

AGRICULTURAL LAND CLASSIFICATION AND
STATEMENT OF PHYSICAL CHARACTERISTICS

SOUTH SHIELDS FARM, TOW LAW,

CO. DURHAM

PROPOSED OPENCAST COAL SITE

ADAS
Leeds Statutory Centre

JUNE 1992
File Ref: 2FCS 5913
Job No: 35/92

ALSSHDS.FRM

CONTENTS

1. INTRODUCTION

Climate and Relief

Geology, Soils and Drainage

2. AGRICULTURAL LAND CLASSIFICATION

3. STATEMENT OF PHYSICAL CHARACTERISTICS

4. SOIL PROFILE DESCRIPTIONS

MAPS

1. AGRICULTURAL LAND CLASSIFICATION

2. TOPSOIL RESOURCE MAP

3. SUBSOIL RESOURCE MAP

AGRICULTURAL LAND CLASSIFICATION AND STATEMENT OF PHYSICAL CHARACTERISTICS ON LAND AT
SOUTH SHIELDS FARM, TOW LAW, COUNTY DURHAM

1. INTRODUCTION

The site is located around National Grid Reference NZ136 410 and lies approximately 2 Km. north-east of the village of Tow Law. It covers a total of about 48 ha. divided into two blocks of approximately equal size. The area around South Shields Farm is ley and permanent grassland and the area of Hedleyhope Fell is rough grazing land.

Survey work was carried out June 1992 when soils were examined by hand auger borings to a maximum depth of 1.00 (less where the presence of stones prevented penetration of the auger). A total of forty eight borings were carried out at 100 m intervals predetermined by the National Grid. In addition, two soil profile pits were dug in order to collect further information on the physical characteristics of the soils.

Climate and Relief

Average Annual Rainfall is 831 mm and the Accumulated Temperature (January to June) is 1,079 day °C. The land is at field capacity for 210 days in an average year. The rainfall and temperature figures indicate that there is an overall climatic limitation of subgrade 3b on land in this area.

Site altitude varies from approximately 250 m to 296 m. The land around South Shields Farm is gently sloping with a south-easterly aspect. At Hedleyhope Fell the land is steeply sloping with a north-westerly aspect.

Geology, Soils and Drainage

The entire site is underlain by Carboniferous coal measures. Much of the land (around South Shields Farm and the south-eastern corner of the block of land at Hedleyhope Fell) has been opencasted in the past and the soils restored after working. These restored soils are generally medium to heavy-textured with

compacted subsoils. Colliery overburden frequently occurs close to the surface to the north-west of South Shields Farm and in the area of restored land at Hedleyhope Fell. These restored soils are poorly to very poorly drained, falling in Wetness Classes IV and V.

The remainder of the block of land at Hedleyhope Fell is covered by a thick layer of boulder clay in which has developed a medium to heavy textured soil which is often covered by a thin layer of loamy peat. These soils are poorly drained, falling in Wetness Class IV.

2. AGRICULTURAL LAND CLASSIFICATION GRADES

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

<u>Grade/Subgrade</u>	<u>Areas (ha.)</u>	<u>Percentage of Agricultural Area</u>	<u>Percentage of Total Area</u>
3b	11.21	22.8	22.6
4	37.16	75.6	74.9
5	0.80	1.6	1.6
Urban	0.46	-	0.9
TOTAL	49.63	100	100

Subgrade 3b

Land in this subgrade occurs around South Shields Farm. The soils (which appear to be restored) typically consist of medium clay loam topsoils overlying heavy clay subsoils. Both topsoils and subsoils are very slightly stony, containing around 3% soft sandstones and shales. Slowly permeable layers generally begin at around 35 cm. depth and the soils are poorly drained, falling in Wetness Class IV. Soil wetness is, thus, along with overall climate, the main factor limiting the A.L.C. grade on this land.

Grade 4

Grade 4 land occurs to the north of South Shields Farm and over most of Hedleyhope Fell. To the north of South Shields Farm and in the south-eastern corner of Hedleyhope Fell soils have been restored and consist of medium clay loam (at South Shields Farm) or heavy clay loam (on Hedleyhope Fell) topsoils overlying compacted heavy clay loam subsoils. Colliery overburden typically occurs at around 50 cm. depth at South Shields Farm but at or very near the soil surface on Hedleyhope Fell. The subsoil compaction found in these restored soils results in their being very poorly drained and soil wetness and severe soil workability limitations are the factors which prevent these areas being graded higher than Grade 4.

The remainder of the land at Hedleyhope Fell typically consists of medium clay loam or peaty loam topsoils overlying medium clay loam or heavy clay loam subsoils. Pockets of sand occur in places but in general slowly permeable layers begin at around 25 cm. depth and the soils are poorly drained, falling in Wetness Class IV. Although slopes are generally around 3°, the presence of old mine shafts and shallow drainage channels limit the use of farm machinery and for these reasons this land is also limited to Grade 4.

Grade 5

This occurs in the north-eastern corner of the block of land at Hedleyhope Fell. Soils consist typically of organic medium clay loam or peaty loam topsoils overlying heavy clay loam subsoils. Profiles are poorly drained, falling in Wetness Class IV, with slowly permeable layers starting at around 35 cm. depth. The area slopes steeply down to the flood plain of the Hedleyhope Burn and gradients of more than 18° limit this land to Grade 5.

Urban

This consists of the access track to South Shields Farm and a track on Hedleyhope Fell.

3.0 STATEMENT OF PHYSICAL CHARACTERISTICS

Two main soil types occur on this site.

Soil Type 1.

Medium to heavy-textured boulder clay soil. This soil type covers the block of land at Hedleyhope Fell with the exception of the south-eastern corner. Typically a thin organic topsoil (generally peaty loam or loamy peat) overlies a heavy-textured subsoil (generally heavy clay loam, which often contains lenses of sand). The topsoil has a well-developed granular structure and the subsoil a moderately developed prismatic structure. This soil type is generally stoneless.

Soil Type 1. - Restored Soil

This soil type occurs in the area around South Shields Farm and in the south-eastern corner of the block of land at Hedleyhope Fell. At South Shields Farm the soil consists of a medium clay loam topsoil overlying a heavy clay loam subsoil which is compacted in places. Colliery overburden occurs at around 55 cm. depth in the northern part of this block of land but is absent within 1.00 m of the soil surface in the southern part. The soils are typically very slightly stony with around 3% small and medium-sized sandstones and shales. The topsoil has a weakly developed medium subangular blocky structure and the subsoil a massive structure. At Hedleyhope Fell colliery overburden occurs at or very near the soil surface. Where topsoil occurs it is generally of heavy clay loam with a massive structure.

Soil Resources

The topsoil and subsoil resources for the whole site are shown on the accompanying maps along with soil thicknesses and volume information.

4. SOIL PROFILE DESCRIPTIONS

Pit 1:- Medium to heavy-textured boulder clay soil.

Location:- Near boring 29. Land Use:- Rough Grazing. Slope: 1°N

Depth (cm)	Description
0 - 15	Black (10YR 2/1) peat; no mottles; stoneless; dry; well-developed medium granular structure; low packing density; porous; abundant fine and medium fibrous roots; non-sticky; non-plastic; non-calcareous; clear, wavy boundary.
15 - 40	Pinkish white (75YR 8/2) heavy clay loam with pockets of medium sand; common fine distinct reddish yellow (7.5YR 6/8) mottles; stoneless; very dry; moderately developed coarse prismatic structure; high packing density; extremely hard soil strength; slightly porous (< 0.5% pores > 0.5 mm); common fine and medium fibrous roots; moderately sticky; moderately plastic; non-calcareous; abrupt smooth boundary.
40 - 100	Grey (7.5YR 5/1) clay; many coarse distinct strong brown (7.5YR 5/8) mottles; very slightly stony (3% medium subrounded sandstones and shales); moist; moderately developed medium to coarse prismatic structure; high packing density; extremely firm soil strength; very slightly porous (< 0.5% pores > 0.5 mm); common fine fibrous roots; moderately sticky; moderately plastic; non-calcareous.

Pit 2. Restored Soil

Location:- Near boring 7 Land Use:- Permanent Pasture Slope:- 2° SE

Depth (cm)	Description
0 - 20	Dark grey (10YR 4/1) medium clay loam; common fine distinct strong brown (7.5YR 5/8) mottles; very slightly stony (3% small and medium subrounded sandstones and shales); dry; weakly developed medium subangular blocky structure; high packing density; moderately hard soil strength; very slightly porous; many fine and medium fibrous roots; moderately sticky; moderately plastic; non-calcareous; smooth gradual boundary.
20 - 45	Grey (10YR 5/1) clay; common fine distinct reddish w=yellow (7.5YR 6/8) mottles; very slightly stony (3% small to large sub-rounded sandstones and shales); dry; massive structure; high packing density; very hard soil strength; very slightly porous (< 0.05% pores > 0.5 mm); few fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; gradual smooth boundary.
45 +	Colliery overburden.