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## PENWITH DISTRICT PLAN: ST JUST IN PENWITH

## AGRICULTURAL LAND CLASSIFICATION

## Report of Survey

## 1. INTRODUCTION

Nearly fifty hectares of land around St Just in Penwith, Cornwall 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 the preparation of the Penwith District Plan.

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 22 borings and 2 soil pits 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: St Just

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3A	38.8	78.1	97.0
3B	1.2	2.4	<u>3.0</u>
Urban	2.3	4.6	100%(40.0ha)
Non Agric	<u>7.4</u>	<u>14.9</u>	
TOTAL	49.7	100%	

## 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 a climatic limitation across part of the survey area. Above 131m the land can be graded no better than Grade 2. Below this the land could qualify for Grade 1 if other factors were favourable.

Across the whole survey area the risk of exposure was noted. The exposure risk was assessed by an ADAS Horticultural Advisor and the results of his assessment are included in this report. 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: St Just

Grid Reference	SW372309	SW363316	SW371307
Height (m)	155	110	132
Accumulated Temperature ( days)	1486	1537	1512
Average Annual Rainfall (mm)	1126	1081	1112
Overall Climatic Grade	2	1	2
Field Capacity (Days)	218	211	216
Moisture Deficit, Wheat (mm)	79	87	82
Potatoes (mm)	67	76	71

## 3. RELIEF

The survey area is gently sloping in the west whilst in the north east the land slopes down into a valley. There is a small hill Carn Bosavern in the south east rising to 155m.

## 4. GEOLOGY AND SOILS

The whole of the survey area is underlain by Biotite Granite which is medium and coarse grained, as shown on BGS sheet 351.

The soils across the survey area are coarse sandy loams, often organic in composition in the topsoil. They are free draining. Some of the profiles become heavier at depth,

heavy clay loams. With the local climatic situation the soils are not droughty. The soils become stonier with depth. Stone percentages were found by sieving horizons in two soil pits. Volumes were established by displacement. Topsoils contents were found to be 14% and 9% which increased to 35% and 22 % at depth.

## 5. AGRICULTURAL LAND CLASSIFICATION

The distribution of the 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

The majority of the survey area has been classified as ade 3a. The soils are light textured often organic in the topsoil, Org. Coarse Sandy Loams. At depth sometimes, these become heavier Heavy Clay Loams. The soils are stoney but this does not impose a droughtiness limitation on the soils in this high rainfall area with relatively low moisture deficits. Stone content in soil profile pits were found to increase from 9-14% in the topsoil to 22-35% at depth. The stones were of hard rock. The soils are free draining and do not show any evidence of wetness. They can therefore be placed into Wetness Class I. These soils can therefore qualify for Grade 1 in terms of workability. Part of the survey area is limited by climate to Grade 2 but in terms of the local climatic factors the whole site has been down graded to Subgrade 3a. The main limitation here is risk from exposure. The western part of the survey area is open to the sea and southwesterly and westerly winds. The valley to the north esat allows north westerly winds to be funnelled down it. Boundaries generally lack vegetation and there are few trees to see evidence of windpruning. The few around the site do show evidence of this type. Local knowledge suggests that winds can be strong and have damaged polythene tunnels and paraweb fencing in the past. Horticultural advice suggests that the land around St Just can be graded no higher than Subgrade 3a in terms of the risk posed by exposure.

### Subgrade 3b

A small area of this grade has been identified in the noth west where slopes are locally limiting. The versatility of this land is reduced by the types of machinery that could be safely used and it is downgraded.

## 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.

CLIMATIC INTERPOLATIONS

## Penzance Survey Areas

Grid Reference	SW 470316	SW 479312	SW 489317	SW 458308	SW 456282
Altitude (m)	58	18	15	75	105
Average Annual Rainfall (mm)	1102	1046	1025	1145	1120
Accumulated Temperature (° days)	1594	1640	1643	1576	1542
Field Capacity (days)	216	207	203	223	218
Moisture Deficit, Wheat (mm)	90	97	98	87	85
Moisture Deficit, Potatoes (mm)	79	88	89	76	74
Overall Climatic Grade	1	1	1	1	1

Madron Survey Area	St Buryan Survey Area	Marazion Survey Area
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Grid Reference	SW 449321	SW 455318	SW 407252	SW 411260	SW 514312	SW 519311
Altitude (m)	132	100	95	124	5	61
Average Annual Rainfall (mm)	1179	1151	1077	1094	964	1013
Accumulated Temperature (° days)	1510	1547	1556	1522	1654	1590
Field Capacity (days)	229	224	210	213	192	199
Moisture Deficit, Wheat (mm)	78	83	92	87	103	94
Moisture Deficit, Potatoes (mm)	64	71	81	75	96	86
Overall Climatic Grade	2	2	1	1	1	1

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