

## AGRICULTURAL LAND CLASSIFICATION

NORTH MELBOURNE, CHELMSFORD, ESSEX

## 1. BACKGROUND

- 1.1 An Agricultural Land Classification (ALC) survey was carried out over 93.6 ha of land to the north of Chelmsford, following an application for residential development.
- 1.2 The published 1:63 360 scale ALC map, sheet 161 (Provisional; MAFF 1964) shows the majority of the site to be grade 2 with a small area of grade 3 land in the extreme east. The current survey was undertaken to provide a more detailed ALC of the area.
- 1.3 A total of 96 auger boring inspections were made over the site supplemented by information from 4 soil pits. At the time of survey the majority of the land was under winter cereals.

## 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 44m AOD, the annual average rainfall is 579 mm (22.8"). This data also indicates that field capacity days are 107 and moisture deficits are 123 mm for wheat and 119 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 site is generally level or gently sloping and ranges in altitude from 37m AOD (adjacent Roselawn Farm) to 52m AOD (adjacent to Scravels). Gradient and altitude do not constitute limitations to the ALC grade.

## 3. GEOLOGY AND SOILS

3.1 The published 1:50,000 scale solid and drift edition geology maps - Nos.241 and 240 (Geological Survey of GB 1975 and 1981 respectively) show the survey area to comprise mainly boulder clay deposits with smaller out crops of Head at the eastern and western peripheries of the site.

3.2 The Soil Survey of England and Wales have mapped the soils in the Chelmsford area at a reconnaissance scale of 1:250,000. This map, entitled "The Soils of Eastern England", shows the occurrence of the Stretham Association (\*1) within the survey area. During the current survey a more detailed inspection of the soils was carried out.

(\*1) Stretham Association: Deep well drained calcareous clayey soils associated with similar but slowly permeable soils.

Three main soil types were identified.

- 3.2.1 West of Priors and east and west of Scot's Green decalcified\* clayey soils predominate. They typically comprise heavy clay loam (or occasionally clay) topsoils over heavy clay loam or clay subsoils which overlie gleyed clays at depth. (45/55cm+ or occasionally 35cm+). At depth clays may be calcareous and contain many chalk fragments. Bands of flints\*\* may occur, in the subsoils, east of Scot's Green, however the depth to and percentage of flints in these flinty bands vary with location.
- 3.2.2 Through the central part of the site, east of Priors, a tract of lighter textured soils occur. These soils typically comprise deep medium clay loams which may become slightly stony at depth (75/120cm+). Permeability of the upper horizons is relatively high due to the presence of a dense network of interlinking coarse pores (namely worm and root channels).
- 3.2.3 In the vicinity of Parsonage and Roselawn Farms a small area of land consists of droughty gravelly soils. They typically comprise slightly stony medium clay loam topsoils over slightly to moderately stony heavy clay loams which overlie gravelly material at shallow depths (40cm+). The gravelly material generally comprises 50-75% flints in a clay loam matrix.

\* decalcified: occasionally profiles are calcareous throughout.

\*\* flint content ranges from 15-25% mainly medium in size.

4. AGRICULTURAL LAND CLASSIFICATION

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

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

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
2	18.4	20
3a	55.5	59
3b	10.9	12
Non Agricultural	5.5	6
Urban	2.2	2
Agricultural Buildings	1.1	1
TOTAL	93.6	100

5. GRADE 2

5.1 Approximately 20% of the survey site has been mapped as grade 2. This land lies east of Priors and is associated with the soils described in paragraph 3.2.2. Soil profile pit observations indicate that these soils are slightly droughty and have slowly permeable horizons present at depth in the subsoil (65cm+ ie. wetness Class II)\*\*\*. Thus the slight droughtiness and drainage imperfections restrict this land to grade 2.

\*\*\* Occasionally profiles lack gleyed lower horizons; these profiles are assessed as wetness class I, minor droughtiness alone excludes this land from grade 1.

6. SUBGRADE 3a

6.1 The majority of the survey area has been mapped as subgrade 3a. The land is associated with the decalcified clayey soils described in paragraph 3.2.1. Soils are moderately droughty and typically become slowly permeable in the subsoil 45/55cm+ (ie wetness class II). The combination of moderate reserves of water, heavy topsoil textures and impeded drainage at depth restricts this land to subgrade 3a.

7. SUBGRADE 3b

Land graded 3b occurs in three main situations.

7.1 Firstly, the majority of the land graded 3b occurs adjacent to Parsonage and Roselawn Farms. This land is associated with the soils described in paragraph 3.2.3. The presence of gravel at shallow depths has a significant limiting effect on the waterholding capacity of this soil. As a result, the significant droughtiness imperfection excludes the land from a higher grade.

7.2 Secondly, south of Broom Wood, a smaller area of land graded 3b has been mapped. This land is associated with the clayey soils described in paragraph 3.2.1. Soils typically comprise clay topsoils which directly overlie slowly permeable, clayey subsoils (ie wetness class III). The heavy topsoil textures and slow subsoil permeability combine to restrict this land to subgrade 3b.

7.3 Finally, adjacent to Priors a small area of land has been mapped as subgrade 3b. As a result of building removal the topsoils in this area comprise clay loams with 15-20% rubble, flint and brick fragments. Topsoil stone excludes this land from a higher grade.

8. NON AGRICULTURAL

8.1 Allotments, woodland and rough grass with ponds have been mapped as Non-Agricultural.

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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 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 levels 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.

## REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN, 1975.

Solid and Drift Edition Geology Map Sheet No.241, Scale 1:50,000.

GEOLOGICAL SURVEY OF GREAT BRITAIN, 1981.

Solid and Drift Edition Geology Map Sheet No.240, Scale 1:50,000.

MAFF, 1964 Agricultural Land Classification Map Sheet 161 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. Climatic Data extracted from the published agricultural climatic dataset.

SOIL SURVEY OF ENGLAND AND WALES, 1983. 'The Soils of Eastern England' Sheet 4 1:250,000.