

AGRICULTURAL LAND CLASSIFICATION
OXFORDSHIRE MINERALS PLAN

LAND SOUTH WEST OF DUCKLINGTON

MAFF Ref: EL 33/00017

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1. SUMMARY

- 1.1 In September 1992, an Agricultural Land Classification (ALC) survey was carried out on approximately 18.56 ha of land south-west of Ducklington, 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 15 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 grassland.

- 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	18.41	100
Total Agricultural Area	18.41	
Urban	<u>0.15</u>	
Total Site Area	<u>18.56</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 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 ground water regime. Soils comprise calcareous and non-calcareous heavy silt clay loams (occasionally organic) overlying gleyed and slowly permeable clay subsoils. Occasional subsoil horizons have lenses of peaty or organic mineral material. Clay subsoils either extend to depths in excess of 100-120 cm or pass into calcareous sands and gravels from 80 cm. The site is graded 3b due to wetness and workability limitations. The land is also prone to flooding, limited areas of which were apparent at the time of survey.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

- 2.1 Estimates of climatic variables 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	SP369071
Altitude (m.A.O.D)	75
Accumulated Temperature (°days, Jan-June)	1431
Average Annual Rainfall (mm)	687
Field Capacity Days	149
Moisture Defecit - wheat (mm)	106
Moisture Defecit - potatoes (mm)	98

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

Relief

- 2.3 The site lies at altitudes of around 75 m A.O.D in River Windrush floodplain. The land is flat or very gently sloping. Neither gradient nor altitude are significant factors influencing land quality at this location. Parts of the site are, however, prone to flooding, limited areas of which were apparent to the northwest of the site at the time of survey.

Geology and Soils

- 2.4 The published Mineral Assessment Report which covers the site (Report No.23; IGS, 1976) includes a geological map at 1:25,000 scale which indicates the whole site as 1st level river terrace sands and gravels. These overlie Jurassic Oxford Clay.
- 2.5 There is a semi-detailed published soil map, again at 1:25,000 scale, (SSEW, 1983) which indicates the site as the Thames/Windrush soil series. These comprise soils developed from clayey river alluvium which may be peaty at some locations.
- 2.6 Detailed inspection of soils on the site indicate topsoils of calcareous or non-calcareous heavy silty clay loam which may be organic in the uppermost 10-20 cm. Topsoils rest directly over a gleyed and slowly permeable clay. Occasional subsoil horizons have lenses of peaty or organic materials. Whilst some soil profiles extend to 120 cm or more, many pass to calcareous gravelly or sand and gravel (usually fine limestone gravel) horizons between 80-120 cm. The water table was encountered at depth in a number of auger borings indicating that the soils suffer from both slowly permeable upper horizons and a high groundwater table.

3. 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. With the exception of a new quarry road (mapped as urban land) the whole site is graded 3b. (see paragraph 1.3)

Grade 3b

- 3.2 As indicated above the site is subject to significant soil wetness and workability limitations, due primarily to the heavy topsoil textures, slowly permeable upper subsoils and high groundwater levels. (see paragraph 2.6). Due to the slowly permeable clay subsoils the land is appropriately assessed as wetness class IV; this coupled with heavy silty clay loam topsoils in a relatively dry climatic regime makes such land eligible for grade 3b.

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Reading

SOURCES OF REFERENCE

INSTITUTE GEOLOGICAL SCIENCES (1976). Mineral Assessment Report No. 23. 1:25,000 scale. Sheet SP30 and parts of sheets SP20, SU29 and SU39 (Lechlade and Standlake)

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). Soil Survey Record No. 77. Soils in Oxfordshire I (Sheet SP30 - Witney South; 1:25,000 scale).