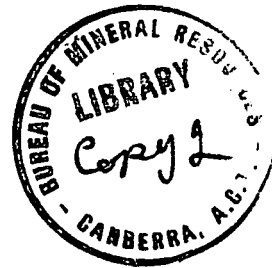


COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF SUPPLY AND DEVELOPMENT.
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.

REPORT No.

1952/23



TYLDESLEY AREA

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WESTERN COALFIELD

Results of Drilling in the Tyldesley Area.

by

W. J. Perry.
Records 1952/23.

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WESTERN COALFIELD

Results of Drilling in the Tyldesley Area.

by

W. J. Perry

RECORDS 1952/23

SUMMARY

Core drilling in the Tyldesley Area has indicated the presence of 41,000 tons of banded high-ash coal in the lower split of the Lithgow Seam. The coal is considered unsuitable for exploitation by open cut methods and a proving campaign is not recommended.

INTRODUCTION.

The area tested by drilling comprises approximately 30 acres of the Parish of Cullen Bullen in the County of Roxburgh, and is immediately to the east of the Portland-Mudgee railway line about $1\frac{1}{2}$ miles northward from Cullen Bullen Station. The purpose of drilling was to test the Irondale and Lithgow seams of the Upper Coal-Measures for thickness and quality, and thus determine whether or not the more detailed investigation of proving is warranted.

Seven holes, with an average depth of 116 feet, were drilled by Goldfields Diamond Drilling Co. under contract to the Bureau at or near sites chosen by the Geological Survey of N.S.W. The total footage drilled was 810 feet and coal-core recovery averaged 89%. Supervision of drilling and logging of core from six holes was done by Mr. E.O. Rayner of N.S.W. Geological Survey whose work is gratefully acknowledged here.

Proximate analyses and calorific value determinations of coal cores and samples were carried out by the N.S.W. Mines Department laboratory in Sydney. Coal samples from bores 1 to 6 were selected in the field and these usually excluded shale bands thicker than $\frac{1}{2}$ inch but occasionally contained bands up to 4 inches. Coal cores from bores 6 and 7 were forwarded from the field to the laboratory where the analysts selected samples by rejecting shale and sandstone bands which had a thickness of $\frac{1}{2}$ inch or more. Inferior coal or carbonaceous shale with specific gravity exceeding 1.6 was also excluded from the samples submitted to analysis. Consequently the analyses quoted indicate a composition roughly equivalent to that which might be expected for cleaned or hand-picked coal from this area.

Definition of Suitable Coal.

Coal intersected has been included in the computation of reserves when it conforms to the following conditions which are regarded as suitable for open cut mining.

Depth of Floor of Seam Feet	Thickness of Coal not less than	
	Feet	Inches
80 or less	5	-
90	5	7
100	6	3
110	6	10
120	7	6
130	8	2
140	8	9
150	9	5
160	10	-

cont.

Depth of Floor of Seam Feet	Thickness of Coal not less than	
	Feet	Inches
170	10	7

Calorific value: not less than 10,000 B.Th.U's per pound.

DRILLING RESULTS.

(a) Lithgow Seam

Only one bore, S.7.C intersected coal which conforms to the above definition. This coal is in the lower split of the Lithgow Seam which here has an easterly component of dip of $1\frac{1}{2}$ degrees. Coal in bore S.3.C is just too deep for inclusion in reserves, but quality and thickness have been taken into account in the computation of the area of economic coal. This area is restricted on the east by rising ground and on the west by the weathering near the outcrop. Twenty feet of overburden has been assumed to be the minimum cover required for unweathered coal. Principal details of the bores referred to are shown in summarized form below.

Bore number	Altitude of surface above sea level Ft.	Depth and thickness of Coal Seam INcluding bands from to thickness Ft. Ins. Ft. Ins. Ft. Ins.						Core recovery INcluding bands. Ft. Ins.		%
		Ft.	Ins.	Ft.	Ins.	Ft.	Ins.	Ft.	Ins.	
S.3.C	3010	87	8	93	11	5	3	5	2	98.7
S.7.C	2985	59	6	64	8	5	2	4	5	85.5

Details of quality and thickness, bands excluded, are shown in Table I.

(b) Irondale Seam

Bores S.1.C, S.3.C and S.4.C intersected coal of average thickness 7 ft. 10 ins. on this horizon but the seam is so banded that quality falls below the standard required. Principal figures are shown below and further details are in Table 2.

Bore Number	Thickness of coal EXcluding bands $\frac{1}{2}$ inch. ft. ins.		Ash %	B.Th.U's per pound	approx. B.Th.U's. per pound bands included.
	ft.	ins.			
S.1.C	7	9	27.1	10,220	9,000
S.3.C	7	$4\frac{1}{2}$	29.7	9,810	8,950
S.4.C	8	9	25.9	10,390	8,740

INDICATED COAL RESERVES

The average thickness of the lower split of the Lithgow Seam is 5 ft. 2 ins. over approximately 5 acres; thus the indicated reserves present are of the order of 41,000 tons. The coal is characterised by high ash content, the average figure for bores S.3.C and S.7.C being 24.3% and average calorific value 10,625 B.Th.U's per pound. These figures are summarized below -

Long Tons	Average thickness		Average composition					B.Th.U. per lb.
			Moisture	Volatile Matter	Fixed Carbon	Ash		
	ft.	ins.	%	%	%	%		
41,000	5	2	2.6	25.1	48.1	24.3	10,625	

* including bands.

Above the lower split and separated from it by about 3 feet of shale and carbonaceous shale is the upper split of the Lithgow Seam. The thickness intersected in bore S.5.C is 4 ft. 11 ins. and that intersected in S.7.C is 3 ft. 8 ins. In the event of the lower split being mined the upper split could be extracted also, but it is of poor quality, average ash content being 29.2% and average calorific value excluding bands, 9,960 B.Th.U's per pound. Indicated reserves present in the upper split considering the area of 5 acres and an average thickness of 4 ft. 8 ins., are 34,000 tons.

The average thickness of the Irondale Seam is 7 ft. 10 ins. throughout an area of 12.7 acres. The indicated reserves amount to 158,400 tons of poor quality coal; estimated figures with bands included are, ash content 31.4%, calorific value 8,900 B.Th.U's per lb.

OVERBURDEN.

This consists chiefly of shale and carbonaceous shale with up to 16 feet of fine-grained sandstone subjacent to the Irondale Seam. The average thickness of overburden covering the lower split of the Lithgow Seam is 59 feet and the average overburden ratio is 11.4/1.

RECOMMENDATION

Indicated reserves are so small, ash content so high, and average overburden ratio so great that the area cannot be recommended for exploitation by open-cut methods.

Topographically the area underlain by economic coal is suitable for exploitation by contour-stripping, but it is apparent from the banded nature and the high ash content of the coal that it could not be used without prior washing. Before any further consideration is given to the area, washability tests should be carried out to discover whether the coal of the upper split of the Lithgow and possibly of the Irondale Seam could be brought within usable limits.

TABLE I.

Details of Coal Reserves

Bore No.	Thickness of Coal Excluded bands more than 2 in. thick					Overburden Thickness ft.	Composition of Coal bands EXcluded					Approx. B.Th.U's per lb., bands INcluded (b)
	Assumed from log.		Recovered and analysed		% coal recovered		Moist %	V.M. %	F.C. %	Ash %	B.Th.U's per lb.	
	ft.	ins.	ft.	ins.								
3	5	3	5	2	99	87.7	2.7	23.5	47.3	26.9	10,170	10,170
7	5	2	4	5	85.5	59.5	2.6	26.7	49.1	21.6	11,085	11,085

Tonnage: Average thickness 5 ft. 2 ins. over 5 acres. $5.17 \times 5 \times 1600 = 41,000$ tons
 Overburden thickness: Range 20 to 80 ft. average 59 ft.
 Overburden ratio: Range 4/1 to 15/1; average 11.4/1.

Notes: (a) Lost core from within the coal seam and for which there is no information is regarded as coal of the same composition as that recovered and analysed.

(b) It is assumed that bands have no calorific value.

TABLE 2.

Details of bores in coal not included in reserves

Bore No.	Thickness of Coal <u>EX</u> cluding bands more than $\frac{1}{2}$ in. thick					Overburden thickness ft.	Composition of Coal, bands <u>EX</u> cluded					Approx. B.Th.U's per lb. bands <u>IN</u> cluded (b)
	Assumed from log ft.	(a) ins.	Recovered and analysed ft.	ins.	% Coal recovered		Moist. %	V.H. %	F.C. %	Ash %	B.Th.U's per lb.	
1	(5	4 $\frac{1}{2}$	5	3 $\frac{1}{4}$	98	67.3	2.9	24.9	36.6	35.6	8,840	6,950
	(7	9	7	1	91	84	2.8	29.4	40.7	27.1	10,220	8,490
2	(3	9	3	6 $\frac{1}{2}$	94	67.5	3.2	21.4	43.5	31.9	9,310	7,465
	(3	5	3	2	93	75.6	3.1	24.3	42.9	29.7	9,530	9,000
4	(8	6	5	11	72	73.3	2.5	30.8	40.8	25.9	10,390	9,107
	(4	8	4	4	93	131	2.8	21.3	45.4	30.5	9,645	9,288
	(3	10	3	4 $\frac{1}{2}$	88	139.6	3.0	24.5	46.4	26.1	10,265	9,342
5	(4	11	4	9 $\frac{1}{2}$	97	22.5	2.9	22.2	48.1	26.8	10,070	10,070
	(2	6	2	5	97	31.7	2.7	20.7	48.6	28.0	9,970	9,970
6	(2	5 $\frac{1}{2}$	2	4	95	85.2	3.1	31.8	43.4	21.7	11,080	11,080
	(3	2 $\frac{1}{2}$	2	7	80	89.5	2.9	29.3	40.5	27.3	10,030	7,870

Notes: (a) Lost core from within the coal seam and for which there is no information is regarded as coal of the same composition as that recovered and analysed.

(b) It is assumed that bands have no calorific value.

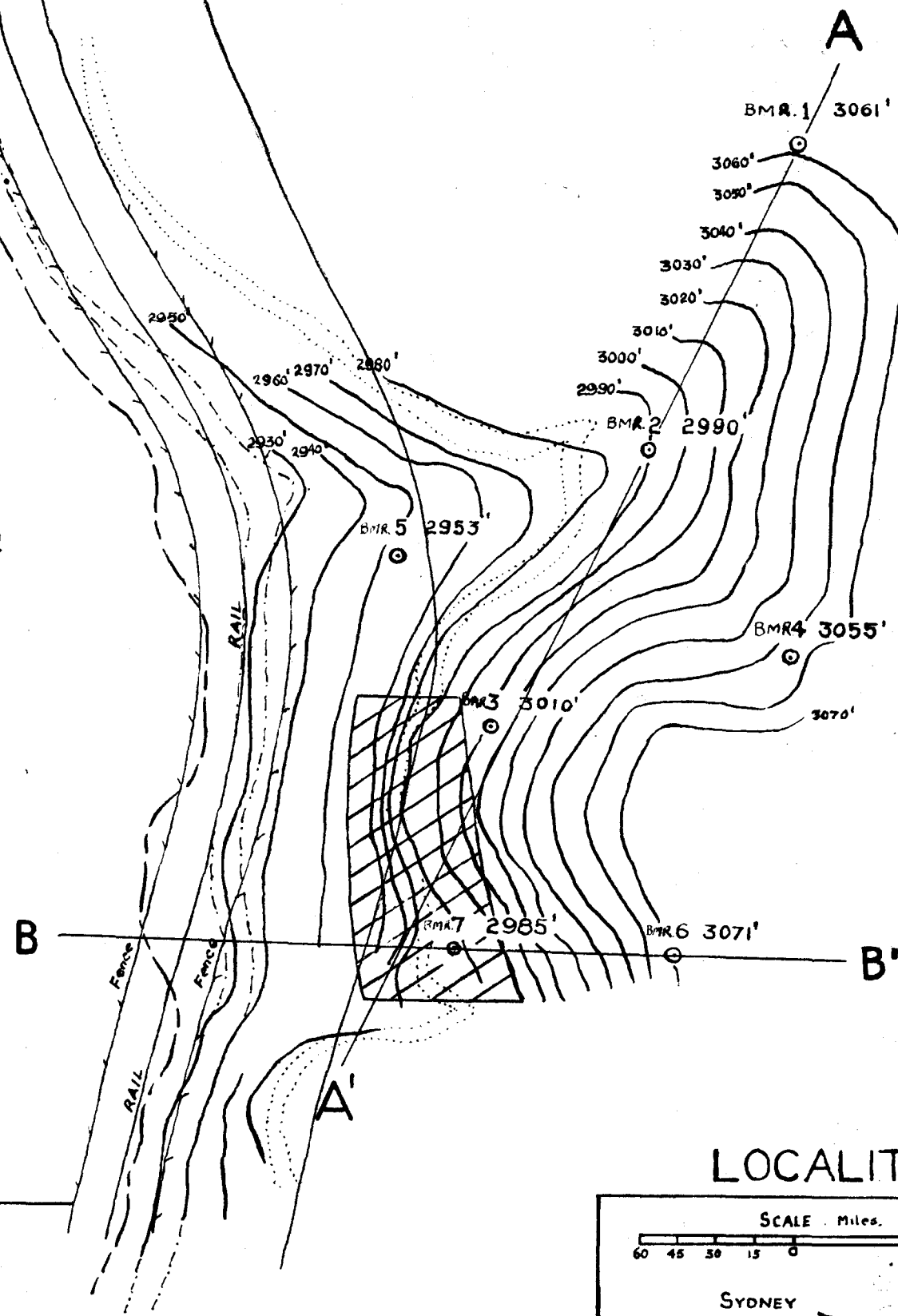
DRILLING LAYOUT TYLDESLEY AREA

M.L. 113

M.L. 3

POR. 62

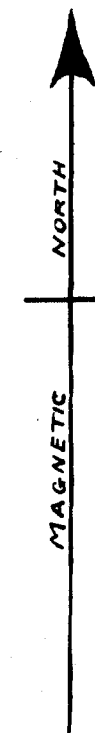
POR. 49



SCALE
Feet.



REFERENCE



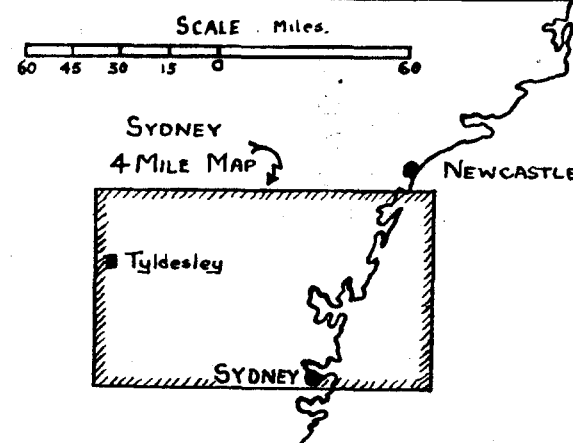
BMR 9 2965' Bores, showing number and site, with standard height above sea level

- Base of Coal Measures. (Lower Marrangaroo)
- Lithgow Seam Outcrop.
- Irondale Seam Outcrop.
- 3060' Contours.
- Economic Coal.

DATUM Mines Department Standard.

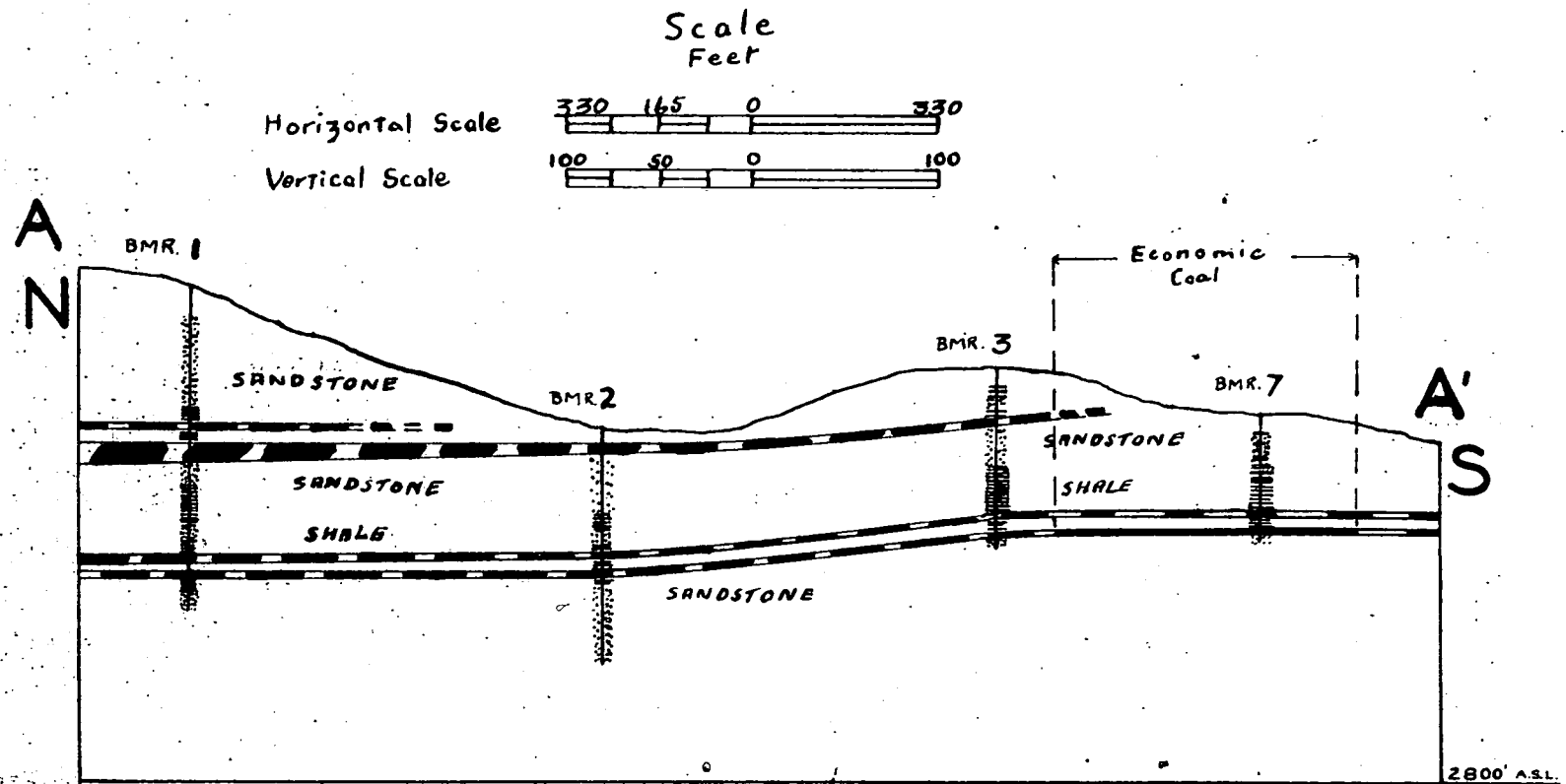
Traced from Plan Number 3P 697A, Geological Survey, N.S.W., Department of Mines.

LOCALITY MAP



N14-73

TYLDESLEY AREA SECTION AA'

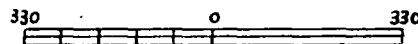


N 14-74

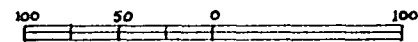
TYLDESLEY AREA

SECTION BB'

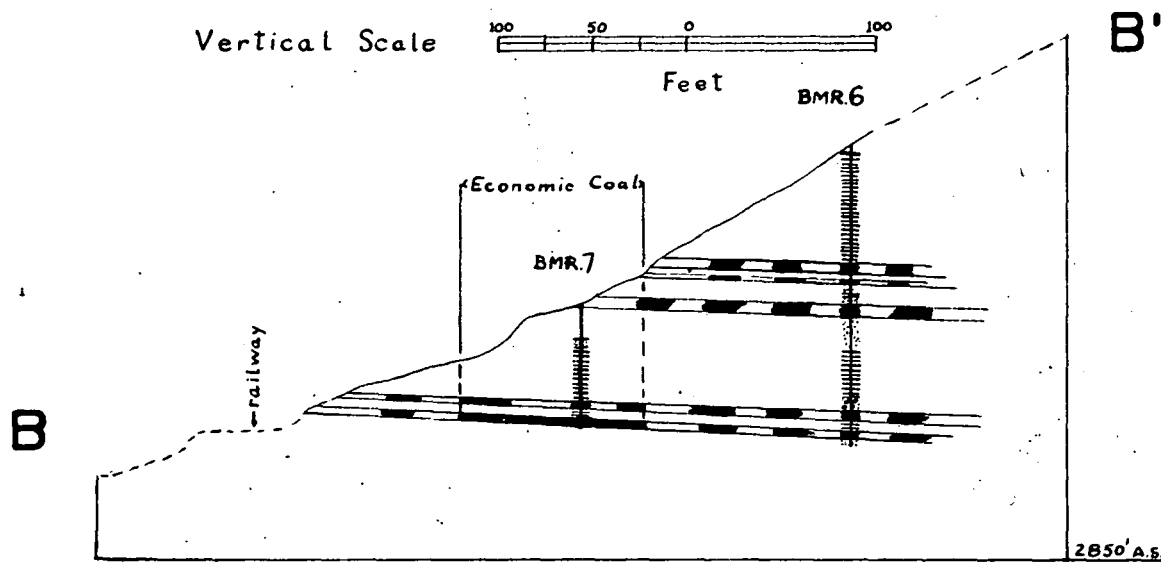
Horizontal Scale



Vertical Scale


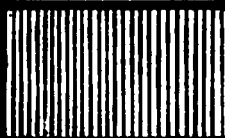


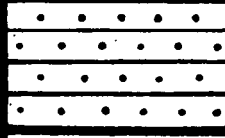
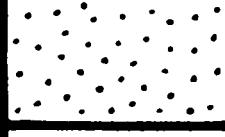
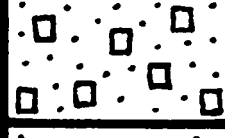
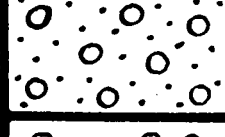
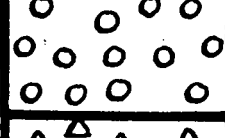
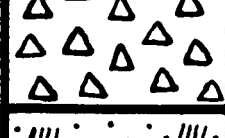

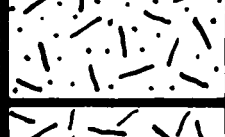
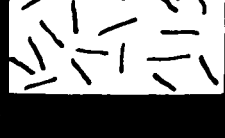






Feet



N14-75

REFERENCE

	Alluvium
	Clay
	Shale
	Sandy Shale
	Siltstone
	Sandstone
	Greywacke
	Sandy Conglomerate
	Conglomerate
	Breccia
	Chert
	Tuff
	Igneous Rock
	Coal (Under 20% Ash)
	Shaly Coal (20-30% Ash)
	Carb. Shale (Over 30% Ash)
	Carb. Shale or Coal composition unknown

Commonwealth of Australia
Bureau of Mineral Resources
Geology & Geophysics

Area: TYLDESLEY
Hole No. BMR. 1 (Scott Drill No. Cullen)
Map Ref: 3 P 697 a

R.L. 3060' Datum: Mines Dept. Standard
Driller: C. Stanley Logger: E. O. Rayer
Started: 14/3/51 Completed: 15/5/51
Drill Type: Goldfields D.D. Total Depth of hole: 172'
Inclination of hole: VERTICAL

Depth	Section	Description	% Core Recovered		
0				90	95
				93' 2"	88
					70
				100	89
				110	100
					94
				120	71
					92
	Soil				
10	Clay			130	
	Pebbles				100
	and				
20	Sandstone			140	
	Grit		0		71
30	and			150	
	Chert				99
	Fragments				
40				160	61
50				170	10
		3" Chert Band			
		1" Chert Band	97		
		1" Chert Band		180	
60					
			96		
			96		
			95		
70		Associated Seam	100		
		Composite Analysis	97		
		35.6% Ash 8840 BTU/lb	98		
			100		
80				100	
83' 11"				90	
		Irondale Seam	94		
		Composite Analysis	93		
90		27.1% Ash 10220 BTU/lb	98		

11 1/2" bands excluded from analysis.

Shale and Sandstone Thin Bedded.

Laminated Sandstone and Shale.

22.8% Ash 10,700 BTU/lb
34.4% Ash 9,020 BTU/lb
(excluding 2 1/2" Carb. Shale)

25.8% Ash 10,280 BTU/lb
27.8% Ash 9,920 BTU/lb

N14-76A

Commonwealth of Australia
Bureau of Mineral Resources
Geology & Geophysics

Area: TYLDESLEY
Hole No: BMR.2 PH. CULLEN BULLEN.
Map Ref: N.S.W. GEOL. SURVEY. 3P697a.

R.L. 2990' Datum: Mines Dept. Standard.
Driller: Goldfields D.D. Co. Logger: E.O. RAYNER.
Started: 1.5.51 Completed: 1.5.51
Drill Type: Goldfields D.D. Total Depth of hole: 126'
Inclination of hole: Vertical

Depth	Section	Description	Cone Recovered	
	Soil			19
	Sandstone			93
	Chert			
				85
				100
				100
10	(Some coal)		16	
20				
30				
			86	
40				
			80	
			67	
			92	
50				
			98	
			100	
60				
			100	
67'6"			100	
70'4"		28.0% Ash 9,950 B.T.U./lb		
		Excluding 8" Shale Band		
		35.7% Ash 8,870 B.T.U./lb	96	
75'6"				
		29.7% Ash 8,530 B.T.U./lb	86	
79'4"		Excluding 2" Shale Band	100	
			90	
90				

N14-76B

Area: TYLDESLEY
Hole No BMR 3 (*Parish Cullen Bullen*)
Map Ref: 3 P 697 a

Depth	Section	Description	% Core Recovered
0		Soil, Clay, Fragmentary Chert and Shale	0
		Fragmentary Chert, Shale, & Carb. Shale	63
10			100
			100
			100
			55
20			
20' 2"		32.8% Ash 9,300 B.T.U./lb.	47
26' 6"		25.6% Ash 10,410 B.T.U./lb.	
26' 9"		27.1% Ash 10,230 B.T.U./lb.	97
28' 3"		27.9% Ash 10,090 B.T.U./lb.	
30		6½" bands excluded from analysis of whole seam.	100
			100
40			
			89
50			
			97
60			
		thin-laminated sandstone and shale	94
70			
			88
			100
80			
80' 2"		24.5% Ash 10,540 B.T.U./lb.	91
81' 3"		33.4% Ash 9,190 B.T.U./lb.	100
84' 2"			89
87' 5"		30.8% Ash 9,580 B.T.U./lb.	94
90' 0"			

[illegible]

N-14-76C

Commonwealth of Australia
Bureau of Mineral Resources
Geology & Geophysics

Area: TYLDESLEY
Hole No BMR 4 (Parish Cullen Bullen)
Map Ref: 3P 697 a

R.L. 3055' Datum: Mines Dept. Standard
Driller: C. Stanley Logger: E. O. Rayner
Started: 15/51 Completed: 16/51
Drill Type: Goldfields D.D. Total Depth of hole: 148'6"
Inclination of hole: VERTICAL

Depth	Section	Description	% Core Recovered			
0	Soil					
	Clay					
10	Fragmentary					
	Sandstone		0			
	Chert					
20	Shale					
	Ironstone					
	Ironstone		100			
30			97			
			100			
			85			
40			83			
			98			
50			100			
			94			
60			90			
			90			
70			82			
75' 9"		22.4% Ash 10,990 B.T.U./lb	76			
75' 7"			50			
77' 4"		28.8% Ash 9,910 B.T.U./lb	48			
80' 7' 10"			96			
80' 7' 1"		27.4% Ash 10,140 B.T.U./lb				
82' 7"		13" bands excluded from composite analysis of whole seam				
90						

N14-76D

Commonwealth of Australia
Bureau of Mineral Resources
Geology & Geophysics

Area: TYLDESLEY

Hole No BMR 5 Pt CULLEN BULLEN

Map Ref: Geol. Surv. N.S.W. 3P6979

R.L. 2953' Datum: Mines Dept. Standard

Driller: Goldfields D.D. Co. Logger: E.O. RAYNER

Started: 15/1/51 Completed: 15/1/51

Drill Type: Goldfields R.D. Total Depth of hole: 41'0"

Inclination of hole: Vertical

Depth	Section	Description	%Core Recovered
	Soil		
	Clay		0
	Sandstone		
	Chert		100
			75
			100
22'6"		21.9% Ash 10,600 B.Th. U ₃ /lb.	95
24'3"		31.6% Ash 9,460 B.Th. U ₃ /lb.	
27'5"			82
30'6"		53.8% Ash. —	
31'9"		28.0% Ash 9,970 B.Th. U ₃ /lb.	
34'3"			99

R.L. 3071' Datum: Mines Dept. Standard. 110
 Driller: Goldfields D.D. Co. Logger: E.O. RAYNER
 Started: -1715' Completed: -1715'
 Drill Type: Goldfields D.D. Total Depth of Hole: 1606"
 Inclination of hole: Vertical.

Depth	Section	Description	% Core Recovered		
				120	85
					100
10				130	100
					100
20				140	100
				144'6"	
				147'10"	
					35.9% Ash.
30			96		72
				154'4"	
				155'10"	
				157'2"	
					30.0% Ash 3,000 BTK U ₃ /lb.
					13.5% Ash 12,380 BTK U ₃ /lb.
40					100
					100
50					
60					
69'0"		34.2% Ash 2000 BTK U ₃ /lb.			
69'9"			99		
67'5"		56.8% Ash.			
68'8"		34.0% Ash 8,960 BTK U ₃ /lb.	96		
70'5"					
73'5"		27.9% Ash 9760 BTK U ₃ /lb.	87		
75'0"			76		
80			99		
85'2"		21.7% Ash 11,080 BTK U ₃ /lb.	92		
87'5"		39.7% Ash	100		
88'2"		24.9% Ash 10,510 BTK U ₃ /lb.	85		
91'11"					

N14-76F

Commonwealth of Australia
Bureau of Mineral Resources
Geology & Geophysics

Area: TYLDRESLEY

Hole No BMR 7 (Barish Cullen Bullen)

Map Ref: 3 P 697 a

R.L. 2985' Datum Mines Dept Standard

Driller: C. Stanley Logger: G.M. Burton

Started: 17/51 Completed: 17/51

Drill Type: Goldfields D.D. Total Depth of hole: 672'

Inclination of hole: VERTICAL

Depth	Section	Description	% Core Recovered
0			
10			0
20			
30			
40			
50			
52'6"			
53'4"		27.3% Ash 10,060 BTU./lb.	98
55'3"		35.9% Ash	
56'6"			
58'6"		31.2% Ash 9,550 BTU./lb.	82
63'0"			
65'6"		12.0% Ash 12,620 BTU./lb.	
70			

N14-76G