

AGRICULTURAL LAND CLASSIFICATION
OXFORDSHIRE MINERALS PLAN

TAR FARM, SOUTH LEIGH

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 82.45 ha of land at Tar Farm, North Leigh, 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 78 borings and 2 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 or chemical characteristics impose long term limitations to its agricultural use.

At the time of survey the land was in both grassland and arable uses.

- 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 3a	2.67	3
3b	78.36	97
Total Agricultural Area	<u>81.03</u>	
Urban)		
Non-Agricultural)	<u>1.43</u>	
Total Site Area	<u>82.45</u>	

- 1.4 Appendix 1 gives a general description of the grades and land use categories identified in this survey.
- 1.5 The site mainly comprises 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. Most of the site comprises clayey soils over calcareous sands and gravels, which may be encountered from 50-90 cm depth from the surface. To the north of the site in the vicinity of Rushy Common a small area of better quality grade 3a land is mapped. Here coarser textured sub-soils improve soil drainage and the wetness limitation is slightly reduced. The site is mainly graded 3b due to 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

Climate

- 2.1 Estimates of climatic variables were obtained by interpolation from a 5 km grid database (Met. Office, 1989) for a representative locations in the survey area.

Climatic Interpolation

Grid Reference	SP384080	SP392062
Altitude (m.A.O.D)	74	72
Accumulated Temperature (°days, Jan-June)	1431	1434
Average Annual Rainfall (mm)	685	672
Field Capacity Days	148	144
Moisture Defecit - wheat (mm)	106	109
Moisture Defecit - potatoes (mm)	98	100

- 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 70-75 m A.O.D within the River Windrush floodplain and a small tributary valley occupied by the Rushy Common Ditch. 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 may be subject to flooding.

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 presence of predominantly clayey soils developed from riverine alluvial deposits which may be peaty (Thames, Windrush and Fladbury series). Smaller areas are mapped as the Kelmscot series; these occur where the alluvium is very thin, or absent, over the underlying calcareous gravels or sandy (limestone) gravels and related terrace deposits. Small areas of silty loessial drift (brickearth), giving rise to soils of the Hook series, are also mapped towards the northern fringes of the site (SSEW, 1983).
- 2.6 Detailed inspection of soils on the site broadly confirms the nature of the soils as described above. Topsoils are typically slightly calcareous or non-calcareous heavy silty clay loams, heavy clay loams, silty clays and clays (occasionally organic) usually overlying gleyed and slowly permeable clay subsoils to at least 50-90 cm. Below this depth the sand content frequently increases progressively giving rise to calcareous sandy clay loams, medium sandy loams and loamy sands,

and sands with a limestone gravel content up to 50%. The majority of soils have slowly permeable layers immediately below the topsoils, but are also affected by a high water table in the underlying sands and gravels.

3. AGRICULTURAL LAND CLASSIFICATION

- 3.1 The ALC grading of the survey area is primarily determined by the interaction of soil and climatic factors giving rise to soil wetness and workability limitations. Where coarser textured gravelly subsoils occur closer to the surface (ie within about c.50 cm) soil drainage is improved but profiles are limited by soil droughtiness. The site is mainly grade 3b with a small area of grade 3a.

Grade 3a

- 3.2 Good quality agricultural land is mapped in a small area in the vicinity of Rushy Common. Here coarser textured subsoils improve soil drainage (wetness class II) although this also has the effect of limiting soils to grade 3a on the basis of a slight to moderate droughtiness limitation.

Grade 3b

- 3.3 Moderate quality grade 3b agricultural land occurs extensively over the site. Due to slowly permeable clay subsoils occurring immediately below the topsoil the land is appropriately assessed as wetness class IV; this coupled with the heavy textured topsoils (predominantly heavy silty clay loam or clay) gives rise to both wetness and workability limitations which in this relatively dry climatic regime limits such land to 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).