

AGRICULTURAL LAND CLASSIFICATIONOXFORDSHIRE MINERALS PLANSTONEHENGE FARM-SOUTH, MORETON1. SUMMARY

- 1.1 In September 1992, an Agricultural Land Classification (ALC) survey was carried out on approximately 12.95 ha of land at Stonehenge Farm (South), Moreton, 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 1 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 arable use. A substantial part of the site was newly planted woodland.
- 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	8.00	100%
Total Agricultural Area	8.00	
Non-Agricultural*	4.95	
Total Site Area	12.95	
*Woodland		

- 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 quality agricultural land. Soils have developed in river alluvium resting over calcareous limestone gravel. Drainage is impeded by slowly permeable clayey soils and a high groundwater regime. Topsoils are typically heavy silty clay loams overlying gleyed slowly permeable clay subsoils, calcareous gravel may be encountered between 45-100 cm<sup>+</sup>. The site is graded 3b on the basis of wetness and workability limitations. The land may also be prone to flooding, it being within the floodplain of the River Windrush.



## 2. PHYSICAL FACTORS AFFECTING LAND QUALITY

### 2.1 Climate

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.

#### Climate Interpolation

Grid. Ref	SP 408 017
Altitude (m. AOD)	64
Accumulated Temperature (°days)	1445
Average Annual Rainfall	634
Field Capacity Days	135
Moisture Deficit - wheat (mm)	113
Moisture Deficit - potatoes (mm)	106

- 2.2 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.

#### Relief

- 2.3 The site lies at an altitude of about 64 m A.O.D. and is generally flat. Gradient is not a factor adversely influencing land quality at this location.
- 2.4 The site may, however, be liable to flood, it being within the floodplain of the River Windrush.

#### Geology and Soils

- 2.5 The geology of the site is shown in the published Mineral Assessment Report No. 28 (IGS, 1977) as predominantly alluvium over 1st level river terrace deposits. Towards the north of the site the alluvial deposits are mapped as absent with 1st level river terrace deposits exposed. These drift deposits rest on a solid geology of Oxford Clay.
- 2.6 Soil Survey of England and Wales, Sheet 6, Soils of South East England (1983) shows the site as comprising soils of the Kelmscott Association. These are described as 'calcareous fine loamy soils over gravel, variably affected by groundwater and associated with non-calcareous clayey soils over gravel'. (SSEW, 1984).
- 2.7 Detailed field examination of the soils broadly confirms that soils similar to those described above are present on the site. Soils comprise calcareous and non-calcareous heavy silty clay loams, heavy clay loam or clays overlying gleyed clay subsoils which are typically slowly permeable. Calcareous limestone gravel (or sand and limestone gravel) is usually encountered within 45-100 cm. Where the gravelly horizons are close to the surface (ie. within about 50 cm) soils are more permeable (wetness class II) but are limited by droughtiness and workability constraints. Elsewhere soils have deeper slowly permeable clay subsoils and are limited to wetness IV with workability constraints due to the heavy textured topsoils.

3. AGRICULTURAL LAND CLASSIFICATION

- 3.1 The ALC grading of the survey area is determined primarily by the interaction of soil and climatic limitations giving rise to soil wetness and workability limitations. Occasional sporadic profiles also have droughtiness limitations where the gravel substratum is close to the surface.

Grade 3b

- 3.2 The majority of the site comprises moderate quality agricultural land which is subject to significant wetness and workability limitations. The soils (described in para 2.7) are predominantly derived from heavy textured alluvial deposits overlying calcareous sandy and gravelly materials. The movement of surface water through such profiles is impeded and the majority are classified as wetness class IV. In addition land is affected by a relatively high seasonal groundwater level and may be at risk of flooding from the River Windrush.

March 1993

ADAS Ref: 3302/52/92

MAFF Ref: EL 33/00017

J Holloway

Resource Planning Team

ADAS Statutory Group

Reading



SOURCES OF REFERENCE

INSTITUTE GEOLOGICAL SCIENCES (1977) Mineral Assessment Report No.28, Sheet SP 40 and part of SP 41 (Eynsham) (1:25,000 scale).

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 1:250,000 scale (and accompanying legend).