Cambs 45-91

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MAFF Ministry of Agriculture Fisheries and Food

ELM

WISBECH

CAMBRIDGESHIRE

AGRICULTURAL LAND CLASSIFICATION

SEMI-DETAILED SURVEY

ELM, WISBECH, CAMBRIDGESHIRE

1. BACKGROUND

1.1 The site, an area of 114.1 hectares, is the subject of an application for a golf course, nature reserve and residential development. MAFF carried out a semi-detailed survey in September 1991 to assess the agricultural land quality. Soil inspections using a Dutch soil auger were made to a depth of 1.2m. In addition 3 soil inspection pits were dug to assess subsoil conditions.

1.2 On the published Agricultural Land Classification (ALC) Map sheet No 124 (Provisional, scale 1:63360 (MAFF 1972)) the survey area is shown as Grade 1 with a section in the north west of the site shown as Grade 2. The current survey was undertaken to provide more detailed information on land quality for the site.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data for the site was obtained from the published agricultural climatic dataset (Met Office, 1989). This indicates that the site has an average annual rainfall of 541mm (21.2"). Field capacity days are 93 and moisture deficits are 124mm for wheat and 121mm for potatoes. These climatic characteristics do not impose any climatic limitation on the ALC grading of the survey area.

Altitude and Relief

2.2 The site comprises a fairly level plateau which lies at an altitude of 1m AOD. There is the presence of a low ridge called a rodham in the north east corner of the site which gives the land a change in microrelief. However gradient and altitude do not constitute limitations to the ALC grade of the site.

Geology

2.3 The published 1:233440 scale drift edition Geology Map No 12 shows the entire site to comprise post glacial and recent marine alluvium, peat and fen silts.

Soils

2.4 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 site to comprise mainly the Wallasea 2* Association with smaller areas of the Dowels Association** running from the south towards the centre of the site, and the Wisbech Association*** at the eastern edge. The current survey broadly confirms the presence of these three types of soils.

2.4.1 The majority of the site area, particularly the central section, comprises clayey profiles. These soils typically consist of clay (or occasionally heavy clay loam) topsoils over clay subsoils. Profiles have intermittent calcareous bands which vary in depth and extent, with location. These soils are porous to depth due to the presence of a network of interlinking reed channels. However profiles typically become slowly permeable at depths 60/70 cm+ (i.e. wetness class II).

* Wallasea 2 Association: Deep stoneless clayey soils, calcareous in places. Some deep calcareous silty soils. Flat land often with low ridges giving a complex soil pattern. Groundwater controlled by ditches and pumps.

** Dowels Association: Stoneless clayey soils, in places calcareous, often over peat. Some calcareous coarse and fine silty soils locally. Complex soil pattern with coarser soils often on low ridges. Groundwater controlled by ditches and pumps.

*** Wisbech Association: Deep stoneless calcareous coarse silty soils. Groundwater usually controlled by ditches and pumps. Flat land with low ridges.

2.4.2. Along the eastern edge of the site lighter textured marine silt derived soils predominate, often in association with the rodhams. Soils typically comprise medium silty clay loam topsoils (or occasionally silt loams and fine sandy silt loams) over fine sandy silt loams (marine silts) which may merge into loamy fine sand (marine silt) at depth.

2.4.3 To the south and south west more poorly drained clayey non calcareous soils predominate. These soils typically comprise clay topsoils over slowly permeable clay subsoils with narrow peaty layers at depth (80/95 cm).

3. AGRICULTURAL LAND CLASSIFICATION

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

3.2 The majority of the survey area is mapped as subgrade 3a with smaller areas of grade 1 and subgrade 3b. The table below shows the breakdown of ALC grades in hectares and % terms for the survey area.

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
1	15.7	13.7
3a	71.3	62.5
3b	25.2	22.1
Urban	1.6	1.4
Agricultural buildings	0.3	0.3
TOTAL	114.1	100.0

Grade 1

3.3 Land at the eastern edge of the site has been graded 1 because of the high porosity and available water capacity of these marine silt derived silty soils (described in para 2.4.2). Consequently the soils are freely draining (i.e. Wetness Class I) and crops suffer very little

from drought stress. Thus the land has been graded 1 (excellent quality agricultural land).

Subgrade 3a

3.4 The majority of the site has been graded 3a*. This land is associated with the better drained clayey soils described in paragraph 2.4.1. Profile observations indicate that subsoils are slowly permeable at depth, typically 60/70 cm+. Thus the drainage status is assessed as wetness class II or occasionally I. Profile wetness combines with heavy non calcareous topsoils to restrict this land to grade 3a. In most instances moderate droughtiness also restricts the land to grade 3a.

Subgrade 3b

3.5 Clayey land on the south west edge of the site has been classified as 3b. The soils (described in paragraph 2.4.3) have slowly permeable clayey subsoils over peaty horizons at depth. These peaty layers are often acidic, pH4.5 or less which restricts crop rooting. Wetness class has been assessed as III although occasionally wetness class II profiles exist. Decalcified, heavy topsoil textures combine with soil wetness to impose significant restrictions on the agricultural potential of this land. Consequently the ALC grade is limited to 3b.

Urban

3.6 A caravan site, dairy and houses appear as urban.

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* A few slightly droughty borings graded 2 were noted (medium silty clay loam topsoils over clays with marine silts at depth) but covered too small an area to delineate.

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.

Subgrade 3a - 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 - 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 which can be grazed or harvested over most of the year.

References

GEOLOGICAL SURVEY OF ENGLAND AND WALES, 1912. Drift edition Geology sheet 12 1:233440 scale.

MAFF, 1972. Agricultural Land Classification Map No 124. Scale 1:63,360.

MAFF, 1988. Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for grading the quality of Agricultural Land) Alnwick.

METEOROLOGICAL OFFICE, 1989. Climate data extracted from the published agricultural climatic dataset.

SOIL SURVEY OF ENGLAND AND WALES, 1983. Soils of Eastern England - Sheet No 4, scale 1:250,000.

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Map 1: Agricultural Land Classification