MAFF Ministry of Agriculture Fisheries and Food

Proposed new football ground
Land at Gt. Baddow, Essex

Agricultural Land Classification
October 1996

Resource Planning Team
Huntingdon Statutory Group
ADAS Cambridge

ADAS Reference: 82/96
MAFF Reference: EL 13/02255
LUPU Commission: C02513

AGRICULTURAL LAND CLASSIFICATION REPORT

Proposed new Chelmsford football ground
Land at Gt. Baddow, Essex

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 13.0 ha of land to the south east of Chelmsford to the north of the A12 trunk road centred on grid reference TL 740 037. The survey was carried out during October 1996.

2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Cambridge in connection with the proposal to relocate the football ground of Chelmsford F.C. and associated sports facilities. This survey supersedes previous ALC surveys on this land.

3. The work was conducted by members of the Resource Planning Team in the Huntingdon Statutory Group in ADAS. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey the field in the survey area was sown to winter cereals.

Summary

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10 000 it is accurate at this scale but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% Total site area
3a	8.9	68.5
3b	2.8	21.5
Other land	1.3	10.0
Total site area	13.0	100

7. The fieldwork was conducted at an average density of one borings per hectare. A total of fourteen auger borings and two soil pits were described.

8. The land within the site has been assessed as Subgrade 3a (good quality agricultural land) in the west and Subgrade 3b (moderate quality agricultural land) in the east of the site. the main limiting factor for the agricultural quality of land within the site is a wetness and workability constraint.

Factors Influencing ALC Grade

Climate

9. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

10. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TL 740 037
Altitude	m, AOD	30
Accumulated Temperature	day°C (Jan-June)	1452
Average Annual Rainfall	mm	583
Field Capacity Days	days	105
Climatic grade	N/A	1
Moisture Deficit, Wheat	mm	123
Moisture Deficit, Potatoes	mm	120

11. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

12. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (ATO, January to June), as a measure of the relative warmth of a locality.

13. The combination of rainfall and temperature at this site mean there are no climatic limitations to the quality of the agricultural land.

Site

14. The site lies at an altitude of approximately 30 mAOD and is generally level with a slight fall towards Sandon Brook bordering the east of the site. Slopes are all very gentle and do not exceed 2°. Therefore neither gradient or relief impose any limitation to the agricultural quality of the site.

Geology and soils

15. The published 1 : 50 000 scale solid and drift edition geology map (Geol. Survey, 1975) shows the majority of the site to comprise Head deposits with Alluvium mapped along the course of Sandon Brook in the east of the site.

16. No detailed soil map exists for the area but the reconnaissance (1 : 250 000 scale) soil map (Soil Survey, 1983) shows the site as soils of the Windsor association. These soils are briefly described as slowly permeable seasonally waterlogged clayey soils mostly with brown subsoils. Some fine loamy over clayey and fine silty over clayey soils and locally on slopes clayey soils with only slight seasonal waterlogging. Two soil types were identified within the site during the present survey and are described briefly below.

Soil Type I

17. This soil type covered the majority of the site and consisted of a very slightly stony medium clay loam textured topsoil overlying a similar or slightly heavier textured upper subsoil. This in turn overlay a clay textured lower subsoil horizon. Occasionally the lower subsoil horizon became slightly to moderately stony. The subsoil was distinctly mottled immediately below the topsoil with the lower clay textured subsoil horizon constituting a slowly permeable layer, hence profiles of this soil type were assessed as Wetness Class III (Appendix II).

Soil Type II

18. This soil type was limited to the east of the site alongside Sandon Brook and consisted of a heavy clay loam or clay textured topsoil overlying a distinctly mottled clay textured subsoil. The topsoil was only very slightly stony with the subsoil being generally stoneless. The subsoil was slowly permeable immediately below the topsoil and hence profiles of this soil type were assessed as Wetness Class III.

Agricultural Land Classification

19. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

20. The location of the auger borings and pits is shown on the attached sample location map.

Grade 3a

21. Land of this subgrade extended over the majority of the site and was associated with Soil Type I (paragraph 17). The combination of a medium clay loam textured topsoil with an assessment of Wetness Class III for the majority of the profiles results in a moderate wetness and workability limitation restricting such land to Subgrade 3a. Within the site occasional profiles were assessed as land of a higher quality but they do not occur as discrete units and cannot be delineated separately.

Subgrade 3b

22. Land of this quality was restricted to the east of the site alongside Sandon Brook and is associated with Soil Type II (paragraph 18). The soil profiles in this area were assessed as Wetness Class III which together with a heavy clay loam or clay textured topsoil restrict the land to Subgrade 3b through a significant wetness and workability limitation.

Other Land

23. Two small areas of land were mapped as other land. These areas consisted of a roundabout and associated land at the junction of the A1114 and A12 trunk roads in the south west of the site and an area of scrub surrounding a Pill Box in the east of the site.

Ray Leverton
Resource Planning Team
Huntingdon Statutory Group
ADAS Cambridge

SOURCES OF REFERENCE

British Geological Survey (1975) *Sheet No.* 241, *Chelmsford 1:50 000 scale.* BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.* Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet* 4, *Soils of Eastern England.* SSEW: Harpenden.

APPENDIX I

DESCRIPTIONS OF THE GRADES AND SUBGRADES

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 or horticultural crops can usually be grown but on some land of this 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 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the 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 the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist 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 severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Wetness Class	Duration of waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years.[2]
II	The soil profile is wet within 70 cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

[1] The number of days is not necessarily a continuous period.
[2] 'In most years' is defined as more than 10 out of 20 years.