

AGRICULTURAL LAND CLASSIFICATION AND  
STATEMENT OF PHYSICAL CHARACTERISTICS

LAND AT LOW WEST HOUSE, TOW LAW,  
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PROPOSED OPENCAST COAL SITE

MAFF  
Leeds Regional Office

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AGRICULTURAL LAND CLASSIFICATION REPORT, AND STATEMENT OF PHYSICAL CHARACTERISTICS ON LAND AT LOW WEST HOUSE, TOW LAW.

1.0 Introduction and Site Characteristics

1.1 Location

National Grid Reference:- N2 146 390

Location Details:- 2½ Km east of Tow Law, County Durham

Site Size:- 16ha

1.2 Survey Methods

Date Surveyed:- 29th May 1992

Boring Density and Spacing Basis:- One boring per hectare carried out at 100m intervals redetermined by the National Grid.

Sampling Method:- By hand auger to a depth of 1.00m, but less where stones prevented entry of the auger to this depth.

Number of Borings:- Sixteen

Number of Soil Pits (used for):- Two to collect further information on the physical characteristics of the of the soil.

All land quality assessments were made 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)".

This detailed survey supersedes the previous "1" to one mile" survey of the area.

1.3 Land Use:- The entire site is under ley grass.

1.4 Climate and Relief

Average Annual Rainfall (AAR):- 829 mm

Accumulated Temperature above  
0°C (January-June):- 1079 day °C

Field Capacity Days:- 210 days

Moisture Deficit:

wheat:- 63 mm

potatoes:- 41 mm

Altitude average:- 265 m a.o.d.

maximum:- 275 m a.o.d.

minimum:- 250 m a.o.d.

Climatic limitation (based on  
interaction of rainfall and  
temperature values:- Subgrade 3b

Relief:- Gently to moderately sloping, with a north easterly aspect.

Slopes (° ):- 0 - 6

Gradient Limitations:- None

## 1.5 Geology and Soil

Solid Strata:- Carboniferous Coal Measures.

Depth of solid rock from surface:- Greater than 1.00m across the whole site.

Drift types:- Boulder clay (in the west).

Thickness of drift and distribution:- Greater than 1.00m across the western part of the site.

Soil Types and Distribution:- Medium and heavy-textured soils in the west and restored opencast Coal Workings in the east.

Soil Textures (topsoils and subsoils):- West:- Medium clay loam over heavy clay loam or clay.

East:- Compacted medium clay loam over heavy clay loam or clay passing to overburden at depth.

Soil Associations:-

On 1/250000 map:- Brickfield III and Disturbed Soils.

Identified on site:- Brickfield III and Disturbed Soils.

Soil Limitations and type:- Soil wetness and workability.

## 1.6 Drainage

Soil type and Wetness Class:- The medium and heavy-textured soils in the west are poorly drained (Wetness Class IV). The restored soils in the west are very poorly drained (Wetness Class V).

Drainage Limitations:- The poorly drained soils are limited to subgrade 3b and the very poorly drained soils are limited to Grade 4.

## 2.0 Agricultural Land Classification Grades

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

<u>Grade/Subgrade</u>	<u>Hectares</u>	<u>Percentage of</u>	<u>Percentage of Total</u>
		<u>Agricultural Area</u>	<u>Area</u>
1			
2			
3a			
3b	5.3	34.4	34.4
4	10.1	65.6	65.6
5			
Non Agricultural			
Agricultural Buildings			
Urban			
Other	_____	_____	_____
Total	15.4	100	100
	_____	_____	_____

Subgrade 3b

Distribution on site:- In the west of the site and in the south-eastern corner.

Soil Type(s) and Texture(s):- Medium to heavy-textured soils, typically consisting of medium clay loam topsoils overlying silty clay or clay subsoils.

Depth to Slowly Permeable Layers:- Slowly permeable layers generally begin at around 25 cm. depth.

Wetness and Drainage Class:- Soils are poorly drained, falling in Wetness Class IV.

Stone Percentage and Type:- Topsoils contain around 5% small to large subrounded sandstones.

Grade Limiting Factors:- Soil wetness and climate.

Grade 4

Distribution on site:- In the east of the site.

Soil Type(s) and Texture(s):- Restored soils with compacted subsoils. Typically medium clay loam or medium silty clay loam topsoils overlie heavy clay loam, clay or silty clay subsoils. Coal measure overburden occurs at depths of 60 - 100 cm.

Depth to Slowly Permeable Layers:- A severely compacted slowly permeable layer generally starts at around 25 cm. depth.

Wetness and Drainage Class:- Severe subsoil compaction results in these soils being very poorly drained (Wetness Class V).

Stone Percentage and Type:- These soils typically contain 0 -5% soft sandstones.

Grade Limiting Factors:- Soil wetness and workability.

### 3.0 STATEMENT OF PHYSICAL CHARACTERISTICS (SOIL PROPERTIES AND RESOURCES)

#### 3.1 Soil Properties

Two soil types occur on the site. Their distribution along with soil depth and quantity information are shown on the accompanying maps.

Soil Type 1:- Medium over heavy textured boulder clay soil.

Occurrence:- In the west and in the south-eastern corner.

Textures:- Typically medium clay loam topsoils overlying clay or silty clay subsoils.

Stone content:- Approximately 5% small to large subrounded sandstones.

Horizon thicknesses:- Topsoil 25cm. (medium), subsoil 75 cm.

Profile pit features:- Moderately developed medium granular structure in the topsoil, weakly developed medium prismatic structure in the subsoil.

Soil Type 2:- Medium over heavy restored soil over overburden.

Occurrence:- In the east of the site.

Textures:- Medium clay loam or medium silty clay loam topsoil overlying a heavy clay loam, clay or silty clay subsoil. Silty clay overburden typically begins at around 60 cm. depth.

Stone content:-5% small to large subrounded sandstones.

Horizon thicknesses:- Medium topsoil depth 25 cm., mean subsoil depth 55 cm.

Profile pit features:-Moderately developed medium angular blocky structure in the topsoil, weakly developed coarse prismatic to massive structure in the subsoil.

Other features:- Severe subsoil compaction.

### 3.2 Soil Resources

#### Topsoils

##### Unit T1

Texture/stone content:- Medium clay loam containing approximately 5% small to large subrounded sandstones.

Structure:- Moderately developed medium granular.

Occurrence:- In the west and in the south eastern corner.

Thickness:- Medium thickness 25 cm.

##### Unit T2

Texture/stone content:- Medium clay loam containing approximately 5% small to large subrounded sandstones.

Structure:- Moderately developed medium angular blocky.

Occurrence:- In the east of the site.

Thickness:- Medium thickness 25 cm.

Subsoils

Subsoils

Unit S1

Texture group/stone content:- Heavy-textured soil (heavy clay loam, clay or silty clay) containing approximately 5% small to large subrounded sandstones.

Structure:- Weakly developed medium prismatic.

Occurrence:- In the west of the site and in the south eastern corner.

Thickness:- Mean thickness 74 cm.

Unit S2

Texture group/stone content:- Heavy textured (heavy clay loam, clay or silty clay) containing around 5% small to large subrounded sandstones.

Structure:- Weakly developed coarse prismatic to massive.

Occurrence:- In the east of the site.

Thickness:- Mean thickness 55 cm.

MAP(S)

#### 4.0 SOIL PROFILE DESCRIPTIONS

Pit 1:- Near boring 10 (T1S1, medium to heavy textured soil).

Land Use:- Ley grassland      Slope:- 1° NE      Weather:- Bright and dry.

Depth (cm):-      Description

0 - 25      Dark grey (10 YR 4/1) medium clay loam; no mottles; very slightly stony (5% small to large subrounded sandstones); dry; moderately developed medium granular structure; medium packing density; slightly hard soil strength; moderately porous; many fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; smooth gradual boundary.

25 - 100      Grey (10 YR 5/1) heavy clay loam; common fine and very fine distinct brownish yellow (10 YR 6/6 and 10 YR 6/8) mottles; very slightly stony (5% small to large subrounded sandstones); slightly moist; weakly developed medium prismatic structure; medium packing density; very hard soil strength; very slightly porous (< 0.5% > 0.5 mm); common fine fibrous roots; moderately sticky; very plastic; non-calcareous.

Pit 1:- near boring 2 (T2/52, Restored land).

Land Use:- Ley grassland.      Slope:- 1° NE      Weather:- Bright and dry.

Depth (cm):-      Description

Dark grey (10 YR 4/1) medium clay loam; common fine distinct dark brown (7.5 YR 4/4) mottles; very slightly stony (5% small to large subrounded sandstones), slightly

moist; moderately developed medium angular blocky structure; medium packing density; moderately weak soil strength; moderately porous; abundant fine fibrous roots; moderately sticky, moderately plastic; non-calcareous; clear irregular boundary.

25 - 55

Light grey (10 YR 6/1) heavy clay loam; common fine and medium distinct brownish yellow (10 YR 6/8) and reddish yellow (7.5 YR 6/8) mottles; very slightly stony (5% small to large subrounded sandstones); dry; weakly developed coarse prismatic to massive structure; high packing density; extremely firm soil strength; very slightly porous (< 0.5% pores > 0.5 mm); few fine fibrous roots (common along ped faces); very sticky; very plastic; non-calcareous; abrupt smooth boundary.

55 -100

Light grey (10 YR 6/1) silty clay overburden.