



STATEMENT OF PHYSICAL CHARACTERISTICS
AND
AGRICULTURAL LAND CLASSIFICATION
BURNHOUSE, LEADGATE, COUNTY DURHAM
PROPOSED OPENCAST COAL SITE
AUGUST 1993

ADAS
Leeds Statutory Group

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SUMMARY

A statement of physical characteristics and Agricultural Land Classification survey of 12.3ha of land at Burnhouse, Leadgate, County Durham was carried out in August 1993.

All of this is agricultural land of Subgrade 3b quality.

Soils are highly variable, particularly in terms of subsoil depth, with a mixture of restored land and undisturbed soils occurring throughout the site. Medium to heavy textured topsoils overlie heavy textured, compacted slowly permeable subsoils, which are often impenetrable between 20 and 80cm depth. In some places, subsoils are deeper (up to 120cm) and uncompacted, although still slowly permeable. This land is limited to Subgrade 3b by the overall climate, severe soil wetness and, in the east of the site, gradient.

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STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND
CLASSIFICATION REPORT ON THE PROPOSED OPENCAST COAL SITE AT BURNHOUSE,
LEADGATE, COUNTY DURHAM.

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The site lies 4½ km east of Consett and 1km east of the village of Leadgate and is centred on National Grid Reference NZ 139511. Survey work was carried out in August 1993 when soils were examined by hand auger borings at 100m intervals predetermined by the National Grid. One soil profile pit was dug to assess soil structure. Land quality was assessed using methods described in "Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land" (MAFF, 1988).

1.2 Land Use and Relief

At the time of the survey, the northern part of the site was under permanent pasture and the southern-most field was under winter wheat. Site altitude ranges from approximately 180m AOD to 220m AOD. The land is moderately to strongly sloping (4-10°) with an easterly aspect.

1.3 Climate

Grid Reference	: NZ 139511
Altitude (m)	: 200
Accumulated Temperature above 0°C (January-June)	: 1125 day°C
Average Annual Rainfall (mm)	: 791
Climatic Grade	: 3b
Field Capacity Days	: 200
Moisture Deficit (mm) Wheat	: 70
Moisture Deficit (mm) Potatoes	: 50

1.4 Geology, Soils and Drainage

The site is underlain by Coal Measures which are covered by till. However, much of the site is disturbed, having been restored after an earlier period of coal extraction. Soils are highly variable over short distances across the site, with restored soils being interspersed with undisturbed soils. Topsoils are generally medium to heavy textured (medium clay loam, medium silty clay loam, sandy clay loam or heavy clay loam). Disturbed subsoils are generally heavy textured (heavy clay loam or silty clay), compacted and slowly permeable. They are generally impenetrable at between 20 and 80cm depth. These soils are poorly drained, falling within Wetness Class IV. Undisturbed soils are generally deeper (down to 120cm) with uncompacted, slowly permeable heavy clay loam or silty clay subsoils. These soils are moderately well drained to poorly drained (Wetness Classes II to IV).

1.5 Soil Properties

One soil type occurs on this site, a description of which is given below. Topsoil and subsoil resources are also shown on the accompanying maps along with soil thickness and volume information. It should be noted that soil thicknesses, particularly for the subsoil, are highly variable and that additional soil material may be available in the east of the site where profiles are generally deeper.

- a. Soil Type 1. Variable medium to heavy textured disturbed soils (Unit T1/S1).
(Full Profile Description Table 1).

This variable often disturbed or restored soil, sometimes over shale fill, occurs widely across the site. Deeper, possibly undisturbed soils occur in patches within this area. It is characterised by very slightly stony to slightly stony (2-8% small to medium subangular sandstones) medium to heavy textured topsoils (typically medium clay loam, or medium silty clay loam), over compacted, heavy textured subsoil material (typically heavy silty clay loam or silty clay). Rubble, gravel and shale fragments are sometimes present in the subsoil. Soil depth varies greatly, from 20cm to 120cm.

1.6 Soil Resources

(i) Topsoils

Unit T1 covers the whole site and consists of medium to heavy textured material (medium clay loam, medium silty clay loam, or occasionally sandy clay loam or heavy clay loam). This unit is very slightly stony to slightly stony (typically 2-8% small and medium subangular sandstones) and has a moderately developed coarse subangular blocky structure. Median unit thickness is 25cm.

(ii) Subsoils

Unit S1 occurs across the site. It is heavy textured (typically heavy clay loam or silty clay) and slightly to moderately stony (typically 5-20% small, medium and large angular and subangular hard sandstones, shale gravel and small or very small coal fragments), and has a massive to moderately developed coarse platy structure.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Variable medium to heavy textured soil, T1/S1

Profile Pit 1 (Near auger boring 17)

Slope:- 5°E
Land Use:- Wheat
Weather:- Dry and sunny

Depth cm	Horizon Description
20	Very dark greyish brown (10YR 3/2) heavy clay loam; no mottles; slightly stony (5% total small and medium subangular hard sandstones); moist; moderately developed coarse subangular blocky structure; firm; slightly porous; common fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; abrupt, irregular boundary.
20-40	Grey (N5) silty clay; many distinct fine and medium brownish yellow (10YR 6/8) mottles and common small black (7.5YR 2.5/1) mottles; slightly stony (8%, total, small, medium and large angular and subangular hard sandstones); weakly developed medium to coarse platy structure; slightly moist; very firm; very slightly porous; few fine fibrous roots; moderately sticky; very plastic; non-calcareous; sharp, smooth boundary.
30+	Dark grey (N4) silty clay; no mottles; moderately stony (20% small medium and large angular hard sandstones and small coal fragments); structureless and massive; dry; no roots; moderately sticky; very plastic; non calcareous.

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:-

<u>Grade/Subgrade</u>	<u>Hectares</u>	<u>Percentage of Total Area</u>
1		
2		
3a		
3b	12.3	100
4		
5		
(Subtotal)	(12.3)	(100)
Urban		
Non Agricultural		
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Subtotal)		
TOTAL	<u>12.3</u>	<u>100</u>

3.1 Subgrade 3b

All land on the site falls within Subgrade 3b. Topsoils consist of medium or occasionally heavy textured material (typically medium clay loam, medium silty clay loam, sandy clay loam or heavy clay loam). In most places, slowly permeable upper subsoils are present. These are generally heavy textured (typically heavy clay loam), but may be medium textured (medium clay loam or sandy clay loam) in places. Restored and disturbed areas contain compacted, slowly permeable subsoils usually composed of slightly to moderately stony heavy textured material, typically heavy clay loam or silty clay. Soils vary in thickness and are impenetrable below 20cm in places, but extend to 120cm depth in others. These soils are poorly drained, falling within Wetness Class IV. This land is limited to Subgrade 3b by severe soil wetness, an overall climatic restriction and, by gradient in some eastern parts of the site where the land is moderately steeply sloping (8-10°).

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MAPS