

## **AGRICULTURAL LAND CLASSIFICATION**

### **BURLEY ROAD, OAKHAM, LEICESTERSHIRE**

#### **1.0 BACKGROUND**

- 1.1 The site, an area of 18.7 hectares, is the subject of an application for residential development. In December 1993, ADAS Resource Planning Team undertook an Agricultural Land Classification (ALC) survey, carrying out a total of 20 auger borings. In addition, two soil pits were dug to provide more detailed information on subsoil conditions.
- 1.2 At the time of the survey the site was in arable production.
- 1.3 On the published 1,63,360 scale ALC map, sheet 122, (MAFF, 1972) the site is mapped as approximately two-thirds grade 2 and one-third grade 3. 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 site.

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

##### Climate

- 2.1 Climate data was obtained from the published agricultural climatic dataset (Met Office, 1989). This indicates that at an average altitude of 95 m AOD the site has an annual average rainfall of 649 mm. It also indicates that field capacity days are 142 and the moisture deficits for wheat and potatoes are 100 mm and 90 mm respectively. These characteristics do not impose any climatic limitation on the ALC grade of the site.

##### Altitude and Relief

- 2.2 In general the site is gently undulating at an altitude of 90-100 m AOD. An exception occurs along the north eastern boundary where there is a small area with gradients in excess of 7°.

## Geology and Soils

- 2.3 The published 1:50,000 scale solid and drift edition geology map sheet 157 (Geological Survey of Great Britain, 1978) shows two rock formations outcropping on site. There are Middle Lias Marlstone Rock Beds outcropping in a large lobe centred to the east of the site, and Silt and Silty Clay which predominates to the west and south of the site. Both rock types are solid geology, and each occupies approximately 50% of the site.
- 2.4 No detailed soil map of the area is available. The reconnaissance 1:250,000 scale soil map "Soils of Eastern England" (Soil Survey of England and Wales, 1983) shows the presence of two soil associations. The Banbury Association (\*1) covers approximately 80% of the site, and the Denchworth Association (\*2) covers approximately 20% at the northern end of the site. The current more detailed survey identified three soil types which only partially correspond with those of the SSEW (1983) reconnaissance survey.
- 2.5 The soils occurring in the central part of the site comprise medium clay loam topsoils to a depth of 30-35 cm. In some profiles the topsoil overlies shattered limestone/marlstone whilst in others there is a medium or heavy clay loam subsoil horizon extending typically to 50-80 cm depth overlying the shattered rock. The soils are generally free draining (wetness class I) and slightly stony throughout.
- 2.6 At the extreme south and also on the western part of the site to the south of the central track, heavy textured imperfectly/poorly drained soils have been mapped. The soils typically have a heavy clay loam topsoil to a depth of 30/35 cm overlying a faintly mottled heavy clay loam or clay upper subsoil to approximately 40 cm depth. Below this depth the subsoil is invariably silty clay and strongly mottled. The soils are generally slowly permeable below 40 cms depth and have been assessed as wetness class III or IV.

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(\*1) Banbury Association: Well drained fine and coarse loamy ferritic brown earths developed on Cretaceous Ironstone, Northampton Sand and Middle Lias Marlstone. Some deep fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.

(\*2) Denchworth Association: Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils. Some fine loamy over clayey soils with only slight seasonal waterlogging and some slowly permeable calcareous clayey soils. Landslips and associated irregular terrain locally.

2.7 Over the remainder of the site deep fine loamy over clayey soils have been mapped. These soils have a medium or heavy clay loam topsoil to a depth of 30/35 cm over a similar textured upper subsoils which typically extends to depths of 50-80 cm. Below this lies a clay textured lower subsoil. This lower subsoil is generally mottled and slowly permeable and the soils have been assessed as typically wetness class II, although at the northern end the soils are classified as wetness class I.

### 3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The definitions of the ALC grades are included in Appendix 1.

3.2 The site has been mapped as predominantly subgrade 3a with some smaller areas of subgrade 3b and grade 2. The table below shows the breakdown of the grades in hectares and in percent terms for the survey area.

#### AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
2	1.2	6.4
3a	12.5	66.8
3b	4.9	26.2
Non Agricultural	0.1	0.5
<b>TOTAL</b>	<u>18.7</u>	<u>100.00</u>

#### Grade 2

3.3 The grade 2 land lies at the northern extremity of the site and profiles are as described in paragraph 2.7. Subsoils are underlain by clay or limestone/marlstone at 80 cm, and the soils are assessed as wetness class I. Topsoils are heavy clay loams, and workability limitations preclude the land from a higher grade.

#### Subgrade 3a

3.4 The land graded 3a corresponds to soils described in paragraphs 2.5 and 2.7. Profiles described in paragraph 2.5 are underlain by limestone/marlstone rock at a relatively shallow depth. This has a limiting effect on the available water for crop growth, and the prevailing moderate droughtiness imperfections preclude the land from a higher grade.

Profiles as described in paragraph 2.7 have a moderate wetness and workability limitation imposed by the combination of heavy textured topsoils and slow permeability at depth (wetness class II). Consequently, the land is restricted to subgrade 3a (good quality agricultural land).

#### Subgrade 3b

- 3.5 The land graded 3b is predominantly associated with the heavy textured soils described in paragraph 2.6. The combination of slow permeability at a relatively shallow depth (wetness class III and IV) and heavy textured topsoils imposes a wetness and workability limitation which restricts the land to subgrade 3b (moderate quality agricultural land).

In addition, there is a small area along the northeastern site boundary which is graded 3b due to gradients of 7-10° and due to limestone/marlstone bedrock lying immediately below the topsoil at 30/33 cm. The relative shallowness of the underlying limestone has a limiting effect on the available water for crop growth, which together with the moderately steep slopes preclude the land from a higher grade.

#### Non-Agricultural

- 3.6 There is a small area of scrub/woodland by the western site boundary. This has been mapped as Non-Agricultural.

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## **REFERENCES**

**GEOLOGICAL SURVEY OF GREAT BRITAIN (1978).** Solid and Drift Edition,  
Geology Sheet 157, 1:50,000 scale.

**MAFF (1972).** Agricultural Land Classification Map No 122. 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 (1984).** Soils and their use in Eastern  
England by C A Hodges, R G O Burton, W M Corbett, R Evans and R S Searle,  
Harpenden.

## 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 yield 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 a wider 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.