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Vennbridge Farm, Starcross, Devon

AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

December 1993

ADAS

VENNBRIDGE FARM, STARCROSS, DEVON.

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REPORT OF SURVEY

SUMMURY

1. The site, an area of 60 ha of land around Vennbridge Farm was graded using the Agricultural Land Classification (ALC) system in December 1993. The survey was carried out on behalf of MAFF as part of its statutory role in response to an application to the Teignbridge District Council regarding a proposed Pay and Play Golf Centre.

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 59 auger borings and 3 soil profile pits were examined.

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

Distribution of ALC grades: Vennbridge Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
1	24.4	42.1	42.6
2	13.1	22.6	22.9
3a	12.9	22.3	22.6
3b	6.4	11.1	11.2
4	0.4	0.7	0.7
urban & non agric	0.7	1.2	
TOTAL	57.9	100%	100% (57.2 ha)

The site occupies a south facing valley side however only a small area of the site is graded 3b and 4 due to steep slopes .The rest of the site is best and most versatile land with the main limiting factor on these well drained sandy soils being droughtiness, which is experienced in varying degrees of limitation across the site.

2. INTRODUCTION

An area of 60 ha of land around Vennbridge Farm was surveyed on behalf of MAFF, as part of its statutory role in the consultation with the Teignbridge District Council regarding the proposed Pay and Play Golf Centre. The survey was carried out in December 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 59 borings were supplemented by 3 soil inspection pits which were 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 1972) shows the majority of the land to be Grade 1, with a spur of Grade 2 land to the north of Vennbridge Farm itself and some Grade 3 land on the steeper slopes on either side of Church Brake. 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: Vennbridge Farm

Grid Reference	SX961 815	SX957 820	SX953 824
Height (m)	15	32	42
Accumulated Temperature (day deg)	1587	1567	1555
Average Annual Rainfall (mm)	884	891	891
Overall Climatic Grade	1	1	1
Field Capacity (Days)	182	183	183
Moisture Deficit, Wheat (mm)	107	105	104
Potatoes (mm)	101	98	97

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 facing slope and valley floor, the highest point being 64 m AOD in the northern corner of the site, the lowest point being 12 m AOD along the southern edge of the site. At the time of survey most of the agricultural land was cultivated or under arable stubble with one field of brassicas . The steeper sloping land was under set aside. Slopes of between 7° and 11° were graded 3b and a small area of land of 13° was graded 4.

5. GEOLOGY AND SOILS

The published 1:50,000 scale solid and drift geology map, sheet 339 (Geological Survey of England and Wales 1976) shows most of the site to be underlain by Dawlish Sandstone with a small area on the east of the site being Exe Braccia. A narrow strip of alluvium is shown in the valley floor.

The Soil Survey of England and Wales mapped the soils of the area in 1972, at a scale of 1:63,360 and then at a reconnaissance scale of 1:250,000, in 1983. These maps shows soils to comprise the Bridgenorth Association. These soils are described as well drained sandy and coarse loamy soils over soft sand stone with occasional deeper soils. There is a risk of water and wind erosion. The larger scale map shows the valley floor area to comprise Cutton Series which is described as coarse loamy riverine alluvium soils.

The recent survey found deep medium sandy loams over much of the site. Soils in the west and north are coarser in texture, predominantly deep loamy medium sands occasionally over medium sand.

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: Vennbridge Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
1	24.4	42.1	42.6
2	13.1	22.6	22.9
3a	12.9	22.3	22.6
3b	6.4	11.1	11.2
4	0.4	0.7	0.7
urban & non agric	0.7	1.2	—
TOTAL	57.9	100%	100% (57.2 ha)

All but the steeper sloping land was found to be best and most versatile

Grade 1

A total of 24.4 ha of land was found to be Grade 1. This relates to well drained (Wetness Class I) deep medium sandy loam soils, with only a small stone content (0 - 20% hard rock as measured by sieving and water displacement). These soils have no long term limitations to agricultural use, being easily worked and moisture retentive. A soil inspection pit was dug to confirm the grade.

Grade 2

The low lying area of Grade 2 land comprises deep medium sandy loam profiles (occasionally organic topsoil textures). However these profiles show evidence of wetness due to regular wet conditions at certain times of the year. The soils have been assessed as Wetness Class II because there is no natural outfall for water draining into this area.

The Grade 2 land on the slopes has a slight drought limitation. These are similar to the Grade 1 soils, however loamy medium sand and sandy horizons were found below a depth of 60cm. This reduces the water available for plant growth imposing a Grade 2 limitation.

Subgrade 3a

There are two blocks of land which have been graded 3a. These soils are well drained (Wetness Class I) deep loamy medium sands. The coarse textures of these profiles impose a moderate drought restriction. There are small areas of land south of Church Brake wood where medium sandy loam subsoils contain high stone contents (between 40 - 50% hardrock, as measured by sieving and water displacement). These soils also experience a moderate drought restriction and have thus been graded 3a. A soil inspection pit was dug to confirm the grade.

Subgrade 3b

The two areas on either side of Church Brake wood which are comprised of moderately steep slopes of between 9° and 11°. It is graded 3b due to the limiting affect such slopes have on the use of some types of agricultural machinery.

Grade 4

There is a small area of land near the centre of the site which comprises of relatively steep slopes of between 12° and 18°. It is graded 4 due to the limiting affect such slopes have on the use of agricultural machinery

Urban and Non Agricultural Land

Vennbridge Farm was marked as urban and the two farm tracks are shown as non-agricultural.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1976) Solid and Drift edition. Sheets 339, Newton Abbot, 1:50,000 scale

MAFF (1972) Agricultural Land Classification Map Sheet 176 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 (1972) Sheets 325 & 329 Exeter and Newton Abbot 1:63,360 scale

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 (e.g. 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 (e.g. 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, e.g. 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
Vennbridge Farm, Starcross	2P	4° W	Fodder crop	Av Rainfall: 891 ATO: 1567 FC Days: 182 Climatic Grade: 1	Dawlish Sandstone
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		
113.93	9.12.93	ASP 13-14	NAD and PB		

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	05YR33	MSL	16% >2 mm 1% >2 cm 17% Hard rock sieve	-	-	Good	-	-	Common F, VF and M	No	No	Abrupt smooth
2	50	25YR36	MSL	36% >2 mm 5% >2 cm 41% Hard rock sieve	-	WCSAB	Good	Good	V friable	Few F, VR	No	No	Gradual smooth
3	120	5YR54	MSL	44% >2 mm 6% >2 cm 50% Hard rock sieve	-	WCSAB - too stony to assess	Good	Good	V friable	Few	No	No	-

Profile Gleyed From: -

Depth to Slowly Permeable Horizon: -

Wetness Class: I

Wetness Grade: 1

Available Water Wheat: 113

Potatoes: 109

Moisture Deficit Wheat: 105

Potatoes: 98

Moisture Balance Wheat: +8

Potatoes: -11

Droughtiness Grade: 3a

Final ALC Grade: 3a

Main Limiting Factor(s): Droughtiness

Remarks:

VP336

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Vennbridge Farm, Starcross	Pit 1	0°	Stubble	Av Rainfall: 891 ATO: 1567 FC Days: 182 Climatic Grade: 1	Dawlish Sandstone
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		
113/93	9/12/93	ASP40	H Lloyd-Jones and 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	35	75YR21	MSL/ LMS	None	None	-	-	-	-	Common fine and very fine	None	None	Clear/wavy
2	70	75YR44	LMS	None	None	WDCSAB	>0.5%	M	V friable	Few fine	None	None	Smooth/ abrupt
3	85	75YR56	LMS	1% HR	None	WDMSAB	>0.5%	M	V friable	Few fine	None	None	Smooth/ abrupt
4	120+	25YR46	MSL	5% HR	None	WDVCP	>0.5%	M	Friable	Few fine	None	None	

Profile Gleyed From: -

Depth to Slowly Permeable Horizon: -

Wetness Class: I

Wetness Grade: 1

Available Water Wheat: 110

Potatoes: 71

Moisture Deficit Wheat: 105

Potatoes: 98

Moisture Balance Wheat: +5

Potatoes: -27

Droughtiness Grade: 3a

Final ALC Grade: 3a

Main Limiting Factor(s): Drought

Remarks:

Few areas of hard sand in H3.
Pit dug to 110 cm.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Vennbridge Farm, Starcross	Pit 3	3° NE	Plough	Av Rainfall: 891 ATO: 1567 FC Days: 182 Climatic Grade: 1	Dawlish Sandstone
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		
113/93	9/12/93	ASP 35	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	40 cm	10 YR43	MSL	None	None	-	-	-	-	Few fine and v fine	None	None	Gradual/ wavy
2	70	75YR54	MSL	None	None	WDCSAB	Many pores >0.5mm worms + roots	G	V friable	Few v fine	None	None	Gradual/ smooth
3	120	05YR56	MSL	None	None	WDCSAB	Many >0.5mm	G	V friable	Few v fine	None	None	

Profile Gleyed From: -

Depth to Slowly Permeable Horizon: -

Wetness Class: I

Wetness Grade: 1

Available Water Wheat: 176

Potatoes: 119

Moisture Deficit Wheat: 105

Potatoes: 98

Moisture Balance Wheat: 71

Potatoes: 21

Droughtiness Grade: 1

Final ALC Grade: 1

Main Limiting Factor(s): -

Remarks: