

Camb 576/89

AGRICULTURAL LAND CLASSIFICATION

CUCKOO BRIDGE, NEAR SPALDING, LINCOLNSHIRE

1. BACKGROUND

1.1. The site, an area of 70.1 hectares, is the subject of an application for residential development west of Spalding, Lincolnshire. MAFF surveyed the site in January 1990 to assess the agricultural land quality.

1.2 On the published Agricultural Land Classification map sheet number 123 (provisional, Scale 1 : 63360 (MAFF, 1974)), the area is shown as grade 2.

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 for the site's median altitude (2m AOD) the annual average rainfall is 570 mm (24.4"). This data also indicates that field capacity days are 105 and moisture deficits are 119 mm for wheat and 114 mm for potatoes. These climatic characteristics do not impose any climatic limitation on the ALC grading of the survey site.

Altitude and Relief

2.2 The survey area comprises fairly level land ranging in altitude from 2 to 3 mm AOD. Gradient and altitude do not constitute limitations to the ALC grade.

Geology and Soils

2.3 The published 1/4" to 1 mile geology map sheet 12 (Geological Survey of England & Wales, 1971) shows the survey area to comprise alluvium, peat and fen silts.

2.4 The Soil Survey of England & Wales have mapped the soils in the Spalding area at a reconnaissance scale of 1:250,000. This map, entitled 'The Soils of Eastern England', shows the occurrence of two marine alluvium derived associations; mainly the Wisbech Association (*1) with a narrow strip of Wallasea 2 Association (*2) occurring along the northern edge of the site. During the current survey a more detailed inspection of the soils was carried out.

Three main soil types occur over the site.

2.4.1 The majority of the survey area comprises decalcified clayey soils derived from the marine alluvium deposits. The soils typically comprise clay or heavy clay loam topsoils over clay subsoils. In the subsoils, at varying depths these profiles contain a dense network of coarse interlinking pores which aids drainage of water through the lower soil horizons.

2.4.2 Along the southern edge* of the site lighter textured marine silt derived soils occur. These soils typically comprise medium clay loam topsoils over alternating bands of calcareous medium clay loams and fine sandy silt loams which invariably merge into loamy fine sands or fine sandy loams at depth. The subsoils, 40/45cm+, contain a dense network of coarse interlinking biopores which aids the drainage of water through the lower horizons.

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

(*2) 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.

* These soils also occur sporadically in the northwest corner of the site.

2.4.3 Finally, towards the centre of the site, south of Pinchbeck Common a transient non calcareous soil type occurs. Soils typically comprise medium clay loam (or occasionally heavy clay loam) topsoils over permeable clay subsoils. Scattered patches of jarosite within the lower horizons indicate areas of low pH. However profile pit observations indicate that this acidity problem is isolated and does not impede crop rooting through the soil profile.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The definition of the agricultural land classification grades are included in Appendix 1.

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

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
2	12.2	17
3a	41.4	59
3b	15.8	23
Agricultural Buildings	0.7	1
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TOTAL	70.1	100
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4. GRADE 2

Land graded 2 occurs in two main situations.

4.1 Along the southern edge of the site, in association with the soils described in paragraph 2.4.2, the land has been graded 2. The soils have good moisture retention characteristics and have a wetness class of II. Subsoils are gleyed but permeable. As a result the minor wetness and workability limitation excludes the land from grade I.

4.2 Towards the centre of the site land associated with the soils described in paragraph 2.4.3** have been graded 2. The soils have moderately good moisture retention characteristics and have a wetness class of II. These soils are gleyed directly below the topsoil, 30/35cm+, however the presence of a dense network of coarse interlinking reed channels means that profiles are permeable to depth. Slight droughtiness, wetness and workability limitations combine to restrict this land to grade 2.

5. SUBGRADE 3a

The majority of the survey area has been graded 3a. Two main situations occur.

5.1 Most of the land graded 3a is associated with the clayey soils described in paragraph 2.4.1. The topsoils are heavy and non calcareous and soil profile pit observations indicate that these soils became slowly permeable at depth 40/45cm+ (ie wetness class II). As a result, these factors combine to impose a moderate limitation on the agricultural potential of this land. Thus the land is restricted to subgrade 3a (good quality agricultural land).

** Where topsoils are medium clay loams.

5.2. At the peripheries of the central block of grade 2 land heavier variants of the soils described in paragraph 2.4.3 have been graded 3a. These soils have heavy clay loam topsoils and a wetness class of II. Moderate workability and wetness limitations combine to restrict this land to subgrade 3a.

6. SUBGRADE 3b

6.1 A tract of land through the centre of the site has been graded 3b. The land is associated with the clayey soils described in paragraph 2.4.1. Soil profile pit observations indicate that profiles are slowly permeable immediately below the topsoil 30/35cm+ (ie wetness class III) and typically biopores only exist at depth 60/70cm+. The heavy topsoil textures and drainage impediment combine to impose a significant limitation which restricts this land to subgrade 3b.

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RESOURCE PLANNING GROUP

Cambridge RO

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 more 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 and 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 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 ENGLAND & WALES 1971

Drift edition geology map sheet 12. -1/4" to 1 mile.

MAFF 1974, Agricultural Land Classification

Map sheet No. 123, 1:63360

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

METEOROGOLICAL OFFICE, 1989 Climatic data extracted from the published
climatic dataset.

SOIL SURVEY OF ENGLAND & WALES 1983

Soils of Eastern England Sheet No 4 Scale 1:250,000