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Ministry of
Agriculture
Fisheries
and Food

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION BANKS WOOD CLAY SITE PENISTONE, SOUTH YORKSHIRE APRIL 1995

ADAS
Leeds Statutory Group

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SUMMARY

A detailed Statement of Physical Characteristics and Agricultural Land Classification Survey of 2.5 ha of land at Banks Wood Clay site near Penistone, South Yorkshire was carried out in late March 1995.

Two distinctly different soil types were identified on the site. One occurs in the western third of the site where heavy textured, poorly drained soils have developed from weathering shale. Remaining land contains shallower soils developed from weathering sandstone. Top and subsoils are medium textured and slightly to moderately stony. Bedrock is exposed at about 50cm depth on average.

0.7 ha were Subgrade 3a. Soil depth and droughtiness limited the ALC grade of this land.

1.0 ha of Subgrade 3b were mapped. Slope was the main limiting factor on this land.

Grade 4 covered 0.8 ha and again slope was the limiting factor.

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STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED CLAY EXTRACTION SITE AT BANKS WOOD, PENISTONE, SOUTH YORKSHIRE

1. INTRODUCTION AND SITE CHARACTERISTICS

1.1 Location and Survey Methods

A detailed survey of 2.5 ha of land at Banks Wood (grid reference SE 275 058) was carried out in late March 1995. Soils were examined by hand auger borings at 100m intervals predetermined by the National Grid. Soil profile pits were also dug to describe the soils in greater detail. 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).

1.2 Land Use and Relief

At the time of survey all the land was under grass. Slopes range from moderate (4-7°) to moderately steep (12-15°) with a north east to north westerly aspect.

Altitude ranges from 145m AOD in the north to 160m AOD in the south of the site.

1.3 Climate

Grid Reference	: SE 275 058
Altitude (m)	: 153
Accumulated Temperature above 0°C (January - June)	: 1256 day °C
Average Annual Rainfall (mm)	: 737
Climatic Grade	: 2
Field Capacity Days	: 185
Moisture Deficit (mm) Wheat	: 87
Moisture Deficit (mm) Potatoes	: 72

1.4 Geology, Soils and Drainage

Except for locally derived deposits, Drift cover is absent from the site. Soils are all developed from Lower Carboniferous Coal Measure deposits of thinly bedded sandstones and shales.

Two distinctly different soil types are found on the site. One is found in the western third of the site. It is developed from weathering shale and contains heavy textured top and subsoils extending to about 75cm depth. Below this is bedrock. The subsoil is gleyed and slowly permeable and this soil is Wetness Class IV.

The remaining eastern two thirds of the site contain well drained medium textured soils derived from weathering sandstones. Topsoils and subsoils are medium textured, typically sandy clay loam or medium clay loam and are slightly to moderately stony. Bedrock is encountered at between 35 and 65cm depth.

These soils correspond to the Dale and Rivington I Associations respectively, as mapped by the Soil Survey and Land Research Centre (1984).

1.5 Soil Properties

Two 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:- Heavy-textured soils (Unit T1/S1)
(Full Profile Description, Table 1)

This soil is formed on weathering shale and occurs in the western third of the site. It is characterised by heavy clay loam topsoils over gleyed, slowly permeable, coarse prismatic heavy textured subsoils.

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

This soil formed on weathering sandstone occurs in the east of the site. It is characterised by sandy clay loam or medium clay loam, slightly to moderately stony topsoils and subsoils. Subsoils are medium subangular blocky and bedrock is exposed at between 35 and 65cm depth.

1.6 Soil Resources

(i) Topsoils

Unit T1. This dark greyish brown unit is heavy textured and slightly stony. It has a coarse subangular blocky structure. Mean unit thickness is 25cm.

Unit T2. This unit is also dark greyish brown and slightly stony. It is medium textured and has a strongly developed medium subangular blocky structure. Mean unit thickness is 30cm

(ii) Subsoils

Unit S1. This light brownish unit is found below topsoil T1. It is very slightly stony and has a weakly developed coarse prismatic structure. It is heavy-textured. Below this unit is shale bedrock. The mean unit thickness is 50cm.

Unit S2. This unit underlies topsoil T2. It is slightly stony and has a moderately developed medium subangular blocky structure. It is medium or occasionally light textured. Below this unit is weathering sandstone bedrock. Mean unit thickness is 20cm with a range of 5cm to 35cm.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Heavy-textured soil, T1/S1

Profile Pit 1 (Near auger boring 1)

Slope:- 12° NW
Land Use:- Grass
Weather:- Cool, overcast

Depth cm	Horizon	Description
0-24		Dark greyish brown (2.5Y 4/2) heavy clay loam; unmottled; slightly stony with 10% medium and small subangular sandstones; moderately developed coarse subangular blocky; firm; many fine fibrous roots; moderately sticky; moderately plastic; non calcareous; clear smooth boundary
24-76		Light brownish grey (2.5Y 6/2) silty clay; many distinct reddish yellow (7.5YR 6/8) mottles; very slightly stony with a few small subrounded sandstones; weakly developed coarse prismatic; very firm; few fine fibrous roots; moderately sticky, very plastic; non calcareous; abrupt smooth boundary to weathering shale

Table 2 Medium-textured soil, T2/S2

Profile Pit 2 (near auger boring 3)

Slope:- 4° NE
Land Use:- Grass
Weather:- Cool, overcast

Depth cm	**Horizon Description**
0-26	Dark greyish brown (10YR 4/2) medium clay loam; unmottled; slightly stony with 12% small, medium and large sandstones; strongly developed medium subangular blocky; friable; many fine fibrous roots; moderately sticky; moderately plastic; non calcareous; clear irregular boundary to
26-64	Brownish yellow (10YR 6/6) sandy clay loam; unmottled; moderately stony with 25% medium and coarse angular sandstones; moderately developed medium subangular blocky; friable; common fine fibrous roots; moderately sticky; slightly plastic; non calcareous; smooth clear boundary to weathering sandstone.

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2		
3a	0.7	28
3b	1.0	40
4	0.8	32
5		
(Sub total)	(2.5)	(100)
Urban		
Non Agricultural		
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Sub total)		
TOTAL	2.5	100

3.1 Subgrade 3a

This land contains well drained, shallow, medium-textured soils on slopes up to 7°. The land is limited by soil depth and droughtiness.

3.2 Subgrade 3b

Soils on this land are similar to those graded 3a. However slopes of up to 11° limit this land to Subgrade 3b.

3.3 Grade 4

Slopes of over 11° limit this land to Grade 4. Soils are slowly permeable and gleyed.

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MAPS