UR1976_14

1976/14. Diamond drilling for coal in the Fingal area.

V.M. Threader

The current diamond drilling programme in the Fingal area was commenced in 1960, with 22 holes having been drilled to date. The locations of these holes are:

Hole No.	*Location*
1- 7	Vicinity of the Duncan and Fingal coal mines.
8-13	Nicholas Range north of the South Esk valley.
14-17, 19-21	Fingal Tier, as part of a ½ mile grid.
18	Merrywood Road, approximately 13 km south of Fingal.
22	Lochhaber Road, approximately 7 km south-east of hole 18.

Drill holes 10, 14, 15 and 16 were abortive. A summary of drilling data is given in Table 1 and drilling locations are shown in Figures 1 and 2.

PROGRESS DRILLING

A drilling programme of 25 holes on a ½ mile grid was commenced in 1972 to attempt to establish sufficient reserves of coal to fuel a thermal power station. The grid is located on Fingal Tier, adjacent to the existing coal mines and previous drilling. It was estimated that a 2 m thick seam over the area (11 km^2) would contain 33 million tonnes (assuming a S.G. of 1.5, 1 hectare metre contains 1.5 x 10^4 tonnes). The reserves of extractable coal would depend on the actual thickness of the seam, quality of coal and the geological structure, but could reasonably be expected to be approximately half the calculated tonnage or about 12-15 million tonnes. The results of drilling to present are summarised in Table 1 and Figure 1. Fifteen holes are still to be drilled to complete the 11 km^2 grid.

CORNWALL COAL COMPANY LEASE AREA

Additional drilling on the Cornwall Coal Companys lease area north-west of the drilling grid is needed to establish the geological structure in an area of approximately 400 ha, bounded by the worked out area, inferred faults and the line of outcrop. This area has a potential coal content of 12 million tonnes, but actual reserves would depend on the factors previously mentioned. Two proposed holes are shown on Figure 1 while underground diamond drilling in three working places is recommended to augment surface drilling. These locations are shown as A, B and C in Figure 1. Drilling locations A and B are in abandoned working areas which may be unsafe and these holes would have to be sited according to accessibility. The two holes should be angled up at 40° or more to locate the coal through the fault. Site C should be drilled horizontally. It is recommended that the company carry out the underground drilling and the Department of Mines the surface drilling. It is also recommended that the company carry the main heading as a development end at least 100 m ahead of the other workings in order to test the ground in the triangle of unworked ground (approx. 60 ha) lying between the workings and the fault. This should be done after the results of the drilling are known.

Although this area appears to be free from major faulting the evidence from surface bore holes indicates that this area may be unworkable due to roof rolls and minor faults associated with the major faults inferred in

Figure 1. All ten south-easterly headings, including the main heading are currently in disturbed ground with the roof roll taking the entire seam below floor level in several locations.

COAL SEAMS

The initial objective of the drilling programme was to determine the reserves of the Duncan coal seam, which is mined in the Duncan and Fingal coal mines. A seam correlated with the East Fingal Seam (Hale, 1967) occurs 40 m below the Duncan Seam in all bore holes east of the fault, and appears to have improved in thickness and quality in this area. If this trend continues, the East Fingal Seam would make a significant contribution to coal resources in the area being drilled. The variation in seam quality and thickness has made this correlation difficult and it is essential that the full sedimentary sequence of the Triassic system, (approx. 350 m) be drilled wherever possible.

EXPLORATION

The drilling of three exploratory holes in the Fingal Tier area was recommended in 1969. These holes, located at Dalmayne, Merrywood Road and within the present prospecting area have been drilled, numbers 18 and 22 by the Department of Mines for gravity survey control, and Dalmayne 1 and 2, which were drilled by Industrial and Mining Investigations (IMI) on E.L. 5/61.

The gravity survey was recommended in 1972 to assist in siting surface bore holes, by locating dolerite feeder axes, areas of thin dolerite cover and to avoid areas of excessive dolerite thickness. This survey is nearing completion and the siting of exploration should be made only when this information is available.

It was envisaged that an exploration programme on a broad grid would eventually be undertaken, to cover the entire area to the north of Fingal Tier. A proposed 5 km grid to form the working basis for an exploratory programme is given in Figure 2.

SUMMARY OF RECOMMENDATIONS

(1) The Cornwall Coal Company be asked to drill 3 underground bore holes in the areas recommended, to determine the presence of faults and the amount of displacement.

(2) The Department of Mines drill 2 surface holes to test the ground in the NW of the lease.

(3) The Department continue the present drilling programme to complete the 11 km^2 grid using two diamond drills.

(4) The Department commence an exploration programme on Fingal Tier when the gravity survey results are known and a rig becomes available. This should not proceed at the expense of the prospecting programme on the 11 km^2 grid.

(5) A large part of the proposed drilling programme is covered by E.L. 5/61 and it is recommended that the holding company either carry out that part of the programme located within this lease or relinquish their exploration licence to enable the Department of Mines to carry out exploration.

REFERENCE

HALE, G.E.A. 1967. Coal resource investigation - Fingal. *Unpubl.Rep.Hydro Electric Comm.Tasm.*

[22 March 1976]

Table 1. SUMMARY DATA, FINGAL COAL DRILLING

No.	Locality	AMG* Reference	R.L.Collar (m)	Depth to top of coal (m)	R.L. top of coal (m)	Thickness of coal (m)	Core recovery (%)	Ash content (%)	Calorific value (mj/kgm) ():inferred	Seam correlation
1.	Fingal	84458800	525.6	71.1 5 dirt bands 45% of total	455.2	1.68	100	-	-	Duncan
2.	Fingal	85358810	608.7	176.6	432.11	2.08 0.31	100 100	22.0 47.9	24.2 15.4	Duncan
3.	Fingal	85558850	641.9	210.2	431.7	1.27 0.305 0.43 2.005	95 95 67 weighted mean:	22.7 41.4 46.5 30.7	23.8 17.1 15.0 21.0	Duncan
4.	Fingal	88059000	546.8	122.8	424.0	0.38	53	46.1	(14.5)	Duncan (not certain)
5.	Fingal	87058935	575.8	143.1 147.2 188.8 2.64m mudstone between seams.	432.7 428.6 387.0	0.91 1.81 1.02	90 90 83	25.8 29.4 46.4	23.3 21.3 (14.3)	Valley Duncan E. Fingal
6.	Fingal	86208860	739.8	305.2	434.6	0.69) 0.69) 0.69) 2.07	90 weighted mean:	21.3 19.2 36.9 25.3	23.5 25.0 19.0 22.5	Duncan Duncan Duncan
				345.1	294.7	1.52	100	39.4		E. Fingal

Table 1. (continued)

No.	Locality	AMG* Reference	R.L.Collar (m)	Depth to top of coal (m)	R.L. top of coal (m)	Thickness of coal (m)	Core recovery (%)	Ash content (%)	Calorific value (mj/kgm) ():inferred	Seam correlation
7.	Fingal	86108790	619.7	183.7	436.0	1.42	97	22.7	23.2	Duncan
						0.64		37.9	18.4	Duncan
						2.06	weighted mean:	27.4	21.7	
				228.4	391.3	1.98	97	--	--	E. Fingal
8.	Nicholas Range	89759955	560.5	32.4		0.51	100	--	--	Blue
				45.1		0.69	100	--	--	Hitit
				124.05		1.83	100	41.8	(16.4)	Silkstone
				126.87		2.29	100	30.7	(21.5)	Silkstone
						6.32		35.6	19.7	
				152.70				44.7	(15.1)	L.Silkstone
9.	Nicholas Range	88700100		22.20		1.63	100	--	--	L.Silkstone
10.	Nicholas Range	88000016		abandoned in dolerite scree						
11.	Nicholas Range	87824001		66.98		1.14	100	23.4	25.6	L.Silkstone
12.	Nicholas Range	87829978	574.9	55.3	519.6	0.53	100	--	--	Hitit
				89.0	485.9	0.84	98	--	--	--
				125.6	449.3	1.45	100			Silkstone
				128.3	446.6	1.11	82			--
				contains 0.3 m mudstone						
				149.25	425.6	1.52		27.2	22.0	L.Silkstone

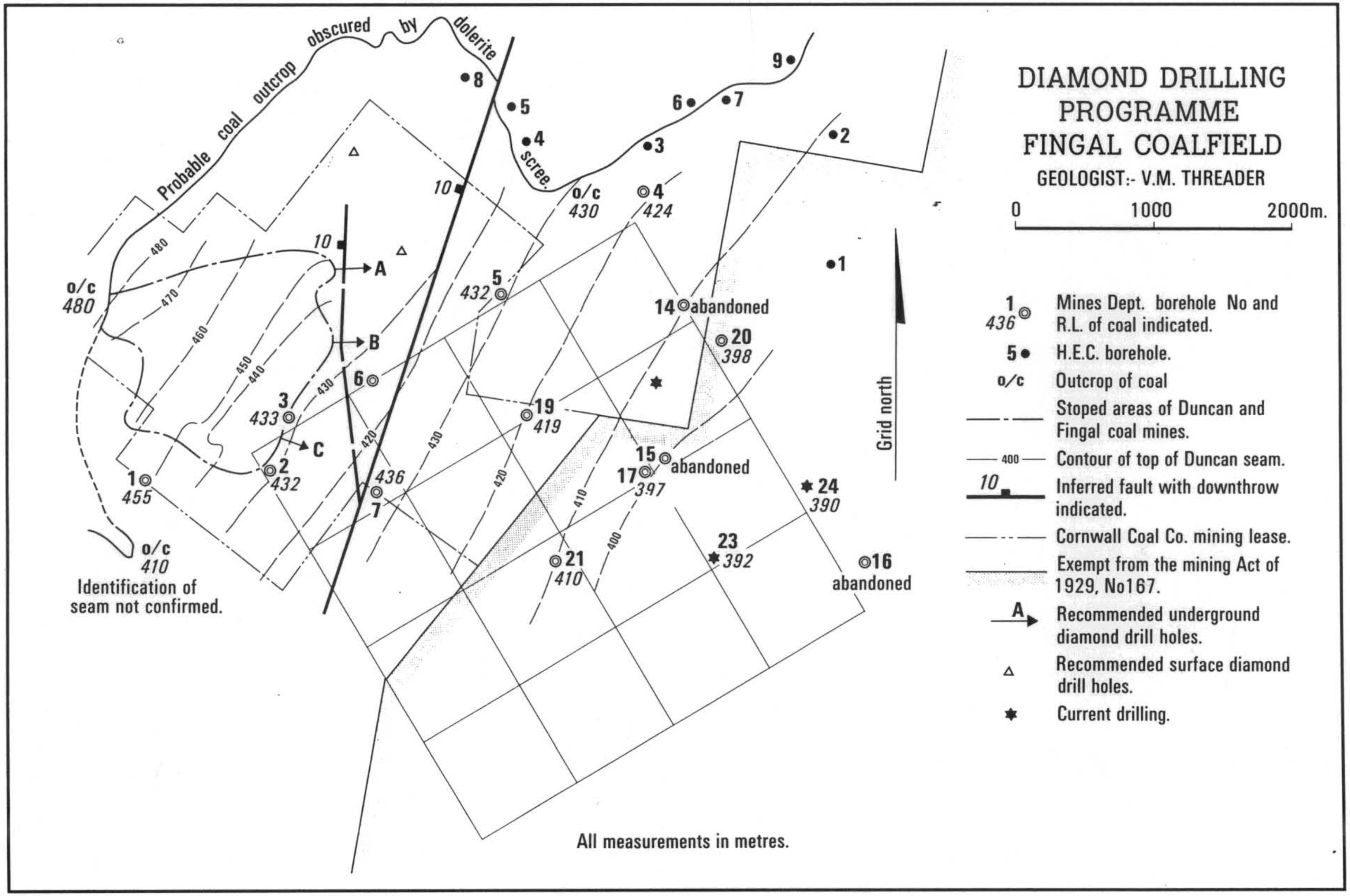
Table 1. (continued)

No.	Locality	AMG* Reference	R.L.Collar (m)	Depth to top of coal (m)	R.L. top of coal (m)	Thickness of coal (m)	Core recovery (%)	Ash content (%)	Calorific value (mj/kgm) ():inferred	Seam correlation
13.	Nicholas Range	91970197	536.4	73.8	462.6	0.95	100	--	--	Blue
				85.5	450.9	2.18	100	17	27.6	Hitit
				162.6	373.8	1.66	83	28.5	20.2)	(Fenton
				164.7	371.7	1.63	83	39.7	16.4)	(≡Silkstone
				180.8	355.6	0.90		17.5	27.5	L.Silkstone
14.	Fingal	88388904	662.0	abandoned in dolerite scree						
15.	Fingal Tier	88148798	766.3	abandoned in dolerite scree						
16A.	Fingal Tier	89668695	837.0	abandoned in sandstone (only minor upper seams intersected).						
17.	Fingal Tier	88088788	777.5	380.1	397.4	1.32	100	32.9	18.8	Duncan
				423.0	354.5	2.00	92	25.6	24.3	E. Fingal
18.	Merrywood Road	79217659		no coal seams						
19.	Fingal Tier	87238830	847.2	428.2	419.0	0.60)	95	30.8	(21.4)	Duncan
				428.8	418.4	1.00)	weighted	20.5	(26.1)	Duncan
						1.6	mean:	24.4	(24.3)	
				Hole stopped due to rod jamming						

Table 1. (continued)

No.	Locality	AMG* Reference	R.L.Collar (m)	Depth to top of coal (m)	R.L. top of coal (m)	Thickness of coal (m)	Core recovery (%)	Ash content (%)	Calorific value (mj/kgm) ():inferred	Seam correlation
20.	Fingal Tier	88888868	811.0	412.8	398.2	1.06)	100	34.7	20.7	Duncan
				413.9	397.1	1.16)		28.9	24.4	Duncan
						2.22		31.7	22.6	
				458.3	352.7	1.08	91	25.0	24.7	E. Fingal
				459.6	351.4	0.56		38.7	20.0	E. Fingal
						1.64		29.7	23.1	
				0.1 m between seams						
21.	Fingal Tier	87388736	758.5	348.04	410.5	1.03	100	26.8	25.5	Duncan
				349.07	409.4	1.04	100	26.5	25.1	Duncan
						2.07	weighted mean:	26.7	25.3	
				396.5	362.0	0.76	100	30.2	23.0	E. Fingal
				413.4	345.1	0.94	100	24.1	24.4	E. Fingal
						1.7	weighted mean:	26.8	23.8	
22.	"Lochaber" Royal George	86297341	407.4	155.2	252.2	1.49	92	23.4	(21.8)	

* All grid references lie within the 100km grid square EP



DIAMOND DRILLING PROGRAMME FINGAL COALFIELD
GEOLOGIST:- V.M. THREADER
0 1000 2000m.
Grid north
Mines Dept. borehole No and R.L. of coal indicated.
H.E.C. borehole.
o/c Outcrop of coal
Stoped areas of Duncan and Fingal coal mines.
Contour of top of Duncan seam.
Inferred fault with downthrow indicated.
Cornwall Coal Co. mining lease.
Exempt from the mining Act of 1929, No167.
Recommended underground diamond drill holes.
Recommended surface diamond drill holes.
Current drilling.
Probable coal outcrop obscured by dolerite
scree
Identification of seam not confirmed.
abandoned
All measurements in metres.

Figure 1.

5 cm

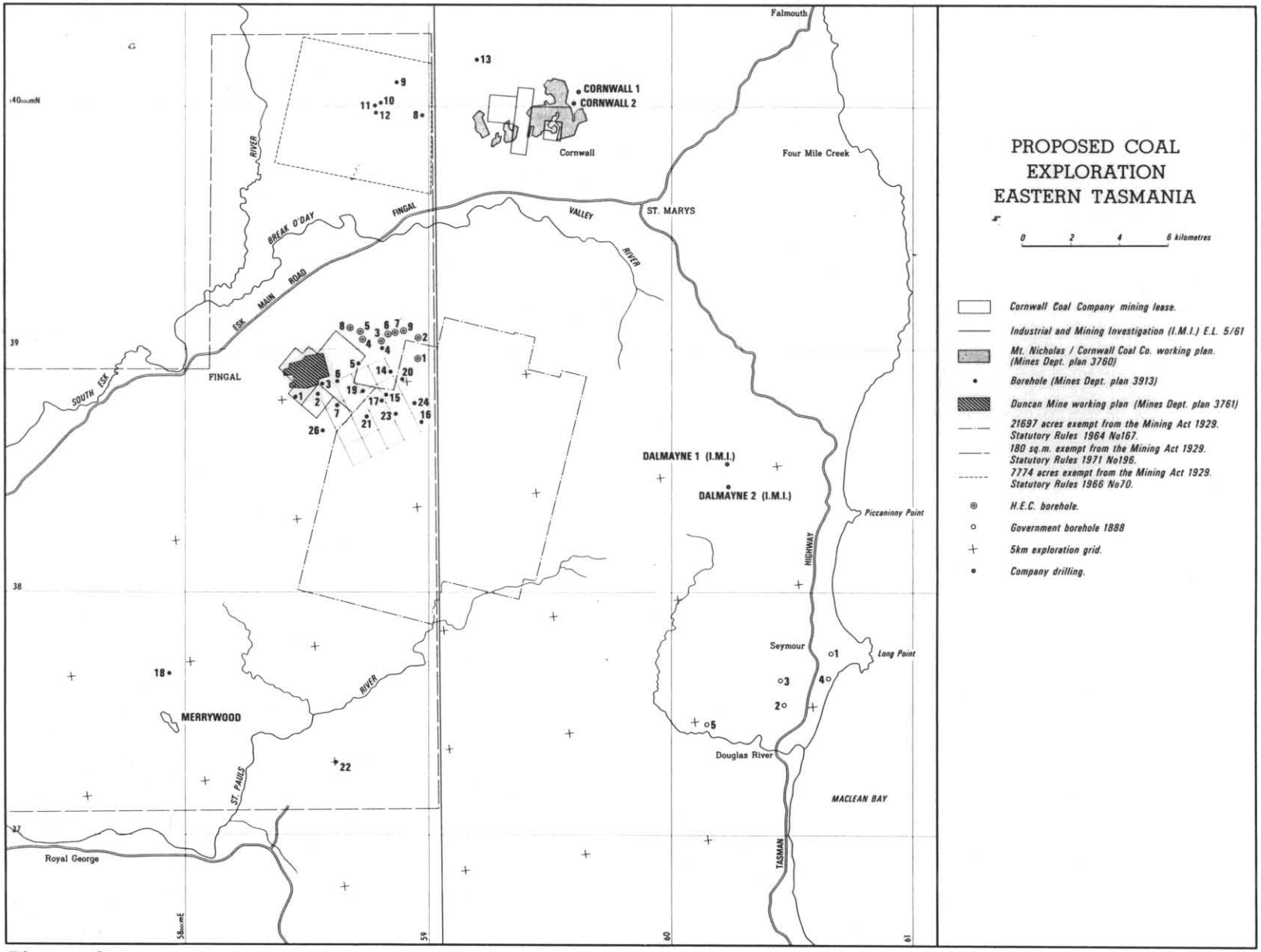

PROPOSED COAL EXPLORATION EASTERN TASMANIA
0 2 4 6 kilometres
Cornwall Coal Company mining lease.
Industrial and Mining Investigation (I.M.I.) E.L. 5/61
Mt. Nicholas / Cornwall Coal Co. working plan. (Mines Dept. plan 3760)
Borehole (Mines Dept. plan 3913)
Duncan Mine working plan (Mines Dept. plan 3761)
21697 acres exempt from the Mining Act 1929. Statutory Rules 1964 No167.
180 sq.m. exempt from the Mining Act 1929. Statutory Rules 1971 No196.
7774 acres exempt from the Mining Act 1929. Statutory Rules 1966 No70.
H.E.C. borehole.
Government borehole 1888
5km exploration grid.
Company drilling.
CORNWALL 1
CORNWALL 2
Cornwall
Falmouth
Four Mile Creek
ST. MARYS
VALLEY
RIVER
BREAK O'DAY
FINGAL
ESK MAIN ROAD
SOUTH ESK
FINGAL
DALMAYNE 1 (I.M.I.)
DALMAYNE 2 (I.M.I.)
Piccaninny Point
HIGHWAY
Seymour
Long Point
Douglas River
MACLEAN BAY
TASMAN
MERRYWOOD
ST. PAULS
Royal George
40mN
58mE
59
60
61
37
38
39

Figure 2.

5 cm