AGRICULTURAL LAND CLASSIFICATION

Basingstoke Local Plan,

Sherborne St John.

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BASINGSTOKE LOCAL PLAN
SHERBORNE ST JOHN

1. BACKGROUND

1.1 The 16.1 hectare site lies to the north of Basingstoke in Hampshire. The site is bounded to the north by a minor road which joins the A340, forming the eastern boundary. There are no obvious physical features which form the southern and western boundaries.

1.2 The site was surveyed during November 1991 using 1.2m Dutch soil augers with samples being taken at approximately 100m intervals across the site. Two soil inspection pits were examined to enable more detail soil descriptions.

Land-use

1.3 At the time of survey land occurring towards the south and south east of the site was under winter cereals. The remaining area (ie on the lower slopes) was under grass, which was being stripped for turf. Consequently some areas were exposed as bare soil. A small field at the north west of the site was in permanent pasture, grazed by cattle.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2.1 The site lies at approximately 80-105m AOD with the highest land occurring toward the south. The land falls gently toward the north-west. Nowhere on the site does gradient or altitude represent a significant limitation to agricultural land quality.

Climate

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

Climatic Interpolation

Grid Reference	SU617557 - SU616553
Altitude (m AOD)	80 - 105
Accumulated temperature (°day Jan-June)	1442 - 1413
Annual average rainfall (mm)	747 - 772
Field capacity days	161 - 165
Moisture deficit wheat (mm)	104 - 100
Moisture deficit potatoes (mm)	95 - 90

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 the relative warmth of a locality). Although average annual rainfall is relatively low in a national context, there is no overall climatic limitation affecting the land quality of this site. However climatic factors do affect

interactive limitations between soil and climate, namely soil wetness and droughtiness.

Geology and Soils

2.4 British Geological Survey sheet 284, Basingstoke (1981) shows the site to be underlain by Cretaceous Upper Chalk with a small area towards the north underlain by Reading Beds.

2.5 Soil Survey of England and Wales sheet 6 (1983) shows the site to comprise soils predominantly of the Andover 1 Association. However a small area towards the north is mapped as Wickham 4. The Andover 1 Association is described as "variably flinty and chalky silty brown rendzinas over chalk". The Wickham 4 Association is described as "soils that are seasonally waterlogged with slowly permeable horizons, classified as typical stagnogleys or pelo-stagnogley soils" (SSEW 1984).

2.6 Detailed field examination of soils indicates that there are two broad soil types, which occur at this site.

2.7 Soils located on the lower slopes towards the far north of the site were found to be well drained. Profiles typically comprise calcareous medium silty clay loam and medium clay loam topsoils which are slightly stony (1-2% v/v angular flints) overlying medium or heavy silty clay loam and medium or heavy clay loam with about 5-15% v/v angular flints. The lower subsoil was found to comprise heavy silty clay loam and heavy clay loam with occasional profiles over silty clay. Stone content was between about 20-30% v/v flints, with occasional profiles comprising up to 50% v/v flints. The more stony variants of these soils typically become impenetrable (to soil auger) at variable depths.

2.8 The second group of soils occur in association with the underlying chalk lithology . This was found to outcrop between the middle and the upper slopes. Soils occurring in conjunction with the mid slopes typically comprise calcareous medium silty clay loam and medium clay loam topsoils which are slightly to moderately stony (2% v/v angular flints; 2-5% small rounded chalk stones). These overlie medium or heavy silty clay loam and clay loams with about 10-90% chalk within the soil matrix. The subsoil eventually becomes impenetrable (to soil auger) due to the underlying chalk between about 50 and 70cm. Soils mapped on the upper slopes were found to be a shallow variant to those described above, resting over chalk between about 28 and 32cm.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of this site is primarily determined by interactions between soil and climatic factors namely wetness and droughtiness. ALC grades 2, 3a and 3b have been mapped at this site, and a breakdown of the grades in terms of area and extent is given below.

Grade	Area (ha)	% of total Agricultural land
2	7.5	60
3a	1.2	10
3b	3.7	30
Total Agricultural Area	12.4	100
Urban	3.7	
Total Area of the site	16.1	

3.2 Appendix 1 gives a generalised description of the grades and subgrades identified in this survey.

Grade 2

3.3 Land of this quality represents 60% of the total agricultural area, and occurs in two situations.

Firstly, profiles situated on the lower slopes, occuring towards the western half of the site typically comprise calcareous medium silty clay loam, or medium clay loam topsoils which are slightly stony (1-3% v/v angular flints › 2 cm). Topsoils overlie heavy silty clay loam and heavy clay loam subsoils which are slightly to moderately stony (5-15% v/v angular flints) with stone content increasing with depth. Lower subsoils may become slightly heavier as the clay content increases. Occasional profiles become impenetrable (to soil auger) due to flints in the lower subsoil between 45 and 65 cm.

The second situation occurs towards the eastern half of the site where the land starts to rise gently towards the north west. Profiles typically comprise calcareous medium silty clay loam and clay loams topsoils which are slightly to moderately stony (c.1-5% v/v angular flints › 2 cm) overlying medium or heavy silty clay loam and clay loam with c.10-40% chalky fragments with the soil matrix. Profiles become impenetrable (to soil auger) due to chalk between about 55 and 70cm.

In both situations the land is well drained, wetness class I, but is limited in terms of agricultural land quality by droughtiness, as a result of moderate topsoil and subsoil stone contents, or relatively shallow depths over chalk lithology, respectively. These characteristics cause profiles to have slightly restricted available water reserves for plant growth. Land of this quality is capable of supporting a wide range of agricultural and horticultural crops.

Grade 3a

3.4 Land of this quality occupies 10% of the total agricultural land surveyed and is mapped towards the north of the site. Profiles typically

comprise calcareous medium silty clay loam and clay loam overlying heavy silty clay loam and heavy clay loam subsoils, which are slightly to moderately stony (c.5-15% v/v angular flints). Subsoil stone content was found to increase with depth (c.20-30% v/v flints) becoming impentrable (to soil auger) due to flints within the subsoil, at variable depths. All profiles are well drained wetness class I, but are limited by droughtiness due to moderate to high stone contents, consequently water availability to plants is reduced. Land of this quality is capable of producing moderate to high yields of a narrow range of arable crops or moderate yields of a wide range of crops.

Grade 3b

3.5 Land of this quality occupies 30% of the total agricultural land surveyed and is mapped on the upper slopes towards the south and south east of the site. Profiles typically comprise calcareous medium silty clay loam and clay loam topsoils which are slightly stony (c.2% v/v angular flints, and 2% small rounded chalk stones). Topsoils were found to rest directly over chalk between 28 and 32cm. Occasional profiles were found to be slightly deeper. All profiles are typically well drained, wetness class I but are limited by severe droughtiness, due to relatively shallow depths over chalk. Consequently water availability to plants is greatly reduced. Land of this quality is capable of producing moderate yields of a narrow range of crops.

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SOURCES OF REFERENCE

British Geological Survey, (1981), Sheet 284, Basingstoke.

MAFF, (1988) Agricultural Land Classification of England and Wales : Revised guidelines and criteria for grading the quality of agricultural land.

Meterological Office, (1989), Climatological data sets for Agricultural Land Classification.

Soil Survey of England and Wales, (1983), Sheet 6, Soils of South East England.

Soil Survey of England and Wales, (1984), Soils and their use in South East England, Bulletin 15.