

FOR DIVISIONAL USE ONLY

AGRICULTURAL LAND CLASSIFICATION

LAND EAST OF HECKINGTON, NEAR SLEAFORD, LINCOLNSHIRE

1. BACKGROUND

1.1 The site, an area of 32.5 hectares, is the subject of an application for residential and ancillary development at Heckington, Lincolnshire. MAFF surveyed the site in May 1990 to assess the agricultural land quality using the Revised ALC guidelines (MAFF, 1988).

1.2 On the published Agricultural Land Classification map sheet No. 113 (Provisional, scale 1:63360 (MAFF, 1971)), 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 mid range altitude of 8m AOD the annual average rainfall is 601mm (23.7"). This data also indicates that field capacity days are 113 and moisture deficits are 115mm for wheat and 110mm for potatoes. These climatic characteristics do not impose any climatic limitations on the ALC grading of the survey site.

Altitude and Relief

2.2 The site rises gently from 5m adjacent to the A17 road to 12m adjacent to the Boston Road. Gradient and altitude do not constitute limitations to the ALC grade.

## Geology and soils

- 2.3 The published  $\frac{1}{4}$ " to 1 mile scale drift edition geology map sheet 12 (Geological Survey of England and Wales, 1953) shows the survey area to comprise sand and gravel to the west and deposits of boulder clay to the east.
- 2.4 The Soil Survey of England and Wales mapped the soils in the area in 1983, at a reconnaissance scale of 1:250000. The map shows the whole site as Beccles 3 Association(\*). During the current survey a more detailed inspection of the soils was carried out. Three main soil types were identified.
- 2.4.1 Along the western edge of the site and through the centre eastwards towards the A17 road, calcareous boulder clay derived soils occur. They typically comprise heavy clay loam (or occasionally clay or medium clay loam) topsoils over clay or occasionally heavy clay loam upper subsoils which merge into clays. These profiles are calcareous throughout and typically contain chalk fragments at depth 45/70 cm+
- 2.4.2 In smaller pockets towards the southern end of the site non calcareous lighter textured soils outcrop. They typically comprise medium clay loam or sandy clay loam topsoils over (sandy) heavy clay loam or occasionally sandy clay loam subsoils which overlie clay at depth. Profiles become slightly calcareous at depths 50/80cm+.
- 2.4.3 Decalcified better bodied soils occur in small pockets towards the northern end of the site. They typically comprise heavy clay loam or occasionally clay topsoils over clay subsoils which become calcareous at depth (50/80cm+).
- (\*) Beccles 3 Association - slowly permeable seasonally waterlogged fine loamy over clayey soils and similar soils with only slight seasonal waterlogging. Some calcareous clayey soils especially on steeper slopes.

### 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 breakdown of ALC grades in hectares and percentage terms for the survey area.

AGRICULTURAL LAND CLASSIFICATION		
GRADE	ha	%
2	19.6	60.3
3a	12.6	38.8
Urban	0.1	0.3
non agricultural	<u>0.2</u>	<u>0.6</u>
TOTAL	<u>32.5</u>	<u>100.0</u>

#### 3.3 GRADE 2

The majority of the survey area has been mapped as grade 2. Land graded 2 occurs in two main situations.

3.3.1 Firstly, the majority of the land graded 2 is associated with the better drained variant of the soils described in paragraph 2.4.1. The soils are slightly droughty and soil profile pit observations indicate that profiles are slowly permeable at depth, 50/70cm+ i.e. wetness class II. Topsoils are heavy and profiles calcareous throughout. As a result of these factors; slight droughtiness, wetness and workability limitations restrict the land to grade 2.

3.3.2 The remainder of the land graded 2 occurs in association with the decalcified\*\* soils described in paragraph 2.4.2. Profiles are generally slowly permeable at depth 50/70cm+ (i.e. wetness class II); however occasionally profiles are permeable throughout (i.e. wetness class I). In this low rainfall area the textures slightly impair the profile water holding capacity, thus limiting the water available to

\*\* profiles are decalcified in the upper horizons to depths 50/80cm+.

the crops. Consequently, slight wetness, workability and droughtiness imperfections constitute the main limitations to the ALC grade.

### 3.4 SUBGRADE 3a

The remainder of the survey area (approximately 13%) has been mapped as subgrade 3a. These areas occur mainly in the northern half of the site.

3.4.1 The majority of the land graded 3a is associated with the slightly droughty and decalcified\*\*\* fine textured soils described in paragraph 2.4.3. Soil profile pit observations indicate that the subsoils are slowly permeable at depth, typically 50cm+ (i.e. wetness class II). This land is consequently limited by moderate wetness and workability imperfections which derive from the reduced subsoil permeability at depth combined with the relatively heavy, decalcified topsoil textures. These factors restrict the land to subgrade 3a (good quality agricultural land).

3.4.2 The remaining land graded 3a occurs, to the north, in association with the less well drained variant of the calcareous soils described in paragraph 2.4.1. Topsoils are heavy and calcareous and subsoils are slowly permeable directly below the topsoil (i.e. wetness class III). These factors combine to impose a moderate limitation; which restricts the land to subgrade 3a.

### 4. URBAN

4.1 An out house has been mapped as urban.

### 5. NON AGRICULTURAL

5.1 Two ponds have been mapped as Non Agricultural.

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\*\*\* profiles are decalcified in the upper horizons to depths of 50/80cm+.

## 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.

## References

GEOLOGICAL SURVEY OF ENGLAND & WALES, 1953. Drift edition Geology Sheet 12. Scale  $\frac{1}{4}$ " to 1 mile.

MAFF, 1974: Agricultural Land Classification Map No 113, Scale 1:63360.

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 & WALES, 1984. Soils of Eastern England - Sheet No 4, Scale 1:250000.