

DEVON COUNTY STRUCTURE PLAN - ADDITIONAL LAND ALLOCATIONS, PLYMOUTH
AGRICULTURAL LAND CLASSIFICATION

Report of Survey : Langage Site

1. Introduction

In July 1989, a detailed Agricultural Land Classification (ALC) survey was carried out over 114 hectares of land around Higher Langage Farm, north of the A38 at Plympton in Devon. The survey was requested by Plymouth City Council as part of their forward looking plan to allocate additional development land for Plymouth in the Devon County Structure Plan.

The fieldwork was conducted by the Resource Planning Group at an approximate auger sampling density of one boring per hectare. A total of 133 borings and 3 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 its use for agriculture. The distribution of grades for the site is detailed below and illustrated on the ALC map at a scale of 1:10,000. The information is accurate at the scale shown, but any enlargement of the map would be misleading.

Table 1: Distribution of Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
3B	103.7	90.6	95.8
4	4.6	4.0	4.2
Non-Agric	1.5	1.3	100% (108.3 ha)
Urban	1.9	1.7	
Agric Bldgs	2.7	2.4	
	114.4 ha	100%	

Altitudes range from 112 metres in the north of the site to 70 metres in the south-west. Geology is uniform over much of the site, with the soils having developed over weathered slate.

2. Climate

Estimates of important climatic variables were obtained by interpolation from a 5 km grid database in order to assess any overall climatic limitation. The results are detailed in Table 2 below.

Table 2: Climatic Interpolation

	Location 1*	Location 2*
Accumulated Temperature ($^{\circ}$ days):	1496	1539
Average Annual Rainfall (mm):	1363	1266
Field Capacity Days:	261	245
Moisture Deficit, Wheat (mm):	73	82
Moisture Deficit, Potatoes (mm):	58	69
Height (m):	112	75
Overall Climatic Grade	3A	2

*Location 1 = SX576566 Location 2 = SX568554

The interpolations reveal that an overall climatic limitation does affect all of the site but that it varies in intensity with altitude. The accumulated temperate and average annual rainfall for the higher land in the north of the survey area limits the potential grade to 3A, whilst the prevailing climate in the lower lying land in the south permits grade 2 (see Figure 1, Revised Guidelines).

3. Agricultural Land Classification

Sub-grade 3B: the majority of the site has been placed within this ALC grade, with soil depth and gradient as the main limitations together with workability. The soils are typically heavy clay loams with shillet (the soft, thinly bedded slate) occurring at shallow depths. The Description for Soil Pit No. 1 explains the soil depth limitations in more detail. The field capacity day values for the site reveal that where the topsoils are definitely heavy clay loams the workability limits the ALC grade to 3B even where the wetness class is I.

Parts of the valley sides of the stream that flows north-south through the centre of the site have been downgraded to 3B on the basis of local gradient.

Grade 4: the central stream area is affected by several springs which cause prolonged wetness and, as such, is believed to be at least one ALC grade lower than the surrounding land.

The unit of grade 4 adjacent to Higher Langage delineates an area that has been recently disturbed and which has been left with a poached and stone-strewn surface.

A small area of grade 4 gradient has been mapped in the north of the site.

DEVON COUNTY STRUCTURE PLAN: PLYMOUTH AREA
LANGAGE SITE

SOIL PIT DESCRIPTIONS

Pit No 1

Crest top location, with no evidence of local climatic factors.
Overall climatic limitation restricts potential of the site to 3A.

Topsoil: 0-22
Heavy Clay Loam (very dry soil); Clay content = 35%
10YR54 when moist; 10YR64 when dry
Approx 5% stone (2 mm-2 cm) and 5% >2 cm (visual estimate);
the stone is shillet, occurring in its characteristic thin
weathered layers.
Evidence of rusty root mottling.

Subsoil: 22-42 cm
difficult to assess texture of the soil matrix because of
the high percentage of stone, but it is believed to be a
Heavy Clay Loam
Approx 50% stone (2 mm-2 cm); shillet.

Impenetrable + 42 cm

This soil pit is typical of the soils found throughout much of the site. When augering, the surface layers can only be penetrated to a depth in the 3B range (ie 20-30 cm) and typically 25-28 cm. Simply from the range of auger boring depths it would therefore appear that there is an active soil depth limitation restricting the site to 3B. However, on opening up a profile by means of pick-axe a further 10 cm of soil with stone is revealed. The stone contents in this layer are approximately 50% (>2 cm) and are therefore less than the critical cut-off of 70% when a horizon is more realistically to be treated as 'rock'. Technically, therefore, there may appear to be adequate soil depth to satisfy the 3A criteria, but it is felt that this transitional layer of soil and fragmented rock "cannot be penetrated satisfactorily by cultivation implements" (p. 12 Revised Guidance). This effect of shallowness maintains the 3B limitation and limits the range and consistency of cropping to "moderate quality agricultural land" (p. 3, Revised Guidance)

ALC grade also = 3B on Workability.

Pit No 2

Topsoil: 0-25 cm
Heavy Clay Loam; Clay content = 35%
10YR64 for dry soil; 10YR54/44 when moist
Slight evience of surface mottling
1% stone >2 cm (stoniness assessment); approximately 5%
stone 2 mm - 2 cm (visual)

Subsoil: 25 - approximately 35 cm
Difficult to assess texture because of high stone content
(at least HCL): approximately 50% shillet >2 mm
very few roots penetrating into this zone; none found below
35 cm

Impenetrable: 35 cm (weathered shillet; >70%; rock)

See note for Pit No 1 on Soil Depth: 3B
Wetness Class I and HCL: 3B
Overall Climatic Limitation: 3A
Droughtiness: 3A

ALC = 3B

Soil Pit No 3

Topsoil: 0-28 cm
Heavy Clay Loam; Clay content = 31%
10YR63 (pale, when dry; 10YR54 when moist)
Slight surface mottling and rusty roots
Approx 5% stone (2 mm-2 cm)

Subsoil: 28-41 cm
Heavy Clay Loam (at least)
7.5YR56
Up to 50% stone (>2 mm); shillet
Few roots in this layer; none below 41 cm.

Impenetrable: 41 cm
>70% shillet; finely layered

See note for Pit No 1 on Soil Depth: 3B
Wetness Class I and HCL: 3B
Overall Climatic Limitation: 3A
Droughtiness: 3A

ALC Grade = 3B

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