

**Land South of Hinxton Hall,
Essex**

**Agricultural Land Classification
ALC Map and Report**

April 1998

**Resource Planning Team
Eastern Region
FRCA Cambridge**

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AGRICULTURAL LAND CLASSIFICATION REPORT

LAND SOUTH OF HINXTON HALL, ESSEX

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 18.3 ha of land located immediately south of the Cambridgeshire/Essex county boundary and east of Ickleton village. The survey was carried out during April 1998.
2. The survey was carried out by the Farming and Rural Conservation Agency (FRCA) for the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with an application by The Wellcome Trust Ltd. to develop a Research Faculty and stormwater balancing lake on land to the immediate north of this site. This survey supersedes previous ALC information for this land.
3. The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA. 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 agricultural land on site was growing crops of winter barley and oilseed rape. Two areas have been mapped as 'Other land'. The area in the north comprises the sewage works, whilst the area in the south of the site is comprised of farm buildings and concrete hard standings, plus other uncultivated land on which farm equipment and piles of soil are currently stored.

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)	% surveyed area	% site area
2	6.6	43	36
3a	2.5	17	14
3b	6.1	40	33
Other land	3.1	N/A	17
Total surveyed area	15.2	100	83
Total site area	18.3	-	100

7. The fieldwork was conducted at an average density of one auger boring per hectare. A total of 15 auger borings and 2 soil pits was described.

8. The east of the site has been graded 2 (very good quality agricultural land) and is restricted to this grade by a slight droughtiness constraint. Land graded 3b (moderate quality agricultural land) occurs in the west of the site and corresponds to the area restored to agriculture after previous extraction of gravel. In this area significant droughtiness imposes the overriding limitation, whilst flood risk is equally limiting in a small area adjacent to the River Cam and west of the sewage works. A narrow strip of land graded 3a (good quality agricultural land) occurs between the grade 2 and subgrade 3b land, this land is precluded from a higher grade by moderate droughtiness constraints.

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 5 km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TL 500 438
Altitude	m, AOD	35
Accumulated Temperature	day°C (Jan-June)	1434
Average Annual Rainfall	mm	583
Field Capacity Days	days	108
Moisture Deficit, Wheat	mm	118
Moisture Deficit, Potatoes	mm	114
Overall climatic grade	N/A	Grade 1

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 (AT0, January to June), as a measure of the relative warmth of a locality.

13. The combination of rainfall and temperature at this site mean it is relatively warm and dry during the critical crop growing period. The site is therefore of climatic grade 1.

Site

14. The site slopes gently in a westerly direction from 40 m AOD, adjacent to Stumps Cross, to approximately 31 m AOD in the area of restored land adjacent to the railway in the west. Neither gradient nor altitude impose any limitation to the agricultural quality of the land.

Geology and soils

15. The published 1:63 360 scale drift edition geology map, sheet 205 (Geological Survey of Great Britain [England and Wales], 1952) maps the northern half of the site as Cretaceous Middle Chalk. In the south, land adjacent to the M11 spur road is mapped as 'highest' terrace gravels whilst land parallel to the railway is mapped as 'lowest and intermediate' terrace gravels. Land in the low lying north-west corner is mapped as alluvium.

16. At a reconnaissance scale of 1:250 000 the Soil Survey of England and Wales (Sheet 4, Soils of Eastern England, 1983) maps two soil associations. Soils of the Moulton Association predominate, with a small area of the Thames Association depicted in the north-west. These Associations are briefly described as follows:-

- Moulton: Well drained coarse and fine loamy soils with similar shallow calcareous coarse loamy soils over chalk or chalk rubble in places. Patterned ground of stripes and polygons gives very variable soil depth. Slight risk of water erosion.
- Thames: Stoneless mainly calcareous clayey soils affected by groundwater. Flat land. Risk of flooding.

The eastern half of the site has also been mapped at a scale of 1:25 000 (SSEW, Sheet TL54, 1986). This map shows soils of the Moulton series occurring in this part of the site, which it briefly describes as: deep permeable coarse loamy soils with sandy clay loam below 40 cm. Calcareous chalk and flint may be found at depth.

17. The current survey confirms the presence of two soil types.

18. The predominant soil type occupies the middle and eastern parts of the site. The soils comprise medium sandy loam topsoils which are slightly to very calcareous, typically slightly stony, and 25/30 cm deep. Upper subsoils typically comprise calcareous, slightly to moderately stony, sandy clay loams or medium sandy loams. They typically extend to 45/80 cm depth before merging into a clayey or occasionally chalky lower subsoil. Occasionally profiles become very stony and impenetrable to auger at 50/70 cm.

19. The second soil type corresponds to the area of restored land in the west of the site. Topsoils extend to 20/30 cm depth and typically comprise moderately stony, very calcareous medium sandy loams. Upper subsoils are slightly to moderately stony, very calcareous, typically of medium and heavy clay loam or silty clay loam texture and severely compacted. Rooting within this horizon is very poor. Below 45/50 cm the subsoil usually becomes extremely dense, very stony and impenetrable to auger. Exploitation of this horizon by crop roots is negligible. In the northern part of this area, adjacent to the River Cam, the lower subsoil is augerable, here it comprises slightly to very stony medium sandy loam to 70/75 cm, at which depth it becomes very stony and impenetrable to auger.

AGRICULTURAL LAND CLASSIFICATION

20. 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, page 1.

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

Grade 2

22. The grade 2 land on site occurs in the east and corresponds with the least stony variant of the soils described in paragraph 18. The combination of soil textures and stone contents mean that the ability of this soil to retain water for crop growth is only slightly limiting. This land therefore only suffers a minor droughtiness constraint, which restricts it to grade 2.

Subgrade 3a

23. Land graded 3a occurs in the middle section of the site and corresponds to the more stony variant of the soils described in paragraph 18. The soil textures present, combined with the profile stone content, mean that this soil has a moderately limited ability to retain water for crop growth. Consequently this land is moderately drougty and limited to subgrade 3a.

Subgrade 3b

24. Land of subgrade 3b occupies the area adjacent to the railway, in the west of the site, and corresponds to the soils described in paragraph 19. The coarse loamy, moderately stony topsoils directly overlie a severely compacted, stony subsoil, which is very poorly exploited by crop roots, and virtually unrootable below 45/50 cm. This combination of soil textures, soil stone content, and the limited exploitation of the soil by crop roots, means that these profiles suffer from a significant droughtiness constraint. This land can not therefore be graded higher than subgrade 3b. Part of the north-western corner of the site may also be equally limited to this subgrade by flood risk.

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SOURCES OF REFERENCE

Geological Survey of Great Britain (England and Wales), 1952, *Sheet 205, Saffron Walden* 1:63 360 scale.

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

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.

Soil Survey of England and Wales (1983), *Sheet 4, Soils of Eastern England*, 1:250 000 scale, SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in Eastern England*, SSEW: Harpenden

Soil Survey of England and Wales (1986), *Sheet TL54, Linton*, 1:25 000 scale, SSEW: Harpenden

APPENDIX I

DESCRIPTION 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 that 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 (eg. 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 that restricts use to permanent pasture or rough grazing, except for occasional pioneer forage crops.