

AGRICULTURAL LAND CLASSIFICATION

GRANGE FARM, BAR HILL, CAMBRIDGESHIRE

1. BACKGROUND

- 1.1 The site an area of 34.6 hectares, is the subject of an application for residential and industrial development adjacent to Grange Farm, Bar Hill. MAFF surveyed the site in July 1991 to assess the agricultural land quality.
- 1.2 The survey was carried out at an auger boring density of one per hectare. During the survey the land was in oil seed rape and wheat.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

- 2.1 Climate data for the site was obtained from the published agricultural climatic dataset. (Met Office, 1989). This indicates that for the site's mid range altitude the annual average rainfall is 551mm (21.7"). This data also indicates that field capacity days are 90 and moisture deficits are 116mm for wheat and 111mm for potatoes. These climatic characteristics do not impose any climatic limitations on the ALC grading of the survey site.

Altitude and Relief

- 2.2 The land surveyed slopes gently northwards towards the A604 road from a maximum altitude of 40m to 21m AOD. 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 map sheet 187 (Geological Survey of GB, 1975) shows the survey area to comprise mainly clayey deposits, namely Kimmeridge Clay, Gault Clay and boulder clay outcropping with rise in altitude. Sandstones have also been mapped midslope in the northern half of the site.
- 2.4 The Soil Survey of England and Wales has mapped the soils in the area on two occasions; firstly, in 1973, at a scale of 1:63360 and secondly, in 1983, at a reconnaissance scale of 1:250,000. The more detailed map shows the presence of mainly the Denchworth Association (*1) with a small outcrop of the Hanslope Association (*2) to the south east. During the current survey a more detailed inspection of the soils was carried out.

Two main soil types occur over the site.

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

(*2) Hanslope Association: Gleyed brown calcareous soil. (Chalky Boulder Clay).

- 2.4.1 The majority of the survey area comprises non calcareous Kimmeridge/Gault Clay derived soils. Profiles typically consist of clay topsoils over clay subsoils which may contain calcium carbonate nodules at depth. Bands of 15% flints are common between 50 and 70cm in some profiles. Occasionally topsoils are heavy clay loam and subsoils comprise 50% flints in a sandy clay matrix.
- 2.4.2 Towards the south east corner of the site the soils are derived from chalky boulder clay deposits. They typically comprise calcareous clay or heavy clay loam topsoils over calcareous clay subsoils. Chalk fragments are common throughout the subsoil.

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	34.4	99.4
Urban	0.2	0.6
	—	—
TOTAL	34.6	100
	—	—

3.3 Grade 3a

Two main situations occur

- 3.3.1 The majority of the 3a land is associated with the decalcified clayey soils described in paragraph 2.4.1. Profile pit observations indicate that these clays are slowly permeable at depths 45/65cm+ (ie wetness class II). This land is consequently limited by moderate wetness and workability imperfections which derive from the reduced subsoil permeability at depth combined with the heavy, decalcified topsoil textures. These factors restrict the land to subgrade 3a (good quality agricultural land).
- 3.3.2 Towards the south east land rises gently onto the boulder clay plateau. In this area the chalky boulder clay soils were mapped and are described in paragraph 2.4.2. Profile pit observations indicate that the subsoils are slowly permeable directly below the topsoil (ie wetness class III)*. Heavy calcareous topsoils and slow permeability at shallow depths combine to preclude this land from a higher grade.

*Occasional profiles of wetness class II were found but these covered too small an area to delineate separately.

3.4 Urban

The Gas Valve Compound adjacent to the A604 road has been mapped as urban.

August 1991

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References

GEOLOGICAL SURVEY OF GREAT BRITIAN 1975 Drift edition Geology Sheet No 187,
1:50,000 scale.

MAFF 1971, Agricultural Land Classification Map Sheet 135, scale 1:63360.

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.