

**HELSTON LOCAL PLAN
AGRICULTURAL LAND CLASSIFICATION**

REPORT OF SURVEY

1. In November 1989, a detailed 116.4 Agricultural Land Classification (ALC) survey was carried out over hectares on the northern and north-eastern fringe of Helston in Cornwall. The survey was requested as part of MAFF's statutory input to the Helston Local Plan being prepared by Kerrier District Council and was conducted by members of the Resource Planning Group (Bristol).

The ALC system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on its use for agriculture.

Fieldwork was conducted at an approximate auger sampling density of one boring per hectare; a total of 107 borings and 3 soil pits were examined. The location of the borings and pits is shown on the accompanying auger sample point map, and the distribution of land quality is shown on the ALC map and detailed in Table 1 below. The maps have been drawn at a scale of 1:10,000 and are accurate at this scale; any enlargement of this base would be misleading.

Land quality has been assessed using MAFF's revised guidelines and criteria for grading the quality of agricultural land (operational from 1.1.89).

Table 1: Distribution of ALC Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
2	21.2	18.2	20.0
3A	78.2	67.3	74.0
3B	2.8	2.4	2.5
4	3.8	3.2	3.5
Non-Agric	4.2	3.6	100% (106 ha)
Urban	4.7	4.0	
Agric Bldgs	1.5	1.3	
	116.4 ha	100%	

2. Climate

Estimates of important climatic variables were obtained by interpolation from a 5km grid database for three representative locations in the survey area. The important parameters in assessing an overall climatic limitation are average annual rainfall (a measure of overall wetness) and accumulated temperature (a measure of the relative warmth of a locality). At the representative points the values for these two parameters reveal a slight climatic limitation on the highest land in the north-west of the survey area (downgrading this area to Grade 2 at best) but that no overall climatic limitation affects the rest of the site.

Table 2: Climatic Interpolations

	Location 1	Location 2	Location 3
Grid Reference	SW668298	SW678283	SW673290
Altitude (m)	110	55	
90Accumulated Temperature (° days)	1531	1594	1554
Average Annual Rainfall (mm)	1138	1083	1116
Field Capacity (days)	221	213	218
Moisture Deficit, Wheat (mm)	85	95	89
Moisture Deficit, Potatoes (mm)	73	85	78
Climatic Grade	2	1	

The additional local climatic factor of exposure is also significant in determining the grade. Much of the survey area occupies the upper slopes of crest top locations and is therefore open to the effect of strong winds from the south, south-west and north which regularly hit this section of the Cornish peninsula. The site is also only 5 km from the coast, and therefore winds may still be salt-laden at this point inland.

The significance of exposure has been determined by its effect on the range of crops suitable throughout the site. The crest top locations and their associated upper slopes are limited to sub-grade 3A as it is felt that such locations preclude top fruit, soft fruit, salad crops and the more demanding horticultural crops. Over the whole of the survey area there is at least a slight exposure risk which limits the land quality to Grade 2 at best and excludes top fruit, soft fruit and salad crops.

3. Topography and Geology

The site occupies the gently sloping south and south-west facing land above Helston where altitudes range between 50 and 110 metres. Gradient is only significant in limited areas. A minor dry valley feature runs NE-SW through the site above Trenethick Farm and a second valley runs NW-SE near Trelill Farm in the south-east of the survey area.

Granite and granite gneiss underlie the northern third of the site; slate and sandstone (Mylor Series) underlie the southern two thirds.

4. Agricultural Land Classification

4.2 **Grade 2:** the two minor valleys that cut through the site provide shelter from most of the effects of the strong and regular winds that affect the area. A slight exposure risk prevents the soils in these localities being graded any higher. The soils are placed in Wetness Class I and exhibit medium clay loam topsoil textures which increase in clay content with depth (heavy clay loam upper subsoil; clay lower subsoil) but show no evidence of soil wetness or any other physical limitation in the top 120 cm.

4.2 **Sub-grade 3A:** the majority of the site is placed in this grade. The soils are similar in physical characteristics to those graded as class 2 elsewhere, but are located on the more exposed upper crest slopes.

One small map unit of 3A adjacent to Trenethick Farm delineates an area of Wetness Class III soils along part of the valley floor which exhibit evidence of shallow gleying but have no slowly permeable layers.

- 4.3 **Sub-grade 3B and Grade 4:** a significant wetness problem affects the floor of the valley feature around Trelill Farm. Shallow gleying and slowly permeable layers at depths less than 60 cm place these soils in Wetness Class IV and grade 4. The soils are further complicated by the presence of springs. Those parts of the valley floor where the wetness limitation is less marked are most appropriately placed in sub-grade 3B. Areas of 3B gradient also occur on the steeper slopes of the valley sides.

Sub-grade 3B and grade 4 land in the extreme north-west of the survey area highlights two limited areas where the gradient is locally limiting.

**HELSTON LOCAL PLAN
SOIL PIT DESCRIPTIONS**

Pit No 1

Location: 98 metres altitude; crest top location; 2° south-west facing slope; horizon to south, south-west and west is at similar/lower height; open to strong coastal winds from south, south-west and west; clear evidence of strong wind pruning on boundary trees and bushes at a height of 10'; 5 km inland.

Permanent Grass.

Topsoil: 0-17 cm
Medium Clay Loam
10YR33
Approximately 2% stone (less than 2 cm; visual)
No evidence of wetness

Upper Subsoil: 17-53 cm
Heavy Clay Loam
10YR33 (slight visual colour change from topsoil)
Approximately 2% stone (less than 2 cm; visual)
Structure (from 35 cm): Weakly Developed
 Fine Subangular Blocky
 Friable

Porous
Good root penetration
No evidence of wetness

Lower Subsoil: 53-80+
Clay
10YR64 (pale)
Approximately 10-15% stone (less than 2 cm; visual)
No evidence of wetness
Structure = Weakly developed
 Medium Subangular Blocky
 Friable

Porous
Good root penetration

Pit dug to 80 cm; augering to 120 cm revealed the continuation of the lower subsoil with stone contents increasing to 20%.

Wetness Class I

ALC Grade = 3A
(Limitation: Exposure)

[RPG-38B]SJ

Pit No 2

Location: 97 metres altitude; upper crest slopes, south-west facing slope; horizons to south, south west and west at similar/lower height; clear evidence of wind-pruning on field boundary vegetation (at 8-10'); 5 km inland; ploughed field.

Topsoil: 0-20 cm
Medium Clay Loam
10YR33
No evidence of wetness
2% stone (less than 2 cm; visual)

Upper Subsoil: 20-43 cm
Heavy Clay Loam
10YR43
No evidence of wetness
2% stone (less than 2 cm; visual)
Very porous
Structure = (from 35 cm)
Weakly developed
Fine Subangular Blocky
Very Friable

Lower Subsoil: 43-85+ cm
Silty Clay
10YR64; pale
No evidence of wetness (beyond pale matrix colour)
2% stone (less than 2 cm; visual)
Very porous
Structure = Moderately developed
Coarse Angular Blocky
Friable
(No clear ped skins or paler ped faces)

Soil Pit dug to 85 cm; augered to 110 cm (then Impenetrable)

Wetness Class I

ALC Grade = 3A
(Limitation: Exposure)

Pit No 3

Location: 72 metres altitude; upper crest slopes; south-facing slope; 6° gradient; valley floor at 55 m below; horizon to south at similar altitude; 5 km inland; recent re-seed.

Topsoil: 0-26 cm
Medium Clay Loam
10YR33
No evidence of wetness
2% stone (less than 2 cm; visual)

Upper Subsoil: 26-60 cm
Clay
10YR53; pale
No evidence of wetness (beyond pale matrix colour)
2% stone (less than 2 cm; visual)
Very porous
Structure = (from 35 cm)
Moderately developed
Coarse Subangular Blocky
Friable
(No clear ped skins or paler ped faces)

Lower Subsoil: 60-80+ cm
Clay
2.5Y52 and 10YR54; the 2.5Y52 reflects the weathered fragments of slate.
No evidence of wetness
20% soft weathered slate
Very porous
Structure = Moderately developed
Coarse Subangular Blocky
Friable
(No clear ped skins or paler ped faces)
Breaks down readily to Medium Subangular Blocky

Soil Pit dug to 80 cm; augering to 100 cm reveals 2.5Y54 Clay with +30% slate from 85 cm.

Wetness Class I

ALC Grade = 3A
(Limitation: Exposure)