

**AGRICULTURAL LAND CLASSIFICATION  
GOLF COURSE PROPOSAL -  
MIDDLETON-ON-SEA BOGNOR REGIS  
WEST SUSSEX**

**January 1993  
ADAS Ref 4202/131/92  
MAFF Ref EL 42/00155**

**Resource Planning Team  
Guildford Statutory Team  
ADAS Reading**

## AGRICULTURAL LAND CLASSIFICATION

### MIDDLETON-ON-SEA, BOGNOR REGIS, WEST SUSSEX

#### 1 Introduction

- 1 1 In January 1993, an Agricultural Land Classification, (ALC), survey was carried out on 49.1 hectares of land to the north-east of Middleton-on-Sea, West Sussex. ADAS was commissioned by MAFF to determine the quality of land affected by proposals for a change of land use to a golf course.
- 1 2 The survey was carried out at a detailed scale of one boring per hectare. A total of 44 borings and three soil inspection pits were described in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land, (MAFF 1988). These guidelines provide a framework for classifying land according to the extent to which its physical and chemical characteristics impose long term limitations on its agricultural use.

At the time of survey the land was under leguminous crops.

- 1 3 The distribution of grades is shown on the attached ALC map and the area and extent is given in the table below. The map has been drawn at a scale of 1:5000. It is accurate at this scale but any enlargement would be misleading.

#### Distribution of Grades and Sub-grades

	<u>Area (ha)</u>	<u>% total agricultural land</u>
Grade 3a	14.9	34
3b	29.4	66
Total agricultural area	<u>44.3</u>	<u>100</u>
Non agricultural	1.1	
Woodland	3.7	
Total area of site	<u>49.1</u> ha	

- 1 4 The grades and land use categories identified in this survey are described in Appendix 1.
- 1 5 Grades 3a and 3b have been mapped across the site. The land is primarily limited by wetness and workability arising from the combination of climatic regime (ie a relatively high number of field capacity days) and the occurrence of gleyed and slowly permeable horizons in many of the profiles. The relative depths to these horizons which show evidence of impeded drainage determines the grade, such that the shallower the gleying and slowly permeable horizon, the more severe the wetness limitation and the poorer the land quality.

## 2 PHYSICAL FACTORS AFFECTING LAND QUALITY

### Relief

- 2 1 The site lies at an altitude of 2-3 m AOD and is generally flat or very gently undulating. Nowhere on the site is gradient or altitude a significant limitation to agricultural land quality.

### Climate

- 2 2 Estimates of climatic variables relevant to the assessment of agricultural land quality were obtained by interpolation from a 5 km grid dataset (Met Office, 1989) for a representative location in the survey area.

### Climatic Interpolation

Grid Reference	SU 008 987
Altitude (m AOD)	3
Accumulated Temperature (°days, Jan-June)	1524
Average Annual Rainfall (mm)	694
Field Capacity Days	167
Moisture Deficit, wheat (mm)	112
Moisture Deficit, potatoes (mm)	106

- 2 3 There is no overall climatic limitation at this locality. However climatic and soil factors will interact to influence soil wetness and droughtiness limitations. It should be noted that the relatively high number of field capacity days at this locality has particular relevance in the grading of this site.

### Geology and Soils

- 2 4 British Geological Survey, Sheet 332, Bognor (1975) shows much of the site to be underlain by Recent and Pleistocene Brickearth deposits which rest on Cretaceous Upper Chalk. A small band of Alluvium has been indicated along the eastern boundary of the site.
- 2 5 Soil Survey of England and Wales Sheet 6 Soils of South East England (1983) indicates the presence of two soil associations on the site. Across the northern part of the site soils of the Parkgate association have been mapped. These are described as 'seasonally waterlogged deep stoneless silty soils' (SSEW, 1984). Soils of the Efford 1 association, 'well drained fine loamy soils' (SSEW, 1984) have been mapped across the southern part of the site.
- 2 6 Detailed field examination of the soils on the site suggests that they are broadly of one type. Typically, non-calcareous clay loam topsoils overlie similar textures in the immediate subsoil and pass to clay in the lower subsoil which may become calcareous. Profiles are assigned to wetness class III or IV, depending on depth to gleying and slowly permeable clay horizons. The majority of the site comprises these surface water gleys although occasional profiles are not slowly permeable, but are affected by groundwater.

### 3 AGRICULTURAL LAND CLASSIFICATION

3 1 The ALC grading of the survey area is primarily determined by wetness and workability limitations Grades 3a and 3b have been mapped

#### 3 2 Grade 3a

Land of this quality occurs as a single mapping unit across the central part of the site and represents 34% of the total agricultural area surveyed

Profiles typically comprise non-calcareous medium clay loam topsoils overlying heavy clay loam, sandy clay loam or clay in the subsoil Profiles may be very slightly stony throughout and may become calcareous at depth Gleying is evident between 29 cm and 55 cm depth and slowly permeable clay horizons were found to occur below 45 cm Given these drainage characteristics, profiles were assigned to wetness class III and graded 3a good quality agricultural land accordingly

The land is limited by wetness which means the soil water regime is likely to adversely affect plant growth or impose restrictions on cultivations or grazing by livestock

#### 3 3 Grade 3b

Land assigned to this grade, moderate quality agricultural land has been mapped across the remaining two-thirds of the site

The constituent soils are similar to those described above, the differences being that topsoils may be of medium or heavy clay loam and gleyed and slowly permeable horizons occur at shallower depth in the profile Typically gleying was evident within 40 cm and slowly permeable clay horizons were present within 45 cm Wetness class IV was assigned to such profiles Alternatively, occasional profiles were slightly better drained with slowly permeable layers occurring below 45 cm (wetness class III) but were graded 3b on the basis of wetness and workability as a result of heavy clay loam topsoil textures

This land is subject to significant wetness and workability limitations and may be expected to be difficult to cultivate and capable of producing only moderate yields of a narrow range of crops or high yields of grass

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#### SOURCES OF REFERENCE

- British Geological Survey (1975) Sheet 332, Bognor
- MAFF (1988) Agricultural Land Classification of England and Wales  
Revised guidelines and criteria for grading the quality of agricultural  
land
- Meteorological Office (1989) Climatic datasets 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) Bulletin 15 Soils and their use  
in South-East England