



**A45 New Settlements Inquiry**  
**Hare Park**  
**Proof of Evidence**  
**Agricultural Land Classification**

## AGRICULTURAL LAND CLASSIFICATION

### HARE PARK

#### INTRODUCTION

#### 1.0 THE AGRICULTURAL LAND CLASSIFICATION SYSTEM

1.1 Agricultural Land Classification (ALC) assesses land quality based on its long term physical potential. The ALC system grades land according to the degree to which its inherent physical characteristics impose long term limitations on agricultural use.

1.2 The main physical factors which are taken into account in assessing ALC grade are climate site and soil. These may act singly, or in combination to result in varying degrees of constraint on agricultural use. The ALC grade is determined by the most limiting factor present.

1.3 Five main grades of land are recognised ranging from grade 1 land of excellent quality to grade 5 land of very poor quality. Other issues, such as the location of farms, the standard of fixed equipment and the accessibility of land do not affect grading although they may influence land use decisions.

#### 2.0 BACKGROUND TO THE SITE

2.1 This 348 hectare site was inspected during late 1989 in connection with proposals to develop a new residential settlement with supporting amenities.

2.2 On the published provisional 1:63,360 scale Agricultural Land Classification map sheet No 135 (MAFF 1971) the site is shown as comprising grade 2 land in the northeast and grade 3 land to the southwest. The 1989 survey was undertaken to provide more detailed site specific information on land quality.

2.3 At the time of survey the majority of the agricultural land was supporting cereals although smaller areas of grassland were also noted in the vicinity of Hare Park stud.

### 3.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

#### Relief and Drainage

3.1 A maximum altitude of 59 metres occurs at Bungalow Farm, adjacent to the A1303. From this point a broad ridge of generally higher ground extends in a north-north-westerly direction towards the junction of the A11 (T) with the A45 (T) roads. From this central ridge of higher ground, the land falls with local gentle undulations, to minimum altitudes of approximately 30 metres in the north east and south west of the site.

3.2 The soils are naturally permeable and free draining and are typically assessed as wetness class I.

#### Climate

3.3 Site-specific climate data was obtained from the 5km grid data set produced by the Meteorological Office (Met Office, 1989). This shows annual average rainfall to be approximately 591 mm (23.6 inches) which is low by national standards. Soils are likely to be at field capacity for a relatively short period of approximately 104 days between mid March and mid December. During this time the workability of these soils is not likely to be greatly impaired due to the free-draining nature of the chalk substrate.

3.4 The accumulated temperature for this area is approximately 1414 degrees Celsius. This parameter indicates the cumulative build up of warmth available for crop growth and has an influence on the development of soil moisture deficits (SMD)\*. Meteorological

\* SMD represents the balance between rainfall and potential evapotranspiration occurring during the growing season. For ALC purposes the soil moisture deficits developing under a winter wheat and maincrop potato cover are considered. These 'reference' crops have been selected because they are widely grown, and in terms of their susceptibility to drought, are representative of a wide range of crops.

Office data indicates that soil moisture deficits in the order of 118 mm for wheat and 113 mm for potatoes are likely to occur. These figures are slightly higher than average for lowland England. In order to counter the effects of these deficits (in terms of drought stress on crops) it is necessary for soils to hold adequate reserves of plant available water.

### Geology

- 3.5 The geology of this site is mapped on the 1:50,000 scale solid and drift edition geology map sheet number 188. (Geol. Surv. 1981). This shows the entire site to be underlain by Middle Chalk. In the vicinity of the central broad ridge the chalk is shown to be mainly obscured by head deposits and by spreads of poorly sorted flint and chalk gravels of uncertain origin. On the slightly lower ground flanking the outskirts of Lower Hare Park (off site) small areas of second terrace river gravels and alluvium are mapped as occurring.
- 3.6 Field survey observations generally support these descriptions but indicate that over the majority of land to the north and east of Hare Park Stud where the chalk is mapped as being exposed, it is in fact obscured by shallow spreads of sandy hillwash and solifluction deposits, giving rise to loamy soils of moderate depth overlying chalk.

### Soils

- 3.7 The soils of this area have been mapped on the 1:63,360 map sheet number 188 (SSEW, 1963). This principally identifies soils of the Moulton Complex to the north east of Allington Hill Farm and soils of the Newmarket and Icknield soil series to the southwest. A small area of Dullingham Soil series is mapped immediately south of Lower Hare Park.

- 3.8 This early map has been superseded by a more recent but less detailed map at 1:250,000 scale which broadly confirms the existence of the soil types described above and identifies soils of the Moulton\* and Newmarket 2\*\* soil associations to the northeast of and southwest of the site respectively, (SSEW, 1983).
- 3.9 Field survey work confirms these broad descriptions and identifies two main soil types on site:
- 3.10 To the north and east of Allington Hill Farm soils typically comprise variably stony profiles of sandy loam, sandy silt loam, sandy clay loam or medium clay loam which overlie chalk or chalky drift at variable depth. Although localised areas of soil acidity were reported to occur in the deeper, lighter textured soil variants in this area, field survey failed to confirm the existence of any areas where soil acidity was sufficiently severe to impede plant rooting and thus limit ALC grade.
- 3.11 To the south and west of Allington Hill Farm soils are shallower and typically comprise slightly chalky profiles of clay loam or silty clay loam overlying chalk, chalk rubble or chalky drift between depths of 25-40 cm. Slightly deeper variants of this soil type were noted to occur in the small valley features south and south east of Allington Hill Farm.
- 3.12 The principal limitation to land quality is droughtiness. The relative severity of this limitation depends on the depth, texture and stone content of the soil profile and the nature of the underlying chalk or chalky drift.

\* Moulton: Well drained coarse and fine loamy soils with similar shallow calcareous coarse loamy soils over chalk or chalk rubble in places. Patterned ground of stripes and polygons gives very variable depth. Slight risk of water erosion.

\*\* Newmarket 2: Shallow well drained calcareous coarse loamy and sandy soils over chalk rubble associated with well drained deeper coarse loamy and sandy soils often in an intricate pattern.

4.0 AGRICULTURAL LAND CLASSIFICATION

4.1 The site is principally graded 3a, with smaller areas of 3b and 2. A breakdown of ALC grades in hectares and percentage terms is provided below:

| ALC Grade    | Ha    | %     |
|--------------|-------|-------|
| 2            | 49.3  | 14.2  |
| 3a           | 162.8 | 46.8  |
| 3b           | 83.1  | 23.9  |
| Urban/Non    | 52.8  | 15.1  |
| Agricultural | ----- | ----- |
| Total        | 348.0 | 100.0 |
|              | ----- | ----- |

The definitions of the ALC grades are included in Appendix I.

Grade 2

4.2 This is mapped in 3 main locations: In a long tongue to the north west and southeast of Four Mile Stable Farm, to the south and west of the crossroads at GR TL591605, and in a smaller area or lowerlying ground flanking the outskirts of Lower Hare Park.

4.3 In the vicinity of Four Mile Stable Farm, and the crossroads at TL591605, grade 2 land typically comprises of sandy loam, sandy silt loam textures, which may contain lighter sandy or heavier clayey lenses below depths of 60 - 80 cm. Profiles are typically slightly or very slightly stony, may extend to 120 cm, but typically overlie chalky drift or impenetrable gravelly horizons below depths of 70 - 90 cm.

4.4 Land of this type is limited by minor droughtiness imperfections. Although this will not affect the range of crops grown it will

lead to slightly depressed yields in all but the most favourable of seasons.

- 4.5 Around the outskirts of Lower Hare Park grade 2 land is mapped in areas of deep, slightly stony profiles of clay loam and silty clay loam textures which may extend to depth or overlie lighter textured sandy loam below 60 cm. This land is limited by a combination of minor winter wetness and slight summer droughtiness constraints.

#### Grade 3a

- 4.6 This is mapped extensively over the site in two main situations:
- 4.7 To the north of Hare Park Stud and east of Allington Hill Farm it occurs where slightly or occasionally moderately stony profiles of medium loamy textures (sandy loam, sandy silt loam, sandy clay loam or clay loam) overlie chalk rubble or chalky drift between depths of 45-65 cm.
- 4.8 To the west of Hare Park Stud and south of Allington Hill Farm grade 3a land occurs where variably chalky profiles of silty clay loam and clay loam overlie chalk rubble, or occasionally chalky drift between depths of 40-65 cm.
- 4.9 Since root penetration into the underlying chalk is generally impaired, these generally shallower soils are correspondingly more prone to droughtiness than those graded 2. However they remain capable to producing moderately high yields of a fairly wide range of crops.

#### Grade 3b

- 4.10 This occurs extensively to the south and west of the site and in a small area of slightly lower lying ground to the north. Soils in these areas typically comprise variably chalky silty clay loam and

clay loam textures which overlie chalk, chalk rubble or chalky drift between 25-40 cm depth. This land is limited by moderately severe droughtiness constraints.

Non Agricultural

- 4.11 Substantial areas of non agricultural land have been mapped in the vicinity of Hare Park Stud, Allington Hill Farm and Allington Hill. This principally includes areas of woodland and new woodland planting, although farm tracks and shelter belts emanating from this central area have also been included in the category. Farms and associated buildings in the immediate vicinity of large blocks of non-agricultural land have also been included in the category.

Urban

- 4.12 This principally includes public roads which flank or bissect the site and are within the application area.

MAFF

Resource Planning Group  
Cambridge Regional Office

January 1990

SOURCES OF REFERENCE

SOIL SURVEY OF ENGLAND & WALES (1963), 1:63,360 Scale soil map, sheet no 188, Cambridge

GEOLOGICAL SURVEY (1965), 1:63,360 scale solid and drift edition geology map, sheet no 188.

MAFF (1971) 1:63,360 Scale ALC Map sheet No 135 (Provisional)

SOIL SURVEY OF ENGLAND & WALES (1983), 1:250,000 scale soil map, sheet no 4, Eastern England; and accompanying legend.

MAFF (1988) Agricultural Land Classification of England & Wales. Revised guidelines and criteria for grading the quality of agricultural land

METEOROLOGICAL OFFICE (1989) Climatological data for Agricultural Land Classification

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 which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. When 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 level of yields. It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields 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.