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STATEMENT OF PHYSICAL CHARACTERISTICS
AND
AGRICULTURAL LAND CLASSIFICATION
LOW BROOMS FARM, LEADGATE, CO DURHAM
PROPOSED OPEN CAST COAL SITE
DECEMBER 1992

ADAS
Leeds Statutory Group

Job No:- 125/92
MAFF Ref:-12/00055

lowbrook.alc.mp

SUMMARY

A statement of physical characteristics and Agricultural Land Classification survey of approximately 7.5ha of land at Low Brooms Farm, Leadgate was carried out in December 1992.

7.4ha of this land was in agricultural use of which the southern and western parts covering 3.9ha fall within Subgrade 3b and the northern part of 3.5ha within Grade 4.

The northern area, much of which is a restored tip consists of very slightly to moderately stony medium and heavy clay loam topsoils over structureless slowly permeable, compacted medium and heavy clay loam subsoils. These overlie rubble and other debris at depths of between 25cm and 100cm. Where the soil cover is thin some debris is visible on the surface and within the topsoil. This area is limited to Grade 4 by wetness and its poorly restored condition.

The southern Subgrade 3b part of the site consisting of previously worked opencast land has been restored to a better condition. Here, soils consist either of medium clay loam topsoils overlying slowly permeable heavy clay loam subsoils, or medium clay loam topsoils directly over sandstone overburden. Profiles are well to poorly drained (WC I-IV) and very slightly to moderately stony. They are limited to Subgrade 3b by wetness and the overall climatic limitation.

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1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The site lies 4½ Km east of Consett and 1 Km east of Leadgate and is centred on Grid Reference NZ 137515. It covers a total area of 7.61ha. Survey work was carried out in December 1992 when soils were examined by hand auger borings at a density of 2 borings per hectare at intervals predetermined by the National Grid. Two soil pits were dug to allow the assessment of subsoil structure. Land quality was assessed using the 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 all agricultural land was in rough grazing or permanent pasture. Site altitude varies from 210m AOD to 336m AOD and the land varies from level to moderately sloping with a strongly sloping area in the north west.

1.3 Climate

Grid Reference	:	NZ 137515
Altitude (m)	:	220
Accumulated Temperature above 0°C (January-June)	:	1119
Average Annual Rainfall (mm)	:	789
Climatic Grade	:	3b
Field Capacity Days	:	200
Moisture Deficit (mm) Wheat	:	70
Moisture Deficit (mm) Potatoes	:	49

1.4 Geology, Soils and Drainage

The site is underlain by coal measures. The northern part is a restored landfill area, topsoils consist of medium and heavy clay loam with compacted slowly permeable poorly drained (Wetness Class IV) medium and heavy clay loam subsoils, containing shale and stone fragments and landfill debris. Soil depth is very variable, ranging from 25cm to 1.00m.

The southern part of the site has been restored after an earlier period of coal extraction. Profiles consist of medium clay loam topsoils over heavy clay loam subsoils which pass to sandstone overburden at 40-60cm depth. Where sufficient depth of subsoil occurs profiles are slowly permeable and poorly drained (Wetness Class IV). Elsewhere, especially where subsoils are thin or absent, profiles vary from imperfectly drained (Wetness Class III) to well drained (Wetness Class I).

1.5 Soil Properties

2 main soil types occur on this site, descriptions of which are given below. Topsoil and subsoil resources are also shown on the accompanying maps along with soil thickness and volume information.

(a) Soil Type 1:- Medium/heavy textured restored soils over land fill (Unit T1/S1)
(Full Profile Description, Table 1)

This soil occurs on the restored tip in the northern part of the site. It is characterised by medium and heavy textured topsoils (medium/heavy clay loam) over massively structured compacted medium and heavy textured (medium/heavy clay loam) subsoil material. Rubble and other debris is sometimes present in both topsil and subsoil. Soil depth varies greatly from 25cm to 1.00m.

(b) Soil Type 2:- Medium/heavy textured restored opencast soils (Unit T2/S2) (Full Profile Description, Table 2)

This soil occurs on the restored opencast area southern part of the site. It is characterised usually by medium textured topsoils (medium clay loam) over heavy textured (heavy clay loam) subsoils which pass to sandstone overburden at depth. In places, however, overburden lies directly below the topsoil.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs over the northern part of the site and consists of medium and heavy clay loam. This unit is very slightly stony (2% hard shale and gravel) and has a moderately developed fine to medium granular structure. Landfill debris occurs at or near the surface in places. Median unit thickness is 30cm.

Unit T2 occurs in the southern part of the site and consists of medium clay loam. This unit is very slightly to slightly stony (4-6% small and medium subrounded standstones) and has a moderately developed medium granular structure. Median unit thickness is 40cm.

(ii) Subsoils

(a) Subsoils

Unit S1 occurs in the northern part of the site. It is medium and heavy textured consisting of medium or heavy clay loam. This unit is very slightly to moderately stony (5-20% of hard shale gravel and medium and large angular blocky hard sandstones) and is structureless and compacted. Thickness varies greatly over the site from almost nil to 70cm. Landfill debris is also present in places. Mean thickness is 35cm.

Unit S2 occurs in the southern part of the site and consists of stoneless to moderately stony heavy clay loam with a moderately developed angular blocky structure. Thickness varies from 0-25cm with a mean thickness of 10cm.

2. SOIL PROFILE DESCRIPTIONS

Table 1

Soil Type 1 Medium/heavy textured soil over landfill T1/S1)

Land Use: Rough Grazing
Slope: 0°

Depth cm	Description
0-20	Very dark greyish brown (10YR3/2) medium clay loam; no mottles; very slightly stony (2% gravel); moist; moderately developed fine/medium granular structure; friable; slightly porous; many fine and medium fibrous roots; slightly sticky; slightly plastic; non calcareous; clear smooth boundary.
20-60	Grey (10YR5/1) heavy clay loam; common distinct brown (10YR5/4) mottles; structureless and massive; moderately stony (15-20%) medium/coarse angular blocky hard sandstones); very slightly porous; few medium fibrous roots; moderately sticky; moderately plastic; non calcareous; smooth clear boundary.
60+	Rubble and landfill waste

Table 2

Soil Type 2 Medium/heavy textured restored opencast soil (T2/S2)

Land Use: Permanent Pasture

Slope: 4°

Depth cm	Description
0-25	Very dark greyish brown (10YR3/2) medium clay loam; no mottles; slightly stony (6% small/medium subrounded sandstones); moderately developed fine/medium granular structure; friable; moist; slightly porous; many fine and medium roots; slightly sticky; slightly plastic; non calcareous abrupt smooth boundary.
25-50	Dark grey (10YR4/1) heavy clay loam; many indistict brown (20YR5/4) and yellowish brown (10YR5/8) mottles; moderately stony (15-20% medium/coarse subrounded hard sandstones); moderately developed medium angular blocky structure; firm soil strength; slightly moist; very slightly porous; common fine fibrous roots; moderately sticky; moderately plastic; non calcareous; sand lenses present; abrupt smooth bounardy.
50+	Sandstone overburden

3. AGRICULTURAL LAND CLASSIFICATION

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

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2		
3a		
3b	3.91	51.0
4	3.56	47.0
5		
(Subtotal)	(7.47)	
Urban	0.14	2.0
Non Agricultural		
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Subtotal)		
TOTAL	7.61	100

3.1 Subgrade 3b

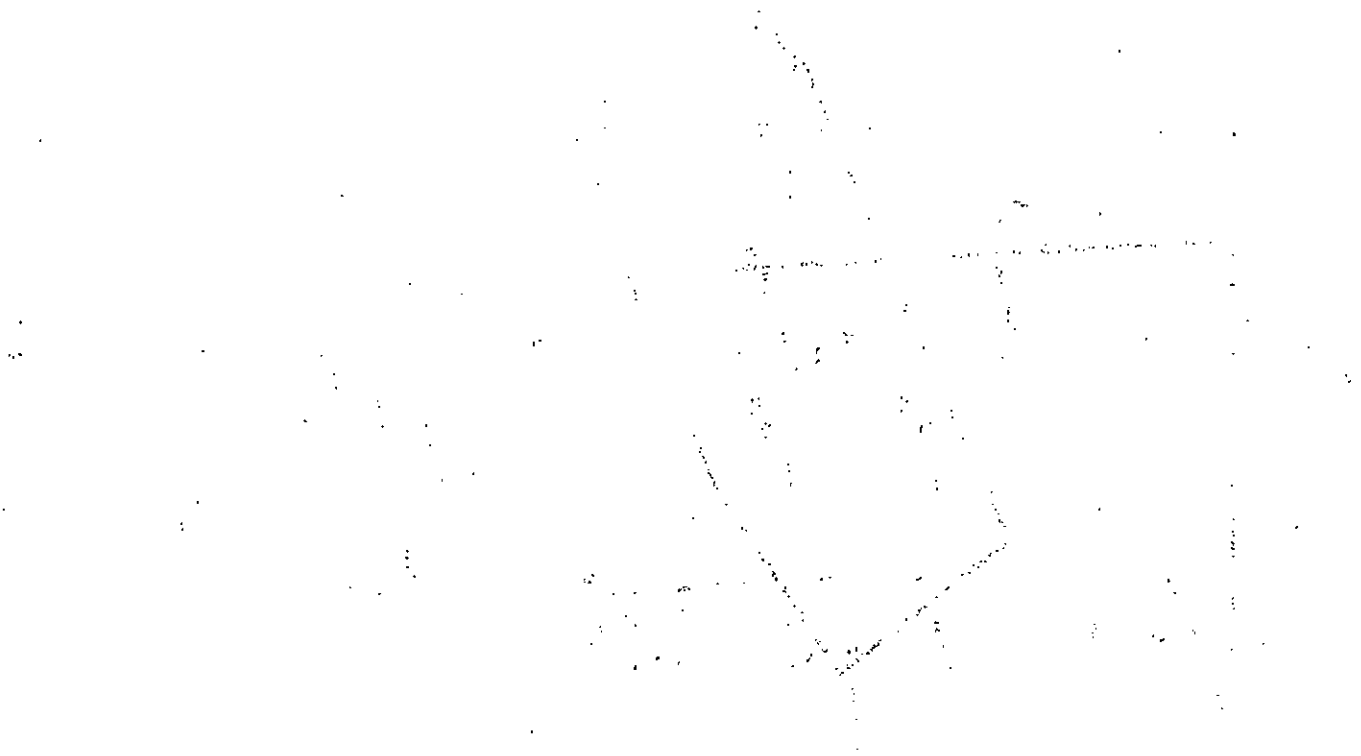
Subgrade 3b land occurs mainly in the southern restored opencast part of the site. There is also a small area in the north west corner. Topsoils consist of medium clay loam overlying either, slowly permeable, gleyed, heavy clay loam subsoils or, sandstone overburden. Profiles are well drained (Wetness Class I) to poorly drained (Wetness Class IV) and very slightly to moderately stony (small coarse subrounded sandstones). Soil depth to overburden varies between 30 and 60cm. Soil wetness variability and the overall climatic limitation are the main factors limiting this land to Subgrade 3b.

3.2 Grade 4

Grade 4 land occurs in the northern restored tip area. Topsoils consist of medium or heavy clay loam and overlie slowly permeable, gleyed massive, structureless medium or heavy clay loam subsoils. Profiles are poorly drained (Wetness Class IV) and very slightly to moderately stony (gravel shale and medium to coarse angular blocky sandstones). Soil depth to overburden varies greatly from 25cm to 1.00cm. There is evidence of landfill debris visible from the surface downards. Wetness and the disturbed nature of the soils due poor restoration are the main factors limiting this land to Grade 4.

Urban

Urban land consists of a farm access road in the north west.



MAPS