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WEST WILTSHIRE LOCAL PLAN

Agricultural Land Classification

Report of Survey

1. INTRODUCTION

West Wiltshire District Council requested detailed Agricultural Land Classification (ALC) surveys around three towns, Warminster, Melksham and Westbury, to provide information for the preparation of the West Wiltshire Local Plan.

The ALC* provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on its use for agriculture.

The survey work was conducted in April 1991 by members of the Resource Planning Group at a scale of 1:10,000 (ie approximately one soil observation per hectare).

Details of the distribution of grades and sub-grades are given below for each town separately and illustrated on individual ALC maps. The ALC information is accurate at the scale shown, but any enlargement would be misleading.

The survey results reveal significant amounts of high quality land on the north-western fringe of Warminster and the south-eastern edge of Melksham, with alternative sites of low quality nearby. The area of search at Westbury revealed a mixture of Sub-Grades 3A and 3B.

A general indication of the amount of high quality land in Wiltshire compared to the South West Region and the national situation is attached, in addition to a general description of the five main ALC grades.

2. WARMINSTER

An area of 64 ha was surveyed around the north-west of Warminster. A total of 55 borings and 3 soil pits were described. The distribution of grades is detailed in Table 1.

The area had been surveyed previously at 1:25,000 scale, but the level of fieldwork was considered inadequate for local plan purposes, and the site has been fully resurveyed at 1:10,000 scale. This recent survey now supercedes any previous ALC information.

* Revised Guidelines and Criteria for grading the quality of agricultural land; MAFF; 1989

Table 1: Distribution of Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
1	17.3	27.0	30.7
2	6.7	10.5	11.9
3a	9.4	14.7	16.8
	33.4 *		59.3
3b	10.5	16.3	18.6
4	12.4	19.4	22.0
Non agric	5.6	8.7	
Urban	1.8	2.8	100% (56.3 ha)
Farm Bldgs	0.4	0.6	
	64.1ha	100%	

*Grades 1, 2 and 3a are considered 'best and most versatile' in Wiltshire

Climate: Estimates of importance climatic variables were obtained for the site by interpolations from a 5km grid Met Office/MAFF database** in order to assess any overall climatic limitation. The indicative parameters for assessing such a limitation 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 limitations, such as exposure, were observed in the survey area.

Table 2: Climatic Interpolation

Grid Reference	ST 852450
Altitude (m)	130
Accumulated Temperature (days)	1407
Average Annual Rainfall (mm)	867
Field Capacity (Days)	193
Moisture Deficit, Wheat (mm)	90
Potatoes (mm)	79
Overall Climatic Grade	1

Grade 1

17 ha of land in the West of the survey area has been classified as Grade 1. These light soils are well drained, show no evidence of wetness and do not suffer from a droughtiness limitation. The profiles exhibit medium sandy silt loam topsoils with medium sandy loam subsoils which contain good structural conditions with common biopores as proved by a soil pit.

There is a corresponding area of Grade 1 in the east of the site.

** Climatological Data for Agricultural Land Classification Met Office/MAFF/SSLRC 1989

Grade 2

The Grade 2 soils are similar to those found in the area of Grade 1 but are slightly heavier and hence are restricted by topsoil workability to Grade 2. The topsoils are medium clay loams over heavy clay loams. There is no evidence of wetness and the soils can be placed in Wetness Class I.

Sub-Grade 3A

There are two areas of sub-grade 3A. The smaller area near to Bugley Barton Farm is in a depression. This small low lying area of land, with intermittent surface ponding is characterised by a medium silty clay loam or medium sandy silt loam topsoil with a gleyed horizon within 40cm and a slowly permeable layer (SPL) from approximately 55cm. The soils are therefore placed in Wetness Class III and, with the prevailing 193 FCD value, the soil is limited to Sub-Grade 3A.

The larger area of 3A does not have such a wetness limitation. A soil pit dug in this unit confirmed the absence of an SPL; the soil is porous even at depth. The topsoils in this area are medium clay loams with heavy clay loam and clay subsoils. The subsoil horizons exhibit gleying within 40cm. The soils are placed into wetness Class II (Table 13 Revised Guidelines) and therefore limited to Sub-Grade 3A on workability.

Sub-Grade 3B

The area of Sub-Grade 3B has a more severe wetness problem than the Sub-Grade 3A soils. The topsoils in this area are medium clay loams and medium silty clay loams; the subsoils are gleyed with slowly permeable layers beginning above 52cm. The soils are therefore placed into Wetness Class IV and Sub-Grade 3B.

Grade 4

The area of Grade 4 accounting for 19% of the survey area experiences a severe wetness limitation. The soils have been placed into Wetness Class IV (defined as the soil profile wet within 70cm for more than 6 months but not within 40cm for more than 7 months in a typical year) because there is evidence of wetness in the form of gleying less than 40cm depth and an SPL starting above 52cm (Figure 7 Revised Guidelines). The textures of the top 25cm are generally heavy clay loams often with a thin horizon of medium silty clay loam in the top 10cm. The upper horizons were sometimes organic. The lower subsoils are silty clays. The heavy texture of the top 25cm, the wetness class and the prevailing 193 Field Capacity Day value place the soils into Grade IV on the basis of soil wetness and poor workability.

3. **WESTBURY**

An area of 32 ha was surveyed between the northern edge of Westbury and the railway. A total of 32 borings and 2 soil pits was described. The distribution of grades is detailed in Table 3.

The site had been surveyed previously at 1:10,000 scale using MAFF's Original ALC system, and this indicated the presence of some high quality land. It was felt to be important to confirm these grades and, as a result, the whole site was resurveyed (at a similar scale) using MAFF's Revised ALC system and locating soil pits in the main map units to examine the main limitations in detail. Results from the 1991 survey now supercede any previous ALC information.

Table 3: Distribution of Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	13.5 *	42.7	43.8
3b	16.1	50.9	52.3
4	1.2	3.8	3.9
Urban	0.8	2.6	
	31.6 ha	100%	100% (30.8 ha)

* Grade 3a is considered 'best and most versatile'

Climate: A climatic interpolation as previously described was carried out for Westbury. The results (shown in Table 4) reveal that there is no overall climatic limitation across the survey area, no local climatic limitations such as exposure were observed.

Table 4: Climatic Interpolation

Grid Reference	ST 878520
Altitude (m)	60
Accumulated Temperature (days)	1483
Average Annual Rainfall (mm)	783
Field Capacity (days)	175
Moisture Deficit, Wheat (mm)	104
Potatoes (mm)	96
Overall Climatic Grade	1

Sub-Grade 3A

One unit of 3A land has been mapped, surrounded by poorer quality soils. Typical profiles exhibit heavy clay loam topsoils overlying a gleyed clay subsoil. Gleying is caused by a groundwater problem, not by the presence of any slowly permeable horizons. The clay subsoils are calcareous with between 20-40% chalk stones. The final grade has been assigned on the basis that the groundwater problem cannot be removed easily - the drainage outlet for this floodplain area currently has an inadequate freeboard, and the groundwater hydrology is probably complex due to the presence of nearby chalk downs. The soils are therefore placed in Wetness Class II at best (ie wet within 40cm for <30 days in most years) and are limited to Sub-Grade 3A. Any additional local dipwell information that proved a greater degree of waterlogging would down grade the soils to 3B.

Sub-Grade 3B

The two areas of 3B have a more severe wetness problem than the sub-grade 3A. A heavy clay loam topsoil overlies a gleyed, stone free clay subsoil, with a slowly permeable layer from 38cm. This places the soil into wetness Class IV resulting in a 3B grade with workability as the main limitation.

Grade 4

There is one small area of grade 4 on the north western edge of the site. These soils have an organic clay topsoil with a silty clay subsoil from 20cm. The subsoil is slowly permeable and the soils are placed in Wetness Class IV. The organic clay topsoil limits these soils to grade IV.

4. MELKSHAM

An area of 112 ha was surveyed along the eastern edge of Melksham. A total of 61 borings and 5 soil pits was examined. The distribution of grades found is detailed in Table 5.

The northern section of the current survey area had been surveyed earlier at 1:20,000 scale, indicating a large area of poor quality land. This grading was confirmed by locating two soil pits in the 3B map unit, with adjacent auger borings. The rest of the current survey area was surveyed in detail at 1:10,000 scale, and the distribution of land quality has been mapped at 1:10,000 scale for the whole site.

Table 5: Distribution of Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	8.6	7.7	8.3
3a	27.6	24.7	26.6
	36.2 *	32.4	34.9
3b	67.6	60.5	65.1
Non agric	1.3	1.2	
Urban	5.5	4.9	100% (103.8 ha)
Farm Bldgs	1.1	1.0	
	111.7 ha	100%	

*Grades 2 and 3a are considered 'best and most versatile'

Climate

The results of the climatic interpolation for Melksham are shown in Table 6. They reveal that there is no overall climatic limitation across the survey area and no local climatic limitations were observed.

Table 6: Climatic Interpolation

Grid Reference	ST 920640
Altitude (m)	40
Accumulated Temperature (^{o} days)	1500
Average Annual Rainfall (mm)	735
Field Capacity (days)	165
Moisture Deficit, Wheat (mm)	107
Potatoes (mm)	99
Overall Climatic Grade	1

Grade 2

There is a small area of Grade 2 land in the south of the survey area. This area is similar to the larger area of Sub-Grade 3A but with lighter topsoils so the workability is less limiting. The profiles typically have medium clay loam topsoils with gleyed clay subsoils. The gleying is present within 40cm but the subsoils do not exhibit the characteristics of a slowly permeable layer. These profiles have been assigned to wetness Class II and Grade 2 at the prevailing field capacity day value of 165.

Sub-Grade 3A

Most of the south of the survey area has been placed in this grade. These profiles exhibit heavy clay loam topsoils overlying clay subsoils. The subsoils are gleyed below 40cm, and often gleyed above this depth, and are therefore generally placed in Wetness Class II and are limited to Grade 3A on the basis of soil wetness and restricted workability. The absence of any slowly permeable horizons in the subsoil was confirmed by a pit description.

Sub-Grade 3B

The majority of the survey area (68 ha) has been classed as Sub-Grade 3B. The soils in this unit experience a wetness limitation to a greater extent than the rest of the survey area. Here heavy clay loam topsoils lie above gleyed clay subsoils with slowly permeable layers beginning before 45cm. The subsoils have moderately developed coarse angular blocky structural units with low porosity. The soils are therefore assigned to wetness Class IV and Sub-Grade 3B. The southern edge of the map unit also contains some areas of 3B slope.

DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level and consistency of yield. In practice, the grades are defined by reference to physical characteristics and the *grading guidance and cut-offs for limitation factors* in Section 3 enable land to be ranked in accordance with these general descriptions. The most productive and flexible land falls into Grades 1 and 2 and Subgrade 3a and collectively comprises about one-third of the agricultural land in England and Wales. About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4. Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates. The remainder is very poor quality land in Grade 5, which mostly occurs in the uplands.

Descriptions are also given of other land categories which may be used on ALC maps.

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 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 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.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

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.