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STATEMENT OF PHYSICAL CHARACTERISTICS
AND
AGRICULTURAL LAND CLASSIFICATION
WOODBINE OCCS, BILLINGLEY
SOUTH YORKSHIRE
OCTOBER 1994

ADAS
Leeds Statutory Group

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SUMMARY

A Statement of Physical Characteristics and Agricultural Land Classification survey was carried out on 21 ha of land south of Woodbine Cottage, Billingley, in October 1994.

At the time of survey all of the land was in agricultural use and 2.5 ha of this falls in Subgrade 3a. The soils are moderately well or imperfectly drained, with medium to heavy-textured topsoils overlying similar subsoils. The subsoils are gleyed, and in some places, slowly permeable layers begin at about 50cm depth. Soil wetness and topsoil workability restrictions limit this land to Subgrade 3a.

The remainder of the land on this site falls in Subgrade 3b. Profiles are poorly drained, with medium to heavy-textured subsoils. Soil wetness is more restricting than on the adjoining Subgrade 3a land and it is this factor which limits the land to Subgrade 3b.

CONTENTS

MAPS

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED WOODBINE OCCS AT BILLINGLEY, SOUTH YORKSHIRE

1. INTRODUCTION AND SITE CHARACTERISTICS

1.1 Location and Survey Methods

The site lies approximately 1½ km west of Dearne directly south of the A635, and is centred on National Grid Reference SE 441 039. Survey work was carried out in October 1994 when the soils were examined by hand auger borings at 100m intervals predetermined by the National Grid. In addition, two soil pits were dug to allow full profile descriptions to be made. 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 of the land was in agricultural use; land to the west of the stream was sown to winter cereals and land to the east was under permanent grass. Site altitude varies from 25m AOD to 30m AOD and the land is level to gently sloping (0-2°) with a southerly aspect.

1.3 Climate

Grid Reference	: SE 441 039
Altitude (m)	: 25
Accumulated Temperature above 0°C (January - June)	: 1399 day °C
Average Annual Rainfall (mm)	: 620
Climatic Grade	: 1
Field Capacity Days	: 131
Moisture Deficit (mm) Wheat	: 108
Moisture Deficit (mm) Potatoes	: 100

1.4 Geology, Soils and Drainage

The site is underlain by Carboniferous Coal Measures consisting of interbedded sandstones and shales. With the exception of locally derived Head deposits there are no drift deposits on the site apart from some heavy-textured alluvium alongside the ditches in the east.

In most cases profiles are poorly drained, falling in Wetness Class IV, with medium clay loam, heavy clay loam or heavy silty clay loam topsoils overlying heavy silty clay loam, sandy clay loam, heavy clay loam or silty clay subsoils in most cases.

1.5 Soil Properties

One main soil type occurs on this site, a description of which is given below. Topsoil and subsoils resources are also shown on the accompanying maps along with soil thickness and volume information.

a) Soil Type 1:- Medium to heavy textured soils (unit T1/S1)
(Full Profile Description, Table 1)

This soil, formed on thin weathering beds of shale and sandstone occurs over the whole site. It is characterised by a medium to heavy-textured topsoil overlying a gleyed and often slowly permeably heavy textured subsoil. Weathering shale or sandstone occurs within one metre of the soil surface over much of the site.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs over the whole site. It is medium to heavy-textured, consisting of medium silty clay loam, heavy silty clay loam or heavy clay loam, and is very slightly stony, typically containing 1-2% small and medium subangular sandstones. This topsoil has a weakly to moderately developed medium and coarse subangular blocky structure. Median thickness of T1 is 25cm.

(ii) Subsoils

Unit S1 occurs over the whole site and has been divided into deep and shallow phases (Units S1A and S1B respectively). It is heavy-textured and generally consists of heavy clay loam, heavy silty clay loam or silty clay. It is very slightly to slightly stony in most cases, containing between 2% and 15% subangular sandstones and shales. This subsoil has a variable structure but typically has a weakly to moderately developed coarse angular or subangular blocky or medium prismatic structure.

Thin bands of weathering sandstone or shale occur throughout the subsoil on this site but the mean thickness of material suitable for use in restoration is 25cm (in the case of Unit S1B, in the north-west of the site) or 85cm (in the case of S1A, in the south and east of the site).

2. SOIL PROFILE DESCRIPTIONS

Table 1 Medium to heavy textured soil, T1/S1

Profile Pit 1 (near auger boring 12)

Slope:- 0°
Land Use:- Winter Cereals
Weather:- Mild, Showery

Depth cm	Horizon Description
0-27	Very dark grey (10YR 3/1) heavy silty clay loam; no mottles, very slightly stony, containing approximately 2% small and medium subangular sandstones; moist; weakly developed medium and coarse subangular blocky structure; firm; moderately porous common fine and very fine fibrous roots and few medium fleshy roots; moderately sticky; very plastic; non-calcareous; clear, wavy boundary.

27-46	Light grey (10YR 7/1) heavy silty clay loam; many distinct strong brown (7.5 YR 5/8) mottles; very slightly stony, containing approximately 4% small and medium subangular sandstones; slightly moist; weakly developed coarse angular blocky and medium prismatic structure; very firm; slightly porous (<0.5% pores >0.5 mm); common fine and very fine fibrous roots; moderately sticky; very plastic; non-calcareous; clear wavy boundary.
46-67	Light grey (N7/) heavy silty clay loam; many distinct reddish yellow (7.5 YR 6/8) mottles; slightly stony, containing approximately 6% small, medium and large subangular sandstones; slightly moist; well developed coarse prismatic structure, slightly porous (<0.5% 70.5mm) few very fine fibrous roots; moderately sticky; very plastic; non-calcareous; clear irregular boundary.
67-76	Grey (10YR 6/1) heavy silty clay loam; many distinct reddish yellow (7.5YR 6/8) and strong brown (7.5YR 4/6) mottles; slightly stony, containing approximately 15% small and medium subangular shales; slightly moist; weakly developed coarse subangular blocky structure; very firm; slightly porous (<0.5% pores >0.5mm); few very fine fibrous roots; moderately sticky; very plastic; smooth, gradual boundary
76+	Impenetrable weathering shale

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2		
3a	2.5	11.9
3b	18.5	88.1
4		
5		
(Sub total)	(21.0)	(100.0)
Urban		
Non Agricultural		
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Sub total)	(0.0)	(0.0)
TOTAL	21.0	100

3.1 Subgrade 3a

A small area of Subgrade 3a land occurs in the south-east of the site. Profiles are moderately well or imperfectly drained, falling in Wetness Classes II or III. Medium clay loam or heavy clay loam topsoils overlie medium silty clay loam or sandy clay loam subsoils which are gleyed but permeable. Horizons of heavy silty clay loam begin at around 50cm depth in places and the land is limited to Subgrade 3a by soil wetness and topsoil workability restrictions.

3.2 Subgrade 3b

The remainder of the land on this site falls in Subgrade 3b. The soils are poorly drained (Wetness Class IV) with medium clay loam, heavy clay loam or heavy silty clay loam topsoils overlying gleyed and slowly permeable heavy clay loam, heavy silty clay loam or silty clay subsoils at around 30cm depth. Bands of weathering sandstone and shale occur at depth in places but soil wetness is the principal factor limiting the ALC grade of this land.

MAPS