

FOR DIVISIONAL USE ONLY

AGRICULTURAL LAND CLASSIFICATION

LAND AT BROOK FARM, ELLINGTON

1. INTRODUCTION

- 1.1 This 89.2 ha site was surveyed in December 1989 and January 1990 in connection with proposals to develop the area as an 18-hole golf course, hotel and residential development.
- 1.2 The published 1:63 360 scale Agricultural Land Classification map; sheet 134 (Provisional) (MAFF: 1969), shows the majority of the site to be graded 3, with an area of grade 2 land west of Brook Farm, adjacent to the A604. These maps are inappropriate for site-specific appraisals however, as they were surveyed at reconnaissance level only and do not always show small areas of individual grades (ie. less than approximately 80 ha).
- 1.3 The current survey was undertaken to provide a more detailed Agricultural Land Classification (ALC) for the area.
- 1.4 93 soil inspections were made over the site on a 100m grid basis and data collected were supplemented by information from 6 soil profile pits. Soils were sampled to a depth of 120 cms using a hand-held Dutch soil auger.
- 1.5 At the time of survey, the land was in arable use with crops of winter cereals and winter oil seed rape being grown.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

- 2.1 Site specific climate data has been obtained by interpolating information contained in the published 5km grid agricultural climatic dataset (Met Office; 1989).

- 2.2 This indicates that the average annual rainfall for this site is 578 mm (22.8"). Soils are likely to be at field capacity for 113 days between early December and late March (MAFF; 1984).
- 2.3 The accumulated temperature for the site is estimated as 1452° Celsius. This parameter indicates that cumulative build up of warmth available for crop growth and influences the development of soil moisture deficits and hence susceptibility to drought. The soil moisture deficits for this site are 114mm for potatoes and 119 mm for wheat. These are slightly higher than average for lowland England.
- 2.4 The site is neither particularly exposed nor frost prone.
- 2.5 The climatic characteristics outlined above do not constitute a limitation to the ALC grading of land at Brook Farm.

#### Relief

- 2.6 The site occupies gently sloping land between altitudes of 23m and 17 m AOD, with overall falls northwards towards the A604. A high point of 23m occurs at GR 152 714 and from here falls to the north, south and east are recorded. Higher ground in the vicinity of the non-agricultural land at GR 157 717 results in falls to the north, west and south.
- 2.7 Gradient and altitude do not constitute limitations to ALC grade.

#### Geology and Soil

- 2.8 Solid and drift geological data for the Huntingdon area have been mapped by the Geological Survey for Great Britain at a scale of 1:50,000 (sheet 184; 1975). This shows the solid geology of the site to be Oxford Clay. Adjacent to the A604 and extending over the majority of the land west of the pond (GR 154 721), the Oxford Clay is obscured by 1st and 2nd terrace river gravels. A small area of

glacial gravels occur around the highest point of the site, (GR 152 714).

- 2.9 No detailed soils information is available for the Brook Farm area. However, the soil survey of England and Wales have mapped the "Soils of Eastern England" at a scale of 1:250,000, (1983). This maps the Evesham 3 Association\* over the entire survey area. The current survey confirmed the presence of this association in the east and south of the site and also in the extreme west. Soils derived from river terrace gravels were identified elsewhere.

Two soil types occur:

- 2.9.1 Firstly, east and south of the pond at GR 154 714, and in the west of the site southwest of "Wayside", are soils derived from Oxford clay. These soils typically comprise heavy clay loam or occasionally medium clay loam topsoils either directly overlying clay or, more typically, over an upper subsoil of heavy clay loam to between 45 cms and 75 cms, (typically 50/55 cms) with clay extending to depth. At scattered locations clay subsoils overlie heavy clay loam or sandy clay loam, and occasionally profiles comprising heavy clay loam textures to depth were recorded. Field observations indicate that soils are typically non-calcareous in the upper 60 cms but may become slightly calcareous or calcareous below this depth. Laboratory analyses confirm these results. The drainage status of these soils varies from Wetness Class I to Wetness Class III.
- 2.9.2 Secondly between the pond at GR 154 721 and "Wayside" are soils which have developed in river terrace gravels. These typically have a higher stone and sand content than those soils described in paragraph 2.9.1. Topsoils typically comprise heavy clay loam or medium clay loam textures over horizons of heavy clay loam, sandy clay loam and very occasionally medium clay loam or clay. These upper subsoils contain 5-10% stones by volume (comprising small and medium sub-angular flints and sub-rounded pebbles) and typically extend to 65-70 cm depth. Lower subsoils are generally stonier,

\* Evesham 3 Association: Slowly permeable calcareous clayey and fine loamy over clayey soils. Some slowly permeable seasonally waterlogged non-calcareous clayey soils.

containing 10-50% stones by volume, and typically comprise sandy clay loam and occasionally sandy loam and loamy sand textures which may overlie Hoggin at 70 cms+ but generally extend to depth. The presence of stones in the soil profile reduces the available water capacity of the soil. This factor in combination with the soil textures found and the relatively dry climate of the Brook Farm area imposes a slight to moderate risk of drought in soils of this type. Field tests and laboratory analysis again indicate that these soils are non-calcareous above approximately 60 cms, but may be slightly to strongly calcareous below this. The drainage status of these soils varies from Wetness Class I to Wetness Class III.

### 3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The site has been graded using the Revised guidelines and criteria for grading the quality of agricultural land, (MAFF 1988). Definitions of the ALC grades are set out in Appendix 1.

3.2 The table below shows a breakdown of ALC grades in ha and % terms for land at Brook Farm, Ellington.

AGRICULTURAL LAND CLASSIFICATION		
Grade	ha	%
2	12.4	13.9
3a	61.1	68.5
3b	12.6	14.1
Non-Agricultural	1.3	1.5
Agricultural Buildings	1.3	1.5
Urban	0.5	0.5
Total	89.2	100.0

### 4. GRADE 2

Land graded 2 occurs in 3 locations:

4.1 In the centre of the site at GR 150 718 and in the south east of the site on the gentle slopes at GR 154 715, grade 2 land is associated

with the lighter textured, better drained variants of soils described in paragraph 2.9.1. Here medium clay loam topsoils overlie heavy clay loam upper sub-soils and clay occurs at depths below 40 cms (typically 50/60 cms: Wetness Class II). Occasionally, these soils comprise heavy clay loam throughout and are freely drained (Wetness Class I). Minor wetness and/or workability constraints in combination with slight summer droughtiness restrict this land to grade 2.

- 4.2 In the north of the site, adjacent to the A604, land graded 2 is associated with soils described in paragraph 2.9.2. These soils are generally freely-draining (Wetness Class I) but may be affected by fluctuating groundwater levels at depth (Wetness Class II). Soils comprise medium clay loam topsoils overlying heavy clay loam and sandy clay loam upper and lower subsoils which may or may not become stony at depth. The combination of soil texture, subsoil stone and relatively dry climate results in these soils being slightly susceptible to drought. This minor drought limitation together with minor wetness constraints, associated with fluctuating groundwater levels restricts the land to grade 2.

5. SUBGRADE 3a

Land of this quality occurs over the majority of the site.

- 5.1 Grade 3a land is associated with heavier and less well drained (Wetness Class II) variants of soils described in paragraph 2.9.1. Typically, soils comprise heavy clay loam topsoils overlying similarly textured upper subsoils which in turn overlie clay below 50/55 cms. Soil profile pit observations indicate that these soils contain slowly permeable horizons below 50/55 cms and are therefore assessed as Wetness Class II. The reduced subsoil permeability together with heavy topsoil textures limit this land to subgrade 3a.
- 5.2 Land graded 3a is also associated with moderately droughty variants of soils described in paragraph 2.9.2. These soils comprise medium

or heavy clay loam topsoils overlying heavy clay loam, sandy clay loam and very occasionally clay lower subsoils, with between 20% and 50% stone 50/60 cms+. Occasionally impenetrable gravel/hoggin was encountered below 65/70 cms. The volume of sub-soil stone in combination with the soil textures found in this relatively dry area produce a moderate drought limitation and restrict the land to subgrade 3a.

6. SUBGRADE 3b

Land graded 3b occurs in four locations; in the extreme west; adjacent to Brook Farm and adjacent to the southernmost boundary.

6.1 Southwest of "Wayside", adjacent to the urban area at Brook Farm and along the southernmost boundary, land graded 3b is associated with the least well drained variants of soils described in paragraph 2.9.1 where subsoils become slowly permeable at 35 cms+ (Wetness Class III). This imposes more significant wetness and workability constraints and restricts the land to sub-grade 3b.

6.2 West of "Wayside", adjacent to the A604, soils have been disturbed and fragments of concrete, brick and tar rubble are mixed into the topsoil. This land is low lying and the profiles were very wet throughout with waterlogging at 45 cms at the time of survey. Significant wetness and workability constraints remain the over-riding limitation to agricultural production and restrict this land to subgrade 3b.

6.3 Adjacent to Brook Farm, an area of disturbed land has been graded 3b. Personal communication with the farmer confirmed that heavy clay subsoil was "dumped" onto the topsoil during local house building, and that this has caused increased workability problems and significant reductions in yield.

7. OTHER LAND USES

A recreation/playing field in the east of the site, the pond at GR 154 721 and remains of a pond in the west of the site have been mapped as non-agricultural. Brook Farm buildings have been mapped as agricultural buildings and residential buildings plus an area of concrete road and hardstanding have been mapped as urban.

RESOURCE PLANNING GROUP  
CAMBRIDGE RO

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REFERENCES:

MAFF (1969): Agricultural Land Classification; Sheet 134; 1:63 360 scale  
(Provisional)

METEOROLOGICAL OFFICE (1989): Climatological Data for Agricultural Land  
Classification.

MAFF (1984): The Agricultural Climate of England and Wales.

GEOLOGICAL SURVEY FOR GREAT BRITAIN (1975): Solid and Drift Edition geology  
map sheet 187. Huntingdon 1:50 000.

SOIL SURVEY OF ENGLAND AND WALES (1983): Soils in Eastern England 1:250 000

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



## 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 will 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 crop.

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.