HIGH HOUSE FARM
STAPLEFORD ABBOTTS
ESSEX
Agricultural Land Classification
& Site Physical Characteristics
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Resource Planning Team
Huntingdon Statutory Group
ADAS Cambridge

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AGRICULTURAL LAND CLASSIFICATION REPORT

HIGH HOUSE FARM, STAPLEFORD ABBOTTS ESSEX

Introduction

1. This report presents the findings of a detailed, Agricultural Land Classification (ALC) survey of 38.0 ha of land at High House Farm, Stapleford Abbotts, Essex.The survey was carried out during September 1996.

2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Cambridge in connection with a planning application for a leisure and recreation park.

3. The work was conducted by members of the Resource Planning Team in the Huntingdon 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 land use on the site was set aside with two small fields under grass. The non agricultural area comprised farm buildings, domestic residence and garden, and an area which appeared to have been used for landfill.

Summary

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10 000 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: Areas of grades and other land

Grade/Other land	Area (hectares)	% surveyed
3b	35.0	92.1
Other land	3.0	7.9
Total agricultural land	35.0	92.1
Total survey area	38.0	100.0

7. The fieldwork was conducted at an average density of 1 boring per hectare. A total of 38 borings and 2 soil pits were described.

8. Land on the whole site is of moderate agricultural quality (subgrade 3b) due to moderately severe wetness and workability limitations.

Factors Influencing ALC Grade

Climate

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

10. 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

Parameter	Value
Grid reference	TQ502948
Altitude (m, AOD)	50
Accumulated Temperature (day °C, Jan.–June)	1439
Average Annual Rainfall (mm)	600
Field Capacity Days	114
Moisture Deficit, Wheat (mm)	119
Moisture Defecit, Potatoes (mm)	115
Overall Climatic Grade	1

11. 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.

12. 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 (ATO, January to June), as a measure of the relative warmth of a locality.

13. The combination of rainfall and temperature at this site mean there are no overriding climatic limitations to the grading of the land, and therefore the climatic grade 1 is assigned.

Site

14. The northern part of the site comprises a western facing valley slope parts of which are in excess of 7° thus restricting these areas to subgrade 3b. At a height of 75m AOD in the northern end of the site the land slopes westwards and then southwards. From the centre of the site the land slopes more gently to the southern boundary where the height is 42m AOD.

Geology and soils

15. The 1:50 000 scale geology map (BGS, 1976) shows the site to comprise Boulder Clay in the north, Claygate Beds over London Clay in the north central part and London Clay over the remainder of the site.

16. The 1:250 000 reconnaissance soil survey map for the area (SSEW, 1983) shows soils of the Windsor Association to predominate with a small area in the northern part of the site given to soils of the Oak 2 Association. Soils of the Windsor Association are briefly described as slowly permealble seasonally waterlogged, clayey soils mostly with brown subsoils. Those of the Oak 2 Association as slowly permeable seasonally waterlogged, fine loamy over clayey and fine silty over clayey soils.

17. During the current detailed survey one soil type was encountered .

18. Soil profiles comprise very slightly stony, non-calcareous clay (occasionally heavy clay loam) topsoil , over stoneless non-calcareous, slowly permeable clay subsoil. Gleying occurs at 30/35 cm and soils are assessed as Wetness Class III (q.v. Appendix II). A few profiles, typically those with a heavy clay loam topsoil, are underlain with a heavy clay loam upper subsoil over slowly permeable clay lower subsoil with gleying occurring at 45/50cm. These soils are also assessed as Wetness Class III.

Agricultural Land Classification

19. 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, page 1.

20. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III.

Grade 3b

21. The whole site has been mapped as subgrade 3b. The soil profiles are mainly clay throughout with occasional fine loamy topsoils and imperfectly drained (Wetness Class III) as described in paragraph 18. The soils are subject to moderately severe wetness and workability limitations which limit the number of days when the soil is in a suitable condition for cultivation.

Soil Resources

22. A statement of soil physical characteristics is given in Appendix III. The thicknesses and the volumes given in Table 3 below should be treated with some caution due to the variability of the soils. This information should not be used for soil stripping purposes.

Table 3: Soil Resources

	Area (ha)	Thickness (cm)	Volume(m^3)
Topsoil	35.0	32	112000
Subsoil	35.0	88	308000

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SOURCES OF REFERENCE

British Geological Survey (1976) *Sheet No. 257, Romford, Drift Edition. Scale 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 4, Soils of Eastern England.* SSEW: Harpenden.

Soil Survey of England and Wales (1984). *Soils and their Use in Eastern 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

STATEMENT OF SOIL PHYSICAL CHARACTERISTICS

Topsoil	Texture	:	clay
	Colour	:	10YR4/2
	Mottles	:	-----
	Concretions	:	-----
	Stone	:	3-4% small & medium, round & subangular
	Roots	:	common, fine and very fine
	$CaCO^3$	:	non-calcareous
	Depth	:	28/35cm
	Boundary	:	smooth/abrupt
Subsoil	Texture	:	clay
	Colour	:	10YR5/3, 10YR5/2
	Mottles	:	many 7.5YR6/8, many 10YR5/2
	Concretions	:	few/ many, variable
	Stone	:	stoneless
	Structure	:	moderately developed, coarse prismatic
	Consistence	:	firm
	Structural condition	:	poor
	Pores	:	<0.5%
	Roots	:	common, fine and very fine
	$CaCO^3$	:	non-calcareous
	Depth	:	120cm
Wetness Class:			III