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Ministry of
Agriculture
Fisheries
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Bolton House Farm OCCS
(Land to be restored to agriculture)
Agricultural Land Classification and
Statement of Physical Characteristics
S. Yorkshire
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Resource Planning Team
Leeds Statutory Group
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BOLTON HOUSE FARM OCCS, GOLDTHORPE AGRICULTURAL LAND CLASSIFICATION AND STATEMENT OF PHYSICAL CHARACTERISTICS REPORT

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) and Statement of Physical Characteristics survey of 1.2 ha of land at Bolton House Farm, Goldthorpe. The survey was carried out during October 1996.

2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Northallerton in connection with a proposal to extract coal by opencast methods and restore land to agriculture. This survey supersedes a previous ALC survey on this land carried out by ADAS Statutory in 1993 for the Barnsley UDP (ref DE 19).

3. The work was conducted by members of the Resource Planning Team in the Leeds Statutory Group in ADAS. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey the agricultural land on the site was in permanent grass. The site also contains an area of non-agricultural land, formerly the site of and access to Goldthorpe Brickworks. The land is now derelict and has been tipped with various wastes.

Summary

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:5,000. It is accurate at this scale but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% Total site area	% Surveyed Area
Subgrade 3b	0.6	50.0	100.0
Other land	0.6	50.0	-
Total surveyed area	0.6	-	100
Total site area	1.2	100	-

7. The fieldwork was conducted at an average density of one boring per hectare plus supplementary borings. A total of 6 borings and one soil pit were described.

Subgrade 3b

8. All agricultural land on the site is Subgrade 3b. Soils are variable in nature due to sporadic disturbance associated with the former Goldthorpe Brickworks. Brick, shale, ash and cinders are occasionally found in the soil profile. Very occasionally topsoils are absent. However, when undisturbed, which includes a majority of soils on the site, profiles are imperfectly drained (Wetness Class III). Topsoils are typically medium textured. This land is Subgrade 3b because of a variable soil pattern limitation, caused by soil disturbance.

Other Land

9. This includes an access road to, and land associated with, the former Goldthorpe Brickworks factory. This land is now derelict and has been tipped on with various wastes, some of which are grassed over.

Factors Influencing ALC Grade

Climate

10. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

11. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SE 448 041
Altitude	m, AOD	35
Accumulated Temperature	day°C (Jan-June)	1387
Average Annual Rainfall	mm	634
Field Capacity Days	days	132
Moisture Deficit, Wheat	mm	105
Moisture Deficit, Potatoes	mm	97

12. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

13. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (AT0, January to June), as a measure of the relative warmth of a locality.

14. The combination of rainfall and temperature at this site means there is no climatic limitation on ALC.

Site

15. The site has a southerly aspect with moderate and gentle slopes (up to 7°). Altitude ranges from 30 to 40 m A.O.D.

Geology and soils

16. The area is underlain by Middle Coal Measures consisting of interbedded sandstones and shales. With the exception of locally derived Head deposits there is no drift cover on the site and the soils are derived from weathering shale and Head deposits. Soils vary between well drained (Wetness Class I) and poorly drained (Wetness Class IV), with light to medium-textured topsoils and upper subsoils overlying medium to heavy-textured lower subsoils. Generally profiles are imperfectly drained (Class III). As detailed in paragraph 8 profiles are occasionally disturbed with various wastes and topsoils are sometimes disturbed. The soils on the site correspond to the Bardsey association as mapped by the Soil Survey and Land Research Centre.

Agricultural Land Classification

17. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

Subgrade 3b

18. All agricultural land on the site is Subgrade 3b. Soils are variable in nature due to sporadic disturbance associated with the former Goldthorpe Brickworks. Brick, shale, ash and cinders are occasionally found in the soil profile. Very occasionally, topsoils are absent. However, when undisturbed, which includes a majority of soils on the site, profiles are imperfectly drained (Wetness Class III). Topsoils are typically medium textured. This land is Subgrade 3b because of a variable soil pattern limitation, caused by soil disturbance.

Other land

19. This includes an access road to, and land associated with, the former Goldthorpe Brickworks factory. This land is now derelict and has been tipped on with various wastes, some of which are grassed over.

Statement of Physical Characteristics

Soil Properties

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

Soil Type 1: Medium-textured topsoils and upper subsoils overlying heavy-textured lower subsoils (Unit T1/USS1/LSS1
(Full Profile Description, Appendix III).

This soil, derived from Coal Measures shales and light-textured Head deposits, occurs over most of the site. It is variable, but is characterised in most cases by a very slightly stony light to medium-textured topsoil and upper subsoil overlying a medium to heavy-textured lower subsoil. It is disturbed in places which will mean some profiles will not conform to the standardised description in this report.

Soil Resources

Topsoils

21. Unit T1 occurs on all the agricultural land on the site. It is medium textured and has a strongly developed subangular blocky structure. Where the profile is disturbed topsoils are occasionally absent or various wastes have been mixed with the topsoil. Mean thickness of T1 is 30 cm.

Upper Subsoils

22. Upper subsoil USS1 is found below topsoil T1. It is medium textured and has a strongly developed, medium subangular blocky structure. Mean thickness is 25 cm.

Lower Subsoil

23. Lower subsoil LSS1 is found below USS1. It is typically heavy textured and has a weakly developed coarse prismatic structure. Mean thickness is 65 cm.

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SOURCES OF REFERENCE

British Geological Survey (1976) *Sheet No.* 87, *Barnsley, Solid and Drift. 1:50,000.* BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.* Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 1, Northern England, 1:250,000.* SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in Northern England* SSEW: Harpenden

APPENDIX I

DESCRIPTIONS OF THE GRADES AND SUBGRADES

Grade 1: Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2: Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a: Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b: Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4: Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5: Very Poor Quality Agricultural Land

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Wetness Class	Duration of waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years.[2]
II	The soil profile is wet within 70 cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

[1] The number of days is not necessarily a continuous period.
[2] 'In most years' is defined as more than 10 out of 20 years.

APPENDIX III

Soil Profile Description: Medium textured topsoil and upper subsoil over heavy textured lower subsoil. (T1/USS1/LSS1)

Location: SE 448 041

Slope: 2°

Land Use: Grass

Weather: **Sunny and mild**

Depth (cm)	Horizon description
0 - 31	Dark greyish brown (10YR4/2) unmottled; medium clay loam; very slightly stony with 2% small sandstones and shales; dry; strongly developed fine subangular blocky; slightly hard; >0.5% pores > 0.5 mm; many fine fibrous roots; moderately sticky; moderately plastic; non calcareous; clear smooth boundary.
31 - 55	Brown (10YR5/3) medium clay loam, with few distinct yellowish brown (10YR6/8) mottles; very slightly stony with 2% small sandstones and shales; dry; strongly developed medium subangular blocky; slightly hard; <0.5% pores > 0.5 mm; common fine fibrous roots; moderately sticky; moderately plastic; non calcareous.
55 - 120	Very pale brown (10YR7/3) clay with many distinct brownish yellow (10YR6/6) mottles; moderately stony with 20% small sandstones and shales; slightly moist; weakly developed coarse prismatic; very firm; <0.5% pores >0.5 mm; few fine fibrous roots; moderately sticky; very plastic; non calcareous.