

1983/07. The Merrywood coalfield

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Abstract

The Merrywood coalfield is a southern extension of the Fingal-Mount Nicholas coalfield and once supported a small open cut and underground mine. The seam is 4 m thick, but is interbedded with many mudstone bands. Operations ceased in 1963 due to loss of markets. The coal is of good quality, but inferred reserves are not likely to exceed one million tonnes.

LOCATION AND ACCESS

The Merrywood coalfield [EP795745] is located 19 km east of Avoca and 15 km south of Fingal. The mine area is 28 km by road from Avoca through the township of Royal George.

GENERAL GEOLOGY

The geology of the mine area has been briefly discussed by Hughes (1949, 1961). A summary of the geology of the district is given in Threader (1968) and Waters (1978), and is shown in Figure 1.

The basement rocks in the area are the Siluro-Devonian Mathinna Beds, which are extensively folded micaceous quartzwacke turbidite sequences with minor mudstone intervals. These beds have been intruded by the Ben Lomond Granite of Devonian age.

Unconformably overlying the basement rocks are a series of dominantly marine sediments, belonging to the Lower Parmeener Super-Group. The unconformity is exposed in Tullochgorum Creek and in Iron Pot Gully southwest of Fingal (Waters, 1978).

From the base, the Lower Parmeener Super-Group in the Merrywood area grades from a conglomerate (1-15 m thick), into a quartz-lithic sandstone with mudstone and minor coal (0-15 m thick). This is overlain by an interbedded, often fossiliferous mudstone-siltstone sequence (up to 40 m thick) which grades into a highly fossiliferous limestone (10-50 m thick). Massively bedded unfossiliferous mudstone (25-50 m thick) overlies the limestone sequence. The total thickness of the Lower Parmeener Super-Group near Merrywood would appear to be 150-200 m (Waters, 1978).

Paraconformably overlying the dominantly marine Lower Parmeener Super-Group is a massively bedded quartzose sandstone sequence which grades up into lithic sandstone with subordinate interbedded mudstone, siltstone, claystone and coal. These rocks belong to the Upper Parmeener Super-Group. Most of the coal seams are restricted to the upper part of the lithic sandstone sequence, although rare coal is found in the quartzose sandstone. Sangster (1979) reported a coal seam in Investigator Coal DDH 78RG-1 which had a quartzose sandstone roof. The sandstone sequence is about 300 m thick in the Merrywood area.

The Parmeener Super-Group sediments have a regional dip to the south-east of 3-5°, have been extensively intruded by Jurassic dolerite, and some parts of the coal-bearing sequence have been rafted upwards, eroded and lost. The dolerite forms a protective capping on much of the high plateau areas around Merrywood.

The dolerite has intruded as a series of transgressive sheets and dykes. Intrusion into the older Mathinna Beds is rare but has been recorded by Threader (1968). Faulting accompanying the dolerite intrusion and occurring later in the Tertiary has disrupted the continuity of the coal seams.

Dolerite to the north of the Merrywood open cut truncates the coal seam and has restricted the area of potential development to the north and east. In the underground workings at Merrywood, Hughes (1949) recorded the strike of the seam as 30°E of N with a dip to the south-east of 5°. Two minor faults with throws of 1-2 m in the underground workings were noted by Hughes (1949).

In the area of the open cut, the dolerite cover has been eroded leaving a thin sandstone overburden on the near-surface coal. Some dolerite talus covered the sandstone. The cover was relatively easily removed by bulldozer, with no blasting required.

PREVIOUS MINING HISTORY

Coal was discovered near Merrywood in 1907. Small amounts of coal were excavated from areas south of Royal George before mining commenced at Merrywood. Coal was mined from the Prospect Tunnel [located in a tributary of Rockhouse Creek at EP772662] near Lewis Hill between 1910-1920 and from an adit in Stable Creek [EP735638] (Waters, 1978). Both these small mines had ceased production by 1922.

Hills *et al.* (1922) noted that exploratory works at Merrywood consisted of one adit 130' (40 m) long and two shafts.

Large scale mining began in 1945. The seam was reported as being 17' (5.2 m) thick of which 7' (2.1 m) was mined by the bord and pillar method (Director of Mines, Annual Report for 1945, p. 50).

In 1947 tests were made by bulldozer to ascertain the viability of open-cut operations which eventually commenced in 1948. Coal was produced from both underground workings and the open cut until the mine closed, except for an interval in 1949 when open-cut operations were briefly suspended until demand increased.

In 1953 a crushing plant was installed at the Avoca railway siding, and in 1957 a washery was built close to the mine to improve the quality of the marketable coal. Output from the mine was the highest in the State in terms of tonnes/man/year for much of the mine life, although the transport of the coal to Avoca was always a problem for the mine owners. The road was in poor condition, subject to frequent flooding, and the transport trucks suffered many mechanical difficulties.

Both underground and open-cut operations ceased in 1963 due to a loss of markets.

COAL QUALITY

The open-cut seam at Merrywood is described by Hughes (1949). Analyses of coal from the Merrywood area are given in Appendix 2.

The seam at Merrywood was described by Hughes (1949) as:

Coal and shale	0.61 m
Coal	1.63 m
Shale band	0.05 m
Coal	0.56 m
Shale band	0.05 m
Coal	0.33 m
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Total	3.23 m
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A more detailed description of the Merrywood seam, measured by V.M. Threader in 1970 at the adit portal, is given in Appendix 3.

A thin (100 mm thick) paper coal exists towards the top of the seam and consists largely of *Johnstonia* leaves.

A typical analysis for Merrywood coal (minus dirt bands) is:

Moisture at 105°C	2.19
Ash (%)	18.82
VCM (%)	27.74
FC (%)	51.24
S (%)	0.35
S.E. (MJ/kg)	26.47

RECENT EXPLORATION

In 1974 the Department of Mines drilled two holes near the Merrywood Open Cut, as stratigraphic control holes for a gravity survey. In DOM DDH 18, dolerite had intruded to RL 293 m, below the level of the Merrywood Seam. However, in DOM DDH 22, drilled near Royal George, six thin coaly intervals (as yet uncorrelated) were intersected and sampled. The results of these analyses are given in Appendix 2. The coal seam at the mouth of the Merrywood adit was sampled in 1970 by V.M. Threader. The stratigraphic section and ply analyses are given in Appendix 3.

In 1978 Investigator Coal Exploration Pty Ltd drilled four holes in the area, two of which were in the vicinity of the old Merrywood mine. The holes intersected a total of 29 coaly intervals, from 0.3 m to 2.2 m thick. Coal sections greater than 0.5 m thick were sampled and analysed. Selected analyses are given in Appendix 2; the analysis results and details of exploration are given in full in Waters (1978) and Sangster (1979).

The Department of Mines drilled some eighty holes south-west of Fingal and east of the Merrywood mine. Eight coal seams (named A-H) are persistent over much of the area examined, but seams readily split and lense out over short distances. A large dolerite body interrupts the seams south of Fingal Rivulet, with a large part of the sequence being replaced by dolerite. The seam at Merrywood is tentatively correlated with either seam B or C on Fingal Tier.

POTENTIAL FOR FUTURE EXPLORATION

The coal seam exposed in the Merrywood open cut is thick (≈ 4 m) of which 2.0 m is relatively free of dirt bands, and the mine area is free of major faults. The inferred reserves remaining in the Merrywood area are not likely to exceed one million tonnes; thus the deposit is classed as a very small inferred reserve. Of this reserve, 0.5 million tonnes may be regarded as an indicated reserve.

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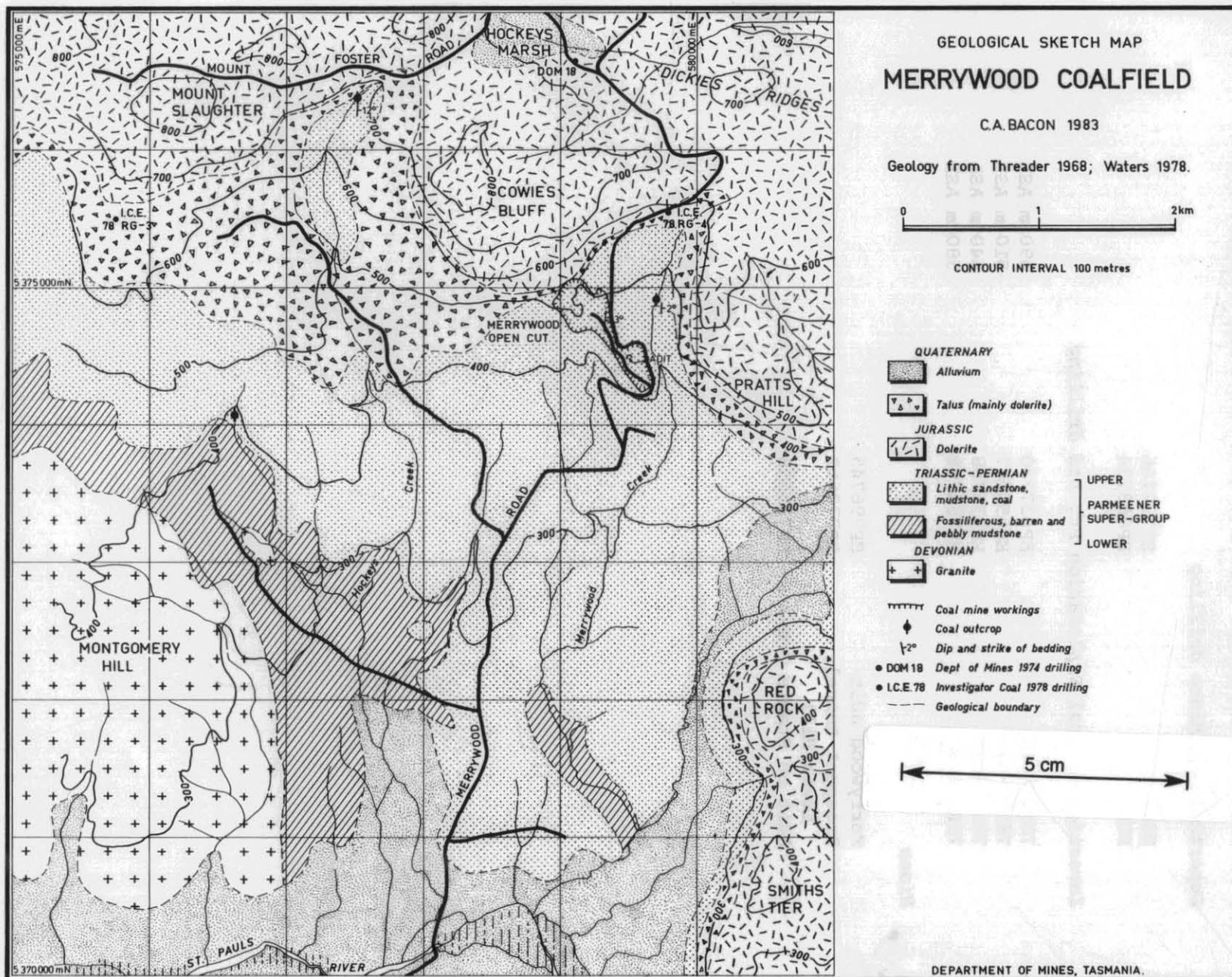


Figure 1.

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APPENDIX 1

AMG references of drill holes and mines in the Merrywood area

Department of Mines drilling

DDH 18	EP792766
DDH 22	EP863734

Investigator Coal Exploration Pty Ltd drilling

78RG - 1	EP637730	590 m ASL
78RG - 2	EP658787	510 m ASL
78RG - 3	EP775758	640 m ASL
78RG - 4	EP754798	580 m ASL

Mines

Merrywood adit	EP796745
Prospect tunnel, Lewis Hill	EP772662
Adit on Stable Creek	EP735638

APPENDIX 2

Coal seam analyses, Merrywood area

Sample and Reference	From (m)	To (m)	Thickness (m)	Moisture at 105°C (%)	Ash (%)	VCM (%)	FC (%)	Sulphur (%)	Specific energy (MJ/kg)	S.G.
Reg. No. 693 (Hills <i>et al.</i> , 1922)	Outcrop in Merrywood Creek			2.66	18.36	25.10	53.88	0.44	25.27	1.44
Merrywood mine (Hughes, 1949)	Top 4' (1.22 m)		1.22	2.40	20.00	26.66	50.94	0.35	25.98	
	Middle 1'9" (0.53 m)		0.53	1.92	19.54	28.20	50.34	0.36	26.14	
	Bottom 11" (0.28 m)		0.28	1.82	12.28	31.60	54.30	0.34	29.21	
Calc. average:				2.19	18.82	27.74	51.24	0.35	26.47	
DOM DDH 18	79.28	79.83	0.55	3.6	23.4	31.3	41.6		24.7	
	155.19	156.81	1.62	2.4	21.0	26.3	50.3		25.6	
	169.90	170.48	0.58	3.6	42.7	21.9	31.8		-	
	182.44	182.77	0.33	6.5	65.6	12.2	15.6		-	
	188.59	189.32	0.73	2.1	15.6	30.1	52.2		27.2	
	199.30	200.15	0.85	3.2	44.8	19.0	33.0		-	
I.C.E. 78RG-3 (Sangster, 1979)	66.78	67.795	1.015	5.3*	27.2					1.50
	102.43	103.535	0.605	5.2*	65.9					1.88
	112.62	113.86	1.24	3.9*	80.7					2.26
	118.04	118.61	0.57	4.3*	48.9					1.74
I.C.E. 78RG-4 (Sangster, 1979)	34.98	35.885	0.905	7.4*	36.3					
	36.945	37.575	0.63	7.1*	31.6					
	37.575	38.105	0.53	6.4*	23.4	23.6	53.0	0.44	25.86	1.45
	38.105	39.145	1.04	7.1*	28.8					
	107.39	108.16	0.77	8.3*	35.6					

* moisture 'as received'.

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APPENDIX 3

Detailed seam section, Merrywood Mine adit portal

From (m)	To (m)	Thickness (m)	Description	Sample	Moisture (%)	Ash (%)	VCM (%)	FC (%)
0	0.089	0.089	dull coal		4.2	45.3	20.8	29.7
0.089	0.102	0.013	band					
0.102	0.203	0.101	shaly coal	A				
0.203	0.216	0.013	band	(miner's				
0.216	0.343	0.127	coal	roof)				
0.343	0.381	0.380	band					
0.381	0.533	0.152	coal (mostly vitreous)					
0.533	0.559	0.026	paper coal*					
0.559	0.623	0.064	coal					
0.623	0.660	0.037	black shale	-----	3.3	21.9	24.3	44.8
0.660	0.673	0.013	coal	B				
0.673	0.711	0.038	black shale					
0.711	1.270	0.559	clean coal with <u>dull</u> lustre					
1.270	1.283	0.013	band	-				
1.283	1.803	0.520	coal with dull lustre	-----	3.0	25.4	26.8	44.8
1.803	1.969	0.166	band	C				
1.969	2.261	0.292	coal					
2.261	2.311	0.050	mudstone	-----				
2.311	3.378	1.067	coal with dull lustre; and vitreous bands containing white clay on vertical D joints.	-----	2.8	18.5	29.5	49.2

* coal, mostly vitreous, associated with *Johnstonia* leaves packed tightly together, composing a very leafy shale or paper coal.

Described and sampled by V.M. Threader, 20 April 1970.