

8 FC 5076

22/93

GREAT HAYE FARM, LAMERTON,
TAVISTOCK, DEVON

**AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY**

Resource Planning Team
Taunton Statutory Unit

May 1993

ADAS 

AGRICULTURAL LAND CLASSIFICATION

GREAT HAYE FARM, LAMERTON, TAVISTOCK, DEVON

REPORT OF SURVEY

1. INTRODUCTION

- 1.1 The site, an area of 47 ha of land, is located to the north of Lamerton. The survey work was completed on behalf of MAFF as part of its statutory role in response to an ad hoc planning application to West Devon Borough Council. The survey work was carried out in May 1993 by ADAS's Resource Planning Team (Taunton Statutory Unit) using the Agricultural Land Classification (ALC) system. An initial reconnaissance survey was followed by a detailed survey where field work was carried out at a scale of 1:10,000 (approximately one sample point every hectare of agricultural land). These borings were supplemented by 2 soil inspection pits in order to assess subsoil conditions. The information is correct at the scale shown but any enlargement would be misleading.
- 1.2 The published Provisional 1" to the mile ALC map of this area (MAFF 1973) shows much of the site to be Grade 3, with a narrow band of Grade 4 along the south-eastern edge of the site. The current survey 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.
- 1.3 The proportion of ALC grades are shown in the table below and are illustrated on the accompanying map. A description of the grades used in the ALC system can be found in the Appendix.

Table 1 Distribution of ALC grades:
Great Haye Farm, Lamerton

GRADE	AREA (ha)	% OF SURVEY AREA	% OF AGRICULTURAL LAND
3a	33.9	66.3	82.7
3b	5.3	10.4	12.9
4	1.8	3.6	4.4
Urban	1.2	2.4	
Non-agricultural	8.6	16.8	
Agric buildings	0.3	0.5	
TOTAL	51.1	100% (51.1 ha)	100% (41.0 ha)

2.0 CLIMATE

- 2.1 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.
- 2.2 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 relative warmth of a locality) and average annual rainfall (a measure of overall wetness). The results shown in Table 2 indicate that there are two climatic boundaries across the site. Land above 235 m AOD can be graded no better than 3b, whilst land between 170 m and 235 m AOD can be graded no better than 3a, and land below 170 m AOD can be graded no higher than Grade 2.

**Table 2 Climatic interpolations:
Great Haye Farm, Lamerton**

Grid Reference	SX 447778	SX 447784	SX 450790
Height (m)	140	190	235
Accumulated Temperature (° days)	1458	1400	1348
Average Annual Rainfall (mm)	1211	1248	1297
Overall Climatic Grade	2	3a	3b
Field Capacity (days)	243	248	256
Moisture Deficit - Wheat (mm)	72	62	53
Potatoes (mm)	56	44	31

- 2.3 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.

3. RELIEF

- 3.1 The site occupies a south facing valley side which rises from 140 m AOD at the most southerly point to 262 m AOD at the most northern point. In several areas over the site, slopes are moderately steep imposing 3b and 4 slope limitations.

4. GEOLOGY AND SOILS

- 4.1 The published 1:50,000 scale solid and drift geology map sheet 337 (Geological Survey of England and Wales, 1977) shows the majority of the site to be underlain by Carboniferous chert. The north part of the site is shown as Carboniferous shale, limestone and grit. A narrow strip of alluvium occupies the valley floor on the southern margins of the site.

- 4.2 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 the soils to comprise the Denbigh 1 Association*. During the recent field survey a single soil type was identified.
- 4.3 Soils across the whole of the site comprise very slightly stony medium clay loam and medium silty clay loam topsoils over silty clay loam and silty clay subsoils. These horizons have variable stone contents, but typically contain 30-40% rock (mostly sandstones, some shale).

5. AGRICULTURAL LAND CLASSIFICATION

- 5.1 The distribution of ALC grades identified in the survey area is detailed in section 1 and shown on the accompanying ALC map. This shows nearly two-thirds of the site to be best and most versatile land.

5.2 Subgrade 3a

Nearly all the agricultural land has been graded 3a and relates to the soils described in paragraph 4.3. Profiles are free-draining with no evidence of wetness found within 70 cm. These soils have been assessed as wetness class I. However, due to the topsoil texture and the very high number of days when these soils are at field capacity (243-256), a moderate workability limitation exists, thus limiting the soils to subgrade 3a. Most of the land in this subgrade is very gently sloping, however there are localised moderately steep slopes which have not been down-graded where there is sufficient vehicular turning space above and below the slope.

5.3 Subgrade 3b

A narrow strip of land along the eastern boundary of the site and a small area in the centre around a spring have been assessed as wetness class III and IV and thus subgrade 3b with a wetness limitation. These soils have mottling and gley colours in the subsoil indicative of a slowly permeable layer and waterlogged conditions. There are 3 small areas in the southern part of the site where land between 7 and 11° slope has been allocated to Subgrade 3b. This land has an increased risk of soil erosion and is unsuitable for the safe operation of the machinery used in some soil cultivations and crop harvests.

5.4 Grade 4

The steep slopes (11-18°) found on the site are limited to Grade 4 for reasons described in paragraph 5.3.

* Denbigh 1 Association: well-drained fine loamy and fine silty soils over rock. Some similar soils with slowly permeable subsoils and slight seasonal waterlogging. Shallow soils and some bare rock locally.

5.5 Urban and Farm Buildings

There is a total of 1.5 ha of land comprising Great Haye Farm buildings and holiday accommodation and the concrete access road.

5.6 Non-agricultural Land

This land comprises mainly mature woodland and some rough land dominated by scrub.

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1977) Solid and Drift edition. Sheet 337 1:50,000 scale

MAFF (1973) Agricultural Land Classification Map Sheet 190 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

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 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: 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.

SITE NAME Great Haye Farm, Lamerton		PROFILE NO. Pit 1		SLOPE AND ASPECT 0		LAND USE Ley		Av Rainfall: 1248 mm ATO: 1400° FC Days: 248 days Climatic Grade: 3a			PARENT MATERIAL Chert		
JOB NO. 22/93		DATE 18 May 1993		GRID REFERENCE As Auger 33 SX 4480 7830		DESCRIBED BY G Clark/N 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	40	10YR44	MCL	3% Hard rock (visual estimate)	-	-	-	-	-	Many fine + very fine	0	0	Clear/ smooth
2	90+	10YR56	MSZL	43% silty rock (wet + dry sieving) (23% <2cm) (20% >2cm)	-	Weakly developed coarse, sub-angular blocky (also, structure determined by stone content)	>0.5%	Good	Friable	Common fine + very fine	0	0	-

Profile Gleyed From: -
Depth to Slowly Permeable Horizon: -
Wetness Class: I
Wetness Grade: 3A

Available Water Wheat: 122 mm
Potatoes: 113 mm
Moisture Deficit Wheat: 44 mm
Potatoes: 62 mm
Moisture Balance Wheat: 78 mm
Potatoes: 51 mm
Droughtiness Grade: 1 (assumed horizon 2 down to 120 cm)

Final ALC Grade: 3A
Main Limiting Factor(s): Workability

Remarks:
Dark weathering colours around stones

SITE NAME		PROFILE NO.		SLOPE AND ASPECT		LAND USE		Av Rainfall: 1211 mm			PARENT MATERIAL		
Great Haye Farm, Lamerton		Pit 2		5° South-east		Ley		ATO: 1458°			Chert		
JOB NO.		DATE		GRID REFERENCE		DESCRIBED BY		FC Days: 243 days					
22/93		18 May 1993		As auger 45 SX 4470 7790		G Clark/N Done		Climatic Grade: 2					
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	35	10YR43	MZCL	3% Angular hard rocks (visual est)	-	-	-	-	-	Many, fine and v fine	0	-	Clear/ smooth
2	65	10YR46/54	MSZL	21% >2mm, <2cm 10% >2cm (Wet and dry sieving respectively) => 31% Total (80% hard rock, 20% silty rock, visual est)	-	Weakly developed, coarse, sub-angular, blocky, some angular faces around stones	Porous	Good	Friable	Many, fine and v fine	0	-	Gradual/ clear
3	80+	10YR56	HCL	26% Total hard rocks	-	Weakly developed, very coarse, platy	Porous	Poor	Friable	Few, fine and v fine	0	-	-
Pit dug to 80 cm													

Profile Gleyed From: -
Depth to Slowly Permeable Horizon: -
Wetness Class: I
Wetness Grade: 3a

Available Water Wheat: 106 mm
Potatoes: 109 mm
Moisture Deficit Wheat: 44 mm
Potatoes: 62 mm
Moisture Balance Wheat: 62 mm
Potatoes: 47 mm
Droughtiness Grade: 1 (Calculated down to 120 cm)

Final ALC Grade: 3a
Main Limiting Factor(s): Workability

Remarks: