
MAFF
Ministry of
Agriculture
Fisheries
and Food

AGRICULTURAL LAND CLASSIFICATION
BANK END ROAD
FINNINGLEY
SOUTH YORKSHIRE
DECEMBER 1994

ADAS
Leeds Statutory Group

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SUMMARY

An Agricultural Land Classification of 43.2 ha of land 1 km north east of Finningley was carried out in October 1994.

35.9 ha of this was in agricultural use of which 10.6 ha falls in Subgrade 3a. This is found in a small restored area to the north east and unrestored land running west to south. The unrestored area contains two soil types, one heavy and one light textured. Heavy textured soils consist of imperfectly drained (Wetness Class III) medium clay loam topsoils, over gleyed slowly permeable clay to 120 cm. The soils are slowly permeable within 35 cm depth and are limited to Subgrade 3a by soil wetness restrictions. The light textured soils consist of well to moderately well drained (Wetness Class I - II) medium sandy loam and loamy medium sand topsoils over occasionally gleyed loamy medium sand or medium sand upper subsoils and slowly permeable clay lower subsoils at between 70 and 110 cm depth. This land is limited to Subgrade 3a by soil droughtiness restrictions. The restored area consists of deep medium clay loam topsoils over subsoils containing loamy sand and medium sand with large silty clay inclusions. These soils are well drained (Wetness Class I), however a pattern limitation restricts these soils to Subgrade 3a.

25.3 ha of the site is Subgrade 3b, a small area to the east being restored. Unrestored soils contain a mixture of heavy and light textured soils. Heavy soils consist of heavy clay loam topsoils over slowly permeable clay subsoils. They are imperfectly drained (Wetness Class III) and are limited to Subgrade 3b by soil wetness and workability restrictions. The light textured soils consist of loamy medium sand topsoils over medium sand upper subsoils and clay lower subsoils at between 100 and 110 cm depth. These soils are well drained (Wetness Class I) and are limited to Subgrade 3b by severe soil droughtiness. The restored land consists of heavy clay loam topsoils over ungleyed slowly permeable silty clay subsoils to depth. These soils are imperfectly drained (Wetness Class III) and limited to Subgrade 3b by workability and soil wetness restrictions.

The remaining 7.3 ha of the site consists of two fishing lakes with hard access tracks around them, and a railway track running east to west.

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1. INTRODUCTION AND SITE CHARACTERISTICS

1.1 Location and Survey Methods

The site lies 1 km north east of Finningley directly south of the B1396. It is centred around National Grid Reference SK695 995. The site was surveyed in October 1994 when soils were examined by hand auger borings at 100 m intervals at points predetermined by the National Grid. Four soil inspection pits were dug to assess subsoil structure. 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 the agricultural land was either recently ploughed or arable. The remainder, to the north of the site, was open water for fishing with hard access tracks around it. The land is level (0 - 1°). Altitude is 4 m AOD.

1.3 Climate

Grid Reference	: SK695 995
Altitude (m)	: 4
Accumulated Temperature above 0°C (January - June Day °C)	: 1419 day° C
Average Annual Rainfall (mm)	: 571
Climatic Grade	: 1
Field Capacity Days	: 114
Moisture Deficit (mm) Wheat	: 114
Moisture Deficit (mm) Potatoes	: 107

1.4 Geology, Soils and Drainage

The site is underlain by solid deposits of Bunter Sandstone. Above this is deposited a layer of silt and clay and blown sand. Soil profiles are a mixture of heavy and light soils with a restored area to the east of the site.

Heavy profiles, developed from clayey drift, consist of heavy clay loam, with occasional medium clay loam, topsoils over gleyed slowly permeable clay subsoils to depth. Slowly permeable layers begin between 25 and 35 cm depth and profiles are imperfectly drained (Wetness Class III).

Light profiles developed from blown sand consist of loamy medium sand topsoils over medium sand or loamy medium sand upper subsoils in turn over slowly permeable clay at between 65 and 110 cm depth. These soils are well to moderately well drained (Wetness Class I - II) and droughty. The restored soils to the east consist mainly of heavy clay loam topsoils over a slowly permeable heavy clay loam subsoil to depth. These soils are imperfectly drained, falling into Wetness Class III. The remaining area of restored land lies in the north east corner and consists of deep medium clay loam topsoils over a mixture of medium sand with large silty clay inclusions. Rooting does occur in this horizon. Soils are permeable and profiles are well drained (Wetness Class I).

1.5 Soil Properties

4 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 : - Light textured over heavy soils (Unit T1/US1A/LS1A)
(Full Profile Description, Table 1)

This soil formed on blown sand over clay occurs in the south west of the site. It is characterised by stoneless light textured topsoils overlying light textured upper subsoils in turn over clay subsoils at or below 100cm.

(b) Soil Type 2 :- Medium to heavy over light over heavy textured soils (Unit T2A/US1B/LS1B)

This soil formed on blown sand over clay occurs in the west of the site. It is characterised by stoneless to very slightly stony medium/heavy topsoils over light textured upper subsoils in turn over clay subsoils at or below 70 cm depth.

(c) Soil Type 3 :- Medium/heavy over heavy textured soils (Unit T2A/LSIC) (Full Profile Description, Table 2)

This soil formed on clay over sandstone occurs in the centre of the site. It is characterised by stoneless to very slightly stony medium/heavy textured topsoils over heavy textured stoneless clay subsoils.

(d) Soil Type 4 :- Medium/heavy over heavy textured soils (Unit T2B/LS2) (Full Profile Description, Table 3)

This soil is restored and occurs in the north east of the site. It is characterised by very slightly stony medium/heavy textured topsoils over subsoils of unconsolidated clay and sand.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs in the south west of the site. It consists of very slightly stony (1% small to medium rounded hard stones) loamy medium sand. It has a moderately well developed medium subangular structure and a mean depth of 30 cm.

Unit T2A occurs over the centre of the site. It consists of stoneless weakly developed medium subangular blocky heavy clay loam with a mean depth of 30cm.

Unit T2B occurs over the north east of the site. It consists of very slightly stony (1% small to medium rounded to subrounded hard stones) medium and heavy clay loam. It has a weakly developed medium subangular blocky structure and a mean depth of 35cm.

(ii) Subsoils

(a) Upper subsoils

Unit US1A occurs over the south of the site. It consists of light textured stoneless moderately developed medium subangular blocky medium sand, with a mean depth of 75cm.

Unit US1B occurs directly north of US1A. It consists of light textured stoneless moderately developed medium subangular blocky medium sand, with a mean depth of 40cm.

(iii) Lower Subsoils

Unit LS1A occurs over the south of the site. It consists of stoneless weakly developed coarse prismatic clay, with a mean depth of 15cm.

Unit LS1B occurs directly north of unit LS1A. It consists of stoneless weakly developed coarse prismatic clay, with a mean depth of 50cm.

Unit LS1C occurs over the central area of the site. It consists of stoneless weakly developed coarse prismatic clay, with a mean depth of 90cm.

Unit LS2 occurs over the north east of the site. It consists of restored soils. Subsoils consist of stoneless weakly developed medium subangular blocky heavy clay loam. Within the subsoils areas of medium sand are encountered, dispersed within silty clay. This subsoil has a mean depth of 85cm.

2. SOIL PROFILE DESCRIPTIONS

Table 1.	Near Boring 19 - Profile typical of units T1/US1A/LS1A
Land Use	Ploughed
Slope	0°
Weather	Sunny

Depth (cm)	
0-38	Dark brown (10YR3/3) loamy medium sand; unmottled; very slightly stony (1% small to medium rounded hard stones); slightly moist; moderately well developed medium subangular blocky structure; friable; few fine fibrous roots; non plastic; non sticky; non calcareous; abrupt smooth boundary.
38-105	Strong brown (75YR5/6) medium sand; common distinct yellow (10YR6/7) mottles; stoneless, slightly moist; moderately developed medium subangular blocky; very porous; very friable; no roots; non plastic; non sticky; non calcareous; smooth abrupt boundary.
105-120	Dark grey (25Y4/2) clay; common distinct common dark brown (75YR4/4) mottles; stoneless; moist; moderately developed coarse prismatic structure; slightly porous; very firm; no roots; moderately plastic; moderately sticky; non calcareous.

Table 2.	Near Boring 16 - Profile typical of units T2A/LS1C
Land Use	Horticultural
Slope	0°
Weather	Sunny

Depth (cm)	
0-25	Very dark greyish brown (10YR3/2) heavy clay loam, unmottled; stoneless; moist; weakly developed medium subangular blocky; firm; few fine roots; moderately porous; moderately sticky; moderately plastic; non calcareous; smooth abrupt boundary.
25-120	Dark grey (25Y4/2) clay; common distinct dark brown (75YR4/4) mottles; stoneless; moist; moderately developed coarse prismatic; very slightly porous; very firm; no roots; moderately plastic; moderately sticky; non calcareous.

Table 3.	Near Boring 12 - Profile typical of units T2B/LS2 (Restored)
Land Use	Arable
Slope	0°
Weather	Sunny

Depth (cm)	
0-40	Very dark greyish brown (10YR3/2) medium sandy loam, unmottled; very slightly stony (1% small to medium subrounded stones); moist; moderately developed coarse subangular blocky; common fine roots; moderately porous; slightly sticky; slightly plastic; non calcareous; smooth clear boundary.
40-120	Dark brown (75YR4/2) heavy clay loam, few yellowish brown (10YR5/8) mottles; stoneless; moist; weakly developed coarse subangular blocky; slightly porous, very firm; moderately sticky; moderately plastic; non calcareous. This subsoil is interspersed with areas of yellowish brown (10YR5/6) medium sand. Rooting is found in sandy areas between the largest clay loam fragments but not within the heavy clay loam.

Table 4	Near Boring 24. Restored area profile T2B/L52
Land Use	Ploughed
Slope	0°
Weather	Sunny

Depth (cm)	
0-30	Very dark greyish brown (10Y3/2) medium clay loam; unmottled; very slightly stony (1% small to medium subrounded stones); moist; moderately developed coarse angular blocky; firm; few fine roots; moderately porous; slightly sticky; slightly plastic; non calcareous; smooth abrupt boundary.
30-120	Dark brown (75YR4/2) heavy clay loam; unmottled; stoneless; slightly moist; weakly developed coarse subangular blocky; very firm; slightly porous; moderately sticky; moderately 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	10.6	24.5
3b	25.3	58.6
4		
5		
(Sub total)	(35.9)	(83.1)
Urban	1.2	2.8
Non Agricultural	1.2	2.8
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water	4.9	11.3
Land not surveyed		
(Sub total)	(7.3)	(16.9)
TOTAL	43.2	100

3.1 Subgrade 3a

Subgrade 3a land occurs in a central band running west to south and a small restored area to the north east. The main area contains two soil types, one heavy textured the other light. Heavy soils consist of very slightly stony medium clay loam topsoils over gleyed slowly permeable stoneless clay to 120 cm. These soils are slowly permeable within 35 cm and are imperfectly drained (Wetness Class III). This land is restricted to Subgrade 3a by soil wetness restrictions. The remaining light textured soils within this area consist of well to moderately well drained (Wetness Class I - II), very slightly stony medium sandy loam or loamy medium sand topsoils over occasionally gleyed loamy medium sand or loamy fine sand upper subsoils in turn over slowly permeable clay lower subsoils at between 70 and 110 cm depth. This land is limited to Subgrade 3a by soil droughtiness restrictions. The remaining area of Subgrade 3a land occurs in the north east corner. Soils have been restored (hatched) and consist of deep very slightly stony medium clay loam topsoils over a

subsoil consisting of loamy sand and medium sand with large silty clay inclusions. The sandy matrix is permeable and these soils are well drained (Wetness Class I). The variable subsoil texture of this land will produce differences in available water capacity, hence these soils are limited to Subgrade 3a by pattern limitation although the drought limitation is often only Grade 2.

3.2 Subgrade 3b

The remaining agricultural land falls within Subgrade 3b of which a small area to the east consists of restored land (hatched).

Unrestored land consists of a mixture of light and heavy textured soils. Heavy soils consist of very slightly stony heavy clay loam topsoils overlying stoneless, gleyed, slowly permeable clay subsoils to 120 cm. These soils are imperfectly drained, falling into Wetness Class III. They are limited to Subgrade 3b by soil wetness and workability restrictions.

Lighter soils consist of very slightly stony loamy medium sand topsoils over medium sand upper subsoils in turn over clay lower subsoils at between 100 and 110 cm depth. These soils are well drained (Wetness Class I) and are restricted to Subgrade 3b by severe droughtiness limitations.

The remaining restored land (hatched) consists of very slightly stony heavy clay loam topsoils overlying ungleyed slowly permeable heavy clay loam subsoils to depth. These soils are imperfectly drained (Wetness Class III) and are limited to Subgrade 3b by workability and soil wetness restrictions.

3.3 Open Water

Open water occurs as two fishing ponds in the north of the site.

3.4 Non-Agricultural

Non-Agricultural land consists of hard access tracks around the fishing ponds.

3.5 Urban

Urban land consists of a railway track running east to west in the south of the site.

MAP