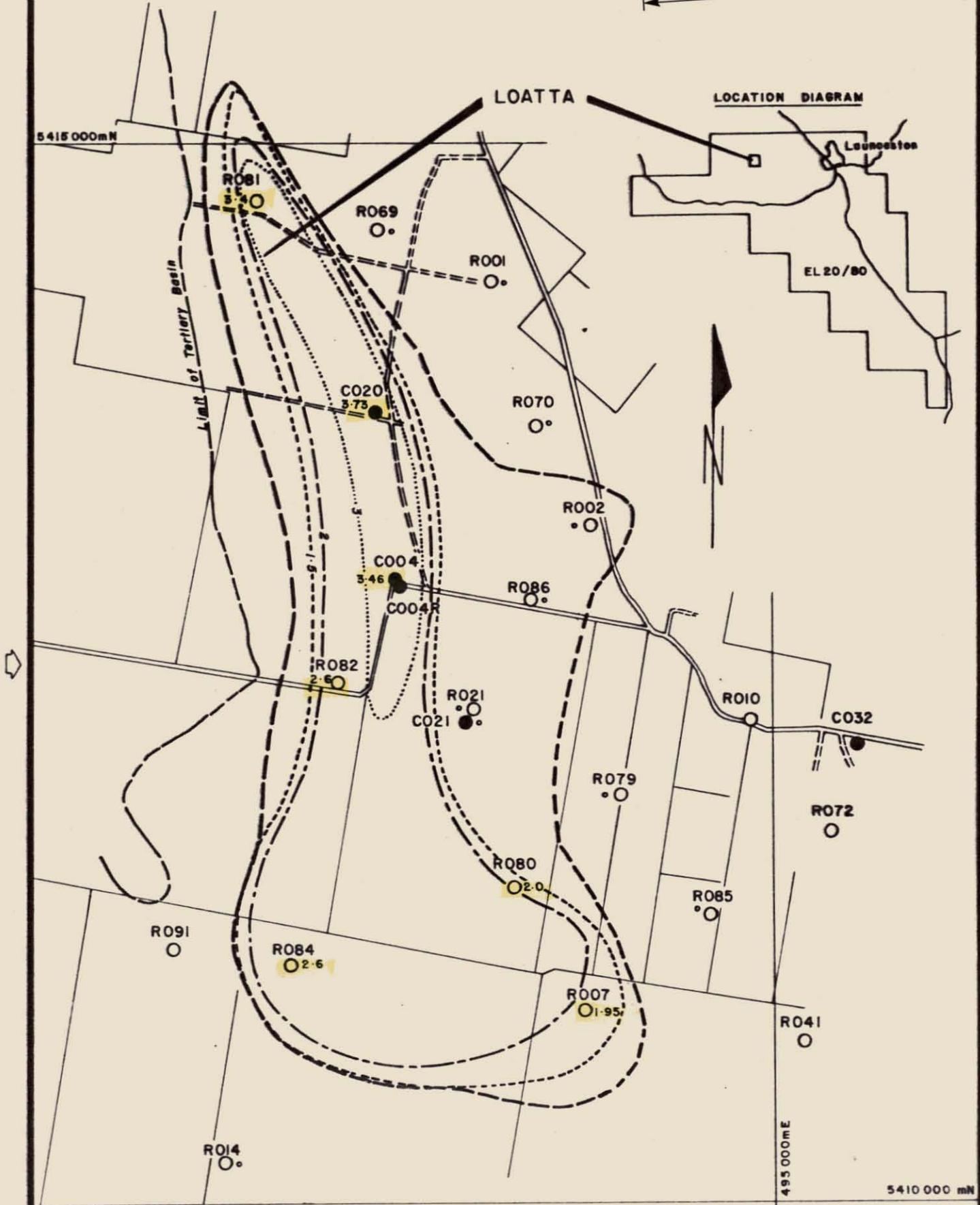
5 cm



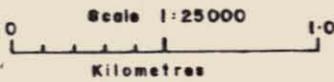
CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP CSR	
DRAWING / DATE		SCALE	
DRAWN	Aug '82	1 : 25 000	
CHECKED		FIGURE	
REVISED		DRAWING No	
EL 20/80 LAUNCESTON LOATTA LB2 SEAM ISOPACH		70020	

732089

5 cm

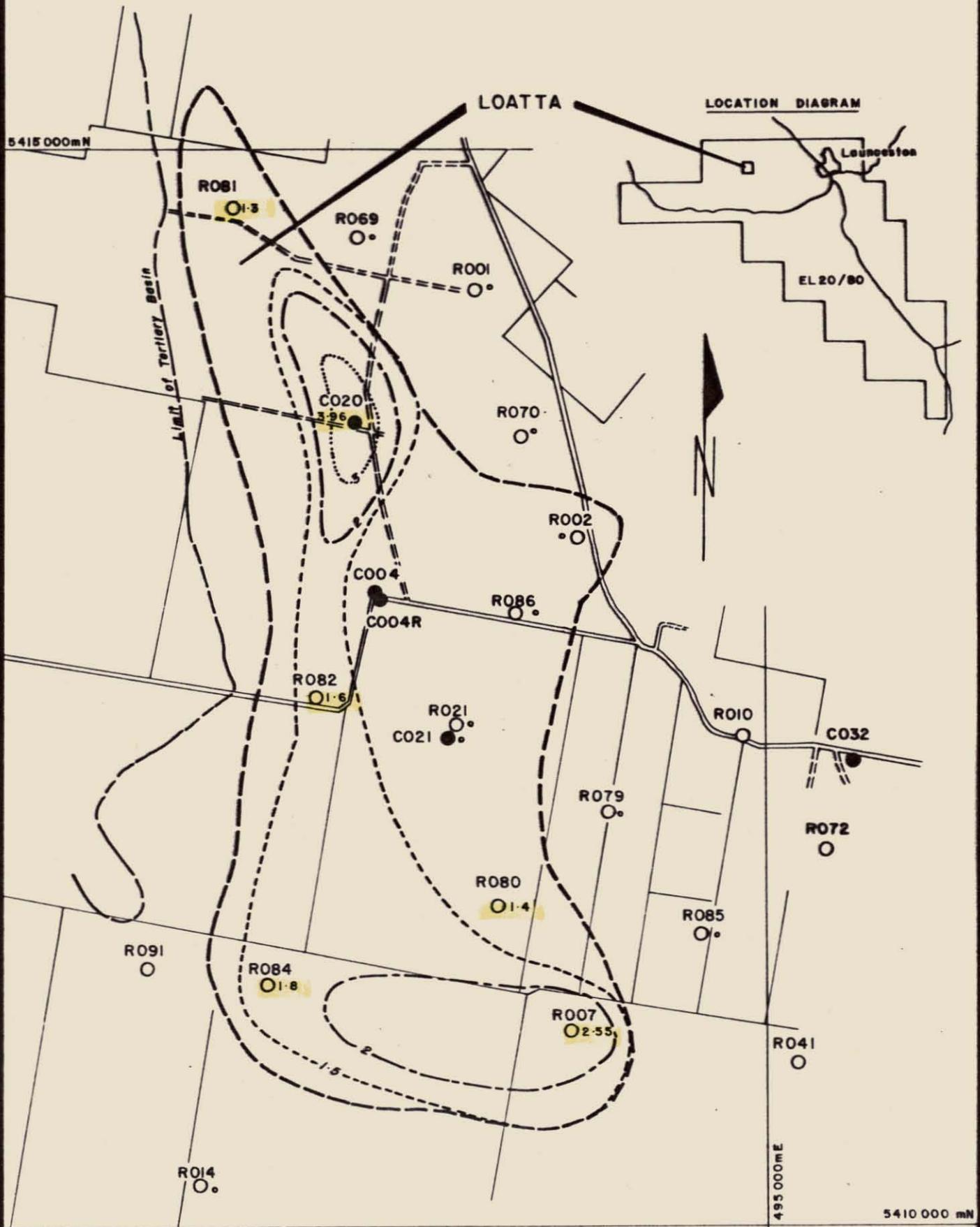


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE	
DRAWN Aug '82		LOATTA		1 : 25 000	
CHECKED		LB3 SEAM ISOPACH		FIGURE	
REVISED				DRAWING No	
				70020	

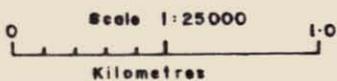


732090

5 cm

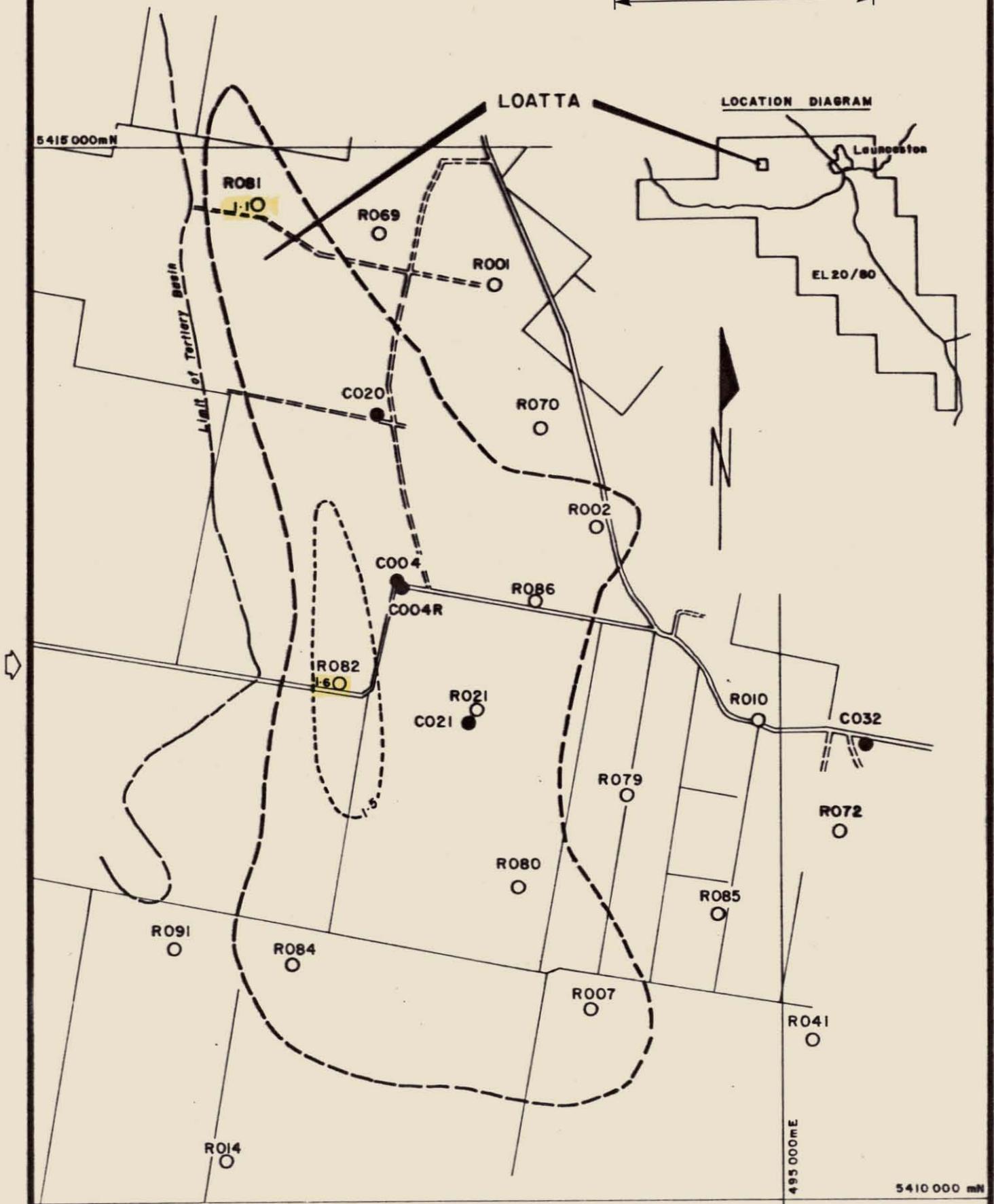


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP 	
DRAWING / DATE		EL 20/80 LAUNCESTON	
DRAWN	Aug '82	LOATTA	
CHECKED		LCI SEAM ISOPACH	
REVISED		SCALE 1 : 25 000	
		FIGURE	
		DRAWING No 70020	



732091

5 cm



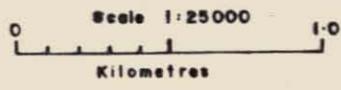
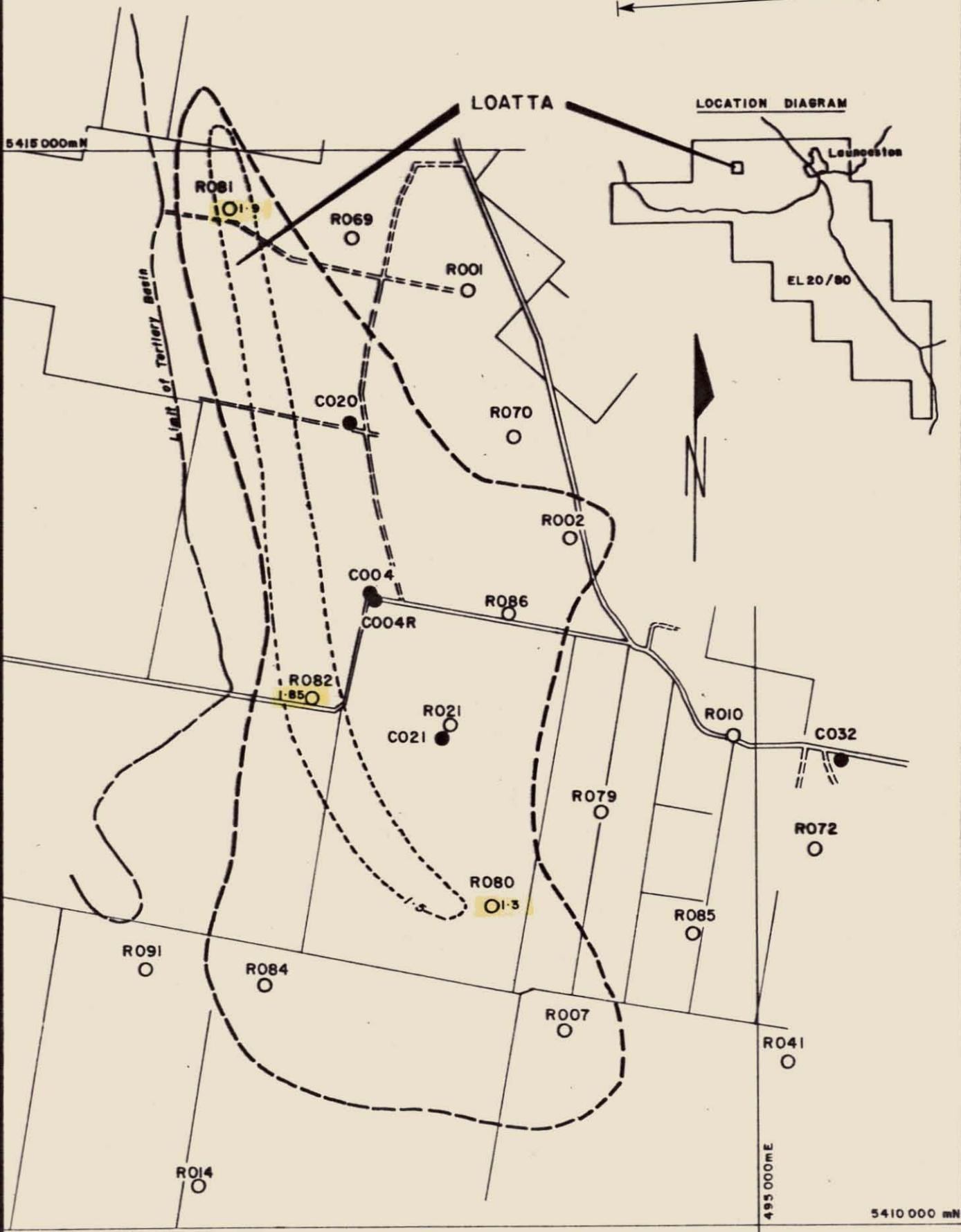
Scale 1:25000
 0 ————— 1.0
 Kilometres

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

EL 20/80 LAUNCESTON
 LOATTA
 LC2 SEAM ISOPACH

732092

5 cm

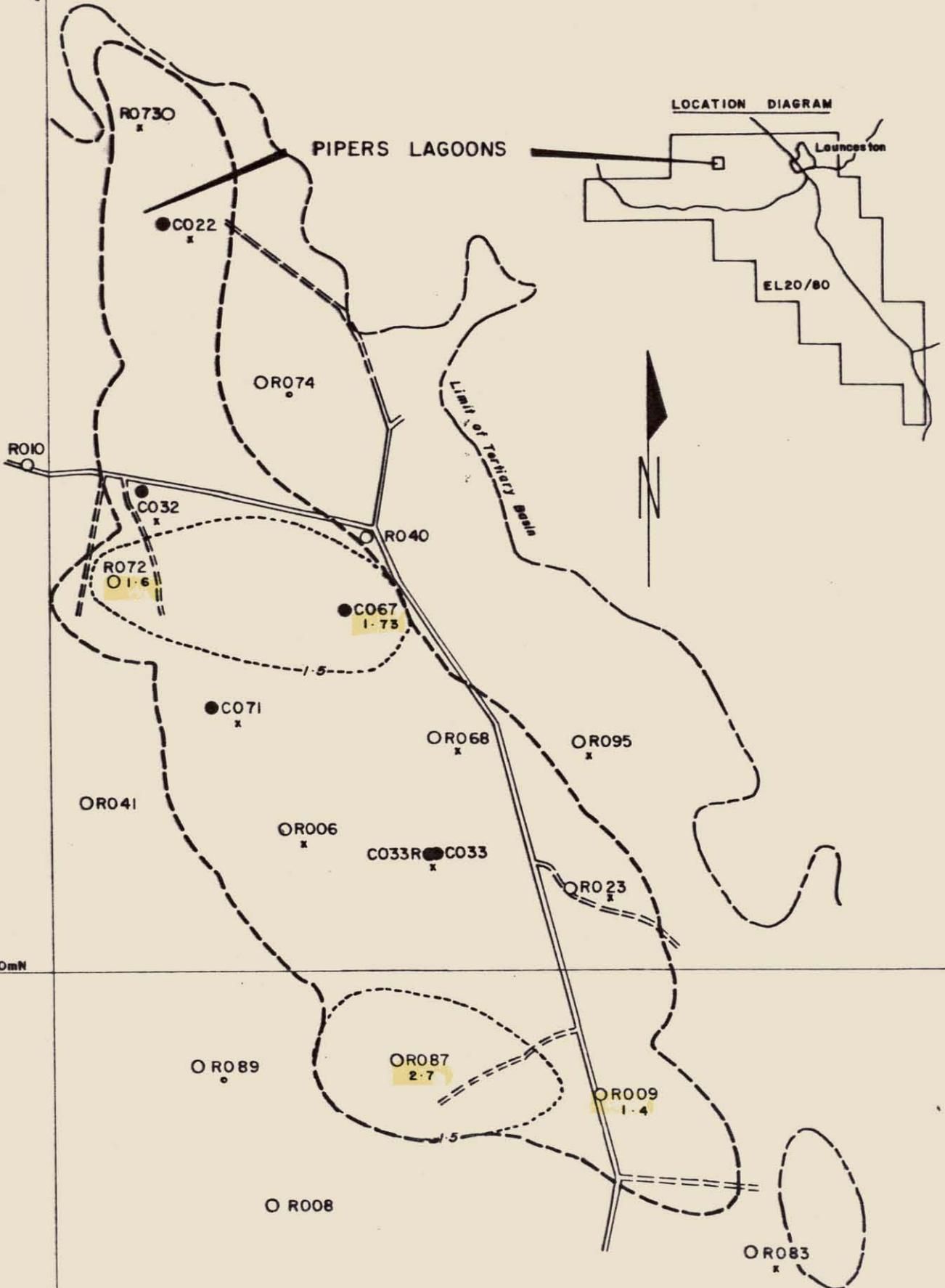


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE 1 : 25 000	
DRAWN Aug '82		LOATTA		FIGURE	
CHECKED		LC3 SEAM ISOPACH		DRAWING No 70020	
REVISED					

732093

496 000 mE

5 cm



5 410 000 mN

0 Scale 1:25 000 1.0
Kilometres

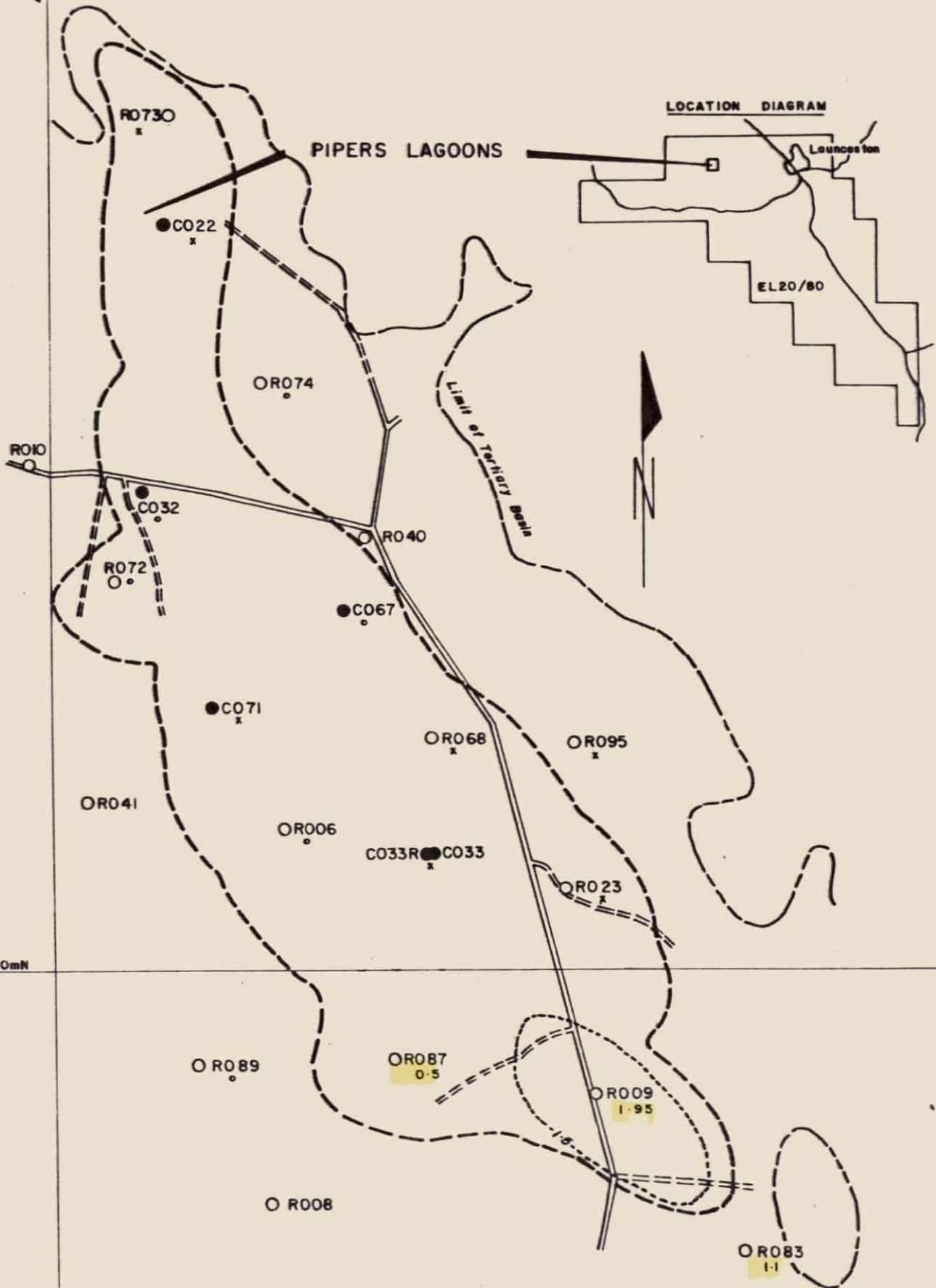
CSR Limited Coal Division	EXPLORATION AND EVALUATION GROUP	CSR
DRAWING / DATE	EL 20/80 LAUNCESTON PIPERS LAGOONS PAO SEAM ISOPACH	SCALE 1 : 25 000
DRAWN B.H. Aug '82		FIGURE
CHECKED		DRAWING No 70020
REVISED		



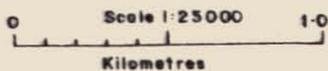
732094

495 000 mE

5 cm



5 410 000 mN

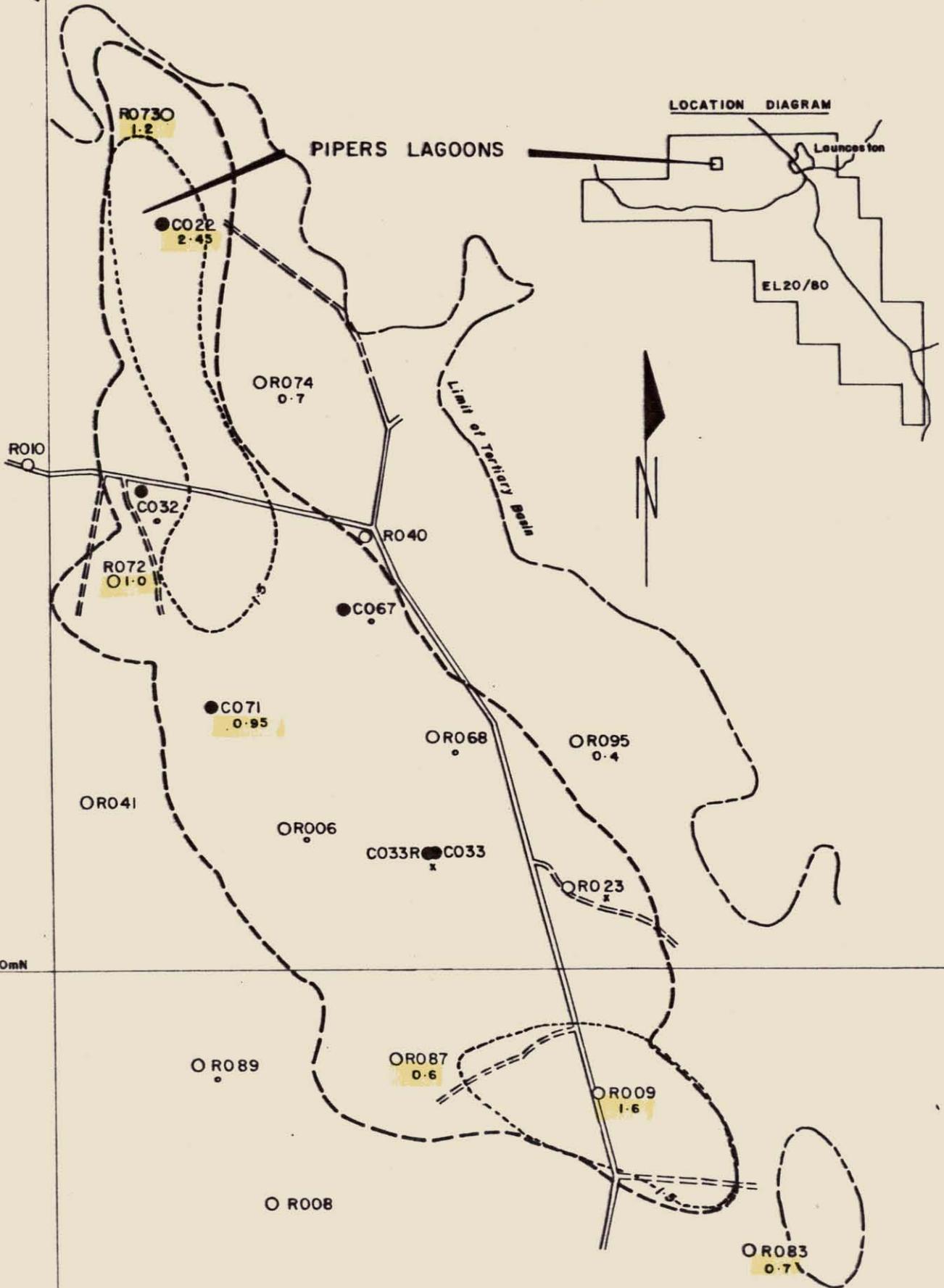


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP	
DRAWING / DATE		EL 20/80 LAUNCESTON PIPERS LAGOONS PBI SEAM ISOPACH	SCALE 1 : 25 000
DRAWN B.H. Aug '82			FIGURE
CHECKED			DRAWING No 70020
REVISED			

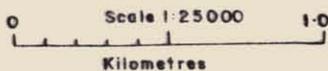
732095

495 000 mE

5 cm



5 410 000 mN

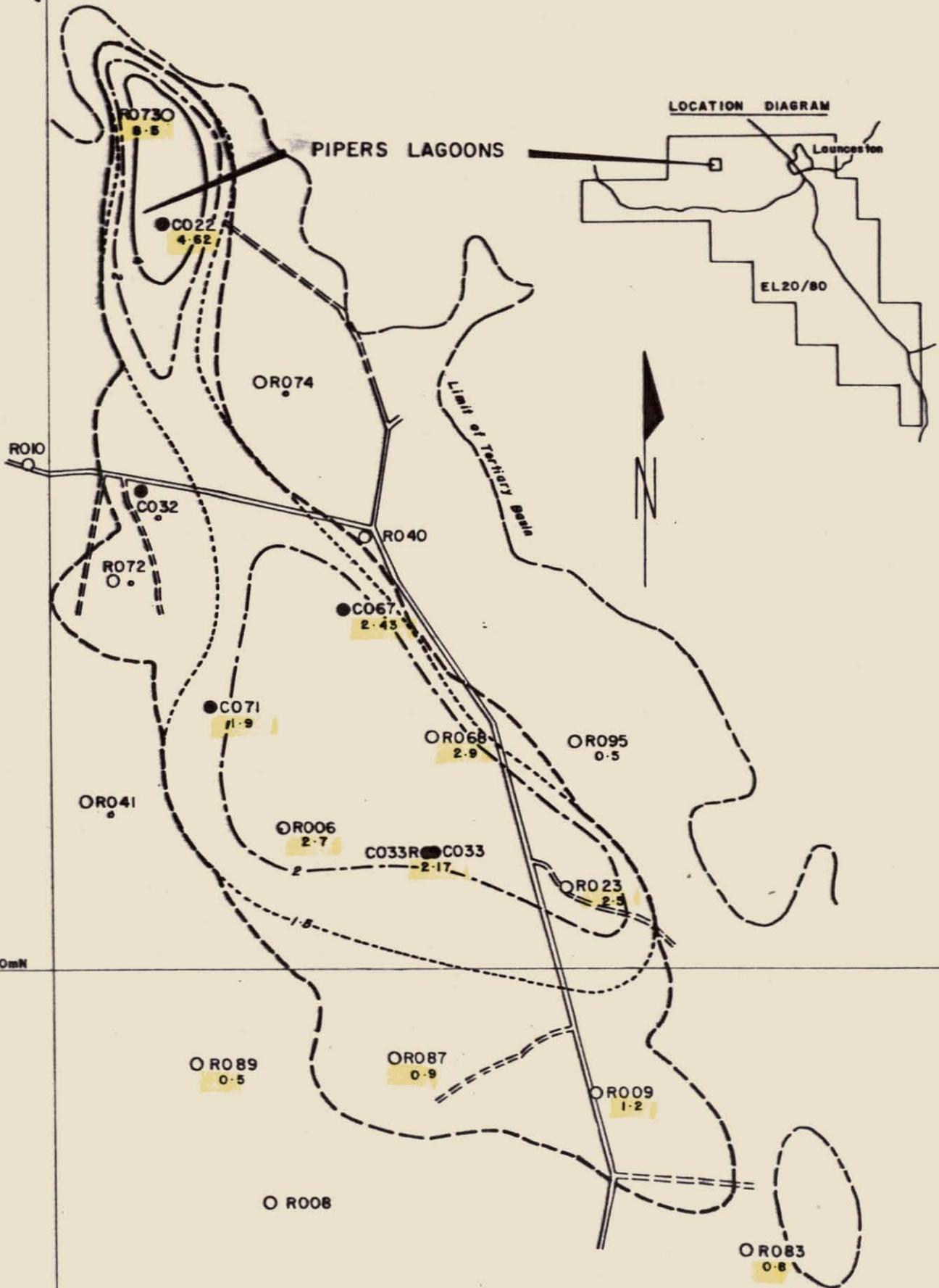


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP	CSR
DRAWING / DATE		EL 20/80 LAUNCESTON PIPERS LAGOONS PB2 SEAM ISOPACH	SCALE
DRAWN B.H. Aug '82			1 : 25 000
CHECKED			FIGURE
REVISED			DRAWING No 70020

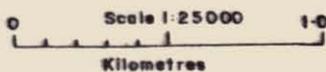
732096

496 000 ME

5 cm



5 410 000 MN



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		EL 20/80 LAUNCESTON PIPERS LAGOONS PB3 SEAM ISOPACH		SCALE 1 : 25 000
DRAWN B.H. Aug '82				FIGURE
CHECKED				DRAWING No 70020
REVISED				

732097

496 000 mE

5 cm

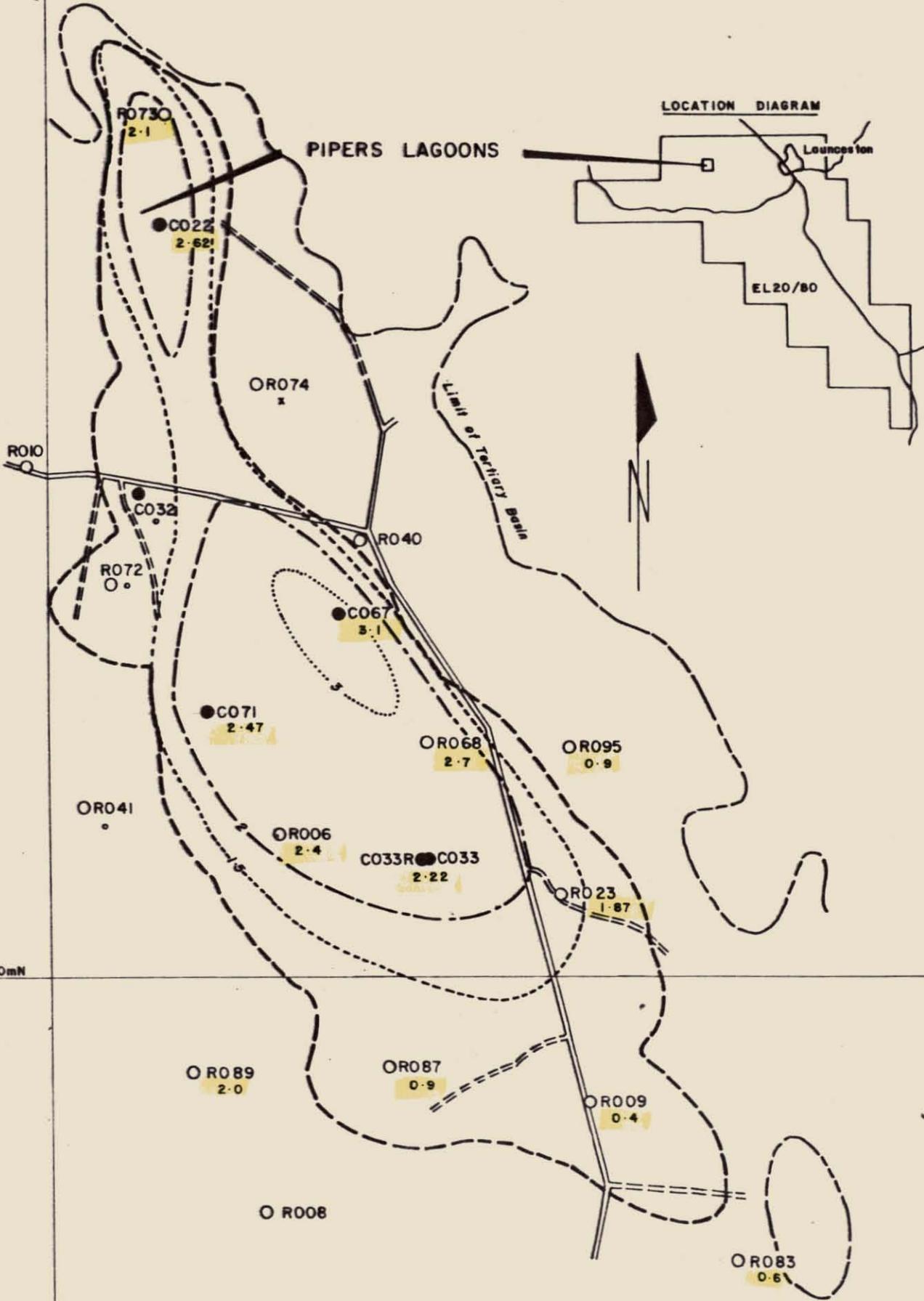
LOCATION DIAGRAM

PIPERS LAGOONS

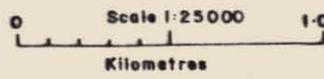
Launceston

EL20/80

Limit of Tertiary Basins



5 410 000 mN

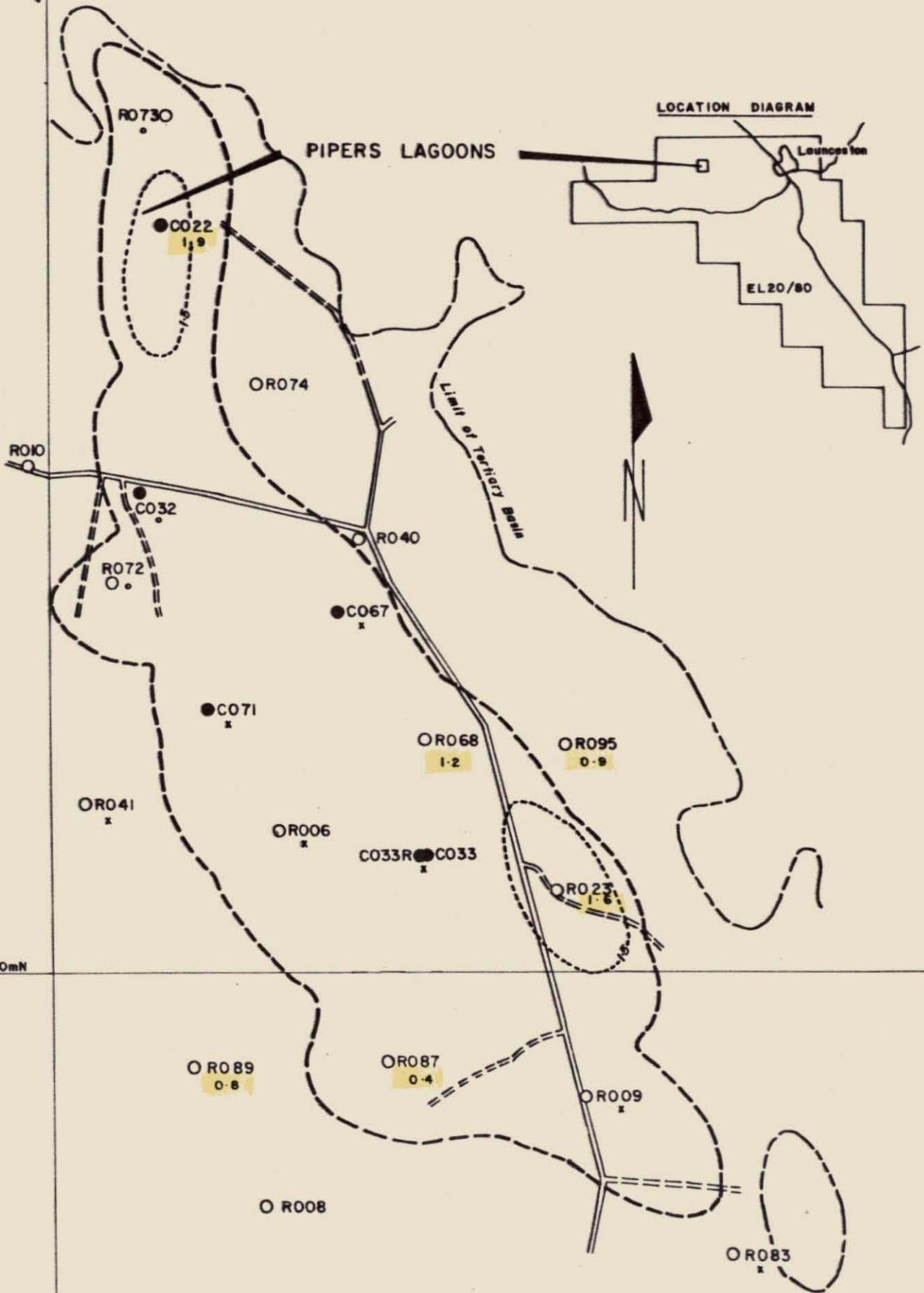


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON PIPERS LAGOONS PB4 SEAM ISOPACH		SCALE	
DRAWN B.H. Aug '82				1 : 25 000	
CHECKED				FIGURE	
REVISED				DRAWING No 70020	

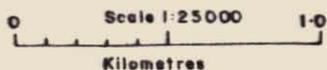
732098

496 000 mE

5 cm



5 410 000 mN

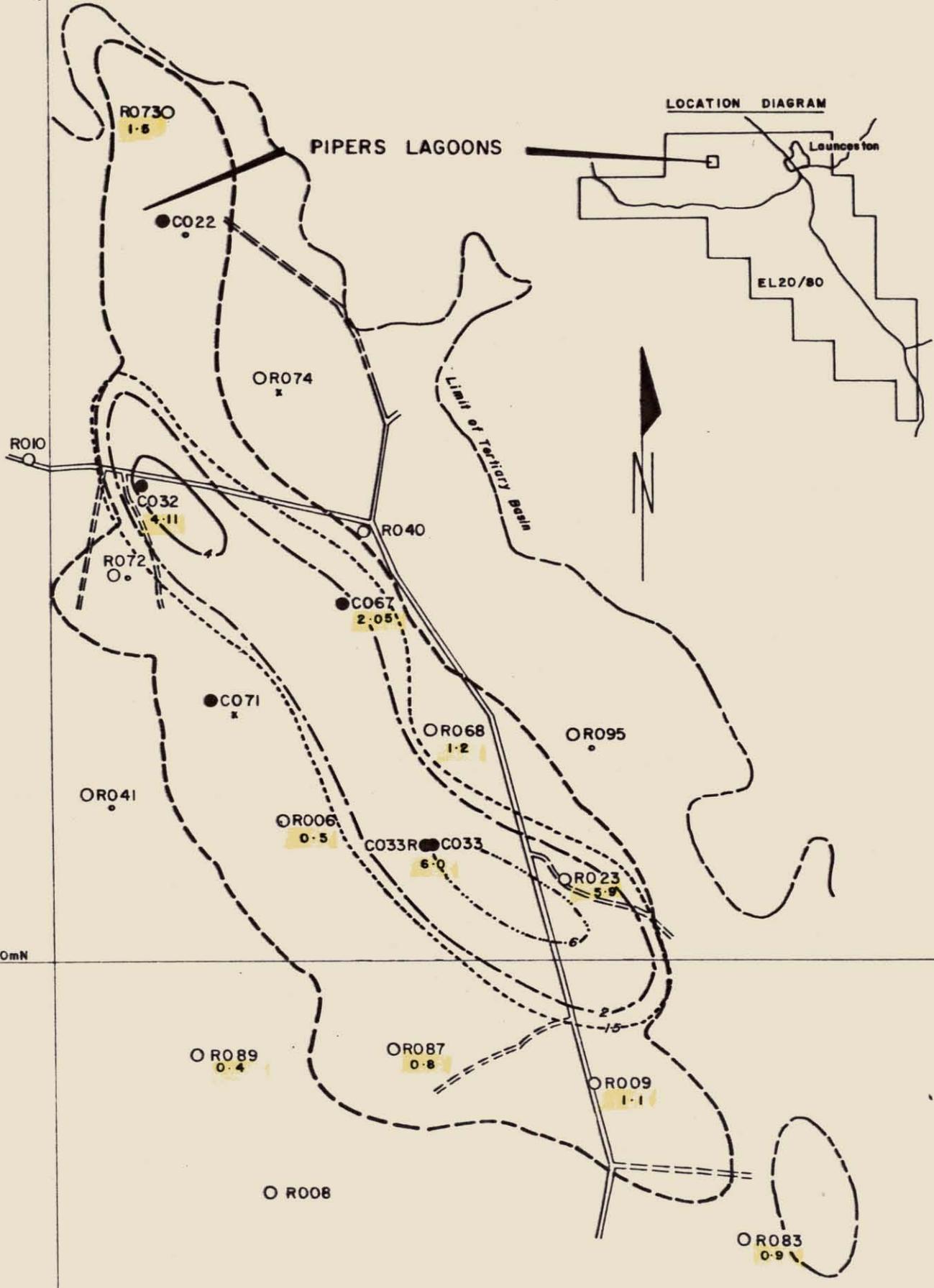


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		EL 20/80 LAUNCESTON		SCALE
DRAWN B.H. Aug '82		PIPERS LAGOONS		1 : 25 000
CHECKED		PCI SEAM ISOPACH		FIGURE
REVISED				DRAWING No
				70020

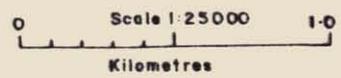
732099

495 000 mE

5 cm



5410000mN

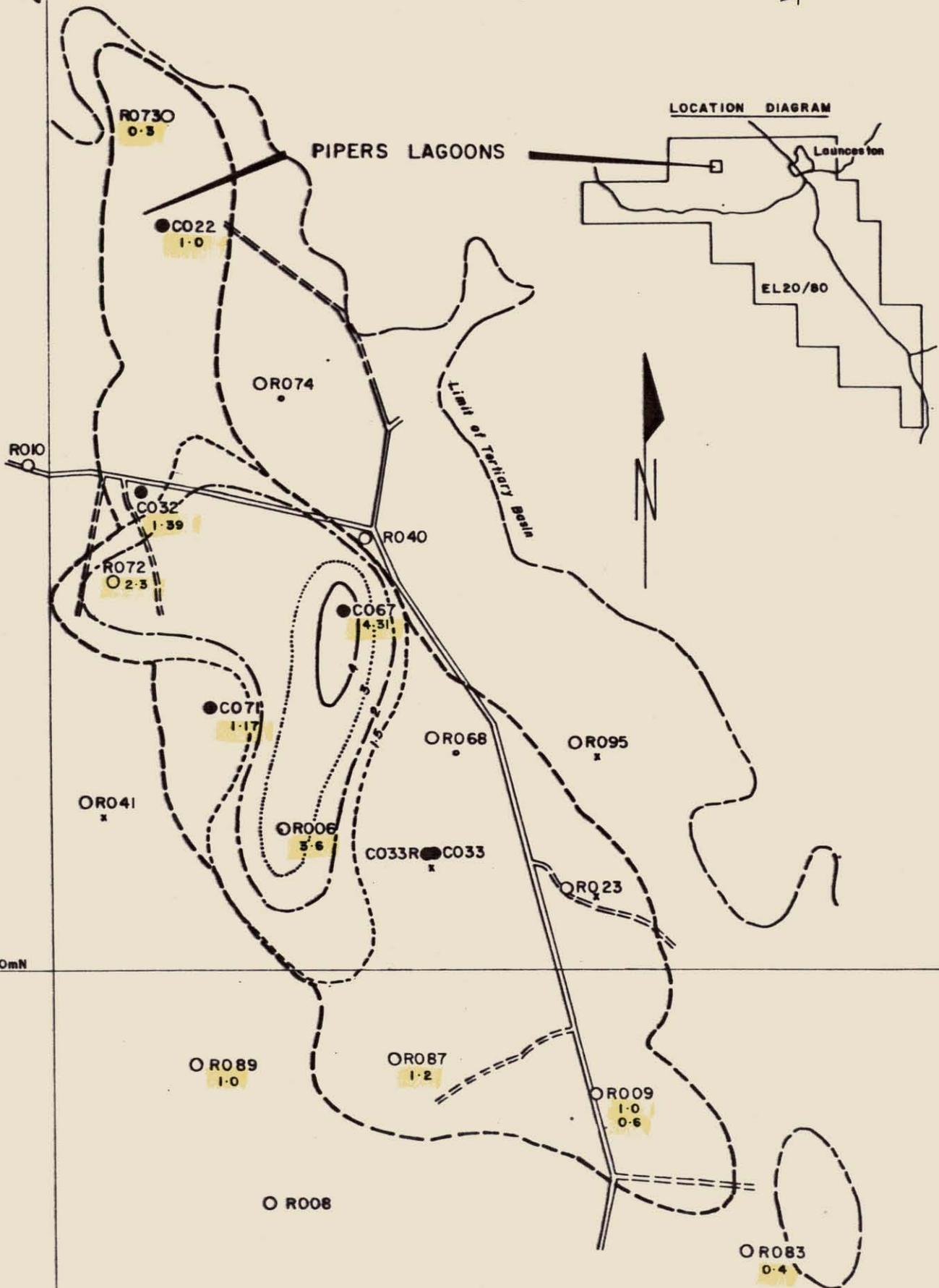


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		
DRAWING / DATE DRAWN B.H. Aug '82 CHECKED REVISED		EL 20/80 LAUNCESTON PIPERS LAGOONS PC2 SEAM ISOPACH		SCALE 1 : 25 000 FIGURE DRAWING No 70020

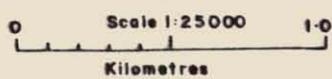
732100

498 000 mE

5 cm



5 410 000 mN

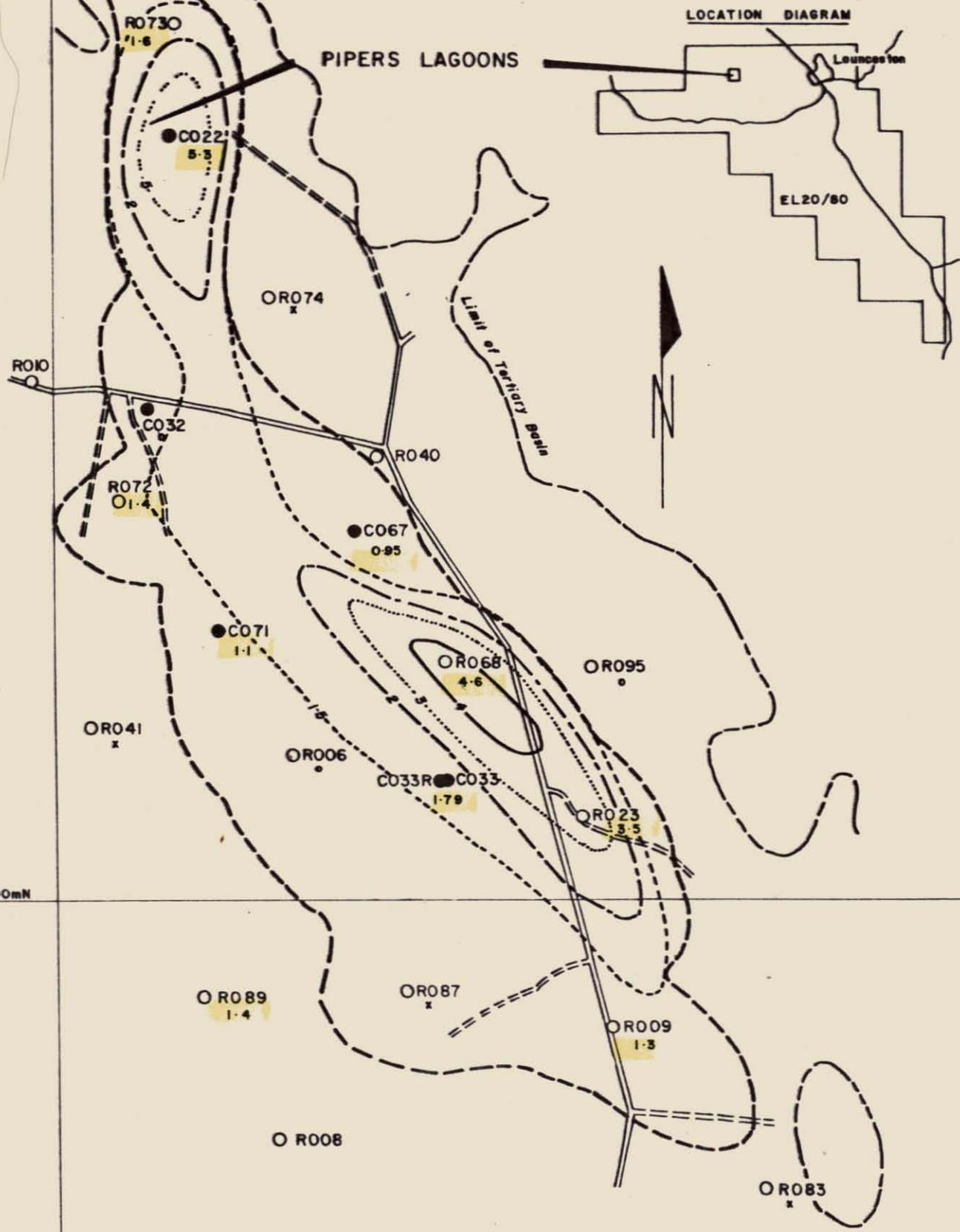


CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		EL 20/80 LAUNCESTON PIPERS LAGOONS PC3 SEAM ISOPACH		SCALE
DRAWN B.H. Aug '82				1 : 25 000
CHECKED				FIGURE
REVISED				DRAWING No 70020

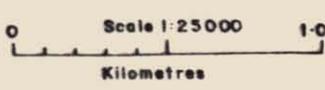
732101

498 000 mE

5 cm



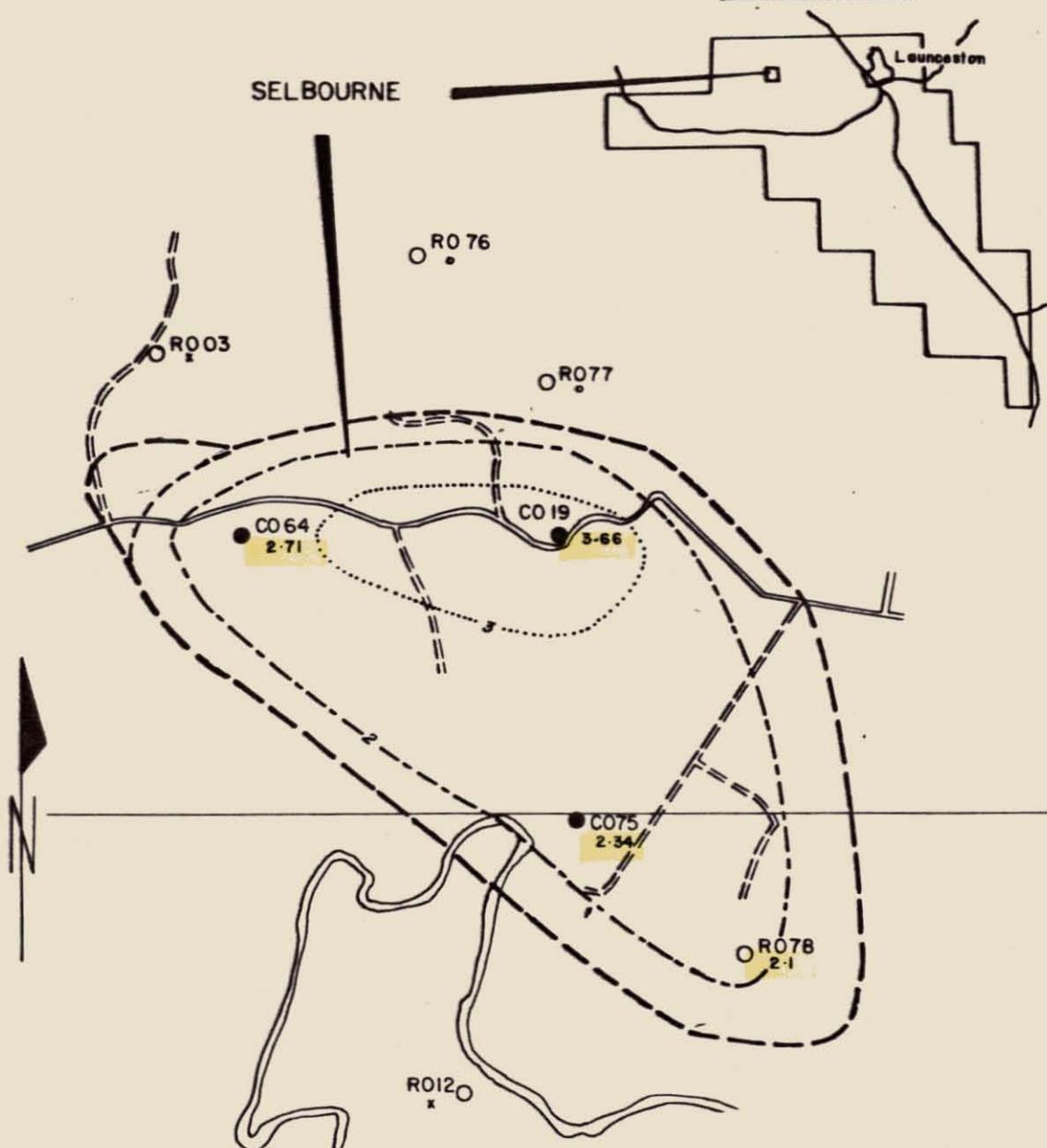
5 410 000 mN



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON PIPERS LAGOONS PC4 SEAM ISOPACHS		SCALE	
DRAWN B.H. Aug '82				1 : 25 000	
CHECKED				FIGURE	
REVISED				DRAWING No 70020	

732102

LOCATION DIAGRAM



5410000 mN

490 000 mE

Legend

- RO68 Rotary Chip Hole
- CO68 Cored Hole
- RO68 Coal Thickness
2.16
- RO69 Horizon Intersected
- No Coal
- RO70 Seams Not Intersected
x

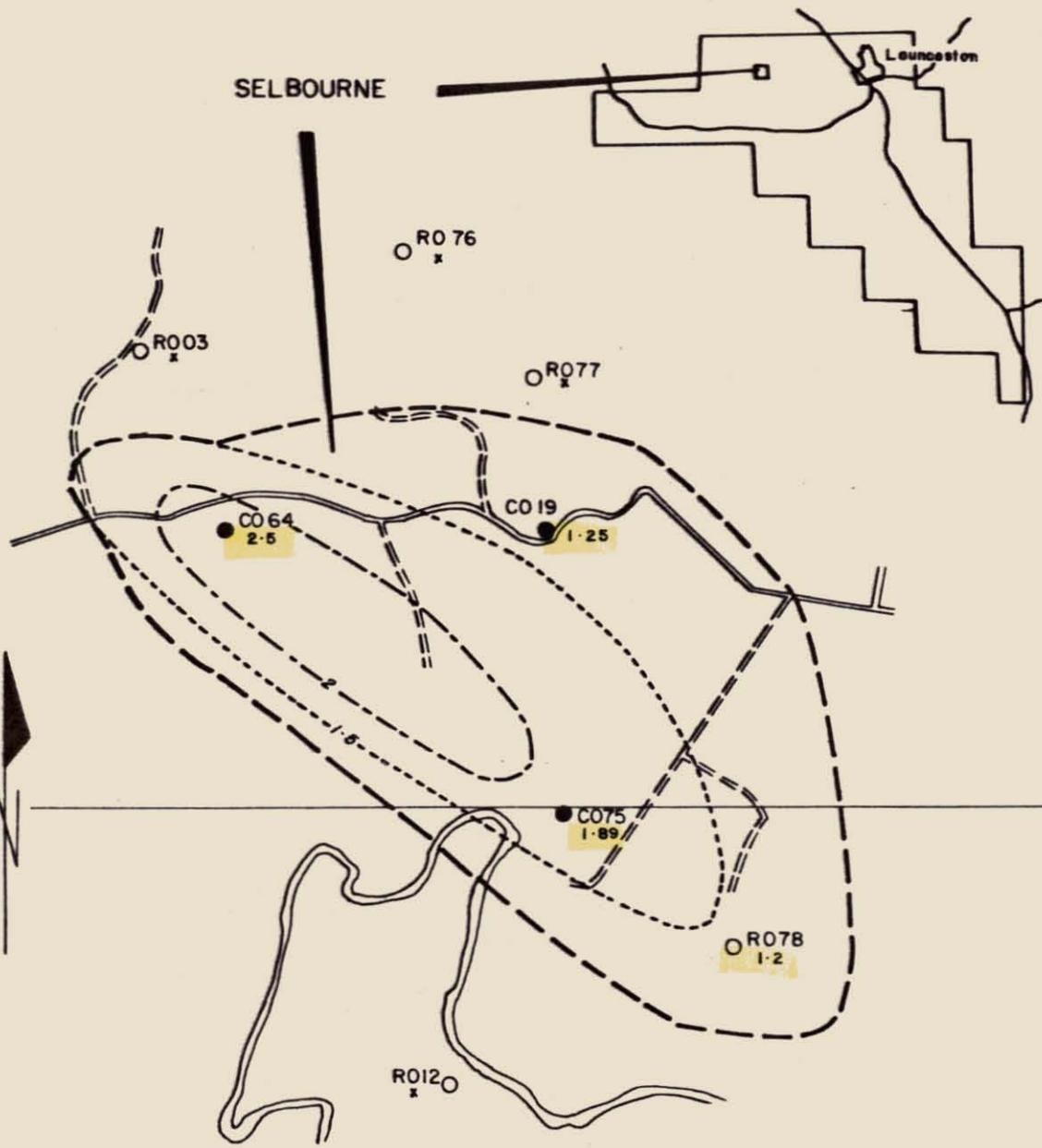
5 cm



CSR Limited Coal Division	EXPLORATION AND EVALUATION GROUP	CSR
DRAWING / DATE	EL 20/80 LAUNCESTON SELBOURNE SAI SEAM ISOPACH	SCALE 1 : 25 000
DRAWN Sept '82		FIGURE
CHECKED		DRAWING No 70020
REVISED		

732103

LOCATION DIAGRAM

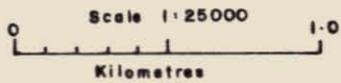


Legend

- RO 68 Rotary Chip Hole
- CO 68 Cored Hole
- RO 68 Coal Thickness
2.16
- RO 69 Horizon Intersected
- No Coal
- RO 70 Seams Not Intersected

5 cm

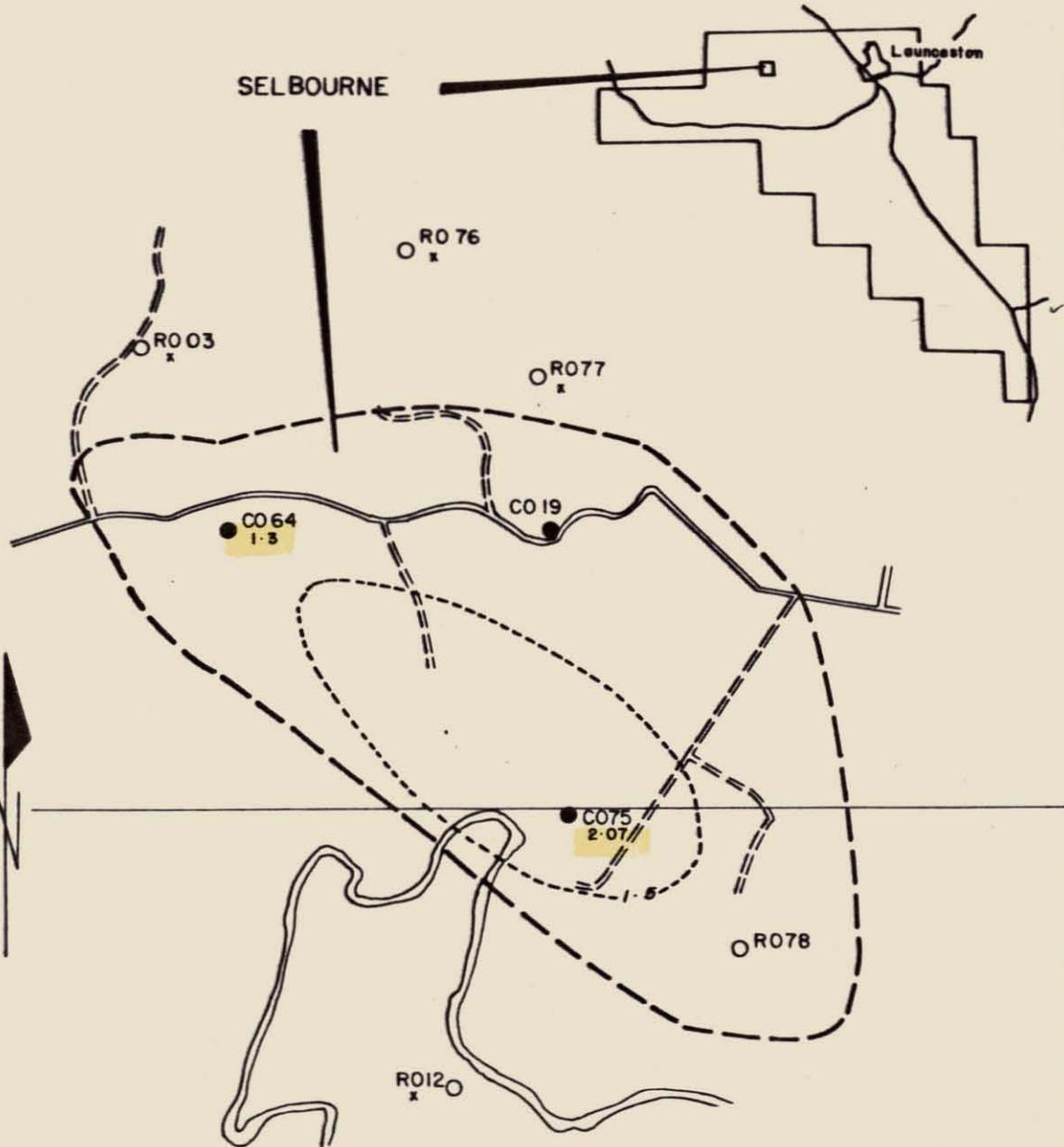
490 000 mE



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING / DATE		EL 20/80 LAUNCESTON SELBOURNE SA2 SEAM ISOPACH		SCALE
DRAWN	Sept '82			1 : 25 000
CHECKED				FIGURE
REVISED			DRAWING No	70020

732104

LOCATION DIAGRAM



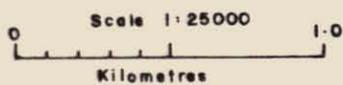
5410000 mN

490 000 mE

Legend

- RO68 Rotary Chip Hole
- CO68 Cored Hole
- RO68 Coal Thickness
2.16
- RO69 Horizon Intersected
- No Coal
- RO70 Seams Not Intersected

5 cm



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON SELBOURNE SB3 SEAM ISOPACH		SCALE	
DRAWN Sept '82				1:25000	
CHECKED				FIGURE	
REVISED				DRAWING No 70020	



732105

LOCATION DIAGRAM

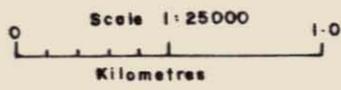


Legend

- RO68 Rotary Chip Hole
- CO68 Cored Hole
- RO68 Coal Thickness
2.16
- RO69 Horizon Intersected
- No Coal
- RO70 Seams Not Intersected

5 cm

490 000 mE



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		DRAWN		SCALE	
		Sept '82		1 : 25 000	
CHECKED		REVISED		FIGURE	
		EL 20/80 LAUNCESTON SELBOURNE SB4 SEAM ISOPACH		DRAWING No 70020	



732106

LOCATION DIAGRAM

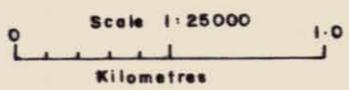


Legend

- RO 68 Rotary Chip Hole
- CO 68 Cored Hole
- RO 68 Coal Thickness 2.16
- RO 69 Horizon Intersected - No Coal
- RO 70 Seams Not Intersected

5 cm

490 000 mE



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		EL 20/80 LAUNCESTON SELBOURNE SCI SEAM ISOPACH		SCALE	
DRAWN Sept '82				1 : 25 000	
CHECKED				FIGURE	
REVISED				DRAWING No 70020	