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1.0 SUMMARY

On 22 August, 1987 a 50 km² area located 4 km to 15 km northeast of the town of Westbury was relinquished from Exploration Licence (EL) 20/80.

Exploration for near surface lignite carried out on the area by CSR Limited and its subsidiary, AAR Limited, consisted of:

- . Literature search and photogeological interpretation of the regional geology.
- . Surface geological mapping.
- . Preparation of a 1:25000 scale geological map.
- . Exploration drilling comprising 13 rotary holes totalling 887 m of open hole drilling.

Thin seams of lignite, inferior lignite and/or ligneous clay were intersected in 10 of the drill holes. None of the intersections are considered to have any economic significance due to their thin nature, limited distribution and geographic location within the relinquished area.

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2.0 INTRODUCTION

2.1 Scope of Report

This report details geological investigations carried out over the period 19 September, 1980 to 22 August, 1987 by CSR Limited and its subsidiaries on the 50 km² area of Exploration Licence (EL) 20/80 relinquished on 22 August, 1987.

Exploration activity comprised background literature research, geological reconnaissance mapping, and rotary drilling for oil shale and brown coal.

2.2 Tenement Details

EL 20/80, originally covering an area of 2,339 km², was granted to AAR Limited (a wholly-owned subsidiary of CSR) on 19 September, 1980. In February, 1983 the Licence was transferred from AAR to CSR Limited and the area reduced to 984 km² (Ellis, 1983).

A second reduction in area occurred on 22 August, 1984 when the EL was reduced to 100 km² (Carr, 1984).

The current relinquishment reduces the size of the licence area to 50 km² to qualify it for conversion to a Retention Licence.

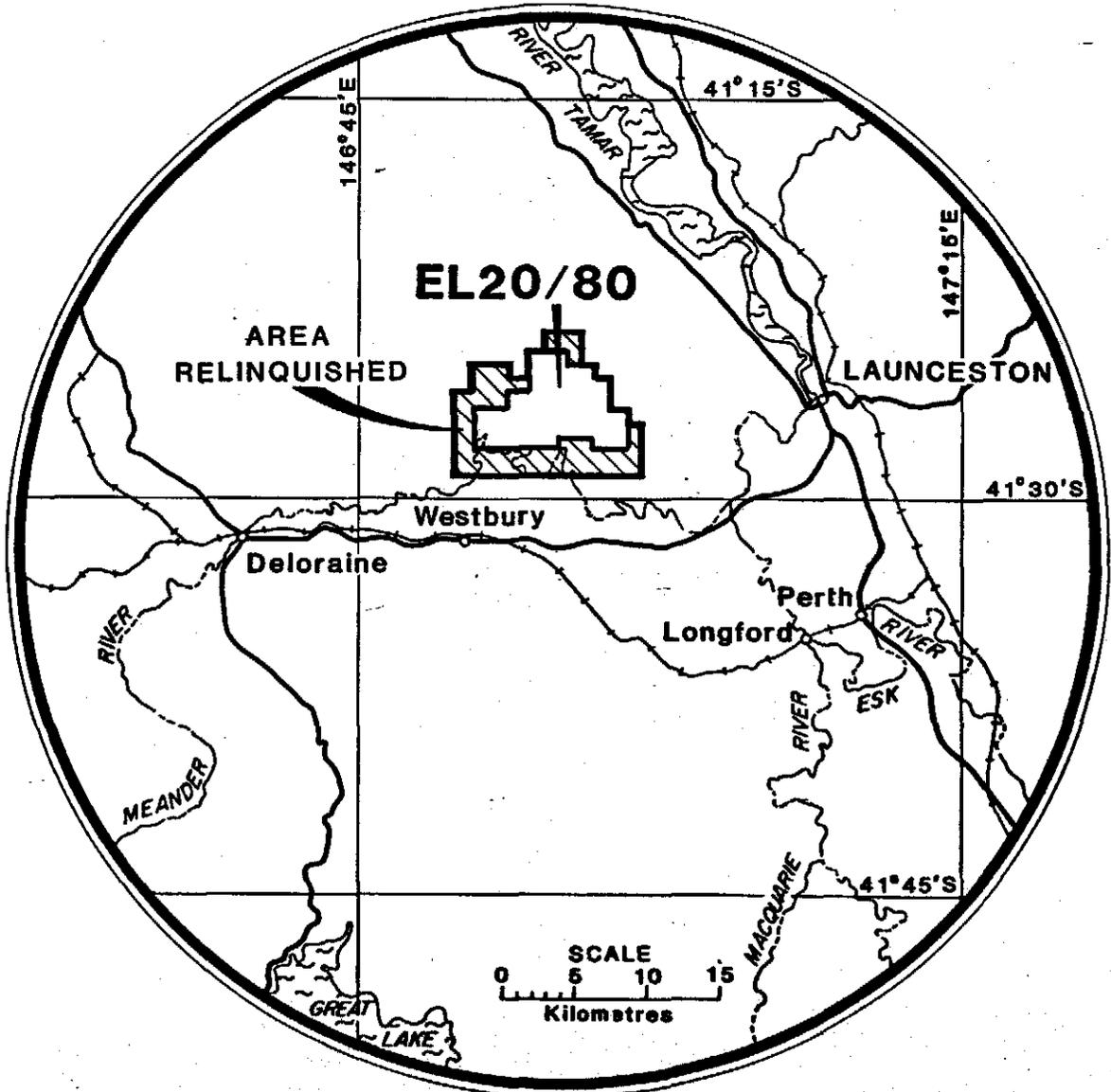
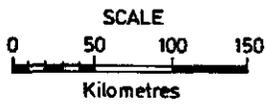
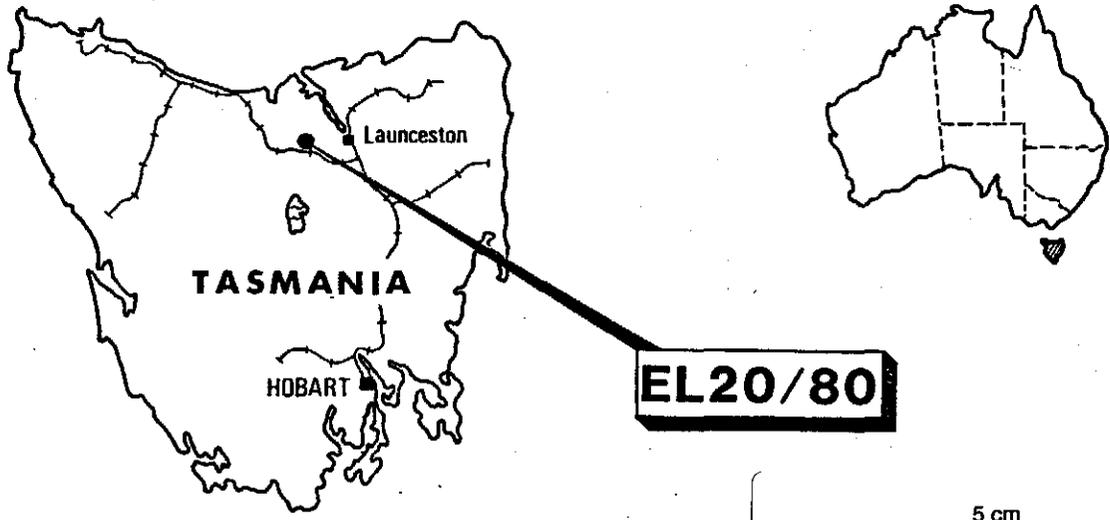
2.3 Location, Access, Physiography and Land Use

The 50 km² area relinquished from EL 20/80 is located 4 km to 15 km northeast of Westbury and borders the Rosevale coal deposits retained under EL 20/80 (Figure 1).

Local access to the area is via sealed and good quality unsealed shire roads linking Westwood and Rosevale settlements with Carrick, Hagley and Westbury. Farm tracks provide dry weather access off those roads. During the wet winter and spring months local pastures become boggy and restrict the movement of vehicles across them.

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893005



**EXPLORATION LICENCE 20/80
TASMANIA**

FIGURE 1

The climate is temperate, ranging from cold winters in which low-level snowfalls are occasionally recorded, to warm, drier summers. Annual rainfall averages 750 mm, falling principally in the winter months. January through March is generally dry and is the ideal time for exploration activity.

Topography is a reflection of the local geology, with the soft Launceston Beds expressed as physiographic lows and the more erosion resistant Jurassic dolerites forming peripheral hills.

Southerly flowing ephemeral streams drain the region through low gradient marshy zones into the Meander River, which is the major water course around Westbury and is the source of Westbury's reticulated water supply.

The principal land use is sheep and cattle raising on the more elevated ground and intensive agriculture on the Meander River flood plain.

3.0 GEOLOGY OF EL 20/80 LAUNCESTON

3.1 Regional Geological Setting

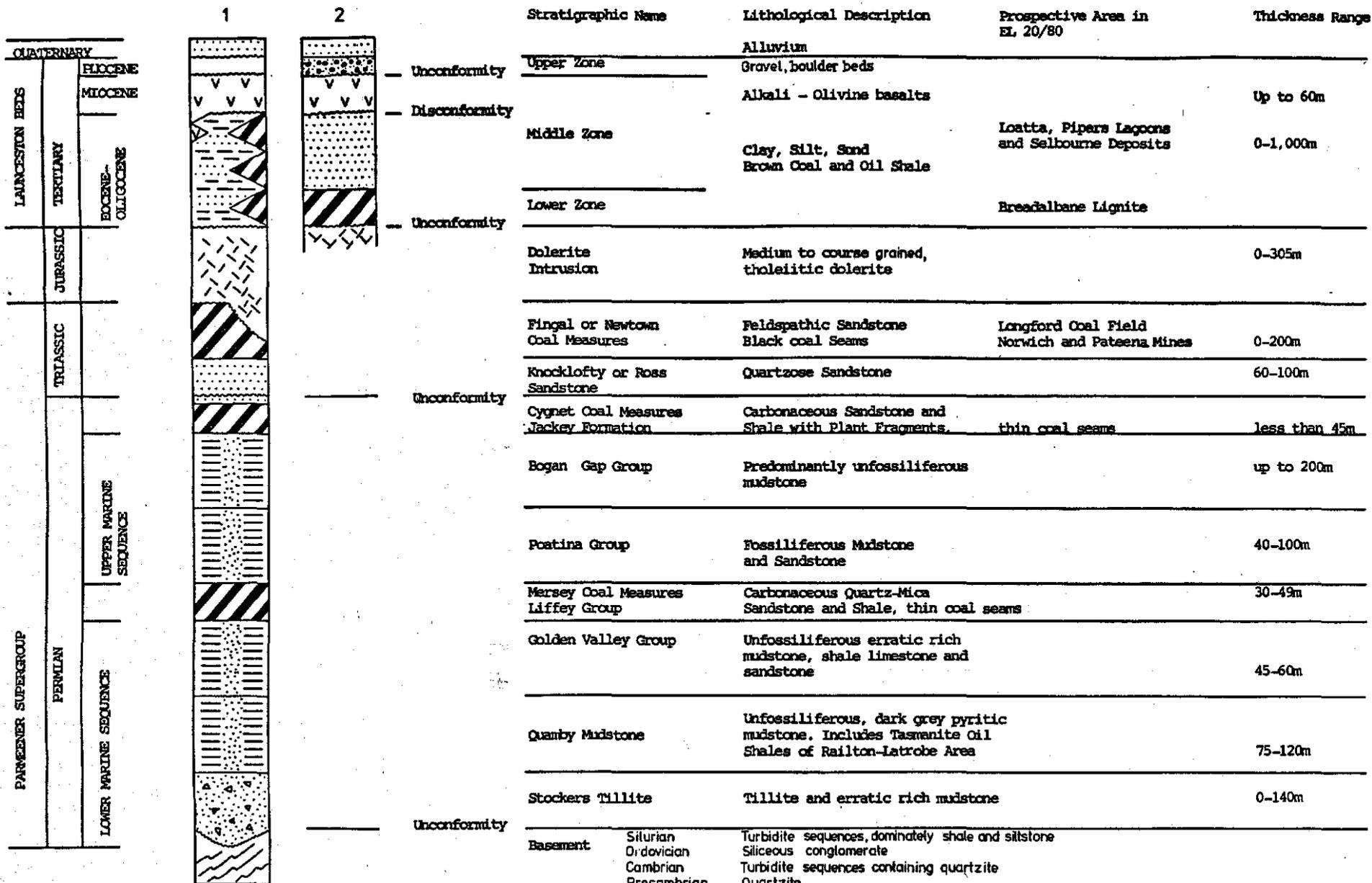
The brown coals (lignite) at Rosevale occur in a different structural and stratigraphic setting from Tasmania's better known Permo-Triassic black coals. Within EL 20/80, it is the Permo-Triassic Parmeener Supergroup and intrusive Jurassic tholeiitic dolerite dykes and sills, which constitute 'basement' to the Tertiary coal-bearing Launceston Beds (Figure 2). Black coal has been recorded within the Parmeener Supergroup from a number of locations previously covered by EL 20/80. These occurrences were found to have no economic significance and were subsequently relinquished from the EL (Ellis 1983, Carr 1984).

During the early Tertiary a series of north to northwest trending grabens formed in Northern Tasmania into which predominantly non-marine sediments ranging up to 1,000 m in thickness accumulated. Four main grabens are recognised, and each contains traces of brown coal or carbonaceous material. The northern part of the Midlands Graben (Figure 3), known as the Launceston Basin, contains the largest volume of Tertiary sediments in Tasmania, and consequently has the best potential for development of brown coal deposits in the state.

The Launceston Basin is further subdivided by the Hummocky Hills Horst into a western (Cressy) graben and an eastern (Tamar) graben. The Rosevale Coalfield is located on the eastern edge of the Cressy Graben.

Deposition of sediments in the grabens commenced in the Palaeocene to Lower Eocene and continued until the Upper Oligocene. The sequence is composed primarily of non-marine clays, silts, sands and gravel, with minor brown coal and carbonaceous facies, as well as minor marine or brackish water sediments. Environments of deposition were in a state of constant flux during the Tertiary, alternating from fluviatile to lacustrine to subaerial, and are reflected in the rapid lateral facies changes revealed from exploratory drilling. The primary

006



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

Compiled from information contained in Mathews (1974).

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR
DRAWING	DATE	SCALE		
DRAWN C. J.	Nov. '82	STRATIGRAPHY OF THE PARMEENER SUPERGROUP AND LAUNCESTON BASIN IN EL 20/80		FIGURE 2
CHECKED				DRAWING No 70020-90
REVISED	Aug. '84			

893008

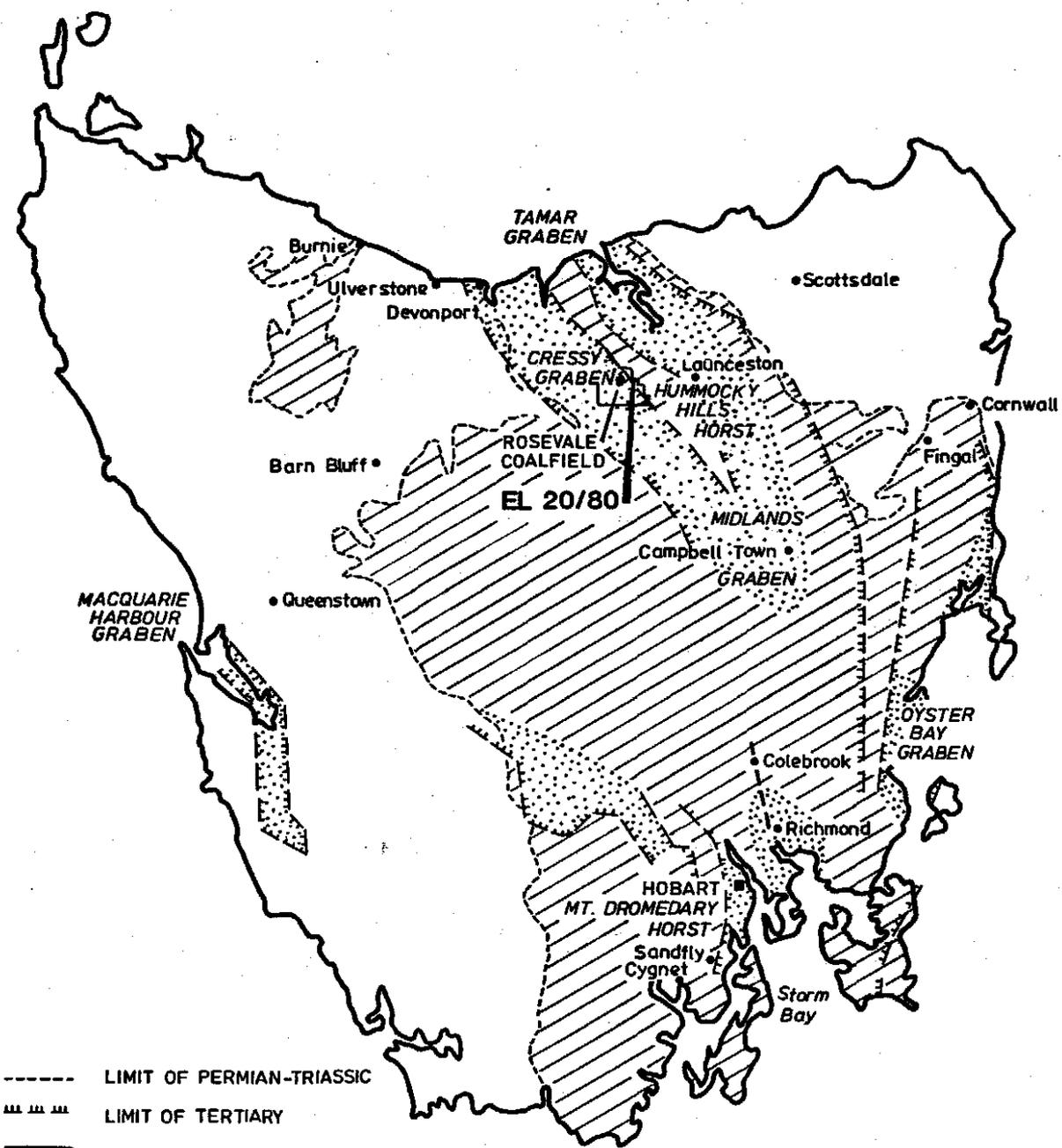
4A

007

893009

4B

BASS STRAIT



- LIMIT OF PERMIAN-TRIASSIC
- LIMIT OF TERTIARY
- PRE-PERMIAN BASEMENT
- ▨ PERMIAN-TRIASSIC BASINS
- ▤ TERTIARY BASINS

SCALE
0 20 40 60 80
Kms.

5 cm

CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		CSR	
DRAWING / DATE		SEDIMENTARY BASINS AND TERTIARY STRUCTURAL ELEMENTS OF TASMANIA		SCALE	
DRAWN C.J. Dec. '82				AS SHOWN	
CHECKED				FIGURE 3	
REVISED BAL July '87				DRAWING No 70020 - 92	

008

sources of the inorganic sediments which infilled the Tertiary grabens were the sandstones, siltstones and mudstones of the Parmeener Supergroup and weathering of the Jurassic dolerite.

Basin-wide correlation of Tertiary strata, and particularly the brown coal horizons, has not been established in the Launceston Basin, nor has a formal intrabasinal stratigraphic sequence. Johnson (1888) proposed the term "Launceston Beds" for the Tertiary succession and arbitrarily divided it into three zones. The lower zone contains laminated strata, with brown coal seams and fossilised leaves, resting unconformably upon Parmeener Supergroup strata. It is presumed to have accumulated in a lacustrine floor-plain environment. The middle zone is represented by cross-bedded fluviatile sands, as well as clay, silt, oil shale and brown coal. The upper zone comprises gravel and boulder beds on terraces flanking the present course of the Tamar River.

Late Tertiary "Newer" volcanics (basalt flows) extensively cover the Launceston Beds and because the Tertiary strata also occupy topographically low areas there is widespread veneering by the uppermost Tertiary and Quaternary marsh and swamp deposits, alluvium and colluvium.

3.2 Local Geology

The oldest rocks present are the Jurassic tholeiitic dolerites which outcrop as an arcuate line of prominent hills to the east, north and west (Plate 1).

The Tertiary Launceston Beds were deposited unconformably around the base of these hills in a Pretertiary valley cut into the dolerite.

The Launceston Beds comprise a monotonous sequence of interbedded clays, carbonaceous clays and brown coal, with minor sandy intercalations. The beds have yet to be subdivided stratigraphically. The strata pinch out towards the basin margins by onlap onto basement, and thicken rapidly towards the depositional centres. Total thickness of the formation is not

known but is at least 150 m thick in the southern portion of the relinquished area.

Whilst clay is the dominant lithology, sandy beds constitute up to a few percent of the drilled section and locally may comprise up to 25% of the section. The sands are therefore considered to be lenticular but very little is known of their distribution and spatial relationships to the finer grained sediments.

Weathered Tertiary basalt partly cover the Launceston Beds and remnants of the basalt outcrop as undulating elevated ground bordering the Meander River flood plain.

Recent alluvium is confined to the flood-plain of the Meander River.

4.0 EXPLORATION

Photogeological interpretation and surface geological mapping of the area has been completed and the results plotted on a 1:25000 scale base map (Plate 1).

In addition a total of 13 rotary holes aggregating 887.5 m of open hole have been drilled by CSR within the relinquished area (Table 1). The drill hole locations are plotted on Plate 1. English logs of the drill hole cuttings accompany this report as Appendix 1. Computer plotted sections of the holes appear on Plate 2.

Lignite bands ranging from 0.4 m to 4 m were intersected in drill holes R0003, R0012, R0018, R0026, R0039, R0083 and R0089 at depths between 14 m and 71 m.

Inferior lignite and/or ligneous clay bands were intersected in all holes apart from R0011, R0016 and R0088.

None of the lignite or inferior lignite intersections are considered to have any economic significance given their thickness, distribution and/or geographic location.

B.A. Coxhead

**B.A. COXHEAD
EXPLORATION MANAGER**

011

TABLE 1SUMMARY OF HOLES DRILLED BY CSR LIMITED

Hole No.	AMG Location (approx.)		Collar RL (approx.) (m)	Total Depth (m)
	mE	mN		
R0003	486710	5411640	150	87.0
R0005	494590	5409370	150	53.6
R0008	495950	5408890	170	95.0
R0011	494650	5407490	170	28.8
R0012	487710	5409030	150	73.6
R0016	490690	5407880	150	64.0
R0018	491950	5407950	160	80.0
R0026	488610	5412960	199	79.5
R0039	496100	5408400	175	38.0
R0065	487750	5412990	175	90.0
R0083	489800	5408700	165	84.0
R0088	489640	5412500	205	6.0
R0089	495550	5409700	165	108.0
				887.5 m
				=====

5.0 REFERENCES

- Carr, M.J. 1984 Exploration Licence 20/80 Launceston Final Report on Area Relinquished 22 August, 1984. Open File, Mines Dept., Tasmania.
- Ellis, P. 1983 Exploration Licence 20/80 Launceston Report on Area Relinquished 22 February, 1983. Open File, Mines Dept., Tasmania.
- Hills, L., et al. 1922 The Coal Resources of Tasmania. Miner Res. Geol. Surv. Tas., 7.
- Johnston, R.M. 1873 Regarding the Composition and Extent of Certain Tertiary Beds in and around Launceston. Proc. Roy. Soc. Tas. 1873, pp 39-47.
- Longman, M.J. 1971 Gravity Survey of the Tertiary Basins in Northern Tasmania. Bull. Geol. Surv. Tas., 51.
Leaman, D.E.
- Matthews, W.L. 1974 The Geology and Groundwater Resources of the Longford Tertiary Basin. Bull. Geol. Surv. Tas., 59.
- 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 Dept., Tasmania.

APPENDIX 1

GEOLOGICAL LOG REPORTS

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

01A

EL2080 LAUNCESTON R0003

Easting: 486710.000
Northing: 5411640.000
Grid Type: Australian Mapping Grid
Accuracy: Approximate
Crs: 150.00

Logging Organisation: CSR Exploration and Evaluation Group
Logged By: ELLIS
Drilling Contractor: H.J. Stacpoole
Geophysical Logging: Murdoch Geophysics

Datum: Approximate Level - Not Surveyed

Sheet Reference:
Sheet Index:

County:
Parish:
Portion:

Total Depth: 87.00

Drilling Commenced: 07/10/81

Drilling Completed: 10/10/81

Inclination:

Plug Depths:

Azimuth:

Hole Diameter: 120

Standing Water Level: 1.0

Core Diameter:

Cased Depths: 1.8

Core Barrel:

Available Data: Gamma Logs
Density Logs
Resistivity Logs
Caliper Logs

Drill Bits: Blades

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

015

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUM3R	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					0.50	0.50		SAND	Silty, medium to dark brown, medium dense, non-plastic, fine and medium grained.
					2.00	1.50		CLAY	Micaceous, light white - grey, stiff, low plasticity (clay).
					2.40	0.40		SAND	Quartzose, light to medium orange, medium dense, non-plastic, fine and medium grained, uniform, well sorted, rounded, gradational base.
					2.60	0.20		SAND	Quartzose, light yellow - grey, medium dense, non-plastic, fine and medium grained, uniform, well sorted, rounded.
					2.80	0.20		SAND	Clayey, quartzose, light white - grey, medium dense, non-plastic, fine and medium grained, uniform.
					4.50	1.70		SAND	Silty, light to medium orange - yellow, medium dense, non-plastic, fine and medium grained, uniform.
					5.20	0.70		CLAY	Carbonaceous, medium to dark brown, soft, low plasticity (clay), common ligneous wisps; Additional features include: abundant woody fragments.
					5.50	0.30		CLAY	Light to medium grey, firm, low plasticity (clay); Bands include: SAND, quartzose, clayey, light to medium grey, medium dense, non-plastic.
					5.60	0.10		SAND	Quartzose, light to medium orange, medium dense, non-plastic.
					7.00	1.40		LIGNEOUS CLAY	Medium to dark brown, soft, low plasticity (organic).
					8.60	1.60		SAND	Quartzose, light to medium orange - yellow, medium dense, non-plastic, fine grained.
					8.70	0.10		GRAVEL	Medium dense, non-plastic.
					13.50	4.80		SAND	Quartzose, clayey, light grey, medium dense, non-plastic, fine grained, well sorted, rounded, heavy minerals, accessory, disseminated; Additional features include: well rounded;
CIRCULATION POOR FROM 6 METRES, USED									
1200 GALLONS TO 12 METRES.									

893017

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					14.50	1.00		SAND	Clayey, ligneous, light to medium brown, medium dense, non-plastic, fine grained, occasional ligneous wisps; Additional features includes: silty, quartzose, very fine grained; Bands include: LIGNEOUS CLAY, sandy, silty, medium to dark brown, firm, low plasticity (clay).
					22.50	8.00		SILT	Sandy, carbonaceous, light to medium grey - brown, medium dense, non-plastic, fine grained; MIXED 2XSACKS SUPERGEL, 1/2XSATCHEL ROTROL. 1200 GALLONS WATER FROM 12 TO 20 METRES. CIRCULATION POOR AFTER MUD MIXING.
					24.20	1.70		CLAY	Sandy, silty, light to medium grey, soft, low plasticity (clay), abundant woody fragments; Additional features include: occasional ligneous wisps.
					24.90	0.70		SAND	Quartzose, carbonaceous, light grey, medium dense, non-plastic, fine grained, well sorted, rounded, equant.
					25.90	1.00		CLAY	Light to medium grey, soft, high plasticity (clay), occasional woody fragments.
					26.40	0.50		SAND	Quartzose, carbonaceous, light grey, medium dense, non-plastic, fine grained, well sorted, rounded, equant.
					26.80	0.40		CLAY	Light to medium grey, soft, high plasticity (clay), occasional woody fragments.
					30.00	3.20		SAND	Quartzose, carbonaceous, light grey, medium dense, non-plastic, fine grained; SANDS CONTAIN MINOR ROCK FRAGMENTS AND FELDSPAR. COMMON SMALL CARBONACEOUS FRAGMENTS. USED 1200 GALLONS OF WATER FROM 20 TO 30 METRES PULLED RODS AT 30M 7/10/81 WATER FLOWED FROM RODS 15 MINS. CLAY BALLING CAUSING PRESSURIZING OF FORMATIONS. DOUBTFUL IF LITHOLOGIES FROM 8.7M ARE ALL SANDS AS LOGGED

016

893018

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

017

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					30.50	0.50		CLAY	Light to medium grey, soft, high plasticity (clay).
					31.20	0.70		LIGNITE	Woody textured, dark black - brown, firm, friable; Bands include: INFERIOR LIGNITE, clayey, dark brown, firm, Low plasticity (organic); Bands include: LIGNEOUS CLAY, dark brown, firm, low plasticity (organic).
					32.00	0.80		SAND	Quartzose, medium dense, non-plastic, fine grained.
					32.40	0.40		LIGNEOUS CLAY	Dark brown, firm, low plasticity (organic); Bands include: LIGNITE, dark black - brown, firm, friable; Bands include: CLAY, light to medium grey, soft, high plasticity (clay).
					33.80	1.40		CLAY	Light to medium grey, soft, high plasticity (clay).
					35.00	1.20		SAND	Quartzose, light grey, medium dense, non-plastic, fine and medium grained.
					37.30	2.30		CLAY	Bentonitic, light to medium grey, soft, low plasticity (clay), common woody fragments; Bands include: CLAY, carbonaceous, dark brown, soft, low plasticity (clay), occasional ligneous wisps.
					37.70	0.40		SAND	Quartzose, woody textured, light brown - grey, medium dense, non-plastic, fine and medium grained, abundant woody fragments.
					38.10	0.40		CLAY	Carbonaceous, medium to dark brown - grey, soft, low plasticity (clay), occasional ligneous wisps; Additional features include: common woody fragments; Bands include: CLAY, light to medium grey, soft, low plasticity (clay).

EL2080 LAUNCESTON R0003

893019

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
					40.00	1.90		LIGNEOUS CLAY and LIGNITE	Interbedded 50:50. LIGNEOUS CLAY: sandy, quartzose, medium to dark brown, soft, low plasticity (organic), common woody fragments; LIGNITE: woody textured, medium to dark brown, low strength, brittle; Bands include: LIGNITE, medium to dark brown, firm, friable; Bands include: SAND, ligneous, quartzose, light to medium brown, medium dense, non-plastic, common woody fragments; SIMILAR TO LOWER SECTION OF LIGNEOUS ZONE AT SEDAN
					43.00	3.00		CLAY	Carbonaceous, light to medium brown - grey, very soft, low plasticity (clay), gradational base, common woody fragments; Bands include: CLAY, bentonitic, light to medium grey, soft, low plasticity (clay).
					49.00	6.00		CLAY	Bentonitic, light to medium grey, firm, low plasticity (clay), gradational base; VERY POOR SAMPLE RETURN ONLY FIRM CLAY RETURNED AS CHIPS. SOFT CLAYS DISPERSE
					52.70	3.70		CLAY	Carbonaceous, bentonitic, light to medium brown - grey, firm, low plasticity (clay).
					53.50	0.80		SAND	Quartzose, light grey - brown, medium dense, non-plastic, common woody fragments.
					56.20	2.70		LIGNEOUS CLAY	Medium to dark brown, soft, low plasticity (organic), common woody fragments; Bands include: CLAY, bentonitic, light to medium grey, soft, low plasticity (clay).
					58.00	1.80		SAND	Quartzose, silty, light grey - brown, medium dense, non-plastic, fine grained, common woody fragments; Bands include: CLAY, carbonaceous, silty, light to medium brown, soft, low plasticity (clay), common ligneous wisps.

EL2080 LAUNCESTON R0003

018

893020

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					69.00	11.00		CLAY	Silty, light white, soft, low plasticity (clay); Bands include: SAND, quartzose, ligneous, light brown, medium dense, non-plastic, common woody fragments; USED 1200 GALLONS OF WATER FROM 30 TO 64 METRES
					70.50	1.50		CLAY	Silty, light to medium grey - brown, soft, low plasticity (clay), occasional woody fragments.
					72.50	2.00		SILT	Clayey, ligneous, light brown - grey, loose, non-plastic; SUB-BITUMINOUS DULL BANDED COALLY BANDS ABUNDANT
					74.50	2.00		CLAY	Light to medium grey, firm, high plasticity (clay); Bands include: SILT, sandy, light grey, medium dense, non-plastic, very fine grained.
					75.90	1.40		SILT	Sandy, quartzose, soft, low plasticity (silt).
					76.80	0.90		CLAY	Light to medium grey, firm, high plasticity (clay), occasional woody fragments; Bands include: SILT, sandy, quartzose, light grey, medium dense, non-plastic, fine grained, occasional woody fragments.
					80.00	3.20		CLAY	Light to medium grey, firm, high plasticity (clay).
					87.00	7.00		CLAY and CLAY	Interbedded 80:20. CLAY: light to medium grey - green, firm, high plasticity (clay); CLAY: carbonaceous, light to medium brown - grey, soft, low plasticity (clay), common woody fragments; RAN OUT OF RODS AT T.D.

END OF BORE AT 87.00 m

EL2080 LAUNCESTON R0003

019

893021

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

020

EL2080 LAUNCESTON R0005

Easting: 494590.000
Northing: 5409370.000
Grid Type: Australian Mapping Grid
Accuracy: Approximate
Crl: 150.00

Logging Organisation: CSR Exploration and Evaluation Group
Logged By: ELLIS
Drilling Contractor: H.J. Stacpoole
Geophysical Logging: Murdoch Geophysics

Datum: Approximate Level - Not Surveyed

Sheet References:

Sheet Index:

Total Depth: 53.60

County:

Parish:

Portion:

Drilling Commenced: 13/10/81

Drilling Completed: 14/10/81

Inclination:

Azimuth:

Standing Water Level: 1.4

Plug Depths:

Hole Diameter: 150

Core Diameter:

Cased Depths:

Core Barrel:

Available Data:

Gamma Logs

Density Logs

Resistivity Logs

Caliper Logs

Drill Bits: Blades

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					0.30	0.30		SAND	Silty, clayey, light to medium brown, weathered, medium dense, non-plastic, fine and medium grained.
					1.50	1.20		CLAY	Light to medium brown - yellow, weathered, firm, high plasticity (clay); DERIVED FROM BASALT, CONTAINS COARSE SAND-FINE GRAVEL BASALT FRAGMENTS
					1.80	0.30		CLAY	Mottled red - yellow, weathered, firm, high plasticity (clay), gradational base; Additional features include: grey.
					3.20	1.40		CLAY	Mottled grey - yellow, firm, high plasticity (clay); Additional features include: red.
					4.00	0.80		CLAY	Light brown - grey, firm, high plasticity (clay); LENSES OF LIGNEOUS CLAY
					5.50	1.50		CLAY	Mottled brown - grey, firm, high plasticity (clay); Additional features include: khaki.
					5.90	0.40		CLAY	Medium to dark brown, firm, high plasticity (clay).
					9.00	3.10		CLAY	Light grey - brown, firm, high plasticity (clay).
					11.60	2.60		CLAY	Light grey, firm, high plasticity (clay).
					12.15	0.55		CLAY	Sandy, light grey, firm, high plasticity (clay).
					12.70	0.55		SIDERITE	Sandy, light to medium brown, low strength, brittle; Bands include: SIDERITE, light to medium brown, high strength, tough.
					13.70	1.00		SAND	Gravelly, light brown, medium dense, non-plastic, fine and medium grained.

EL 2080 LAUNCESTON R0005

021

893023

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					18.00	4.30		CLAY	Light grey, soft, low plasticity (clay); CIRCULATION POOR FROM 9 METRES DUE TO CLAY BALLING-PRESSURIZING FORMATIONS, WATER PUMPING FROM GROUND 7 M FROM RIG. USED 1200 GALL ONS WATER TO 18 METRES.
					23.30	5.30		CLAY	Light to medium grey - brown, soft, high plasticity (clay); Bands include: SIDERITE, 00.05 m thick, base at 0018.65m, light to medium brown, low strength, brittle; LOST CIRCULATION DUE TO CLAY-BALI NG. USED 1200 GALLONS BETWEEN 18 AND 22 METRES. ADDED SALT.
					24.00	0.70		LIGNEOUS CLAY	Medium to dark brown, firm, low plasticity (organic).
					24.50	0.50		INFERIOR LIGNITE	Clayey, medium to dark black - brown, firm, friable; Bands include: LIGNITE, medium to dark black - brown, firm, friable.
					32.00	7.50		CLAY	Light to medium grey, soft, high plasticity (clay), common ligneous fragments; Additional features include: common woody fragments; Bands include: CLAY, carbonaceous, light to medium brown - grey, soft, high plasticity (clay), common ligneous fragments; Additional features include: common woody fragments.
					36.00	4.00		CLAY	Carbonaceous, light to medium brown - grey, soft, high plasticity (clay), common ligneous wisps.
					42.00	6.00		CLAY	Light to medium grey, soft, low plasticity (clay); MONTMORILLONITE/BENTONITE CLAY LIGNEOUS CLAY LENSES AND WISPS

EL2080 LAUNCESTON R0005

022

893024

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SER NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					46.00	2.00		CLAY	Light to medium grey, soft, low plasticity (clay), common ligneous wisps; LIGNEOUS FRAGMENTS FIRM FRIABLE. POSSIBLY A LIGNEOUS HORIZON. SAMPLE RETURN POOR, CIRCULATING MEDIUM TOO THICK AND SAMPLE IS RECIRCULATED THROUGH SYSTEM. CHANGE WATER, ADD 1/4 BUCKET OF SALT.
					47.00	3.00		CLAY	Light to medium grey, soft, low plasticity (clay).
					53.60	6.60		CLAY	Light to medium grey, soft, low plasticity (clay); CLAYS DISPERSING IN HOLE THICKENIN G MUD EXCESSIVELY. HARD ROCK INTER SECTED AT TOTAL DEPTH, SUSPECT DOLERITE. NO SAMPLE RETURNED. DRILL RIG MOVED OFF SITE DUE TO EXTREMELY WET AND SOFTENING GROUND CONDITIONS.

023

END OF BORE AT 53.60 m

EL2080 LAUNCESTON R0005

893025

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

024

EL2080 LAUNCESTON R0008

Easting: 425950.000 Logging Organisation: CSR Exploration and Evaluation Group
Northing: 5408290.000 Logged By: ELLIS
Grid Type: Australian Mapping Grid Drilling Contractor: H.J. Stacpoole
Accuracy: Approximate Geophysical Logging: Murdoch Geophysics
Crl: 170.00
Datum: Approximate Level - Not Surveyed

Sheet References: County:
Sheet Index: Parish:
Total Depth: 95.00 Portion:

Drilling Commenced: 19/10/81
Drilling Completed: 21/10/81
Inclination: Plug Depths:
Azimuth: Hole Diameter: 150
Standing Water Level: 2.7 Core Diameter:
Core Depths:
Core Barrel:

Available Data: Gamma Logs
Density Logs
Resistivity Logs Drill Bits: Blades
Caliper Logs

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

893026

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					0.50	0.50		SAND	Silty, clayey, medium to dark brown, weathered, medium dense, non-plastic.
					1.50	1.00		CLAY	Light to medium brown - khaki, firm, high plasticity (clay).
					4.60	3.10		CLAY	Silty, mottled white - yellow, firm, low plasticity (clay), fining upwards; WITH SOME FINE SAND
					6.00	1.40		CLAY	Silty, light white - grey, firm, low plasticity (clay); WITH SOME FINE SAND
									1850 CLAY: silty, sandy, light to medium yellow, firm, low plasticity (clay), very fine grained; Bands include: SAND, silty, clayey, light to medium yellow, medium dense, non-plastic, very fine grained.
					8.00	2.00		GRAVEL	Sandy, clayey, light to medium brown, medium dense, non-plastic, fining upwards, rare ligneous fragments; FINE GRAVEL TO COARSE SAND, ANGULAR CLASTS
					9.20	1.20		CLAY	Light to medium yellow - buff, firm, low plasticity (clay).
					9.70	0.50		CLAY	Gravelly, light to medium yellow - buff, firm, low plasticity (clay); CLAY AFTER DOLERITE, COARSE ANGULAR DOLERITE GRAVEL CLASTS
					11.15	1.45		CLAY	Medium to dark brown - grey, firm, high plasticity (clay); GRADES TO LIGHT BROWN-GREY AT BASE
					11.70	0.55		CLAY	Light to medium brown, firm, high plasticity (clay).

025

893027

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					15.50	3.80		CLAY	Carbonaceous, light to medium brown, firm, high plasticity (clay), common woody fragments; Additional features include: common ligneous fragments; Bands include: SIDERITE, 00.20 m thick, base at 0014.10m, light to medium brown, low strength, brittle.
					16.80	1.30		LIGNEOUS CLAY	Woody textured, firm.
					17.10	0.30		CLAY	Carbonaceous, medium to dark brown, firm, high plasticity (clay), common ligneous fragments; Additional features include: common woody fragments.
					17.80	0.70		LIGNEOUS CLAY	Woody textured, medium to dark brown, firm.
					19.60	1.80		CLAY and CLAY	Interbedded 50:50. CLAY: carbonaceous, medium to dark brown, firm, high plasticity (clay), common ligneous fragments; CLAY: carbonaceous, light to medium brown - grey, firm, high plasticity (clay), common ligneous fragments.
					21.20	1.60		CLAY	Carbonaceous, light to medium brown - grey, firm, high plasticity (clay), common woody fragments; Bands include: CLAY, carbonaceous, medium to dark brown, firm, high plasticity (clay), common woody fragments; Bands include: CLAY, light grey - brown, firm, high plasticity (clay), common woody fragments.
					21.70	0.50		INFERIOR LIGNITE	Clayey, peaty, medium to dark black - brown, low strength, brittle; Additional features include: woody textured.
					22.90	1.20		LIGNEOUS CLAY	Medium to dark brown, firm; Bands include: CLAY, carbonaceous, light to medium brown, firm, high plasticity (clay).
					23.60	0.70		CLAY	Bentonitic, light to medium grey, firm, high plasticity (clay).
					24.50	0.90		CLAY	Carbonaceous, woody textured, light to medium brown, firm, high plasticity (clay), abundant woody fragments;
LOST CIRCULATION DUE TO CLAY BALLING BETWEEN 22.5 TO 24 METRES									

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					29.10	4.60		CLAY	Bentonitic, light to medium grey, firm, high plasticity (clay); Bands include: SIDERITE, 00.30 m thick, base at 0027.40m, light to medium brown, high strength, brittle.
					30.20	1.10		CLAY	Silty, bentonitic, light to medium grey, soft, low plasticity (clay); EMPTIED MUD PIT AT 31 METRES, ADDED SALT TO FLOCCULATE CLAYS
					34.45	4.25		CLAY	Silty, bentonitic, light to medium grey, soft, low plasticity (clay), fining upwards; Bands include: CLAY, light to medium brown - grey, firm, low plasticity (clay).
					35.40	1.95		CLAY and CLAY	Interbedded 60:40. CLAY: silty, bentonitic, light to medium grey, soft, low plasticity (clay); CLAY: light to medium brown - grey, soft, low plasticity (clay); EMPTIED MUD PIT AT 35 METRES
					36.60	0.20		CLAY	Medium to dark khaki - brown, firm, high plasticity (clay); Bands include: CLAY, silty, bentonitic, light to medium grey, soft, low plasticity (clay).
					39.30	2.70		SAND	Clayey, woody textured, medium to dark black - brown, medium dense, non-plastic, fibrous; Additional features include: peaty.
					41.00	1.70		CLAY	Carbonaceous, medium to dark brown, soft, low plasticity (clay), coarsening upwards, abundant woody fragments.
					41.30	0.80		CLAY	Carbonaceous, medium to dark brown, soft, low plasticity (clay), abundant woody fragments.
					42.80	1.00		SILT	Clayey, carbonaceous, medium to dark brown, soft.
					43.80	1.00		SILT	Clayey, carbonaceous, medium to dark brown, soft, coarsening upwards.
					45.80	2.00		CLAY	Carbonaceous, light to medium brown, soft, high plasticity (clay), coarsening upwards, abundant woody fragments.

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					47.40	1.60		SAND	Silty, clayey, soft.
					51.50	4.10		CLAY	Bentonitic, light to medium grey - brown, very soft, low plasticity (clay), fining upwards, occasional woody fragments;
									CHANGED MUD AT 48 METRES
					56.50	5.00		CLAY	Bentonitic, light to medium grey - white, soft, low plasticity (clay).
					57.10	0.60		SIDERITE	Light brown - cream, high strength, tough.
					59.20	2.10		CLAY	Carbonaceous, medium to dark brown, very soft, low plasticity (clay), common woody fragments; Bands include: CLAY, light to medium brown - grey, very soft, low plasticity (clay), common woody fragments.
					60.40	1.20		SAND	Silty, clayey, dark black - brown, soft, non-plastic, abundant woody fragments; Additional features include: woody textured, peaty.
					61.30	0.90		SAND	Clayey, woody textured, medium to dark black - brown, soft, non-plastic, common woody fragments.
					62.30	1.00		SAND	Silty, clayey, dark black - brown, soft, non-plastic, abundant woody fragments; Additional features include: woody textured, peaty.
					63.30	1.00		SAND	Clayey, woody textured, medium to dark black - brown, soft, non-plastic, common woody fragments;
									CHANGED MUD AT 63 METRES
					64.80	1.50		SAND	Silty, clayey, dark black - brown, soft, non-plastic, fibrous, abundant woody fragments; Additional features include: woody textured, peaty.
					68.40	3.60		SAND	Clayey, woody textured, medium to dark black - brown, soft, non-plastic, common woody fragments.
					70.80	2.40		SAND	Silty, clayey, medium to dark black - brown, soft, non-plastic, fibrous, abundant woody fragments; Additional features include: woody textured, peaty.

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA. NAME	SEQ. NO.	SEAM NAME	WOK. SEC.	SAMPL. NUMBR	DEPTH (m)	THICK (m)	% REC.	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					71.40	0.60		SAND	Interbedded 60:40; Additional features include: peaty; CLAY: carbonaceous, medium to dark brown, soft, low plasticity (clay).
					72.10	0.70		SAND	Silty, clayey, medium to dark black - brown, soft, non-plastic, fibrous, abundant woody fragments; Additional features include: woody textured, peaty.
					75.50	3.40		SILT	Sandy, light to medium brown, medium dense, non-plastic; Bands include: SAND, silty, clayey, medium to dark black - brown, soft, non-plastic, abundant woody fragments; Additional features include: woody textured, peaty; CHANGED MUD. AT 75 METRES
					76.00	0.50		SAND	Silty, clayey, medium to dark black - brown, soft, non-plastic, fibrous, abundant woody fragments; Additional features include: woody textured, peaty.
					78.40	2.40		SILT	Sandy, clayey, medium dense, non-plastic.
					78.80	0.40		SAND and CLAY	Interbedded 60:40. SAND: silty, clayey, medium to dark black - brown, soft, non-plastic, abundant woody fragments; CLAY: carbonaceous, medium to dark brown, soft, low plasticity (clay); Additional features include: woody textured, peaty; ALL LITHOLOGIES DESCRIBED AS WOODY PEATY CLAYEY SILTY SAND WERE LOGGED IN THE FIELD AS LIGNITE, WOODY, PEATY WHEN INTERSECTED THIS LITHOTYPE CAUSED RATTLING OF RIG AS IF BLACK COAL WAS INTERSECTED. SAMPLE RETURN WAS SUB-BITUMINOUS DULL BANDED COALLY FRAGMENTS
					81.50	2.70		CLAY	Carbonaceous, woody textured, medium to dark brown, soft, low plasticity (clay).
					83.00	1.50		SILT	Sandy, quartzose, medium to dark brown, medium dense, non-plastic, very fine grained.
					85.50	2.50		CLAY	Carbonaceous, woody textured, medium to dark brown, soft, low plasticity (clay), common woody fragments; Additional features include: silty.

029

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					86.50	1.00		SILT	Sandy, medium dense, non-plastic.
					89.00	2.50		CLAY	Carbonaceous, woody textured, dark brown, soft, low plasticity (clay), common woody fragments; Additional features include: silty.
					92.70	3.70		CLAY	Silty, light to medium grey - brown, soft, low plasticity (clay);
CHANGED MUD AT 91 METRES									
					93.60	0.90		SAND	Quartzose, woody textured, abundant woody fragments.
					95.00	1.40		CLAY	Silty, light to medium grey - brown, soft, low plasticity (clay);

CARBONACEOUS WOODY CLAY IS PROBABLY

A PRECURSOR TO CARBONACEOUS SHALE
SUB-BITUMINOUS DULL BANDED COALLY
FRAGMENTS WERE PRESENT

END OF BORE AT 95.00 m

EL2080 LAUNCESTON ROADS

030

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

031

EL2080 LAUNCESTON R0011

Easting: 494650.000
Northing: 5407490.000
Grid Type: Australian Mapping Grid
Accuracy: Approximate
Crl: 170.00

Logging Organisation: CSR Exploration and Evaluation Group
Logged By: ELLIS
Drilling Contractor: H.J. Stacpoole
Geophysical Logging: Murdoch Geophysics

Datum: Approximate Level - Not Surveyed

Sheet References:
Sheet Index:

County:
Parish:
Portion:

Total Depth: 28.80

Drilling Commenced: 23/10/81
Drilling Completed: 27/10/81

Plug Depths:
Hole Diameter: 150

Inclination:

Azimuth:

Standing Water Level: 3.4

Core Diameter:
Cased Depths:
Core Barrel:

Available Data: Gamma Logs
Density Logs
Resistivity Logs
Caliper Logs

Drill Bits: Blades
Rollers
Percussion

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

893033

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

032

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					0.20	0.20		SILT	Sandy, medium to dark brown, weathered, firm, low plasticity (silt).
					1.30	1.10		CLAY	Medium to dark brown, weathered, firm, high plasticity (clay).
					4.50	3.20		GRAVEL	Silty, clayey, medium to dark brown - yellow, weathered, medium dense, non-plastic; BASALT FRAGMENTS COMPRISE GRAVEL
					8.30	3.80		GRAVEL	Clayey, medium to dark brown, weathered, low strength, brittle.
					10.00	1.70		BASALT	Medium to dark brown, weathered, low strength, brittle.
					11.50	1.50		BASALT	Medium to dark brown, weathered, high strength, tough; Bands include: BASALT, medium to dark brown, fresh, high strength, tough.
					12.00	0.50		BASALT	Medium to dark brown, weathered, extremely high strength, tough; CHANGE TO ROLLER BIT AT 12 METRES
					20.00	8.00		BASALT	Medium to dark brown - grey, weathered, extremely high strength, tough; BANDS OF SILICIFIED BASALT, CHALCEDONNY INFILLING OF VESICLES CHANGE TO DOWN THE HOLE HAMMER BIT AT 13 METRES
					22.50	2.50		BASALT	Medium to dark grey - brown, fresh, extremely high strength, tough.

EL2080 LAUNCESTON R0011

893034

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	BOX SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
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					26.80	6.30		DOLERITE	Medium to dark grey, fresh, extremely high strength, tough;
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PENETRATION RATE 1 METER PER 9 MINUTES

HOLE MAKING WATER LESS THAN 100 GALLON
S PER HOUR

COARSER AND HARDER THAN BASALT
QUARTZ CARBONATE VEINING COMMON

END OF BORE AT 23.80 m

EL2080 LAUNCESTON R0011

893033

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

03A

EL2080 LAUNCESTON R0012

Easting: 487710.000
Northing: 5409030.000

Grid Type: Australian Mapping Grid

Accuracy: Approximate

Cri: 150.00

Datum: Approximate Level - Not Surveyed

Sheet References:

Sheet Index:

Total Depth: 73.60

Drilling Commenced: 27/10/81

Drilling Completed: 28/10/81

Inclination:

Azimuth:

Standing Water Level: 4.4

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: 150

Core Diameter:

Cased Depths:

Core Barrel:

Available Data: Gamma Logs

Density Logs

Resistivity Logs

Caliper Logs

Drill Bits: Blades

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

893036

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

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		SAND	Silty, clayey, medium to dark brown, firm, non-plastic, occasional woody fragments.
					1.80	1.30		CLAY	Sandy, quartzose, mottled orange - yellow, firm, high plasticity (clay), medium grained, uniform, occasional woody fragments; Additional features include: grey.
					2.30	0.50		CLAY	Sandy, quartzose, light to medium grey, firm, high plasticity (clay).
					3.30	1.00		CLAY	Sandy, quartzose, light to medium orange - yellow, firm, low plasticity (clay).
					3.60	0.30		CLAY	Silty, sandy, mottled orange - grey, firm, low plasticity (clay), very fine grained.
					4.60	1.00		CLAY	Silty, sandy, mottled grey - orange, firm, high plasticity (clay), very fine grained.
					5.80	1.20		GRAVEL	Sandy, clayey, medium dense, non-plastic; Bands include: CLAY, silty, sandy, mottled grey - orange, firm, high plasticity (silt).
					6.40	0.60		SAND	Clayey, gravelly, medium dense, non-plastic.
					8.80	2.40		SILT	Sandy, clayey, mottled orange - grey, soft, low plasticity (clay).
					9.50	0.70		CLAY	Silty, gravelly, mottled orange - grey, firm, low plasticity (clay); MEDIUM GRAVEL
					10.10	0.60		SILT	Sandy, clayey, mottled grey - white, soft, low plasticity (silt), very fine grained; Additional features include: pink.
					10.80	0.70		CLAY	Silty, sandy, mottled grey - orange, soft, low plasticity (clay), fine and medium grained; Additional features include: gravelly; COARSE GRAVEL

035

093031

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 208Q

Launceston

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC.	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					11.50	0.70		CLAY	Mottled grey - orange, soft, low plasticity (clay).
					12.60	1.10		SILT	Sandy, clayey, mottled grey - orange, medium dense, non-plastic, fine and medium grained; Additional features include: gravelly; FINE TO MEDIUM GRAVEL
					13.30	1.20		CLAY	Silty, sandy, light to medium grey - orange, soft, low plasticity (clay); CHANGE CIRCULATING FLUID AT 12.8M
					15.80	2.00		CLAY	Silty, sandy, mottled grey - white, soft, low plasticity (clay); Bands include: CLAY, silty, light to medium orange - yellow, soft, low plasticity (clay); Bands include: CLAY, light grey, firm, high plasticity (clay).
					18.20	2.40		CLAY	Silty, sandy, light grey - white, soft, high plasticity (clay); BLOCKED BIT AT 16M., REAMED CLAY BALLS, CHANGED CIRCULATING FLUID
					20.20	2.00		CLAY	Silty, light grey - white, soft, high plasticity (clay), common woody fragments; WITH SOME SAND Bands include: CLAY, carbonaceous, light to medium brown, soft, high plasticity (clay).
					23.20	3.00		CLAY	Silty, kaolinitic, light grey, soft, high plasticity (clay), rare woody fragments; Bands include: CLAY, carbonaceous, light to medium brown, soft, high plasticity (clay); LIGHT GREY CLAY DISPERSIVE, THICKENS CIRCULATING FLUID READILY, BENTONITIC

036

893038

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					34.30	11.60		CLAY	Silty, light grey, soft, high plasticity (clay), occasional woody fragments;
CHANGE MUD AT 32 METRES									
					37.30	3.00		CLAY	Silty, sandy, light grey, soft, low plasticity (clay), common woody fragments.
					39.70	1.90		CLAY	Silty, light grey, firm, high plasticity (clay), common woody fragments;
CHANGED MUD AT 38.4 METRES									
WOOD FRAGMENTS ARE TWIGS AND BRANCHES									
					40.30	0.60		INFERIOR LIGNITE	Woody textured, peaty, dark brown, firm, friable.
					41.60	1.30		CLAY	Carbonaceous, medium to dark brown - grey, firm, high plasticity (clay).
					41.90	0.30		LIGNEOUS CLAY	Medium to dark brown, firm, low plasticity (organic).
					42.20	0.30		INFERIOR LIGNITE	Medium to dark brown, firm, friable.
					42.60	0.40		LIGNITE	Medium to dark brown - black, firm, friable.
					44.30	2.20		LIGNEOUS CLAY	Medium to dark brown, firm, low plasticity (organic).
					45.50	0.70		LIGNITE	Medium to dark brown - black, firm, friable.
					46.70	1.20		LIGNEOUS CLAY	Medium to dark brown, firm, low plasticity (organic);
BASE OF LIGNEOUS HORIZON UNDERFINED									
DUE TO GEOPHYSICAL LOG ENDING AT 47M. NO LIGNITE LOGGED FROM CHIPS.									
					48.90	2.20		CLAY	Silty, sandy, light grey, soft, low plasticity (clay), common woody fragments.
					53.60	4.70		CLAY	Silty, light to medium grey, very soft, low plasticity (clay);
CLAY VERY SOFT AND DISPERSIVE									

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893039

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					59.30	5.70		CLAY	Light to medium grey, firm, high plasticity (clay); Bands include: CLAY, light to medium brown - grey, firm, high plasticity (clay).
					62.00	2.70		SAND	Silty, quartzose, light white - grey, very soft, non-plastic, common woody fragments; Bands include: CLAY, light to medium grey, firm, high plasticity (clay).
					62.40	0.40		SAND	Quartzose, woody textured, light to medium brown, medium dense, non-plastic, abundant woody fragments.
					63.00	0.60		SAND	Clayey, quartzose, light grey - white, medium dense, non-plastic; Bands include: CLAY, light to medium grey, firm, high plasticity (clay).
					63.50	0.50		SAND	Quartzose, woody textured, light to medium brown, medium dense, non-plastic, abundant woody fragments.
					65.80	2.30		CLAY and CLAY	Interbedded 50:50. CLAY: sandy, light white - grey, medium dense, non-plastic; CLAY: light to medium grey, firm, high plasticity (clay).
					66.20	0.40		SAND	Quartzose, light white - grey, medium dense, non-plastic, fine and medium grained.
					68.20	2.00		CLAY	Light to medium grey, firm, high plasticity (clay), common woody fragments; Bands include: SAND, clayey, quartzose, light white - grey, very soft, non-plastic, common woody fragments.
					70.00	1.80		CLAY	Light to medium grey, firm, high plasticity (clay); Bands include: SAND, clayey, quartzose, light white - grey, very soft, non-plastic, fine and medium grained; Bands include: SAND, quartzose, light grey, medium dense, non-plastic, fine and medium grained.

038

EL2080 LAUNCESTON R0012

893040

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
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					73.60	3.60		CLAY	
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Light to medium grey, firm, high plasticity (clay);
Bands include: CLAY, light to medium brown - grey, firm, high plasticity (clay);

POSSIBLE LIGNEOUS HORIZON BETWEEN

62 AND 65 METRES. SAMPLE RETURN
POOR. RECIRCULATING CUTTINGS IN MUD
DRILLING FLUID

END OF BORE AT 73.60 m

EL2080 LAUNCESTON R0012

039

893041

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

EL2080 LAUNCESTON R0016

040

Easting: 490690.000
Northing: 5407880.000
Grid Type: Australian Mapping Grid
Accuracy: Approximate
Crl: 150.00

Logging Organisation: CSR Exploration and Evaluation Group
Logged By: ELLIS
Drilling Contractor: H.J. Stacpoole
Geophysical Logging: Murdoch Geophysics

Datum: Approximate Level - Not Surveyed

Sheet References:

County:
Parish:
Portion:

Sheet Index:

Total Depth: 64.00

Drilling Commenced: 02/11/81

Drilling Completed: 02/11/81

Inclination:

Azimuth:

Standing Water Level: 0.5

Plug Depths:
Hole Diameter: 150
Core Diameter:
Cased Depths:
Core Barrel:

Available Data: Gamma Logs
Density Logs
Resistivity Logs
Caliper Logs

Drill Bits: Blades

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

893042

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

041

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					0.30	0.30		SAND	Silty, medium to dark brown - grey, medium dense, non-plastic, fine and medium grained; BANDS OF IRON OXIDE CEMENTED SAND
					1.50	1.20		CLAY	Sandy, quartzose, light to medium orange - yellow, firm, low plasticity (clay), fine and medium grained, uniform, gradational base; WITH SOME IRON OXIDE NODULES, GRAVELLY HUMIC FIBROUS WOOD FRAGMENTS
					3.50	2.00		SAND	Clayey, quartzose, light to medium orange - yellow, medium dense, non-plastic, fine and medium grained, uniform.
					5.00	1.50		CLAY	Sandy, light to medium orange - yellow, firm, low plasticity (clay); Bands include: CLAY, silty, mottled orange - yellow, firm, low plasticity (clay); Additional features include: white - grey.
					8.00	3.00		CLAY	Sandy, silty, mottled grey - yellow, low strength, brittle; Additional features include: orange.
					10.70	2.70		CLAY	Silty, mottled yellow - orange, firm, high plasticity (clay); Bands include: CLAY, light to medium grey - brown, gradational base.
					18.90	8.20		CLAY	Light to medium brown - grey, firm, high plasticity (clay); Bands include: SIDERITE, 00.20 m thick, base at 0015.10m, light to medium grey - brown, low strength, brittle; Bands include: SIDERITE, 00.30 m thick, base at 0017.50m, light to medium grey - brown, low strength, brittle.
					24.00	5.10		CLAY	Light to medium grey - brown, firm, high plasticity (clay); Bands include: CLAY, 00.30 m thick, base at 0020.70m, light to medium green - brown, low strength, brittle, iron oxide, secondary, cement.
					26.50	2.50		SAND	Quartzose, clayey, light grey, medium dense, non-plastic, fine and medium grained, uniform, mixed sorting, subrounded, equant, fining upwards, rare woody fragments.

893043

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
					27.70	1.20		CLAY	Sandy, light grey, firm, low plasticity (clay), fine and medium grained.
					29.20	1.50		SAND	Quartzose, clayey, light grey, medium dense, non-plastic, fine and medium grained, rare woody fragments.
					30.60	1.40		CLAY	Light grey - green, firm, high plasticity (clay), rare woody fragments.
					32.00	1.40		SAND	Quartzose, clayey, light grey, medium dense, non-plastic, fine and medium grained, rare woody fragments.
					34.50	2.50		CLAY	Light grey - green, soft, high plasticity (clay), rare woody fragments.
					36.20	1.70		SAND	Quartzose, clayey, light grey, medium dense, non-plastic, rare woody fragments.
					41.30	5.10		CLAY	Light grey - white, firm, high plasticity (clay), occasional woody fragments; Bands include: CLAY, light brown - grey, firm, high plasticity (clay); CHANGED CIRCULATING FLUID AT 38.4M
					42.00	0.70		SIDERITE	Light grey - brown, extremely high strength, tough; Additional features include: green; CHANGED CIRCULATING FLUID AT 42.5M
					47.00	5.00		CLAY	Bentonitic, light green - grey, firm, high plasticity (clay); CLAY IS HIGHLY DISPERSIVE. CHANGED CIRCULATING FLUID AT 46.5M
					49.60	2.60		SILT	Sandy, quartzose, light grey, medium dense, non-plastic, fine grained, common woody fragments; Additional features include: clayey.
					51.90	2.30		CLAY and CLAY	Interbedded 50:50. CLAY: bentonitic, light green - grey, firm, high plasticity (clay); CLAY: silty, light white - grey, soft, high plasticity (clay).

042

893041

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

043

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					52.30	0.40		SILT	Sandy, quartzose, light grey, medium dense, non-plastic, fine grained, abundant woody fragments; Additional features include: clayey.
					54.00	1.70		CLAY	Bentonitic, light green - grey, firm, high plasticity (clay).
					54.50	0.50		SILT	Sandy, quartzose, light grey, medium dense, non-plastic, fine grained, common woody fragments; Additional features include: clayey.
					56.90	2.40		CLAY	Bentonitic, light grey - green, soft, high plasticity (clay); Bands include: CLAY, bentonitic, light to medium green - grey, firm, high plasticity (clay); THIS CLAY IS OF LOW STRENGTH. CRUMBLES READILY Bands include: CLAY, silty, light grey - brown, soft, high plasticity (clay), occasional woody fragments.
					62.00	5.10		CLAY	Bentonitic, light grey - green, soft, high plasticity (clay); Bands include: CLAY, silty, light to medium green - grey, firm, high plasticity (clay); HIGHLY DISPERSIVE LOW STRENGTH CLAYS
					64.00	2.00		CLAY and SAND	Interbedded 50:50. CLAY: bentonitic, light to medium green - grey, soft, high plasticity (clay); SAND: silty, clayey, light grey, medium dense, non-plastic.

END OF BORE AT 64.00 m

EL2080 LAUNCESTON R0016

893045

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

044

EL2080 LAUNCESTON R0018

Easting: 491950.000	Logging Organisation: CSR Exploration and Evaluation Group
Northing: 5407950.000	Logged By: ELLIS
Grid Type: Australian Mapping Grid	Drilling Contractor: H.J. Stacpoole
Accuracy: Approximate	Geophysical Logging: Murdoch Geophysics
Cr1: 150.00	
Datum: Approximate Level - Not Surveyed	
Sheet Reference:	County:
Sheet Index:	Parish:
Total Depth: 80.00	Portions:
Drilling Commenced: 04/11/81	Plug Depths:
Drilling Completed: 04/11/81	Hole Diameter: 150
Inclination:	Core Diameter:
Azimuth:	Cased Depths:
Standing Water Level: 1.2	Core Barrel:
Available Data: Gamma Logs	Drill Bits: Blades
Density Logs	
Resistivity Logs	
Caliper Logs	

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

893046

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK. SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					0.20	0.20		SAND	Silty, medium to dark brown, weathered, medium dense, non-plastic.
					1.00	0.80		CLAY	Gravelly, mottled orange - yellow, firm, high plasticity (clay), abundant iron oxide, secondary, staining; Additional features include: grey.
					2.20	1.20		CLAY	Sandy, mottled orange - yellow, firm, low plasticity (clay), abundant iron oxide, secondary, staining; Additional features include: grey; Bands include: GRAVEL, silty, sandy, light to medium orange - red, medium dense, non-plastic, abundant iron oxide, secondary, staining.
					3.20	1.00		GRAVEL	Clayey, sandy, light to medium orange - red, medium dense, non-plastic, abundant iron oxide, secondary, staining.
					6.00	2.80		CLAY	Gravelly, mottled red - orange, firm, high plasticity (clay), abundant iron oxide, secondary, staining; Additional features include: white - grey.
					9.60	3.60		CLAY	Mottled red - orange, firm, high plasticity (clay); Additional features include: white - grey; WITH A TRACE OF GRAVEL
					10.50	0.90		CLAY	Mottled white - grey, firm, high plasticity (clay).
					10.60	0.10		CLAY	Medium to dark red - purple, stiff, high plasticity (clay), abundant iron oxide, secondary, staining; Additional features include: abundant manganese, secondary, staining.
					22.00	11.40		CLAY	Buff - khaki, fresh, firm, conchoidal fracture, high plasticity (clay); Bands include: CLAY, base at 0011.60m, medium to dark buff - khaki, firm, high plasticity (clay); Bands include: CLAY, medium to dark grey, firm, high plasticity (clay); DUMPED MUD AT 12.8M WITH SOME RED-ORANGE MOTTLING KAOLINITIC CLAY LOW STRENGTH CRUMBLES READILY DUMPED MUD AT 19.2M

045

893047

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
					27.00	5.00		CLAY	Mottled white - grey, stiff, high plasticity (clay); Bands include: CLAY, silty, medium to dark red, stiff, high plasticity (clay), abundant iron oxide, secondary, staining; Bands include: CLAY, silty, medium to dark red, low strength, brittle, abundant iron oxide, secondary, cement; Bands include: CLAY, light grey, firm, high plasticity (clay); CLAYS ARE HIGHLY INTERBANDED FROM 17.0 METRES TO 27.0 METRES CHANGED MUD AT 24.0 AND 26.0 METRES
					31.00	4.00		CLAY	Light grey, soft, high plasticity (clay); Bands include: CLAY, silty, medium to dark red, low strength, brittle; Bands include: CLAY, silty, medium to dark red, stiff, high plasticity (clay); Bands include: CLAY, light grey, firm, high plasticity (clay).
					34.80	3.80		SAND	Silty, quartzose, light grey, medium dense, non-plastic, fine grained, common woody fragments.
					36.00	1.20		CLAY	Silty, light grey, soft, low plasticity (clay); IRON/MANGANESE OXIDE CEMENTED SANDY CLAYEY NOD ULES COMMON POSSIBLY NOT CLAY BUT CLAYEY SAND HARD TO DETERMINE DUE TO EXTRA-THICK MUD DUMPED MUD AT 36.0 METRES
					39.60	3.60		SAND	Silty, quartzose, light to medium brown, medium dense, non-plastic, fine and medium grained; Additional features include: ligneous.
					41.10	1.50		SAND	Silty, quartzose, light to medium brown, medium dense, non-plastic, fine and medium grained; Additional features include: ligneous; Bands include: CLAY, ligneous, silty, medium to dark brown, soft, low plasticity (organic), common woody fragments; Bands include: CLAY, carbonaceous, medium to dark brown - grey, soft, low plasticity (organic), common woody fragments.
					42.30	1.20		CLAY	Carbonaceous, medium to dark brown - grey, soft, low plasticity (organic), common woody fragments.

0430

893048

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					44.50	2.20		LIGNITE	Medium to dark black - brown, firm, friable.
					46.00	1.50		CLAY	
					47.90	1.90		LIGNEOUS CLAY	
					54.50	6.60		CLAY	
					55.40	0.90		INFERIOR LIGNITE	
					55.90	0.50		LIGNEOUS CLAY	
					56.70	0.80		INFERIOR LIGNITE	
					57.55	0.85		CLAY	Carbonaceous.
					61.45	3.90		CLAY	
					63.20	1.75		LIGNEOUS CLAY	
					65.50	2.30		SAND	Ligneous, quartzose, light to medium brown, medium dense, non-plastic, fine and medium grained; HUMIFIED AND FIBEROUS PEATY-WOODY FRAGMENTS POSSIBLY WOODY-SANDY INFERIOR LIGNITE
					66.60	1.10		SAND	Silty, light grey, medium dense, non-plastic.
					70.00	3.40		CLAY	Silty, sandy, light grey - brown, soft, low plasticity (clay), very fine grained; POSSIBLY WITH SAND INTERBEDDED 50/50
					71.50	1.50		SIDERITE	Light grey - brown, low strength, brittle.
					80.00	8.50		SILT	Sandy, light grey, medium dense, non-plastic, very fine grained.

 END OF BORE AT 30.00 m

EL2080 LAUNCESTON R0018

047

893049

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

EL2080 LAUNCESTON R0026

048

Easting: 489610.000	Logging Organisation: CSR Exploration and Evaluation Group
Northing: 5412960.000	Logged By: HINRICHS
Grid Type: Australian Mapping Grid	Drilling Contractor: H.J. Stacpoole
Accuracy: Approximate	Geophysical Logging: Murdoch Geophysics
Cr1: 199.00	
Datum: Approximate Level - Not Surveyed	
Sheet Reference:	County:
Sheet Index:	Parish:
Total Depth: 79.50	Portions:
Drilling Commenced: 13/11/81	Plug Depths:
Drilling Completed: 14/11/81	Hole Diameter: 120
Inclination:	Core Diameter:
Azimuth:	Cased Depths:
Standing Water Level: 7.3	Core Barrels:
Available Data: Gamma Logs	Drill Bits: Blades
Resistivity Logs	Rollers
	Percussion

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

893030

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston.

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMDR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					0.30	0.30		SILT	Clayey, sandy, medium to dark red - brown, decomposed, medium dense, non-plastic; BASALT BOULDERS OCCASIONAL
					0.90	0.60		CLAY	Silty, medium to dark red - brown, decomposed, firm, high plasticity (clay).
					4.50	3.60		BASALT	Medium to dark grey - red, weathered, extremely high strength, tough; CHANGED TO ROLLER BIT AT 1.2M, CHANGED TO 120MM BLADES AT 4.5M
					7.90	3.40		SAND	Gravelly, lithic, light to medium orange - brown, medium dense, non-plastic, fine to coarse grained.
					10.50	2.60		CLAY	Kaolinitic, mottled grey - white, firm, high plasticity (clay); WITH SOME SAND
					11.00	0.50		LIGNEOUS CLAY	Medium to dark brown, firm, high plasticity (organic); Bands include: INFERIOR LIGNITE, clayey, medium to dark black - brown, firm, friable; LOW STRENGTH CLAY
					15.70	4.70		CLAY and LIGNEOUS CLAY	Interbedded 60:40. CLAY: carbonaceous, medium to dark brown - grey, firm, high plasticity (clay); LIGNEOUS CLAY: medium to dark brown, firm, high plasticity (organic).
					17.80	2.10		CLAY	Light to medium grey, firm, high plasticity (clay).

049

EL2080 LAUNCESTON R0026

893051

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC.	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					21.40	3.60		CLAY and INFERIOR LIGNITE and CLAY	Interbedded 40:30:30. CLAY: ligneous, light to medium brown, firm, high plasticity (clay); INFERIOR LIGNITE: clayey, humified, medium to dark brown - black, firm, friable; CLAY: carbonaceous, light to medium brown - grey, firm, high plasticity (clay);
CIRCULATION POOR DUE TO CLAY BALLING									
% OF LITHOLOGIES UNCERTAIN									
					26.00	4.60		LIGNEOUS CLAY	Medium to dark brown, firm, low plasticity (organic); Bands include: CLAY, sandy, light to medium grey, firm, low plasticity (clay).
					34.90	8.80		SAND	Woody textured.
					36.50	1.70		LIGNEOUS CLAY	
					37.10	0.60		INFERIOR LIGNITE	Sandy.
					37.60	0.50		LIGNEOUS CLAY	Bands include: INFERIOR LIGNITE, humified, peaty.
					38.00	0.40		INFERIOR LIGNITE	Humified, sandy, medium to dark brown - black, firm, low plasticity (clay); Additional features include: spongy textured.
					38.50	0.50		CLAY	Sandy, light to medium grey - brown, firm, low plasticity (clay), abundant woody fragments.
					39.50	1.00		CLAY	Carbonaceous, medium to dark black - grey, firm, low plasticity (clay); Bands include: CLAY, light to medium grey, firm, low plasticity (clay).
					44.00	4.50		CLAY	Sandy, woody textured, light to medium grey, firm, low plasticity (clay), rare ligneous wisps.
					44.30	0.30		INFERIOR LIGNITE	Clayey, medium to dark black - brown, firm, low plasticity (organic).
					45.50	1.20		CLAY	Sandy, woody textured, light to medium grey, firm, low plasticity (clay).

0.50

893052

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					45.00	2.50		SAND	Clayey, light to medium grey - orange, loose, non-plastic, rare woody fragments; SAND POSSIBLY DERIVED FROM DOLERITE
					50.20	2.20		CLAY	Carbonaceous, medium to dark grey - black, firm, high plasticity (clay).
					51.00	0.80		CLAY	Sandy, light to medium grey - orange, firm, high plasticity (clay).
					52.00	1.00		SAND	Woody textured, light to medium grey, loose, non-plastic.
					52.30	0.30		SAND	Clayey, light to medium grey - brown, loose, non-plastic, occasional ligneous fragments.
					53.20	0.90		INFERIOR LIGNITE	Sandy, clayey, medium to dark brown, firm, low plasticity (organic).
					55.00	1.80		SAND	Clayey, light to medium brown - grey, loose, non-plastic.
					57.80	2.80		SAND	Woody textured, light to medium grey - brown, loose, non-plastic; SPONGY WOODY FRAGMENTS
					58.00	0.20		CLAY	Carbonaceous, medium to dark black - grey, firm, low plasticity (clay), rare woody fragments.
					58.30	0.80		LIGNEOUS CLAY	Medium to dark brown, firm, low plasticity (clay).
					60.40	1.60		INFERIOR LIGNITE	Clayey, sandy, medium to dark brown, firm, low plasticity (organic).
					60.80	0.40		CLAY	Sandy, woody textured, medium to dark brown - grey, firm, high plasticity (clay); Bands include: CLAY, carbonaceous, sandy, medium to dark black - brown, firm, high plasticity (clay).
					62.00	1.20		CLAY	Sandy, light to medium off white, firm, high plasticity (clay), common woody fragments.
					62.50	0.50		CLAY	Woody textured, ligneous, medium to dark black - brown, firm, low plasticity (organic).

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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
					63.80	1.30		SAND	Ligneous, clayey, medium to dark black - brown, firm, low plasticity (organic).
					65.20	1.40		INFERIOR LIGNITE	Sandy, clayey, medium to dark brown, firm, low plasticity (organic).
					66.00	0.80		INFERIOR LIGNITE	Peaty, sandy, medium to dark brown, firm, low plasticity (organic).
					66.50	0.50		CLAY	Ligneous, medium to dark brown, firm, low plasticity (clay).
					66.80	0.30		CLAY	Light to medium grey, firm, low plasticity (clay), common woody fragments.
					67.20	0.40		CLAY	Carbonaceous, medium to dark black - grey, firm, high plasticity (clay).
					68.30	1.10		INFERIOR LIGNITE	Sandy, spongy textured, medium to dark brown - black, firm, low plasticity (organic).
					69.00	0.70		CLAY	Sandy, woody textured, light to medium brown - grey, firm, low plasticity (clay).
					70.00	1.00		CLAY	Ligneous, medium to dark brown, firm, low plasticity (organic).
					70.40	0.40		INFERIOR LIGNITE	Sandy, spongy textured, medium to dark black - brown, firm, low plasticity (organic).
					71.00	0.60		CLAY	Sandy, medium to dark brown - grey, firm, high plasticity (clay).
					71.50	0.50		INFERIOR LIGNITE	Sandy, clayey, medium to dark brown - black, firm, low plasticity (organic).
					72.00	0.50		LIGNITE	Woody textured, sandy, medium to dark black - brown, firm, low plasticity (organic); Additional features include: spongy textured.
					73.00	1.00		SAND	Ligneous, light to medium grey - brown, medium dense, non-plastic.
					73.80	0.80		SAND	Woody textured, light to medium grey - brown, medium dense, non-plastic.

052

890054

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					76.00	2.20		SAND	Clayey, woody textured, light to medium grey - brown, medium dense, non-plastic.
					77.50	1.50		CLAY	Ligneous, medium to dark brown, firm, low plasticity (organic).
					79.50	2.00		CLAY	Woody textured, sandy, medium to dark brown, firm, high plasticity (clay).

 END OF BORE AT 79.50 m

EL2080 LAUNCESTON ROD26

0353

893053

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

EL2080 LAUNCESTON R0039

05A

Eastings: 496100.000	Logging Organisation: AAR Limited
Northing: 5408400.000	Logged By: HOLZOSB
Grid Type: Australian Mapping Grid	Drilling Contractor: Exploration Drilling, WA Pty. Ltd.
Accuracy: Approximate	Geophysical Logging: AAR Limited
Crl: 175.00	
Datum: Australian Height Datum	
Sheet Reference:	County:
Sheet Index:	Parish:
Total Depth: 33.00	Portion:
Drilling Commenced: 10/04/81	
Drilling Completed: 10/04/81	
Inclination: 90	Plug Depths:
Azimuth:	Hole Diameter: 125
Standing Water Level:	Core Diameter:
	Cased Depths: 2.0
	Core Barrel:
Available Data: Gamma Logs	
Self Potential Logs	
Resistivity Logs	Drill Bits: Blades

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

893036

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAP NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
TE					2.00	2.00		SOIL	Clayey, light to medium brown.
TE					9.00	7.00		SILT and CLAY	SILT: sandy, light to medium brown, soft; CLAY: light to medium blue - grey, soft, plasticity (un- differentiated), iron oxide, secondary, staining.
TE					12.00	3.00		SANDSTONE	Light to medium brown, loose, non-plastic, medium and coarse grained, poorly sorted; SLIGHTLY GRAVELLY
TE					14.00	2.00		SILT	Sandy, light to medium brown, soft.
TE					18.00	4.00		LIGNITE	Clayey, medium to dark brown, soft.
TE					28.50	10.50		CLAY and LIGNITE	Interbedded 90:10. CLAY: siliceous, medium to dark brown - grey, soft, common carbonaceous remains; LIGNITE: dark brown - black.
TE					29.00	0.50		SIDERITE	Light to medium brown, high strength.
TE					34.00	5.00		CLAY and LIGNITE	Interbedded 85:15. CLAY: siliceous, medium to dark brown - grey, soft, common carbonaceous remains; LIGNITE: dark brown - black.
					37.00	3.00		LIGNITE and CLAY	Interbedded 09:91. LIGNITE: dark brown - black; CLAY: medium to dark brown, soft.
PM					38.00	1.00		SILTSTONE	Carbonaceous, dark black, high strength; LIGHT CREAM COLOR BANDS, PERMAIN BASEMENT
									AAR BOREHOLE 22 IS NOW NUMBERED R0039

END OF BORE AT 38.00 m

EL2080 LAUNCESTON R0039

055

893057

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

EL2080 LAUNCESTON R0065

058

Eastings: 487750.000	Logging Organisation: CSR Exploration and Evaluation Group
Northings: 5412990.000	Logged By: ELLIS
Grid Type: Australian Mapping Grid	Drilling Contractor: Deadline Drilling
Accuracy: Approximate	Geophysical Logging: Century Geophysical Corp.
Ctrl: 175.00	
Datum: Approximate Level - Not Surveyed	
Sheet Reference:	County:
Sheet Index:	Parish:
Total Depth: 90.00	Portion:
Drilling Commenced: 24/03/81	Plug Depths:
Drilling Completed: 25/03/81	Hole Diameter: 120
Inclination:	Core Diameter:
Azimuth:	Cased Depths:
Standing Water Level:	Core Barrel:
Available Data: Gamma Logs	Drill Bits: Blades
Neutron Logs	
Density Logs	
Self Potential Logs	
Resistivity Logs	
Caliper Logs	

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

893065

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					2.00	2.00		SILT	Sandy, clayey, medium to dark brown, decomposed, medium dense, non-plastic.
					2.50	0.50		CLAY	Silty, medium to dark red, moderately weathered, firm, low plasticity (clay), abundant iron oxide, secondary, staining.
					4.50	2.00		CLAY	Silty, mottled red - grey, highly weathered, firm, low plasticity (clay), abundant iron oxide, secondary, staining.
					6.00	1.50		CLAY	Kaolinitic, mottled grey - blue, firm, high plasticity (clay); Additional features include: yellow - pink; DRILL 0-5M ON AIR SET STAND PIPE
					7.50	1.50		CLAY	Kaolinitic, light grey - white, stiff, high plasticity (clay); SOME DARK YELLOW MOTTLING
					10.00	2.50		CLAY	Kaolinitic, light grey - white, stiff, high plasticity (clay); SOME PP MOTTLING
					10.50	0.50		CLAY	Silty, gravelly, light to medium yellow - buff, firm, low plasticity (clay); BASALT GRAVEL
					13.00	2.50		CLAY	Kaolinitic, light grey - white, firm, high plasticity (clay).
					14.00	1.00		CLAY	Light to medium brown - grey, firm, high plasticity (clay), common ligneous fragments.
					14.50	0.50		CLAY	Light grey - white, firm, high plasticity (clay).
					15.00	0.50		CLAY	Mottled brown - grey, firm, high plasticity (clay).
					18.40	3.40		CLAY	Light to medium grey, firm, high plasticity (clay).
					18.80	0.40		LIGNEOUS CLAY	Dark brown - black, firm, low plasticity (organic); LIGNITIED. WOODY FRAGMENTS COMMON
					22.10	3.30		CLAY	Light to medium grey, firm, high plasticity (clay).
					24.00	1.90		CLAY	Light to medium grey - blue, firm, high plasticity (clay);

TRIPPED OUT AT 24M 24/3/82

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WDK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					31.20	7.20		CLAY	Silty, sandy, light to medium grey, firm, low plasticity (clay); Bands include.
					31.70	0.50		INFERIOR LIGNITE	Dark brown, firm, friable, fibrous.
					32.80	1.10		CLAY	Ligneous, medium to dark brown, firm, low plasticity (organic).
					33.20	0.40		INFERIOR LIGNITE and CLAY	Interbedded 50:50. INFERIOR LIGNITE: clayey, medium to dark grey - brown, firm, low plasticity (organic); CLAY: micaceous, light to medium brown, firm, high plasticity (clay).
					34.20	1.00		CLAY	Silty, light to medium brown, soft, high plasticity (clay).
					35.80	1.60		INFERIOR LIGNITE and CLAY	Interbedded 70:30. INFERIOR LIGNITE: medium to dark brown - black, firm, low plasticity (organic); CLAY: light to medium grey - brown.
					36.30	0.50		CLAY and CLAY	Interbedded 50:50. CLAY: light brown, firm, high plasticity (clay); CLAY: light to medium grey - green, stiff, high plasticity (clay).
					36.50	0.20		INFERIOR LIGNITE	
					36.90	0.40		CLAY	
					37.60	0.70		INFERIOR LIGNITE	Clayey, medium to dark brown - black, soft, high plasticity (clay), common woody fragments; Bands include: CLAY, base at 0036.80m, dark brown, firm, friable.
					37.70	0.10		CLAY	Light to medium brown - grey, firm, high plasticity (clay); Bands include: CLAY, light to medium brown, firm, high plasticity (clay).
					38.56	0.86		LIGNEOUS CLAY	Ligneous, humified, dark brown - black, soft, low plasticity (organic); Bands include: INFERIOR LIGNITE, clayey, woody textured, dark brown - black, firm, friable.
					41.50	2.94		CLAY	Silty, light to medium grey - green, firm, high plasticity (clay); WITH SOME SAND MEDIUM

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					42.50	1.00		CLAY	Light to medium grey - green, firm, high plasticity (clay); Bands include: CLAY, light to medium brown - grey, firm, high plasticity (clay), occasional woody fragments.
					43.50	1.00		CLAY	Ligneous, light to medium brown, soft, low plasticity (organic).
					44.30	0.80		INFERIOR LIGNITE	Clayey, woody textured, dark brown - black, firm, friable.
					45.30	1.00		CLAY	Light to medium brown - grey, stiff, high plasticity (clay), occasional woody fragments.
					47.00	1.70		CLAY	Kaolinitic, light grey - brown, firm, high plasticity (clay), occasional woody fragments.
					47.50	0.50		CLAY	Ligneous, humified, medium to dark brown, firm, low plasticity (organic); Bands include: INFERIOR LIGNITE, clayey, medium to dark brown - black, firm, friable, subfissile.
					49.00	1.50		CLAY	Light grey - brown, firm, high plasticity (clay), occasional woody fragments.
					51.65	2.65		CLAY	Medium to dark grey, firm, high plasticity (clay), occasional woody fragments.
					52.40	0.75		CLAY	Ligneous, medium to dark brown, firm, high plasticity (clay).
					53.20	0.80		CLAY	Light grey - brown, firm, high plasticity (clay).
					53.60	0.40		CLAY	Ligneous, humified, medium to dark brown, firm, high plasticity (clay), common ligneous fragments.
					54.10	0.50		CLAY	Light to medium brown - grey, firm, high plasticity (clay); Bands include: INFERIOR LIGNITE, base at 0054.90m, medium to dark brown - black, firm, low plasticity (organic).
					56.40	2.30		LIGNEOUS CLAY	Woody textured, dark brown - black, firm, friable, subfissile.
					56.80	0.40		INFERIOR LIGNITE	Clayey, medium to dark brown - black, firm, low plasticity (organic).
					57.60	0.80		LIGNEOUS CLAY	Medium to dark grey, firm, high plasticity (clay), occasional ligneous fragments.

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080

TENEMENT 2080

Launceston

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					58.20	0.60		CLAY	Light to medium grey, firm, high plasticity (clay).
					58.40	0.20		INFERIOR LIGNITE	Clayey, medium to dark brown - black, firm, low plasticity (organic).
					58.80	0.40		CLAY	Light to medium grey - brown, firm, high plasticity (clay).
					59.40	0.60		INFERIOR LIGNITE and CLAY	Interbedded 40:60. INFERIOR LIGNITE: clayey, medium to dark brown - black, soft, low plasticity (organic); CLAY: light to medium brown - grey, firm, high plasticity (clay).
					63.50	4.10		CLAY	Light to medium grey - green, firm, high plasticity (clay); Bands include: CLAY, light to medium brown, firm, high plasticity (clay).
					64.00	0.50		CLAY	Medium to dark brown - grey, firm, high plasticity (clay), common ligneous wisps.
					69.00	5.00		CLAY	Light to medium grey - green, firm, high plasticity (clay), gradational base; Bands include: CLAY, light to medium brown - grey, firm, high plasticity (clay), occasional ligneous wisps.
					70.00	1.00		CLAY and CLAY	Interbedded 70:30. CLAY: light to medium brown, firm, high plasticity (clay); CLAY: light to medium grey - green, firm, high plasticity (clay); Bands include: INFERIOR LIGNITE, clayey, humified, dark brown - black, firm, low plasticity (organic).
					71.20	1.20		CLAY	Light to medium grey - brown, firm, high plasticity (clay).
					71.60	0.40		INFERIOR LIGNITE	Clayey, woody textured, medium to dark brown - black, firm, low plasticity (organic).
					72.40	0.80		CLAY	Light to medium brown - grey, firm, high plasticity (clay).
					72.60	0.20		INFERIOR LIGNITE	Clayey, woody textured, dark brown - grey, firm, low plasticity (organic), subfissile.
					74.00	1.40		CLAY	Light to medium brown - grey, firm, high plasticity (clay), common ligneous wisps.

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					74.40	0.40		INFERIOR LIGNITE	Medium to dark brown - black, firm, high plasticity (clay); Bands include: CLAY, bentonitic, light to medium green, firm, friable.
					77.60	3.20		CLAY	Light to medium brown - grey, firm, high plasticity (clay), common woody fragments; Bands include: INFERIOR LIGNITE, clayey, dark brown, firm, friable.
					78.40	0.80		INFERIOR LIGNITE and CLAY and LIGNEOUS CLAY	Interbedded 60:30:10. INFERIOR LIGNITE: clayey, woody textured, dark brown, firm, friable, gradational base; CLAY: light to medium brown, firm, high plasticity (clay); LIGNEOUS CLAY: dark brown, firm, low plasticity (organic).
					79.00	0.60		CLAY	Light to medium grey, firm, high plasticity (clay).
					80.30	1.30		CLAY and CLAY and INFERIOR LIGNITE	Interbedded 70:20:10. CLAY: ligneous, medium to dark brown, firm, low plasticity (organic); CLAY: light to medium brown, firm, high plasticity (clay); INFERIOR LIGNITE: clayey, woody textured, dark brown - black, firm, friable.
					32.70	2.40		CLAY and CLAY	Interbedded 60:40. CLAY: carbonaceous, ligneous, medium to dark brown, firm, high plasticity (clay), common woody fragments; CLAY: light to medium grey; Bands include: SOME SILTY AND SANDY BANDS
					88.00	5.30		CLAY	Light brown - grey, stiff, high plasticity (clay), common woody fragments; Bands include: CLAY, mottled brown - grey, firm, high plasticity (clay), common ligneous wisps.
					90.00	2.00		SAND	Silty, ligneous, light to medium brown, stiff, friable; Bands include: CLAY, carbonaceous, light to medium grey, stiff, high plasticity (clay), abundant woody fragments; WOOD FRAGMENTS NOT HUMIFIED. LOW STRENGTH BRITTLE

END OF BORE AT 90.00 m

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

END OF GEOLOGICAL LOG REPORT

062

893064

REPORT TC14-01
LAUNCESTON

CSR COAL DIVISION
GEOLOGICAL LOG REPORT

PAGE 1 RUN AT 10:21:39 7/ 8
ATP EL2080 TENEMENT 2080
Launceston

EL2080 LAUNCESTON R0088

Eastings: 489640.000
Northings: 5412500.000
Grid Type: Australian Mappins Grid
Accuracy: Approximate
Crl: 205.00
Datum: Approximate Level - Not Surveyed
Sheet Reference:
Sheet Index:
Total Depth: 6.00
Drillings Commenced: 15/04/81
Drillings Completed: 16/04/81
Inclination:
Azimuth:
Standings Water Level:

Logging Organisation: CSR Exploration and Evaluation Group
Logged By: ELLIS
Drillings Contractor: Headline Drillings
Geophysical Logging:

County:
Parish:
Portion:

Plus Depths:
Hole Diameter:
Core Diameter: 120
Cased Depths:
Core Barrel:

Available Data:

Drill Bits: Blades
Tungsten Carbide

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

EL2080 LAUNCESTON R0088

063

893065

064

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	Z REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					1.50	1.50		CLAY	Silt, medium to dark red - orange, fine, low plasticity (clay); DECOMPOSED BASALT, CONTAINS BASALT BOULDERS AND COBBLES
					2.00	0.50		SOIL	Sandy, silt, medium to dark yellow; CHANGED TO DOWN THE HOLE HAMMER
					3.00	1.00		BASALT	Medium to dark grey - black, extremely high strength, tough; CHANGED TO ROCK BIT
					4.80	1.80		SAND	Clayey, dark brown, low strength, brittle; Bands include: BASALT, clayey, dark brown, highly weathered, low strength, brittle, iron oxide, secondary, staining; POSSIBLY TUFFACEOUS, MAY BE WEATHERED BASALT
					5.50	0.70		BASALT	Dark grey - brown, weathered, low strength, brittle.
					6.00	0.50		BASALT	Dark grey - black, high strength, brittle; Bands include: BASALT, dark brown - red, weathered, low strength, brittle, iron oxide, secondary, staining; BASALT JOINTED, FRACTURED, WEATHERED ALONG JOINTS, FRACTURE PLAINS. HOLE COLLAPSING FROM 4.8M MIX QUIKCEL TO TRY AND STABILIZE HOLE AS BASALT BEHAVING LIKE A GRAVEL. REAM BASALT FRAGMENTS WITH ROCK ROLLER TO TRY AND GRIND FRAGMENTS TO POWDER CHANGE TO HAMMER AT 6M. FOAM ADDED TO LIFT FRAGMENTS HOLE ABANDONED WHEN PISTON OF HAMMER SHATTERED.

END OF BORE AT 6.00 m

REPORT TC14-01
LAUNCESTON

CSR COAL DIVISION
GEOLOGICAL LOG REPORT

PAGE 1 RUN AT 10:17:01 7/ 8
ATP EL2080 TENEHENT 2080
Launceston

EL2080 LAUNCESTON R0083

Eastings: 489800.000
Northings: 5408700.000
Grid Type: Australian Mapping Grid
Accuracy: Approximate
Crl: 165.00
Datum: Approximate Level - Not Surveyed
Sheet Reference:
Sheet Index:
Total Depth: 84.00
Drillings Commenced: 13/04/82
Drillings Completed: 13/04/82
Inclination:
Azimuth:
Standing Water Level:

Logging Organisation: CSR Exploration and Evaluation Group
Logged By: ELLIS
Drillings Contractor: Deadline Drillings
Geophysical Logging: Century Geophysical Corp.

County:
Parish:
Portion:

Plug Depths:
Hole Diameter: 120
Core Diameter:
Cased Depths:
Core Barrel:

Available Data: Gamma Loss
Neutron Loss
Density Loss
Self Potential Loss
Resistivity Loss
Caliper Loss

Drill Bits: Blades
Tungsten Carbide

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

EL2080 LAUNCESTON R0083

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LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
QA					1.00	1.00		SOIL	Gravelly, medium to dark grey, decomposed, medium dense, non-plastic; CONTAINS GUBA FRAGS
QA					3.00	2.00		CLAY	Mottled grey - green, decomposed, firm, high plasticity (clay), medium grained; POSSIBLY WEATHERED DOLERITE, RELICT MEDIUM GRAINED TEXTURE
QA					3.20	0.20		CLAY	Medium to dark green - yellow, decomposed; SANDY TEXTURE, WEATHERED DOLERITE
QA					4.50	1.30		DOLERITE	Interbedded 50:50; clayey, medium to dark brown - orange, highly weathered, low strength, brittle; Bands include: DOLERITE, clayey, medium to dark green - white, highly weathered, low strength, brittle; DECOMPOSED DOLERITE TALUS, OR CLAY DETRITUS DERIVED FROM DOLERITE.
TE					5.50	1.00		CLAY	Silty, kaolinitic, light white - off white, firm, high plasticity (clay).
					6.20	0.70		CLAY	Silty, kaolinitic, mottled off white - white, firm, high plasticity (clay); Bands include: yellow - brown.
					11.50	5.30		CLAY	Silty, mottled yellow - off white, stiff, high plasticity (clay); SOME FERRICRETE NODULES, WEATHERING SURFACE?
					12.20	0.70		SIDERITE and IRONSTONE - UN- DIFFERENTIATED	Interbedded 20:80. SIDERITE: light grey, low strength, brittle; IRONSTONE - UN- DIFFERENTIATED: dark brown - purple, low strength, brittle; Additional features include: yellow.
					12.80	0.60		CLAY	Silty, mottled yellow - off white, firm, high plasticity (clay).
					13.00	0.20		IRONSTONE - UN- DIFFERENTIATED	Dark brown - purple, high strength, brittle; Additional features include: yellow; FERRICRETE

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	Z REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					16.30	3.30		CLAY	Silty, light to medium grey - brown, stiff, high plasticity (clay); Additional features include: purple.
					16.40	0.10		CLAY	Light to medium brown, firm, high plasticity (clay).
					17.00	0.60		INFERIOR LIGNITE	Clayey, woody textured, dark black - brown, firm, friable, subfissile.
					17.40	0.40		LIGNEOUS CLAY	Dark brown, firm, low plasticity (organic), occasional ligneous wisps.
					17.60	0.20		CLAY	Light to medium brown - grey, stiff, high plasticity (clay).
					17.70	0.10		CLAY	Medium to dark brown, firm, high plasticity (clay).
					18.20	0.50		INFERIOR LIGNITE	Clayey, gelatinous, dark brown, soft, low plasticity (organic).
					18.80	0.60		CLAY	Ligneous, medium to dark brown, firm, high plasticity (clay).
					19.25	0.45		INFERIOR LIGNITE	Clayey, gelatinous, dark brown - black, firm, friable, subfissile, occasional resin aggregates; Additional features include: woody textured.
					20.00	0.75		CLAY	Light to medium brown, firm, high plasticity (clay), common woody fragments.
					20.50	0.50		INFERIOR LIGNITE	Clayey, gelatinous, dark brown - black, firm, friable, fibrous.
					21.10	0.60		CLAY	Dark brown, firm, high plasticity (clay).
					21.80	0.70		INFERIOR LIGNITE	Clayey, gelatinous, dark brown - black, firm, friable.
					22.90	1.10		CLAY	Medium to dark brown - grey, firm, high plasticity (clay), common woody fragments.
					24.70	1.80		LIGNITE	Clayey, woody textured, dark brown - black, firm, friable, fibrous.
					25.40	0.70		CLAY	Medium to dark brown - grey, firm, high plasticity (clay).
					26.00	0.60		INFERIOR LIGNITE	Clayey, woody textured, dark brown - black, firm, friable.

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					26.50	0.50		CLAY	Medium to dark brown; firm; high plasticity (clay); common woody fragments.
					27.50	1.00		CLAY	Light to medium brown - grey; firm; high plasticity (clay); occasional woody fragments.
					31.60	4.10		CLAY	Silty; kaolinitic; light to medium grey - brown; firm; high plasticity (clay); occasional woody fragments.
					31.90	0.30		SIDERITE	Light grey - brown; high strength; brittle.
					33.30	1.40		CLAY	Silty; light to medium grey; firm; high plasticity (clay).
					33.50	0.20		SIDERITE	Light brown - grey; high strength; brittle.
					37.50	4.00		CLAY	Sandy; kaolinitic; light grey; firm; high plasticity (clay); fine grained.
					37.60	0.10		SIDERITE	Light brown - grey; low strength; brittle.
					38.70	1.10		CLAY	Silty; light to medium grey; firm; high plasticity (clay); rare woody fragments.
					38.90	0.20		SIDERITE	Light brown - grey; high strength; brittle.
					40.50	1.60		CLAY	Silty; light to medium grey - brown; firm; high plasticity (clay).
					40.80	0.30		CLAY	Medium to dark brown - grey; firm; high plasticity (clay).
					41.70	0.90		INFERIOR LIGNITE	Woody textured; dark brown - black; low strength; brittle; fibrous.
					43.50	1.80		CLAY	Medium to dark brown; firm; high plasticity (clay); Bands include: LIGNEOUS CLAY; dark brown - black.
					44.80	1.30		INFERIOR LIGNITE	Clayey; dark brown - black; low strength; friable; Bands include: CLAY; base at 0043.90m; medium to dark brown; firm; high plasticity (clay).
					45.90	1.10		CLAY	Silty; light to medium brown - grey; firm; high plasticity (clay).
					46.80	0.90		INFERIOR LIGNITE	Woody textured; clayey; dark brown - black; firm; low plasticity (organic).

LAUNCESTON

GEOLOGICAL LOG REPORT

ATP EL2080
Launceston

TENEMENT 2080

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					47.20	0.40		CLAY	Lisneous, medium to dark brown - black, stiff, high plasticity (clay).
					47.60	0.40		INFERIOR LIGNITE	Clayey, woody textured, dark brown - black, firm, friable.
					48.40	0.80		CLAY	Lisneous, light to medium brown - grey, stiff, high plasticity (clay).
					51.00	2.60		INFERIOR LIGNITE and CLAY	Interbedded 60:40. INFERIOR LIGNITE: clayey, woody textured, dark brown - black, firm, friable; CLAY: medium to dark brown, stiff, high plasticity (clay), abundant lisneous wisps.
					52.50	1.50		CLAY	Medium to dark brown, firm, high plasticity (clay), common lisneous wisps.
					54.00	1.50		CLAY	Light to medium grey, firm, high plasticity (clay), occasional woody fragments.
					58.50	4.50		CLAY	Light grey - off white, firm, high plasticity (clay), occasional lisneous wisps.
					59.00	0.50		SAND	Woody textured, light to medium grey, medium dense, non-plastic.
					60.00	1.00		CLAY	Woody textured, light to medium grey, firm, high plasticity (clay).
					60.50	0.50		CLAY	Woody textured, light to medium brown, firm, high plasticity (clay).
					62.40	1.90		CLAY	Sandy, light to medium grey, firm, high plasticity (clay), fine and medium grained.
					63.60	1.20		INFERIOR LIGNITE	Woody textured, dark brown - black, firm, friable.
					66.00	2.40		CLAY	Light to medium grey, stiff, high plasticity (clay), occasional lisneous wisps; WITH KAOLIN NOBULES Bands include: SIDERITE, light to medium yellow - brown, low strength, brittle.
					69.00	3.00		CLAY	Light to medium grey, firm, high plasticity (clay); DISPERSIVE Bands include: SIDERITE, light to medium yellow, low strength, brittle.

089

893071

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ATP EL2080 TENEMENT 2080
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STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	Z REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					74.00	5.00		CLAY	Light to medium grey, firm, high plasticity (clay); DISPERSIVE CIRC FLUID 72M, CLEAN MUD PIT
					75.50	1.50		CLAY	Medium to dark buff - brown, firm, high plasticity (clay).
					82.50	7.00		CLAY	Mottled grey - buff, firm, high plasticity (clay).
					82.70	0.20		SIDERITE	High strength, brittle.
					84.00	1.30		CLAY	Mottled grey - buff, firm, high plasticity (clay).

END OF BORE AT 84.00 m

EL2080 LAUNCESTON R0083

070

893072

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LAUNCESTON

CSR COAL DIVISION
GEOLOGICAL LOG REPORT

PAGE 1 RUN AT 14:39:08 7/ 8

ATP EL2080 TENEMENT 2080
Launceston

071

EL2080 LAUNCESTON R0089

Eastings: 495550.000
Northing: 5409700.000
Grid Type: Australian Mappings Grid
Accuracy: Approximate
CrI: 165.00
Datum: Approximate Level - Not Surveyed
Sheet Reference:
Sheet Index:
Total Depth: 108.00
Drilling Commenced: 17/04/82
Drillings Completed: 18/04/82
Inclination:
Azimuth:
Standing Water Level:

Logging Organisation: CSR Exploration and Evaluation Group
Logged By: ELLIS
Drilling Contractor: Deadline Drillings
Geophysical Logging: Century Geophysical Corp.

County:
Parish:
Portion:

Plus Depths:
Hole Diameter: 120
Core Diameter:
Cased Depths:
Core Barrel:

Available Data: Gamma Loss
Neutron Loss
Density Loss
Self Potential Loss
Resistivity Loss
Caliper Loss

Drill Bits: Blades
Tungsten Carbide

ALL ROCKS ARE FRESH UNLESS OTHERWISE INDICATED

EL2080 LAUNCESTON R0089

893073

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	Z REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					0.10	0.10		SOIL	Humified, silty, medium to dark brown, very dense, non-plastic.
					1.00	0.90		CLAY	Silty, mottled off white - cream, firm, high plasticity (clay).
					1.80	0.80		CLAY	Light white - off white, firm, high plasticity (clay).
					2.00	0.20		CLAY	Silty, sandy, mottled yellow - orange, firm, low plasticity (clay); very coarse grained; Additional features include: off white.
					2.50	0.50		CLAY	Mottled white - off white, firm, high plasticity (clay).
					4.70	2.20		CLAY	Silty, mottled yellow - orange, firm, high plasticity (clay); Additional features include: off white.
					5.10	0.40		CLAY	Silty, mottled off white - yellow, firm, high plasticity (clay).
					5.40	0.30		IRONSTONE - UN-DIFFERENTIATED	Medium to dark red - purple, low strength, brittle.
					6.00	0.60		LIGNEOUS CLAY	Silty, mottled yellow - off white, firm, high plasticity (clay); Polyaxial sortins.
					6.40	0.40		LIGNEOUS CLAY	Medium to dark purple - brown, firm, high plasticity (clay).
					7.00	0.60		CLAY	Mottled grey - purple, firm, high plasticity (clay).
					7.80	0.80		LIGNEOUS CLAY	Mottled grey - buff, firm, high plasticity (clay); Additional features include: yellow.
					8.40	0.60		CLAY	Light to medium brown, firm, high plasticity (clay).
					8.70	0.30		CLAY	Ligneous, medium to dark brown, firm, high plasticity (clay).
					9.50	0.80		CLAY	Light to medium brown - grey, firm, high plasticity (clay).
					10.20	0.70		CLAY	Medium to dark brown, firm, high plasticity (clay).
					10.30	0.10		CLAY	Light to medium grey - brown, firm, high plasticity (clay).

072

893074

LAUNCESTON

GEOLOGICAL LOG REPORT

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STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	Z REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					10.60	0.30		CLAY	Light to medium brown; firm; high plasticity (clay).
					11.20	0.60		LIGNEOUS CLAY	Dark brown; firm; high plasticity (organic).
					18.70	7.50		CLAY	Silty, light to medium grey; firm; high plasticity (clay); fining upwards.
					22.00	3.30		CLAY	Light to medium grey; firm; high plasticity (clay); occasional siderite; secondary; nodules.
					23.70	1.70		CLAY	Light to medium grey - brown; firm; high plasticity (clay); occasional woody fragments.
					25.60	1.90		CLAY	Medium to dark brown - grey; firm; high plasticity (clay); common woody fragments.
					26.70	1.10		CLAY	Light to medium grey; firm; high plasticity (clay).
					26.90	0.20		LIGNEOUS CLAY	Medium to dark brown - black; firm; high plasticity (clay).
					27.50	0.60		CLAY	Light to medium grey - brown; firm; high plasticity (clay); Bands include: CLAY; medium to dark grey - brown; firm; high plasticity (clay).
					28.50	1.00		CLAY	Medium to dark brown - grey; firm; high plasticity (clay).
					29.40	0.90		LIGNEOUS CLAY	Dark brown - black; firm; high plasticity (organic); Bands include: INFERIOR LIGNITE; clayey; dark brown - black; firm; low plasticity (organic).
					30.50	1.10		INFERIOR LIGNITE	Clayey; dark brown - black; firm; low plasticity (organic).
					32.00	1.50		CLAY	Light to medium grey - brown; firm; high plasticity (clay).

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STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	Z REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					32.50	0.50		INFERIOR LIGNITE	Clayey, dark brown - black, firm, low plasticity (organic).
					34.00	1.50		CLAY	Medium to dark brown - grey, firm, high plasticity (clay).
					34.45	0.45		INFERIOR LIGNITE	Dark brown - black, firm, high plasticity (organic).
					34.60	0.15		LIGNEOUS CLAY	Medium to dark brown - grey, firm, high plasticity (clay).
					35.00	0.40		LIGNITE	Dark brown - black, firm, low plasticity (organic).
					35.90	0.90		INFERIOR LIGNITE	Dark brown - black, firm, high plasticity (organic).
					37.20	1.30		CLAY	Light to medium brown - grey, firm, high plasticity (clay).
					38.40	1.20		LIGNITE	Dark black - brown, firm, friable.
					38.60	0.20		INFERIOR LIGNITE	Medium to dark brown, firm, low plasticity (organic).
					39.20	0.60		LIGNITE	Dark brown - black, firm.
					39.60	0.40		INFERIOR LIGNITE	Dark black - brown, firm, low plasticity (organic).
					41.00	1.40		CLAY	Light to medium brown - grey, firm, high plasticity (clay).
					42.60	1.60		CLAY	Silty, sandy, light to medium brown - grey, firm, high plasticity (clay); rare siderite, secondary, nodules.

04A

893076

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Launceston

075

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	Z REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					44.00	1.40		CLAY	Medium to dark brown - grey, firm, high plasticity (clay).
					44.40	0.40		INFERIOR LIGNITE	Clayey, woody textured, dark brown - black, firm, low plasticity (organic).
					44.80	0.40		CLAY	Light to medium brown, firm, high plasticity (clay).
					46.00	1.20		LIGNEOUS CLAY	Dark brown, firm, high plasticity (organic).
					46.70	0.70		CLAY	Light to medium brown, firm, high plasticity (clay).
					47.60	0.90		CLAY and CLAY	Interbedded 60:40. CLAY: medium to dark brown, firm, high plasticity (clay); CLAY: lithic, light to medium brown, firm, high plasticity (clay).
					48.40	0.80		INFERIOR LIGNITE	Clayey, dark brown - black, firm, low plasticity (organic).
					50.00	1.60		CLAY and LIGNEOUS CLAY	Interbedded 50:50. CLAY: medium to dark brown, firm, high plasticity (clay); LIGNEOUS CLAY: dark black - brown, firm, high plasticity (organic).
					51.00	1.00		CLAY	Light to medium brown - grey, firm, high plasticity (clay).
					55.00	4.00		CLAY	Light to medium grey - brown.
					55.40	0.40		INFERIOR LIGNITE	Clayey, woody textured, dark brown - black, firm, low plasticity (organic).
					55.60	0.20		CLAY	
					56.80	1.20		INFERIOR LIGNITE	Clayey, dark brown - black, firm, low plasticity (organic).

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STRA NAME	SEG NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	X REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					58.00	1.20		CLAY	Light to medium brown - grey, firm, high plasticity (claw).
					59.20	1.20		LIGNEOUS CLAY and INFERIOR LIGNITE	Interbedded 80:20. LIGNEOUS CLAY: dark brown - black, firm, low plasticity (organic); INFERIOR LIGNITE: clayey, dark brown - black, firm, low plasticity (organic).
					59.80	0.60		CLAY	Medium to dark brown - grey, firm, high plasticity (claw), common woody fragments.
					60.80	1.00		INFERIOR LIGNITE	Dark brown - black, firm, low plasticity (organic).
					64.60	3.80		LIGNEOUS CLAY	Dark brown - black, firm, low plasticity (organic).
					65.20	0.60		CLAY	
					65.70	0.50		INFERIOR LIGNITE	
					66.20	0.50		CLAY	
					67.60	1.40		INFERIOR LIGNITE	Clayey, dark brown - black, firm, low plasticity (organic).
					70.60	3.00		CLAY	Medium to dark brown, firm, high plasticity (claw).
					71.60	1.00		CLAY	Silty, sandy, light to medium grey - brown, firm, high plasticity (claw), fine grained; SAND IN LENSES, & PODS, BIOTURBETIN ?
					72.00	0.40		SIDERITE	Silty, light to medium brown, high strength, brittle.

0719

893075

077

STRA NAME	SEQ NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					73.00	1.00		CLAY	Sandy, silty, light to medium grey - brown, firm, high plasticity (clay), fine grained.
					75.00	2.00		SAND	Clayey, quartzose, light to medium grey - brown, medium dense, non-plastic.
					77.00	2.00		CLAY	Silty, light to medium grey - brown, firm, high plasticity (clay).
					80.00	3.00		SAND	Clayey, quartzose, light to medium grey - brown, medium dense, non-plastic, occasional siderite, secondary, nodules.
					84.40	4.40		CLAY	Light to medium brown - grey, very stiff, high plasticity (clay), occasional woody fragments.
					84.70	0.30		SIDERITE	Light to medium brown - grey, high strength, brittle; Bands include: SIDERITE, light to medium brown - grey, extremely high strength, tough.
					85.50	0.80		SAND	Clayey, light to medium grey, medium dense, non-plastic, fine and medium grained.
					87.00	1.50		SIDERITE	Light to medium brown - grey, high strength, brittle.
					88.30	1.30		CLAY	Light to medium grey, firm, high plasticity (clay).
					88.50	0.20		INFERIOR LIGNITE	
					89.10	0.60		CLAY	Woody textured, medium to dark brown, firm, high plasticity (clay); CLEAN HOLE OF CUTTINGS, BIT BLUNTED 17/04/82 AND CLAYS NOT CLEARING, CLAYS DISPERSIVE, THICK MUD
					90.20	1.10		INFERIOR LIGNITE	
					90.50	0.30		CLAY	Woody textured, dark brown - black, firm, low plasticity (organic).
					91.30	0.80		LIGNEOUS CLAY	Dark brown - black, firm, low plasticity (organic).

893079

048

STRA NAME	SER NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	Z REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					96.00	4.70		CLAY	Silty, light to medium brown - grey, firm, high plasticity (clay), common woody fragments.
					97.20	1.20		CLAY	Light to medium brown - grey, firm, high plasticity (clay); Bands include: LIGNEOUS CLAY, dark brown, firm, high plasticity (organic).
					98.00	0.80		LIGNEOUS CLAY	Dark brown, firm, low plasticity (organic); Bands include: INFERIOR LIGNITE, dark brown - black, firm, low plasticity (organic); BANDS CL ABRGY
					98.70	0.70		INFERIOR LIGNITE and LIGNEOUS CLAY and CLAY	Interbedded 70:20:10. INFERIOR LIGNITE: dark brown - black, firm, low plasticity (organic); LIGNEOUS CLAY: dark brown, firm, high plasticity (organic); CLAY: light to medium brown - grey, firm, high plasticity (clay).
					101.00	2.30		CLAY	Light to medium brown, firm, high plasticity (clay); occasional ligneous wisps.
					101.80	0.80		CLAY	Light to medium brown - grey, firm, high plasticity (clay); occasional woody fragments.
					104.50	2.70		LIGNEOUS CLAY	Woody textured, clayey, dark brown - black, firm, low plasticity (organic); BANDS LC B BRBL FOL
					105.20	0.70		CLAY	Light to medium brown - grey, firm, high plasticity (clay); common woody fragments.

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STRA NAME	SER NO.	SEAM NAME	WOK SEC	SAMPL NUMBR	DEPTH (m)	THICK (m)	Z REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA
					96.00	4.70		CLAY	Silty, light to medium brown - grey, firm, high plasticity (clay); common woody fragments.
					97.20	1.20		CLAY	Light to medium brown - grey, firm, high plasticity (clay); Bands include: LIGNEOUS CLAY, dark brown, firm, high plasticity (organic).
					98.00	0.80		LIGNEOUS CLAY	Dark brown, firm, low plasticity (organic); Bands include: INFERIOR LIGNITE, dark brown - black, firm, low plasticity (organic); BANDS CL ABRDY
					98.70	0.70		INFERIOR LIGNITE and LIGNEOUS CLAY and CLAY	Interbedded 70:20:10, INFERIOR LIGNITE: dark brown - black, firm, low plasticity (organic); LIGNEOUS CLAY: dark brown, firm, high plasticity (organic); CLAY: light to medium brown - grey, firm, high plasticity (clay).
					101.00	2.30		CLAY	Light to medium brown, firm, high plasticity (clay); occasional ligneous wisps.
					101.80	0.80		CLAY	Light to medium brown - grey, firm, high plasticity (clay); occasional woody fragments.
					104.50	2.70		LIGNEOUS CLAY	Woody textured, clayey, dark brown - black, firm, low plasticity (organic); BANDS LC D BRBL FOL
					105.20	0.70		CLAY	Light to medium brown - grey, firm, high plasticity (clay); common woody fragments.

079

893081

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CSR COAL DIVISION
GEOLOGICAL LOG REPORT

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ATP EL2080 TENEHENT 2080
Launceston

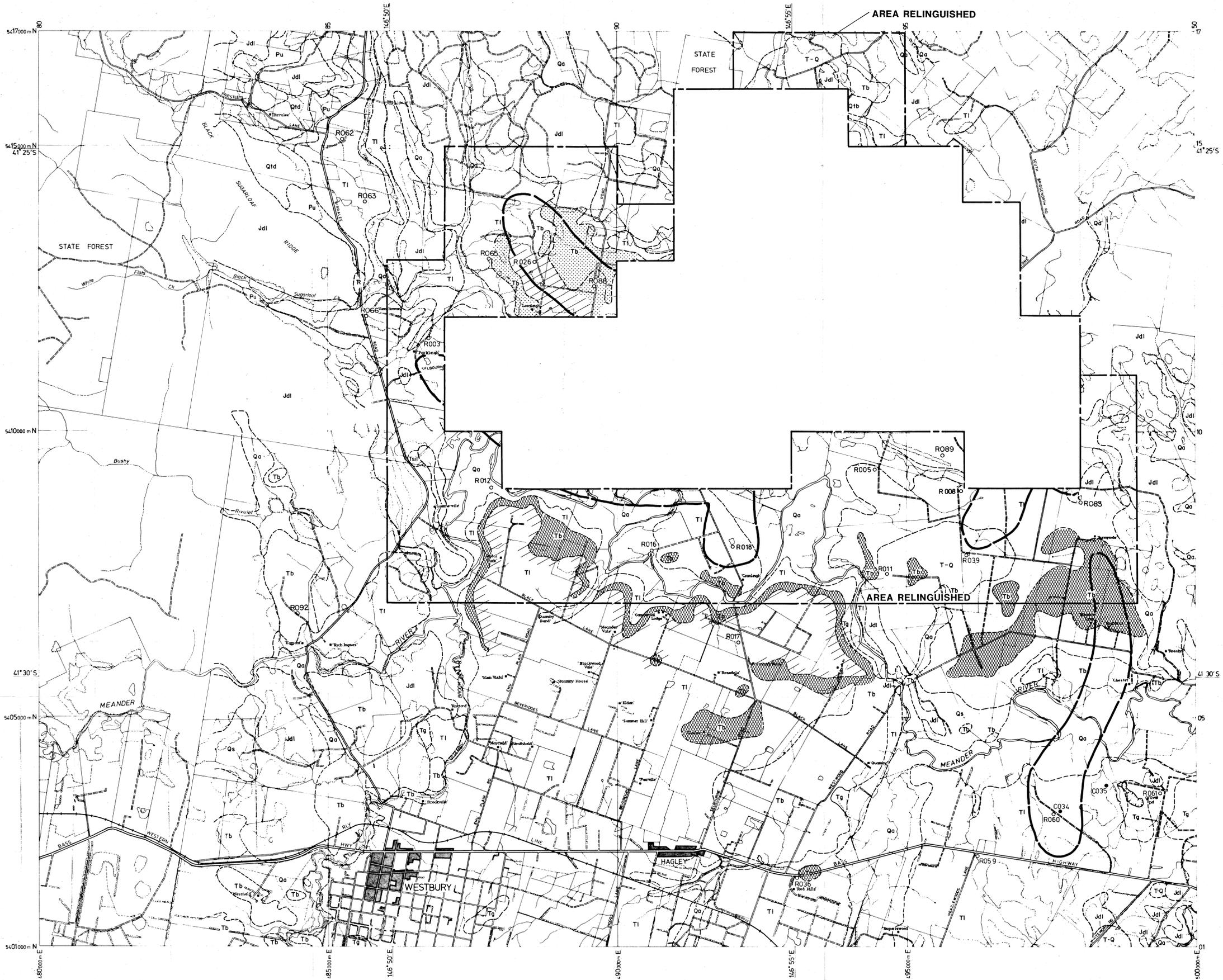
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					105.50	0.30		SIDERITE	Light to medium brown - grey, high strength, tough.
					107.90	2.40		CLAY	Light to medium brown - grey, firm, high plasticity (clay), common lenticular wisps.
					108.00	0.10		SIDERITE	Light to medium brown - grey, high strength, brittle.

END OF BORE AT 108.00 m

EL2080 LAUNCESTON R0089

080

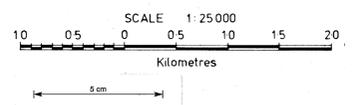
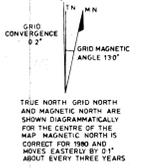
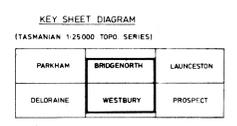
893085



- LEGEND**
- Highway, sealed road
 - Unsealed road, vehicular track, lane
 - Railway
 - Homestead
 - Drain
 - C033 CSR drillhole coal cored
 - R009 CSR drillhole chip sampled

- QUATERNARY**
- Qa Alluvium, terrace deposits, marsh and swamp deposits, boulder beds and gravel.
 - Qs Windblown and locally derived sand.
 - Qt Talus and Scree - Basalt (Qtb)
- TERTIARY - QUATERNARY**
- T-Q Lag deposits of ferruginous buckshot gravel (Quaternary) and ferricrete including laterite and minor alumina rich areas (Tertiary)
- TERTIARY**
- Ti Clay, sandy clay, unconsolidated and poorly consolidated sand and minor gravel horizons.
 - Tg Quartz sand and gravel - partly consolidated, some dolerite gravel (Tgd) and silica stone greyblity and siltite? (Tsil).
- TRIASSIC**
- T
- PERMIAN**
- Pu Upper freshwater sequence (Jackey Formation and correlates) and upper glacio-marine sequence of pebbly mudstone and pebbly sandstone.
- IGNEOUS ROCKS**
- Tb Tertiary basalt.
 - Td Decomposed Basalt, contains large basalt boulders (Mapped by CSR)
 - Tb Subsurface Basalt - Below Weathered and Decomposed Basalt intersected in CSR exploratory drillholes.
 - Tb Outcropping Basalt (Mapped by CSR)
 - Tb Outcropping Basalt (Mapped by Tasmanian Department of Mines)

NOTE: Geology from Tasmania Department of Mines 1:100,000 sheet Longford Basin Geology (1974)



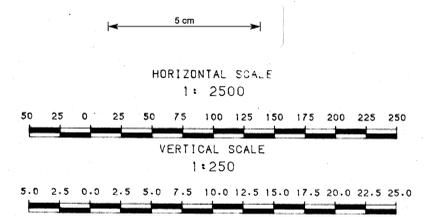
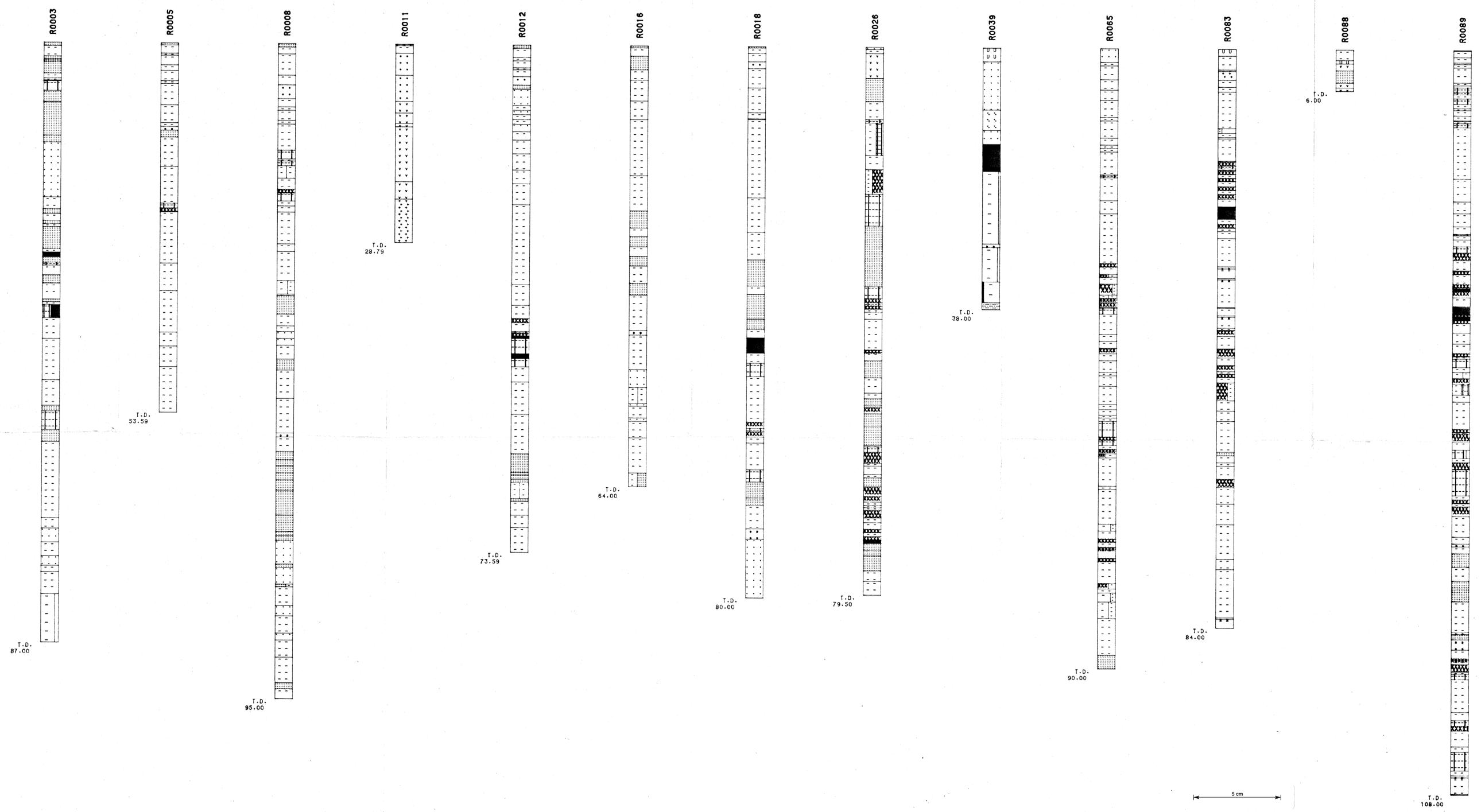
CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP			
DRAWING	DATE	EL 20/80 LAUNCESTON		SCALE	1:25000
DRAWN	C.J.	Dec. '82	GEOLOGY AREA RELINGUISHED		PLATE 1
CHECKED			22 AUGUST '87		DRAWING No. 70020 -
REVISED	AUG '87				

5628

893083
87-2695

LEGEND
LITHOLOGY REFERENCE

- | | | | |
|--|--------------|--|--|
| | SOIL | | INTERBEDDED SEDIMENTS (SANDST/MUDST 50:50) |
| | CLAY | | LIMESTONE |
| | SILT | | SIDERITE |
| | SAND | | LIGNITE |
| | GRAVEL | | LIGNITE CUNDIFF. J |
| | ALLUVIUM | | LIGNITE WEATHERED |
| | CLAYSTONE | | LIGNITE INFERIOR |
| | MUDSTONE | | LIGNEOUS CLAY |
| | SHALE | | DOLERITE |
| | SILTSTONE | | BASALT |
| | SANDSTONE | | BASEMENT CUNDIFF. J |
| | CONGLOMERATE | | CORE LOSS |



CSR Limited Coal Division		EXPLORATION AND EVALUATION GROUP		893084 87-2695
DRAWING	DATE	EL20/80 LOATTA		SCALE V 1:250 H 1:2500
DRAWN COXHEAD	11-AUG-87	DRILLHOLE SECTIONS IN AREA RELINQUISHED 22-8-87		PLATE 2
CHECKED				DRAWING NO.
REVISED				