

TREVITHICK MANOR FARM, NEWQUAY

AGRICULTURAL LAND CLASSIFICATION

Report of Survey

1. INTRODUCTION

Fifty two hectares of land around Trevithick Manor Farm, Newquay were graded under the Agricultural Land Classification (ALC) System in May 1992. The survey was carried out for MAFF as part of its statutory role in response to an ad hoc planning application made to North Cornwall District Council.

The fieldwork was carried out by ADAS's Resource Planning Team (Wessex Region) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at the scale shown but any enlargement would be misleading. This survey supercedes the previous survey of this area at 1:14,300 (1986) being at a more detailed level and carried out under the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1989). A total of 49 borings and 3 soil pits were examined.

The ALC provides 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 the appendix.

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

Table 1 Distribution of ALC grades: Trevithick Manor Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3A	47.9	93.0	100%
Urban	1.8	3.5	
Non Agric	1.4	2.7	
Farm Buildings	<u>0.4</u>	<u>0.8</u>	
TOTAL	51.8	100%	

It can be seen that the whole of the planning application area is of 'best and most versatile' quality.

2. 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.

To assess any overall climatic limitation, estimates of important climatic variables were obtained for the site by interpolation from the 5km grid Met Office/Maff Database (Met Office/MAFF/SSLRC 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 2 reveal that there is no climatic limitation across the survey area.

Across the whole survey area there was evidence of exposure. The exposure risk was assessed by an ADAS Horticultural Advisor and the results of his assessment are included in this report. 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.

Table 2 Climatic Interpolations: Trevithick Manor Farm

Grid Reference	SW 829 600	SW 821 597
Height (m)	60	5
Accumulated Temperature (days)	1571	1634
Average Annual Rainfall (mm)	996	952
Overall Climatic Grade	1	1
Field Capacity (Days)	198	191
Moisture Deficit, Wheat (mm)	95	105
Potatoes (mm)	86	98

3. RELIEF

The survey area slopes to the south west. The maximum height in the east is 60m dropping to 5m. The slope is slightly undulating but not limiting to agricultural use.

4. GEOLOGY AND SOILS

The majority of the survey area is underlain by calcareous slates of the Meadfoot Beds as shown on the BGS sheet no 346. The land by the River Gannel has alluvial deposits.

The soils across the survey area are variable with some areas showing evidence of wetness and others with higher stone contents. The topsoils have relatively high organic matter contents (lab values of 4-9%) which make the soils feel lighter than they are. Particle size analysis shows that the topsoils are heavy clay loams.

5. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed in Section 1 and shown on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

Subgrade 3a

The whole of the survey area has been classified as Subgrade 3a. Risk from exposure is the main limitation across the whole area although this limitation is matched in places by a wetness limitation and in others by a workability limitation. Horticultural advice suggests that only the less demanding horticultural crops and arable crops with grass could be grown in the area. There is evidence of wind pruning across the site although significantly less at the bottom of the slope and on the upper slopes. If poly tunnels were to be used then these would need extra support. Two basic types of profile exist in the survey area. On the higher land the soil profiles show no evidence of wetness and so can be assigned to Wetness Class I. A soil profile pit dug in this area showed that the stone content of these profiles increases with depth. To 50cm the stone content does not exceed 2%, but below this contents of 23 % were measured using sieving and displacement. This imposes a slight soil moisture limitation but that of exposure exceeds this. The profiles become heavier with depth and have heavy clay loam topsoils. In terms of workability these profiles could not be graded higher than 3a. The other type of profile shows evidence of wetness. Gleying is present in these profiles often in the topsoil and always before 40cm. Soil profile pits dug in these areas show that there are not slowly permeable layers in the subsoils despite the significant gleying present. Some of these profiles also had stone contents similar to the well drained profiles described above. These wet profiles are placed in Wetness Class II. They also have a topsoil texture of heavy clay loam. The organic matter content increases in the soil nearer the river. Whether the soils fall into Wetness Class I or II with the prevailing FCD level and the HCL topsoils they are classified as Subgrade 3a.

SOIL PIT DESCRIPTION

Site Name : TREVITHICK MANOR FARM Pit Number : 1P

Grid Reference: SW82465950 Average Annual Rainfall : 996 mm
 Accumulated Temperature : 1571 degree days
 Field Capacity Level : 198 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 20	OHCL	10YR42 00	0	0	C	
20- 35	HZCL	10YR53 00	0	25	F	
35- 65	HZCL	10YR72 00	0	34	M	MDCSAB

Wetness Grade : 3A Wetness Class : II
 Gleying : 000 cm
 SPL : No SPL

Drought Grade : 3A APW : 085mm MBW : -10 mm
 APP : 092mm MBP : 6 mm

FINAL ALC GRADE : 3A
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : TREVITHICK MANOR FARM Pit Number : 2P
 Grid Reference: SW82335953 Average Annual Rainfall : 996 mm
 Accumulated Temperature : 1571 degree days
 Field Capacity Level : 198 days
 Land Use : Ley
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	HZCL	10YR53 00	0	0	C	
28- 41	HZCL	25 Y64 00	0	0	M	MCSAB
41- 65	ZC	25 Y64 00	0	25	M	MCSAB

Wetness Grade : 3A Wetnesss Class : II
 Gleying : 000 cm
 SPL : No SPL

Drought Grade : 3A APW : 095mm MBW : 0 mm
 APP : 103mm MBP : 17 mm

FINAL ALC GRADE : 3A
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : TREVITHICK MANOR FARM Pit Number : 3P
 Grid Reference: SW82636004 Average Annual Rainfall : 996 mm
 Accumulated Temperature : 1571 degree days
 Field Capacity Level : 198 days
 Land Use : Ley
 Slope and Aspect : 03 degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 27	HCL	10YR44 00	1	1		
27- 49	MCL	75YR46 00	0	2		WCSAB
49- 70	HZCL	75YR64 00	0	23		MCSAB

Wetness Grade : 2 Wetnesss Class : I
 Gleying : 000 cm
 SPL : No SPL

Drought Grade : 2 APW : 102mm MBW : 7 mm
 APP : 114mm MBP : 28 mm

FINAL ALC GRADE : 3A
 MAIN LIMITATION : Workability

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.