8FCS 6189

21/94

NORTH DEVON DISTRICT LOCAL PLAN: BARNSTAPLE

AGRICULTURAL LAND CLASSIFICATION

Report of Survey

1. SUMMARY

Thirty one hectares of land at two sites around Barnstaple were surveyed using the Agricultural Land Classification (ALC) System in February 1994. The survey was carried out for MAFF as part of its statutory input into the North Devon District Local Plan. The two sites surveyed were Glen Wood Farm and Whiddon. A further five sites were surveyed in January 1994 (Old Torrington Lane, Larkbear, Waytown, Silver leat and Northfield Lane) and the results of these surveys are in a separate report.

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 areas is detailed below and illustrated on the accompanying ALC maps.

Distribution of ALC grades: Barnstaple (both sites)

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	24.1	77.3	82.8
3b	5.0	16.1	17.2
Urban	1.2	3.8	100%
Non-Agric	0.7	2.2	(29.1ha)
Agric Bdgs	0.2	0.6	
TOTAL	31.2	100%	

Distribution of ALC grades: Glen Wood Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3b	3.7	81.1	100.0
Urban	0.3	6.6	100%
Non-Agric	0.3	6.9	
Agric Bdgs	0.2	5.4	
TOTAL	4.5	100%	

All of this site has poorly drained soils and is mapped as Subgrade 3b.

Distribution of ALC grades: Whiddon

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	24.1	90.3	95
3b	1.3	4.9	5
Urban	0.9	3.3	100%
Non-Agric	0.4	1.5	(25.4ha)
TOTAL	26.7	100%	

The majority of this site has well drained soils with heavy clay loam topsoils and is mapped as Subgrade 3a. There is also a small area of more poorly drained soils which has been mapped as Subgrade 3b.

2. INTRODUCTION

Thirty one hectares of land at two sites around Barnstaple were surveyed using the Agricultural Land Classification (ALC) System in February 1994. The survey was carried out for MAFF as part of its statutory input into the North Devon District Local Plan. The two sites surveyed were Glen Wood Farm and Whiddon. A further five sites were surveyed in January 1994 (Old Torrington Lane, Larkbear, Waytown, Silver leat and Northfield Lane) and the results of these surveys are in a separate report.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at this scale but any enlargement would be misleading. A total of 30 auger sample points and two soil profile pits were examined.

The published provisional one inch to the mile ALC map of this area (MAFF 1972) shows the sites to be Grades 2, 3 and 4. The site at Glen Wood Farm is shown as all Grade 4 with a strip of non-agricultural land along the western edge of the site. The site at Whiddon is shown as being predominantly Grade 2 with an area of Grade 3 land running along Mount Sandford Road to the south of Whiddon itself.

Both sites have been surveyed in the past but under the original Guidelines for grading land. The information obtained during these surveys was inadequate to make an accurate assessment of the land quality using the Revised Guidelines. The recent survey supersedes all the previous maps and surveys having been carried out at a more detailed level and using the Revised Guidelines and Criteria for grading the quality of Agricultural Land (MAFF1988).

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 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 interpolated for each site 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.

Table 1 Climatic Interpolations: Barnstaple

Grid Reference	SS 581 315	SS 577 321
Altitude (m)	75	20
Accumulated Temperature (day deg)	1505	1567
Average Annual Rainfall (mm)	1015	943
Overall Climatic Grade	1	1
Field Capacity Days	210	199
Moisture Deficit, Wheat (mm)	87	99
Moisture Deficit, Potatoes (mm)	76	91

Grid Reference	SS 533 314
Altitude (m)	37
Accumulated Temperature (day deg)	1549
Average Annual Rainfall (mm)	926
Overall Climatic Grade	1
Field Capacity Days	194
Moisture Deficit, Wheat (mm)	96
Moisture Deficit, Potatoes (mm)	87

No local Climatic limitations were noted in the survey areas.

4. RELIEF AND LANDCOVER

GLEN WOOD FARM: The site is virtually flat and at a height of 35m AOD. At the time of survey all the fields were being used for grazing.

WHIDDON: The site is gently sloping to the north. The height of the site ranges from 20 to 75m AOD. All of the site was being used for grazing at the time of the survey.

5. GEOLOGY AND SOILS

The geology of the sites is shown on the published 1:50,000 scale solid and drift geology map, sheet 293 (Geological Survey of England and Wales 1982). This map shows the Glen Wood Farm site to be underlain by Boulder Clay and the Whiddon site to be underlain by Pilton Shale.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. The Glen Wood Farm site was mapped as being the Denbigh 1 Association. These soils are described as slowly permeable, seasonally waterlogged clayey, fine loamy and fine silty soils. The Whiddon site was mapped as the Neath Association. These soils are described as well drained fine loamy soils often over rock. There are some fine loamy soils with slowly permeable subsoils and slight seasonal waterloggging.

The recent survey found soils similar to the mapped soil associations at each site.

6. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed in Tables 2-4 and shown on the accompanying ALC maps. The information is correct at the scale shown but any enlargement would be misleading.

Table 2 Distribution of ALC grades: Barnstaple (both sites)

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	24.1	77.3	82.8
3b	5.0	16.1	17.2
Urban	1.2	3.8	100%
Non-Agric	0.7	2.2	(29.1ha)
Agric Bdgs	0.2	0.6	
TOTAL	31.2	100%	

Table 3 Distribution of ALC grades: Glen Wood Farm

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3b	3.7	81.1	100.0
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TOTAL	4.5	100%	

Table 4 Distribution of ALC grades: Whiddon

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	24.1	90.3	95
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Urban	0.9	3.3	100%
Non-Agric	0.4	1.5	(25.4ha)
TOTAL	26.7	100%	

GLEN WOOD FARM

Subgrade 3b

The whole of this site has been mapped as Subgrade 3b. These soils have a wetness limitation. The soils in this area are poorly drained with slowly permeable layers in the subsoils starting from a depth of 52cm to 80cm. The soils are gleyed both above and within the slowly permeable layers. These soils are Wetness Class III and they have a heavy clay loam topsoil texture. A soil pit was dug on the site to confirm the presence of the slowly permeable horizons.

Other land

The small area of woodland has been mapped as non agricultural land. The buildings associated with the farm are mapped as agricultural buildings, while the buildings and land associated with the engineering works are mapped as urban.

WHIDDON

Subgrade 3a

The soils in this mapping unit are well drained heavy clay loams overlying shales. Although the stone content increases down the profiles there is no droughtiness limitation. The soils are Wetness Class I. The combination of topsoil texture, Wetness Class and the number of days that the site is at field capacity makes the site Subgrade 3a on the basis of a workability limitation. A soil profile pit was dug to assess the subsoil structural condition and the stone content of the soil.

Subgrade 3b

A small area has been downgraded by a wetness limitation. The soils are more poorly drained and are Wetness Class III. The topsoil texture in this area is also heavy clay loam. This area is associated with springs.

Other land

Residential areas have been mapped as urban and their gardens as non agricultural. There is a small area of scrub mapped also as non agricultural.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1982) Solid and Drift edition. Sheet 293, Barnstaple, 1:50,000 scale

MAFF (1974) Agricultural Land Classification Map sheet 163 Provisional 1:63,360 scale

MAFF (1988) Agricultural Land Classification of England and Wales (Revised guidelines and criteria for grading the quality of agricultural 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

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
Glen Wood Farm	Pit 1	0°	Perm Grass	Av Rainfall: 926 mm ATO: 1549° FC Days: 194 Climatic Grade: 1	Boulder Clay
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		TOPSOIL SAMPLE
20/94	17/2/94	ASP 3 SS 533 314	GMS/HLJ		RPT/HLJ 14

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	22	10YR53	HCL	<1% HR visual	cdom	-	-	-	-	Common fine + v fine	none	none	Abrupt wavy
2	44	2.5Y62	HCL	<1% HR visual	mdom	MCSAB	Good	Moderate	Friable	Common fine + v fine	none	none	Gradual smooth
3	64	2.5Y52	HCL	<1% HR visual	mdom	MCSAB	Good	Moderate	Friable	Common v fine	none	none	Gradual irregular
4	80+	2.5Y62 10YR58	C	2% HR visual	mdogm	Wadherant CSAB	Low	Poor	Firm	Few v. fine	none	none	

Profile Gleyed From: 0 cm

Depth to Slowly Permeable Horizon: 64 cm

Wetness Class: III

Wetness Grade: 3b

Available Water Wheat: 137 mm

Potatoes: 114 mm

Moisture Deficit Wheat: 96 mm

Potatoes: 87 mm

Moisture Balance Wheat: 41 mm

Potatoes: 27 mm

Droughtiness Grade: 1 (to 120 cm)

Final ALC Grade: 3B

Main Limiting Factor(s): Wetness

Remarks:

Topsoil texture confirmed by PSD