

AGRICULTURAL LAND CLASSIFICATION FOR LAND AT LITTLEPORT, CAMBS

1. BACKGROUND

- 1.1 The site, an area of 43.7 hectares, is the subject of an application for residential and light industrial development at Littleport, Cambridgeshire.
- 1.2 The site was surveyed by MAFF, in September 1991, at an auger boring density of approximately one boring per hectare. In addition 3 soil inspection pits were dug in order to assess subsoil conditions.
- 1.3 The provisional one inch to one mile ALC map sheet number 135 (1971) shows the majority of the site to comprise grade 2 with a small area of grade 3 on the southern tip. The current survey was undertaken to provide a more detailed representation of agricultural land quality.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

- 2.1 Climate data for the site was obtained from the published agricultural dataset (Met Office, 1989). This indicates that for the site's modal altitude of 10 m AOD the annual average rainfall is 560 mm (22"). This data also indicates that the field capacity days are 96 and that moisture deficits are 122 mm for wheat and 117 mm for potatoes. The climate characteristics do not impose any climatic limitations on the ALC grading of the survey site.

2.2 Altitude and relief

The majority of the site is on gently sloping land falling north and north westwards from a maximum altitude of 19 m AOD, to a minimum altitude of 4 m AOD.

The remainder of the site to the west of Woodfen Road is fairly level at approximately 4 m AOD. Gradient and altitude do not constitute limitations to ALC grade.

## Geology and Soils

2.3 The geology of the area is mapped on the 1:50,000 scale solid and drift edition geology map sheet number 173 (Geol. Survey 1974). This map shows the majority of the site to comprise Boulder clay with a small area of glacial sand and gravel at the southern tip of the site. A small area of underlying Kimmeridge Clay is also shown at the western corner of the site.

2.4 The soils on the site have been mapped on 2 previous occasions, firstly on the 1:63,360 scale map, sheet 173 (SSEW, 1954) and secondly at a reconnaissance scale of 1:250,000 (SSEW, 1983). The two maps broadly agree and the latter map shows the majority of the site comprises Ashley Association(\*) with a smaller area of Peacock Association(\*\*) on the western portion of the site.

2.4.1 During the more detailed MAFF survey carried out for the purposes of this ALC report 3 main soil types were identified:-

2.4.2 The first soil type is derived from glacial till and occurs over the majority of the eastern portion of the site (except for the field south of Highfield Farm) and some borings in the north part of the western portion of the site. Profiles typically comprise medium or occasionally heavy clay loam topsoils over similar or clayey subsoils which become chalky drift at depth (typically 60/70 cm). These profiles are typically slowly permeable in the lower subsoil horizons and therefore have predominately been assessed at Wetness Class II although occasional borings of Wetness Class I and III were encountered.

\* ASHLEY ASSOCIATION Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging, associated with similar but wetter soil. Some calcareous and non calcareous slowly permeable clayey soils.

\*\* Peacock Association Deep humose fine loamy sandy and fine loamy over clayey soils, mainly calcareous. Some peat soils. Groundwater controlled by ditches and pumps.

2.4.3 The second soil type occurs to the south of Highfield Farm. These profiles comprise medium sandy loam topsoils over similar subsoils which typically become slightly or moderately stony at depth. These profiles are well drained and have been assessed as Wetness Class I.

2.4.4 The third soil type covers the majority of the western portion of the site. Profiles typically comprise medium clay loam topsoils which overlie fine loamy upper subsoils which are gleyed and form a slowly permeable layer. The lower subsoils (typically 60 cm +) either comprise clay or sandy and coarse loamy horizons which are slightly to moderately stony.

### 3.0 AGRICULTURAL LAND CLASSIFICATION

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

3.2 The table below shows the breakdown of the ALC grades for the survey area.

#### AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
2	2.7	6.2
3a	39.3	89.9
Urban	0.3	0.7
Non Agricultural	0.7	1.6
Agricultural buildings	0.7	1.6
TOTAL	<u>43.7</u>	<u>100</u>

### 3.3 Grade 2

A small area to the south of Highland Farm has been graded 2, and is associated with the soils described in section 2.4.3. These soils are freely draining (wetness Class 1) but have a slight droughtiness limitation due to the combination of the coarse profiles textures and high moisture deficits in this area.

### 3.4 Subgrade 3a

Two main areas of subgrade 3a arise-:

- 3.4.1 The glacial till derived soils (see section 2.4.2) in the eastern portion of the site (and occasional similar profiles occurring in the western portion of the site) have been graded 3a. Although these soils are typically Wetness Class II, droughtiness is the overriding limitation to the the ALC grade for the majority of these profiles. The combination of the heavy textures, gleyed subsoils, and the high moisture deficits in this area result in a moderate droughtiness limitation.
- 3.4.2 The land on the western portion of the site which has been graded 3a is predominately associated with the soils described in section 2.4.3. These soils are slowly permeable from between 30 and 40 cm for at least 15 cm. (Wetness Class III) which, combined with clay loam topsoils results in a 3a wetness grade. In addition the coarse subsoil textures and the gleyed heavily textured upper subsoils result in these profiles having a reduced water holding capacity and are therefore moderately droughty. Droughtiness and wetness are the overriding limitations to the ALC grade.

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## References

GEOLOGICAL SURVEY OF ENGLAND & WALES, 1974.

Solid drift geology, sheet 173, 1:50,000 scale.

MAFF, 1971 Agricultural Land Classification sheet 135, 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. Climate data extracted from the published agricultural climate dataset.

SOIL SURVEY OF ENGLAND & WALES, 1954, Sheet 173 1:63,360 scale.

SOIL SURVEY OFF ENGLAND & 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 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 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.