

8FC56485

101/94

Lower Colbiggan, Lanivet, Bodmin  
AGRICULTURAL LAND CLASSIFICATION

Prepared for MAFF by  
N Done  
ADAS Statutory Unit  
Bristol

LOWER COLBIGGAN, LANIVET, BODMIN  
AGRICULTURAL LAND CLASSIFICATION

CONTENTS

	Page
SUMMARY	1
1. INTRODUCTION	2
2. CLIMATE	2
3. RELIEF AND LANDCOVER	2
4. GEOLOGY AND SOILS	2
5. AGRICULTURAL LAND CLASSIFICATION	3
APPENDIX 1      References	4
APPENDIX 2      Description of the grades and subgrades	5
APPENDIX 3      Definition of Soil Wetness Classes	7
MAP	

LOWER COLBIGGAN, LANIVET, BODMIN

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

The survey was carried out by ADAS on behalf of MAFF as part of its statutory role in response to an ad-hoc application to Restormel Borough Council for a 9 hole golf course, and was completed in November 1994 at a scale of 1:10,000. Data on climate, soils, geology and previous ALC Surveys was used and is presented in the report. The distribution of grades is detailed below and illustrated on the accompanying ALC map. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: Lower Colbiggan

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
3a	13.8	85.2	85.2	
4	<u>2.4</u>	<u>14.8</u>	<u>14.8</u>	
TOTAL	16.2	100.0	100.0	(16.2 ha)

Most of the site comprises well drained medium clay loam soils over shale at variable depths. This land is of good quality and graded 3a. A small area of low lying land experiences a severe wetness limitation and is Grade 4.

## 1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in November 1994 at Lower Colbiggan, Lanivet, Bodmin on behalf of MAFF as part of its statutory role in response to an ad-hoc application to Restermol Borough Council for a golf course. The fieldwork covering 16.2 ha of land was conducted by ADAS at a scale of 1:10,000 (approximately one boring per hectare of agricultural land). A total of 15 auger borings were examined and 1 soil profile pit used to assess subsoil conditions.

The published provisional one inch to the mile ALC map of this area (MAFF 1970) shows the grades of the site at a reconnaissance scale to be grade 3 with grade 5 on land to the east and north of the site.

The recent survey supersedes this map having been carried out at a more detailed level and using the Revised Guidelines and Criteria for grading the quality of agricultural land (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.

## 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 a lower grade despite other favourable conditions.

Estimates of climatic variables were interpolated from the published agricultural climate dataset (Meteorological Office 1989). The parameters used for assessing overall 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 there is an overall climatic limitation which restricts the land to Grade 2.

**Table 1: Climatic Interpolations: Lower Colbiggan**

Grid Reference	SX 010 635
Altitude (m)	113
Accumulated Temperature (day °)	1505
Average Annual Rainfall (mm)	1211
Overall Climatic Grade	2
Field Capacity Days	236
Moisture deficit (mm):	
Wheat	76
Potatoes	62

Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat and potatoes are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in later sections.

## 3. RELIEF AND LANDCOVER

The site occupies a gentle north and east facing slope and valley floor. All the land was used for grazing at the time of survey.

## 4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:50,000 scale drift geology map, sheet 347, Institute of Geological Sciences 1982.

The geology of the site comprises Meadfoot Beds which are calcareous slate, grit and thin limestone. There is a narrow band of alluvium along the river to the north east of the site.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:25,000. This shows that most of the higher ground consists of soils from the Manod Association which are described as being well drained fine loamy or fine silty soils over rock. They can be shallow in places and bare rock may occur locally. The lower part of the site consist of soils from the Crowdy 2 Association which are described as thick very acidic amorphous raw peat soils. They are permanently wet and eroded in places.

The soils found during the recent survey were similar to those of the Manod Association with medium clay loam topsoils over heavy clay loam subsoils which contain many (approximately 20-30%) small soft silty stones. The lower lying soil has heavier textures with clay subsoils at approximately 20 cm.

## 5. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades is shown in Table 2 and on the accompanying ALC map. The information could be misleading if shown at a larger scale.

**Table 2: Distribution of ALC grades: Lower Colbiggan**

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
3a	13.8	85.2	85.2	
4	2.4	14.8	14.8	
TOTAL	16.2	100.0	100.0	(16.2 ha)

### Subgrade 3a

Nearly all the land has been assessed as good quality agricultural land. The soils are well drained (Wetness Class 1, see Appendix 3), but experience a moderate workability limitation imposed by the very wet climatic conditions on soils with a medium clay loam topsoils.

### Grade 4

The land of this grade experience a severe wetness limitation induced by a slowly permeable layer starting within 40 cm. This limits the period in which the land can be worked to such a narrow window in the year that the soils are assessed at Wetness Class V.

Resource Planning Team  
Taunton Statutory Unit  
November 1994

**APPENDIX 1**

**REFERENCES**

INSTITUTE OF GEOLOGICAL SCIENCES (1982) *Drift Edition, Sheet 347, Bodmin 1:50,000*

MAFF (1970) *Agricultural Land Classification Map, Sheet 186, 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) *Climatological Data for Agricultural Land Classification.*

SOIL SURVEY OF ENGLAND AND WALES (1983) *Sheet 5, Soils of South West England, 1:250,000 scale.*

## APPENDIX 2

### DESCRIPTION OF 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 landcover types, eg 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	Av Rainfall: 1211 mm	PARENT MATERIAL	
Lower Colbiggan Bodmin		Pit 1	0°	Ley	ATO: 1505 day °C	Meadfoot Beds	
JOB NO.		DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 236	SOIL SAMPLE REFERENCES	
101/94		8/11/94	SX 0085 6345	N A Done	Climatic Grade: 2	NAD/155	
					Exposure Grade: 1		

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	30	MCL	10YR44	3% ZR	-	-	-	-	-		Many F+VF	-	Clear/ smooth
2	60	HCL	10YR44	5% ZR	-	-	MDC + MSAB	Friable	M	G	Common F+VF	-	Grad/ smooth
3	120	HCL	10YR53	20% ZR vis est	FFOM 10YR58	-	MDCSAB	Friable	M	G	Few F	-	

Profile Gleyed From: -  
Depth to Slowly Permeable Horizon: -  
Wetness Class: 1  
Wetness Grade: 3a

Available Water Wheat: 148 mm  
Potatoes: 114 mm  
Moisture Deficit Wheat: 76 mm  
Potatoes: 62 mm  
Moisture Balance Wheat: 72 mm  
Potatoes: 52 mm  
Droughtiness Grade: 1 (Calculated to 120 cm)

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

Remarks:  
Pit dug to 80 cm.

NL336j