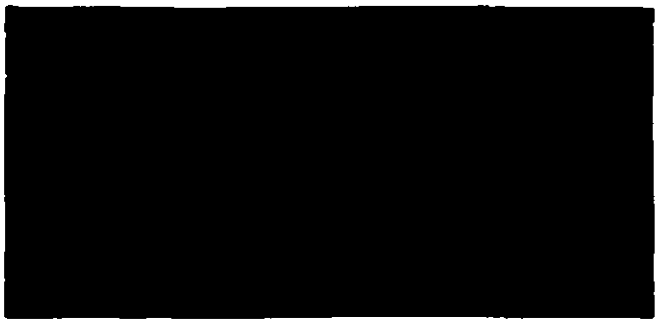

MAFF Ministry of Agriculture Fisheries and Food

# AGRICULTURAL LAND CLASSIFICATION
# AND STATEMENT OF
# PHYSICAL CHARACTERISTICS
# E. HETTON COLLIERY
# RECLAMATION SCHEME
# COUNTY DURHAM

**OCTOBER 1995**

ADAS
Leeds Statutory Group

Job No:- 199-95
MAFF Ref:- EL 10803
Commission No:- N2143

## SUMMARY

A detailed Agricultural Land Classification (ALC) and Statement of Physical Characteristics Survey was carried out on 18.9ha of land at Cassup in October 1995.

At the time of survey all the site was fallow following arable use in 1995.

8.7ha were Subgrade 3a. Here imperfectly drained (Wetness Class III) land suffers a soil wetness and workability limitation. The overall climatic limitation of Subgrade 3a is also a restriction on ALC grade.

Subgrade 3b covers 10.2 ha. A more severe soil wetness/workability limitation than on the Subgrade 3a land restricts the ALC grade. Profiles are poorly drained (Wetness Class IV).

Three soil types occur on the site. Firstly is a unit with medium textured topsoils and upper subsoils over heavy textured lower subsoils. A second unit contains medium textured topsoils over similar upper subsoils over limestone bedrock at about 55cm depth. Finally medium textured topsoils overlie heavy textured subsoils.

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# STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED COLLIERY RECLAMATION SCHEME AT E. HETTON, COUNTY DURHAM

## 1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

### 1.1 Location and Survey Methods

The site measures 18.9ha and is located immediately south of the village of Cassop in County Durham. It has a centroid grid reference of NZ344379. Survey work was carried out in October 1995 when soils were examined by hand auger borings at locations predetermined by the OS National Grid. Supplementary borings were used to check upon and refine grade boundaries. The overall density of borings was 1 per hectare. Three soil pits were dug to examine representative soils in greater detail. 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 survey the site contained stubble from crops of oil seed rape and cereals. Relief is mostly gentle with a generally south easterly aspect. The site is bisected by a shallow dry valley running across the site from the north west to the south east. Altitude ranges from 179m AOD in the north to 160m AOD in the south.

### 1.3 Climate

| | |
|---|---|
| Grid Reference | : NZ344379 |
| Altitude (m) | : 170 |
| Accumulated Temperature above 0°C (January - June) | : 1178 day °C |
| Average Annual Rainfall (mm) | : 703 |
| Climatic Grade | : 3a |
| Field Capacity Days | : 177 |
| Moisture Deficit (mm) Wheat | : 81 |
| Moisture Deficit (mm) Potatoes | : 63 |

1.4 Geology, Soils and Drainage

The whole site is underlain with solid deposits of Magnesian Limestone which have been covered with boulder clay drift. This drift, however, is thin in the north and east of the site where the limestone outcrops within a metre of the surface.

Soils are generally imperfectly to poorly drained (Soil Wetness Class III to IV) and contain gleyed and slowly permeable subsoils at between 25 cm and 55 cm depth.

Soils on the site correspond to the Brickfield III Association as mapped by the Soil Survey and Land Research Centre.

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

a) Soil Type 1. Medium over heavy textured soil. (Units T1, U1, L1). (Full profile description table 1).

This unit occurs on the better drained Wetness Class III soils which have a medium textured topsoil and upper subsoil over a heavy textured lower subsoil.

b) Soil type 2 Shallow medium over medium/heavy soils over limestone (units T1, U1). (Full profile description table 2).

This unit is found in the relatively shallow soils in the north of the site where limestone bedrock outcrops within 1 metre.

c) Soil Type 3. Medium over heavy textured soils. (Units T2, L2). (Full profile description table 3).

Here soils in the south of the site are poorly drained.

## 1.6 Soil Resources

### (i) Topsoils

Unit T1 occurs in the north of the site. It is medium textured, typically medium clay loam, with a moderately developed medium subangular blocky structure. It is generally only very slightly stony but some small areas in the north are slightly stony. The median depth of this unit is 30 cm.

Unit T2 is similar to unit T1 except that it is shallower with a median depth of 25 cm and it is occasionally heavy textured,typically heavy clay loam, although most soils are medium clay loam.

### (ii) Upper Subsoil

Upper subsoils (U1) are only found in the north of the site. They are typically medium to heavy textured, either a medium or heavy clay loam. This upper subsoil has a moderately developed medium subangular to coarse subangular blocky structure. Stoniness is greatest in the north where it averages 10% volume. The unit is 25cm thick below which is limestone bedrock in the north and Unit L1 in the north west.

### (iii) Lower Subsoils

Two lower subsoils are present on the site. Unit L1 is found below upper subsoil U1. It is heavy textured and has a weakly developed coarse structure. Unit L1 is 65 cm thick.

Unit L2 is found below topsoil T2. It is also heavy textured and has a weakly developed structure. The unit is 95cm thick.

2. Soil Profile Descriptions

Table 1 Medium over medium over heavy textured soil (T1/U1/L1).
Near auger boring 7.
Slope 2°SE
Land use : oil seed rape stubble
Weather : wet and windy

| Depth | |
|---|---|
| 0-28cm | Dark greyish brown (10YR4/2); unmottled; medium clay loam; very slightly stony with 2% small and medium stones of mixed lithology; moist; moderately developed medium subangular blocky; friable; moderately porous; many fine fibrous roots, moderately sticky, moderately plastic; non calcareous; clear smooth boundary. |
| 28-52cm | Brown (10YR5/3) unmottled medium clay loam; very slightly stony with 2% small and medium stones of mixed lithology; moist, moderately developed medium and coarse subangular blocky; friable, moderately porous; common fine fibrous roots; moderately sticky; moderately plastic; non calcareous; clear smooth boundary. |
| 52-120cm | Light yellowish brown (10YR6/4) matrix and ped face with many distinct brownish yellow (10YR6/8) mottles; clay; very slightly stony with medium and large stones of mixed lithology; moist; weakly developed medium and coarse angular blocky; firm; very slightly porous; few fine fibrous roots; moderately sticky, very plastic; non calcareous. |

Table 2 (Near auger boring 1)

Medium over medium/heavy shallow soil (T1/U1)
Slope : level
Land use : cereal stubble
Weather : wet and windy.

| Depth | |
|---|---|
| 0-28cm | Dark greyish brown (10YR4/2); unmottled; medium clay loam; slightly stony with 6% small to large subrounded limestones (5% > 2cm; 1%> 6 cm);moist; moderately developed medium subangular blocky; friable; moderately porous; moderately sticky; moderately plastic; common fine fibrous roots; non calcareous clear abrupt boundary. |
| 28-61cm | Greyish brown (10YR5/2) with common distinct brownish yellow (10YR6/6) mottles; heavy clay loam; slightly stony with 10% small to large subrounded limestones; moist; moderately developed coarse angular blocky; firm; slightly porous; few fine fibrous roots, moderately sticky; very plastic; non calcareous; clear smooth boundary to. |
| 61 cm+ | Weathering limestone. |

Table 3 Medium over heavy textured soil (T2, L2).
Profile pit 3 (near auger boring 15)
Slope : 2° W
Land use : cereal stubble
Weather : wet and windy.

| Depth | |
|---|---|
| 0-25cm | Very dark greyish brown (10YR3/2) unmottled medium clay loam; very slightly stony with 2% small and medium subrounded stones of mixed lithology; moist; moderately developed coarse angular blocky; friable; moderately porous; moderately sticky; moderately plastic; non-calcareous clear abrupt boundary. |
| 25-120cm | Grey (10YR6/1)) with many distinct light brownish yellow and brownish yellow (10YR6/2 and 10YR6/8) mottles; clay; stoneless; moist; weakly developed coarse angular blocky; very firm; few fine fibrous roots; very sticky; very plastic; non calcareous. |

## 3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:

| Grade/Subgrade | Hectares | Percentage of Total Area |
|---|---|---|
| 1 | | |
| 2 | | |
| 3a | 8.7 | 46 |
| 3b | 10.2 | 54 |
| 4 | | |
| 5 | | |
| (Sub total) | (18.9) | (100) |
| Urban | | |
| Non Agricultural | | |
| Woodland - Farm | | |
| - Commercial | | |
| Agricultural Buildings | | |
| Open Water | | |
| Land not surveyed | | |
| (Sub total) | | |
| TOTAL | 18.9 | 100 |

3.1 Subgrade 3a

Subgrade 3a occurs in two areas on the site. The largest is in a band across slope towards the north of the site. It also occurs in a small area in the south. All the land is imperfectly drained (Wetness Class III) with soils that have slowly permeable layers starting at about 45cm to 50cm depth. Soil wetness and workability problems as well as the overall climatic limitation place this land within Subgrade 3a.

3.2 Subgrade 3b

Two bands of Subgrade 3b were mapped on the site. Both areas contain poorly drained soils that were slowly permeable within 35cm depth (Soil Wetness Class IV). Soil wetness and workability limit the ALC grade of this land.

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MAPS