# AGRICULTURAL LAND CLASSIFICATION

# LAND AT HOLLY LODGE DRIVE/BOUGHTON GREEN ROAD, MOULTON PARK, NORTHAMPTON

## 1.0 INTRODUCTION

1.1 The site, an area of approximately 2.9 hectares is the subject of a proposed development. In April 1995, ADAS Statutory Resource Planning Team undertook a detailed Agricultural Land Classification (ALC) survey, carrying out a total of 6 auger borings. In addition one soil inspection pit was dug to provide more detailed information on subsoil conditions.

1.2 At the time of the survey the land was under grass, being grazed by cattle.

1.3 On the published 1:63 360 scale ALC map, Sheet 133 (MAFF, 1974) the whole site is mapped as grade 3 land. 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 for the sites was interpolated from data contained in the published agricultural climatic dataset (Met Office, 1989). This indicates that for an average altitude of 115 m AOD, the average annual rainfall is 627 mm (24.7"). Accumulated temperature is given at 1347 days °C. It also indicates that field capacity days are 128 and that moisture deficits for wheat and potatoes are 104 mm and 94 mm respectively.

2.2 These climatic characteristics do not impose any overall climatic limitation to land quality.

Altitude and Relief

2.3 This small site lies on the northern boundary of Northampton and is adjacent to the Moulton Park Industrial Estate. The land falls steadily in a north easterly direction from a maximum altitude of approximately 123 m AOD at the southern tip of the site to 109 m AOD in the north east corner. Slopes typically range between $1^{\circ}$ and $4^{\circ}$ and thus neither gradient nor altitude constitute limitations to the ALC grade.

Geology and Soils

2.4 The published 1:50 000 scale solid and drift edition geology map, sheet 185 (Geological Survey of England and Wales, 1980) shows the small site to comprise a complex geology. On the lowest part of the site Jurassic Lower Estuarine Series is mapped. As the land rises outcrops of Upper Estuarine and Blisworth Limestone are shown and on the highest land in the southern part of the site boulder clay caps the underlying deposits.

2.5 No detailed soil map is available of the area but the reconnaissance 1:250 000 scale soil map "Soils of Eastern England" (Soil Survey of England and Wales 1983) shows the presence of a single soil association, the Banbury Association. These are described as well drained brashy fine and coarse loamy ferruginuous soils over limestone with some deep fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.

2.6 During the current more detailed survey work two main soil types occur with variations reflecting the complex underlying geology.

2.7 The first soil type is found on the highest land in the southern half of the site. Topsoils typically comprise non calcareous, very slightly stony heavy clay

2.7 The first soil type is found on the highest land in the southern half of the site. Topsoils typically comprise non calcareous, very slightly stony heavy clay loam. Upper subsoils are similar with lower subsoils comprising variable textures ranging from fine sandy silt loam to heavy silty clay loam. Soils have been assessed as wetness class I/II. At the southern tip of the site soils are calcareous throughout reflecting the boulder clay deposit.

2.8 The second soil type is found in the northern half of the site and comprises variable soils. This reflects the complexity of the underlying geology of the Estuarine Series. Topsoils range from very slightly stony, non calcareous, fine sandy silt loam to heavy clay loam. Subsoils are similarly variable but contain bands of dark grey clay which occur at variable depths and vary in thickness between 15 cm to 40 cm+. Wetness class has been assessed in the range of I/III.

## 3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The definitions of the ALC grades is provided in Appendix 1 with wetness class definitions given in Appendix 2.

3.2 The whole site has been graded 2 (very good quality agricultural land). The precise area measurement is given below.

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| Grade | Ha | % |
|---|---|---|
| 2 | 2.9 | 100 |

Grade 2

3.3 Grade 2 land is associated with both the soil types described in paragraphs 2.7 and 2.8. Soils found in the southern part of the site (paragraph 2.7) are freely drained (wetness class I) but heavy topsoil textures restrict the land by slight wetness and workability limitations. Soils in the extreme south suffer from a

slight drainage imperfection (wetness class II) but are naturally calcareous throughout the profile, thus have also been graded 2.

3.4 The land in the northern part of the site is limited by slight droughtiness, wetness and workability limitations. This depends on the textures within the profile and the depth to a slowly permeable layer, where it exists.

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April 1995

## REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1980). Solid and drift edition sheet 185, Market Harborough 1:50 000 scale.

MAFF, (1974). Agricultural Land Classification Map sheet 133 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 AND WALES (1983). Sheet 4, Soils of Eastern England 1:250 000 scale.

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 (e.g. 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.

## Appendix II

### Field Assessment of Soil Wetness Class

### Soil Wetness Classification

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and defined in the table below.

**Definition of Soil Wetness Classes**

| Wetness Class | Duration of Waterlogging[1] |
|---|---|
| I | The soil profile is not wet within 70 cm depth for more than 30 days in most years[2]. |
| II | The soil profile is wet within 70 cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years. |
| III | The soil profile is wet within 70 cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years. |
| IV | The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years. |
| V | The soil profile is wet within 40 cm depth for 211-335 days in most years. |
| VI | The soil profile is wet within 40 cm depth for more than 335 days in most years. |

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

[1] The number of days specified is not necessarily a continuous period.

[2] 'In most years' is defined as more than 10 out of 20 years.