QFCS 4704 26/92

HARDWICKE, GLOUCESTERSHIRE

AGRICULTURAL LAND CLASSIFICATION, REPORT OF SURVEY

1. Introduction

In April 1992 a detailed Agricultural Land Classification (ALC) was carried out on land at Hardwicke, Gloucestershire in response to a request by Stroud District Council to MAFF regarding a planning application.

The fieldwork was carried out by the ADAS Statutory Resource Planning Team (Wessex Region) at a scale of 1:10,000. A total of 48 ha were surveyed.

The ALC system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on agricultural use. The grading takes into account the top 120 cm of the soil profile. The distribution of the ALC grades is detailed for the survey area and illustrated on the accompanying ALC map. The information is accurate at the scale of mapping but any enlargement would be misleading.

The survey shows that there is a significant amount of 'best and most versatile' land.

The table below provides the details of the ALC statistics by grade.

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
1	2.2	4	5
2	17.7	37	37
3a	14.8	31	31
3b	13.1	27	27
Non Agric	0.5	1	----
Urban	0.1	<1	100%
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Total	48.4	100%	

2. Climate

The climatic criteria are considered first when classifying land as they may be overriding in the sense that severe climatic limitations will restrict land to low grades irrespective of favourable soil or site conditions. A detailed estimate of the prevailing climate was made by interpolation from a Met Office 5 km dataset.

The parameters used in assessing the impact of overall climate are accumulated temperature (a measure of the relative warmth of a locality), and average annual rainfall (a measure of overall wetness). Two climatic interpolations were carried out and details of these are given below. These show that there is no overall climatic limitation affecting the site. The area is climatically Grade 1, and has a field capacity value of 158 days. No local climatic factors are limiting on the site.

Climatic Interpolations		
Grid Reference	SO 805118	SO 808116
Altitude (m)	23	25
Average Annual Rainfall (mm)	720	722
Accumulated Temperature (° days)	1501	1499
Field Capacity (days)	158	158
Moisture Deficit, Wheat (mm)	107	107
Moisture Deficit, Potatoes (mm)	100	100
Overall Climatic Grade	1	1

3. Agricultural Land Classification

Grade 1: These soils have Sandy Clay Loam topsoils overlying a deep, similar subsoil which may also have a Sandy Clay subsoil horizon. The soils show some evidence of wetness, although the depth at which it occurs does not cause a significant limitation. The soils are typically stone free; some stone may be present after a depth of 80 cm, and possess moderate structural conditions, which together do not produce a droughtiness limitation.

Grade 2: Pit 1 is typical of these soils (details attached) and describes a soil with a Sand Clay Loam topsoil overlying a deep Loamy Medium Sand subsoil. The soils show evidence of wetness but are placed in Wetness Class I as it is not a significant limitation. This is on the basis that the mineral soil has a subsoil which is predominantly coarse textured (ie contains less than 18% clay) within 80 cm depth and is coarse textured at and immediately below 80 cm depth. The main limitation is of droughtiness caused by the combination of sandy and stony subsoil horizons and the moisture deficit (a crop-related meteorological variable) of the soil.

The small area of Grade 2 in the west of the survey area typically has a Medium Clay Loam topsoil overlying a Sandy Clay Loam subsoil which grades into a Sandy Clay lower subsoil. These soils have been downgraded due to a significant wetness limitation caused by the presence of gleying in the upper and lower horizons. The lower horizon also exhibits a slowly permeable layer but the depth at which this occurs does not cause a significant limitation. The soils have consequently been placed in Wetness Class II (ie the soil profile is wet within 70 cm for more than 90 days, but not wet within 40 cm depth for more than 30 days in most years).

Sub-grade 3A: The soils within this sub-grade are variable and are best described as 3 separate units.

Firstly, the area to the north west of the site typically has soils with Medium Clay Loam topsoils overlying a Sandy Clay Loam subsoil. This subsoil grades into a Sandy Clay and then Clay with increasing depth. Wetness is the limiting factor within this unit. The soils have been placed in Wetness Class III (ie the soil profile is wet within 70 cm depth for 91-180 days in most years, but only wet within 40 cm depth for between 31 and 90 days in most years). This is on the basis that the soils are generally gleyed before a depth of 40 cm and a slowly permeable layer is present at a depth of approximately 60 cm.

Secondly, the area in the east of the site typically has Medium Clay Loam topsoils overlying a deep, Clay subsoil. Pit 2 is typical of this unit. Wetness is again the limiting factor and the soils have been placed in Wetness Class III.

Thirdly, the area in the south of the site typically has Heavy Clay Loam topsoils overlying a deep, Clay subsoil. The main limitation here is of wetness and the soils have been placed within Wetness Class II (ie 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 not wet within 40 cm depth for more than 30 days in most years).

Sub-grade 3B: The topsoils are variable within this sub-grade; either being a Heavy Clay Loam or Medium Clay Loam. They overlie a deep, Clay subsoil. The main limitation of the sub-grade is of soil wetness. The depth to gleying, typically 30 cm, and depth to a slowly permeable horizon, typically 40 cm, causes the soils to be categorised as Wetness Class IV (ie the soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years). These soils are downgraded due to the significant wetness and related workability limitations.

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 an 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 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 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: golf courses, private parkland, 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.

HARDWICKE Pit Number : 1P

Grid Reference : SO80621198
Average Annual Rainfall : 720 mm
Accumulated Temperature : 1501 degree days
Field Capacity Level : 158 days
Land Use : Ploughed
Slope and Aspect : degrees O

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 26	MCL	10YR33 00	0	0		
26- 64	SCL	10YR52 00	0	0	C	WKCSAB
64- 82	LMS	10YR53 00	0	0	C	WKCSAB
82-120	LMS	10YR53 00	0	18		

Wetness Grade : 1
Wetnesss Class : I
Gleying : 026 cm
SPL : No SPL

Drought Grade : 2
APW : 121 mm MBW : 14 mm
APP : 108 mm MBP : 8 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

HARDWICKE Pit Number : 2P

Grid Reference : SO80421172
Average Annual Rainfall : 720 mm
Accumulated Temperature : 1501 degree days
Field Capacity Level : 158 days
Land Use : Grassland
Slope and Aspect : degrees O

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 23	MCL	10YR44 00	0	0		
23- 52	C	25 Y52 00	0	0	F	WDCSAB
52- 80	C	25 Y40 00	0	2	C	MDCPR

Wetness Grade : 3A
Wetnesss Class : III
Gleying : 052 cm
SPL :052 cm

Drought Grade : 3A
APW : 108 mm MBW : 1 mm
APP : 116 mm MBP : 16 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Wetness