

AGRICULTURAL LAND CLASSIFICATION

Basingstoke Local Plan,

Popley Fields.

Reconnaissance Survey.



AGRICULTURAL LAND CLASSIFICATION

BASINGSTOKE LOCAL PLAN

POPLEY FIELDS

RECONNAISSANCE SURVEY

1. BACKGROUND

- 1.1 The 59.1 hectare site lies immediately to the north of Basingstoke. The site is bounded to the north by hedge lines, to the east by Marl's Lane, to the west by a farm track leading to Kiln Farm, and to the south by Chineham Lane.
- 1.2 The site was surveyed in November 1991 using 1.2 m Dutch soil augers, with samples being taken at approximately 200 m intervals across the site with additional auger samples to enable the determination of grade boundaries. Two soil inspection pits were examined to allow more detailed soil descriptions.

Land Use

- 1.3 At the time of survey the land was predominantly under winter cereals. An area towards the west of the site, adjacent to the farm track was under cereal stubble whilst a small field north east of Kiln Farm was under permanent grassland, grazed by cows.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

- 2.1 The altitude of the site varies between 80 and 95 m A.O.D. with the highest land occurring towards the south and south east. The land falls gently north, east, and west becoming almost level and flat. Nowhere on the site does gradient or altitude represent a significant limitation to land quality.

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.

Climate Variables

Grid Reference	SU 663 552	SU 634 546
Altitude (m A.O.D.)	80	95
Accumulated temperature (°days, Jan-June)	1441	1425
Annual average rainfall (mm)	743	763
Field capacity days	159	163
Moisture deficit wheat (mm)	105	103
Moisture deficit potatoes (mm)	97	93

- 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 national content, there is no overall climatic limitation affecting the land quality of this site. However climatic factors do affect the 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 Reading Beds across the north of the site, and Upper Chalk across the south of the site.
- 2.5 Soil survey of England and Wales, Sheet 6, Soils of South East England (1983), shows the site to comprise soils of the Wickham 4, and Andover 1 Associations. The Wickham 4 Association typically comprise soils that are "seasonally waterlogged with slowly permeable horizons, classified as typical stagnogleys or pelo-stagnogleys" (SSEW 1984). The Andover 1 Association typically comprises soils that are "variably flinty and chalky silty brown rendzinas over chalk". (SSEW 1984).
- 2.6 Detailed field examination of the soils indicates that there are three soil groups present at this site.
- 2.7 Soils found on the lower slopes towards the north, east, and northwest of the site typically comprise calcareous or non calcareous medium or heavy silty clay loam or clay loam topsoils with c. 1-2% v/v angular flints >2 cm. These overlie similar textures, or silty clay or clay subsoils with c. 2-10% v/v flints and c. 5-90% chalky fragments within the soil matrix. All profiles were found to be gleyed between 27 and 70 cm and slowly permeable within 70 cm. They are assigned to wetness class II, III and IV according to depth of gleyic features and slowly permeable horizons.
- 2.8 The second group of soils were found to occur towards the south and west. Soil profiles were found to comprise calcareous medium or heavy clay loam topsoils which were slightly stony (c. 1-5% v/v flints >2 cm) overlying heavy clay loam, silty clay or clay containing c. 3-20% chalky fragments within the soil matrix increasing to about 50 and 90%. All profiles are typically well drained.
- 2.9 The remaining area (ie upper slopes towards the south and south east) comprise well drained shallow soils over chalk. Profiles typically comprise heavy silty clay loam topsoils with c. 3% v/v flints >2 cm over similar textures with about 50-80% chalky fragments. Profiles become impenetrable (to soil auger) due to chalk between about 40 and 60 cm. Occasional profiles were found to be deeper over the chalk lithology (ie between about 70-110 cm).

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The site has been graded in accordance with the criteria for grading agricultural land (MAFF 1988), and is primarily determined by interactions between soil and climatic factors namely wetness and droughtiness.

ALC grades 2, 3a and 3b have been mapped across this site and a breakdown of the grades in terms of area and extent is given below:

<u>Grade</u>	<u>Area ha</u>	<u>% of total agricultural land</u>
2	11.5	20
3a	7.5	13
3b	37.5	67
Total agricultural area	54.5	100
Urban	0.5	
Non-agricultural	0.6	
Farm Buildings	0.4	
Woodland	1.1	
Total area surveyed	59.1	

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 occupies 20% of the total agricultural land, and is mapped towards the south west. Profiles typically comprise calcareous medium or heavy clay loam or silty clay loam topsoils which are slightly to moderately stony (1-4% v/v angular flints >2 cm). Topsoils overlie heavy silty clay loam, silty clay or clay subsoils which are moderately stony (c. 5-10% v/v flints, 3-20% chalky fragments within the soil matrix). The chalk content within the lower subsoil increases (ie 50-80%) with depth.

Occasional profiles become lighter in texture as depth increases typically passing to silt loam or medium silty clay loam in the subsoil, eventually becoming impenetrable over chalk between 65 and 110 cm. All profiles are freely drained, and exhibit no evidence of impeded drainage, they are assigned to wetness class I accordingly. The principal limitation to land of this quality is droughtiness. This minor limitation is a result of slight to moderate stone contents within the profile which restrict available water reserves for plant growth. Although crop yields may be restricted land grade 2 is capable of supporting a wide range of agricultural and horticultural crops. The level of yield is generally high, but may be lower and more variable than grade 1.

Grade 3a

- 3.4 Land of this quality occupies 13% of the agricultural land and occurs in two situations. Land grade 3a is located towards the south, situated on the upper slopes. Profiles typically comprises calcareous heavy silty clay loam topsoils which are slightly stony (c. 3% v/v angular flints >2 cm and c. 1-2% chalk stones), overlying similar textures with about 50-80% chalky fragments within the soil matrix. Subsoils becoming impenetrable (to soil auger) due to chalk between about 40 and 60 cm. These soils are well drained wetness class I, but are limited in terms of droughtiness due to relatively shallow soils over chalk, thereby reducing the plants available water reserves.

Land graded 3a also occurs towards the centre of the site. Profiles were found to comprise calcareous to non calcareous medium or heavy silty clay loam and heavy clay loam topsoils, which are slightly stony (c. 2-3% v/v angular flints >2 cm). Overlying heavy silty clay loam, heavy clay loam and medium clay subsoils, over slowly permeable clay. All profiles exhibited strong evidence of gleying and are typically slowly permeable within 70 cm. They are thus assigned to wetness class III or IV. Occasional profiles were found to comprise medium silty clay loam topsoils with c. 3% v/v flints >2 cm over sandy clay loam subsoils with c. 50% chalk fragments within the soil matrix. Profiles were typically gleyed within 35 cm, but were not slowly permeable.

Land within this unit is principally limited by wetness and workability, consequently this may affect plant growth, or impose restrictions upon cultivation and trafficking of machinery. Despite these moderate limitation cropping flexibility is not severely reduced and the land 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 67% of the total agricultural land surveyed, and occurs throughout the majority of the site. Profiles typically comprise calcareous or non calcareous medium or heavy silty clay loam topsoils which are slightly stony (1-2% v/v angular flints >2 cm) over similar textures or silty clay, or clay. Subsoils were found to be slightly to moderately stony (2-10% v/v flints, and c. 15-9% chalky fragments within the soil matrix). Lower subsoils were found to comprise silty clay or clay. All profiles exhibit evidence of impeded drainage and are slowly permeable within c. 63 cm. They are assigned to wetness class III and IV accordingly.

Land is assigned to this grade on the basis of wetness and workability restrictions which adversely affects plant growth or imposes restrictions on cultivation and traffickability of machinery. Land assigned to this grade is capable of producing moderate yields of a narrow range of crops, principally cereals and grass.

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SOURCES OF REFERENCE

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