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Summerhouse Farm, Hardwicke

AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

March 1994

ADAS

SUMMERHOUSE FARM, HARDWICKE, GLOUCESTERSHIRE

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Report of Survey

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Report of Survey

1. SUMMARY

Eight hectares of land at Summerhouse Farm, Hardwicke were surveyed using the Agricultural Land Classification Survey (ALC) System in March 1994. The survey was carried out on behalf of MAFF as part of its statutory role in response to an ad hoc planning application made to Stroud District Council.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000. The information is correct at this scale but any enlargement would be misleading. The distribution of grades identified in the survey area is detailed below and illustrated on the accompanying ALC map.

Distribution of ALC grades : Summerhouse Farm, Hardwicke

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3b	5.7	66.6	100
Urban	2.9	33.4	
TOTAL	8.6	100%	100%

All of the agricultural land surveyed was found to be Subgrade 3b. These soils are poorly drained and have a moderate wetness limitation. The soils have heavy clay loam topsoils and clay subsoils at depth.

2. INTRODUCTION

Eight hectares of land at Summerhouse Farm, Hardwicke were surveyed using the Agricultural Land Classification Survey (ALC) System in March 1994. The survey was carried out on behalf of MAFF as part of its statutory role in response to an ad hoc planning application made to Stroud District Council.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000 (approximately one auger boring per hectare). The information is correct at this scale but any enlargement would be misleading. A total of 6 auger borings and one soil profile pit were examined.

The published provisional one inch to the mile ALC map of this area (MAFF 1972) shows the whole site to be Grade 3. The scale of this map is considered inadequate for the current purposes. The recent survey supersedes this map having been carried out at a more detailed level and using the Revised Guidelines and Criteria for grading the quality of Agricultural Land (MAFF 1988).

These Guidelines provide a framework for classifying the land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The grading takes account of the top 120cm of the soil profile. A description of the grades used in the ALC System can be found in Appendix 2.

3. CLIMATE

The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an overriding influence on restricting land to a lower grade despite other favourable conditions.

Estimates of climatic variables were obtained for each site by interpolation from the Agricultural Climate Dataset (Meteorological Office 1989). The data are shown in Table 1.

The parameters used for assessing overall climatic conditions are accumulated temperature, (a measure of the relative warmth of a locality) and average annual rainfall, (a measure of overall wetness). Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat (MDW) and potatoes (MDP) are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in later sections. A description of the Wetness Classes used in quantifying the degree of wetness can be found in Appendix 3.

No local climatic limitations were noted in the survey area.

Table 1 Climatic Interpolations: Summerhouse Farm

Grid Reference	SO 800 115
Altitude (m)	17
Accumulated Temperature (day deg)	1508
Average Annual Rainfall (mm)	730
Overall Climatic Grade	1
Field Capacity Days	159
Moisture Deficit, Wheat (mm)	107
Moisture Deficit, Potatoes (mm)	101

4. RELIEF AND LANDCOVER

The survey area is flat and at a height of 20m AOD.

At the time of survey all the agricultural land was in permanent grass.

5. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:50,000 scale solid and drift geology map, sheet 234 (Geological Survey of England and Wales 1972). The site is shown to be mainly underlain by clay from the Lower Jurassic era. However in the northern part of the site there is a small area of river gravels.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. The site is mapped as having soils from the Badsey 2 Association. To the south soils of the Evesham 2 Association are mapped. Badsey 2 soils are described as well drained calcareous fine loamy soils over limestone, whilst the Evesham soils are described as slowly permeable calcareous clayey soils.

The soils found during the recent survey are more typical of the Evesham Association. The soils were heavy and poorly drained. Heavy clay loam topsoils lie over clay subsoils which are slowly permeable. The soils have low stone contents.

6. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed in Table 2 and shown on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

Table 2 Distribution of ALC grades: Summerhouse Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3b	5.7	66.6	100
Urban	2.9	33.4	100%
TOTAL	8.6	100%	

Subgrade 3b

All of the agricultural land has been mapped as Subgrade 3b. These soils are poorly drained and have a moderate wetness limitation. The soils are usually gleyed within 40cm of the surface and the clay subsoils are slowly permeable. The soils are Wetness Class IV. The presence of the slowly permeable structure in the subsoil was confirmed in a soil profile pit. The topsoil texture of the soils is heavy clay loam.

Other land

The eastern part of the site is a road and the buildings associated with the riding school have been mapped as urban.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1972) Solid and Drift edition. Sheet 234, Gloucester, 1:50,000 scale

MAFF (1972) Agricultural Land Classification Map sheet 143 Provisional 1:63,360 scale

METEOROLOGICAL OFFICE (1989) Published climatic data extracted from the agroclimatic dataset, compiled by the Meteorological Office

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 5 Soils of South West England 1:250,000 scale

APPENDIX 2

DESCRIPTION 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 include 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 and horticultural crops can usually be grown but on some land in the 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.

Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where 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 level of yields. It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields of which are variable. In most 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 very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Descriptions of other land categories used on ALC maps

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: private park land, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Agricultural buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg polythene tunnels erected for lambing) may be ignored.

Open water

Includes lakes, ponds and rivers as map scale permits.

Land not surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above land cover types, eg buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will usually be shown.

Source: MAFF (1988) Agricultural Land Classification of England and Wales (Revised guidelines and criteria for grading the quality of agricultural land) Alnwick.

APPENDIX 3

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years.

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for between 31 and 90 days in most years.

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not within 40cm depth for more than 210 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 40cm depth for 91-210 days in most years.

Wetness Class V

The soil profile is wet within 40cm depth for 211-335 days in most years.

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years.

Notes: The number of days specified is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.

Source: Hodgson, J M (in preparation) Soil Survey Field Handbook (revised edition).

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Summerhouse Farm Hardwicke	Pit 1	0°	Permanent Grass	Av Rainfall: 730 mm ATO: 1508 deg FC Days: 159 Climatic Grade: 1	Lower Jurassic Clay
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		TOPSOIL SAMPLE
26/94	24/3/94	ASP 4 SO 798115	GMS		RPT/GMS 375

Horizon Number	Lowest Av Depth (cm)	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots: Abundance, Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and form
1	10	10YR32	HCL	0% Visual	None	WMSAB	Good	-	Friable	Many fine		None	Abrupt smooth
2	42	10YR53	HCL	0% Visual	Common 10YR56	MCSAB	Good	Moderate	Friable	Many fine		None	Gradual smooth
3	65+	2.5Y62	C	0% Visual	Many 10YR56 2.5Y56	MCAB tending to MMPr	Poor	Poor	Firm	Common v. fine		None	

Profile Gleyed From: 10 cm

Depth to Slowly Permeable Horizon: 42 cm

Wetness Class: IV

Wetness Grade: 3b

Available Water	Wheat:	129 mm
	Potatoes:	106 mm
Moisture Deficit	Wheat:	107 mm
	Potatoes:	101 mm
Moisture Balance	Wheat:	22 mm
	Potatoes:	5 mm
Droughtiness Grade:		2 (to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks:

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