

## **AGRICULTURAL LAND CLASSIFICATION CAMBRIDGE ROWING LAKE, MILTON, CAMBS**

### **1. BACKGROUND**

- 1.1 The site, an area of 74.4 hectares, is the subject of an application for recreational facilities comprising a boating lake and country park. The site comprises mainly agricultural land, with a very small proportion (1%) mapped as Non-Agricultural. The agricultural land was surveyed in detail in July 1992, by the ADAS Statutory Unit, in order to assess the agricultural land quality. An area of 4.5 hectares in the centre of the site was left unsurveyed because the crop was ready for harvest and could not be disturbed.
- 1.2 At the time of survey the land was under barley, wheat and sugar beet. Smaller areas of grassland also exist, some of which are grazed by cattle.
- 1.3 On the published Agricultural Land Classification Map Sheet 135 (Provisional, scale 1:63,360, MAFF 1971) the site is shown as mainly grade 3 with smaller areas of grade 2 in the north-west and grade 4 in the south. Since this map is of a reconnaissance nature designed primarily for strategic planning purposes, the current survey was undertaken to provide more detailed information on land quality for the survey area.
- 1.4 Soils information was collected from auger borings spaced at 100m intervals. Subsoil structural conditions and stone contents were assessed from 7 representative soil pits.

### **2. PHYSICAL FACTORS AFFECTING LAND QUALITY**

#### Climate

- 2.1 Climate data for the site was obtained from a recently published agricultural climatic dataset (Met Office 1989). This indicates that for the modal altitude of 5m AOD the annual average rainfall is 565 mm (22.6"). This data also indicates that field capacity days are 94 and moisture deficits are 121 mm for wheat and 117 mm for potatoes. These climatic characteristics do not impose a limitation on the ALC grade.

### Altitude and Relief

- 2.2 The survey area comprises level land lying at an altitude of 5m AOD. Consequently there are no altitude or gradient limitations preventing this land being classified as grade 1.

### Geology and Soils

- 2.3 The published 1:50,000 scale geology map sheet 188 (Geological Survey of Great Britain, 1981) shows the site to mainly comprise drift deposits lying parallel to the river Cam in a northeast/southwest direction. A large area of alluvium lies adjacent to the river Cam in the southern part of the site. To the northwest of this runs a similar sized area of first terrace deposits. Smaller portions of second terrace deposits occur upslope in the northwest, with Gault Clay outcropping to the north.
- 2.4 The Soil Survey of England and Wales published small scale map of the area (Sheet 135, scale 1:63,360, 1976) shows mainly the occurrence of the Middelney Association (\*1) with a smaller area of the Milton Association (\*2) upslope to the northwest.

The current more detailed survey identified two main soil types.

- 2.4.1 Within the majority of the survey area profiles typically comprise very slightly calcareous to calcareous heavy clay topsoils over calcareous heavy clay upper subsoils which are gleyed. These overlie gravelly calcareous lower subsoils which consist of 50% flints in a medium sand or loamy medium sand matrix 60/70 cms+.

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(\*1) Middelney Association: Stoneless clayey soils mostly overlying peat. Soils variably affected by groundwater which is, in places, controlled by ditches and pumps. Flat land. Risk of flooding locally.

(\*2) Milton Association: Deep permeable calcareous fine loamy soils variably affected by groundwater. Some similar shallower well drained soils over gravel in places. Complex soil patterns occur locally.

2.4.2 In smaller areas to the west of the site lighter textured, stonier soils occur. Profiles are calcareous throughout and typically comprise (sandy) heavy clay loam topsoils and upper subsoils which tend to become sandier with depth. From 50/60 cms or deeper loamy medium sand or medium sand textures may be encountered. Stoniness increases with depth being 10% in the upper subsoil and 15-30% in the lower subsoil to a depth of 85/90 cm. Below this stone contents may be as high as 50%.

### 3. AGRICULTURAL LAND CLASSIFICATION

3.1 The site has been classified as mainly subgrade 3b (59%) with smaller areas of 3a to the west (34%). There is a small portion of Non-Agricultural land (1%) and a small area which has not been surveyed (6%). A precise breakdown of the ALC grades in hectares and % terms is provided below.

#### AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
3a	25.5	34
3b	44.1	59
Non-Agricultural	0.3	1
Unsurveyed	<u>4.5</u>	<u>6</u>
TOTAL	74.4	100

3.2 The definition of the ALC grades is included in Appendix 1.

#### Subgrade 3a

3.3 The subgrade 3a land outcrops to the west and coincides with the droughty, fine loamy soils described in paragraph 2.4.2. The fine textured nature of the soils combines with profile stoniness to impose moderate droughtiness limitations on the available water reserves for crop growth. Therefore the land has been graded 3a (good quality agricultural land).

### Subgrade 3b

- 3.4 Land graded 3b covers the majority of the site. It corresponds with the heavy textured clay soils described in paragraph 2.4.1. Topsoils are calcareous but the clay content exceeds 50% thus limiting the topsoil workability of this land. The above workability limitation combines with the slow permeability in the subsoils (ie. wetness class III) to impose a significant limitation on the ALC grade. Consequently the land has been graded 3b (moderate quality agricultural land).

### Non-Agricultural

- 3.5 An area of gardens in the southwest of the survey area has been mapped as Non-Agricultural.

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## **References**

GEOLOGICAL SURVEY OF GREAT BRITAIN (ENGLAND & WALES), 1981. Solid and Drift edition, Sheet 188 Cambridge 1:50,000 scale.

MAFF, 1971. Agricultural Land Classification Map Sheet 135 (Provisional) 1:63,360 scale.

MAFF, 1988. Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for grading the quality of Agricultural Land). Alnwick.

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

SOIL SURVEY OF ENGLAND AND WALES, 1976. Sheet 135 Cambridge and Ely 1:63,360 scale (Seventh Series).

## Appendix 1

### **Grade 1 - excellent quality agricultural land**

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly include top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

### **Grade 2 - very good quality agricultural land**

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable crops. The level of yields is generally high but may be lower or more variable than Grade 1.

### **Grade 3 - good to moderate quality agricultural land**

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

#### **Subgrade 3a - good quality agricultural land**

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

#### **Subgrade 3b - moderate quality agricultural land**

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of winter range of crops or high yields of grass which can be grazed or harvested over most of the year.

**Grade 4 - poor quality agricultural land**

Land with severe limitations which significantly restrict the range of crops and/or levels of yields. It is mainly suited to grass with occasional arable crops (eg. cereals and forage crops) the yield of which are variable. In most climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

**Grade 5 - very poor quality agricultural land**

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.