

BASINGSTOKE LOCAL PLAN

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HAMPSHIRE



AGRICULTURAL LAND CLASSIFICATION

BASINGSTOKE LOCAL PLAN, HAMPSHIRE

1. BACKGROUND

1.1 The 71.1 ha area lies north east of Old Basing, Basingstoke, Hampshire, and north of the A30 London Road. The area is bounded to the west and southwest by Poors Farm Road and Ashmoor Lane, to the north by Newnham Lane and to the south by the A30 London Road. It is bounded to the east by Pot Lane and Water End Lane; the Basingstoke - London mainline railway passes through the centre of the site.

1.2 The land was surveyed during December 1989 and January 1990 using 110 cm and 120 cm Dutch Augers, with samples being taken at approximately 100 m intervals across the site. A number of inspection pits were dug.

Land Use

1.3 At the time of survey most of the area was under winter cereals with a smaller area of field beans. Grassland, some presently grazed by horses or sheep, occurs within the survey area.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2.1 The area lies between 65 m and 90 m A.O.D. falling gently east and south with the highest land occurring to the west, adjoining Ashmoor Lane. Although moderate slopes of approximately 4-6° were noted on the site (with one location of 7-8° towards the south west) gradient is not a significant limitation in terms of land quality at this locality.

Climate

- 2.2 The average annual rainfall for this area varies from 734 mm to 751 mm depending upon altitude (Met. Office 1989). The median accumulated temperature above 0°C between January and June, a measure of the relative warmth of the locality ranges between 1413 day degrees and 1459 day degrees. (Met Office 1989). The site has approximately 158 to 161 field capacity days which provides a measure of the effect climate has on the soil water regime. Crop adjusted moisture deficits are 107 mm for wheat and 98 mm for potatoes at an altitude of 65 m A.O.D. and 103 mm for wheat and 95 mm for potatoes at 90 m A.O.D.
- 2.3 Climatic factors per se place no limitations on agricultural land quality but, do affect interactive limitations between soil and climate, namely soil wetness and droughtiness.

Geology and Soils

- 2.4 British Geological Survey sheet 284, Basingstoke, (1978) shows the site to be underlain by London Clay, with Reading Beds (Tertiary clays and sandy clays) towards the south western half of the area.
- 2.5 Soil Survey of England and Wales - Sheet 6, Soils of South East England (1983) shows typical Stagnogley soils of the Wickham 4 Association present. These are described as seasonally waterlogged with slowly permeable subsurface horizons, fine loamy or fine silty over clay with grey and ochreous mottles throughout.
- 2.6 Detailed field examination of the soils indicates that there are three broad types present.
- 2.7 Firstly, there are those believed to be found in association with the Reading Beds deposit. Profiles typically comprise sandy clay loam and medium to heavy clay loam topsoils, overlying similar textures in the upper subsoil and passing into medium clay below

50 cm, or sandy loam textures at 70 cm. Occasionally profiles become impenetrable due to the presence of gravel layers (small and medium angular flint fragments). The soils exhibit only minor drainage imperfections and are generally placed in Wetness Class I or II.

2.8 Secondly, are soils found in association with deeper loamy drift over the London Clay deposits. They have a slightly poorer drainage status than those soils described above. Profiles typically comprise sandy clay loam, medium to heavy clay loam and occasionally silty clay loam (medium) and silt loam topsoil overlying similar textures in the upper subsoil passing into medium to heavy clay below 45 cm. Gleying occurs in the clay and these soils are slowly permeable thus appropriately assigned to Wetness Class III and III/IV.

2.9 Thirdly, are soils which are also associated with the London clay deposits of the area, but have a much poorer drainage status than those described above due to the occurrence of slowly permeable clay at much shallower depths (ie. above 45 cm). Profiles are commonly composed of sandy clay loam, medium and heavy clay loam and occasionally medium silty clay loam and silt loam topsoil, overlying medium to heavy plastic clay. Soils of this type are placed in Wetness Class IV due to slowly permeable horizons high in the soil profile. Occasionally profiles have moderately stony bands (c. 10-50%) of small and medium angular flint fragments (gravel) which may become impenetrable to auger.

3. AGRICULTURAL LAND CLASSIFICATION

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

Grade	ha	% of Total Agricultural Land
2	2.8	4%
3a	13.0	21%
3b	47.5	75%
Total Agricultural Area	63.3	
Total Area	71.1 ha	

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

Grade 2

3.3 Land of this quality represents approximately 4%, (2.8 ha), of the total agricultural land area and occurs in one locality to the south west of the area believed to be associated with the Reading Beds deposits. Deep moderately well drained clay loam soils are present which typically have sandy clay loam or medium to heavy clay loam topsoils, overlying similar textures in the upper subsoil passing into medium clay at depth. Occasionally, passing into sandy loam texture or becoming impenetrable due to the presence of gravel. These soils are Graded 2 due to a combination of a slight wetness problem due to slowly permeable lower horizons and medium to heavy topsoil textures, which may give rise to wetness and workability limitations.

Grade 3a

3.4 Land of this quality occupies 21%, (13.0 ha), of the total agricultural land area and occurs in three main areas. Firstly, in a small area to the far north western corner of the area which is slightly higher than the surrounding area; profiles typically comprise sandy clay loam topsoils overlying similar textures in the upper subsoil (occasionally sandy clay) over medium clay between 50 and 85 cm which is gleyed and slowly permeable. Another small area occurs on mid slopes adjacent to Poors Farm. Here profiles have sandy silt loam and fine sandy clay loam topsoils, overlying sandy clay loam and medium clay loam upper subsoils passing into medium clay which is gleyed and slowly permeable from 50 cm depth. Profiles are usually virtually stoneless but can be slightly gritty due to very small flint fragments. Finally, the largest area of Grade 3a land occurs across the centre of the site running east-west and southwards to Water End Lane and surrounding the playing field. Topsoils are typically medium silty clay loam, sandy clay loam or medium clay

loam textures, overlying similar textures or occasionally medium clay or sandy silt loam in the upper subsoil over medium clay. These soils are gleyed and slowly permeable from about 45-50+ cm deep and assigned to Wetness Class III. Wetness restrictions form the main limitations to agricultural use, although the light to medium textures in the upper profiles assist workability.

Grade 3b

3.5 Land of this quality occupies approximately 75%, (47.5 ha) of the total agricultural land area and occurs in a large area in the southern half of the site and remaining area to the north not occupied by Grade 2 and 3a. Soil profiles typically comprise medium silty clay loam, medium clay loam, heavy clay loam topsoil or medium clay textures overlying similar textures in the upper subsoil (to 40-45 cms) over clay subsoils or directly over clay which is gleyed and slowly permeable from 30 cm deep. Some occasional profiles become impenetrable due to the presence of thin gravel seams resting over the clay, with c. 10-50% small and medium angular flint fragments. All these soils fall into Wetness Class IV being poorly drained and the major limitations to agricultural use is therefore wetness. Wetness in combination with the medium to heavy topsoil textures found at these locations will result in workability restrictions which will reduce the flexibility for cultivations and cropping.

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REFERENCES

BRITISH GEOLOGICAL SURVEY (1978) Sheet 284, Basingstoke.

MAFF (1988) Agricultural Land Classification. Revised Guidelines and Criteria for Grading the Quality of Agricultural Land.

METEOROLOGICAL OFFICE (1989) Climatological Datasets for Agricultural Land Classification.

SOIL SURVEY OF ENGLAND & WALES (1983) Soils of South East England.

SOIL SURVEY OF ENGLAND & WALES (1984) Soils and their Use in South East England.

APPENDIX 1

DESCRIPTION OF THE GRADES AND SUBGRADES

Grade 1 – excellent quality agricultural land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 – very good quality agricultural land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

Grade 3 – good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a – good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b – moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 – poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 – very poor quality agricultural land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six revised soil wetness classes (Hodgson, in preparation) are identified and are defined in Table 11.

Table 11 Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging ¹
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years ² .
II	The soil profile is wet within 70 cm depth for 31-90 days in most years <i>or</i> , if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but not wet within 40 cm depth for more than 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years <i>or</i> , if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31 and 90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years <i>or</i> , if there is no slowly permeable layer within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

¹ The number of days specified is not necessarily a continuous period.

² 'In most years' is defined as more than 10 out of 20 years.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.