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Tone Vale Hospital and Burge Farm, Somerset

AGRICULTURAL LAND CLASSIFICATION REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

October 1993

ADAS

AGRICULTURAL LAND CLASSIFICATION

LAND AT TONE VALE HOSPITAL AND BURGE FARM, SOMERSET.

REPORT OF SURVEY

1. The site, an area of 47.2 ha of land around Tone Vale Hospital was graded using the Agricultural Land Classification (ALC) system in October 1993. The survey was carried out on behalf of MAFF as part of its statutory role in consultation with Taunton Deane Borough Council regarding the Tone Vale Draft Development Guide.

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. A total of 24 auger borings and a soil profile pit were examined. Over half the site comprises hospital buildings and associated non agricultural land. Grade 3a land was found within the hospital grounds and at Burge farm, the rest of the agricultural land was Subgrade 3b.

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

Distribution of ALC grades: Tone Vale Hospital and Burge Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	13.2	28.0	58.7
3b	9.3	19.7	41.7
Non Agric	11.1	23.5	
Urban	12.8	27.1	
Farm building	0.8	1.7	
TOTAL	47.2	100%	100% (22.5 ha)

The site occupies a gently sloping area of grassland around the hospital buildings. Soils over the area comprise medium clay loam and occasionally heavy clay loam topsoils over clay subsoils which are moderately and poorly drained imposing a wetness limitation. There is a total of 13.2 ha of best and most versatile land.

2. INTRODUCTION

An area of 47.2 hectares of land around Tone Vale Hospital and Burge Farm was surveyed on behalf of MAFF, as part of its statutory role in the consultation with Taunton Deane Borough Council regarding the Tone Vale Draft Development Guide. The survey was carried out in October 1993 by ADAS (Resource Planning Team, Taunton Statutory Unit) using the Agricultural Land Classification (ALC) system and conducted at a scale of 1:10,000 (approximately one sample point for every hectare of agricultural land). The 24 borings were supplemented by a soil inspection pit used to assess subsoil conditions. The information is correct at the scale shown but any enlargement would be misleading.

The published Provisional 1" to the mile ALC map of this area (MAFF 1971) shows all the land to be Grade 3. The current survey supersedes any previous surveys and was undertaken to provide a more detailed representation of the agricultural land quality using the Revised Guidelines and Criteria (MAFF 1988). These guidelines provide 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 120 cm 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 lower grades despite other favourable conditions.

Climatic data for the site was interpolated from the published Agricultural Climate Dataset (Meteorological Office 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 1 indicate that there is no overall climatic limitation.

Table 1 Climatic interpolations: Tone Vale Hospital and Burge Farm

Grid Reference	ST163 272	ST168 276	ST171 276
Height (m)	37	39	57
Accumulated Temperature (day deg)	1537	1534	1514
Average Annual Rainfall (mm)	807	806	815
Overall Climatic Grade	1	1	1
Field Capacity (Days)	174	174	175
Moisture Deficit, Wheat (mm)	103	103	100
Potatoes (mm)	95	95	92

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 6.
No local climatic factors such as exposure were noted in the survey area. A description of the Wetness Classes used can be found in Appendix 3.

4. RELIEF AND LAND COVER

The site occupies a gentle south west facing slope, the highest point being 56 m AOD in the northern corner of the site, the lowest point being 35 m AOD along the southern edge of the site. At the time of survey all the agricultural land was grass leys.

5. GEOLOGY AND SOILS

The published 1:50,000 scale solid and drift geology map, sheet 285 (Geological Survey of England and Wales 1975) shows most of the hospital site to be Upper (Keuper) Marl with the valley and land above 45 m AOD shown as valley gravel and head. All of the land at Burge Farm is mapped as valley gravel and head.

The Soil Survey of England and Wales mapped the soils of the area in 1983, at a reconnaissance scale of 1:250,000. This map shows soils over most of the site to comprise the Wimple 3 Association. These soils are described as reddish fine loamy or fine silty over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. A narrow strip of land adjacent to the river is mapped as Brockhurst 1 Association. These soils are described as slowly permeable seasonally waterlogged reddish fine loamy over clayey soils.

The recent survey indicates similar soils over the entire site although the depth to gleying and slowly permeable layers varies. Soils comprise reddish medium clay loam topsoils over heavy clay loam and clay subsoils.

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: Tone Vale Hospital and Burge Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	13.2	28.0	58.7
3b	9.3	19.7	41.7
Non Agric	11.1	23.5	
Urban	12.8	27.1	
Farm building	0.8	1.7	
TOTAL	47.2	100%	100% (22.5 ha)

Over half the agricultural land in the survey area was found to be best and most versatile land (Subgrade 3a).

Subgrade 3a

Land of this grade relates to the slightly better drained reddish soils. Profiles comprise medium clay loam topsoils over subsoils which are gleyed and slowly permeable from approximately 60 cms. These soils have been assessed as Wetness Class III thus limiting the land to 3a with a wetness limitation.

Subgrade 3b

The 3b land in the southern part of the site and between Burge Farm and the hospital relates to the slightly poorer drained soils where gleying occurs within 40 cms and a slowly permeable layer starts at around 40 cms depth. These soils are assessed as Wetness Class IV and graded 3b with a wetness limitation.

Urban and Non Agricultural Land

The hospital buildings, roads and small areas of garden are shown on the accompanying map as urban land as is the sewage works on the western edge of the site. The non agricultural land includes small areas of woodland, recreational grounds and parkland.

Farm Buildings

The farm buildings associated with Burge Farm are included in this category.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1975) Solid and Drift edition. Sheets 285, 1:50,000 scale

MAFF (1971) Agricultural Land Classification Map Sheet 164 Provisional 1:63,360 scale

MAFF (1988) Agricultural Land Classification of England and Wales (revised guidelines and criteria for grading the quality of land) Alnwick

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 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 70 cm depth for more than 30 days in most years.

Wetness Class 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 not wet within 40 cm depth for more than 30 days in most years.

Wetness Class 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 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 and 90 days in most years.

Wetness Class IV

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 or, if there is no slowly permeable layer within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.

Wetness Class V

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

Wetness Class VI

The soil profile is wet within 40 cm 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
Tone Vale Hosp. Taunton	1	2° N	Ley	Av Rainfall: 807 ATO: 1537 FC Days: 174 Climatic Grade: 1	Upper (Keuper) Marl
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		
54/93	27 Oct 93	ASP12	G Clark & N A Done		

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	30	75YR44	MCL	2% >2cm, 1% <2cm, HR visual est 3% total	None	-	>0.5%	-	-	Common fine/v fine	None	None	Clear/ smooth
2	60	25YR34	C	0	75YR54 common not gleyed	Moderately developed CSAB	>0.5%	MOD	Firm	Common Fine + very fine	None	Yes	Clear/ smooth
3	85+	25YR44	C	0	5Y51 many gleyed	Weakly developed Adherent CSAB	<0.5%	Poor	Firm	Few fine + v fine	None	Yes	-

Profile Gleyed From: 60

Depth to Slowly Permeable Horizon: 60

Wetness Class: III

Wetness Grade: 3A

Available Water Wheat: 134

Potatoes: 113

Moisture Deficit Wheat: 103

Potatoes: 95

Moisture Balance Wheat: 31

Potatoes: 18

Droughtiness Grade: 1

Final ALC Grade: 3a

Main Limiting Factor(s): Wetness

Remarks:

Pit dug to 85. Occasional large root channel/pore in H3.