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FURNACE PLACE FARM, PETWORTH ROAD
CHIDDINGFOLD, HASLEMERE, SURREY

AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT

MARCH 1993

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FURNACE PLACE FARM, PETWORTH ROAD, CHIDDINGFOLD, HASLEMERE, SURREY

1. INTRODUCTION

1.1 In March 1993 an Agricultural Land Classification (ALC) survey was carried out on 75 hectares of land at Furnace Place Farm, Petworth Road, Chiddingfold, Haslemere, Surrey. ADAS was commissioned by MAFF to determine the quality of land in connection with proposals for a golf course development.

1.2 The survey work was carried out at a detailed level of approximately 1 boring per hectare. A total of 43 soil auger borings and 3 soil inspection pits were assessed using MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). These guidelines provide a framework for classifying agricultural land according to the extent to which its physical or chemical characteristics impose long term limitations on its agricultural use.

1.3 The distribution of grades and subgrades is shown on the attached map and the areas are given in the table below. The map has been drawn at a scale of 1:10,000. Any enlargement of this scale would be misleading.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% total agricultural land
3A	8.5	18.6
3B	27.4	60.1
4	9.7	21.3
		100% (45.6 ha)
Woodland	27.7	
Non agricultural	1.0	
Urban	0.7	
Total Area of Site	75	

1.4 A general description of the grades and landcover categories is attached.

1.5 The majority of the site area is woodland located on steeply sloping land through the central area of the site and bordering a brook to the north.

1.6 Land of higher elevation to the south is limited by moderate droughtiness limitations to subgrade 3A due to free draining sandy soils.

1.7 The majority of agricultural land comprises moderate quality, subgrade 3B, land which is limited by significant wetness problems associated with light topsoils over slowly permeable clayey subsoils. Additionally sloping land to the south was found to be limited to this subgrade.

1.8 The remainder of the site comprises poor quality, grade 4, agricultural land limited by significant wetness problems associated with heavy topsoils over slowly permeable subsoils.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Altitude and Relief

2.1 The site lies at an altitude of 85 to 170 m AOD with land rising in altitude south and southwest. For the most part land is gently undulating. However in the vicinity of High Barn Farm and Barfold Wood slope angles of between 7.5° and 9.5° were recorded. Also south west of Benham Stud slope angles of 9° to 10° were recorded, although here this was not the main limiting factor. This land is classified as subgrade 3B due to slope limitation.

Climate

2.2 Climatic variables for the site were obtained by interpolation from a 5 km grid dataset (Met. Office, 1989) for a representative location within the survey area.

Table 2 : Climatic Interpolation

Grid Reference	SU 932322	SU 926321	SU 927314
Altitude (m AOD)	90	110	160
Accumulated Temperature (°day Jan-June)	1434	1411	1354
Annual Average Rainfall (mm)	867	885	923
Field Capacity Days	183	186	191
Moisture Deficit - wheat (mm)	98	95	87
Moisture Deficit - potatoes (mm)	87	84	73

2.3 Land above 155 m AOD at this locality has a climatic limitation due to a combination of relatively high average annual rainfall and low accumulated temperature causing land to be limited to ALC grade 2. The majority of land is below 155 m and has no overall climatic limitation however both climate and soil factors interact to affect soil wetness and droughtiness limitations.

Geology and Soils

2.4 The published 1:50,000 scale geology map, Sheet 301 (Geol. Survey, 1978) shows the site to comprise Cretaceous Weald Clay to the north of a wooded slope across the central area, with smaller areas of Cretaceous Atherfield and Quaternary Bramley Wey 1st Terrace River Gravels. Much of the wooded slope described above is mapped as Cretaceous Atherfield Clay which gives way to Cretaceous Hythe Beds on land to the south. A small area of Quaternary Head deposits is mapped on lower lying land in the vicinity of Barfold Copse.

2.5 The published 1:250,000 scale soils map "Soils of South East England" (SSEW, 1983) shows the majority of the site to comprise Wickham 5 Association - "Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey soils, locally reddish. Some coarse loamy soils with slowly permeable subsoils ....." (SSEW, 1983). Reflecting the geology of the Hythe Beds is mapped Shirrell Heath 2

Association - "Well drained sandy soils with bleached subsurface horizons, sometimes over soft rock mainly on heaths and often very acid. Well drained sandy and coarse loamy soils on farmland" (SSEW, 1983). A detailed inspection of soils broadly confirms the presence of two soil types as described above.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The majority of the site area is woodland mainly located through the centre area and around the edges of the survey area.

Subgrade 3a

3.2 Good quality agricultural land is found in the south of the site on sandy soils. Profiles typically comprise topsoils of very slightly stony (1-5% flints or soft medium sandstone) loamy medium sand, occasionally medium sandy loam. Upper subsoils consist of very slightly to moderately stony (2-20% flints or soft medium sandstone by volume) medium sand, loamy medium sand, or medium sandy loam. Lower subsoils comprise very slightly to slightly stony (2-12% flints or soft medium sandstone by volume) sandy clay or sandy clay loam, occasionally medium sand or medium sandy loam. Profiles are well drained, wetness class I, limited to wetness grade 1 with a sandy loam topsoil and 2 more typically, with a loamy sand topsoil. A definition of soil wetness classes is attached. The most limiting factor is droughtiness. The freely draining profiles suffer from moderate droughtiness limitations and land is classified as subgrade 3A. On occasion better quality profiles were found but due to their limited number and extent were included in this subgrade.

Subgrade 3B

3.3 Moderate quality agricultural land accounts for the majority of agricultural land contained in the survey area. Typical profiles comprise topsoils of stoneless to very slightly stony (0-2% flints by volume) medium clay loam, occasionally medium and fine sandy silt loams. Upper subsoils consist of slowly permeable clay which is stoneless to slightly stony (0-8% flints or soft medium sandstone). Occasionally there is a thin horizon of gleyed heavy clay loam or sandy clay loam overlying this. Lower subsoils comprise slowly permeable clay or sandy clay, occasionally sandy clay loam which is stoneless to slightly stony (0-10% flints or soft medium sandstone). Profiles suffer from significant wetness imperfections due to slowly permeable layers occurring between 25-46 cm depth. Wetness class is assessed as IV and combines with topsoil texture to limit the land to subgrade 3B.

3.4 Some areas of land within this subgrade are limited by slope gradient (see paragraph 2.1). Using a hand held clinometer slope angles of between 7.5° and 9.5° were recorded, limiting the safe and efficient use of farm machinery and operations. Land is therefore classified as subgrade 3B. Slope angles of between 9° and 10° were recorded in the vicinity of Ansteadbrook however land here was limited to grade 4 due to a wetness limitation.

Grade 4

3.5 Poor quality agricultural land is found to the east of the site area. Profiles typically comprise topsoils of stoneless to very slightly stony (0-3% flints and soft medium sandstone) clay or heavy clay loam. Subsoils consist of either a thin horizon of gleyed heavy clay loam grading to slowly permeable clay or simply slowly permeable clay to depth. Stone content is stoneless to slightly stony (0-15% flints and medium soft sandstone). Profiles suffer from serious wetness imperfections with a wetness class of IV. This combined with heavy topsoil textures significantly reduces the number of days when the soil is in a suitable condition for cultivation, trafficking or grazing by livestock.

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Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

BRITISH GEOLOGICAL SURVEY, 1978. Solid and Drift Edition Geology Map Sheet 301. 1:50,000 scale.

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

METEOROLOGICAL OFFICE, 1989. Climatological datasets for Agricultural Land Classification.

SOIL SURVEY OF ENGLAND AND WALES, 1983. Sheet 6. Soils of South East England. 1:250,000 scale.

SOIL SURVEY OF ENGLAND AND WALES, 1984. Bulletin 15. Soils and their use in South East England.

DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level and consistency of yield. In practice, the grades are defined by reference to physical characteristics and the grading guidance and cut-offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions. The most productive and flexible land falls into Grades 1 and 2 and Subgrade 3a and collectively comprises about one-third of the agricultural land in England and Wales. About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4. Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates. The remainder is very poor quality land in Grade 5, which mostly occurs in the uplands.

Descriptions are also given of other land categories which may be used on ALC maps.

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.

Descriptions of other land categories used on ALC maps

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

Agricultural buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg polythene tunnels erected for lambing) may be ignored.

Open water

Includes lakes, ponds and rivers as map scale permits.

Land not surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above land cover types, eg buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will usually be shown.

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 *or*, 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 *or*, 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 *or*, 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.