

AGRICULTURAL LAND CLASSIFICATIONWHITCHURCH AREA LOCAL PLANLAND SOUTH OF BLOSWOOD LANE, WHITCHURCH, HAMPSHIRE1. BACKGROUND

- 1.1 This 14.65 hectare site was surveyed by the Resource Planning Group on 4 December 1991, in connection with the Whitchurch Area Local Plan. The site is situated immediately to the west of Whitchurch, Hampshire. It is bounded by Bloswood Lane to the north, the A34 to the west and the B3400 to the south. The eastern boundary is marked by a disused railway line.
- 1.2 The site was inspected using 1.2m Dutch soil augers with observations being taken at approximate 100m intervals on a regular grid basis. In addition a soil pit was examined to allow more detailed soil description.

Land-Use

- 1.3 At the time of survey, the entire area that was in agricultural use was given over to grassland pasture, although the field at the east of the site was disused and overgrown. In addition, areas of urban land and agricultural buildings were mapped.

2. PHYSICAL FACTORS AFFECTING LAND QUALITYRelief

- 2.1 The site lies between about 75 and 100m A.O.D. Land is at its highest altitude at the extreme north of the site and falls moderately towards the south-east, rising again slightly along the eastern boundary. Across the northern part of the site, to the north west of Manor Farm and the farm track, gradients in excess of 7° were measured using an optical reading clinometer. These slopes represent a significant limitation to land quality. The remainder of the site is not influenced by either altitude or slope limitations.

Climate

- 2.2 Estimates of climatic variables were obtained by interpolation from a 5 km grid database, (Met. Office, 1989), for a representative location in the survey area.

The values obtained are as follows:

Grid Reference	SU 457 479	SU 456 485
Altitude, (m, A.O.D)	75	100
Accumulated Temperature (°days, Jan-June)	1145 1455	1426
Average Annual Rainfall (mm)	784	794
Field Capacity Days	171	173
Moisture Deficit, wheat (mm)	105	101
Moisture Deficit, potatoes (mm)	-96 97	92

- 2.3 The important parameters in assessing an overall climatic limitation are average annual rainfall, (a measure of overall wetness), and accumulated temperature, (a measure of relative warmth). The climatic values at this locality do not constitute an overall climatic limitation, although average annual rainfall is relatively high in a regional context. However, climatic factors do influence interactive limitations between soil and climate, specifically soil wetness and droughtiness.

Geology and Soils

- 2.4 British Geological Survey, Sheet 283, Andover, (1975), shows the majority of the site to be underlain by Pleistocene River and Valley Gravel deposits which rest over Upper Chalk. Across the moderately sloping higher land towards the north of the site the drift deposits are absent and the Upper Chalk is exposed at the surface.
- 2.5 Soil Survey of England and Wales, Sheet 6, Soils of South-East England, (1983) shows the majority of the site to comprise soils of the Sonning 1 association. These are described as, 'stony, coarse textured, well drained soils', (SSEW, 1984). Soils of the Charity 2 association are mapped across the north of the site. These have developed over the Upper Chalk and are described as, 'well drained and fine silty' (SSEW, 1984) and comprise a number of soil series including Coombe, Panholes and Andover.
- 2.6 Detailed field examination indicates the presence of three broad soil groups on the site.
- 2.7 The majority of the site comprises deep, well drained, but moderately stony, medium textured soils. Silt loam or medium silty clay loam topsoils which are non-calcareous and variably stony, (ie, between 2 and 18% v/v flints > 2 cm; 2 - 25% v/v flints in total), generally overlie similar textures in the upper subsoil. Textures tend to become heavier in the lower subsoil, typically passing to heavy silty clay loam from about 55 cm and medium silty clay between about 60 and 75 cm. The subsoils are variably stony throughout, ranging from about 5 - 20% v/v flints in the upper subsoil and generally becoming more stony with depth, increasing to up to 40% v/v in some profiles. Where stone contents in the subsoil are in excess of about 30% v/v flints, profiles become impenetrable, (to soil auger). This occurs in a number of profiles between about 72 and 100 cm. All profiles observed were well drained, (wetness class I).
- 2.8 Across the north of the site, north-west of Manor Farm, a different soil group was identified. Profiles have developed in association with Upper Chalk deposits and are thereby shallow and calcareous. Topsoils comprise silt loams or medium silty clay loams which are calcareous and slightly stony having about 13 - 15% v/v flints and 5% chalk fragments. These overlie medium silty clay loam in the upper subsoil which is calcareous and stony as the topsoil. At about 35 - 40 cm soft white chalk is encountered. Profiles are well drained and are thus assigned to wetness class I.
- 2.9 Land has been disturbed in the field at the east of the site. Topsoils of silt loam or medium clay loam contain much brashy material,

including flints, brick fragments and chalk stones. Subsoils of similar texture tend to be even more brashy and are moderately stony, (ie, 25 - 30% v/v flints). Profiles become impenetrable, (to soil auger), at variable depths between 25 and 50 cm, as a result of brash, rubble and stones.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of this site is determined by a number of factors. The interaction between soil and climatic factors is of primary importance in influencing soil droughtiness at this locality. Slight to moderate topsoil stone contents are also significant in affecting the land quality of the site. In addition, the land quality of small areas of the site is determined by gradient and disturbance.

3.2 ALC grades 2, 3a and 3b have been mapped and a breakdown in terms of area and extent is given below.

	<u>Area (ha)</u>	<u>% total agricultural area</u>
Grade 2	7.95	60
3a	1.35	10
3b	4.00	30
Total agricultural area	<u>13.30</u>	<u>100</u>
Urban	1.10	
Agricultural Buildings	0.25	
Total area surveyed	<u>14.65</u>	

3.3 Appendix 1 gives a generalised description of the grades and sub-grades identified in this survey.

Grade 2

3.4 Land of this quality represents 60% of the agricultural area surveyed and mainly comprises relatively deep, but moderately stony, medium textured soils as described in section 2.7. Non-calcareous, medium silty clay loam topsoils typically contain about 2 - 6% v/v flints > 2 cm, (although total stone contents range from 2% - 18%). These overlie similar textures or heavy silty clay loam in the subsoil and pass to silty clay between about 60 and 75 cm. Subsoils are slightly to moderately stony throughout and when volumes reach about 30% flints in the lower subsoil, (ie, between 72 and 100 cm), profiles usually become impenetrable (to soil auger). Soils are well drained, thus being assigned to wetness class I.

These profiles are limited by slight droughtiness and/or topsoil stone contents. Slight droughtiness results from slight to moderate stone contents throughout the soil profile which has the affect of reducing the soil moisture available for plant growth. Topsoil stone contents of about 6% v/v flints > 2 cm act as a limitation to land quality in terms of increased implement wear, reduced crop quality and impaired crop establishment which may arise as a consequence.

Grade 3a

- 3.5 A small area of land of this quality has been mapped towards the north-west of the site.

Profiles comprise non-calcareous medium silty clay loam topsoils which are slightly stony, (ie, about 12% v/v flints > 2 cm). These rest over subsoils of similar texture which tend to become heavier with depth, passing to heavy silty clay loam and silty clay below about 60 cm. Profiles are moderately stony throughout, typically having about 25% v/v flints, increasing to 40% in the lower subsoil. Profiles are well drained and are thereby eligible for wetness class I.

Land assigned to this ALC grade, is chiefly limited by topsoil stone contents in the range 10 - 12% v/v flints > 2 cm, although the moderate stoniness throughout the profile also imparts a slight droughtiness restriction on the land. Topsoil stone contents in the range 10 - 12% > 2 cm act to impede cultivations, harvesting and crop growth, as outlined in section 3.4, to the extent that grade 3a is appropriate.

Grade 3b

- 3.6 Land of this quality has been mapped as three separate mapping units on the site, each of which represents a different situation in terms of the soils observed and the limitations to their agricultural use.

- Across the northern-most part of the site the land is limited by a combination of soil droughtiness and relatively steep gradients. Soils have developed in association with Upper Chalk deposits and are relatively shallow. Silt loam and medium silty clay loam topsoils and upper subsoils rest over soft white chalk at about 35 - 40 cm. Moderate stone contents of about 13 - 15% v/v flints and 5% chalk fragments in the shallow soil profile, combine with restricted rooting into the underlying chalk lithology, to severely reduce the water reserves available for plant growth. This land is thus prone to severe drought risk. In addition, gradients of 8°, as measured by optical reading clinometer, act to limit the mechanised farm operations which can be safely and efficiently carried out on this land.
- At the north-eastern edge of the site an area of grade 3b land has been mapped on the basis of relatively high topsoil stone contents. Profiles are similar to those described in section 2.7, ie, medium textured topsoils and upper subsoils overlying heavier textures in the lower subsoil; they are generally well drained but are moderately stony throughout. Topsoil stone contents of about 15 - 18% v/v flints > 2 cm act to severely impede cultivations and/or crop growth and increase the costs of normal farm operations in terms of implement wear and the reduction of crop quality.

- The field at the east of the site has been disturbed and land has been assigned to grade 3b on the basis of the profiles being very stony and brashy as described in section 2.9. The disused and overgrown condition of this area, suggests it may be difficult and uneconomic to farm successfully.

January 1992
Ref: 1501/039/91

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