Cambs 135/93

AGRICULTURAL LAND CLASSIFICATION
LAND AT MILE HILL, MANSFIELD, NOTTINGHAMSHIRE

1.0 BACKGROUND

1.1 This 24.9 hectare site was surveyed on 1st December 1993 in connection with an industrial development proposal. A total of 16 auger borings were made on a structured grid basis, at a density of approximately 1 per 1.5 hectares. This information was supplemented by information collected from 2 soil profile pits. At the time of the survey the land was in arable use.

1.2 On the published Agricultural Land Classification Map Sheet 112 (MAFF, 1960) the entire site is shown as grade 2. 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.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Site specific climatic information has been obtained by interpolating data held in the published 5km grid dataset (Meteorological Office 1989). This information shows that the site has an annual average rainfall of 701mm and an accumulated temperature (January to June) of 1305°C. Moisture deficits are 94mm for wheat and 81mm for potatoes and the site is at field capacity for 158 days each year. The moderate rainfall figures experienced on the site together with the relatively low accumulated temperature results in the site being excluded from grade 1.

Altitude & Relief

2.2 The site lies in a gently sloping dry valley, with slopes falling from a maximum height of 130m along the northeastern boundary to 120m on the valley floor which runs towards the south of the site. Slopes vary from the flat land in the valley base to 3-4° on the mid slopes, but nowhere on site do gradients constitute a limitation to land quality.

Geology and Soils

2.3 The published geology map sheet 112 (GSGB 1971) shows the site to be underlain entirely by Lower Magnesian Limestone.

2.4 The Soil Survey of England and Wales have mapped the area at a reconnaissance scale of 1:250,000. This map, entitled 'The soils of Midland and Western England' (SSEW 1983) shows the whole site to comprise the Aberford Association (*). The current survey has identified two soil types.

2.5 On the lower land in the central areas of the site are colluvial clayey soils, thought to be derived from downwash from the upper slopes. Profiles comprise medium clay loam topsoils over heavy clay loam upper subsoils which overlie slowly permeable red clay from depths of typically 55cms. Wetness class is assessed as III, although some wetness class II profiles were encountered locally. The soils are non calcareous and very slightly stony throughout.

2.6 Secondly, on the slightly higher ground, typically around the peripheries of the site are soils which comprise medium or heavy clay loam topsoils over similar upper subsoils which overlie sandy clay loam, in which the fine sand fraction was evident. These soils are free draining (wetness class I), non calcareous and very slightly stony. Toward the eastern boundary of the site is a minor ridge running east west where shallow soils over the underlying limestone have been mapped. These soils have medium clay loam topsoils and heavy clay loam upper subsoils which overlie limestone rock at shallow depths. Topsoil stone was measured at up to 20% (greater than 2cms), and the limestone was occasionally encountered directly below the topsoil.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 Most of the site has been graded 2 and 3a with a small area of 3b lying on a gently sloping ridge in the central area of the site. A precise breakdown of grades, in hectares and percentage terms, is given overleaf.

(*) Aberford Association: Shallow, locally brashy, well drained calcareous fine loamy soils over limestone. Some deeper calcareous soils in colluvium.

AGRICULTURAL LAND CLASSIFICATION

Grade	Ha	%
2	14.41	57.9
3a	8.66	34.8
3b	1.83	7.3
TOTAL	24.9	100

3.2 Definitions of the ALC grades are given in Appendix 1.

Grade 2

3.3 Grade 2 land is mapped in the north and south of the site and corresponds to the deeper free draining soils described in paragraph 2.6. Although some profiles are of grade 1 quality due to topsoil texture, the site is limited climatically and thus the land is excluded from a higher grade.

Subgrade 3a

3.4 This land is mapped in the central and northwestern areas of the site and is associated with the soils described in paragraph 2.5. Profiles are imperfectly drained (wetness class III), and due to the medium clay loam topsoil texture, moderate winter wetness and workability problems are the chief limitations on this land.

Subgrade 3b

3.5 Subgrade 3b occurs in a small area in the central part of the site where the shallow, stony soils described in paragraph 2.6 have been mapped. These soils have a moderate droughtiness impediment due to the shallow depth to limestone, and in addition, a high (up to 20% greater than 2cms) topsoil stone content both of which exclude the land from any higher grade.

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December 1993

REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN 1971. Sheet 112, Chesterfield, Solid and Drift. 1:63,360 scale.

MAFF, 1969. Agricultural Land Classification map sheet 112, 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, 1983. Soils of Midland and Western England, Sheet 4. 1:250,000 scale.

SOIL SURVEY OF ENGLAND AND WALES, 1984. Bulletin No 12. "Soils and their use in Midland and Western England". J M Ragg *et al.* 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 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.