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PENWITH DISTRICT LOCAL PLAN ST IVES AND LELANT

AGRICULTURAL LAND CLASSIFICATION

REPORT OF SURVEY

1 INTRODUCTION

One hundred and eighteen hectares of land around St Ives and Carbis Bay, and sixty-one hectares around Lelant were graded under the Agricultural Land Classification (ALC) System in December 1991. The Survey was carried out as part of MAFF's statutory role in response to the revision of the Penwith District Local Plan.

The fieldwork was carried out by the Resource Planning Group (South West 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 86 borings and 3 soil pits were examined around St Ives, and 52 borings and 2 soil pits around Lelant.

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 120 cm of the soil profile. A description of the grades used in the ALC System can be found in the appendix.

The two survey areas are treated separately. The distribution of the ALC grades identified in the survey area is detailed below and illustrated on the accompanying ALC map.

Table 1 Distribution of ALC grades St Ives and Carbis Bay

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Survey Area</u>	<u>% of Agricultural Land</u>
2	6.6	5.6	6.5
3a	85.9	72.2	84.9
3b	8.7	7.3	8.6
Urban	8.6	7.2	----
Non Agric	8.2	6.9	100% (101.2 ha)
Farm Bdgs	0.9	0.8	
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TOTAL	61.6	100%	

Table 2 Distribution of ALC grades Lelant

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Survey Area</u>	<u>% of Agricultural Land</u>
2	20 4	33 1	36 0
3a	36 3	58 9	64 0
Urban	2 7	4 4	----
Non Agric	1 6	2 6	100% (56 7 ha)
Farm Bdgs	0 6	1 0	
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TOTAL	61 6	100%	

Almost all the area surveyed has been classified as best and most versatile land. The majority is Grade 3A although towards and around Lelant where it is more sheltered the land has been classified as Grade 2.

2 ST IVES AND CARBIS BAY

2 1 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 5 km 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 3 reveal that there is a climatic limitation above 125 m where the area can be classified no better than Grade 2.

The majority of the survey area experiences a risk from exposure being open to the sea to the north east and bushes show evidence of wind pruning from south westerly winds. This risk of exposure in the form of persistent strong or cold winds often salt-laden can be damaging to crops or cause stress to livestock. 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 Sections 2 4 and 3 4.

Table 3 Climatic Interpolations St Ives and Carbis Bay

Grid Reference	SW 536381	SW 515389	SW 521381
Height (m)	65	151	125
Accumulated Temperature (° days)	1582	1484	1514
Average Annual Rainfall (mm)	1065	1117	1107
Overall Climatic Grade	1	2	1/2
Field Capacity (Days)	207	217	215
Moisture Deficit, Wheat (mm)	91	79	82
Potatoes (mm)	81	66	70

2 2 Relief

The survey area undulates rising from 65 m in the south west at Carbis Bay to 150 m at Hendra. The slopes generally face north east.

2 3 Geology and Soils

The survey area is underlain by granite, slates, and volcanic rocks as shown on BGS Sheet 351.

The soils in the survey area do not reflect the variability of the geology in terms of textures. Medium clay loams exist to depth, although occasionally they are underlain by heavy clay loams. The soils are free draining. Where the soils overlie granite there is up to 20% small hard stones present.

2 4 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 accurate at the scale shown but any enlargement would be misleading.

Grade 2

There are two small areas of Grade 2. Here the land is shielded from coastal winds. The main limitation affecting these soils is the workability, i.e. the acceptable timing of cultivations and grazing when damage to the soil structure will not occur. Structurally damaged soils will have a reduced drainage capacity. Typical profiles have medium clay loam topsoils overlying medium clay loam subsoils. The soils are free draining with variable stone contents depending on underlying geology. The soils are not droughty and can be assigned to Wetness Class I.

Subgrade 3A

The majority of the survey area has been classified as Subgrade 3A. Although the soils in these areas are similar to those described under Grade 2, the land is more exposed to winds and the versatility of the land is therefore reduced. Bushes and trees in these areas exhibit wind pruning. The winds could cause damage to the more sensitive horticultural crops, winter vegetables and top fruits.

Subgrade 3B

The area of Subgrade 3B near Gonwin Farm is limited by gradients which restrict the safe use of some machinery and thus reduces the potential range of crops that can be grown.

The areas of 3B in the north of the survey area are more exposed than the 3A land and significantly more stoney with boulders evident on the ground surface. These factors have been taken into account in downgrading the land to Subgrade 3B.

3 LELANT

3 1 Climate

Climatic interpolations as described in Section 2 1 were carried out for Lelant. The results are shown in Table 4. The results reveal that there is no climatic limitation across the survey area. Over half of the area experiences local climatic limitations in the form of exposure. The risk of exposure as described in Section 2 1 restricts the versatility of the land.

Table 4 Climatic Interpolations, Lelant

Grid Reference	SW 541362	SW 548359
Height (m)	30	5
Accumulated Temperature (° days)	1623	1651
Average Annual Rainfall (mm)	1040	1012
Overall Climatic Grade	1	1
Field Capacity (days)	203	198
Moisture Deficit, Wheat (mm)	99	104
Potatoes (mm)	92	98

3 2 Relief

The survey area rises gently inland from sea level to 30 m. The slopes generally face east except at Brush End where they face south west.

3 3 Geology and Soils

The survey area is underlain by Slates and Gramscatho beds as shown on BGS Sheet 351. The soils in the north of the survey area are sandier at depth (medium clay loams over medium sandy loams) than to the south of Tyringham Road where the soils are medium clay loams to depth.

3 4 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 accurate at the scale shown but any enlargement would be misleading.

Grade 2

The areas of Grade 2 have been so graded on the basis of a workability limitation. The soils have no drainage problem and can be assigned to Wetness Class I. With medium clay loam topsoils and the FCD value for the area, the soils can be graded no higher than Grade 2. This workability limitation is the result of restrictions on the timing of cultivations and grazing without causing damage to the soil structure. Such damage could impede free drainage of the soil.

Subgrade 3A

The remainder of the survey area has been classified as Subgrade 3A. These areas are subject to a risk of exposure. Wind pruning is evident on bushes and trees. As these relatively hardy plants are affected then agricultural crops will be affected and the risks involved in growing the more sensitive crops will be increased because of a risk of damaging winds particularly at critical times in the growing season.