

54/28

**Restormel Local Plan
Trewoon and Lanjeth, St Austell
Agricultural Land Classification**

*Prepared for MAFF by
H.C. Lloyd-Jones
ADAS Statutory Unit
Bristol*

**RESTORMEL LOCAL PLAN
TREWOON AND LANJETH, ST AUSTELL
AGRICULTURAL LAND CLASSIFICATION**

CONTENTS

	Page
SUMMARY	1
1. INTRODUCTION	2
2. CLIMATE	2
3. RELIEF AND LANDCOVER	2
4. GEOLOGY AND SOILS	3
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	

RESTORMEL LOCAL PLAN

TREWOON AND LANJETH, ST AUSTELL

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

The survey was carried out by ADAS on behalf of MAFF as part of its statutory role in the preparation of the Restormel Local Plan. The fieldwork covered sites at Lanjeth and Trewoon, St Austell and was completed in August 1995 at a scale of 1:10,000. Data on climate, soils, geology and from previous Agricultural Land Classification (ALC) Surveys was used and is presented in the report. The distribution of grades is shown on the accompanying ALC map and summarised below. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: Lanjeth and Trewoon, St Austell

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (24.5 ha)
3b	24.5	88.1	100
Urban	1.7	6.1	0
Non Agricultural	1.6	5.8	0
TOTAL	27.8	100	100

The whole site has been mapped as Subgrade 3b. There are two types of profile, those in the north have a moderate wetness problem while those in the south have a moderate workability problem.

1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in August 1995 at Lanjeth and Trewoon, St Austell on behalf of MAFF as part of its statutory role in the preparation of the Restormel Local Plan. The fieldwork covering 27.8 ha of land was conducted by ADAS at a scale of 1:10,000 with approximately one boring per hectare of agricultural land. A total of 20 auger borings were examined and two soil profile pits used to assess subsoil conditions.

The published provisional one inch to the mile ALC map of this area (MAFF 1961) shows the grades of the sites at a reconnaissance scale. This shows all of the sites as Grade 3.

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 and Subgrade 3a with the cut off at an altitude of 155m AOD.

Table 1: Climatic Interpolations: Lanjeth and Trewoon, St Austell

Grid Reference	SW 987 533	SW 980 525
Altitude (m)	170	112
Accumulated Temperature (day °)	1445	1512
Average Annual Rainfall (mm)	1290	1237
Overall Climatic Grade	3a	2
Field Capacity Days	250	242
Moisture deficit (mm):		
Wheat	69	78
Potatoes	52	64

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 survey area covered three sites around the villages of Lanjeth and Trewoon. The site at Carne Hill had areas with gradients less than 7° and areas of gradients between 7° and 11° with a southerly aspect. The maximum and minimum altitudes are 176m AOD and 128m AOD respectively. At the time of survey the site was under permanent pasture. The two sites at Burngallow had gradients of less than 7° with an altitude ranging from 140m AOD to 112m AOD. At the time of survey the land was under permanent pasture and arable cultivation.

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. This shows that the whole site is underlain by Meadfoot Beds (calcareous slate, grits and thin limestone) of the Lower Devonian Era.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. This shows that the whole site consists of soils from the Manod Association. These are described as being well drained fine loamy or fine silty soils over rock. They are shallow in places with bare rock locally and steep slopes are common.

The soils found during the recent survey fell into two types. In the northern block the profiles had medium sandy silt loam topsoils over heavy clay loam subsoils. Gleying was found to start above 40cm. The southern part of the site had well drained heavy clay loams which are similar to those of the Manod Association.

5. AGRICULTURAL LAND CLASSIFICATION

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

Table 2: Distribution of ALC grades: Lanjeth and Trewoon, St Austell

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (24.5 ha)
3b	24.5	88.1	100
Urban	1.7	6.1	0
Non Agricultural	1.6	5.8	0
TOTAL	27.8	100	100

Subgrade 3b

The whole survey area has been mapped as Subgrade 3b. The profiles in the north have medium sandy silt loam topsoils over heavy clay loam subsoils over shattered slate. They are gleyed above 40cm and were assessed as Wetness Class II (see Appendix 3) giving a moderate wetness limitation. In the southern part of the survey area the profiles are deep, well drained heavy clay loam topsoils and subsoils. These were assessed as Wetness Class I and have a moderate workability limitation. These soils are stony (15-20% slate in subsoil) but with the low moisture deficits are not droughtly.

Other Land

Areas of residential land, including gardens and industrial land are mapped as urban land around the electrical sub-station and the overflow conduit from the china clay works are mapped as non-agricultural land.

Resource Planning Team
Taunton Statutory Unit
September 1995

APPENDIX 1

REFERENCES

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

MAFF (1961) Agricultural Land Classification Map, Sheet 185, 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 Lanjeth & Trewoon		PROFILE NO. Pit 2	SLOPE AND ASPECT 2° south	LAND USE Cereal	Av Rainfall: 1237mm ATO: 1512 day °C	PARENT MATERIAL Meadfoot Beds (slate, grits and limestone)
JOB NO. 54/95		DATE 23/8/95	GRID REFERENCE SW 980 526	DESCRIBED BY HLJ/GMS	FC Days: 242 Climatic Grade: 2 Exposure Grade: -	SOIL SAMPLE REFERENCES RPT/GMS/510

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	HCL	10YR33	< 1% HR > 2cm (s) 12% HR < 2cm (S&D) 12% HR TOTAL	None	None	-	-	-	Good	CF + VF	-	Clear Smooth
2	48	HCL	10YR44	1% HR > 2cm (s) 16% HR < 2cm (S&D) 17% HR TOTAL	None	None	WMSAB	Friable	Good	Good	CVF	-	Clear Smooth
3	70+	HCL	10YR56	15% HR (VIS)	None	None	MM+CSAB	Friable	Moderate	Good	CVF	-	-

Profile Gleyed From: Not gleyed	Available Water	Wheat: 142 mm	Final ALC Grade: 3b
Depth to Slowly Permeable Horizon: No SPL		Potatoes: 110 mm	Main Limiting Factor(s): Workability
Wetness Class: I	Moisture Deficit	Wheat: 78 mm	Remarks: Topsoil clay content 28%
Wetness Grade: 3b		Potatoes: 64 mm	
	Moisture Balance	Wheat: 64 mm	
		Potatoes: 46 mm	
	Droughtiness Grade:	1 (Calculated to 120 cm)	

SITE NAME Lanjeth & Trewoon		PROFILE NO. Pit 1 (ASP 11)	SLOPE AND ASPECT 4° south	LAND USE Permanent grass	Av Rainfall: 1237 mm ATO: 1512 day °C FC Days: 242 Climatic Grade: 2 Exposure Grade: -	PARENT MATERIAL Meadfoot Beds (slate, grits and limestone)
JOB NO. 54/95		DATE 23/8/95	GRID REFERENCE SW 985 530	DESCRIBED BY HLJ		SOIL SAMPLE REFERENCES RPT/HLJ/177

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	34	MSZL	10YR33	1% HR > 2cm (s) 13% HR > 2cm (S&D) 14% HR TOTAL	None	None	-	-	-	Good	MVF	-	Gradual Wavy
2	50	HCL	10YR42	1% H > 2cm (s) 20% HR < 2cm (S&D) 21% HR TOTAL	MDMO (7.5YR56,68)	Few	MFSAB	Friable	Good	Good	MVF	-	Clear Smooth
3	70+	C	10YR64	40% HR TOTAL (VIS)	CDFO (7.5YR56 10YR66)	None	WMSAB	Friable	Good	Good	FVF	-	-

Profile Gleyed From: 34 cm
Depth to Slowly Permeable Horizon: No SPL
Wetness Class: II
Wetness Grade: 3b

Available Water Wheat: 147 mm
Potatoes: 109 mm
Moisture Deficit Wheat: 78 mm
Potatoes: 64 mm
Moisture Balance Wheat: 69 mm
Potatoes: 45 mm
Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3b
Main Limiting Factor(s): Wetness

Remarks:
H3 very compact leading to gleying but it has > 0.5% biopores within its peds.