LAND EAST OF BEDFORD ROAD, MARSTON MORETAINE, BEDFORDSHIRE

Agricultural Land Classification ALC Map and Report

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AGRICULTURAL LAND CLASSIFICATION REPORT

LAND EAST OF BEDFORD ROAD, MARSTON MORETAINE, BEDFORDSHIRE

INTRODUCTION

1. This report presents the findings of a detailed, Agricultural Land Classification (ALC) survey of 30.5 ha of land at Marston Moretaine, Bedfordshire. The survey was carried out during March 1995.

2. The survey was carried out by the Farming and Rural Conservation Agency (FRCA) for the Ministry of Agriculture, Fisheries and Food (MAFF), initially in connection with Mid-Bedfordshire District Local Plan. In 1997 a site specific planning application was submitted for proposed residential development. 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 (formerly ADAS Statutory). 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 land use on the site was either cereal stubble or recently ploughed. The area mapped as 'Other land' is a large earth bund.

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
3a	22.8	82	75
3b	5.0	18	16
Other land	2.7	N/A	9
Total surveyed area	27.8	100	91
Total site area	30.5	-	100

7. The fieldwork was conducted at an average density of one boring per hectare. A total of 34 borings and 2 soil pits was described.

8. The majority of the site has been graded subgrade 3a (good quality agricultural land). The main limitation is one of moderate wetness and workability. Three small areas of subgrade 3b (moderate quality agricultural land) have been mapped. This land exhibits poorer drainage characteristics and subsequently suffers from a significant wetness and workability limitation.

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 002 418
Altitude	m, AOD	36
Accumulated Temperature	day°C (Jan-June)	1445
Average Annual Rainfall	mm	582
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 (ATO, January to June), as a measure of the relative warmth of a locality.

13. The combination of rainfall and temperature at this site do not impose any climatic limitation to the land and the overall climatic grade is 1.

Site

14. The site lies to the north east of the village of Marston Moretaine. The north west of the site is bounded by Bedford Road and the south west abuts the village but is separated by the large soil bund. At the time of survey, land to the east was in agricultural use with a sewage works to the north. The site is almost flat with only very minor gradients and an approximate altitude of 36 to 38 m AOD. A minor tributary of the River Great Ouse has been channelled along the eastern boundary of the site. Neither gradient or altitude constitute limitations to agricultural land quality.

Geology and soils

15. There are no detailed geology maps of the area. On the 1:250 000 scale map the solid geology is shown as Oxford Clay. The 1:625 000 map shows that this geology has been covered by river terrace deposits.

16. The Soil Survey of England and Wales have mapped this area on two occasions. Firstly at a scale of 1:63 360 (sheet 147, 1968) the whole site has been mapped as the Milton Association which is typically derived from gravelly and loamy drifts (riverine and head). In 1983 at a reconnaissance scale of 1:250 000 the whole site was mapped as the Evesham 3 Association. This is broadly described as slowly permeable calcareous clayey and fine loamy over clayey soils. Some slowly permeable seasonally waterlogged non calcareous clayey soils.

17. During the detailed survey two soil types have been identified.

18. The majority of the site broadly corresponds with the mapped Milton Association and mainly comprises very slightly stony non calcareous heavy clay loam (occasionally medium clay loam, sandy clay loam or clay) topsoils, over similar or heavier upper subsoils. Lower subsoils which typically occur between 60/100 cm depth, comprise very slightly stony calcareous dense clay which is slowly permeable. Often occurring immediately above the dense clay is a narrow horizon of moderately stony sandy clay loam which becomes lighter textured at depth. At the time of the survey these sandy horizons were typically saturated.

19. The second soil type occurs in small areas in the south and east of the site and in the fields adjacent to Bedford Road. Soils typically comprise very slightly stony non calcareous heavy clay loam or clay topsoils over very slightly stony non calcareous clay. Lower subsoils which typically occur between 40/55 cm depth comprise very slightly stony calcareous dense grey clay which is slowly permeable.

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 and the details of the soils data are presented in Appendix II.

Grade 3a

22. Subgrade 3a is mapped extensively over the site corresponding with the better drained and slightly lighter textured topsoils described in paragraph 18. Slowly permeable clay is typically present between 60/100 cm and the land is consequently assessed as Wetness Class II, or occasionally, Wetness Class I. The combination of topsoil textures with slight drainage imperfections result in the land being restricted to 3a by a slight to moderate wetness and workability constraint.

23. Although individual profiles of lighter textured soils occur towards the south of the site, that are or approach grade 2, these have not been delineated at this scale of mapping.

Grade 3b

24. Subgrade 3b land is mapped in small areas along the western and eastern boundaries, and corresponds with the slightly heavier and more poorly drained soils described in paragraph 19. These soils are typically slowly permeable between 40/55 cm and are assessed as Wetness Class III. The combination of heavier textured topsoils and imperfect soil drainage results in a more significant wetness and workability limitation. Thus this excludes the land from a higher grade.

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SOURCES OF REFERENCE

Institute of Geological Sciences (1977), *Quaternary Map of the United Kingdom, South.* Ordnance Survey, Southampton.

Institute of Geological Sciences (1983), *Sheet 52°N-02°W, East Midlands,* Ordnance Survey, Southampton

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 (1968) *Sheet 147, Bedford and Luton.* SSEW: Harpenden.

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

Soil Survey of England and Wales (1984) *Soils and their Use in 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.