Muswellbrook Coal Company
No.1 Open Cut Extension Soil Study

November 2001

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1. Introduction

Muswellbrook Coal Company (MCC) has mined by open cut methods an area northeast of Muswellbrook since 1944. MCC is seeking approval to mine further to the east of the No. 1 Open Cut in Extension A and Extension B. This essentially consists of mining the remnant coal between the No. 1 Open Cut and the No. 2 Open Cut.

This Soils and Land Capability study assesses the area of sloping land between the open cut mining areas. The existing overburden dumps of the No. 2 Open Cut forms a physical barrier to the east. The existing access road (Coal Road) to the No. 2 Open is within the pit limits of the proposed mining area and will be relocated further to the south.

2. Methodology

Terrain of the No.1 Open Cut Extension Area was assessed using MCC aerial photography (Hatch 2326, Photos 4374/5, 25/5/2001) and subsequent field checking. Landform units have been plotted on a scanned image of one of the photographs (**Figure 1**). Mapping of terrain is according to terrain unit and slope class as indicated in **Table 1**.

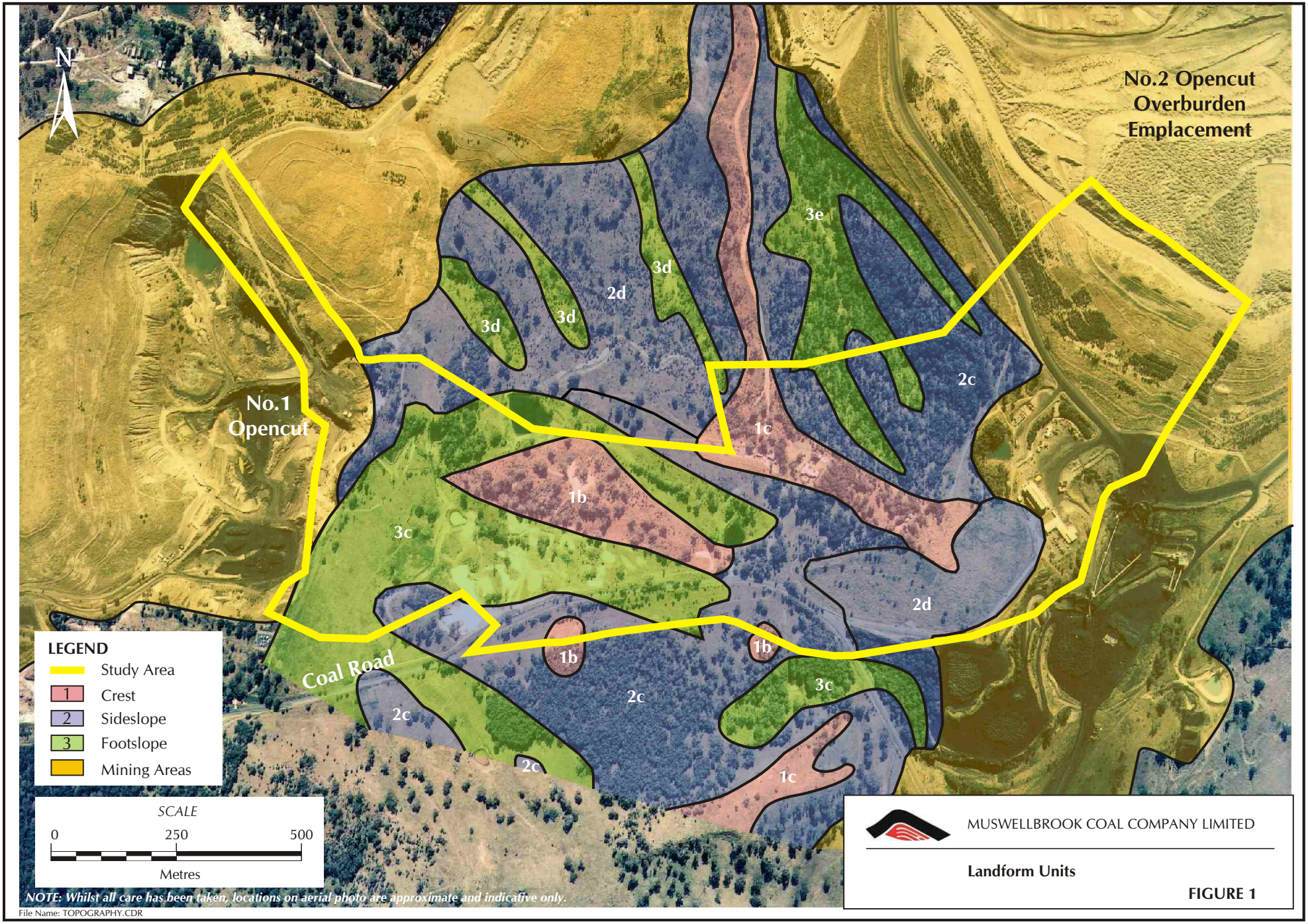
TABLE 1
LANDFORM

1st Character	Terrain Unit	2nd Character	Slope Class
1	Crest	a	0-2%
2	Sideslope	b	2-5%
3	Footslope	c	5-10%
4	Drainage plain	d	10-20%
5	Incised drainage line	e	20-50%

Reference has been made to the Soils of the Singleton 1:250000 Sheet by Kovac and Lawrie, 1991. (Soil Landscape Series Sheet SI 56-1).

Soil profiles were assessed in the field using various excavations as well as observations of exposed soil profiles in gully walls. Observation methods were generally as described in the Australian Soil and Land Survey Field Handbook (McDonald et al, 1998).

Soil Testing has been carried out by the Research Service Centre at Scone operated by the Department of Land and Water Conservation.


N
No.2 Opencut Overburden Emplacement
No.1 Opencut
3e
3d
2d
3d
3d
2c
1c
1b
3c
2d
1b
1b
3c
2c
2c
2c
1c
Coal Road
LEGEND
Study Area
1 Crest
2 Sideslope
3 Footslope
Mining Areas
SCALE
0 250 500
Metres
NOTE: Whilst all care has been taken, locations on aerial photo are approximate and indicative only.
File Name: TOPOGRAPHY.CDR
MUSWELLBROOK COAL COMPANY LIMITED
Landform Units
FIGURE 1

3. Description of Soil Units Observed

The whole of the area is mapped as the Roxburgh Soil Landscape in Soil Landscapes of the Singleton 1:250000 Sheet. The undulating low hills and undulating hills, consisting of the Greta Coal Measures sediments display various degrees of weathering of the sandstones, shales, coal, mudstones and conglomerates. The soils derived from this parent material are typically yellow duplex soils. **Figure 2** shows soils in the proposed mining area.

3.1 Yellow Duplex Soils with mottled subsoils (Dy3.41, Dy2.41)

These generally occur in the drainage lines with fine sandy loam topsoils. The topsoil is organically enriched and darker, average depth being 5 centimetres. Soils are weakly structured with sandy fabric and pH 5-5.5. Generally an A2 horizon is present, 25-30 cms depth and is likely to be conspicuously bleached.

B-horizons
B-horizons have typically a medium clay texture with medium structure and ped size to 50 mm with rough ped fabric. Range of pH was 5.0-5.5 with an acid soil reaction trend. Depth to weathered rock was to 400 cm in the deep gully.

3.2 Yellow Duplex Soils, whole coloured subsoils (Dy 2.41)

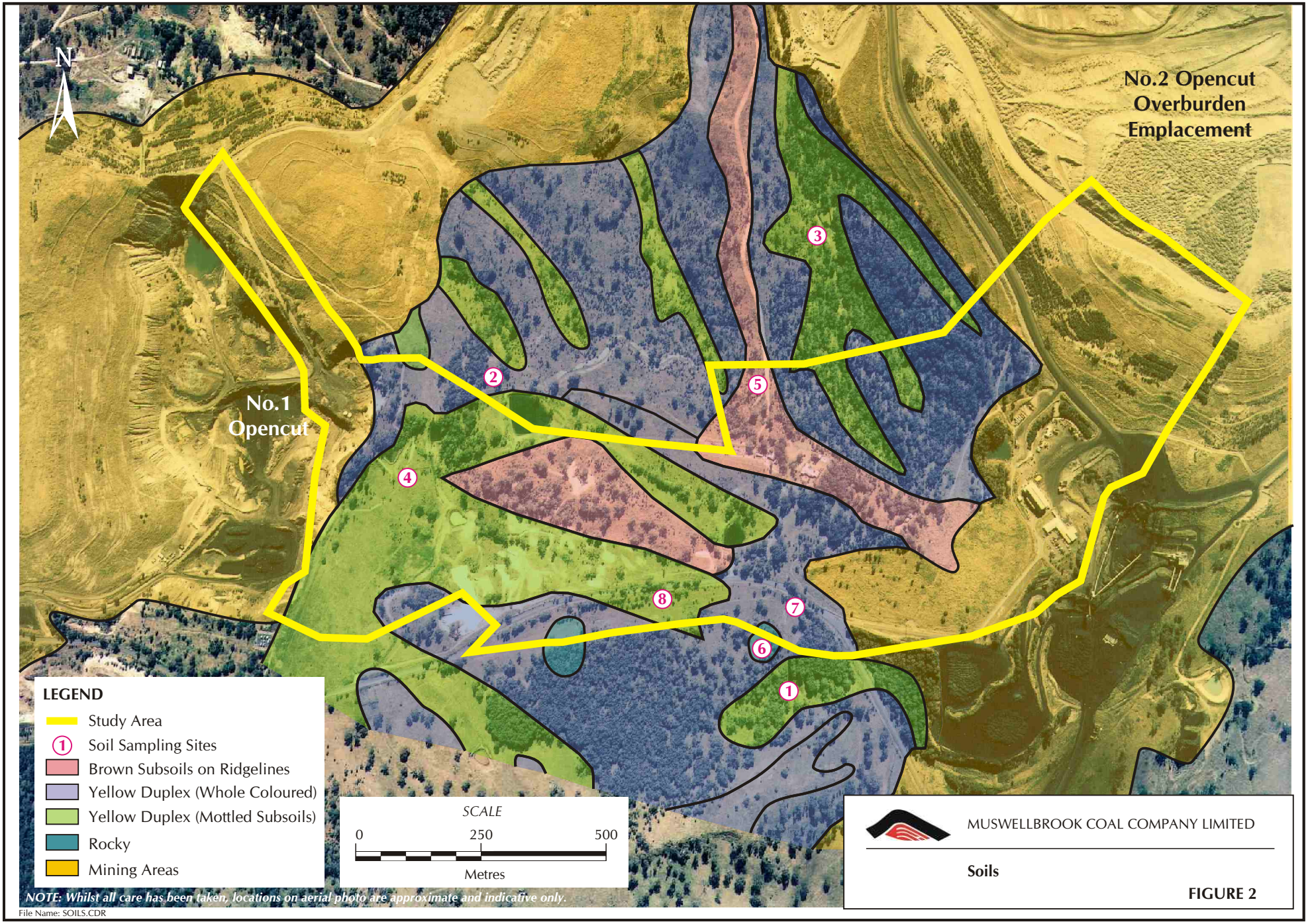
Yellow Duplex Soils with whole coloured subsoils (solods) occur on the sideslopes where gradients are generally less than 10%. A1-horizons are darker coloured, about 5 cms in depth overlying thick, bleached A2-horizons. Typically topsoil is fine sandy loam texture, weakly structured, with pH 5.5.

B-horizons
The B-horizons have medium clay subsoils, yellow in colour, with medium structure and very firm consistence. Subsoil remains brightly coloured to at least 50 cms with pH 6.0.

3.3 Brown subsoils on the ridgelines

Brown duplex soils occur along the ridgelines especially north of Coal Road. To the south resistant conglomerate subcrops occur giving rise to patches of skeletal soils. Topsoil consists of a thin A1-horizon 0-5 cms depth, with weak structure and pH 5.5. The A2-horizon is 15 cms in thickness, and conspicuously bleached.

The B-horizon is whole coloured to depths below 50 cms, with pH 6.0.



File Name: SOILS.CDR

3.4 Mining Area

Mining areas are those areas where open cut operations have resulted in excavation of overburden material and placement in emplacement areas. These may have been subsequently revegetated and may have had some topsoil material spread before being revegetated. Some of the area to be disturbed in the current proposal consists of mining areas that have not been rehabilitated but rather form part of currently used infrastructure. This includes haul roads and hardstands around the workshop, stockpiles etc.

4. Land Capability/Suitability

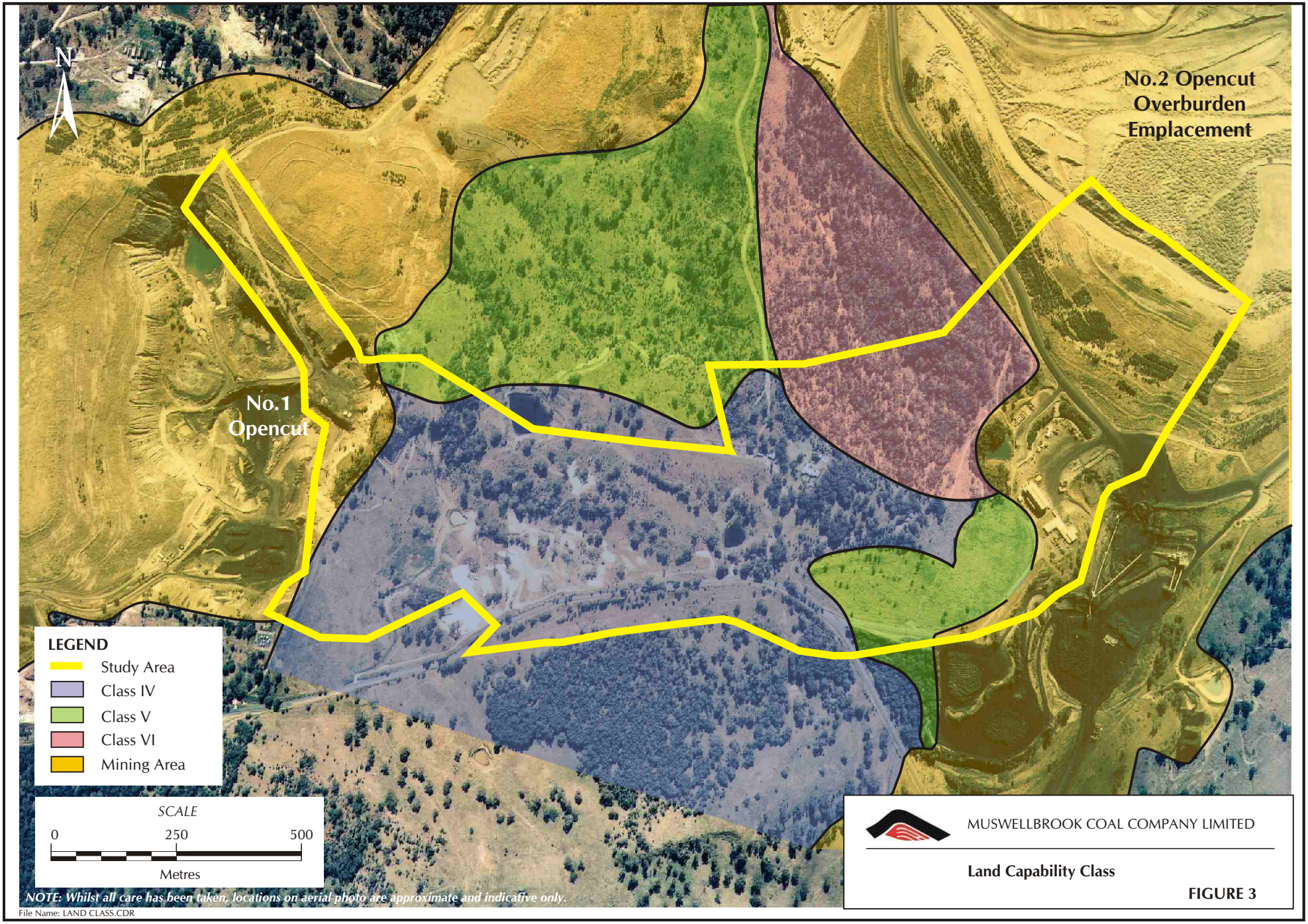
4.1 Land Capability

The Department of Land and Water Conservation (DLWC) has developed a system of agricultural capability classification (see **Figure 3**) based on environmental factors, which may limit the use of land (Emery, 1985). These factors include widespread influences such as climate, land slope and form and local soil limitations such as soil depth, erodibility, water holding capacity, rockiness, salinity, and the degree of existing erosion. One or a number of the factors in combination may restrict land use and limit land capability.

Based on assessment of these limiting factors, land is classified into eight classes, with the restriction on use, or the likelihood of erosion damage increasing from Class I to Class VIII. (Refer to **Table 2**).

TABLE 2
RURAL LAND CAPABILITY

Land Class	Land Suitability	Land Definition
Class I	Regular cultivation	No erosion control requirements
Class II	Regular cultivation	Simple requirements such as crop rotation, minor strategic works
Class III	Regular cultivation	Intensive soil conservation measures required such as banks and waterways
Class IV	Grazing , occasional cultivation	Simple practices such as stock control, fertilizer application
Class V	Grazing, occasional cultivation	Intensive soil conservation measures required such as banks, contour ripping
Class VI	Grazing only	Managed to ensure ground cover is maintained
Class VII	Unsuitable for rural production	Green timber maintained to control erosion
Class VIII	Unsuitable for rural production	Should not be cleared, logged or grazed



File Name: LAND CLASS.CDR

Land capability has been mapped at a scale 1: 100,000 by the Soil Conservation Service of NSW in the Land Capability Series Sheets, "Muswellbrook" (9033). At this scale the Study Area is shown as Class V Land, suited to grazing but requiring intensive soil conservation works to maintain stability, with some Class IV land suitable for grazing to the south where slopes are reduced. Some steep lands close to Muswellbrook No.2 Open Cut are shown as Class VI Land, suitable for judicious grazing.

However when assessed with the benefit of detailed topographical and soils information, a more refined pattern can be described (Figure 3). The Class V lands are those where the Yellow Duplex soils are formed in situ from the sedimentary sequence of the Greta Coal Measures with generally a good cover of native grasses. Steeper sideslopes and the drainage lines have been grouped as Class VI Land. These areas have poorer cover and active sheet and gully erosion, necessitating only judicious grazing. Class IV Lands are those with moderate slope. There is good ground cover and occasional rocky outcrop making these areas suitable for grazing without constraints other than satisfactory management. The mining areas formed of overburden materials, are variously vegetated ranging from rehabilitated land to hardstand and stockpile areas. These lands have been designated as Mining Area (m), currently removed from agricultural production.

4.2 Agricultural Suitability

NSW Agriculture has an alternative system of classification of lands according to five classes of agricultural suitability (see **Table 3**).

TABLE 3
AGRICULTURAL SUITABILITY

Class	Description
Class 1	Arable land suitable for intensive cultivation where constraints to sustained high levels of agricultural production are minor or absent.
Class 2	Arable land suitable for regular cultivation for crops but not suited to continuous cultivation. It has a moderate to high suitability for agriculture but edaphic (soil factors) or environmental constraints reduce the overall level of production and may reduce the cropping phase to a rotation with sown pastures.
Class 3	Grazing land or land well suited to pasture improvement. It may be cultivated or cropped in rotation with pasture. The overall production level is moderate because of edaphic or environmental constraints. Erosion hazard, soil structural breakdown or other factors including climate may limit the capacity for cultivation and soil conservation or drainage works may be required.
Class 4	Land suitable for grazing but not cultivation. Agriculture is bases on native pastures or improved pastures bases on minimum tillage techniques. Production may be seasonally high but the overall production level is low as a result of major environmental constraints
Class 5	Land unsuitable for agriculture or at best only to light grazing. Agricultural production is low or zero as a result of severe constraints, including economic factors, which preclude land improvement.

Figure 4 shows Agricultural Suitability of lands within the Study Area. The land is largely Class 4 Land suitable for grazing but not cultivation. Constrains include slope, soil structure, rockiness, and the degree of existing erosion. The active mining and infrastructure areas comprise the Class 5 Land unsuitable for agriculture.

5. Existing Erosion

An erosion survey was conducted of all the Hunter River Catchments, Hunter River Catchment Soil Erosion (Emery, 1985). 1:100000 Sheet S.C.S. 18293/6 shows the study area generally as an area of moderate to severe sheet erosion. Grass cover has improved since the early eighties because of reduced grazing pressure. The deep north south trending drainage lines are classed as areas of very severe gully erosion (1.5-3 m deep).

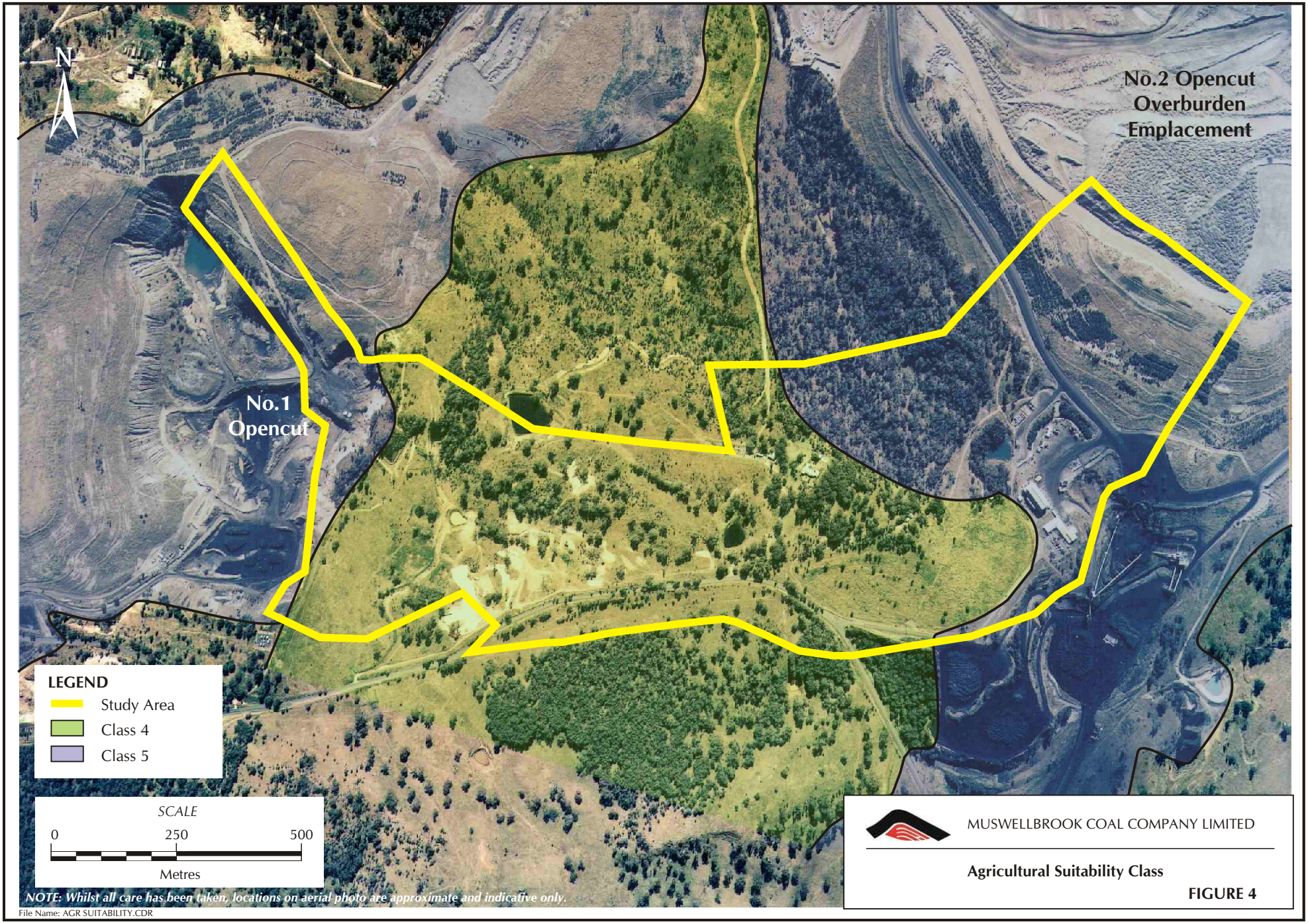
6.Topsoil Stripping Plan

Elliott and Veness (1981) developed a scheme for selecting topdressing materials for use in mine rehabilitation in the Hunter Valley. Critical properties identified were:

- Soil structure
- Coherence
- Mottling
- Macrostructure
- Ped strength
- Texture
- Sand and gravel content
- Salt content and pH

These characteristics were assessed in the field and by laboratory testing. **Table 4** summarises the quantities of topsoil materials and constraints in their use.

The topsoil estimates are included as a guide to quantities of topdressing materials available but do not meet the guidelines for topsoil stockpiling. These materials would be most useful if carefully handled and stripped and respread in a single operation. They would be better suited to rehabilitation sites with low erosion potential such as crests or protected footslopes, and not long sideslopes or drainage areas.



File Name: AGR SUITABILITY.CDR

TABLE 4 TOPSOIL STRIPPING				
Soil Type	Average Depth (cm)	Area (ha)	Volume (m^3)	Constraints
Yellow Duplex Soils Mottled Subsoils	5	25.5	12800	Weak structure Sand and gravel
Yellow Duplex Soils Whole Coloured Subsoils	5	24.7	12350	Structure, consistence, pH
Mining and Infrastructure Areas		30.4		Structure
Brown Subsoils on Ridgelines	5	14.4	7200	Structure, salinity consistence

The Yellow Duplex Soils with mottled subsoils fail to meet the criteria in that the soil structure is weak and the sand and gravel content exceeds the recommendations. It does contain valuable native plant seed and micro-organisms. If planned as a single topsoil stripping and re-spreading operation for rehabilitation of low erosion potential areas, successful results could be achieved under favourable conditions. Mixing with the bleached A2 horizon would need to be avoided.

The material used to rehabilitate the previously rehabilitated lands can be reclaimed but suffers from previous handling and possible mixing with the underlying overburden material. A rapid weathered interface may have developed assisting with recovery.

The Yellow Duplex Soils with whole coloured subsoils have poor structure and have high sand and gravel contents, above recommended levels (SL texture, gravelly). These areas will contribute some useful material but care is required to ensure contamination with bleached A2 material is avoided.

The Brown Soils on the Ridgelines are again dominated by conspicuously bleached A2-horizon requiring careful separation. Limitations include the degree of existing erosion, poor structure, excess sand and gravel.

The Mining and Infrastructure Areas contain material used to rehabilitate the previously rehabilitated lands can be reclaimed but suffers from previous handling and possible mixing with the underlying overburden material. A rapid weathered interface may have developed assisting with recovery.

7. Conclusions

Soils in the proposed mining area of the No. 1 Open Cut Extension are largely the in situ soils formed from the weathering of the sedimentary rocks of the Greta Coal Measures. Duplex soils are dominant with brown subsoils on the ridges and yellow soils on the slopes. The Yellow Duplex Soils are mottled at depth in the drainage lines but mostly with whole coloured subsoils on the side slopes. All soils have deep (20-30 cm) A2-horizons that are bleached and generally dispersible. This material is erodible and unstable on the surface, and should not be collected with the stripped topsoil (A1-horizon).

The A1-horizon material is organically enriched giving it a darker colour, and contains micro-organisms and seeds of native plants which will enhance rehabilitation following mining. However because of poor structure and high sand and gravel content, these thin soils do not meet the standards as described by Elliot and Veness. It would be best to carefully separate from the A2-horizon material and handle in a single operation, by stripping and immediately re-spreading on reshaped surfaces. The subsoils materials should be suitable for sealing purposes, though some exhibit some dispersion. The bright, non-mottled materials will be the most stable.

8. References

Elliott G.L. and Veness R.A. (1981) Selection of Topdressing Material for Rehabilitation of Disturbed Areas in the Hunter Valley. Journ. Soil cons. NSW, 37:1 pp37-40.

Emery K.A. (1985), Hunter River Catchment Soil Erosion. Soil Conservation Service of New South Wales. Sydney.

Emery K.A. (1985). Rural land Capability Mapping, Soil Conservation Service of New South Wales. Sydney.

Kovac M. and Lawrie J.W. (1991). Soil Landscapes of the Singleton 1:250000 Sheet. Soil Conservation Service of NSW, Sydney.

McDonald R.C., Isbell R.F., Speight J.G., Walker J. and Hopkins M.S. (1998), Australian Soil and Land Survey Field Handbook. CSIRO. Canberra.

Appendix 1

Soil Profile Morphology- Site 1 (West of Coal Road)			
Soil Characteristic	**A-horizon**	**B-horizon**	**Remarks**
Depth (cm)	0-5	20-40	A2 5-20
Texture (field)	FSL	SC	
pH	5.5	6.0	
Structure (McDonald et al, 1998)			
Structure grade	weak	Strong	
Ped size	10 mm	<50 mm	
Ped type	platy	Polyhedral	
consistence	weak	Very firm	
Colour	7.5 YR 3/3	7.5 YR 4/8	
Mottle			
Stickiness		3	
Plasticity degree		3	
Plasticity type		N	
Coarse fragments			
Abundance	Moderate (4)	Few (2)	
Size	Coarse gravelly	Medium gravelly	
Shape	Rounded platy	Rounded platy	
Lithology	Sandstone/ironstone	Sandstone/shale	
Laboratory Tests			
Clay %			
Silt %			
Fine sand %			
Coarse sand %			
Gravel %			
Dispersion %			
Emmerson Aggregate Test			
pH			
Electrical Conductivity			

Note: Units are in standard units for soil characteristic, or in classes following McDonald et al, (1998), Australian Soil and Land Survey Field Handbook. Laboratory testing results are as reported by Scone Research Service Centre (**Appendix 2**).

Soil Profile Morphology- Site 2 (East of No. 1 Open Cut)			
Soil Characteristic	**A-horizon**	**B-horizon**	**Remarks**
Depth (cm)	0-5	30-50+	A2 5-30
Texture (field)	FSL	MC	
pH	5.5	6.0	
Structure (McDonald et al, 1998)			
Structure grade	Weak	Medium	
Ped size	10 mm	<50 mm	
Ped type	Platy	Polyhedral	
consistence	Very firm (4)	Very firm (4)	
Colour	7.5 YR 4/3	7.5 YR 5/8	
Mottle	7.5 YR 7/2		A2 conspicuous bleach, gravelly
Stickiness	0	2	
Plasticity degree		3	
Plasticity type		U	
Coarse fragments			
Abundance	Common	Common	
Size	Medium gravelly	Medium gravelly with some stones	
Shape	Angular tabular	At, stones RP	
Lithology	Sandstone/ironstone	Sandstone	
Laboratory Tests			
Clay %			
Silt %			
Fine sand %			
Coarse sand %			
Gravel %			
Dispersion %			
Emmerson Aggregate Test			
pH			
Electrical Conductivity			

Note: Units are in standard units for soil characteristic, or in classes following McDonald et al, (1998), Australian Soil and Land Survey Field Handbook. Laboratory testing results are as reported by Scone Research Service Centre (**Appendix 2**).

Soil Profile Morphology- Site 3 (Dam in deep gully)			
Soil Characteristic	**A-horizon**	**B-horizon**	**Remarks**
Depth (cm)	0-5	30-400	A2 5-30
Texture (field)	FSL	MC	
pH	5.0	5.5	
		Mottled at depth	
Structure (McDonald et al, 1998)			
Structure grade	weak	Strong	
Ped size	5-10 mm (3)	20-50 mm (5)	
Ped type	polyhedral	polyhedral	
consistence	Weak (2)	Strong (5)	
Fabric	Rough ped	Rough ped	
Colour	7.5 Yr 5/3	7.5 YR 5/6	
Mottle	7.5 YR 8/2		A2
Stickiness		Moderately sticky	
Plasticity degree		Very plastic	
Plasticity type		U	
Coarse fragments			
Abundance	Few (2)	Common (3)	
Size	Fine gravel (2)	Medium gravel (2)	
Shape	Rounded	Rounded	
Lithology	Quartz	Quartz	
Laboratory Tests			
Clay %			
Silt %			
Fine sand %			
Coarse sand %			
Gravel %			
Dispersion %			
Emmerson Aggregate Test	8/3(1)	3(3)	
pH	6.0	5.7	
Electrical Conductivity (dS/m)	0.06	0.08	

Note: Units are in standard units for soil characteristic, or in classes following McDonald et al, (1998), Australian Soil and Land Survey Field Handbook. Laboratory testing results are as reported by Scone Research Service Centre (**Appendix 2**).

Soil Profile Morphology- Site 4 (East of No. 1 Open Cut)			
Soil Characteristic	**A-horizon**	**B-horizon**	**Remarks**
Depth (cm)	0-5	35-50+	A2 5-35
Texture (field)	FSL	MC	
pH	5.5	5.0	
Structure (McDonald et al, 1998)			
Structure grade	Weak	Medium	
Ped size			
Ped type			
consistence			
Colour	7.5 Yr 3/3	7.5 YR 5/6	
Mottle	(A2) 7.5 YR 6/3	7.5 YR 6/3	
Stickiness			
Plasticity degree			
Plasticity type			
Coarse fragments			
Abundance	Few (2)	Few (2)	
Size	Cobbly	Cobbly	
Shape	Rounded	Rounded	
Lithology	Sandstone	Sandstone	
Laboratory Tests			
Clay %	13	47	
Silt %	9	9	
Fine sand %	36	22	
Coarse sand %	28	20	
Gravel %	14	2	
Dispersion %	21	47	
Emmerson Aggregate Test	8/3(1)	2(1)	
pH	5.2	4.9	
Electrical Conductivity	0.07	0.12	

Note: Units are in standard units for soil characteristic, or in classes following McDonald et al, (1998), Australian Soil and Land Survey Field Handbook. Laboratory testing results are as reported by Scone Research Service Centre (**Appendix 2**).

Soil Profile Morphology- Site 5 (Ridgeline track)			
Soil Characteristic	**A-horizon**	**B-horizon**	**Remarks**
Depth (cm)	0-5	20-50+	A2 5-20
Texture (field)	FSL	MC	
pH	5.5	6.0	
Structure (McDonald et al, 1998)			
Structure grade	weak	moderate	
Ped size			
Ped type			
consistence			
Colour	10 YR 4/3	10 YR 4/6	
Mottle			
Stickiness			
Plasticity degree			
Plasticity type			
Coarse fragments			
Abundance			
Size			
Shape			
Lithology			
Laboratory Tests			
Clay %			
Silt %			
Fine sand %			
Coarse sand %			
Gravel %			
Dispersion %			
Emmerson Aggregate Test		3(3)	
pH		5.8	
Electrical Conductivity		0.08	

Note: Units are in standard units for soil characteristic, or in classes following McDonald et al, (1998), Australian Soil and Land Survey Field Handbook. Laboratory testing results are as reported by Scone Research Service Centre (**Appendix 2**).

Soil Profile Morphology – Site 6 Rocky outcrop			
Soil Characteristic	**A-horizon**	**B-horizon**	**Remarks**
Depth (cm)	3		
Texture (field)	SL		
pH			
Structure (McDonald et al, 1998)			
Structure grade			
Ped size			
Ped type			
consistence			
Colour			
Mottle			
Stickiness			
Plasticity degree			
Plasticity type			
Coarse fragments			**Rocky(10-20%)**
Abundance	Abundant		
Size	Cobbly (60-200mm)		
Shape	Angular Tabular		
Lithology	Sandstone/siltstone		HEmmerson Aggregate Test affected
Laboratory Tests			
Clay %			
Silt %			
Fine sand %			
Coarse sand %			
Gravel %			
Dispersion %			
Emmerson Aggregate Test			
pH			
Electrical Conductivity			

Note: Units are in standard units for soil characteristic, or in classes following McDonald et al, (1998), Australian Soil and Land Survey Field Handbook. Laboratory testing results are as reported by Scone Research Service Centre (**Appendix 2**).

Soil Profile Morphology- Site 7 Roadside			
Soil Characteristic	**A-horizon**	**B-horizon**	**Remarks**
Depth (cm)	5		
Texture (field)	SL	MC	
pH		4.5	
Structure (McDonald et al, 1998)			
Structure grade		Moderate	
Ped size		20-50 mm	
Ped type		Angular blocky	
consistence		Very firm (4)	
Colour		10YR 4/6	
Mottle			
Stickiness			
Plasticity degree			
Plasticity type			
Coarse fragments			
Abundance		**Abundant**	
Size		Large pebbles (20-60 mm)	
Shape		Rounded tabular	
Lithology		Sandstone/ironstone	
Laboratory Tests			
Clay %			
Silt %			
Fine sand %			
Coarse sand %			
Gravel %			
Dispersion %			
Emmerson Aggregate Test			
pH			
Electrical Conductivity			

Note: Units are in standard units for soil characteristic, or in classes following McDonald et al, (1998), Australian Soil and Land Survey Field Handbook. Laboratory testing results are as reported by Scone Research Service Centre (**Appendix 2**).

Soil Profile Morphology -Site 8 Roadside Gully			
Soil Characteristic	**A-horizon**	**B-horizon**	**Remarks**
Depth (cm)	9		A2-horizon 40 cm
Texture (field)	SL		
pH			
Structure (McDonald et al, 1998)			
Structure grade	Weak		
Ped size	10-20 mm		
Ped type	Platy		
consistence	Weak		
Colour			
Mottle			
Stickiness			
Plasticity degree			
Plasticity type			
Coarse fragments			
Abundance	Common (10-20%)		
Size	Gravel (-20 mm)		
Shape	Angular platy		
Lithology	Sandstone/coal		
Laboratory Tests			
Clay %			
Silt %			
Fine sand %			
Coarse sand %			
Gravel %			
Dispersion %			
Emmerson Aggregate Test			
pH			
Electrical Conductivity			

Note: Units are in standard units for soil characteristic, or in classes following McDonald et al, (1998), Australian Soil and Land Survey Field Handbook. Laboratory testing results are as reported by Scone Research Service Centre (**Appendix 2**).

Appendix 2

SOIL TEST REPORT

Scone Research Service Centre

REPORT NO:	SCO01/303R1
REPORT TO:	R J Connolly Environmental Management Consulting Pty Ltd PO Box 216 Muswellbrook 2333
REPORT ON:	Six soil samples Muswellbrook Coal
PRELIMINARY RESULTS ISSUED:	Not issued
REPORT STATUS:	Final
DATE REPORTED:	17 December, 2001
METHODS:	Information on test procedures can be obtained from Scone Research Service Centre

TESTING CARRIED OUT ON SAMPLE AS RECEIVED.

G. Holman
(Technical Officer)

Gundy Road Scone NSW 2337 P.O. Box 283 Scone NSW 2337 DX 4205
Telephone (02) 65451666 Facsimile (02)65452520

SOIL AND WATER TESTING LABORATORY
Scone Research Service Centre

Report No.: SCO01/303R1
Client Reference: R J Connolly
Environmental Management Consulting Pty Ltd
PO Box 216
Muswellbrook 2333

Lab No	Method	P7B/1 Particle Size Analysis (%)					P8A/2	P9B/2	C2A/3	C1A/4
	Sample Id.	clay	silt	f.sand	c.sand	gravel	D (%)	EAT	pH	EC (dS/m)
1	Muswellbrook Coal MC3 A1	nt	nt	nt	nt	nt	nt	8/3(1)	6.0	0.06
2	Muswellbrook Coal MC4 B	nt	nt	nt	nt	nt	nt	3(3)	5.7	0.08
3	Muswellbrook Coal MC5 A1	13	9	36	28	14	21	8/3(1)	5.2	0.07
4	Muswellbrook Coal MC6 A2	17	12	37	27	7	48	2(1)	5.1	0.04
5	Muswellbrook Coal MC7 B	47	9	22	20	2	47	2(1)	4.9	0.12
6	Muswellbrook Coal MC8 B	nt	nt	nt	nt	nt	nt	3(3)	5.8	0.08

END OF TEST REPORT