

**AGRICULTURAL LAND CLASSIFICATION**

**MANOR FARM, GRAVELEY, CAMBRIDGE**

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### **LAND AT MANOR FARM, GRAVELEY, CAMBRIDGE**

#### **1.0 BACKGROUND**

- 1.1 This 75.5 hectare site was surveyed in August 1993 in connection with proposals to develop a golf course. A total of 78 auger borings were made on the site on a structured 100 m grid basis, and this information was supplemented by data collected from 2 soil profile pits. At the time of the survey, the land was under wheat and barley which were in the process of being harvested.
- 1.2 On the published Agricultural Land Classification Map Sheet 134 (MAFF 1969), the site is shown as predominantly grade 2, with a small area of grade 3 in the southern corner of the site, adjacent to Graveley village. The current survey was undertaken to provide more detailed, site specific information on land quality.

#### **2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY**

##### Climate

- 2.1 Site specific climatic information was obtained by interpolating data contained in the agroclimatic dataset published by the Meteorological Office (Met Office 1989). This shows that the site has an annual average rainfall of 530 mm and an accumulated temperature (January to June) of 1413°C. Moisture deficits for wheat and potatoes are 117 mm and 111 mm respectively. These figures do not impose any restrictions on land quality, however, the interaction of climate with soil texture results in some soils being susceptible to winter wetness and summer droughtiness imperfections.

##### Altitude and Relief

- 2.2 The site occupies gently undulating land which falls from a maximum height of 50 m AOD in the north west over a slight ridge in the centre, to 35 m AOD in the south east of the site. In the south west corner, land gently rises out of a small valley feature to a height of 40 m AOD near the village. Gradients vary from 1-2° on lower slopes to 3-4° on mid slopes, which do not impose any limitation to land quality.

## Geology and Soils

- 2.3 The published 1:50,000 geology map sheet 187 (GSGB 1975) shows the site to comprise almost entirely glacial boulder clay, overlying Upper Jurassic Oxford Clay, which outcrops in a small, lowlying area in the south of the site.
- 2.4 The Soil Survey and Land Research Centre have surveyed the area at a scale of 1:25,000 (SSLRC 1989). This map, sheet TL26, shows the site to comprise mainly Hanslope Soils (\*1) on the higher ground and some midslopes, with Evesham (\*2), Drayton/Waterstock/St Lawrence (\*3) and Stretham (\*4) soils on remaining midslopes and lower ground. A small valley feature in the south of the site is shown to comprise Uffington Soils (\*5). Detailed field survey broadly confirmed these findings, identifying two key soil types.
- 2.5 The first soil type covers the majority of the site and occurs on the upper, mid, and some lower slopes. Profiles are calcareous throughout and comprise clay (or occasionally heavy clay loam) topsoils, over clay upper subsoils which are sometimes gleyed and overlie gleyed, slowly permeable chalky boulder clay at depths from 45/70 cms.

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- (\*1) Hanslope - Slowly permeable slightly mottled calcareous and non-calcareous clayey soils over very calcareous dense chalky clay below 40 cms. Some shallower soils over extremely calcareous dense chalky clay within 30 cms on eroded slopes and brows.
- (\*2) Evesham - Slowly permeable slightly mottled calcareous clays passing to dense clay or soft mudstone. Occasional similar soils with chalk and flint stones in their upper layers.
- (\*3) Drayton/Waterstock/St Lawrence - Slowly permeable slightly mottled calcareous clay soils with flint and chalk stones passing to dense stoneless clay or soft mudstone at depth, interspersed with deep moderately permeable slightly mottled non-calcareous fine loamy and fine loamy over clayey soils. Common slightly mottled calcareous fine loamy over clayey soils passing to dense stoneless clay at depth adjacent to low terraces.
- (\*4) Stretham - Moderately permeable calcareous clayey soils over very calcareous dense chalky clay below 100 cms. A few slightly mottled calcareous alluvial clayey soils adjacent to the main streams and ditches.
- (\*5) Uffington - Deep moderately permeable slightly mottled stoneless calcareous alluvial clayey soils.

Occasionally, chalky boulder clay occurs directly below the topsoil. Sandy pockets are locally present in the subsoil. Profiles are very slightly to slightly stony, although chalk boulders may be present in the subsoil. Wetness class has been assessed as typically II.

- 2.6 The second soil type occurs on lower slopes in the central and southern sections of the site, and has largely developed from soliflucted material. Profiles comprise non- or very slightly calcareous clay or heavy clay loam topsoils over variably calcareous clay upper subsoils, which usually overlie gleyed, slowly permeable chalky boulder clay from depths of 45/70 cms. Occasionally, sandy pockets are encountered in the subsoil. Wetness class is assessed as II, occasionally III.

### 3.0 AGRICULTURAL LAND CLASSIFICATION

- 3.1 The site has been assessed as a mixture of grade 2 and subgrade 3a. A precise breakdown of the ALC grades in hectares and percentage terms is given below:

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GRADE	HECTARES	PERCENTAGE
2	53.3	70.6
3a	21.7	28.7
Non Agricultural	<u>0.5</u>	<u>0.7</u>
TOTAL	75.5	100

- 3.2 The definition of ALC grades is given in Appendix 1.

#### Grade 2

- 3.3 Land graded 2 covers 53.3 hectares in the north and south of the site, generally on higher ground. Profiles correspond to those described in paragraph 2.5. Profiles are calcareous throughout and have been assigned wetness class II. Locally, profiles are imperfectly drained (wetness class III), or variably calcareous, however, these areas are too small to delineate separately. Minor winter wetness and summer droughtiness are the chief limitations to land quality.

### Subgrade 3a

- 3.4 Subgrade 3a land occupies 21.7 hectares on lower ground in the central portion and a small area in the south of the site. Profiles correspond to the non- or only very slightly calcareous soils described in paragraph 2.6. Wetness class has been assessed as typically II, occasionally III. Locally, profiles are calcareous throughout although these are too small to delineate separately. Slight winter wetness and workability are the chief limitations to land quality.

### Non Agricultural

- 3.5 0.5 hectares of non-agricultural land has been mapped, corresponding to a pumping station in the south of the site.

## **REFERENCES**

**GEOLOGICAL SURVEY OF GREAT BRITAIN, 1975.** Sheet 187, Hungtingdon, drift edition 1:50,000 scale.

**MAFF, 1969.** Agricultural Land Classification Map Sheet 134, Provisional, 1:63,360 scale.

**MAFF, 1988.** Agricultural Land Classification of England and Wales (Revised guidelines and criteria for the grading of agricultural land). Alnwick.

**METEOROLOGICAL OFFICE, 1989.** Data extracted from the published agroclimatic dataset.

**SOIL SURVEY AND LAND RESEARCH CENTRE, 1989.** Sheet TL26 (Papworth Everard). Soils in Cambridgeshire V. Soil Survey record no. 109. 1:25,000 scale.