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GLOUCESTER LOCAL PLAN: WATERWELLS FARM

AGRICULTURAL LAND CLASSIFICATION

Report of survey

1. INTRODUCTION

Forty eight hectares of land around Waterwells Farm, Quedgeley were graded under the Agricultural Land Classification (ALC) System in September 1992. The survey was carried out for MAFF as part of its statutory input to the Gloucester Local Plan.

The fieldwork was carried out by ADAS's Resource Planning Team (Wessex Region) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at the scale shown but any enlargement would be misleading. This survey supercedes the previous survey of this area at 1" being at a more detailed level and carried out under the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988). A total of 49 borings and 2 soil pits were examined.

The ALC 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 account of the top 120cm of the soil profile. A description of the grades used in the ALC System can be found in the appendix.

The distribution of ALC grades identified in the survey area is detailed below and illustrated on the accompanying map.

Table 1 Distribution of ALC grades: Waterwells Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3A	24.8	51.6	53.7
3B	21.4	44.5	46.3
Urban	0.7	1.4	100% (46.2ha)
Non Agric	0.2	0.4	
Water	0.2	0.4	
Farm Buildings	0.8	1.7	
TOTAL	48.1	100%	

2. 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 lower grades despite other favourable conditions.

To assess any overall climatic limitation, estimates of important climatic variables were obtained for the site by interpolation from the 5km grid Met Office/Maff Database (Met Office/MAFF/SSLRC 1989). The parameters used for assessing climate are accumulated temperature, (a measure of the relative warmth of a locality) and average annual rainfall, (a measure of overall wetness). The results shown in Table 2 reveal that there is no overall climatic limitation across the survey area.

No local climatic factors such as exposure were noted in the survey area. Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat (MDW) and potatoes (MDP) are also shown. This data is used in assessing the soil wetness and droughtiness limitations referred to in Section 5.

Table 2 Climatic Interpolations: Waterwells Farm

Grid Reference	SO 807 122	SO 798 129
Height (m)	35	18
Accumulated Temperature (° days)	1487	1506
Average Annual Rainfall (mm)	718	712
Overall Climatic Grade	1	1
Field Capacity (Days)	157	157
Moisture Deficit, Wheat (mm)	106	108
Potatoes (mm)	99	101

3. RELIEF

The survey area is divided by a stream and is predominantly flat with some gentle slopes. The land rises from 18m alongside the stream to 35m in the southeastern corner of the site.

4. GEOLOGY AND SOILS

The survey area is underlain by two geological formations, Third Terrace Severn River gravels north of the stream and Upper Lias clay to the south, as shown on BGS sheet 234.

The soils vary across the site largely depending on the presence and content of sand. To the north and east of the site sandier soils predominate with sandy loams and loamy sands in the topsoil and light subsoils. These soils are free draining. The other soils are heavier and have clay subsoils which have restricted drainage.

5. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed in Section 1 and shown on the accompanying ALC map. The information is accurate at the scale shown but any enlargement would be misleading.

Subgrade 3a

The area which has been classified as Subgrade 3a has three types of soil within it. The first two types are found in the northern part of the site. These soils were described in detail by a soil pit. The topsoils in this area are slightly variable with either medium sandy loams or loamy medium sands.The topsoils become lighter with depth. In the soil pit the subsoils to 80cm were loamy medium sand with medium sand below. The soils are free draining and can be assigned to Wetness Class I .Loamy medium sands are not eligible for Grade 1 so in terms of workability would be Grade 2. The medium sandy loams are eligible for Grade 1. However with such light textures in the profile these soils do not hold adequate levels of soil water for a wide range of crops in the local climatic situation. The soil moisture balance calculated for these soils shows that they can be graded no better than 3a despite other favourable conditions.
The third type of soil is limited to 3a because of impaired drainage. These soils are found in the south east corner of the site. They have heavy clay loam topsoils and become heavier with depth. These soils fall mainly into Wetness Class II because they have evidence of wetness below 40cm caused by slowly permeable layers (SPL) at depth.

Subgrade 3b

The rest of the survey area has been downgraded because it experiences more severe drainage problems. These soils have either clay or heavy clay loam topsoils which become clays in the subsoils. Within this grade there are soils showing differing degrees of wetness and as a result fall into Wetness Classes III and IV. For both of these Wetness Classes soils with either heavy clay loam or clay topsoils for 157 FCD can be no better that Subgrade 3b. Most of the soils had gleying within the top 40cm and sometimes from the surface. SPLs were found from 35 to 75cm. The presence of SPLs was confirmed in a soil pit. Droughtiness is not a significant problem in this area.

APPENDIX

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: 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.