

TOLRAGGOTT FARM, ST ENDELLION

AGRICULTURAL LAND CLASSIFICATION

Report of survey

1. INTRODUCTION

Thirty six hectares of land around Tolraggott Farm, St Endellion were graded under the Agricultural Land Classification (ALC) System in April 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" 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 32 borings and 1 soil pit 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: Tolraggott Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3A	18.5	50.6	51.9
3B	7.8	21.4	21.8
4	9.4	25.8	26.3
Urban	0.4	1.1	100% (35.7ha)
Farm Buildings	0.4	1.1	
TOTAL	36.5	100%	

Just over 50% of the agricultural land surveyed was classified as best and most versatile amounting to 18.5 ha in area.

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 overall climatic limitation across the site. There is however an important FCD boundary at 75m. Here the FCD value is 200. This value is critical in grading land where there is evidence of minor wetness in the form of gleying. Below 200 FCDs these soils with gleying within 40cm can be assigned to wetness class II but above 200 FCD they can only reach wetness class III.

Evidence of exposure was noted over parts of the survey area but the risk imposed by this was not considered to be greater than the other limitations in the 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.

Table 2 Climatic Interpolations: Tolraggott Farm

Grid Reference	SW991775	SW995784	SW991782
Height (m)	25	120	75
Accumulated Temperature (days)	1600	1491	1542
Average Annual Rainfall (mm)	966	1077	1020
Overall Climatic Grade	1	1	1
Field Capacity (Days)	192	208	200
Moisture Deficit, Wheat (mm)	99	81	90
Potatoes (mm)	90	69	79

3. RELIEF

The survey area slopes towards the south from a height of 125m down to 15m. The slopes are steepest in the northern part of the survey area.

4. GEOLOGY AND SOILS

The survey area is underlain in the south by Tredorn Slates which are greyish green slates. The northern part has a small area of grey slates, but predominantly pillow lava (spilite).

The soils across the survey area are heavy clay loams with localised patches of clay. Particle size analysis confirmed these findings. The slate parent material in the area is evident in the subsoils with up to 41% stone found in a soil pit. The soils also become heavier with depth. The soils in the south of the survey area show evidence of poor drainage.

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

Half the survey area has been classified as subgrade 3a. The two blocks of this grade represent the same soil. The soils are heavy clay loams to depth sometimes becoming heavier. The soils are stoney. The percentage of stone varies with depth but is much greater in the subsoil. A soil pit was dug in this unit and the stone content was measured by sieving and displacement. In the pit the upper subsoil was found to have 41% slaty stone and from 45cm the stone content decreased to 23%. These soils show no evidence of wetness and can be assigned to wetness class I. With a heavy clay loam topsoil and the prevailing FCD level these soils can be graded no better than 3a. The stone content of the soil limits the available water for crops but the limitation does not exceed that imposed by the soil texture. This textural limitation is known as a workability limitation because it reflects the restrictions on accessing the land for cultivations or grazing without causing damage to the soil structure.

Subgrade 3b

A fifth of the survey area has been classified as subgrade 3b. In the north of the survey area there are limiting slopes. Here the type of crops grown can be limited by the types of machinery that can be safely used. The more southern areas of 3b have been so graded on the basis of heavier topsoils which are clays. In this case the workability limitation is greater than that on the heavy clay loams graded as 3a.

Grade 4

The remaining areas surveyed have greater limitations and can be graded no better than grade 4. In the north of the survey area some of the slopes exceed 11 degrees and so here there is a risk of soil erosion and the range of machinery which can be used is further restricted. The versatility of

soils have either clay or heavy clay loam topsoils which are gleyed from the surface. The subsoils are clays which are slowly permeable. With this degree of wetness the soils have to be assigned to wetness class IV. This combined with the FCD level means that the soils can be graded no better than grade 4.

TOLRAGGOTT FARM

Pit Number : 1P

Grid Reference : SW99257799 Average Annual Rainfall : 1020 mm
Accumulated Temperature : 1542 degree days
Field Capacity Level : 200 days
Land Use : Cereals
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	HCL	10YR54 00	2	2		
30- 45	HCL	10YR43 00	0	41		MCSAB
45- 75	HCL	10YR44 00	0	23		

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

Drought Grade : 2 APW : 102 mm MBW : 12 mm
APP : 108 mm MBP : 29 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.