

**AGRICULTURAL LAND CLASSIFICATION
OXFORDSHIRE MINERALS PLAN
STONEHENGE FARM - NORTH**

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ADAS Reading

AGRICULTURAL LAND CLASSIFICATION

OXFORDSHIRE MINERALS PLAN STONEHENGE FARM, NORTH

1. INTRODUCTION

- 1.1 In September 1992, an Agricultural Land Classification (ALC) survey was carried out on approximately 6.4 ha of land at Stonehenge Farm, near Standlake, Oxfordshire. ADAS was commissioned by MAFF to determine the quality of land affected by proposals to include this site in the Oxfordshire Minerals Plan.
- 1.2 The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 8 borings and one soil inspection pit 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 or chemical characteristics impose long term limitations to its agricultural use.

At the time of survey the land was in permanent grassland, being grazed by sheep and cattle.

- 1.3 The distribution of the grades and sub-grades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement may be misleading.

Distribution of Grades and Sub-grades

	<u>Area (ha)</u>	<u>% total agricultural land</u>
Grade 3b	5.75	90%
4	<u>0.65</u>	10%
Total area of site	<u>6.40</u>	

- 1.4 Appendix 1 gives a general description of the grades and land use categories identified in this survey.
- 1.5 The site constitutes moderate to poor quality agricultural land. Soils have developed in river alluvium resting over calcareous limestone gravel. Drainage is severely impeded by slowly permeable clayey soils and a high groundwater regime. Profiles comprise clay loam or silty clay loam topsoils, which may be organic and are commonly gleyed to the surface. These pass to gleyed and slowly permeable clay or silty clay at shallow depths and rest over calcareous gravel between about 50 and 90 cm. The majority of the site has been graded 3b on the basis of wetness and workability limitations, with a small area of grade 4 where drainage is particularly poor and anaerobic subsoil conditions occur.

The site may also be prone to flooding, it being within the floodplain of the River Windrush.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

- 2.1 The site lies at an altitude of about 64 m A.O.D. and is generally flat, although very slightly undulating in places. Neither gradient or altitude are significant factors in affecting agricultural land quality at this locality.

The site may, however, be liable to flood, it being adjacent to, and within the floodplain of the River Windrush.

Climate

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

Climatic Interpolation

Grid Reference	SP 404022
Altitude (m, AOD)	64
Accumulated Temperature (° days, Jan-June)	1445
Average Annual Rainfall (mm)	639
Field Capacity Days	136
Moisture Deficit, wheat (mm)	112
Moisture Deficit, potatoes (mm)	106

- 2.3 There is no overall climatic limitation at this locality, although average annual rainfall and field capacity days are relatively low in a regional and national context. Climatic factors will interact with soil factors to influence soil wetness and droughtiness limitations.

Geology and Soils

- 2.4 British Geological Survey, Sheet 236, Witney (1982) shows the site to be underlain mainly by Alluvium, although Flood Plain River Gravels have been mapped across the far north-eastern part 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 Thames Association. These are described as 'stoneless, mainly calcareous clayey soils affected by groundwater, (SSEW 1984)'.
- 2.6 Detailed field examination of the site broadly confirms that soils similar to those described by the Soil Survey of England and Wales are present. Soils are generally poorly drained as a result of the predominance of slowly permeable, clayey profiles and a high ground watertable. Calcareous limestone gravel underlies these alluvial soils at depths of greater than about 50 cm.

AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of the survey area is determined by the interaction of soil and climatic factors giving rise to soil wetness and workability limitations. ALC grades 3b and 4 have been mapped.

3.2 Grade 3b

The majority of the site constitutes moderate quality agricultural land which is subject to significant wetness and workability limitations.

Clay loam or silty clay loam topsoils which may be organic and are commonly gleyed to the surface rest over gleyed and slowly permeable clay or silty clay in the subsoil. Calcareous sand and gravel deposits were found to underlie these alluvial soils at depths greater than 50 cm. The movement of surface water through such profiles is severely impeded, wetness class IV being appropriate. In addition, the land on the site is affected by a relatively high ground water table and may be at risk from flooding by the River Windrush. The unfavourable soil water regime at this locality is likely to adversely affect plant growth and impose restrictions on cultivations or grazing by livestock.

3.3 Grade 4

A small unit of this poor quality agricultural land has been mapped in association with an area which was found to be particularly poorly drained.

Profiles comprise an organic loam topsoil overlying gleyed, slowly permeable and anaerobic clay in the subsoil. As across the rest of the site, calcareous sand and gravel underlies the clay at variable depths greater than about 50 cm.

Given the extremely poor drainage, as evidenced by the growth of plant species typical of waterlogged conditions across this area, and the anaerobic nature of the subsoil, this land was assigned to wetness class V.

SOURCES OF REFERENCE

- British Geological Survey (1982) Sheet 236, Witney.
- MAFF (1988) Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of Agricultural Land.
- METEOROLOGICAL OFFICE (1989) Climatological 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.