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MAFF Ministry of Agriculture Fisheries and Food

A45 New Settlements Inquiry

Great Common Farm
Proof of Evidence
Agricultural Land Classification

AGRICULTURAL LAND CLASSIFICATION
GREAT COMMON FARM, CAMBRIDGESHIRE

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 recognized 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. BACKGROUND

2.1 This 401.6 ha site was inspected in autumn 1986 and summer 1989 in connection with proposals to develop a new residential settlement with supporting amenities. The land surveyed lies adjacent to the A45 road at Bourn Airfield and Great Common Farm.

2.2 On the published 1:63,360 (Provisional) Agricultural Land Classification map (Sheet 134; MAFF 1969) the majority of the survey area is graded 2 with land in the south and east of the site graded 3. The current survey was undertaken to provide a more detailed ALC of the area.

2.3 At the time of the survey the majority of the land was in arable use. Typical crops include wheat, barley and oil seed rape. A small area of land adjacent to Great Common Farm was under grass.

3. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

3.1 Climate data for the site was obtained from the published agricultural climatic dataset (Met Office, 1989). This indicates that for the site's median altitude of 70m AOD, the annual average rainfall is 558mm. This is relatively evenly distributed throughout the year, although a slight spring minimum occurs during the months of February to April. Soils are at field capacity for a relatively short period of 95 days, and moisture deficits are 114 mm for wheat and 108 mm for potatoes. Climatic factors do not constitute a limitation to the ALC grading of the survey site.

Altitude and Relief

3.2 The site is generally level in the north and lies at approximately 70m AOD on a plateau adjacent to the A45 road. The land falls gently to the south west to 50m AOD in a dry valley feature and in the south east to a minimum altitude of 60m AOD. Gradient and altitude do not constitute limitations to the ALC grade.

4. GEOLOGY AND SOILS

4.1 The published 1:50,000 scale drift edition geology map for the Huntingdon area (Sheet 187; Geological survey of Great Britain, 1975) shows the survey area to comprise glacial boulder clay deposits.

4.2 The Soil Survey of England and Wales have mapped the "Soils of Eastern England" at a reconnaissance scale of 1:250,000, this map shows the occurrence of the Hanslope Association* over this boulder clay area.

* Hanslope Association: Slowly permeable calcareous clayey soils. Some slowly permeable non-calcareous clayey soils.

During the current survey a more detailed inspection of the soils confirmed the predominance of these boulder clay soils. Three main soil types were identified.

4.2.1a) Soils over the majority of the site typically comprise heavy clay loam or clay topsoils which occasionally directly overlie chalky boulder clay or, more commonly, overlie an upper subsoil of slightly calcareous or calcareous clay passing into chalky boulder clay at varying depths. Topsoils are typically slightly calcareous west of Broadway road and south of the main runway which traverses the site in a north easterly/south westerly direction. To the north of this runway, and in the far north west (adjacent to the woodland, Grid Ref TL 327 595) topsoils tend to be only very slightly or non-calcareous. In the extreme north eastern corner of the site adjacent to Childerley Gate topsoils and upper subsoils are only very slightly calcareous.

4.2.1b) Variants of this soil type may occur, on the airfield, where soils have been affected by runway and/or building removal.

4.2.2 In the valley feature in the south western part of the site deeper "head deposit" soils were noted. These typically comprise slightly calcareous heavy clay loam or clay topsoils with similarly textured upper subsoils overlying boulder clay at 60/120 cm depth.

4.2.3 A small area of decalcified soils occur in the vicinity of Bucket Hill Plantation. These soils typically comprise non-calcareous heavy clay loam topsoils over non calcareous heavy clay loam subsoils which may overlie chalky boulder clay at depth.

5. AGRICULTURAL LAND CLASSIFICATION

5.1 The definitions of the Agricultural Land Classification (ALC) grades are included in Appendix 1.

5.2 The table below shows the breakdown of the ALC grades for the land at Great Common Farm.

	AGRICULTURAL LAND CLASSIFICATION	
Grade	ha	%
2	50.3	12.5
3a	188.7	47.0
3b	101.0	25.1
Non-Agricultural	47.8	11.9
Urban	12.3	3.1
Agricultural Buildings	1.5	0.4
Total	401.6	100

6. GRADE 2

Land graded 2 occurs in three main situations.

6.1 Adjacent to the main north east/south west runway and adjacent to Bucket Hill Plantation the land graded 2 is associated with better drained calcareous variants of the soils described in paragraph 4.2.1a). Soil profile pit observations indicate that these soils have slowly permeable horizons present at depth in the subsoil (40/55 cm+, ie. wetness class II). The land is consequently limited by minor wetness and workability imperfections caused by the reduced subsoil permeability at depth combined with relatively heavy topsoil textures. This, together with the slight risk of drought in this low rainfall area, excludes the land from grade 1.

6.2 Land of this quality is also found in the west and south west of the site. Better drained variants of the boulder clay soils described in paragraphs 4.2.1a) and 6.1 above, are found together with the deeper "head deposit" soils (paragraph 4.2.2), and occur on or near the gently sloping sides of the shallow south-west orientated valley. Soil profile pit observations indicate the presence of a slowly permeable subsoil horizon (45/55 cms+ ie. wetness class II). The land is limited to grade 2 because of the minor wetness and workability problems outlined previously in paragraph 6.1 above.

6.3 Finally, west of Bucket Hill Plantation, the decalcified fine loamy

soils described in paragraph 4.2.3 predominate. The soils are typically freely drained and overlie boulder clay at depths greater than 80 cms. Slight summer droughtiness and topsoil texture limitations combine to restrict this land to grade 2.

7. SUBGRADE 3a

The majority of the land west of Broadway road and south of the main north east/south west runway has been graded 3a.

7.1 Land of this quality is associated with the less well-drained variants of the calcareous soils described in paragraph 4.2.1a). Subsoils are slowly permeable and soil profile pit observations indicate the presence of features associated with reduced permeability at shallow depths within the profile, thus limiting the soils to wetness class III. Reduced subsoil permeability and heavy topsoil textures combine to impose moderate wetness and workability limitations on the agricultural potential of this land; thus the land is restricted to subgrade 3a.

7.2 Slight soil variations occur where aerodrome building removal and runway clearance operations have been carried out. As a result, these clayey soils may be flinty and/or rubbly (5-10%, small and medium in size) with a mixed appearance. However, these variations are minor so the moderate drainage imperfection remains the overriding limitation to the ALC grade.

7.2 Some better drained (wetness class II) profiles of the soils described in paragraph 4.2.1a), have been graded 3a where topsoils were found to be non or very slightly calcareous.

8. SUBGRADE 3b

Approximately $\frac{1}{4}$ of the site has been graded 3b. Land of this quality is found to the north of the main north-east/south-west runway; in the extreme north-east of the site; and in the north west of the site around the woodland at Grid Ref. TL327595.

8.1 Land graded 3b is associated with the less well-drained (wetness class III), non-calcareous variants of the soils described in paragraph

4.2.1a). North of the main north east/south west runway and east of the wood at Grid Ref. TL 327595, topsoils are typically non-calcareous or only very slightly calcareous whilst adjacent to Childerley Gate both topsoils and upper subsoils are only very slightly calcareous. The slowly permeable subsoils and heavy topsoil textures combine to impose a significant limitation on the agricultural potential of this land. Thus the land is excluded from subgrade 3a.

8.2 In addition, where land has been affected by building and runway removal to the east of Broadway Road, soils typically comprise calcareous "mixed-looking" and gritty (5-10% flints and rubble fragments) clays over gritty (clinker* and flints) clays which are often chalky. The subsoils are slowly permeable (wetness class III) and topsoils are shallow, ranging from 15-20 cms thick. However, the more severe limitation is the sporadic occurrence, every season, of large buried concrete lumps within the cultivation zone. These represent remnants of the original runways and hardstanding areas and have the potential to do considerable damage to cultivation and harvesting machinery. Costs of production, therefore, are likely to be increased, and flexibility in the use of the land is reduced. For these reasons the land is restricted to subgrade 3b.

8.3 At "The Grange", land is excluded from subgrade 3a because of the density of large pieces of rubble throughout the topsoil (10-15% by volume).

9. *NON-AGRICULTURAL*

Areas of woodland, an enclosure with a covered reservoir, an enclosure with a radio mast, an area of open water, a piece of unused land believed to be in the ownership of Oakdene and airfield runways have been mapped as non-agricultural.

* Clinker: ironstone hoggin, related to ironstone "firing" in situ.

10. URBAN

Airfield and residential buildings together with the large factory area have been mapped as urban.

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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.

REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN, 1975 : Drift Edition Geology Map No. 187; scale 1:50,000.

MAFF, 1969 : Agricultural Land Classification Map No 134, scale 1:63,360.

MAFF, 1988 : Agricultural Land Classification of England & Wales - Revised guidelines and criteria for grading the quality of agricultural land. Alnwick.

METEOROLOGICAL OFFICE, 1989 : Climatic Data extracted from the published climatic dataset.

SOIL SURVEY OF ENGLAND AND WALES, 1984 : Soils of Eastern England - Sheet No. 4; scale 1:250,000.