3/90

AGRICULTURAL LAND CLASSIFICATION

NOON FOLLY FARM, BAR HILL, CAMBRIDGESHIRE

1. BACKGROUND

1.1 The site, an area of 65.6 hectares, is the subject of an application for the development of a shopping centre complex near Bar Hill, Cambridgeshire. MAFF surveyed the site in February 1990 to assess the agricultural land quality.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data for the site was obtained from the published agricultural climatic dataset (Met Office, 1989). This indicates that for the survey area the annual average rainfall is 548 mm (21.6"). This data also indicates that field capacity days are 89 and moisture deficits are 118 mm for wheat and 113 mm for potatoes. These climatic characteristics do not impose any climatic limitations on the ALC grading of the survey area.

Altitude and Relief

2.2 The land surveyed comprises a fairly level plateau which lies at an altitude of 17m AOD. Microtopographic variation occurs to the west of Noon Folly Farm where a marked ridge traverses the site in a northeasterly/southwesterly direction. Gradient and altitude do not constitute limitations to the ALC grade.

Geology and Soils

2.3 The published 1:50,000 scale drift edition geology sheet 187 (Geological Survey of Great Britain 1975) shows the survey area to comprise mainly Kimmeridge Clay with a smaller area of Ampthill Clay towards the northern corner of the site.

2.4 The Soil Survey of England and Wales have mapped the soils in the area on two occasions; firstly, provisionally in 1973 at a scale of 1:63,360 and secondly, in 1983, at a reconnaissance scale of 1:250,000. These maps show the occurrence of the Denchworth Association (*1) and the Evesham 3 Association (*2) respectively. During the current survey a more detailed inspection of the soils was carried out.

Two main soil types occur over the site.

2.4.1 The majority of the site comprises well bodied soils which contain stony layers in the lower horizons. The profiles typically comprise heavy clay loam or occasionally clays to depths 40/70 cm. Below this, profiles become very stony* and consist of a matrix of sand and clay loam lenses. At depth 70/110 cm+ soils generally merge into gleyed clays, however, at sporadic intervals to the north of Noon Folly Farm the stony layers extend to 120 cm. Depth to and width of calcareous horizons, within these profiles, varies markedly across the site.

2.4.2 In the northwest, southwest and adjacent to the eastern edge of the site a finer textured less stony soil variant outcrops. This soil typically comprises medium clay or occasionally heavy clay loam topsoils over gleyed decalcified clays. At depth 80/90 cm+ profiles are often calcareous due to the presence of carbonate nodules. Occasionally, towards the northeast corner of the site slightly stony bands occur in the subsoil.

(*1) Denchworth Association 1973: Gleyed brown calcareous soil (Grey calcareous and non calcareous Jurassic and Cretaceous Clays).

(*2) Evesham 3 Association 1983: Slowly permeable calcareous clayey and fine loamy over clayey soils. Some slowly permeable seasonally waterlogged non-calcareous clayey soils (Jurassic and Cretaceous Clay).

* Stony: Stones comprise very small, small and medium flints.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The definition of the Agricultural Land Classification grades are included in Appendix 1.

3.2 The table below shows the breakdown of ALC grades in hectares and % terms for the survey area.

	AGRICULTURAL LAND CLASSIFICATION	
Grade	ha	%
3a	8.8	13.4
3b	48.5	73.9
Non Agricultural	3.8	5.8
Urban	4.3	6.6
Agricultural Buildings	0.2	0.3
TOTAL	65.6	100.0

3.3 Subgrade 3a

A narrow tract of land, which forms the microtopographic ridge described in paragraph 2.2, has been mapped as 3a. This land is associated with the better drained variant of the soil described in paragraph 2.4.1. Auger boring information indicates that these profiles contain narrower stony bands (typically 20-25 cm thick) which occur at depths 45/60 cm+. The presence of these stones, acts to reduce the waterholding capacity of these profiles, thus profiles are moderately droughty. Furthermore, profile pit observations indicate that below these stony horizons the gleyed clay encountered is slowly permeable. As a result the profile wetness is assessed as wetness class II. Consequently, moderate droughtiness, wetness and workability imperfections restrict this land to subgrade 3a (good quality agricultural land).

3.4 Subgrade 3b

The majority of the survey area has been mapped as subgrade 3b. Two main situations occur.

3.4.1a Through the centre and western half of the site the less well drained variant of the soils described in paragraph 2.4.1 predominates. Ground water levels are high on this flat low lying land. At the time of the survey the upper horizons were wet and often gleyed. Profile pit observations indicated that the clay lower subsoils were slowly permeable (ie wetness class II). However, this clay holds the ground water up which causes waterlogging of the profiles to shallower depths in winter, namely 40/50 cm. The resultant wetness class was assessed as III. Consequently wetness and workability impose significant restrictions on the flexibility of this land. Thus the land is restricted to subgrade 3b (moderate quality agricultural land).

3.4.1b To the north of Noon Folly Farm subsoils are very stony to 120 cm. In this area significant droughtiness combines with wetness and workability imperfections to restrict this land to subgrade 3b.

3.4.2 Towards the northwest, southwest and eastern edge of the site the land graded 3b is associated with the well bodied soils described in paragraph 2.4.2. Topsoils comprise non calcareous clays which overlie subsoils of similar textures. Subsoils are slowly permeable directly below the topsoil (30/35 cm+) and as a result the drainage status has been assessed as wetness class III. Thus significant wetness and workability imperfections exclude this land from a higher grade.

3.5 Urban and Non Agricultural

The Bar Hill residential area roundabout and associated embankments have been mapped as urban and non agricultural land respectively.

October 1990

RESOURCE PLANNING GROUP
Cambridge RO

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 includes 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 root 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 with affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. When more demanding crops and 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 level 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 1975 Drift edition Geology Sheet No 187, 1:50,000 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 ALC agroclimatic dataset.

SOIL SURVEY OF ENGLAND AND WALES 1973 (Provisional) The Soils of Cambridge and Ely scale 1:63360.

SOIL SURVEY OF ENGLAND AND WALES 1983. 'The Soils of Eastern England' Sheet 4 1:250,000.