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BODMIN PLANNING GUIDELINES, AGRICULTURAL LAND CLASSIFICATION

REPORT OF SURVEY

1. Introduction

In July 1991 a detailed Agricultural Land Classification (ALC) was carried out around much of the urban fringe of Bodmin in Cornwall. The fieldwork was requested as part of MAFF's statutory response to the release of Revised Planning Guidelines by North Cornwall District Council (NCDC). These guidelines in effect act as a Local Plan for the town.

The sites surveyed included all of NCDC's proposals that involve an extension of the urban area onto agricultural land, together with a selection of possible alternative sites for development. A fringe was therefore surveyed around the eastern, northern and north-western edges of the town in an attempt to discover if one particular side of the town would be preferable for development on the grounds of lower land quality.

The survey results are illustrated on the accompanying ALC map at a scale of 1:15,000 and the overall land quality statistics are given below in Table 1 (the breakdown of the grades for individual sites is given in the relevant tables in Section 3). The map shows the poorest quality land at two sites, in the extreme south-east on land south of Carminow Road and on the northern edge of Bodmin on land north of Roselands Road and the cemetery. Elsewhere, Sub-grade 3A is the predominant grade and this, in Cornwall, represents what MAFF describes as "best and most versatile land". Soil workability is the single most limiting factor affecting the grading of these soils.

Table 1: Distribution of Grades and Sub-grades (Total Area)

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
3A	88.3	67.7	73.0
3B	22.1	17.0	18.3
4	5.4	4.2	4.5
5	5.1	3.9	4.2
Non Agric	6.3	4.8	100% (120.9 ha)
Urban	2.9	2.2	
Agric Bldgs	0.3	0.2	
	130.4 ha	100%	

North Cornwall District Council Sites:

* BM2 (i), land north of Castle Canyke Road
* BM2 (ii), land west of Bodmin School
* BM2 (iv), Scarlett's Well Road to Watery Lane
* BM9, land east and south-east of Cooksland Industrial Estate
* BM10, land west of Launceston Road, Cooksland

Alternative Sites:

* Carminow Road, south
* Priory Road, north
* Roselands Road/Cemetery
* West of St Lawrence's Hospital

Fieldwork was conducted by members of the Resource Planning Group (South West Region) at an approximate soil observation density of one per hectare; a total of 91 borings and 3 soil pits were examined. The ALC information is accurate at the scale shown, but any enlargement above 1:10,000 would be misleading. A total of 130 hectares was surveyed of which 121 ha was in agricultural production. This 1991 ALC map now fully supercedes any previous survey information, particularly the 1979 survey at 1:25,000 scale.

The ALC provides a framework for classifying land according to the extent to which the physical or chemical characteristics impose long-term limitations on its use for agriculture. Attached is a description of the five main ALC grades. Classification has been made using MAFF's revised criteria and guidelines for grading agricultural land (operational since 1 January 1989).

2. Climate

The climatic criteria are considered first when classifying land. Climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

Local climate has been estimated for 13 representative locations by interpolation from a MAFF/Met Office 5 km grid dataset. Details of the interpolations are given by site in Section 3. Above approximately 150 m the land cannot be graded higher than Sub-grade 3A due to an overall climatic limitation. Land below 150 m may not be graded higher than Grade 2 for similar reasons.

All of the survey area lies above 225 field capacity days (FCD). FCD estimates the period during which rainfall exceeds evapotranspiration and, for sites > 225 FCD, a significant workability limitation exists for all soil types.

3. Agricultural Land Classification

3.1 BM2 (i), Land north of Castle Canyke Road

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
3A	31.1	88.9	91.5
3B	2.9	8.3	8.5
Non Agric	1.0	2.8	100% (34.0 ha)
	35.0 ha	100%	

Climatic Interpolations

Grid Reference	SX084658	SX084664
Altitude (m)	157	142
Average Annual Rainfall (mm)	1302	1273
Accumulated Temperature (° days)	1452	1469
Field Capacity (days)	250	246
Moisture Deficit, Wheat (mm)	66	70
Moisture Deficit, Potatoes (mm)	49	53
Overall Climatic Grade	3A	2

A total of 26 borings and 1 soil pit was examined in this site (see Pit 1 description attached). Similar soils have developed over the Slate and the Staddon Grit geology, and Sub-grade 3A is the characteristic grade. The pit description reveals a typical profile sequence of medium silty clay loam topsoils overlying a silty clay loam upper subsoil and a clay lower subsoil. The soils exhibit no evidence of wetness and have adequate moisture reserves for extraction by plant roots. Soil workability is the limiting factor. Given the local rainfall and temperature regime there is a significant restriction on the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock. Without careful management soil structural damage will result.

Two areas of Sub-grade 3B have been identified. The southern area delineates a slight hollow where the soils show evidence of wetness and suffer from a more severe workability limitation than the surrounding 3A soils. The northern unit identifies an area of locally steep gradients.

3.2 BM2 (ii) Land west of Bodmin School

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
3A	4.5	40.6	59.2
3B	3.1	27.9	40.3
Non Agric	2.8	25.2	100% (7.6 ha)
Urban	0.7	6.3	
	11.1 ha	100%	

Climatic Interpolation

Grid Reference	SX072658
Altitude (m)	87
Average Annual Rainfall (mm)	1198
Accumulated Temperature (° days)	1532
Field Capacity (days)	235
Moisture deficit, wheat (mm)	81
Moisture deficit, potatoes (mm)	68
Overall Climatic Grade	2

Seven borings were described on this site. A northern area of Sub-grade 3A has soils similar to those in 3.1 and Pit 1 with soil workability as the most limiting factor. A southern area of Sub-grade 3B identifies a wetter area associated with local springs. These soils have evidence of shallow wetness caused by periods of waterlogging which limits the flexibility of the land to 3B.

3.3 BM2 (iv), Scarlett's Well Road to Watery Lane

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
3A	9.5	68.3	72.0
3B	2.1	15.1	15.9
5	1.6	11.5	12.1
Urban	0.7	5.0	100% (13.2 ha)
Agric Bldgs	0.04	0.3	
	13.9 ha	100%	

Climatic Interpolation

Grid Reference	SX062677	SX058675
Altitude (m)	95	60
Average Annual Rainfall (mm)	1186	1138
Accumulated Temperature (° days)	1522	1562
Field Capacity (days)	232	225
Moisture Deficit, Wheat (mm)	81	88
Moisture Deficit, Potatoes (mm)	68	77
Overall Climatic Grade	2	1/2

A total of 9 borings and 1 soil pit was examined on this site. Pit 2 confirms these soils as having no evidence of wetness in the critical top 70 cm and shows that subsoil structural conditions and stone contents are adequate for preserving moisture for rooting crops. Grade 3A is the main ALC grade, with soil workability as the limiting factor.

3.4 BM9, Land east and south-east of Cooksland Industrial Estate

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
3A	2.2	24.7	31.0
3B	4.9	55.1	69.0
Non-Agric	1.8	20.2	100% (7.1 ha)
	8.9 ha	100%	

Climatic Interpolation

Grid Reference	SX085667	SX085665
Altitude (m)	160	153
Average Annual Rainfall (mm)	1296	1289
Accumulated Temperature (° days)	1448	1456
Field Capacity (days)	249	248
Moisture Deficit, Wheat (mm)	66	68
Moisture Deficit, Potatoes (mm)	49	50
Overall Climatic Grade	3A	3A

The southern block of BM9, part B, shows both Sub-grades 3A and 3B. The 3A land is similar to that described in 3.1 The 3B land identifies similar soil profiles but with a topsoil texture of heavy silty clay loam. These topsoils therefore experience a greater workability limitation than adjacent soils and are downgraded accordingly.

3.5 BM10, Land west of Launceston Road, Cooksland

This 8 hectare block has all been graded as Sub-grade 3A with similar soils to those described in 3.1 which have been downgraded due to a significant soil workability limitation.

Climatic Interpolation

Grid Reference	SX082673
Altitude (m)	165
Average Annual Rainfall (mm)	1294
Accumulated Temperature (° days)	1442
Field Capacity (days)	249
Moisture Deficit, Wheat (mm)	66
Moisture Deficit, Potatoes (mm)	48
Overall Climatic Grade	3A

3.6 Carminow Road, South

Grade	Area (ha)	% of Survey Area
3A	1.1	16.2
3B	5.7	83.8
	6.8 ha	100%

Climatic Interpolation

Grid Reference	SX086654
Altitude (m)	125
Average Annual Rainfall (mm)	1261
Accumulated Temperature (° days)	1489
Field Capacity (days)	245
Moisture Deficit, Wheat (mm)	72
Moisture Deficit, Potatoes (mm)	57
Overall Climatic Grade	2

Two minor areas of Sub-grade 3A have been identified on the typical soils of 3.1 with soil workability as the limiting factor. Sub-grade 3B is the predominant grade on this site and includes areas of locally limiting slopes and soils that exhibit evidence of shallow wetness. The latter may be due to local springs and causes the land to be downgraded due to a more significant workability limitation.

3.7 Priory Road, North

Grade	Area (ha)	% of Survey Area
3A	14.3	93.5
Urban	0.4	2.6
Non Agric	0.3	2.0
Agric Bldgs	0.3	2.0
	15.3 ha	100%

All of the agricultural land on this site has been classified as Sub-grade 3A with soils similar to 3.1 where soil workability is the limiting factor.

3.8 Roselands Road/Cemetery

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
3A	9.4	42.9	45.2
3B	2.5	11.4	12.0
4	5.4	24.7	26.0
5	3.5	16.0	16.8
Non-Agric	0.4	1.8	100% (20.8 ha)
Urban	0.7	3.2	
	21.9 ha	100%	

Climatic Interpolations

Grid Reference	SX074677	SX076676	SX078674	SX080674
Altitude (m)	115	137	157	162
Average Annual Rainfall (mm)	1212	1248	1281	1288
Accumulated Temperature (° days)	1499	1474	1451	1446
Field Capacity (days)	237	242	247	248
Moisture Deficit, Wheat (mm)	77	72	68	67
Moisture Deficit, Potatoes (mm)	62	56	50	49
Overall Climatic Grade	2	2	3A	3A

This section includes land north of Bodmin Cemetery, land north and south of Roselands Road and land south of Old Callywith Road. The southern fringe of this section occupies the crest top locations which have been graded as Sub-grade 3A with similar soils to those described in 3.1 where soil workability is the most limiting factor. The rest of the site occupies steep valley sides where gradients reach Grades 4 and 5. Minor area in the stream floodplain show evidence of wetness and possess variable microrelief and have been limited to Sub-grade 3B as a result.

3.9 West of St Lawrence's Hospital

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
3A	8.5	86.7	90.4
3B	0.9	9.2	9.6
Urban	0.4	4.1	100% (9.4 ha)
	9.8 ha	100%	

Climatic Interpolations

Grid Reference	SX052672	SX053664
Altitude (m)	75	60
Average Annual Rainfall (mm)	1170	1171
Accumulated Temperature (° days)	1546	1563
Field Capacity (days)	230	230
Moisture Deficit, Wheat (mm)	84	86
Moisture Deficit, Potatoes (mm)	72	74
Overall Climatic Grade	2	2

Five borings and one soil pit were described in this area (see Pit 3 for details). The pit confirms that these soils developed on Staddon Grit are graded as Sub-grade 3A with soil workability as the most limiting factor. Medium silty clay loam topsoils overlie upper subsoils of similar texture and well-drained, well structured lower subsoils of heavy silty clay loam texture with approximately 20% slaty rock.

A minor area of Sub-grade 3B has also been mapped where gradients are locally limiting.