EIS 1558

AA067923

Charbon Colliery A 351 and A 352 geological assessment

NSW DEPT PRIMARY INDUSTRIES
AA067923

BLUE CIRCLE
SOUTHERN

CHARBON COLLIERY

A 351 AND A 352

GEOLOGICAL ASSESSMENT

JULY 1988
W A MARSHALL

EIS 1558

CHARBON COLLIERY HOLDING (A351) AND AUTHORISATION 352

GEOLOGICAL ASSESSMENT

APPENDICES

1. INTRODUCTION

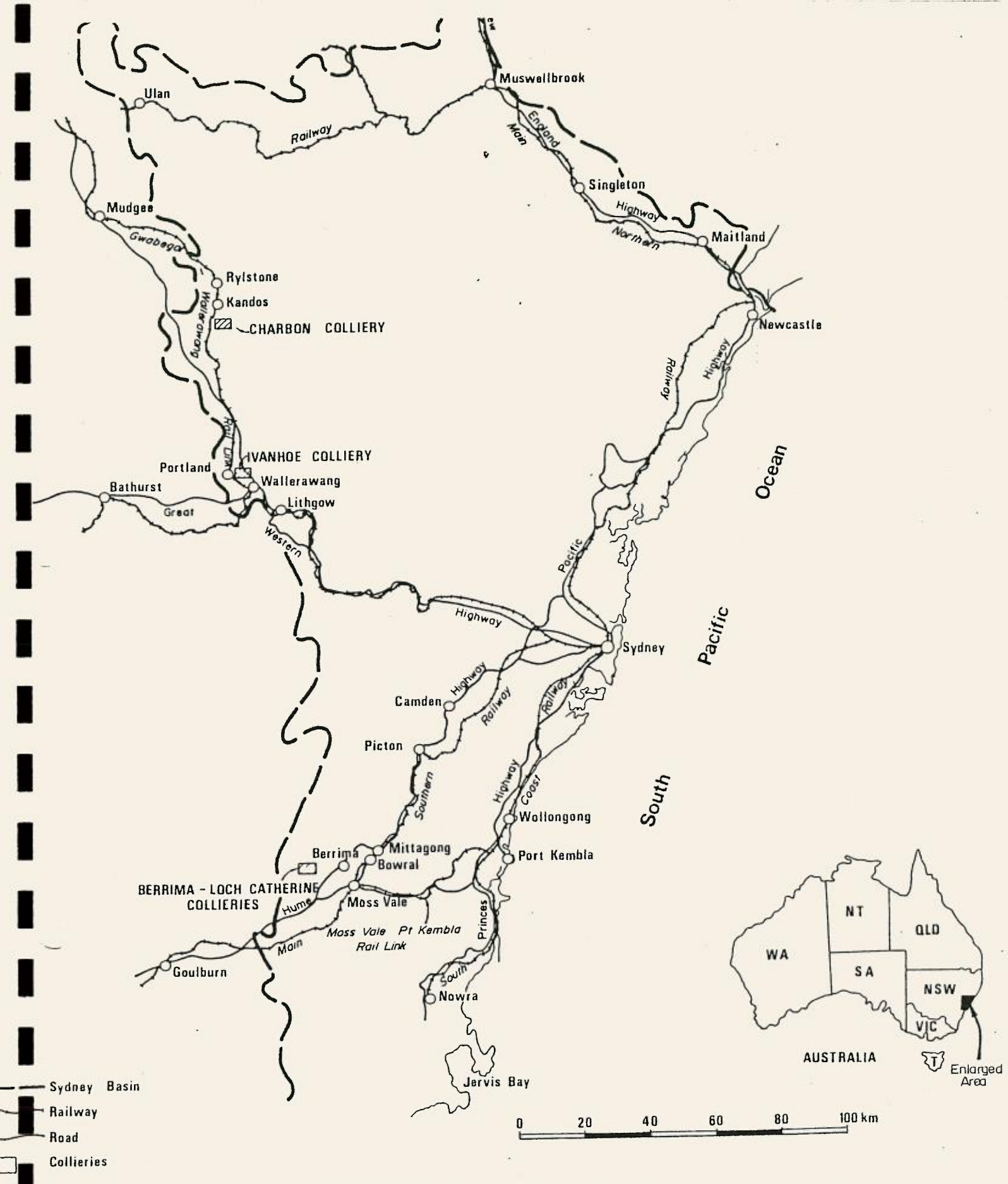
Charbon Colliery is located on the Western Margin of the Sydney Basin in the New South Wales Western Coalfield (Drawing G-600).

Two continuous miners are currently operated for three shifts per day to produce 600 000 tonnes per year of raw coal.

In 1985 a dense medium cyclone washery, coal handling facilities, and train loading loop were installed essentially in response to demands for export coal of 9.5% ash. Typical yield of low ash coal is 60% and a middling fraction of 18% ash is co-produced at a 20% yield.

Washery capacity is 700 000 tonnes per year of raw coal feed and can be increased by some 15-20% without major modifications.

Rail distances to coal loading facilities at Balmain and Port Kembla are 246 and 336km respectively.



BLUE CIRCLE SOUTHERN CEMENT LIMITED

B.C.S.C. COLLIERIES LOCALITY PLAN

G 600

2. EXPLORATION

During the period 1976-1986, two drilling programs have been undertaken within the Authorisations 351 and 352.

(I) 1976-79 Program

The program consisted of 1309 metres in 17 boreholes (two redrills). These holes, C1 to C15, were fully cored and their details are given in Appendix I.

(II) 1985-86 Program

The program consisted of 2,450 metres in 90 boreholes (two redrills). They were 80% cored and details are given in Appendix I.

Open Hole - 507 metres
Cored - 1943 metres

Program I was designed to provide information on which to plan future mine development and to assess the potential of the Katoomba Seam and Irondale Seam (sometimes known as the Wolgan).

Program II was designed to:-

(a) Prove the continuation (thickness) and quality of the Lithgow Seam to the south of Authorisation 351 and the reserves potentially recoverable by underground mining in this area.

(b) Investigate the open cut potential of specific areas within the Authorisations. These areas (Fig. 1) are:-

(i) a narrow ridge extending westwards from the Charbon outlier to Haystack Mountain;

(ii) a broad flat-floored valley [south of (1)] containing Lithgow Seam under shallow cover; and

(iii) an area of low ridges, hills and a flat valley in Authorisation 352.

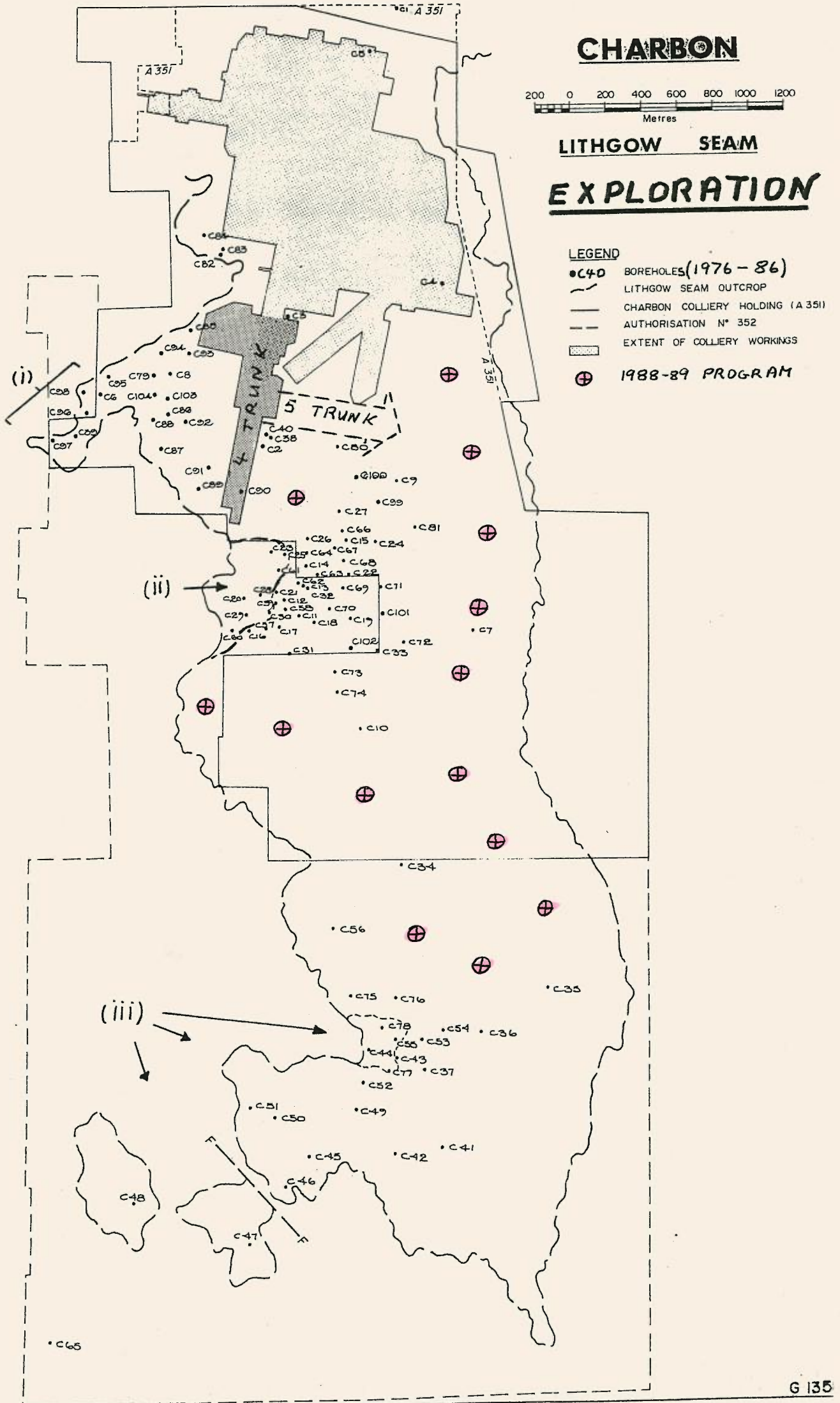
Proximate analyses were undertaken on all coal cores and more detailed analyses including washability testing on selected cores.

1988-1989 Exploration Program

During 1988-1989, 14 drill holes will be completed in A351 and A352. This program will examine the washability of the Lithgow Seam in two areas:-

(i) south and east of the present colliery workings (i.e. 5 trunk).

(ii) the southern portion of A351 and the northern portion of A352.


CHARBON
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
EXPLORATION
LEGEND
C40 BOREHOLES (1976 - 86)
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
1988-89 PROGRAM
A 351
4 TRUNK
5 TRUNK
(i)
(ii)
(iii)
G 135

3. GEOLOGY

3.1 Stratigraphy

Charbon Colliery Holding covers the central part of an Upper Permian-Triassic outlier on the western margin of the Sydney Basin. The full section of the Illawara Coal Measures, capped by Triassic sandstone, is exposed along a narrow north-south trending ridge comprising the outlier.

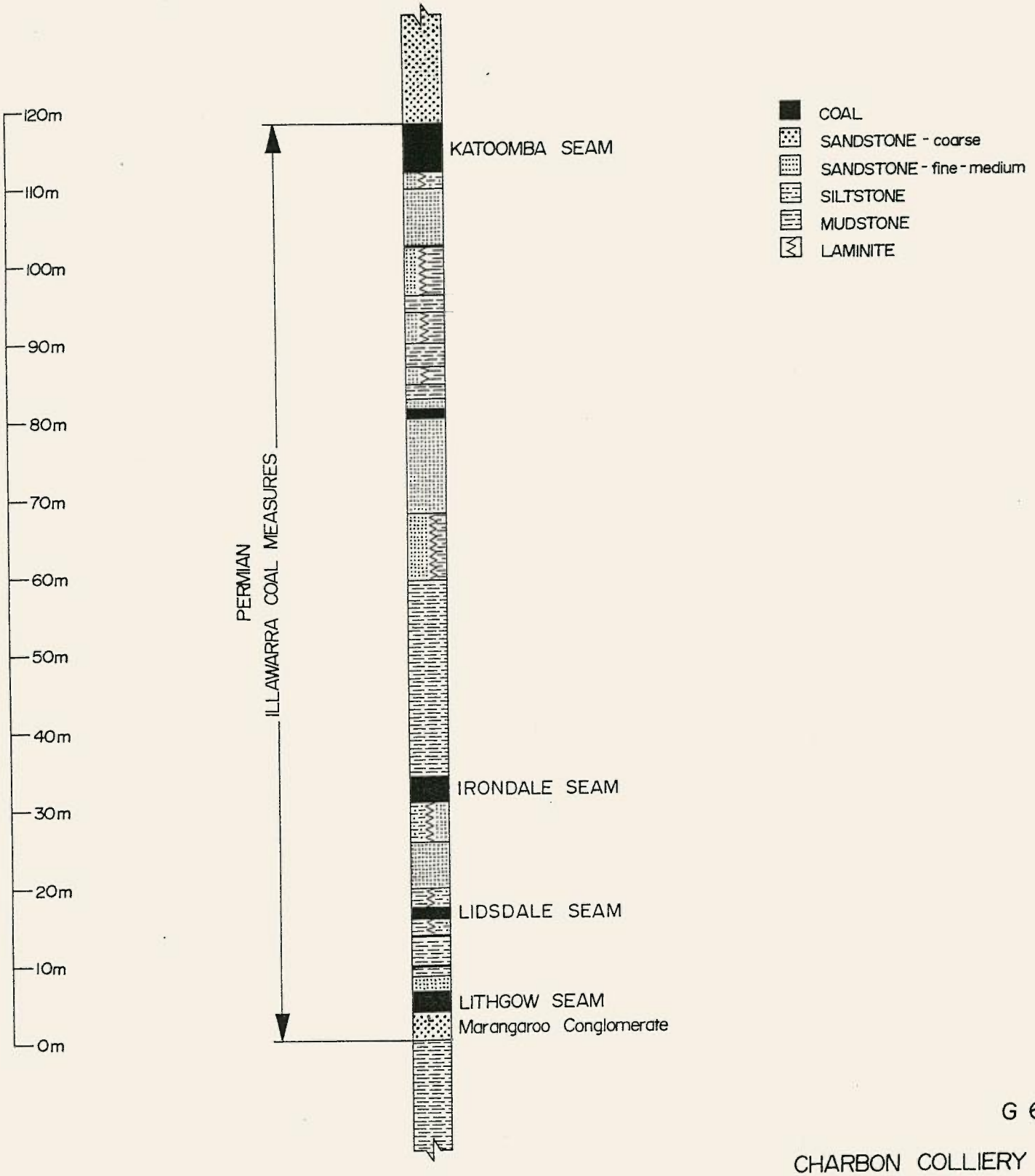
The Illawara coal measures (Drawing G-601) are 120 metres thick and contain three coal seams, the Lithgow, Irondale (Wolgan) and Katoomba Seams.

The basal unit of the Illawarra Coal Measures, the Marangaroo Conglomerate is 3.5 metres thick and consists of coarse grained sandstone and conglomerate. The upper 10cm is silty and carbonaceous with bright coal laminae.

The Lithgow Seam, the basal seam of the coal measures varies from 2 to 3 metres in thickness.

The Irondale is a variable, banded seam from 2.5-3.0 metres thick and is separated from the underlying Lithgow Seam by a highly variable sequence of sandstone, mudstones and laminites 25 metres in thickness.

About 80 metres higher in the sequence, the Katoomba Seam is represented by 7 metres of coal and shale bands. The Katoomba Seam may strictly be equivalent to the Middle River Seam of the Lithgow Area, but the name Katoomba Seam has been retained in this report for Charbon Colliery because of its historical usage. The interval between the Irondale and Katoomba Seams consists of coarsening-upwards sequences of mudstone, siltstone and sandstone. Inferior coal horizons are variably developed in the mudstone units.



G 601

CHARBON COLLIERY

STRATIGRAPHIC SECTION

ILLAWARRA COAL MEASURES

Apart from a small dyke which crops out at GR 1356800 N 203900 E, there is no evidence of igneous intrusions, although such have been encountered in the adjoining Kandos No. 3 Colliery to north and Clandulla Colliery to the west (Haystack Mt). The presence of remnant basaltic soil on the ridge between basalt feeder dykes should not be discounted.

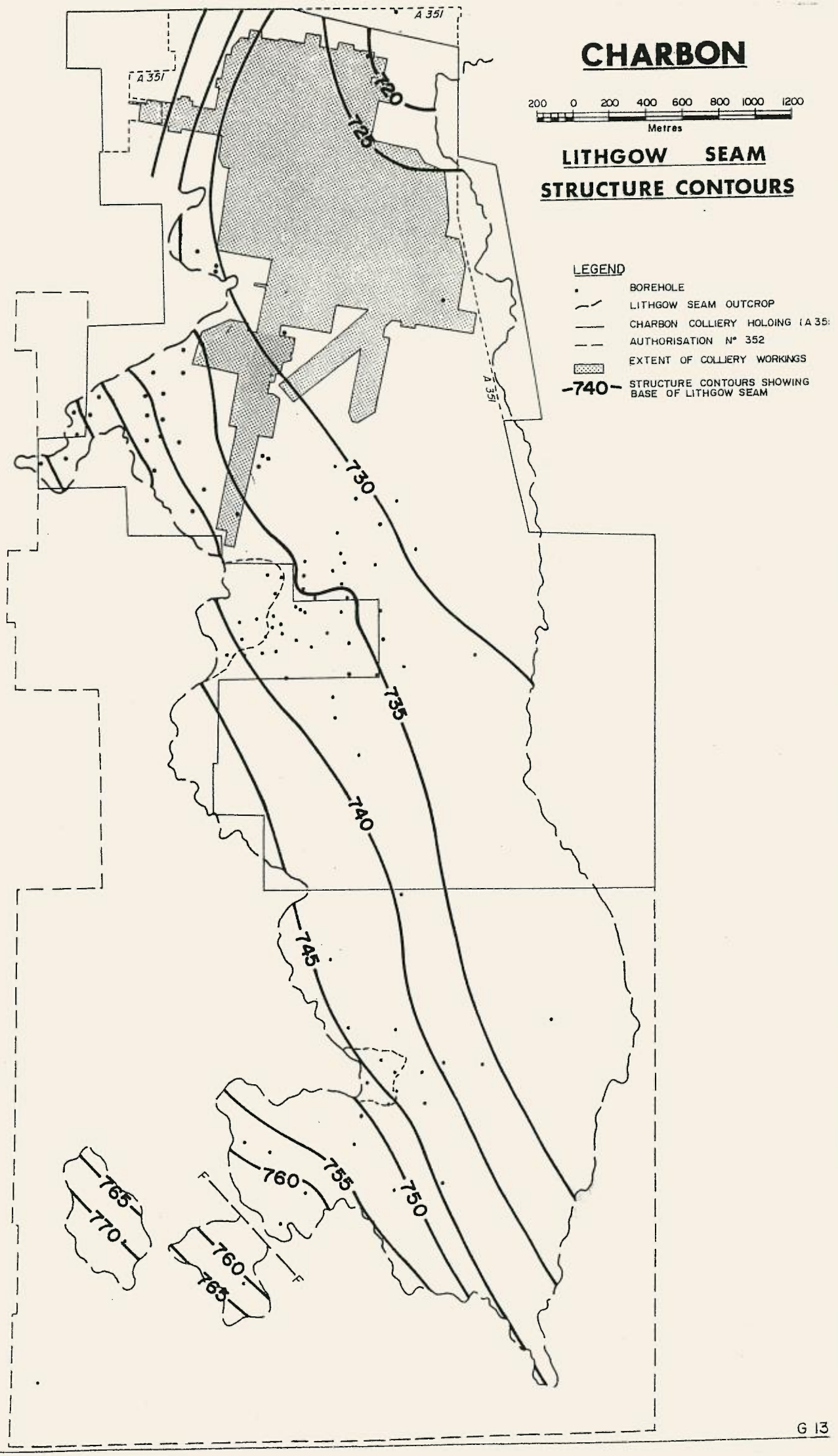
3.2 Structure

Structure contours on the floor of the Lithgow Seam are shown on Drawing G-1357. In general, the coal measures dip to the east and northeast at 1-2 degrees. Steeper dips occur both towards the western margin of the outlier and in the northeast of the Colliery Holding.

The regional joint system is a 255°-345° orthogonal joint set of which the 345° system is stronger. In general the face cleat is parallel to the 255° system and the butt cleat parallel to the 345° system although small scale variations from this pattern are common.

Small scale faulting is common throughout the existing colliery workings. In general, faulting has presented a serious mining problem only on the rare occasions where displacement exceeds the seam thickness, although additional support is usually necessary in the immediate vicinity of the faults and the fault planes usually act as channels for groundwater.

The faults are normal with displacement varying from 0 to 5 metres. Rapid variations in the displacement has been reported on some faults in inaccessible workings. The majority of faults strike in a general 345° direction and are accompanied by intensified zones of jointing. The longest strike length encountered to date is 350 metres with most being 100 metres or less.


CHARBON
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
STRUCTURE CONTOURS
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 35
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
-740- STRUCTURE CONTOURS SHOWING BASE OF LITHGOW SEAM
A 351
A 351
A 351
720
725
730
735
740
745
750
755
760
760
765
765
770

A fault with a throw of 10 metres is indicated by drilling data in the south-west of Authorisation 352. No other large scale faulting is anticipated.

3.3 Lithgow Seam

The Lithgow Seam is currently mined at Charbon Colliery. It is the main economic seam within the Holding.

The seam contains three coal plies (Drawing G 608) numbered 1, 2 and 3 from the floor separated by two claystone bands known locally as the "Bottom Stone Band" and the "Main Stone Band".

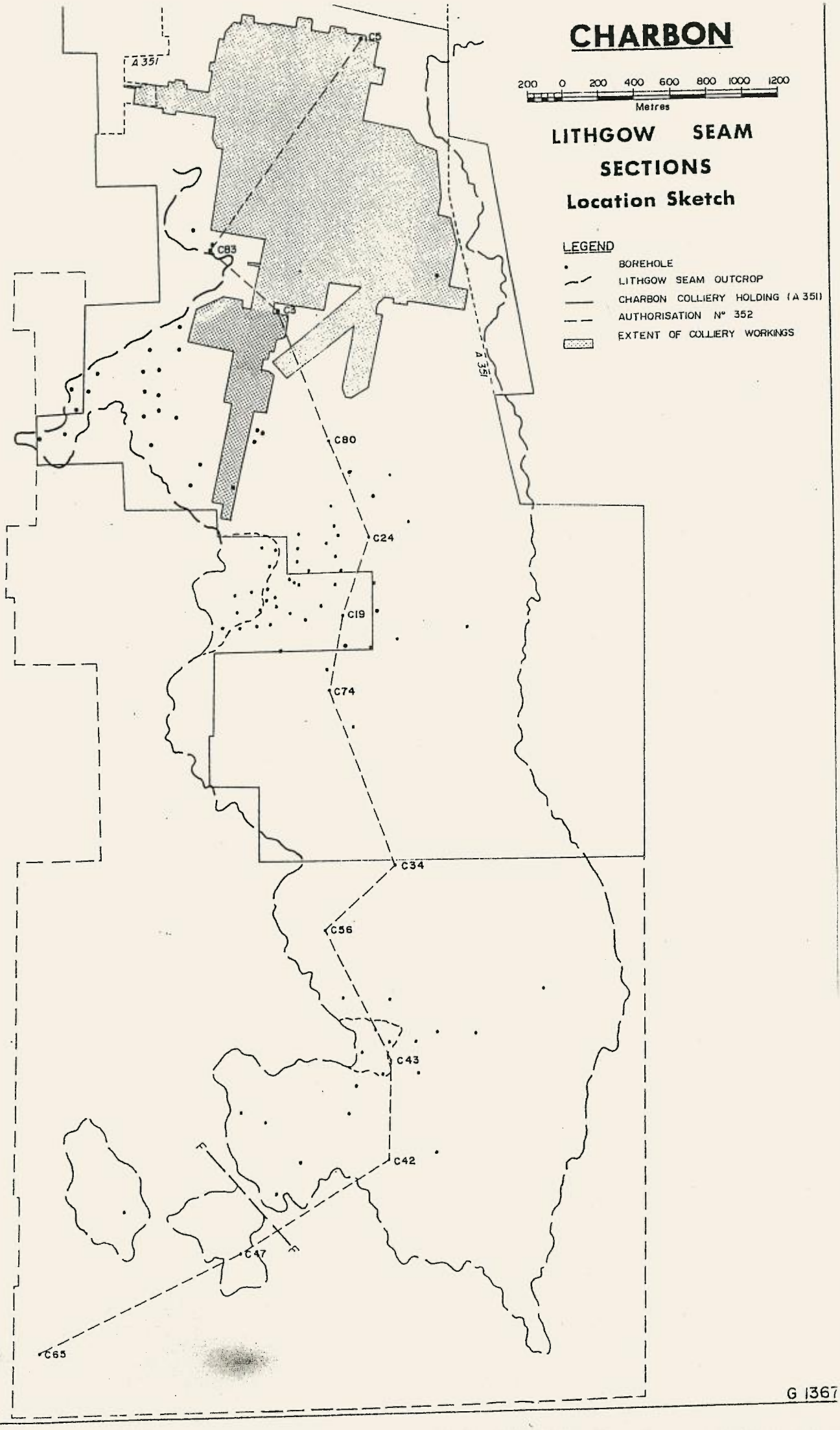
Ply 1 ranges from 0.43m thick to 1.00m with an average of 0.68m. The ply thickens in the southern and western areas of the Colliery Holding. Ash content ranges from 7.9% to 19.3% (db) with an average of 11.9% (db). It decreases to the east, west and south from a central ridge of 10-14% values (db).

The "Bottom Stone Band" ranges from 20-50mm.

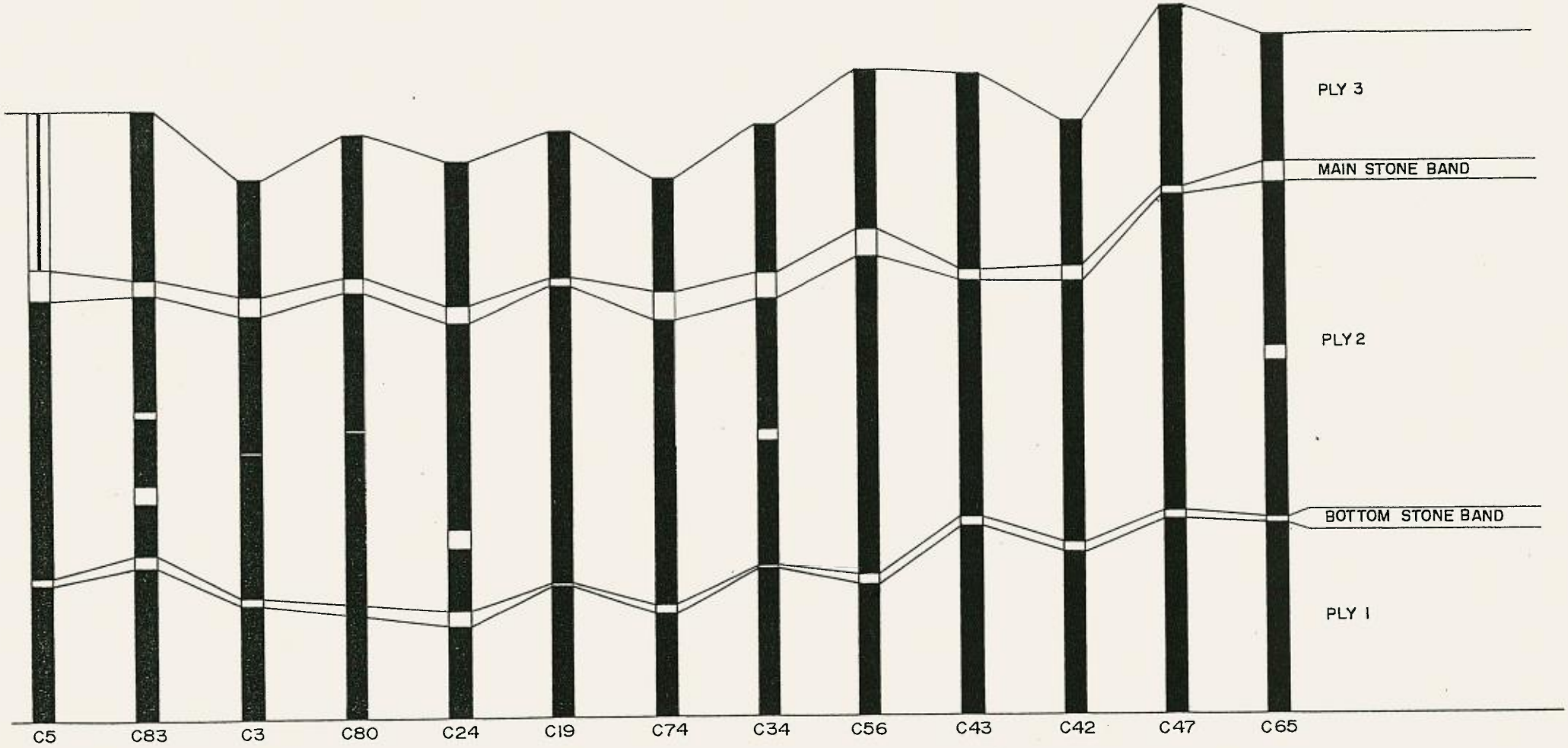
Ply 2 averages 1.32m in thickness and ranges from 0.58m to 1.61m. The central and south-western areas of the Colliery Holding have in excess of 1.40m. The ash content rises from 12-14% (db) in the central area to 18-22% (db) in the northern and southern areas.

The "Main Stone Band" is extremely variable in thickness and can range from 50mm to 300mm over a distance of 1 metre.

Ply 3 ranges in thickness from 0.47m to 0.87m with an average of 0.67m. The thickness is uniform for large areas and shows a gradual increase towards


CHARBON
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
SECTIONS
Location Sketch
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
A 351
A 351
C5
C83
C3
C80
C24
C19
C74
C34
C56
C43
C42
C47
C65

G 1367



LEGEND

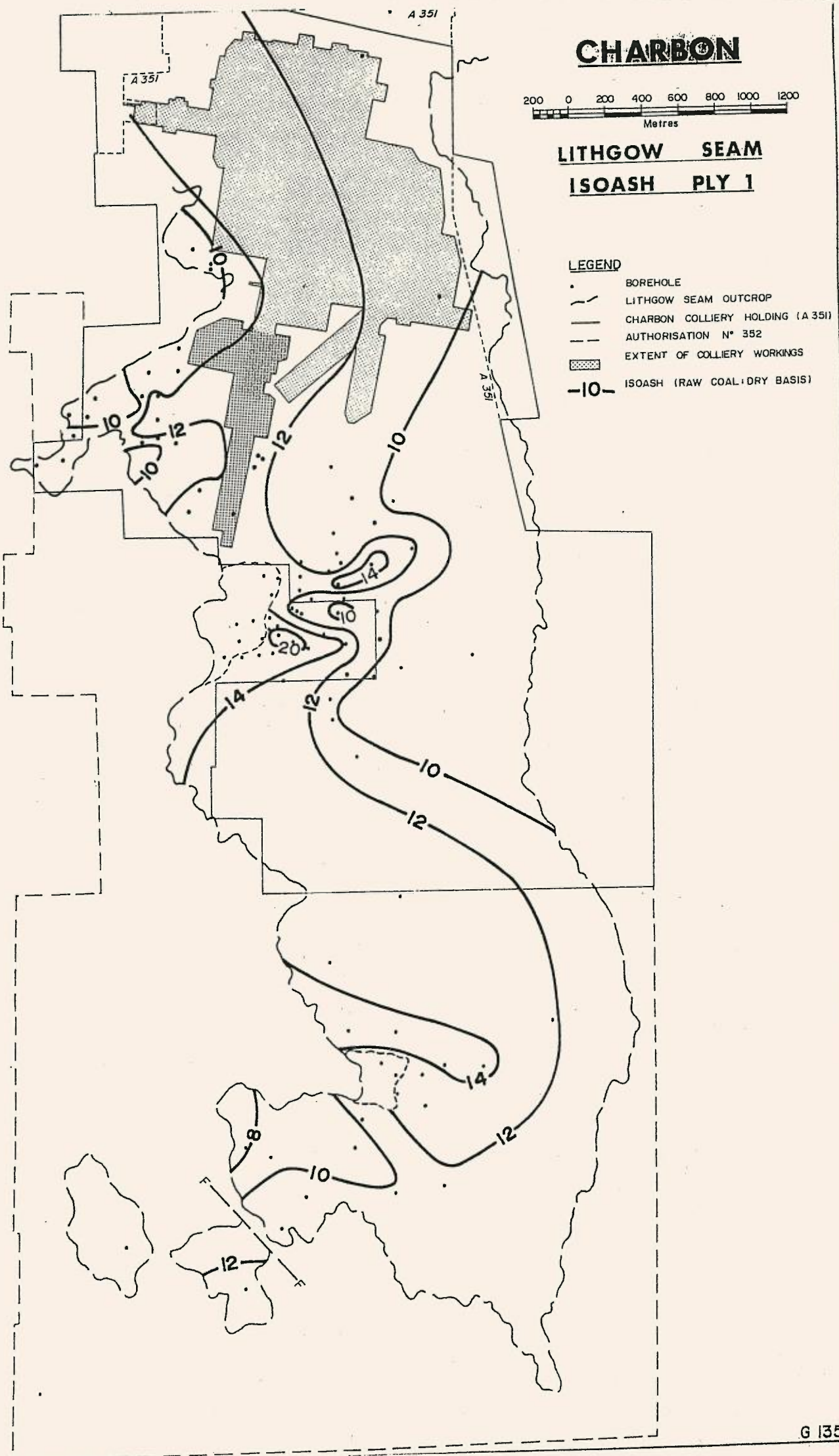
- COAL
- BANDS
- CORE LOSS

0 0·5 1·0 1·5 metres

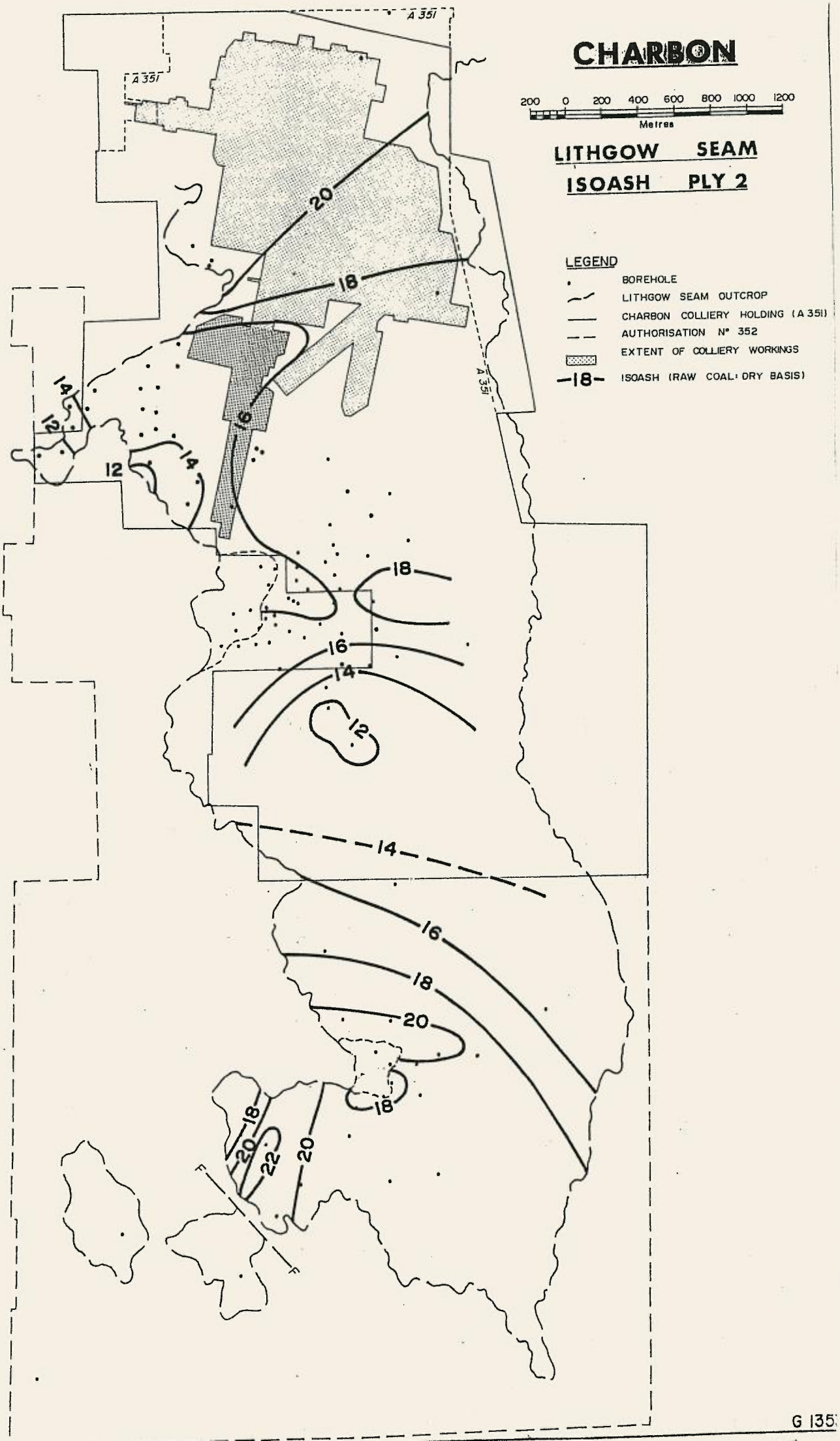
CHARBON

LITHGOW SEAM SECTIONS

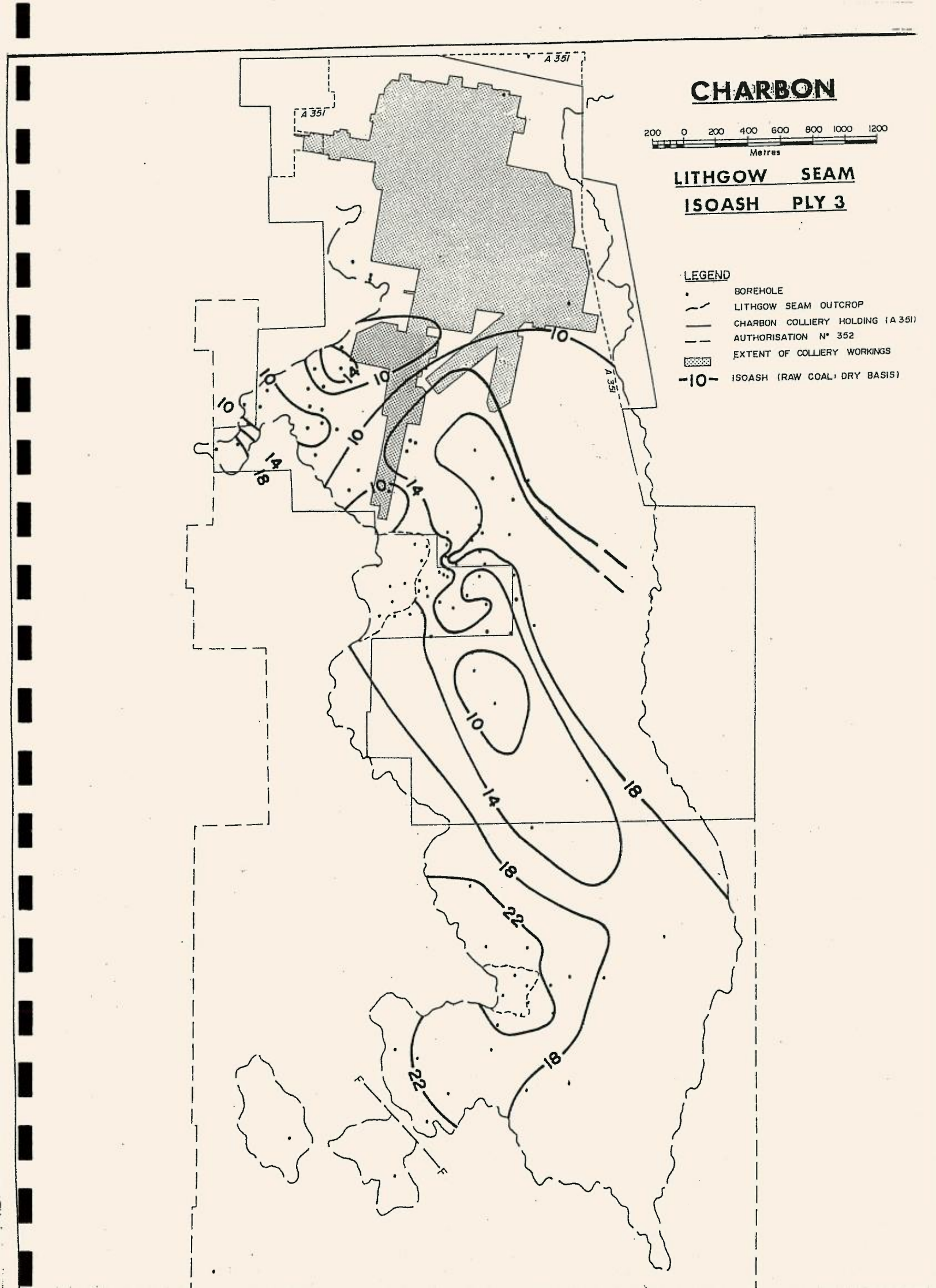
DWG. NO. G 1367


A 351
A 351
A 351
CHARBON
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
ISOASH PLY 1
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
-10- ISOASH (RAW COAL: DRY BASIS)
10
12
14
20
8
F
F

G 1352


CHARBON
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
ISOASH PLY 2
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
-18- ISOASH (RAW COAL: DRY BASIS)
A 351
A 351
A 351
20
18
16
14
12
14
12
18
16
14
12
14
16
18
20
18
18
20
22
20

G 135


CHARBON
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
ISOASH PLY 3
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
-10- ISOASH (RAW COAL, DRY BASIS)
A 351
A 351
A 351
1
10
14
18
22
F

the south. Ash content varies from 7.3-33.4% with an average of 16.4%. The ash percentage increases towards the south-west and east.

The Lithgow Seam as a whole increases in thickness towards the south and west. The seam ranges in thickness from 2.01m in the north to 3.39m in the south-west. The average thickness is 2.79 metres.

3.3.1 Raw Coal Quality

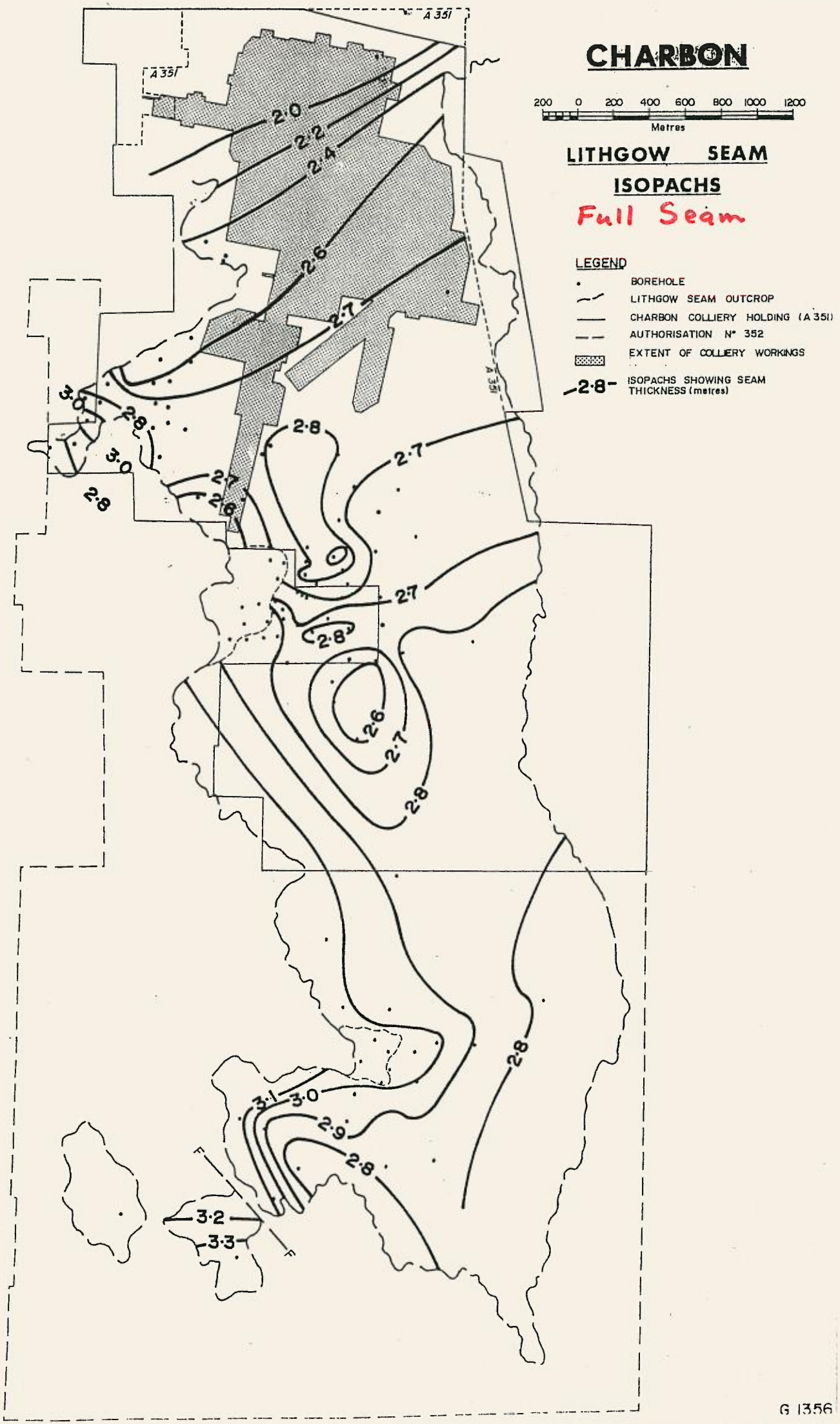
Raw coal analytical data is presented in Appendixes II and III. The seam has an average R.O.M. ash of 19.4% with a range from 12.0% to 26.2%. A typical analysis of R.O.M. coal and a size analysis is shown in Appendix V.

The extremely variable thickness of the two main claystone bands makes prediction of R.O.M. coal quality difficult. A reliable indication of coal quality trends can only be obtained from a survey of the seam ash percentage excluding bands (See AppendixIII).

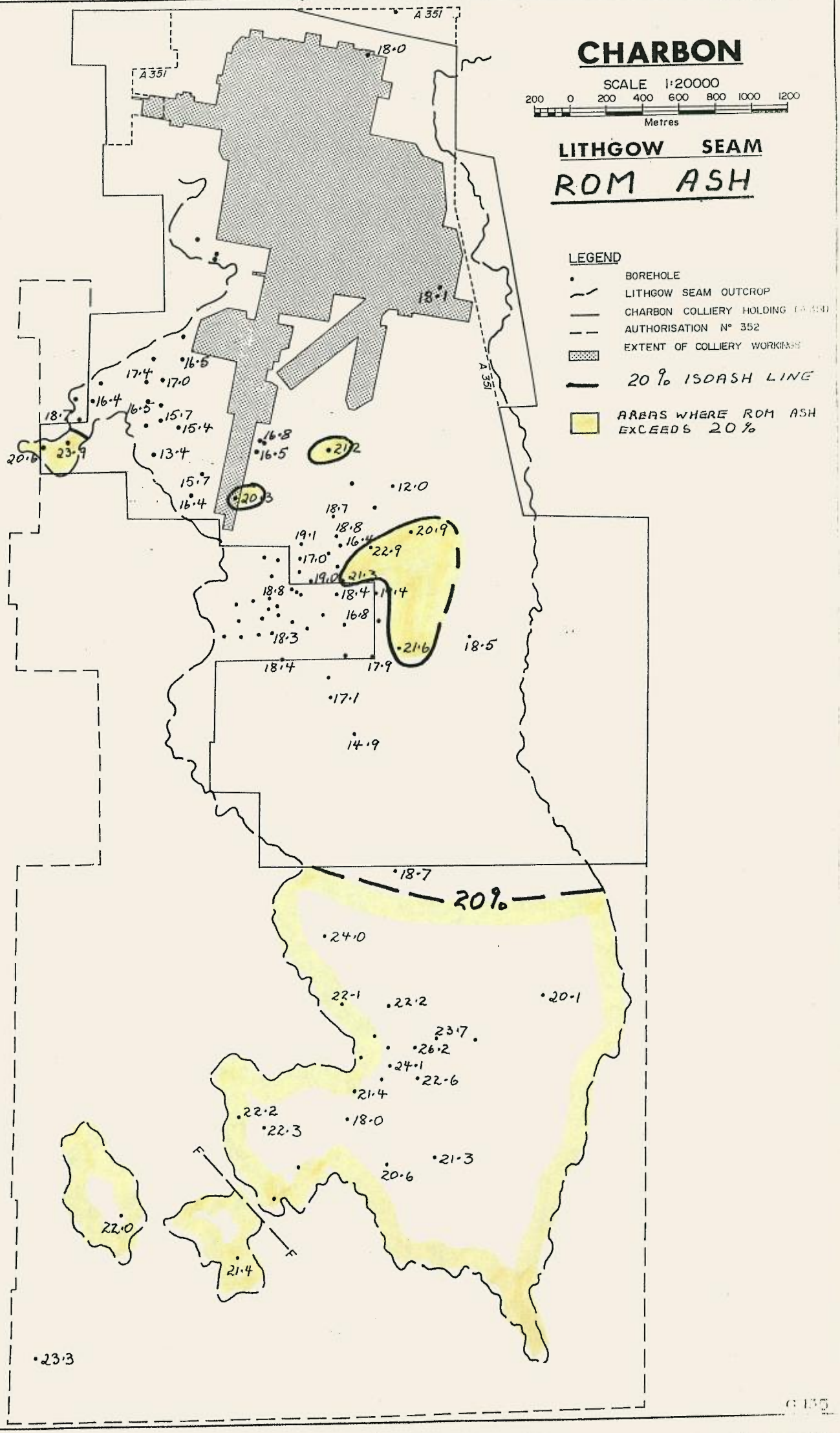
Drawing G-1355 reveals a variable central area with ash values (excluding bands) increasing to 18% in the north, south and west. The ex-bands ash values average 15.5% and range from 10.1% to 21.1%.

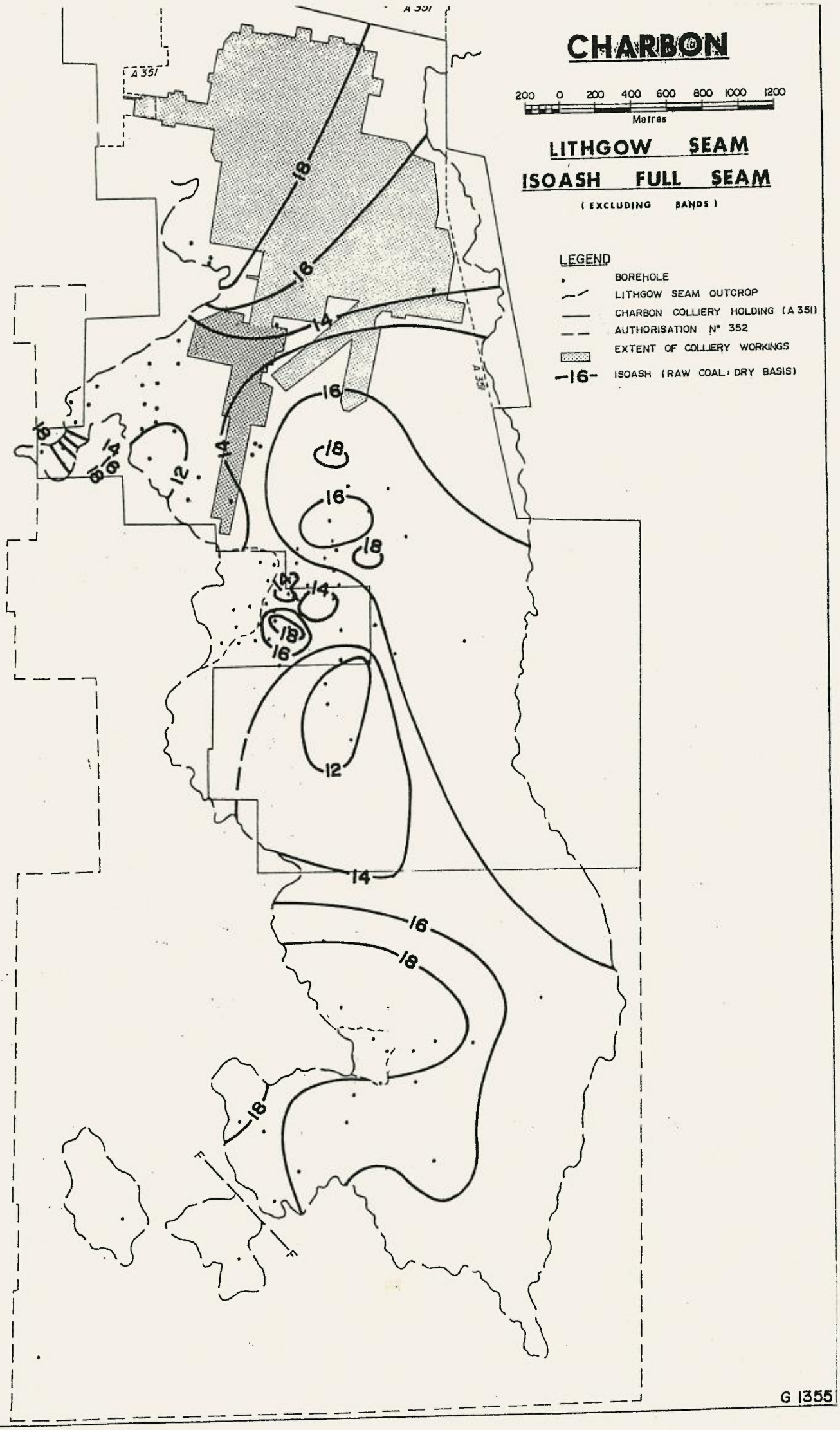
3.3.2 Washed Coal - Drill Core Data

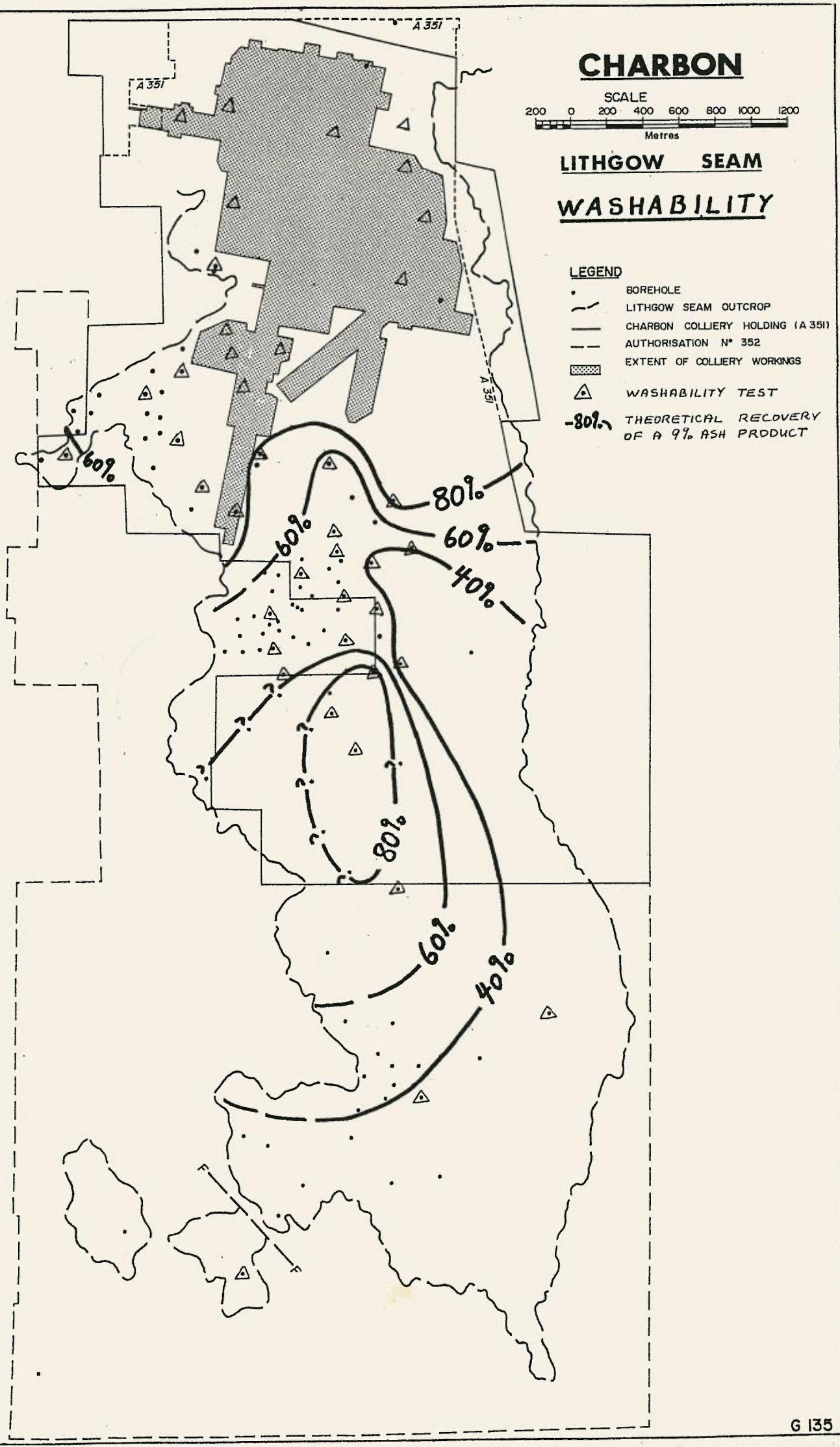
Washability testing has been carried out on twenty-nine of a possible sixty-six Lithgow Seam cores. Core losses, seam absences, oxidation and in-seam faults made 31 cores unsuitable for washability testing. Seven drill holes out of 104 drilled were openhole or did not reach the Lithgow Seam level.


A 351
A 351
2·0
2·2
2·4
2·6
2·7
3·0
2·8
3·0
2·8
2·7
2·6
2·8
2·7
2·7
2·8
2·6
2·7
2·8
3·1
3·0
2·9
2·8
2·8
3·2
3·3
CHARBON
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
ISOPACHS
Full Seam
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
2·8 ISOPACHS SHOWING SEAM THICKNESS (metres)

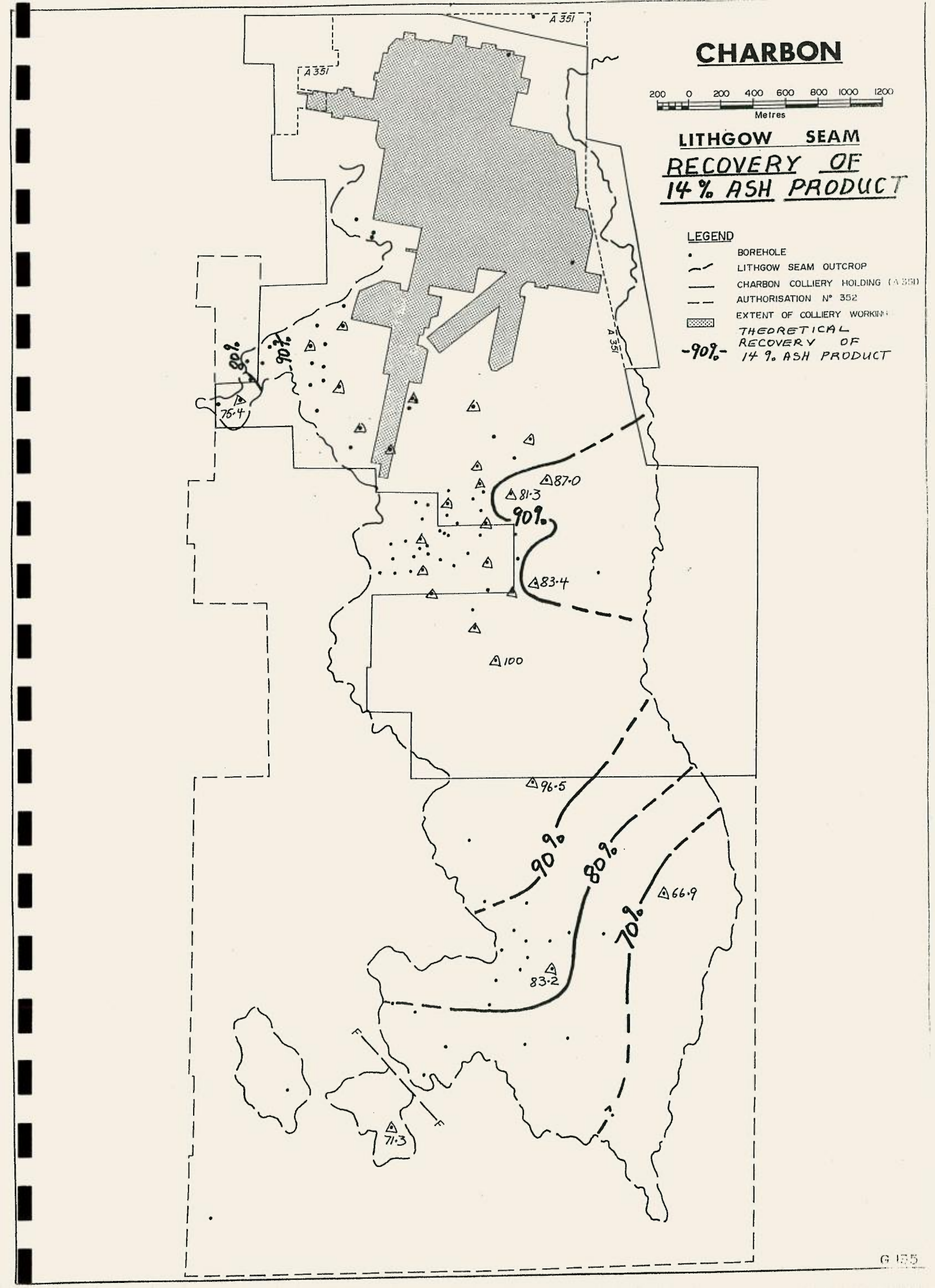
G 1356


CHARBON
SCALE 1:20000
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
ROM ASH
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
20 % ISOASH LINE
AREAS WHERE ROM ASH EXCEEDS 20 %
A 351
20%
18·0
18·1
17·4
17·0
16·5
16·4
18·7
16·5
15·7
15·4
13·4
20·6
23·9
16·8
16·5
21·2
20·3
15·7
16·4
12·0
18·7
18·8
19·1
16·4
20·9
22·9
17·0
19·0
21·3
18·8
18·4
16·8
18·3
21·6
18·5
18·4
17·9
17·1
14·9
18·7
24·0
22·1
22·2
20·1
23·7
26·2
24·1
22·6
21·4
22·2
22·3
18·0
21·3
20·6
22·0
21·4
23·3

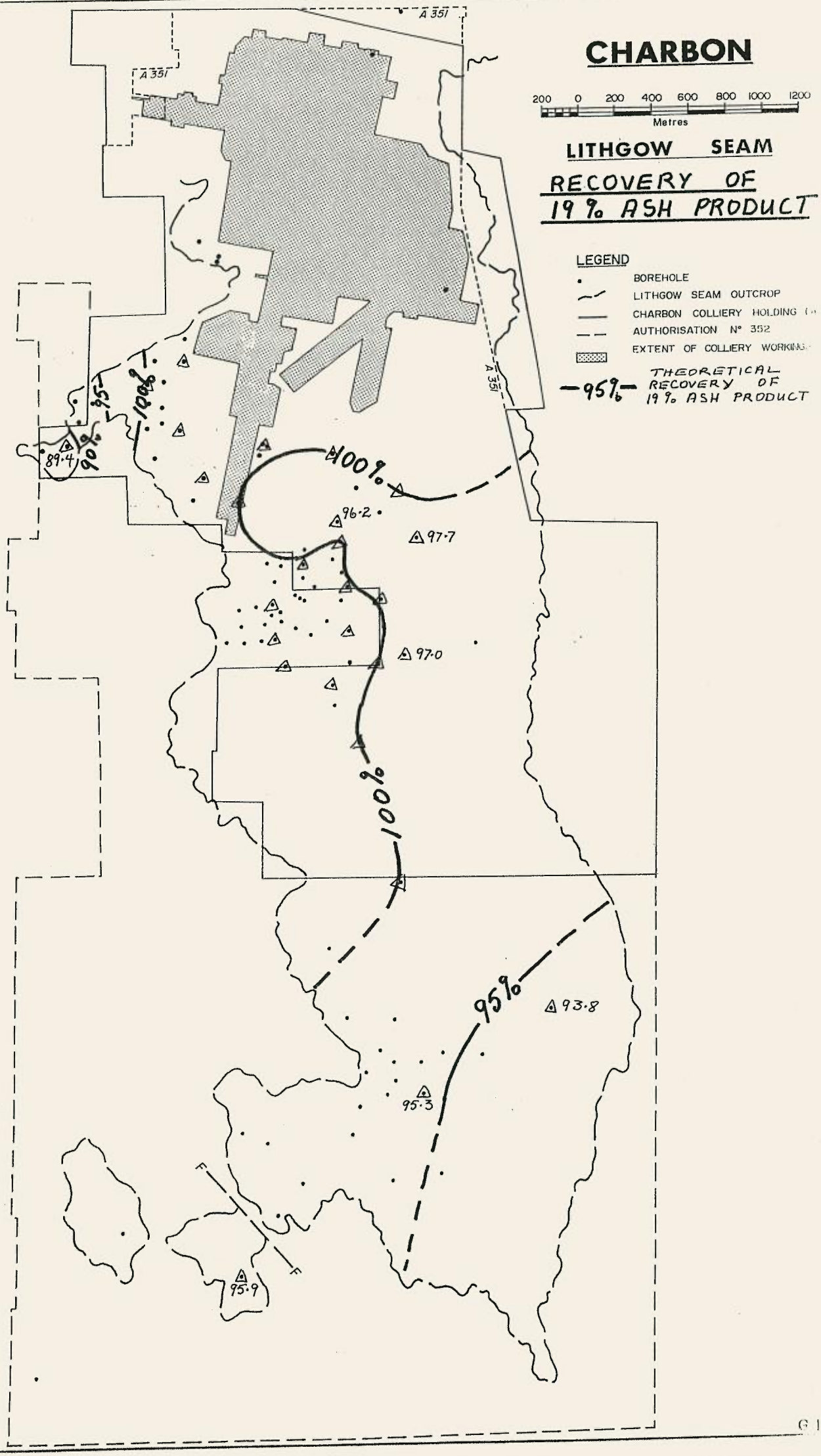

CHARBON
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
ISOASH FULL SEAM
(EXCLUDING BANDS)
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
-16- ISOASH (RAW COAL: DRY BASIS)
A 351
A 352
18
16
14
12
G 1355


A 351
A 351
A 351
CHARBON
SCALE
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
WASHABILITY
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
WASHABILITY TEST
-80%- THEORETICAL RECOVERY OF A 9% ASH PRODUCT
60%
80%
60%
40%
60%
80%
60%
40%

G 135


CHARBON
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
RECOVERY OF
14% ASH PRODUCT
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
-90%- THEORETICAL RECOVERY OF 14% ASH PRODUCT
A 351
A 351
A 351
90%
90%
75·4
87·0
81·3
90%
83·4
100
96·5
90%
80%
70%
66·9
83·2
71·3
F
F

G 155


CHARBON
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
RECOVERY OF
19% ASH PRODUCT
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
-95%- THEORETICAL RECOVERY OF 19% ASH PRODUCT
A 351
A 351
A 351
100%
95%
90%
100%
95%
89.4
96.2
97.7
97.0
93.8
95.3
95.9

The results of the washability tests suggest that A 351 (Charbon Colliery Holding) and A 352 can be divided into 3 regions based on washability. These regions are labelled A, B and C and have the following coal washability characteristics:-

Region 'A'

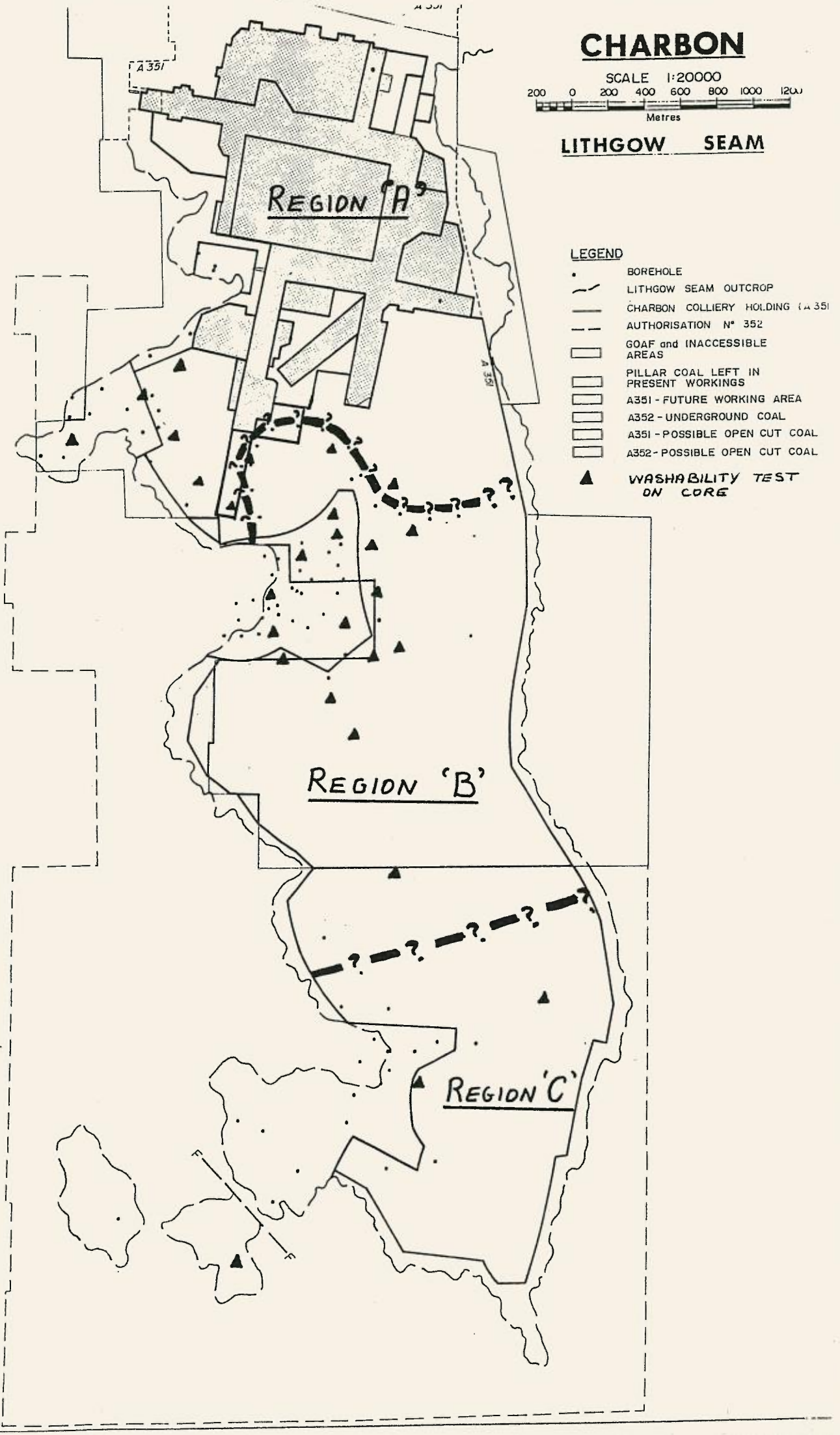
This region contains all past and present workings and some adjacent southern and western areas. The Lithgow seam has a total ash % (excluding bands) of 12% to 18%. It has a theoretical yield for a 9% ash washed product of 80 to 90%. The coal plies have ash values ranging from 8% to 15% with the top ply (Ply 3) being much lower than the two regions to the south.

Region 'B'

This region includes the southern half of the Colliery Holding and the northern part of A 352. The Lithgow Seam ash percentage (excluding bands) rapidly fluctuates from 14% to 18% with one pocket of 12%. The coal has a theoretical yield ranging from 40% to 85% for a 9% ash washed product. The two basal plies of the Lithgow Seam have similar ash values to those in Region 'A' but the top ply ranges from 10% to 22% ash. The low recovery areas (60%) generally coincide with the higher ash values of Ply 3.

Region 'C'

Region 'C' covers the southern 75% of A 352. The Lithgow Seam has an ash % (excluding bands) ranging from 16% to 19%. The theoretical yield of a 9% ash washed product is 24.1%, 29.3% and


CHARBON
SCALE 1:20000
200 0 200 400 600 800 1000 1200
Metres
LITHGOW SEAM
REGION 'A'
REGION 'B'
REGION 'C'
A 351
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351
AUTHORISATION N° 352
GOAF and INACCESSIBLE AREAS
PILLAR COAL LEFT IN PRESENT WORKINGS
A351 - FUTURE WORKING AREA
A352 - UNDERGROUND COAL
A351 - POSSIBLE OPEN CUT COAL
A352 - POSSIBLE OPEN CUT COAL
WASHABILITY TEST ON CORE

and 38.2% in the three seam cores tested. Both Ply 2 and 3 are higher in ash than in the 'A' and 'B' regions with both having a range of 18% to 22% ash.

The 1980 Geological Assessment of the Lithgow Seam washability was based on R.O.M. sample tests and core from C9 and C10 boreholes. This data prompted an optimistic evaluation and a conclusion that washability characteristics improved in a southerly direction.

The 89 drill holes completed since 1980 indicate that the Lithgow Seam in the central area of Charbon Colliery (Region 'B') has widely varying and rapidly fluctuating coal quality and washability characteristics. The southern area (Region 'C') has very low recovery rates for 9% ash washed coal and an average seam ash percentage (excluding bands) higher than normal.

3.3.3 Marketing Options

Charbon Colliery is presently producing a 9% ash export coal. The ROM coal from Region 'A' and the south-west section of Region 'B' should have a theoretical recovery, of 9% ash coal, in excess of 70%. The remainder of Region 'B' coal will require one of the following market strategies:-

(a) production of 9% ash coal and 19-21% ash domestic steaming coal.

(b) production of 14% ash export steaming coal.

(c) all ROM coal to the domestic steaming coal market.

The theoretical recovery of 14% ash coal decreases in the southern and eastern areas of Region 'C'. This coal may be destined for the domestic steaming coal market since it:-

(i) has a 95% recovery rate of 19% ash coal and

(ii) there may be no low ash coal remaining to boost supply of a 9% ash product.

3.4 Lidsdale Seam

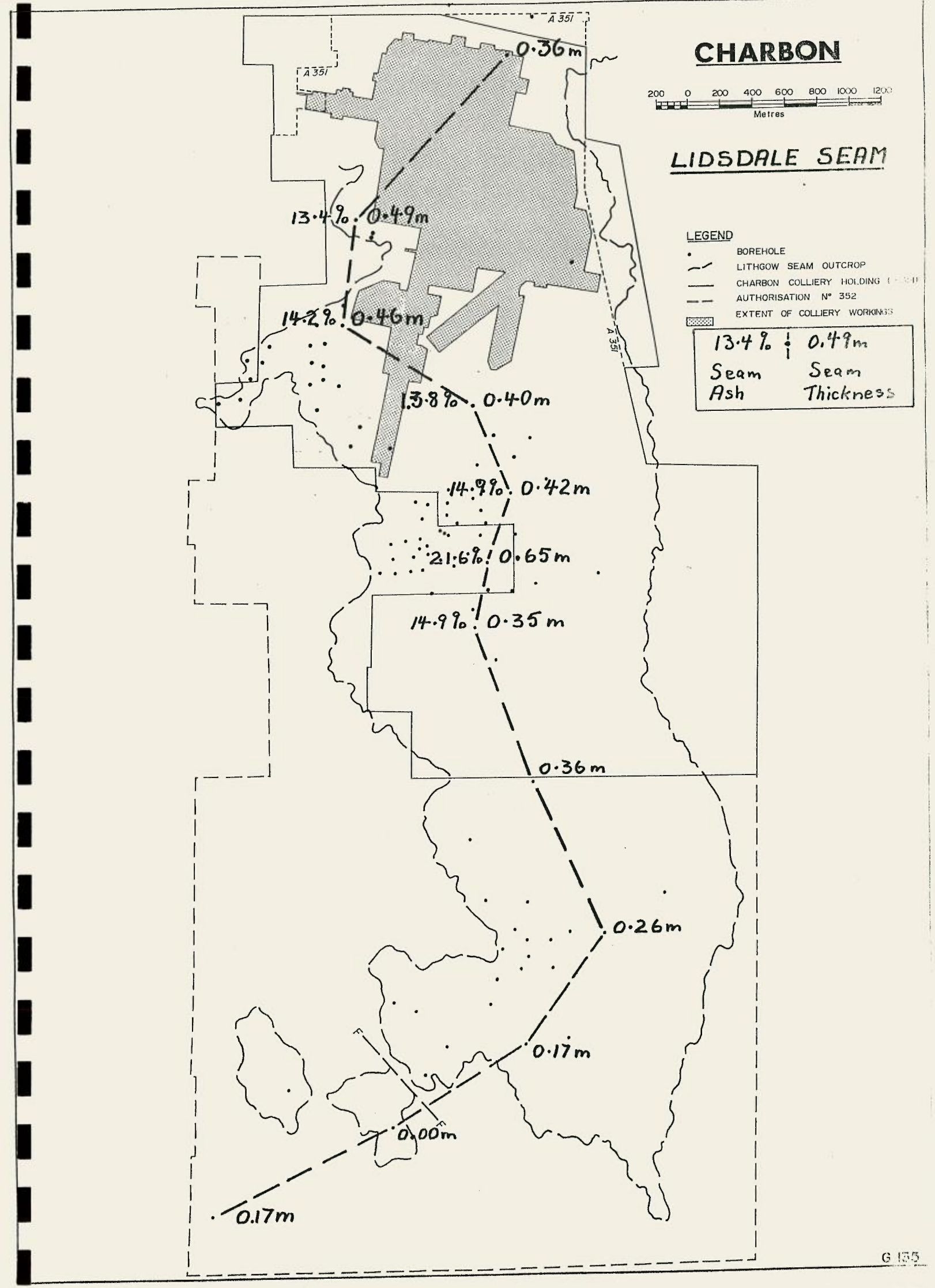
A coal seam averaging 0.48 metres in thickness occurs 6 to 10 metres above the Lithgow Seam. It may be equivalent to the Lidsdale Seam in the Lithgow area and will be labelled as such.

The seam has a maximum thickness of 0.65 m. It ranges from 0.40 to 0.65 m in the northern half of A 351 but drops to 0.35 in the central area and less than 0.30 m in A 352. The raw ash percentage ranges from 12.0 to 26.9% and averages 15.4%. A large majority of the cores were in the range 13-16%.

Four seam cores were tested for washability characteristics. Three indicated a recovery rate of 85 to 90% for a 10% ash product while C22 indicated a

15% ash product with 85% recovery. The R.O.M. coal could be sold as a steaming coal.

The seam thickness makes the Lidsdale Seam uneconomical but the seam will be an added bonus in any opencut venture.


CHARBON
200 0 200 400 600 800 1000 1200
Metres
LIDSDALE SEAM
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
13.4% | 0.49m
Seam Ash | Seam Thickness
A 351
0.36m
13.4% 0.49m
14.2% 0.46m
13.8% 0.40m
14.9% 0.42m
21.6% 0.65m
14.9% 0.35m
0.36m
0.26m
0.17m
0.00m
0.17m

G 135

3.5 Irondale Seam

The Irondale Seam is a heavily banded seam consisting essentially of two coal units separated by inferior coal and claystone bands. The seam averages 2.83 metres in thickness (range - 2.42 m to 3.29 m). The top unit (Unit 'C') has an average thickness of 0.63 m with a range of 0.36 m to 0.84 m. The central unit (Unit 'B') has an average thickness of 1.39 m. Unit 'A' at the base of the Irondale Seam has an average thickness of 0.81 metres and a range of 0.36 m to 1.08 m.

3.5.1 Coal Quality

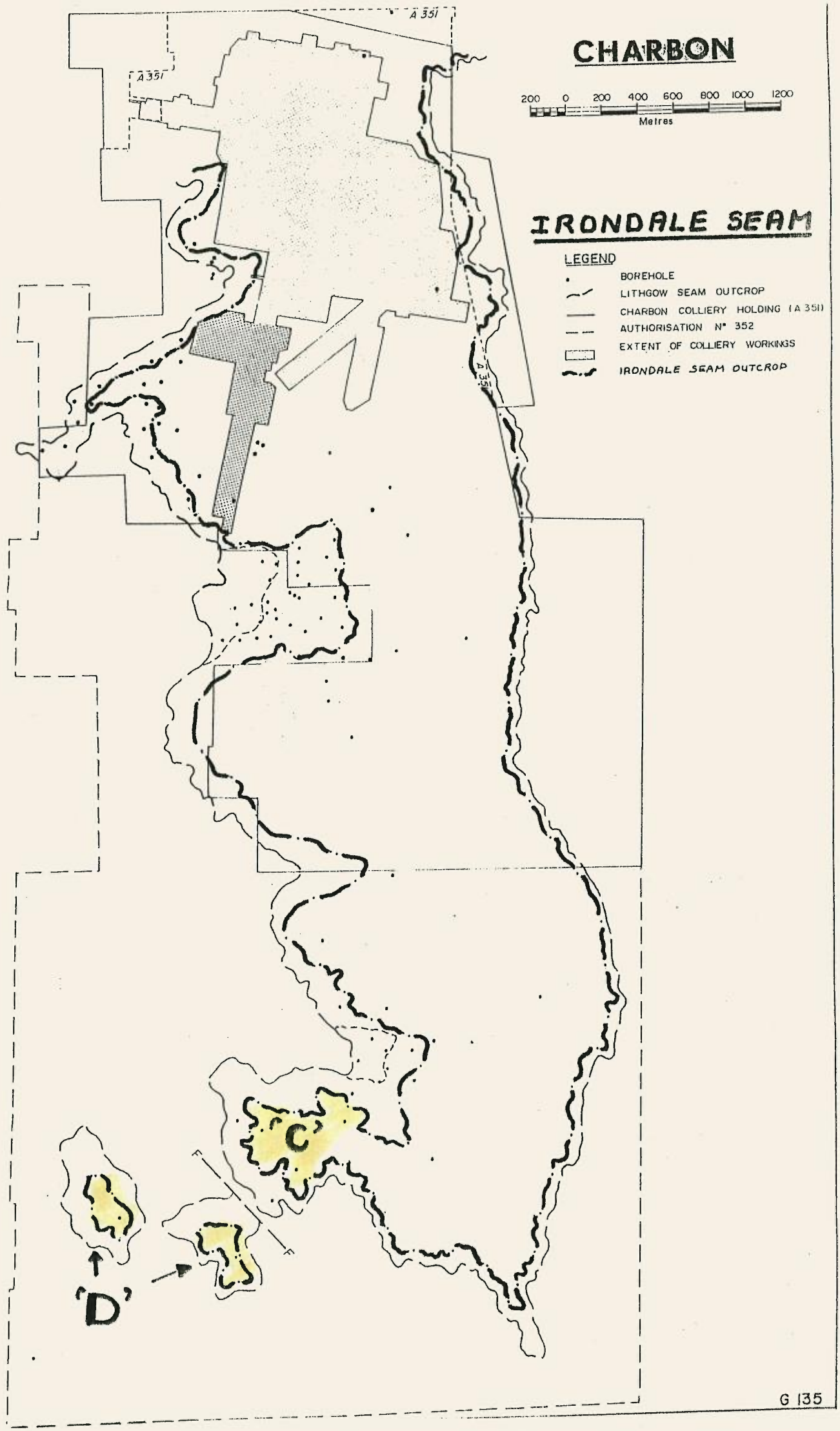
The top unit ('C') has an average ash % over 33 drill holes of 13.4% (2.5% M) with a range of 7.2 to 18.8%. Unit 'A' has an average ash of 19.7% with a range of 15.2 to 29.3%. The average ash percentage of the middle unit 'B' is over 45%.

3.5.2 Irondale Seam Potential

The high ash percentage of the middle unit adversely affects the viability of an underground mine in the Irondale Seam. Units A and C occupy a total 51% of the seam and have an average combined thickness 1.44 m with a range of 0.87 to 1.76 m. The combination of A and C produces an average ash of 17.6% with a range of 13.3 to 25.9%. These two units could be mined by open cut methods with unit 'B' being disgarded.

3.5.3 Washed Coal - Drill Core

Three seam cores (C76, C80, C81) were washed on an individual unit basis. The results indicate that Unit 'C' could be washed to produce a 9% ash product at an average recovery of 85%. Unit 'A' is suitable for steaming coal production as it averages 18% ash at 77% recovery. A blend of Units 'A' and 'C' could produce a 14% washed product at 90% recovery.


CHARBON
200 0 200 400 600 800 1000 1200
Metres
IRONDALE SEAM
LEGEND
BOREHOLE
LITHGOW SEAM OUTCROP
CHARBON COLLIERY HOLDING (A 351)
AUTHORISATION N° 352
EXTENT OF COLLIERY WORKINGS
IRONDALE SEAM OUTCROP
A 351
A 351
A 351
'C'
'D'
G 135

3.6 Katoomba Seam

The Katoomba Seam is a heavily banded seam containing inferior coal. It averages 6.965 metres in thickness and may be sub-divided into 4 basic units as shown on Drawing G-602.

The basal section, Unit 1, averages 2.188 m in thickness and contains dull and inferior coal with several lenticular claystone bands of variable thickness. A basal unit of inferior coal and claystone is locally developed (Unit 1A - Drawing G-602). Unit 2 averages 2.292 metres in thickness and consists of inferior coal with numerous irregular claystone bands. A thick claystone band almost 1 metre thick, Unit 3, separates Unit 2 from the upper Unit 4 which consists of inferior coal with a few irregular claystone bands and averages 1.66 metres in thickness.

3.6.1 Coal Quality

The Katoomba Seam contains inferior high ash coal and averages over 50% ash for the whole seam.

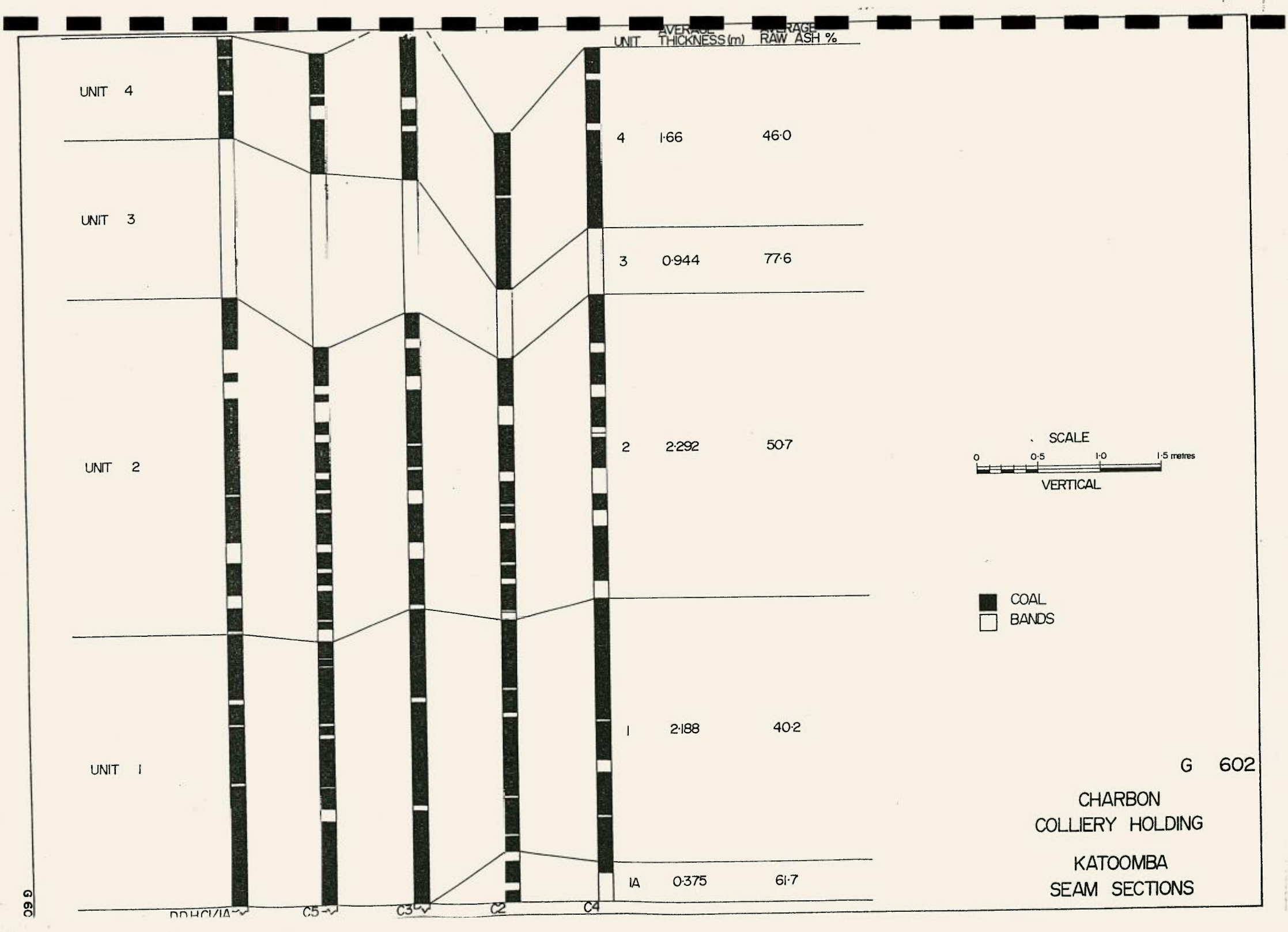
The best section occurs at the base in Unit 1 which averages 40% ash, the best intersection being 35% ash in DDH C4. The estimated average ash content of this unit excluding bands is very high at 35%.

3.6.2 Katoomba Seam Potential

The Katoomba Seam is of extremely poor quality and no part of it is of economic value. The small irregular outcrop of this seam would probably preclude mining regardless of quality.

3.6.3 Reserves

Because of its inferior quality the Katoomba Seam does not constitute a potential reserve at Charbon.


UNIT
AVERAGE THICKNESS (m)
AVERAGE RAW ASH %
UNIT 4
UNIT 3
UNIT 2
UNIT 1
4 1·66 46·0
3 0·944 77·6
2 2·292 50·7
1 2·188 40·2
1A 0·375 61·7
DDHC1/1A
C5
C3
C2
C4
SCALE
0 0·5 1·0 1·5 metres
VERTICAL
COAL
BANDS
G 602
CHARBON
COLLIERY HOLDING
KATOOMBA
SEAM SECTIONS
G 600

4. COAL RESOURCES AND RESERVES

The coal resource and mineable in-situ reserves in A351 and A352 have been calculated using planimeter and borehole data. Allowance has been made for barriers on lease boundaries, open cut areas and a 16 metre cover restriction along the outcrop.

Almost all areas within A351 and A352 can be classed as measured. Two small areas in the south-west are more than 0.5 km from a borehole due to access problems.

Estimates of mineable in-situ reserves by P. Hayes (1988) assume a 2.7 m section. Underground panels are assumed to be able to work to the 20 m coverline. Estimates of recoverable reserves assume an 80% mining recovery rate, comprising 30% in first workings and 50% in pillar extraction.

Marketable reserves will vary between 80% and 100% of recovered coal for the Lithgow Seam. This is dependent upon the efficiency of the coal preparation plant and the decision to sell R.O.M. coal or produce export quality coal by washing.

THE CHARBON COAL RESOURCE

(A) Lithgow Seam

(1) Measured Resource (1988)

A351 - Underground	17.45	million tonnes
- Open Cut	0.8	" "
A352 - Underground	13.1	" "
- Open Cut	4.0	" "

(2) Mineable In-Situ Reserves (1988)

A351 - Underground	12.28	million tonnes
A352 - Underground	9.42	" "
A351, A352 - Open Cut	4.8	" "

(3) Recoverable Reserves (1988)

A351, A352 - Underground	17.36	million tonnes
- Open Cut	4.32	" "

(4) Marketable Reserves

The marketable reserve will vary between 70% and 100% of the recoverable reserve depending upon the final coal product.

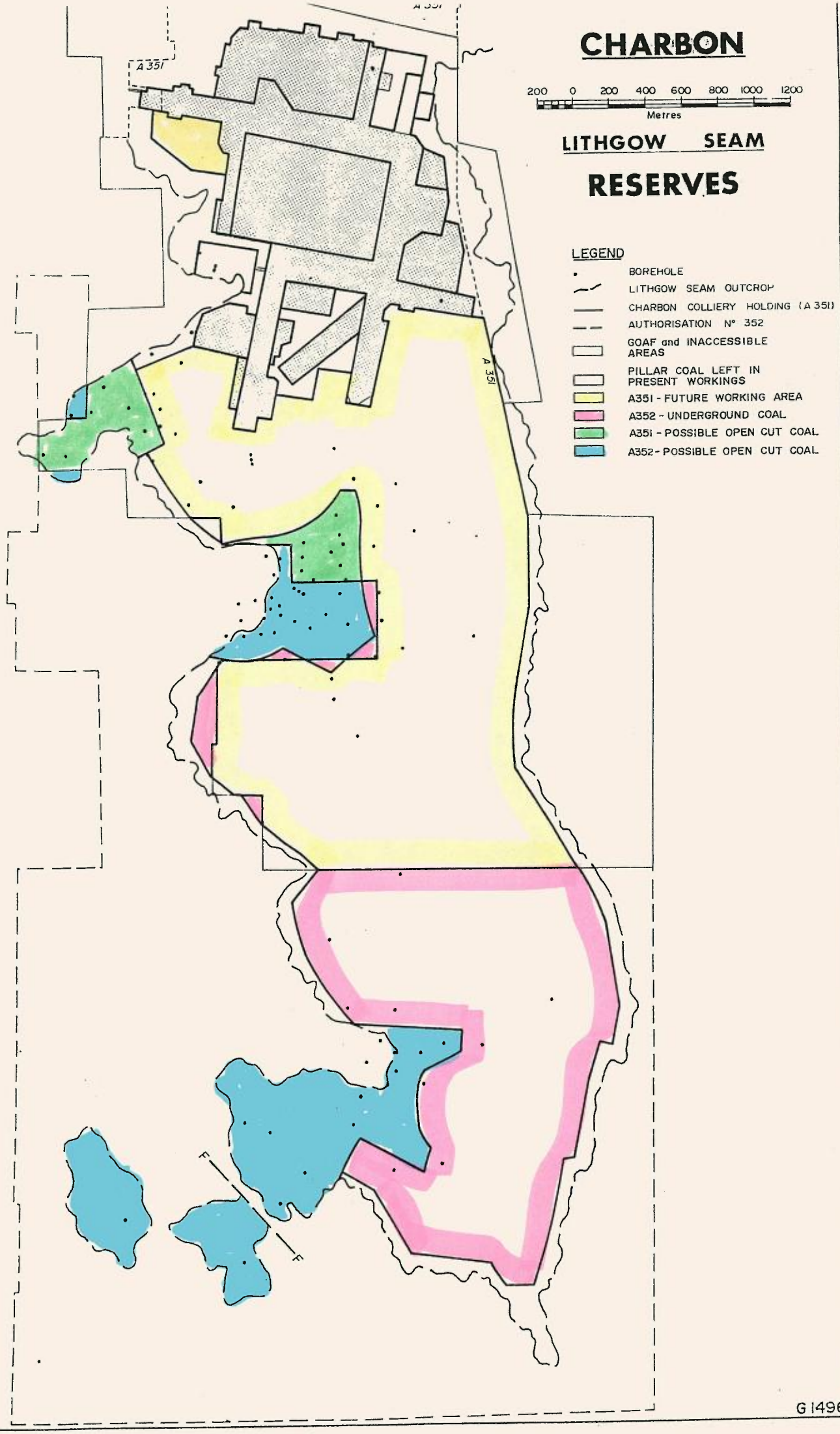
CHARBON

200 0 200 400 600 800 1000 1200

Metres

LITHGOW SEAM

RESERVES



LEGEND

- BOREHOLE
- LITHGOW SEAM OUTCROP
- CHARBON COLLIERY HOLDING (A 351)
- AUTHORISATION N° 352
- GOAF and INACCESSIBLE AREAS
- PILLAR COAL LEFT IN PRESENT WORKINGS
- A351 - FUTURE WORKING AREA
- A352 - UNDERGROUND COAL
- A351 - POSSIBLE OPEN CUT COAL
- A352 - POSSIBLE OPEN CUT COAL

G 1496

(B) Irondale Seam

(1) Resource (1988)

A351 and A352 have an indicated resource in excess of 10 million tonnes of coal in Units 'A' and 'C' of the Irondale Seam. The central plies, Unit 'B', of the Seam have an ash percentage of 40-55% and are not considered as a resource.

(2) Mineable In-Situ Reserves (1988)

The conceptual mining plan includes five open cut areas. Units 'A' and 'C' of the Irondale Seam would be mined in C, D open cuts. (P. Hayes - 1988 conceptual plan). In-situ reserves total 340 000 tonnes.

(3) Recoverable Reserves (1988)

The recoverable reserve of Irondale coal in opencuts C and D totals 306 000 tonnes (90% recovery factor).

(4) Marketable Reserves

Units 'A" and 'C' of the Irondale Seam could be washed to produce a 14% export coal. The marketable reserve should be 275 000 tonnes.

(C) Lidsdale Seam

A351 and A252 have an indicated resource in excess of two million tonnes of Lidsdale Seam coal. The seam can only be mined by open cut methods. The conceptual mining plan includes five open cut areas. Lidsdale Seam coal would be recovered from areas A and E. The mineable in-situ reserve is 90 000 tonnes while the recoverable and marketable reserves equal 81 000 tonnes.

5. CONCLUSIONS

1. The measured resource of Lithgow Seam coal within the Carbon Colliery Holding is 18.25 million tonnes while the resource in Authorisation 352 totals 17.1 million tonnes.

2. The conceptual mining plan (P. Hayes - 1988) concludes that the Charbon Holding has underground mineable in-situ reserves of 12.28 million tonnes while A352 has 9.42 million tonnes. Open cut coal has a total reserve of 4.8 million tonnes. Recoverable reserves total 17.36 million tonnes for underground coal and 4.32 million tonnes for open cut coal.

3. The marketable reserves will vary between 70% and 100% of the recoverable reserve depending upon the final coal product.

4. The Lidsdale and Irondale Seams will provide bonus coal production. The conceptual mining plan concludes that 306 000 tonnes of Irondale Seam coal (Plies A and C) and 81 000 tonnes of Lidsdale Seam coal will be recovered.

5. The Katoomba Seam has no economic value within A351 and A352 at the present time.

6. Washability studies of drill core indicate that the theoretical yield of 9% ash coal will decrease in a southerly direction. This trend will necessitate the change to 14% and 19% ash productgs.

7. Fourteen drill holes will be drilled in areas ahead of present workings to provide a more detailed picture of coal vashability.

APPENDIX I

HOLE	LOCATION I.S.G. mE	mN	COLLAR R.L. (A.H.D.) (m)	DEPTH (m)	R.L. BASE OF KATOOMBA SEAM (m)	R.L. BASE OF IRONDALE SEAM (m)	R.L. BASE OF LITHGOW SEAM (m)
C1	206 250	1358 834	866.0	34.70	-	-	-
C1A	206 250	1358 834	866.0	145.55	825.59	743.365	
C2	205 028	1356 476	877.0	151.00	839.46	758.93	730.41
C3	205 328	1357 151	873.7	149.22	835.82	753.92	727.81
C4	206 190	1357 240	868.0	139.80	840.965	760.395	731.225
C5	205 328	1358 620	871.0	160.500	828.445	747.300	719.390
C6	204 194	1356 905	779.3	36.60	-	773.97	750.05
C7	206 092	1355 280	879.5	181.60	not cored	762.004	733.715
C8	204 594	1356 968	785.6	51.14	-	765.82	739.96
C9	205 789.1	1356 249.5	795.9	68.05	-	759.35	729.655
C10	205 363.8	1354 872.3	791.4	51.76	-	764.00	-
C11	205 107.0	1355 034.5	750.9	19.65	-	-	735.80
C12	205 047.1	1355 646.1	744.1	8.20	-	-	735.90
C13	205 167.3	1355 665.6	749.3	12.95	-	-	735.90 (est.)
C14	205 198.0	1355 830.7	747.4	16.20	-	-	733.50
C15	205 452.7	1355 931.0	757.6	25.15	-	-	733.67
C16	204 790.3	1355 510.5	752.9	18.00	-	-	744.86
C17	204 982.3	1355 496.1	751.7	16.50	-	-	737.42

HOLE	LOCATION I.S.G. mE	mN	COLLAR R.L. (A.H.D.) (m)	DEPTH (m)	R.L. BASE OF KATOOMBA SEAM (m)	R.L. BASE OF IRONDALE SEAM (m)	R.L. BASE OF LITHGOW SEAM (m)
C18	205 182.4	1355 485.6	758.8	24.25	-	-	736.09
C19	205 396.6	1355 481.6	758.8	25.25	-	-	735.59
C20	204 790.2	1355 708.4	741.7	4.00	-	-	-
C21	205 005.9	1355 706.9	743.8	10.50	-	-	735.86
C22	205 396.7	1355 701.6	758.0	25.50	-	-	735.71
C23	204 994.1	1355 310.6	743.3	10.00	-	-	-
C24	205 606.9	1355 900.0	767.3	39.25	-	758.01	731.31
C25	205 085.2	1355 895.7	746.2	12.25	-	-	746.01
C26	205 209.1	1356 006.6	752.0	22.50	-	-	732.25
C27	205 418.5	1356 104.5	759.6	28.50	-	-	733.40
C28	204 906.4	1355 704.6	741.3	2.30	-	-	-
C29	204 791.4	1355 641.7	746.7	10.00	-	-	-
C30	204 891.8	1355 606.5	746.7	11.25	-	-	736.30
C31	205 011.2	1355 311.6	773.9	36.50	-	765.74	739.16
C32	205 202.1	1355 641.7	749.7	16.50	-	-	736.03
C33	205 531.4	1355 243.7	781.1	46.50	-	762.89	735.78
C34	205 398.3	1354 039.8	770.8	32.75	-	-	739.65
C35	206 163.4	1353 214.3	803.3	73.50	-	755.25	731.27

HOLE	LOCATION I.S.G. mE	mN	COLLAR R.L. (A.H.D.) (m)	DEPTH (m)	R.L. BASE OF KATOOMBA SEAM (m)	R.L. BASE OF IRONDALE SEAM (m)	R.L. BASE OF LITHGOW SEAM (m)
C36	205 741.3	1353 011.0	779.1	42.75	-	760.14	-
C36R	205 741.3	1353 010.0	779.1	43.25	-	-	-
C37	205 388.8	1352 836.5	777.2	36.50	-	766.20	742.62
C38	205 075	1356 524	879	147.60	-	-	732.41
C39	203 999.7	1356 681.1	767.2	23.00	-	-	754.57
C40	205 060	1356 529	879	149.50	-	-	731.05
C41	205 422.9	1352 388.6	783.3	41.75	-	768.2	744.27
C42	205 147.5	1352 403.4	794.3	43.50	-	774.61	751.68
C43	205 242.3	1352 933.6	756.9	15.50	-	-	744.18
C44	205 104.3	1353 019.5	749.9	7.50	-	-	-
C45	204 664.6	1352 431.3	798.5	39.75	-	782.92	760.7
C46	204 488.3	1352 291.8	770.7	9.75	-	-	762.86
C47	204 230.9	1351 992.7	797.5	37.50	-	785.23	761.01
C48	203 629.9	1352 347.5	801.5	34.75	-	791.45	770.03
C49	204 968.0	1352 662.6	789.6	39.50	-	776.1	752.90
C50	204 509.9	1352 699.7	790.7	35.25	-	780.49	757.50
C51	204 365.1	1352 801.0	767.9	10.50	-	-	759.74
C52	205 057.4	1352 809.3	762.2	13.50	-	-	750.65

HOLE	LOCATION I.S.G. mE	mN	COLLAR R.L. (A.H.D.) (m)	DEPTH (m)	R.L. BASE OF KATOOMBA SEAM (m)	R.L. BASE OF IRONDALE SEAM (m)	R.L. BASE OF LITHGOW SEAM (m)
C53	205 380.6	1353 021.2	757.8	18.25	-	-	741.49
C54	205 533.1	1353 044.4	764.5	27.00	-	-	739.53
C55	205 255.2	1353 036.4	753.9	12.00	-	-	744.59
C56	205 005.9	1353 729.9	787.7	44.52	-	-	744.36
C57	204 878.4	1355 495.5	753.3	16.50	-	-	739.32
C58	205 029.9	1355 580.9	747.7	13.50	-	-	737.21
C59	204 945.1	1355 654.7	743.2	8.00	-	-	737.88
C60	204 705.5	1355 529.5	744.3	6.05	-	-	741.50
C61	205 033.0	1355 816.6	742.5	7.80	-	-	736.78
C62	205 133.8	1355 698.6	747.5	13.50	-	-	736.46
C63	205 226.1	1355 747.8	747.5	13.75	-	-	735.08
C64	205 193.7	1355 903.2	747.9	14.75	-	-	734.45
C65	203 022.4	1351 639.8	780.5	12.20	-	-	768.9
C66	205 420.0	1356 004.9	757.3	25.40	-	-	732.91
C67	205 344.3	1355 907.1	753.9	22.30	-	-	732.71
C68	205 404.1	1355 803.3	756.8	23.00	-	-	737.35
C69	205 375.8	1355 616.7	759.0	24.00	-	-	738.50
C70	205 376.3	1355 549.8	753.1	18.50	-	-	735.88

HOLE	LOCATION I.S.G. mE	mN	COLLAR R.L. (A.H.D.) (m)	DEPTH (m)	R.L. BASE OF KATOOMBA SEAM (m)	R.L. BASE OF IRONDALE SEAM (m)	R.L. BASE OF LITHGOW SEAM (m)
C71	205 593.4	1355 607.3	789.7	52.50	-	765.09	739.08
C72	205 678.6	1355 283.9	776.5	46.00	-	760.89	732.86
C73	205 247.3	1355 188.2	771.3	9.50	-	764.84	-
C74	205 261.9	1355 080.4	777.1	40.50	-	765.07	738.25
C75	205 046.2	1353 332.7	758.1	15.15	-	-	744.18
C76	205 311.9	1353 301.5	785.1	43.89	-	765.15	741.60
C77	205 197.6	1352 859.5	755.0	12.25	-	-	746.66
C78	205 170.3	1353 139.6	750.8	7.50	-	-	744.28
C79	204 489.5	1356 972.8	783.1	42.50	-	768.50	742.93
C80	205 446.4	1356 499.1	788.2	57.75	-	759.17	732.42
C81	205 849.4	1355 932.1	780.1	51.50	-	757.91	730.78
C82	204 986.1	1357 611.9	737.7	13.50	-	-	-
C83	204 997.6	1357 628.2	738.9	7.50	-	-	732.71
C84	204 903.6	1357 736.3	769.8	39.50	-	757.71	733.12
C85	204 743.7	1357 196.7	742.6	9.25	-	-	735.96
C86	204 539.3	1356 737.0	766.8	25.50	-	-	743.28
C87	204 467.0	1356 550.4	754.7	12.10	-	-	744.53
C88	204 453.8	1356 718.4	757.2	13.00	-	-	745.99

HOLE	LOCATION I.S.G. mE	mN	COLLAR R.L. (A.H.D.) (m)	DEPTH (m)	R.L. BASE OF KATOOMBA SEAM (m)	R.L. BASE OF IRONDALE SEAM (m)	R.L. BASE OF LITHGOW SEAM (m)
C89	204 635.0	1356 279.4	757.0	16.25	-	-	742.17
C90	204 873.2	1356 229.2	790.6	54.50	-	763.50	738.28
C91	204 714.2	1356 399.2	788.6	52.50	-	763.30	738.12
C92	204 628.7	1356 679.7	794.7	55.50	-	767.84	741.24
C93	204 714.1	1357 063.5	784.1	46.88	-	764.26	738.54
C94	204 559.3	1357 099.5	751.9	13.50	-	-	741.09
C95	204 226.1	1357 005.8	754.5	10.00	-	-	747.85
C96	204 092.6	1356 803.0	765.2	12.80	-	-	752.84
C97	203 870.5	1356 681.3	766.9	12.25	-	-	756.54
C98	204 098.3	1356 930.7	758.7	6.50	-	-	753.1
C99	205 654.7	1356 115.7	776.8	46.50	-	758.69	731.90
C100	205 542.9	1356 288.4	770.1	12.00	-	760.23	-
C101	205 571.9	1355 450.5	772.7	12.50	-	761.22	-
C102	205 366.9	1355 527.2	774.9	12.22	-	762.68	-
C103	204 552.6	1356 828.7	759.9	12.68	-	-	-
C104	204 490.3	1356 863.1	758.1	16.50	-	-	742.02

APPENDIX II

HOLE	PLY 1		PLY 2		PLY 3	
	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)
C1/1A	SEAM NOT CORED					
C2	0.600	13.6	1.350	14.2	0.640	8.8
C3	0.535	13.8	1.356	15.6	0.565	9.6
C4	0.575	10.4	1.290	17.2	0.580	9.5
C5	0.645	10.8	1.330	21.0	-	-
C6	0.545	10.1	0.840	14.6	0.555	12.9
C7	0.635	10.0	NOT ANALYSED SEPARATELY			
C8	0.700	12.6	1.150	15.5	0.690	8.7
C9	0.475	9.6	NOT ANALYSED SEPARATELY			
C10/10A	0.730	10.9	0.580	11.5	0.640	9.3
C11	SEAM NOT CORED					
C12	CORE LOSSES IN SEAM					
C13	SEAM NOT FULLY CORED				0.700	15.4
C14	0.565	13.6	1.430	CORE LOSS	0.640	18.1
C15	0.730	10.8	1.520	13.1	0.640	18.7

LITHGOW SEAM PLY ANALYSES - RAW COAL

HOLE	PLY 1		PLY 2		PLY 3	
	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)
C16	NOT ANALYSED SEPARAELY	-	CORE LOSS			
C17	0.94	15.7	NOT ANALYSED SEPARATELY			
C18	0.63	19.3	1.425	18.3	0.69	16.5
C19	0.63	13.9	1.43	16.3	0.71	15.6
C20	NO COAL					
C21	0.74	15.8	1.23	15.8	0.63	12.7
C22	0.59	11.9	NOT ANALYSED EX BOTTOM BAND		0.63	15.0
C23	NO COAL					
C24	0.43	14.8	1.37	17.3	0.70	22.5
C25	NOT SAMPLED SEPARATELY				EROSIONAL SURFACE	
C26	0.575	11.6	1.475	19.0	0.71	14.4
C27	0.50	10.9	1.39	13.9	0.63	17.2
C28	NO SEAM					
C29	NO SEAM					
C30	0.51	11.3	EROSION OF SEAM			
C31	0.54	13.6	1.40	17.3	0.71	12.6

LITHGOW SEAM PLY ANALYSES - RAW COAL

HOLE	PLY 1		PLY 2		PLY 3	
	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)
C32	0.52	11.3	1.39	14.7	0.60	15.5
C33	0.57	9.5	1.165	14.5	0.68	10.2
C34	0.70	13.7	1.29	14.9	0.72	12.3
C35	0.65	12.1	1.40	15.5	0.52	14.8
C36R	CORE LOSS				0.75	16.8
C37	0.90	13.7	1.27	18.3	0.67	22.0
C38	SEAM FAULTED					
C39	0.72	38.0	1.38	10.0	0.71	18.2
C40	0.63	12.5	1.37	16.6	0.74	16.0
C41	0.79	11.4	NOT SAMPLED SEPARATELY			
C42	0.77	10.1	1.25	18.5	0.69	17.8
C43	0.905	13.5	1.12	17.3	0.94	33.4
C44	NO SEAM					
C45	LOST CORE				0.87	19.9
C46	0.88	11.3	LOST CORE		0.64	26.0
C47	0.93	12.4	1.52	21.9	0.86	23.8

LITHGOW SEAM PLY ANALYSES - RAW COAL

HOLE	PLY 1		PLY 2		PLY 3	
	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)
C48	0.86	10.7	1.41	21.2	0.70	22.2
C49	0.67	9.1	1.40	18.5	0.54	19.2
C50	0.84	9.5	1.23	22.6	0.68	21.4
C51	0.65	7.9	1.56	17.7	0.80	23.7
C52	NOT SAMPLED SEPARATELY				0.58	22.1
C53	0.73	11.0	1.39	20.2	0.70	21.0
C54	0.84	15.5	1.41	21.1	0.69	21.8
C55	TOP OF SEAM ERODED					
C56	0.62	12.7	1.34	17.8	0.76	22.2
C57	0.83	13.3	1.22	17.6	0.70	15.5
C58	NOT SAMPLED SEPARATELY				0.79	13.1
C59	SEAM ERODED					
C60	NO COAL SEAM					
C61	SEAM ERODED					
C62	0.53	11.7	1.40	14.6	0.64	11.6
C63	0.53	11.5	1.47	16.1	0.70	14.2

LITHGOW SEAM PLY ANALYSES - RAW COAL

HOLE	PLY 1		PLY 2		PLY 3	
	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)
C64	0.50	12.5	1.41	16.3	0.71	12.8
C65	0.90	12.6	1.61	21.0	0.60	27.7
C66	0.59	11.6	1.38	16.0	0.71	17.9
C67	0.55	10.6	1.40	15.4	0.79	21.3
C68	0.615	14.6	1.36	16.8	0.65	14.3
C69	0.52	9.9	1.42	15.8	0.63	12.3
C70	NOT SAMPLED SEPARATELY				0.65	13.7
C71	0.55	10.7	1.39	19.9	0.65	17.5
C72	NOT SAMPLED SEPARATELY				0.70	20.9
C73	LITHGOW SEAM NOT PENETRATED					
C74	0.49	10.1	1.35	11.9	0.55	7.3
C75	0.89	18.4	1.41	20.1	0.63	22.2
C76	NOT SAMPLED SEPARATELY				0.72	23.6
C77	SEAM ERODED					
C78	SEAM ERODED					
C79	0.69	9.7	1.31	15.8	0.54	7.9

LITHGOW SEAM PLY ANALYSES - RAW COAL

HOLE	PLY 1		PLY 2		PLY 3	
	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)
C80	NOT SAMPLED SEPARATELY				0.69	20.5
C81	0.55	12.1	1.24	16.9	0.65	22.1
C82	NO COAL SEAM					
C83	0.71	9.6	1.25		0.81	32.5
C84	LOST CORE					
C85	OXIDISED					
C86	0.78	9.1	1.27	15.2	0.55	11.5
C87	0.89	10.8	1.17	11.9	0.66	9.1
C88	0.62	8.1	TOPS OXIDISED			
C89	NOT SAMPLED SEPARATELY				0.87	10.5
C90	0.74	12.9	1.13	15.4	0.58	8.3
C91	0.64	12.5	1.24	13.6	0.61	11.6
C92	0.79	10.8	1.25	13.6	0.55	8.4
C93	0.70	11.3	1.31	14.3	0.57	15.2
C94	0.79	11.5	1.06	LOST CORE	0.62	10.4
C95	LOST CORE					

LITHGOW SEAM PLY ANALYSES - RAW COAL

LITHGOW SEAM PLY ANALYSES - RAW COAL

HOLE	PLY 1		PLY 2		PLY 3	
	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)	THICKNESS (m)	ASH % (d.b.)
C96	1.00	N.A.	1.00	N.A.	0.57	8.5
C97	0.48	Lost Core	1.38	18.4	0.70	15.1
C98	0.91	Oxidised	1.59	-	0.47	-
C99	0.61	12.4	1.41	Lost Core	0.63	21.8
C100 to C103	Seam not penetrated					
C104	0.84	12.3	1.23	15.6	0.56	10.5
AVERAGE	0.68	11.9	1.32	13.8	0.67	16.4
RANGE	0.43-1.00	7.9-19.3	0.58-1.61	10.0-22.6	0.47-0.87	7.3-33.4

APPENDIX III

CHARBON COLLIERY - LITHGOW SEAM ANALYSIS AND WASHABILITY DATA

DDH	SEAM THICKNESS (M)	ROM ASH (2.5% M)	SEAM THICKNESS (EX BANDS)	SEAM ASH (EX BANDS)	% RECOVERY 1.40 RD FLOATS	ASH 1.40 RD FLOATS	% RECOVERY 1.70 RD FLOATS	ASH 1.70 RD FLOATS
C1		SEAM NOT PENETRATED						
C2	2.79	18.0						
C3	2.59	16.5	2.49					
C4	2.74	18.1	2.45					
C5	2.01	18.0	-					
C6	2.07	16.4	1.94					
C7	2.82	18.5						
C8	2.73	17.0	2.66					
C9	2.62	12.0			89.6	9.2	97.7	10.6
C10	2.06	14.9			87.0	8.1	93.5	9.5
C11-14		NO RESULTS - CORE LOSS						
C15	2.94	16.4						
C16		CORE LOSS						
C17	2.82	18.3	2.67	14.7	68.9	10.3	94.7	13.3
C18	2.82	20.5	2.74	17.7				
C19	2.81	16.8	2.77	15.2	65.4	10.3	94.7	13.3
C20		SEAM NOT PENETRATED						
C21	2.7	18.8	2.60	14.6	74.2	10.5	89.6	12.6
C22	2.76	21.3	2.60	14.5	75.6	9.2	91.0	11.9
C23		SEAM NOT PENETRATED						

CHARBON COLLIERY - LITHGOW SEAM ANALYSIS AND WASHABILITY DATA

DDH	SEAM THICKNESS (M)	ROM ASH (2.5% M)	SEAM THICKNESS (EX BANDS)	SEAM ASH (EX BANDS)	% RECOVERY 1.40 RD FLOATS	ASH 1.40 RD FLOATS	% RECOVERY 1.70 RD FLOATS	ASH 1.70 RD FLOATS
C24	2.67	22.9	2.50	17.9	60.3	10.6	85.9	15.5
C25		TOPS ERODED						
C26	2.86	19.1	2.76	15.9				
C27	2.71	18.7	2.52	13.8	77.3	10.5	92.8	12.0
C28-30		SEAM NOT PENETRATED						
C31	2.77	18.4	2.65	14.9	81.8	10.8	93.8	12.9
C32	2.67	20.2	2.51	13.8				
C33	2.60	17.9	2.41	11.3	85.0	8.9	92.1	10.3
C34	2.84	18.7	2.71	13.6	80.7	9.5	92.4	11.7
C35	2.79	20.1	2.57	14.2	61.3	13.4	91.7	17.7
C36	2.83	LOST CORE						
C37	3.05	22.6	2.89	17.4	60.8	11.1	89.3	15.1
C39	2.93	23.9	2.81	19.6	50.7	9.8	81.6	15.7
C40	2.81	16.8	2.74	15.1	74.0	10.0	94.8	13.0
C41	2.81	21.3	2.72	16.8				
C42	2.84	20.6	2.71	15.7				
C43	3.07	24.1	2.96	21.1				
C44		SEAM NOT PENETRATED						
C45	2.67	LOST CORE						
C46	3.07	LOST CORE						

CHARBON COLLIERY - LITHGOW SEAM ANALYSIS AND WASHABILITY DATA

DDH	SEAM THICKNESS (M)	ROM ASH (2.5% M)	SEAM THICKNESS (EX BANDS)	SEAM ASH (EX BANDS)	% RECOVERY 1.40 RD FLOATS	ASH 1.40 RD FLOATS	% RECOVERY 1.70 RD FLOATS	ASH 1.70 RD FLOATS
C47	3.39	21.4	3.31	19.3	54.8	12.2	92.7	17.4
C48	3.13	22.0	2.97	18.0				
C49	2.74	18.0	2.61	15.9				
C50	2.89	22.3	2.75	18.0				
C51	3.15	22.2	3.01	17.1				
C52	2.93	21.4	2.82	17.3				
C53	3.08	26.2	2.83	18.9				
C54	3.07	23.7	2.94	19.2				
C55		LOST CORE						
C56	3.09	24.0	2.72	17.4				
C57	2.87	19.9	2.75	15.4				
C58	3.00	21.2	2.93	18.6				
C59		LOST CORE						
C60		SEAM NOT PENETRATED						
C61		LOST CORE						
C62	2.69	17.2	2.57	13.0				
C63	2.81	19.0	2.70	14.6				
C64	2.75	17.0	2.62	14.3	74.0	10.2	89.7	13.2
C65	3.24	23.3	3.11	19.5				
C66	2.81	18.8	2.68	15.2	70.3	10.2	91.9	13.8

CHARBON COLLIERY - LITHGOW SEAM ANALYSIS AND WASHABILITY DATA

DDH	SEAM THICKNESS (M)	ROM ASH (2.5% M)	SEAM THICKNESS (EX BANDS)	SEAM ASH (EX BANDS)	% RECOVERY 1.40 RD FLOATS	ASH 1.40 RD FLOATS	% RECOVERY 1.70 RD FLOATS	ASH 1.70 RD FLOATS
C67	2.90	20.2	2.74	15.8				
C68	2.80	20.0	2.62	15.3				
C69	2.69	18.4	2.57	13.4				
C70	2.71	17.1	2.54	12.9				
C71	2.68	19.4	2.59	15.5	66.3	10.1	91.9	13.8
C72	2.86	21.6	2.76	17.6	60.2	11.5	91.3	15.5
C73		SEAM NOT PENETRATED						
C74	2.58	17.1	2.39	10.1	82.2	8.2	89.9	9.8
C75	3.02	22.1	2.91	19.6				
C76	2.95	22.2	2.86	19.0				
C77		OXIDISED TOPS						
C78		OXIDISED TOPS						
C79	2.67	17.4	2.54	12.2	85.5	9.2	92.0	10.2
C80	2.80	21.2	2.72	17.8	70.0	9.9	88.5	13.5
C81	2.64	20.9	2.44	16.8				
C82		SEAM NOT PENETRATED						
C83	2.92	25.3	2.65	19.1	53.8	7.7	80.1	11.0
C84		LOST CORE						
C85		LOST CORE						
C86	2.68	15.7	2.55	11.7				

CHARBON COLLIERY - LITHGOW SEAM ANALYSIS AND WASHABILITY DATA

DDH	SEAM THICKNESS (M)	ROM ASH (2.5% M)	SEAM THICKNESS (EX BANDS)	SEAM ASH (EX BANDS)	% RECOVERY 1.40 RD FLOATS	ASH 1.40 RD FLOATS	% RECOVERY 1.70 RD FLOATS	ASH 1.70 RD FLOATS
C87	2.81	13.4	2.72	10.8				
C88		OXIDISED TOPS						
C89	2.43	16.4	2.34	12.1				
C90	2.62	20.3	2.45	12.6	73.8	8.0	89.3	10.5
C91	2.60	15.7	2.49	12.6	82.7	8.3	94.0	10.0
C92	2.73	15.4	2.59	11.4	83.1	8.4	91.6	9.8
C93	2.66	16.5	2.54	12.8	72.6	7.8	88.3	10.4
C94	2.53	LOST CORE						
C95		LOST CORE						
C96	3.13	18.7	2.94	13.7				
C97	2.62	20.6	2.53	16.5				
C98		LOST CORE						
C99		LOST CORE						
C100-C103		SEAM NOT PENETRATED						
C104	2.72	16.5	2.63	13.2				
AVERAGE	2.79	19.4		15.5				11.6
RANGE	2.01-3.39	12.0-26.2		10.1-21.1				9.8-17.7

APPENDIX IV

D.D.H. C9

C. Crushing & Dry Screening at 0.5mm

	Mass %
12.5 mm x 0.5 mm	97.0
Minus 0.5 mm	3.0

D. Float/Sink Analysis of 12.5 mm x 0.5 mm Seam Composite

	FRACTIONAL		CUMULATIVE	
	Mass %	Ash %	Mass %	Ash %
Floats 1.35	65.1	8.1	65.1	8.1
S1.35 - F1.40	24.5	12.3	89.6	9.2
S1.40 F1.45	4.5	19.2	94.1	9.7
S1.45 - F1.50	1.6	25.9	95.7	10.0
S1.50 - F1.55	0.9	37.6	96.6	10.3
S1.55 - F1.60	0.4	41.2	97.0	10.4
S1.60 - F1.70	0.7	46.1	97.7	10.6
S1.70 - F1.80	0.4	52.3	98.1	10.8
S1.80 - F1.90	0.3	56.9	98.4	10.9
S1.90 - F2.00	0.3	59.2	98.7	11.1
Sinks 2.00	1.3	77.2	100.0	12.0
Plus 0.5 (by calculation)	97.0	12.0	97.0	12.0
Minus 0.5mm (by analysis)	3.0	16.6	100.0	12.1

Note: Ash corrected to 2.5 ADM basis.

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C10A

LITHGOW SEAM

Crushing & Dry Screening at 0.5mm

	Mass %
12.5 mm x 0.5mm	96.6
Minus 0.5mm	3.4

Float/Sink Analysis of 12.5mm x 0.5mm Seam Composite

(A766 - A770 inclusive)

	FRACTIONAL		CUMULATIVE	
	Mass %	Ash %	Mass %	Ash %
Floats 1.35	77.5	7.6	77.5	7.6
S1.35 - F1.40	9.5	12.5	87.0	8.1
S1.40 - F1.45	3.0	10.8	90.0	8.5
S1.45 - F1.50	1.2	27.7	91.2	8.8
S1.50 - F1.60	1.6	34.2	92.8	9.2
S1.60 - F1.70	0.7	44.7	93.5	9.5
S1.70 - F1.80	0.3	50.2	93.8	9.6
S1.80 - F1.90	0.1	54.8	93.9	9.7
S1.90 - F2.00	0.0	-	-	-
Sinks 2.00	6.1	81.0	100.0	14.0
Plus 0.5 (by calculation)	96.6	14.0	96.6	14.0
Minus 0.5mm (by analysis)	3.4	25.4	100.0	14.4

Note: Ash on air dried basis.

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C17

LITHGOW SEAM

Float and Sink Analysis

Composite of Samples C115 to C121

Relative Density Fraction	Fractional Mass %	Fractional Ash %	Cumulative Mass %	Cumulative Ash %
F 1.25	Nil	-	-	-
1.25 - 1.30	4.8	5.7	4.8	5.7
1.30 - 1.35	32.2	8.7	37.0	8.3
1.35 - 1.40	31.9	13.4	68.9	10.7
1.40 - 1.45	15.6	18.1	84.5	12.0
1.45 - 1.50	3.0	23.8	87.5	12.4
1.50 - 1.60	3.6	31.7	91.1	13.2
1.60 - 1.70	1.3	38.5	92.4	13.6
1.70 - S	7.6	76.1	100.0	18.3

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C 19

LITHGOW SEAM

Float and Sink Analysis

Composite of Samples C131 to C135

Relative Density Fraction	Fractional Mass %	Fractional Ash %	Cumulative Mass %	Cumulative Ash %
F 1.25	Nil	-	-	-
1.25 - 1.30	6.7	5.5	6.7	5.5
1.30 - 1.35	25.9	8.5	32.6	7.9
1.35 - 1.40	32.8	12.6	65.4	10.3
1.40 - 1.45	17.1	15.5	82.5	11.4
1.45 - 1.50	6.9	21.2	89.4	12.2
1.50 - 1.60	4.2	29.7	93.6	13.0
1.60 - 1.70	1.1	39.8	94.7	13.3
1.70 - S	5.3	69.5	100.0	16.3

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C21

LITHGOW SEAM

Float and Sink Analysis

Composite of Samples C136 to C140

Relative Density Fraction	Fractional Mass %	Fractional Ash %	Cumulative Mass %	Cumulative Ash %
F 1.25	nil	-	-	-
1.25 - 1.30	12.2	5.2	12.2	5.2
1.30 - 1.35	28.1	8.9	40.3	7.8
1.35 - 1.40	33.9	13.7	74.2	10.5
1.40 - 1.45	9.6	18.5	83.8	11.4
1.45 - 1.50	2.9	24.3	86.7	11.8
1.50 - 1.60	2.3	33.9	89.0	12.4
1.60 - 1.70	0.6	42.8	89.6	12.6
1.70 - S	10.4	73.0	100.0	18.9

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C22

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Composite of Plies C143 - C147

Relative Density Fraction	Fractional Mass %	Fractional Moist. %	Fractional Ash %	Cumulative Mass %	Cumulative Moist. %	Cumulative Ash %
F 1.30	-	-	-	-	-	-
1.30 -1.35	43.1	2.7	7.2	43.1	2.7	7.2
1.35 - 1.40	32.5	2.9	11.8	75.6	2.8	9.2
1.40 - 1.45	6.2	2.5	18.3	81.8	2.8	9.9
1.45 - 1.50	4.5	2.5	22.8	86.3	2.8	10.5
1.50 - 1.55	2.1	3.4	28.1	88.4	2.8	11.0
1.55 - 1.60	0.9	4.3	35.5	89.3	2.8	11.2
1.60 - 1.65	0.9	4.0	37.7	90.2	2.8	11.5
1.65 - 1.70	0.8	4.1	43.3	91.0	2.8	11.8
S 1.70	9.0	2.5	72.6	100.0	2.8	17.2

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C 24

LITHGOW SEAM

Float and Sink Analysis

Composite of Samples C162 to C169

Relative Density Fraction	Fractional Mass %	Fractional Ash %	Cumulative Mass %	Cumulative Ash %
F 1.25	Nil	-	-	-
1.25 - 1.30	3.1	5.9	3.1	5.9
1.30 - 1.35	28.9	8.7	32.0	8.4
1.35 - 1.40	28.3	13.1	60.3	10.6
1.40 - 1.45	11.4	17.6	71.7	11.7
1.45 - 1.50	3.1	23.1	74.8	12.2
1.50 - 1.60	3.5	29.8	78.3	13.0
1.60 - 1.70	7.6	41.7	85.9	15.5
1.70 - S	14.1	75.6	100.0	24.0

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C27

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Composite of Plies C149 - C154

Relative Density Fraction	Fractional Mass %	Fractional Moist. %	Fractional Ash %	Cumulative Mass %	Cumulative Moist. %	Cumulative Ash %
F 1.30	-	-	-	-	-	-
1.30 - 1.35	46.1	2.8	8.2	46.1	2.8	8.2
1.35 - 1.40	31.2	3.2	13.7	77.3	3.0	10.4
1.40 - 1.45	8.7	3.6	17.7	86.0	3.0	11.2
1.45 - 1.50	3.2	3.8	22.6	89.2	3.1	11.6
1.50 - 1.55	1.8	3.3	29.3	91.0	3.1	11.3
1.55 - 1.60	0.4	3.4	30.5	91.4	3.1	11.4
1.60 - 1.65	0.8	3.8	38.8	92.2	3.1	11.7
1.65 - 1.70	0.6	3.8	43.6	92.8	3.1	11.9
S 1.70	7.2	2.6	73.0	100.0	3.0	16.3

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C31

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Composite of Plies C208 - C218

Relative Density Fraction	Fractional Mass %	Fractional Moist. %	Fractional Ash %	Cumulative Mass %	Cumulative Moist. %	Cumulative Ash %
F 1.30	Nil	-	-	-	-	-
1.30 - 1.35	48.1	3.7	8.4	48.1	3.7	8.4
1.35 - 1.40	33.7	4.0	13.5	81.8	3.8	10.5
1.40 - 1.45	4.5	3.7	18.7	86.3	3.8	10.9
1.45 - 1.50	3.7	3.7	24.1	90.0	3.8	11.5
1.50 - 1.55	1.0	3.8	28.5	91.0	3.8	11.7
1.55 - 1.60	0.8	3.8	34.7	91.8	3.8	11.9
1.60 - 1.65	0.4	3.6	39.7	92.2	3.8	12.0
1.65 - 1.70	1.6	3.7	45.9	93.8	3.8	12.6
S 1.70	6.2	2.8	73.5	100.0	3.7	16.3

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C33

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Composite of Plies C234 - C240

Relative Density Fraction	Fractional Mass %	Fractional Moist. %	Fractional Ash %	Cumulative Mass %	Cumulative Moist. %	Cumulative Ash %
F 1.30	Nil	-	-	-	-	-
1.30 - 1.35	61.0	4.3	7.4	61.0	4.3	7.4
1.35 - 1.40	24.0	4.1	11.8	85.0	4.2	8.6
1.40 - 1.45	5.2	3.7	29.5	90.2	4.2	9.9
1.45 - 1.50	1.8	3.8	18.1	92.0	4.2	10.0
1.50 - 1.55	0.1	2.9	11.6	92.1	4.2	10.0
1.55 - 1.60	Nil	-	-	-	-	-
1.60 - 1.65	Nil	-	-	-	-	-
1.65 - 1.70	Nil	-	-	-	-	-
S1.70	7.9	2.2	75.4	100.0	4.1	15.2

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C34

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Composite of Plies C241 - C246

Relative Density Fraction	Fractional Mass %	Fractional Moist. %	Fractional Ash %	Cumulative Mass %	Cumulative Moist. %	Cumulative Ash %
	-	-	-	-	-	-
F 1.30	60.5	4.0	7.8	60.5	4.0	7.8
1.30 - 1.35	20.2	3.9	13.3	80.7	4.0	9.2
1.35 - 1.40	4.8	3.3	20.6	85.5	3.9	9.8
1.40 - 1.45	2.5	3.3	23.2	88.0	3.9	10.2
1.45 - 1.50	1.3	3.5	29.4	89.3	3.9	10.5
1.50 - 1.55	2.0	3.6	35.2	91.3	3.9	11.0
1.55 - 1.60	0.3	2.6	40.0	91.6	3.9	11.1
1.60 - 1.65	0.8	3.4	45.5	92.4	3.9	11.4
1.65 - 1.70	7.6	2.4	74.2	100.0	3.8	16.2
S 1.70						

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C35

LITHGOW SEAM

Blue Circle Drill Core Samples

FLOAT AND SINK ANALYSIS

Recombination C272 - C278

RELATIVE DENSITY FRACTION	FRACTIONAL		CUMULATIVE	
	Mass%	Ash%	Mass%	Ash%
F - 1.30	4.0	5.1	4.0	5.1
1.30 - 1.35	21.6	10.1	25.6	9.3
1.35 - 1.40	35.7	16.3	61.3	13.4
1.40 - 1.45	16.8	22.0	78.1	15.2
1.45 - 1.50	5.7	27.9	83.8	16.1
1.50 - 1.55	3.5	30.6	87.3	16.7
1.55 - 1.60	1.9	31.5	89.2	17.0
1.60 - 1.70	2.5	43.6	91.7	17.7
S 1.70	8.3	77.5	100.0	22.7

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C37

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Composite of Plies C249 to C255

Relative Density Fraction	Fractional			Cumulative		
	Mass %	Moist. %	Ash %	Mass %	Moist. %	Ash %
F 1.30	7.0	2.2	4.5	7.0	2.2	4.5
1.30 - 1.35	31.9	1.2	10.1	38.9	1.4	9.1
1.35 - 1.40	21.9	0.9	15.2	60.8	1.2	11.3
1.40 - 1.45	20.5	0.9	20.8	81.2	1.1	13.7
1.45 - 1.50	3.3	1.3	25.8	84.5	1.1	14.2
1.50 - 1.55	1.6	2.2	30.0	86.1	1.2	14.4
1.55 - 1.60	1.5	2.4	34.7	87.6	1.2	14.8
1.60 - 1.65	0.8	2.4	38.5	88.4	1.2	15.0
1.65 - 1.70	0.9	2.1	44.9	89.3	1.2	15.3
S 1.70	10.6	2.1	77.7	100.0	1.3	21.9

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C39

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Recombination C295 - C299

RELATIVE DENSITY FRACTION			FRACTIONAL		CUMULATIVE	
			Mass%	Ash%	Mass%	Ash%
F	-	1.30	6.9	4.9	6.9	4.9
1.30	-	1.35	26.9	8.8	33.8	8.0
1.35	-	1.40	16.9	13.4	50.7	9.8
1.40	-	1.45	11.2	17.4	61.9	11.2
1.45	-	1.50	8.5	24.6	70.4	12.8
1.50	-	1.55	3.5	29.3	73.9	13.6
1.55	-	1.60	4.5	34.6	78.4	14.8
1.60	-	1.70	3.2	37.3	81.6	15.7
S		1.70	18.4	58.2	100.0	23.5

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C40

LITHGOW SEAM

COAL ANALYSIS REPORT

FLOAT/SINK ANALYSIS OF COMPOSITE C219-C225

FRACTION	FRACTIONAL % MASS	FRACTIONAL % MOISTURE	ASH	CUMULATIVE % MASS	CUMULATIVE % MOISTURE	ASH
1.30F	7.1	4.4	4.8	7.1	4.4	4.8
1.30S - 1.35F	39.4	3.9	8.5	46.5	4.0	7.9
1.35S - 1.40F	27.5	3.6	12.8	74.0	3.9	9.7
1.40S - 1.45F	10.4	3.5	18.2	84.4	3.9	10.7
1.45S - 1.50F	3.4	3.5	23.7	87.8	3.9	11.2
1.50S - 1.55F	2.5	3.3	28.9	90.3	3.9	11.7
1.55S - 1.60F	1.9	3.0	34.6	92.2	3.9	12.2
1.60S - 1.65F	1.6	2.9	38.2	93.8	3.9	12.6
1.65S - 1.70F	1.0	2.8	42.9	94.8	3.9	12.9
1.70S	5.2	2.8	68.1	100.0	3.9	15.8

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C47

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Composite of Plies C257 to C262

Relative Density Fraction	Fractional			Cumulative		
	Mass %	Moist. %	Ash %	Mass %	Moist. %	Ash %
F 1.30	12.1	2.9	6.6	12.1	2.9	6.6
1.30 - 1.35	28.7	2.8	12.3	40.8	2.8	10.6
1.35 - 1.40	14.0	2.8	16.5	54.8	2.8	12.1
1.40 - 1.45	17.4	2.9	20.5	72.2	2.9	14.1
1.45 - 1.50	11.2	2.8	25.7	83.4	2.9	15.7
1.50 - 1.55	6.1	3.1	29.7	89.5	2.9	16.6
1.55 - 1.60	1.7	2.9	35.3	91.2	2.9	17.0
1.60 - 1.65	1.0	3.0	37.2	92.2	2.9	17.2
1.65 - 1.70	0.5	3.2	42.1	92.7	2.9	17.3
S 1.70	7.3	2.1	69.8	100.0	2.8	21.2

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C64

LITHGOW SEAM

Float and Sink Analysis

Composite of Samples C486 to C493

Relative Density Fraction	Fractional Mass %	Fractional Ash %	Cumulative Mass %	Cumulative Ash %
F 1.25	Nil	-	-	-
1.25 - 1.30	7.6	6.0	7.6	6.0
1.30 - 1.35	26.0	8.5	33.6	7.9
1.35 - 1.40	40.4	12.2	74.0	10.2
1.40 - 1.45	8.2	16.8	82.2	10.9
1.45 - 1.50	3.1	23.2	85.3	11.3
1.50 - 1.60	3.3	29.9	88.6	12.0
1.60 - 1.70	4.1	40.1	89.7	13.2
1.70 - S	7.3	70.9	100.0	17.5

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C66

LITHGOW SEAM

Float and Sink Analysis

Composite of Samples C625 to C632

Relative Density Fraction	Fractional Mass %	Fractional Ash %	Cumulative Mass %	Cumulative Ash %
F 1.25	Nil	-	-	-
1.25 - 1.30	5.0	5.9	5.0	5.9
1.30 - 1.35	27.3	8.3	32.3	7.9
1.35 - 1.40	38.0	12.1	70.3	10.2
1.40 - 1.45	8.9	16.8	79.2	10.9
1.45 - 1.50	4.1	23.0	83.3	11.5
1.50 - 1.60	3.6	30.2	86.9	12.3
1.60 - 1.70	3.8	39.3	90.7	13.4
1.70 - S	9.3	72.4	100.0	18.9

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C 71

LITHGOW SEAM

Float and Sink Analysis

Composite of Samples C723 to C728

Relative Density Fraction	Fractional Mass %	Fractional Ash %	Cumulative Mass %	Cumulative Ash %
F 1.25	Nil	-	-	-
1.25 - 1.30	3.6	6.1	3.6	6.1
1.30 - 1.35	32.2	8.4	35.8	8.2
1.35 - 1.40	30.5	12.3	66.3	10.1
1.40 - 1.45	9.7	16.1	76.0	10.8
1.45 - 1.50	8.5	22.4	84.5	12.0
1.50 - 1.60	3.1	29.5	87.6	12.6
1.60 - 1.70	4.3	38.2	91.9	13.8
1.70 - S	8.1	78.3	100.0	19.0

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C72

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Recombination C674 - C677

Relative Density Fraction	Fractional Mass%	Fractional Ash%	Cumulative Mass%	Cumulative Ash%
F 1.30	7.3	5.9	7.3	5.9
1.30 - 1.35	26.7	9.4	34.0	8.6
1.35 - 1.40	26.2	15.1	60.2	11.5
1.40 - 1.45	20.4	20.1	80.6	13.6
1.45 - 1.50	6.4	24.6	87.0	14.5
1.50 - 1.60	3.0	35.0	90.0	15.1
1.60 - 1.70	1.3	42.7	91.3	15.5
S 1.70	8.7	75.5	100.0	20.8

CHARBON COLLIERY HOLDING

DIAMOND DRILL HLLE C74

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Recombination C701 - C705

Relative Density Fraction	Fractional Mass%	Fractional Ash%	Cumulative Mass%	Cumulative Ash%
F 1.30	15.9	5.0	15.9	5.0
1.30 - 1.35	48.5	7.8	64.4	7.1
1.35 - 1.40	17.8	12.2	82.2	8.2
1.40 - 1.45	3.7	20.5	85.9	8.7
1.45 - 1.50	1.6	25.3	87.5	9.0
1.50 - 1.60	1.5	33.8	89.0	9.5
1.60 - 1.70	0.9	41.9	89.9	9.8
S 1.70	10.1	78.4	100.0	16.7

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C79

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Recombination C758 - C762

RELATIVE DENSITY FRACTION	FRACTIONAL		CUMULATIVE	
	Mass%	Ash%	Mass%	Ash%
F - 1.30	35.1	6.0	35.1	6.0
1.30 - 1.35	37.8	10.0	72.9	8.1
1.35 - 1.40	12.6	15.4	85.5	9.2
1.40 - 1.45	3.3	19.9	88.8	9.6
1.45 - 1.50	1.6	25.6	90.4	9.8
1.50 - 1.55	0.7	27.4	91.1	10.0
1.55 - 1.60	0.5	32.8	91.6	10.1
1.60 - 1.70	0.4	40.4	92.0	10.2
S 1.70	8.0	75.7	100.0	15.5

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C80

LIDSDALE SEAM

Ply C782

Relative Density Fraction		Fractional Mass%	Fractional Ash%	Cumulative Mass%	Cumulative Ash%
F	1.30	29.5	3.8	29.5	3.8
1.30 -	1.35	17.9	8.5	47.4	5.6
1.35 -	1.40	21.6	13.3	69.0	8.0
1.40 -	1.45	16.2	17.3	85.2	9.8
1.45 -	1.50	8.6	21.6	93.8	10.8
1.50 -	1.55	2.0	24.7	95.8	11.1
1.55 -	1.60	1.2	29.6	97.0	11.4
1.60 -	1.70	1.2	33.5	98.2	11.6
S	1.70	1.8	61.7	100.0	12.5

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C81

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Recombination C 812 - C 816

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.25	2.7	4.5	2.7	4.5
1.25	-	1.30	4.3	7.2	7.0	6.2
1.30	-	1.35	19.9	8.3	26.9	7.7
1.35	-	1.40	30.5	12.9	57.9	10.5
1.40	-	1.45	19.6	18.4	77.0	12.5
1.45	-	1.50	5.8	23.5	82.8	13.3
1.50	-	1.55	3.8	27.7	86.6	13.9
1.55	-	1.60	2.2	32.0	88.8	14.4
1.60	-	1.70	2.1	40.1	90.9	14.9
S		1.70	9.1	74.9	100.0	20.4

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C83

LITHGOW SEAM

Float and Sink Analysis

Recombination C747 - C755

Relative Density Fraction	Fractional Mass%	Fractional Ash%	Cumulative Mass%	Cumulative Ash%
F 1.30	6.6	6.0	6.6	6.0
1.30 - 1.35	12.2	7.1	18.8	6.7
1.35 - 1.40	35.0	8.3	53.8	7.7
1.40 - 1.45	15.7	13.7	69.5	9.1
1.45 - 1.50	5.8	19.3	75.3	9.9
1.50 - 1.60	2.9	25.9	78.2	10.5
1.60 - 1.70	1.9	34.2	80.1	11.0
S 1.70	19.9	71.6	100.0	23.1

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C90

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Recombination C 889 - C 893

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.25	NIL	-	-	-
1.25	-	1.30	18.0	5.2	18.0	5.2
1.30	-	1.35	30.3	7.4	48.3	6.6
1.35	-	1.40	25.5	10.7	73.8	8.0
1.40	-	1.45	9.1	17.1	82.9	9.0
1.45	-	1.50	2.2	23.1	85.1	9.4
1.50	-	1.60	3.4	32.1	88.5	10.2
1.60	-	1.70	0.8	38.1	89.3	10.5
S		1.70	10.7	73.6	100.0	17.2

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C91

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Recombination C 869 - C 873

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.25	NIL	-	-	-
1.25	-	1.30	11.1	5.0	11.1	5.0
1.30	-	1.35	42.8	7.4	53.9	6.9
1.35	-	1.40	28.8	11.0	82.7	8.3
1.40	-	1.45	7.6	17.7	90.3	9.1
1.45	-	1.50	0.5	22.1	90.8	9.2
1.50	-	1.60	2.0	29.8	92.8	9.6
1.60	-	1.70	1.2	40.9	94.0	10.0
S		1.70	6.0	64.2	100.0	13.3

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C92

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Recombination C 928 - C 932

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.25	NIL	-	-	-
1.25	-	1.30	23.8	5.4	23.8	5.4
1.30	-	1.35	26.5	7.5	50.3	6.5
1.35	-	1.40	32.8	11.3	83.1	8.4
1.40	-	1.45	3.5	17.3	86.6	8.8
1.45	-	1.50	2.4	23.4	89.0	9.2
1.50	-	1.60	1.7	29.0	90.7	9.5
1.60	-	1.70	0.9	40.8	91.6	9.8
S		1.70	8.4	69.5	100.0	14.8

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C93

LITHGOW SEAM

FLOAT AND SINK ANALYSIS

Recombination C 979 - C 987

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.25	NIL	-	-	-
1.25	-	1.30	11.7	4.8	11.7	4.8
1.30	-	1.35	35.9	6.9	47.6	6.4
1.35	-	1.40	25.0	10.4	72.6	7.8
1.40	-	1.45	8.5	17.0	81.1	8.7
1.45	-	1.50	3.7	24.1	84.8	9.4
1.50	-	1.60	2.3	29.9	87.1	9.9
1.60	-	1.70	1.2	41.6	88.3	10.4
S		1.70	11.7	72.6	100.0	17.7

APPENDIX V

CHARBON COLLIERY R.O.M. COAL

TYPICAL ANALYSIS

Moisture (As Received) %		5.9
Air Dried Moisture %	(As Analysed)	2.0
Ash %	"	19.1
Volatile Matter %	"	28.0
Fixed Carbon %	"	50.9
F.S.I.	"	½
Total Sulphur	"	0.6
Specific Energy	"	26.35 MJ/Kg
Hardgrove Grindability Index		45

Ash Fusion

S.T. ^{o}C	+1600
H.T. ^{o}C	+1600
F.T. ^{o}C	+1600

Ultimate Analysis

Carbon	%	(d.a.f.)	82.63
Hydrogen	%	"	5.10
Nitrogen	%	"	1.85
Oxygen	%	"	9.75

Ash Analysis

	%
SiO_2	64.4
Al_2O_3	28.1
Fe_2O_3	0.64
CaO	0.81
MgO	0.40
Na_2O	0.10
K_2O	2.61
TiO_2	1.30
SO_3	0.25
P_2O_5	0.11
Mn_3O_4	0.01

CHARBON COLLIERY R.O.M. COAL

(UNCRUSHED)

SIZE ANALYSIS

Nominal 127 mm Top Size

Size				Mass %	Ash %
127	x	25.4	mm	33.5	16.1
25.4	x	19.0	mm	10.3	17.9
19.0	x	12.7	mm	13.6	18.4
12.7	x	6.35	mm	16.7	18.0
6.35	x	3.18	mm	9.8	19.8
3.18	x	0.5	mm	9.5	21.0
0.5 mm	x	250	micron	4.3	28.4
250	x	150	micron	1.0	31.6
150	x	75	micron	0.6	32.7
Minus		75	micron	0.7	33.5

Ash of R.O.M. coal - 18.6%

APPENDIX VI

LIDSDALE SEAM - THICKNESS AND ASH

DDH	LIDSDALE/LITHGOW INTERBURDEN (m)	SEAM THICKNESS (m)	ASH % (2.5% M)
C19	5.65	0.65	21.6
C22	6.05	0.53	17.4
C24	7.09	0.42	15.1
C27	6.37	0.50	14.3
C33	5.40	0.50	14.6
C66	6.22	0.49	15.6
C67	6.80	0.47	15.9
C68	6.53	0.50	19.9
C69	5.92	0.52	15.6
C70	5.93	0.50	14.1
C74	5.26	0.35	15.1
C80	9.98	0.40	14.2
C81	8.92	0.56	12.0
C91	8.77	0.41	26.9
C92	10.79	0.40	12.3
C93	7.00	0.46	14.5
AVERAGE	7.08	0.48	15.4

APPENDIX VII

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C22

LIDSDALE SEAM

FLOAT AND SINK ANALYSIS

Composite of Plies C141

Relative Density Fraction	Fractional			Cumulative		
	Mass %	Moist. %	Ash %	Mass %	Moist. %	Ash %
F 1.30	-	-	-	-	-	-
1.30 - 1.35	33.7	5.6	6.0	33.7	5.6	6.0
1.35 - 1.40	11.5	4.3	13.6	45.2	5.3	7.9
1.40 - 1.45	18.4	4.2	19.2	63.6	5.0	11.2
1.45 - 1.50	11.6	4.0	23.4	75.2	4.8	13.1
1.50 - 1.55	12.8	4.0	26.1	88.0	4.7	15.0
1.55 - 1.60	6.9	4.0	29.5	94.9	4.6	16.0
1.60 - 1.65	0.9	3.5	34.3	95.8	4.6	16.2
1.65 - 1.70	2.3	3.5	27.5	98.1	4.6	16.5
S 1.70	1.9	2.9	48.9	100.0	4.6	17.1

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C80

LIDSDALE SEAM

Ply C782

Relative Density Fraction		Fractional Mass%	Fractional Ash%	Cumulative Mass%	Cumulative Ash%
F	1.30	29.5	3.8	29.5	3.8
1.30 -	1.35	17.9	8.5	47.4	5.6
1.35 -	1.40	21.6	13.3	69.0	8.0
1.40 -	1.45	16.2	17.3	85.2	9.8
1.45 -	1.50	8.6	21.6	93.8	10.8
1.50 -	1.55	2.0	24.7	95.8	11.1
1.55 -	1.60	1.2	29.6	97.0	11.4
1.60 -	1.70	1.2	33.5	98.2	11.6
S	1.70	1.8	61.7	100.0	12.5

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C81

LIDSDALE SEAM

FLOAT AND SINK ANALYSIS

Ply C817 (A)

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.30	12.4	3.3	12.9	3.3
1.30	-	1.35	23.0	6.0	35.9	5.0
1.35	-	1.40	33.0	12.3	68.9	8.5
1.40	-	1.45	21.5	16.3	90.4	10.4
1.45	-	1.50	3.7	20.9	94.1	10.8
1.50	-	1.55	4.3	25.5	98.4	11.4
1.55	-	1.60	0.5	28.6	98.9	11.5
1.60	-	1.70	0.5	32.7	99.4	11.6
S		1.70	0.6	60.7	100.0	11.9

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C84

LIDSDALE SEAM

Float and Sink Analysis

Ply C743

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.30	35.8	5.2	35.8	5.2
1.30	-	1.35	22.2	8.3	58.0	6.4
1.35	-	1.40	16.2	13.7	74.2	8.0
1.40	-	1.45	16.0	19.3	90.2	10.0
1.45	-	1.50	2.6	21.7	92.8	10.3
1.50	-	1.60	3.4	27.0	96.2	10.9
1.60	-	1.70	0.9	39.6	97.1	11.2
S		1.70	2.9	74.2	100.0	13.0

APPENDIX VIII

CHARBON COLLIERY - IRONDALE SEAM

DDH	UNIT 'A'		UNIT 'C'		COMBINED 'A' + 'C'	
	THICKNESS (m)	ASH % (2.5 M)	THICKNESS (m)	ASH % (2.5% M)	THICKNESS (m)	ASH % (2.5% M)
C1	0.42	16.5	1.28	16.1	1.70	16.2
C2	0.38	15.6	0.49	16.8	0.87	16.3
C3	0.36	15.4	0.80	16.9	1.16	16.4
C4	Not analysed separately					
C5	0.64	15.2	0.80	15.6	1.44	15.4
C6	Seam not cored					
C7	Individual plies not analysed					
C8	0.75	21.9	0.69	7.2	1.44	14.9
C9	0.84	17.1	0.54	13.5	1.38	15.7
C10	0.55	14.7	0.84	16.5	1.39	15.8
C11-C23	(Seam not penetrated)					
C24	0.70	20.2	Seam eroded			
C25-C30	(Seam not penetrated)					
C31	1.07	17.8	0.50	9.6	1.57	15.2
C32	Seam not penetrated					
C33	0.74	17.3	0.51	7.6	1.25	13.3
C34	Seam not penetrated					
C35	0.37	17.6	0.54	15.5	0.91	16.4
C36	1.01	20.1	0.63	15.8	1.64	18.4
C37	Individual Plies not sampled					
C38	Not cored					
C39	Seam not present					
C40	Not cored					
C41	0.89	18.4	0.57	14.6	1.46	16.9
C42	0.71	27.3	0.60	16.0	1.31	22.1
C43-C44	(Seam not penetrated)					

CHARBON COLLIERY - IRONDALE SEAM

DDH	UNIT 'A'		UNIT 'C'		COMBINED 'A' + 'C'	
	THICKNESS (m)	ASH % (2.5 M)	THICKNESS (m)	ASH % (2.5%)	THICKNESS (m)	ASH % (2.5% M)
C45	0.88	27.4	0.51	17.5	1.39	23.8
C46	Seam not penetrated					
C47	0.85	25.2	0.53	7.5	1.38	18.4
C48	1.08	23.5	0.65	14.7	1.73	20.2
C49	0.66	22.6	0.53	8.3	1.19	16.2
C50	0.99	29.3	0.47	18.8	1.46	25.9
C51-C70	(Seam not penetrated)					
C71	1.04	20.8	0.56	10.7	1.60	17.3
C72	0.97	19.6	0.56	13.3	1.53	17.3
C73	Seam oxidised					
C74	1.00	16.7	0.76	30.3	1.76	22.6
C75	Seam not penetrated					
C76	0.92	19.5	0.74	11.4	1.66	15.9
C77-C78	(Seam not penetrated)					
C79	0.83	17.3	0.79	14.8	1.62	16.1
C80	0.93	21.1	0.62	11.6	1.55	17.3
C81	0.68	16.1	0.66	13.9	1.34	15.0
C82-C83	(Seam not penetrated)					
C84	0.92	17.5	0.84	17.5	1.95	17.5
C85-C89	(Seam not penetrated)					
C90	0.76	17.7	0.36	18.4	1.12	18.0
C91	0.97	18.8	0.58	10.8	1.55	15.9
C92	0.92	19.0	0.57	15.8	1.49	17.9
C93	0.78	20.9	0.71	12.2	1.49	17.1
C94-C98	(Seam not penetrated)					
C99	1.23	21.9	0.45	14.6	1.68	20.0

CHARBON COLLIERY - IRONDALE SEAM

DDH	UNIT 'A'		UNIT 'C'		COMBINED 'A' + 'C'	
	THICKNESS (m)	ASH % (2.5 M)	THICKNESS (m)	ASH % (2.5% M)	THICKNESS (m)	ASH % (2.5% M)
C100	0.61	22.3	'Oxidised'			
C101	1.01	21.3	0.60	15.0	1.61	18.9
C102	1.03	17.5	0.54	12.0	1.57	17.2
C103-C104	(Seam not penetrated)					
AVERAGE	0.81	19.7	0.63	13.4	1.44	17.6
RANGE	0.36-1.08	15.2-29.3	0.36-0.84	7.2-18.8	0.87-1.76	13.3-25.9

APPENDIX VIII (cont.)

CHARBON COLLIERY - IRONDALE SEAM - UNIT 'B'

D.D.H.	THICKNESS (m)	ASH %	D.D.H.	THICKNESS (m)	ASH %
C1	1.67	50.1	C49	1.50	45.3
C2	1.87	48.5	C50	1.15	50.2
C3	1.97	45.6	C71	1.17	55.3
C5	1.30	50.4	C72	1.16	49.0
C8	1.43	48.0	C74	0.48	54.5
C9	1.10	50.2	C76	1.11	48.8
C10	1.34	49.4	C79	1.15	55.0
C31	1.27	43.7	C80	0.98	53.5
C33	1.46	49.7	C81	1.23	47.9
C35	1.87	51.1	C84	1.10	54.5
C36	1.11	42.8	C90	1.37	45.5
C41	1.17	48.2	C91	1.11	52.2
C42	1.40	40.5	C92	1.08	51.2
C45	1.03	43.5	C93	1.06	49.2
C47	1.27	42.8	C99	0.76	52.7
C48	1.16	45.7	C101	1.07	52.5
			C102	1.05	50.7

APPENDIX IX

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C76

IRONDALE SEAM - UNIT B

FLOAT AND SINK ANALYSIS

Recombination Plies C824 - C828

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.275	-	-	-	-
1.275	-	1.30	1.2	5.2	1.2	5.2
1.30	-	1.35	2.9	11.4	4.1	9.6
1.35	-	1.40	7.2	17.3	11.3	14.5
1.40	-	1.45	10.0	23.4	21.3	18.7
1.45	-	1.50	10.4	29.4	31.7	22.2
1.50	-	1.60	17.6	36.1	41.3	27.2
1.60	-	1.70	8.9	44.2	58.2	29.8
S		1.70	41.8	74.3	100.0	48.4

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C76

IRONDALE SEAM - UNIT A

FLOAT AND SINK ANALYSIS

Recombination Plies C829 - C831

Relative Density Fraction			Fractional Mass%	Fractional Ash%	Cumulative Mass%	Cumulative Ash%
F		1.275	2.8	3.7	2.8	3.7
1.275	-	1.30	11.2	5.2	14.0	4.9
1.30	-	1.35	11.3	10.3	25.3	7.3
1.35	-	1.40	21.7	16.9	47.0	11.7
1.40	-	1.45	13.8	22.3	60.8	14.1
1.45	-	1.50	11.2	27.3	72.0	16.2
1.50	-	1.60	7.6	33.3	79.6	17.8
1.60	-	1.70	1.9	41.7	81.5	18.4
S		1.70	18.5	78.7	100.0	29.5

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C76

IRONDALE SEAM - UNIT C

FLOAT AND SINK ANALYSES

Ply C823

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.275	9.6	3.1	9.6	3.1
1.275	-	1.30	51.4	4.5	61.0	4.3
1.30	-	1.35	10.6	8.4	71.6	4.9
1.35	-	1.40	8.8	16.9	80.4	6.2
1.40	-	1.45	8.5	23.2	88.9	7.8
1.45	-	1.50	7.6	29.1	96.5	9.5
1.50	-	1.60	2.8	34.9	99.3	10.2
1.60	-	1.70	0.3	35.1	99.6	10.3
S		1.70	0.4	58.4	100.0	10.5

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C80

IRONDALE SEAM - UNIT A

Float and Sink Analysis

Recombination C777 - C781

Relative Density Fraction		Fractional		Cumulative	
		Mass%	Ash%	Mass%	Ash%
F	1.30	5.9	3.2	5.9	3.2
1.30 -	1.35	14.9	10.2	20.8	8.2
1.35 -	1.40	19.9	17.0	40.7	12.5
1.40 -	1.45	10.0	22.7	50.7	14.5
1.45 -	1.50	11.4	27.8	62.1	17.0
1.50 -	1.55	6.4	34.7	68.5	18.6
1.55 -	1.60	2.4	39.0	70.9	19.3
1.60 -	1.70	3.6	45.1	74.5	20.6
S	1.70	25.5	79.5	100.0	35.6

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C80

IRONDALE SEAM - UNIT B

Float and Sink Analysis

Recombination C771 - C776

Relative Density Fraction		Fractional		Cumulative	
		Mass%	Ash%	Mass%	Ash%
F	1.30	0.1	2.4	0.1	2.4
1.30 -	1.35	0.7	11.3	0.8	10.1
1.35 -	1.40	5.6	19.2	6.4	18.1
1.40 -	1.45	8.2	24.0	14.6	21.4
1.45 -	1.50	9.7	28.4	24.3	24.2
1.50 -	1.55	8.5	32.8	32.8	26.4
1.55 -	1.60	10.8	38.1	43.6	29.3
1.60 -	1.70	11.2	45.5	54.8	32.6
S	1.70	45.2	76.0	100.0	52.2

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C80

IRONDALE SEAM - UNIT C

Float and Sink Analysis

Ply C770

Relative Density Fraction		Fractional		Cumulative	
		Mass%	Ash%	Mass%	Ash%
F	1.30	50.7	4.2	50.7	4.2
1.30 -	1.35	17.7	8.3	68.4	5.3
1.35 -	1.40	12.8	18.0	81.2	7.3
1.40 -	1.45	9.4	23.4	90.6	8.9
1.45 -	1.50	3.4	29.9	94.0	9.7
1.50 -	1.55	1.4	33.9	95.4	10.1
1.55 -	1.60	0.8	38.4	96.2	10.3
1.60 -	1.70	1.0	42.9	97.2	10.6
S	1.70	2.8	67.2	100.0	12.2

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C81

IRONDALE SEAM - UNIT A

FLOAT AND SINK ANALYSIS

Recombination Plies C809 - C811

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.275	2.2	3.2	2.2	3.2
1.275	-	1.30	13.2	4.8	15.4	4.6
1.30	-	1.35	18.7	8.5	34.1	6.7
1.35	-	1.40	22.2	15.0	56.3	10.0
1.40	-	1.45	11.1	23.1	67.4	12.1
1.45	-	1.50	4.1	29.0	71.5	13.1
1.50	-	1.60	2.3	35.0	73.8	13.8
1.60	-	1.70	0.6	44.2	74.4	14.0
S		1.70	25.6	58.5	100.0	25.4

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C81

IRONDALE SEAM - UNIT B

FLOAT AND SINK ANALYSIS

Recombination Plies C802 - C808

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.275	-	-	-	-
1.275	-	1.30	0.6	5.5	0.6	5.5
1.30	-	1.35	2.7	10.7	3.3	9.8
1.35	-	1.40	5.9	16.4	9.2	14.0
1.40	-	1.45	8.2	23.5	17.4	18.5
1.45	-	1.50	11.2	28.6	28.6	22.4
1.50	-	1.60	19.5	35.4	48.1	27.7
1.60	-	1.70	10.4	43.6	58.5	30.5
S		1.70	41.5	72.1	100.0	47.8

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C81

IRONDALE SEAM - UNIT C

FLOAT AND SINK ANALYSIS

Ply C801

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F.		1.275	6.5	2.5	6.5	2.5
1.275	-	1.30	40.7	5.3	47.2	4.9
1.30	-	1.35	16.3	10.3	63.5	6.3
1.35	-	1.40	6.7	15.8	70.2	7.2
1.40	-	1.45	7.5	22.2	77.7	8.7
1.45	-	1.50	10.9	27.1	88.6	10.9
1.50	-	1.60	8.2	33.0	96.8	12.8
1.60	-	1.70	0.8	40.2	97.6	13.0
S		1.70	2.4	80.9	100.0	14.6

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C90

IRONDALE SEAM UNIT A

FLOAT AND SINK ANALYSIS

Recombination C 885 - C 887

Relative Density Fraction			Fractional Mass%	Fractional Ash%	Cumulative Mass%	Cumulative Ash%
F		1.25	NIL	-	-	-
1.25	-	1.30	10.0	4.8	10.0	4.8
1.30	-	1.35	23.9	9.2	33.9	7.9
1.35	-	1.40	21.0	16.2	54.9	11.1
1.40	-	1.45	13.6	21.0	68.5	13.0
1.45	-	1.50	6.0	26.4	74.5	14.1
1.50	-	1.60	2.9	32.3	77.4	14.8
1.60	-	1.70	0.9	39.0	78.3	15.1
S		1.70	21.7	82.4	100.0	29.7

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C90

IRONDALE SEAM UNIT C

FLOAT AND SINK ANALYSIS

Ply C 875

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.25	NIL	-	-	-
1.25	-	1.30	41.4	4.6	41.4	4.6
1.30	-	1.35	6.6	9.3	48.0	5.2
1.35	-	1.40	9.7	18.1	57.7	7.4
1.40	-	1.45	9.0	24.8	66.7	9.8
1.45	-	1.50	13.7	29.5	80.4	13.1
1.50	-	1.60	10.6	36.0	91.0	15.8
1.60	-	1.70	5.2	43.1	96.2	17.3
S		1.70	3.8	57.2	100.0	18.8

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C91

IRONDALE SEAM UNIT A

FLOAT AND SINK ANALYSIS

Recombination C 866 - C 868

Relative Density Fraction			Fractional Mass%	Fractional Ash%	Cumulative Mass%	Cumulative Ash%
			-	-	-	-
F		1.25	NIL			
1.25	-	1.30	14.7	4.6	14.7	4.6
1.30	-	1.35	20.5	9.5	35.2	7.5
1.35	-	1.40	18.3	15.6	53.5	10.2
1.40	-	1.45	11.0	21.3	64.5	12.1
1.45	-	1.50	7.2	27.6	71.7	13.7
1.50	-	1.60	3.4	33.5	75.1	14.6
1.60	-	1.70	1.4	42.0	76.5	15.0
S		1.70	23.5	80.4	100.0	30.4

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C91

IRONDALE SEAM UNIT C

FLOAT AND SINK ANALYSIS

Ply C 856

Relative Density Fraction			Fractional Mass%	Fractional Ash%	Cumulative Mass%	Cumulative Ash%
F		1.25	NIL	-	-	-
1.25	-	1.30	62.4	3.8	62.4	3.8
1.30	-	1.35	8.8	8.4	71.2	4.4
1.35	-	1.40	10.0	17.9	81.2	6.0
1.40	-	1.45	9.4	23.1	90.6	7.8
1.45	-	1.50	4.7	28.4	95.3	8.8
1.50	-	1.60	2.7	34.5	98.0	9.5
1.60	-	1.70	0.7	39.5	98.7	9.7
S		1.70	1.3	62.9	100.0	10.4

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C92

IRONDALE SEAM UNIT A

FLOAT AND SINK ANALYSIS

Recombination C 940 - C 944

Relative Density Fraction			Fractional Mass%	Fractional Ash%	Cumulative Mass%	Cumulative Ash%
F		1.25	NIL	-	-	-
1.25	-	1.30	11.4	3.9	11.4	3.9
1.30	-	1.35	14.2	9.5	25.6	7.0
1.35	-	1.40	13.3	15.4	38.9	9.9
1.40	-	1.45	12.4	21.3	51.3	12.6
1.45	-	1.50	15.8	27.1	67.1	16.0
1.50	-	1.60	9.3	32.5	76.4	18.0
1.60	-	1.70	0.5	39.5	76.9	18.2
S		1.70	23.1	78.4	100.0	32.1

CHARBON COLLIERY HOLDING

DIAMOND DRILL HOLE C92

IRONDALE SEAM UNIT C

FLOAT AND SINK ANALYSIS

Ply C 933

Relative Density Fraction			Fractional		Cumulative	
			Mass%	Ash%	Mass%	Ash%
F		1.25	NIL	-	-	-
1.25	-	1.30	47.5	4.3	47.5	4.3
1.30	-	1.35	12.7	8.6	60.2	5.2
1.35	-	1.40	8.8	17.3	69.0	6.7
1.40	-	1.45	11.4	23.9	80.4	9.2
1.45	-	1.50	8.5	29.2	88.9	11.1
1.50	-	1.60	3.8	34.1	92.7	12.0
1.60	-	1.70	1.7	42.5	94.4	12.6
S		1.70	5.6	60.4	100.0	15.3

APPENDIX X

CHARBON COLLIERY - LITHGOW SEAM

D.D.H.	THEORETICAL RECOVERY OF		
	9% ASH PRODUCT	14% ASH PRODUCT	19% ASH PRODUCT
C9	85.1	100	100
C10A	91.7	100	100
C17	46.3	93	100
C19	47.6	95.9	100
C21	55.4	91.9	100
C22	72.4	94.7	100
C24	39.7	81.3	91.7
C27	57.5	96.2	100
C31	56.1	96.1	100
C33	85.9	98.2	100
C34	76.4	96.5	100
C35	24.1	66.9	93.8
C37	38.2	83.2	95.3
C39	43.2	75.4	89.4
C40	63.3	96.8	100
C47	29.3	71.3	95.9
C64	52.9	91.6	100
C66	50.5	91.7	100
C71	48.6	92.2	100
C72	37.6	83.4	97.0
C74	87.5	95.9	100
C79	83.2	97.7	100
C80	57.5	100	100
C81	41.3	87.0	97.7
C83	68.4	85.0	93.3
C90	82.9	94.9	100
C91	89.3	100	100
C92	87.8	98.6	100
C93	82.7	94.1	100