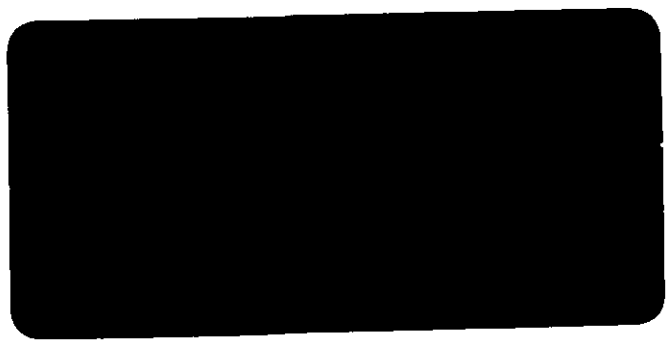


MAFF
Ministry of
Agriculture
Fisheries
and Food

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION LAND WEST OF ROTHERHAM ROAD MIDDLECLIFFE, BARNSLEY SOUTH YORKSHIRE MARCH 1996

ADAS
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SUMMARY

A detailed Agricultural Land Classification (ALC) and Statement of Physical Characteristics survey of 13.2 ha of land west of Rotherham Road, Middlecliffe, Barnsley was carried out in March 1996.

3.0 ha fall into Subgrade 3a. This land lies to the west of the site. Soils consist of stoneless heavy silty clay loam topsoils, over similar gleyed, permeable subsoils. This land is limited to this subgrade by moderate soil wetness restrictions.

6.1 ha fall into Subgrade 3b. Soils to the north are restored and consist of very slightly stony medium clay loam topsoils overlying massively structured slowly permeable heavy silty clay loam subsoils. This land is restricted to this subgrade by severe soil wetness restrictions. Subgrade 3b land to the south consists of stoneless medium and heavy silty clay loam topsoils, over stoneless slowly permeable silty clay subsoils. This land is limited to this subgrade by severe soil wetness restrictions.

Grade 4 land (2.4 ha) occurs over the east of the site and is restored. Soils consist of very slightly stony medium clay loam topsoils overlying colliery spoil/overburden to depth. This land is limited to this grade by soil wetness and droughtiness restrictions due to the heavily compacted overburden.

Other land consists of an area to the east where topsoil and subsoil resources have been removed.

In terms of soil resources there are two topsoil units (T1 and T2). T1 occurs to the north of the site and is restored, consisting of a very slightly stony medium clay loam with a median depth of 25 cm. Unit T2 occurs in the south of the site and consists of medium and heavy silty clay loam with a median depth of 25 cm.

There are three main subsoil types (S1, S2 and S3).

S1 is restored and consists of slightly to moderately stony massively structured heavy silty clay loams with a mean depth of 95 cm.

Unit S2 consists of stoneless heavy and medium silty clay loams which are permeable, with a mean depth of 95 cm.

Unit S3 consists of stoneless slowly permeable silty clay, with a mean depth of 95 cm.

There are no subsoil resources under the restored Grade 4 land, with colliery spoil/overburden being present to depth.

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STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON LAND WEST OF ROTHERHAM ROAD, MIDDLECLIFFE, SOUTH YORKSHIRE

1. INTRODUCTION AND SITE CHARACTERISTICS

1.1 Location and Survey Methods

The site lies 7 km east of Barnsley, directly south-west of Middlecliffe, and covers 13.2 ha. It is centred around Grid Reference SE425050. Survey work was carried out in March 1996 when the soils were examined by hand auger borings at 100 m intervals predetermined by the National Grid. In addition, four soil pits were dug to allow full profile descriptions to be made. The 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 land to the south and west of the site was under cereals, restored land to the north was under oil seed rape, restored land to the north and east was permanent grass and land to the far east of the site was already stripped of topsoil and subsoil. Of the total area of 13.2 ha, 11.5 ha was agricultural land at the time of the survey.

Site altitude varies from 27 m AOD in the south to 35 m AOD in the north.

1.3 Climate

Grid Reference	: SE425050
Altitude (m)	: 30
Accumulated Temperature above 0°C (January - June)	: 1393 day °C
Average Annual Rainfall (mm)	: 619
Climatic Grade	: 1
Field Capacity Days	: 134
Moisture Deficit (mm) Wheat	: 107
Moisture Deficit (mm) Potatoes	: 99

1.4 Geology, Soils and Drainage

The site is underlain by Coal Measures, with sandstones in the north east, shales in the centre and a drift cover of alluvium on the flatter land in the south west. Topsoils in the west consist of stoneless medium and heavy silty clay loam over medium silty clay loam, heavy silty clay loam and silty clay subsoils. These are moderately well or poorly drained (Wetness Class II and IV). Soils in the north west of the site, under oil seed rape, have been restored and consist of very slightly stony medium clay loam topsoils over slightly stony massively structured gleyed slowly permeable heavy silty clay loam subsoils mixed with overburden. These soils are poorly drained (Wetness Class IV). Remaining soils to the north east are under permanent grass and consist of very slightly stony medium clay loam topsoils, lying directly over overburden.

1.5 Soil Properties

Four 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:- Medium over heavy textured restored soils (Unit T1/S1)
(Full Profile Description, Table 1)

This soil is restored and occurs in the north east of the site. It is characterised by a medium clay loam topsoil overlying a restored massively structured slowly permeable heavy silty clay loam subsoil with up to 30% stones.

(b) Soil Type 2:- Heavy-textured topsoils over medium/heavy textured subsoils (Unit T2/S2).
(Full Profile Description, Table 2)

This soil formed on alluvium occurs in the north-west of the site. It is characterised by heavy silty clay loam topsoils, overlying permeable gleyed medium and heavy silty clay loam subsoils.

(c) Soil Type 3:- Heavy textured topsoils over heavy textured subsoils (Unit T2/S3) (Full Profile Description, Table 3)

This soil formed on alluvium occurs over the south of the site. The soil type is characterised by heavy silty clay loam topsoils, overlying slowly permeable silty clay subsoils.

(d) Soil Type 4:- Medium textured topsoils over colliery spoil/overburden (Unit T1/Overburden).

This restored soil occurs in the east of the site. This soil type is characterised by a medium clay loam topsoil overlying colliery spoil/overburden to depth.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs over the north-eastern half of the site. These topsoils have been restored, and consist of very slightly stony medium clay loams, containing around 5% very small to medium angular sandstones (2% >2cm). It has a weakly developed coarse angular blocky and subangular blocky structure and a median depth of 25 cm.

Unit T2 occurs over the south-western half of the site. These topsoils are medium to heavy textured, usually consisting of stoneless heavy silty clay loam topsoils, with occasional medium silty clay loams. Unit T2 has a weakly to moderately developed coarse subangular blocky structure and a median depth of 25 cm.

(ii) There are three subsoil types over this site.

Unit S1 occurs over the north-east of the site. These subsoils have been restored, and consist of moderately stony (10% very small to large angular medium soft sandstones) heavy silty clay loam mixed with overburden. Stone percentage

increases to 30% below 65 cm depth. Unit S1 has massive very firm structure and a mean depth of 95 cm.

Unit S2 occurs over the north-west of the site. These subsoils consist of stoneless, gleyed, permeable medium and heavy silty clay loam. Unit S2 has a weakly developed coarse subangular blocky structure and a mean depth of 95 cm.

Unit S3 occurs over the south of the site. These subsoils consist of stoneless gleyed, slowly permeable silty clay. Unit S3 has a weakly developed coarse angular blocky structure and a mean depth of 95 cm.

2. SOIL PROFILE DESCRIPTIONS

2.1 Table 1 Restored soil T1/S1
Profile Pit 1 (Near auger boring 3)

Slope:- 3°W
Land Use:- Oil Seed Rape
Weather:- Cool Overcast.

Depth (cm)	Horizon Description
0 - 27	Dark greyish brown (10YR4/2) medium clay loam; no mottles; very slightly stony (5% very small to medium angular sandstones, 2% >2cm); moist; weakly developed coarse angular blocky and subangular blocky structure; firm; moderately porous; many very fine fibrous roots and few medium fleshy roots; slightly sticky; moderately plastic; non calcareous; clear smooth boundary.
27 - 120	Yellowish brown (10YR5/4) heavy silty clay loam; many distinct greyish brown (10YR5/2) mottles; moderately stony (with 10% very small to large angular medium soft sandstones and 10% very small to medium angular shales), becoming stonier below 65 cm (with 30% medium soft sandstones and shales); slightly moist; massive structure; very firm; very slightly porous (<0.5% biopores >0.5 mm); few very fine fibrous roots; moderately sticky; moderately plastic; non calcareous.

2.2 Table 2 Soil T2/S2

Profile Pit 2 (Near auger boring 5)

Slope:- 0°

Land Use:- Cereals

Weather:- Cool overcast.

Depth (cm)	Horizon Description
0 - 24	Very dark greyish brown (10YR3/2) heavy silty clay loam; no mottles; stoneless; moist; moderately developed coarse subangular blocky structure; firm; moderately porous; common fine and medium fibrous roots; slightly sticky; slightly plastic; non calcareous; abrupt wavy boundary.
24 - 60	Greyish brown (10YR5/2) medium silty clay loam; many diffuse strong brown (25YR5/6) mottles; stoneless; moist; moderately developed coarse subangular blocky structure; friable; moderately porous (>0.5% biopores >0.5 cm); few fine fibrous roots; moderately sticky; slightly plastic; non calcareous; abrupt smooth boundary.
60 - 120	Grey (10YR6/1) medium silty clay loam; common diffuse strong brown (75YR4/6) mottles; stoneless; moist; weakly developed coarse subangular blocky structure; friable; moderately porous (>0.5% biopores >0.5 mm); few fine fibrous roots; moderately sticky; slightly plastic; non calcareous.

2.3 Table 2 Soil T2/S3

Profile Pit 3 (Near auger boring 8)

Slope:- 0°

Land Use:- Cereals

Weather:- Cool overcast.

Depth (cm)	Horizon Description
0 - 26	Dark greyish brown (10YR4/2) heavy silty clay loam; no mottles; stoneless; moist; weakly developed coarse subangular blocky structure; firm; moderately porous; common fine and medium fibrous roots; slightly sticky; slightly plastic; non calcareous; abrupt smooth boundary.
26 - 120	Dark grey (25YR4/0) silty clay; abundant diffuse strong brown (75YR4/6) mottles; stoneless; moist; weakly developed coarse angular blocky structure; very firm; very slightly porous (<0.5% biopores >0.5 mm); few fine fibrous roots; very sticky; very plastic; non calcareous.

2.4 Table 4 Restored soil T1/Overburden

Profile Pit 4 (Near auger boring 10)

Slope:- 5°

Land Use:- Permanent grass,

Weather:- Cool overcast.

Depth (cm)	Horizon Description
0 - 16	Dark brown (10YR3/3) medium clay loam; no mottles; very slightly stony (2% small and medium shales and sandstones); moist; moderately developed medium and coarse subangular blocky structure; firm; moderately porous; many fine and medium fibrous roots; slightly sticky; moderately plastic; non calcareous; abrupt wavy boundary.
16 - 120	Colliery spoil/overburden containing shale and coal with occasional clay lenses. Very slightly moist to 50 cm depth and dry thereafter; few fine fibrous roots to 30 cm depth.

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:

Grade/Subgrade	Hectares	% of Total Area
1		
2		
3a	3.0	22.7
3b	6.1	46.2
4	2.4	18.2
5		
(Sub total)	(11.5)	(87.1)
Other Land	1.7	12.9
TOTAL	**13.2**	**100**

3.1 Subgrade 3a

Subgrade 3a land lies to west of the site and consists of stoneless heavy silty clay loam and occasional medium silty clay loam topsoils over similar gleyed permeable subsoils. These soils are moderately well drained, falling into Wetness Class II. This land is limited to Subgrade 3a by moderate soil wetness and topsoil workability restrictions.

3.2 Subgrade 3b

Subgrade 3b land covers the south and north-east of the site. Soils to the south consist of stoneless heavy and medium silty clay loam topsoils over gleyed, slowly permeable silty clay subsoils. These soils are poorly drained, falling into Wetness Class IV. This land is limited to Subgrade 3b by severe soil wetness and workability. Soils to the north of the site are restored and consist of very slightly stony medium clay loam topsoils over massively structured slowly permeable heavy silty clay loam subsoils. Subsoils are slightly stony (10% small to large soft sandstones) to moderately stony (30% small to large sandstones and shales) below 65 cm. This land is also limited to Subgrade 3b by severe soil wetness and workability.

3.3 Grade 4

Grade 4 land consists of very slightly stony medium clay loam topsoils over colliery spoil/overburden to depth. Topsoil depth varies between 15 and 20 cm and root penetration into the overburden is limited to 10 cm. This land is limited to Grade 4 by soil wetness limitations due to the compacted overburden, and soil droughtiness due to the lack of available water in the overburden.

3.4 Other Land

Other land consists of an area to the east of the site where work has commenced, and topsoil and subsoil resources have been removed.

MAPS