

## **AGRICULTURAL LAND CLASSIFICATION LAND AT HILL TOP FARM, CASTLE DONINGTON, LEICESTERSHIRE**

### **1.0 INTRODUCTION**

- 1.1 This 36.6 hectare site is the subject of proposals for residential development. In August/September 1993, ADAS Resource Planning Team undertook an Agricultural Land Classification (ALC) survey of the site, carrying out a total of 40 auger borings using a hand held Dutch soil auger. In addition one soil inspection pit was dug to assess subsoil conditions.
- 1.2 At the time of the survey the land was predominantly under permanent pasture with cattle grazing. Along the western boundary of the site fields were in arable, some of which had recently been harvested.
- 1.3 On the published ALC map sheet 121 (MAFF 1971) the majority of the area is shown as grade 3 with a small area of grade 2 in the northern most field.

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

#### Climate

Climate data was obtained by interpolating information contained in the published agricultural climatic dataset (Met. Office, 1989). This indicates that for the average site altitude of 80m AOD, the average annual rainfall is 648mm (25.5"). This data also indicates that the field capacity days are 141 and moisture deficits for wheat and potatoes are 103mm and 94mm respectively. These climatic characteristics do not impose any climatic limitation on the site.

#### Altitude and Relief

- 2.2 From a maximum altitude of 95 m AOD on the watershed ground west of Hill Top Farm, the land falls in a northerly direction over moderately gentle gradients to a minimum altitude of 70 m AOD in the northern part of the site. To the northeast of Hill Top Farm there is an area of disturbed land with embankments and possibly old soil storage mounds.

Due to the uneven microtopography this is likely to severely hinder mechanical operations, and this therefore restricts land quality to grade 3b. Elsewhere neither gradient nor altitude constitute limitations to the ALC grade.

### Geology and Soils

- 2.3 The published 1:50,000 scale solid and drift edition geology sheet 141 (Geological Survey of England and Wales, 1976) shows the majority of the site to be covered by Triassic Keuper Marl with beds of Sandstone and bands of Gypsum. Triassic Keuper Sandstone with bands of Marl outcrop in the northern part of the site with a thin ribbon running parallel to the contours along the mid slopes.
- 2.4 No detailed soil map is available of the area but the reconnaissance 1:250,000 scale soil map "Soils of Midland and Western England" published by the Soil Survey of England and Wales 1983, shows the presence of two soil associations. Over much of the area the Bromsgrove Association (\*1) is mapped, with a small area of Worcester Association soils (\*2) mapped on the southern part of the site near Hill Top Farm.
- 2.5 During the detailed ADAS field survey one soil type was identified.
- 2.6 Over the whole of the site profiles typically comprise medium or heavy clay loam (very occasionally sandy silt loam, sandy clay loam or clay) topsoils over medium clay loam, heavy clay loam or clay upper subsoils. Lower subsoils are typically clay but occasionally deep heavy clay loam extends to depth. Soils are mainly moderately well drained (Wetness Class II) although individual profiles with better and poorer drainage (Wetness Class I and III) do occur locally. Soils are non calcareous and usually very slightly stony throughout, although occasionally very soft weathered sandstone is found at variable depth within the profile.

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(\*1) Bromsgrove Association: Well drained reddish coarse loamy soils mainly over soft sandstone, but deep in places. Associated fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Risk of water erosion.

(\*2) Worcester Association: Slowly permeable non calcareous and calcareous reddish clayey soils over mudstone, shallow on steeper slopes. Associated with similar non calcareous fine loamy over clayey soils. Slight risk of water erosion.

### 3.0 AGRICULTURAL LAND CLASSIFICATION

- 3.1 The definitions of the Agricultural Land Classification (ALC) grades are included in Appendix 1.
- 3.2 The majority of the site is graded 3a with small areas of grade 2 in the northern part of the site and 3b to the north east of Hill Top Farm.

The table below shows the precise breakdown of the ALC grades of the site.

AGRICULTURAL LAND CLASSIFICATION		
	Area (ha)	Percentage
Grade 2	3.2	8.7
Subgrade 3a	28.7	78.4
Subgrade 3b	2.9	7.9
Urban	1.1	3.0
Non agricultural	0.7	2.0
TOTAL	36.6	100.00

#### Grade 2

- 3.3 Grade 2 land is mapped in the extreme north of the site and is associated with the lighter textured variant of soils described in paragraph 2.6. Topsoils are typically medium clay loam or sandy clay loam over similar or heavier subsoils. Soils are typically slowly permeable at depth (wetness class II) and the land is limited by a combination of minor winter wetness and workability constraints.

#### Subgrade 3a

- 3.4 Land comprising subgrade 3a includes many of the slightly heavier variants of soils described in paragraph 2.6. Profiles typically comprise heavy clay loam (occasionally medium clay loam) over similar or heavier subsoils. Moderate wetness and workability limitations restrict the land from any higher grade. Although many profiles are or approach grade 2 on the eastern side of the site, these do not occur in sufficiently consistent areas to permit separate delineation

### Subgrade 3b

- 3.5 Land graded 3b occurs in an area to the north east of Hill Top Farm. This area has previously been disturbed and currently has irregular micro topography which restricts land quality to 3b.

### Non Agricultural

- 3.6 A pond and storage area for bales and silage are classified as land primarily not in agricultural use.

### Urban

- 3.7 Hill Top Farm and associated farm buildings are mapped as urban.

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## 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.

## REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN (ENGLAND & WALES) 1976 Solid and Drift Edition Sheet 141 Loughborough 1:50,000 scale.

MAFF 1971 Agricultural Land Classification Map Sheet 121 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 Published climatic data extracted from the agroclimatic dataset compiled by the Meteorological Office.

SOIL SURVEY OF ENGLAND & WALES 1983 Sheet 3 Soils of Midland and Western England 1:250,000 scale.

SOIL SURVEY OF ENGLAND & WALES 1984 Soils and their use in Midland and Western England by J M Ragg *et al.* Harpenden.