

**BEDFORD BOROUGH COUNCIL.  
LAND AT ELSTOW,  
BEDFORDSHIRE.**

**Agricultural Land Classification  
ALC map and report.**

**February 1999**

**Resource Planning Team  
Eastern Region  
FRCA Cambridge**

**RPT Job Number: 10/99  
MAFF Reference: EL01/01121B  
LURET Job Number: ME1AM2R**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## BEDFORD BOROUGH COUNCIL, LAND AT ELSTOW, BEDFORDSHIRE.

### INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 38.2 ha of land located to the north-west of Elstow in Bedfordshire. The survey was carried out in February 1999.
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 the Bedford Borough Local Plan Review. 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, most of the agricultural land on site comprised land sown with winter oilseed rape, with smaller areas of wheat, sugar beet, a brassica crop and grassland. In the north, corresponding with part of the grounds of the former Abbey is an area of unfarmed disturbed land. The 'Other land' on site comprises several areas of new tree plantation associated with the new road which dissects the site, an old orchard now mostly overgrown by scrub in the north-east, parts of the Abbey ruins and a small wooded field corner in the west.

### 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	19.0	54	50
3a	13.5	39	35
3b	2.5	7	7
Other land	3.2	N/A	8
Total surveyed area	35.0	100	92
Total site area	38.2	-	100

7. The fieldwork was conducted at an average density of one auger boring per hectare. A total of 39 auger borings and 4 pits was described.

8. The majority of the agricultural land on site has been graded 2 (very good quality agricultural land). This land is limited by minor droughtiness imperfections. Land of subgrade 3a (good quality agricultural land) occurs in two situations. In the west of the site it is limited by moderate wetness and workability constraints, whilst in the east and north is restricted by moderate droughtiness imperfections. Land graded 3b (moderate quality agricultural land) occurs in the north-east and mostly corresponds to the disturbed land associated with the former Abbey fish ponds. In this area irregular microrelief imposes the overriding 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 047 471
Altitude	m, AOD	30
Accumulated Temperature	day°C (Jan-June)	1449
Average Annual Rainfall	mm	577
Field Capacity Days	days	99
Moisture Deficit, Wheat	mm	119
Moisture Deficit, Potatoes	mm	115
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 that it is relatively warm and dry during the critical growing season, therefore imposing no overall limitation to land quality. As a result the site has a climatic grade of 1.

## Site

14. The site is situated to the north-west of Elstow. To the north and west it abuts Mile End (B5134) and the A6 respectively. To the east it adjoins domestic gardens, the church grounds, Wilstead Road, a playing field and Lynn Farm, whilst to the south it mostly adjoins open fields. An access road to a new housing estate dissects the site in approximately a north to south direction curving round the south-eastern corner of the site. Most of the site is virtually level occupying an altitude of approximately 30 m AOD. Gradient and altitude do not therefore impose any limitation to the agricultural land quality of this land. However, on the disturbed land in the north-east, irregular microrelief imposes significant restrictions to the use of farm machinery and restricts this area to subgrade 3b.

## Geology and soils

15. No detailed geology map exists for the area. The 1:250 000 scale solid geology map, published by the Institute of Geological Sciences, (Sheet 52° N - 02° W, 1983) shows the entire site to be underlain by Oxford Clay.

16. At a scale of 1:625 000, the Quarternary map of the UK (southern sheet, 1977) depicts the drift geology of the area as river terrace deposits, mainly of sand and gravel.

17. The Soil Survey of England and Wales have mapped the area on two occasions. At a scale of 1:63 360 sheet 147, Bedford and Luton (SSEW, 1968) maps the western three quarters of the site as the Rowsham Association and the remainder part as the Milton Association. These associations are briefly described as:

- Rowsham: A non calcareous gley soil derived from gravelly loamy drift over Jurassic clays.
- Milton: A gleyed brown earth derived from gravelly loamy drift.

18. At the reconnaissance scale of 1:250 000 the Soil Survey of England and Wales (Sheet 4, 1983) maps the whole site as the Evesham 3 Association which is briefly described as: Slowly permeable calcareous clayey, and fine loamy over clayey soils. Some slowly permeable seasonally waterlogged non-calcareous clayey soils.

19. During the current survey three main soil types were identified.

20. The first soil type mainly occurs in the centre of the site. Topsoil textures comprises medium clay loams, medium sandy loams and occasionally sandy clay loams. The topsoils are very slightly to slightly stony, typically non-calcareous and 30 cm deep. Upper subsoils typically extend to 50/55cm depth, they are typically very slightly stony (occasionally moderately stony), non-calcareous and range in texture from medium sandy loam to heavy clay loam. The lower subsoil is typically similar to the upper subsoil but becomes moderately to very stony and impenetrable to auger at 65/90 cm depth. Occasionally, the lower subsoil comprises clay which extends to depth. Profiles are typically well drained.

21. The second soil type occurs in a broad band along the western side of the site. Topsoils are very slightly stony, non-calcareous, 30 cm deep and have medium or heavy clay loam textures. Upper subsoils typically comprise non-calcareous, very slightly stony, gleyed clay (occasionally heavy clay loam). Their depth typically ranges from 50 to 75 cm before strongly gleyed slowly permeable clay is encountered which extends to depth. These profiles have been assessed as moderately well to imperfectly drained.

22. The third soil type occurs in the area surrounding the playing field in the east and in a small area in the north. Topsoils typically comprise very slightly to slightly stony, non-calcareous medium sandy loams (occasionally medium clay loams or sandy clay loams) extending to 30 cm depth. Upper subsoils comprise sandy clay loams (occasionally medium clay loams) which are typically slightly to moderately stony and non-calcareous. At 40/60 cm depth the lower subsoil is encountered. This horizon typically comprises sandy clay loam (but ranges from medium sand to heavy clay loam). Initially moderately stony, the lower subsoil becomes impenetrable to auger at 50/90 cm. Pit information indicates that this depth coincides with an increase from moderately stony to very stony. Profiles have been assessed as free draining.

## **AGRICULTURAL LAND CLASSIFICATION**

23. 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.

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

### *Grade 2*

25. The grade 2 land on site corresponds to the soils described in paragraph 20. The combination of profile textures and stone contents mean that these soils have a slightly limited ability to retain water for crop growth. They therefore suffer from a minor droughtiness constraint which precludes them from grade 1.

### *Subgrade 3a*

26. The subgrade 3a land occurs in two situations. Firstly it corresponds with the soils described in paragraph 21. These soils have been assessed as Wetness Class II or III depending on the depth to a slowly permeable horizon and whether or not gleying occurs above 40 cm. These wetness classes, combine with the fine loamy topsoil textures to impose a moderate wetness and workability constraint to the land, thus restricting it to subgrade 3a.

27. Subgrade 3a land also corresponds to the soils described in paragraph 22. These soils are essentially similar to those described in paragraph 20 but become moderately to very stony at shallower depth. As a result they only have a moderate ability to retain water for crop growth, making them moderately droughty and thus restricting them to subgrade 3a.

*Subgrade 3b*

28. The subgrade 3b land corresponds with the area in the north-east where the soils have been disturbed by various earth moving activities thought to be associated with the former Abbey. In this area surface topography is sufficiently uneven to make most mechanised arable operations impractical. This imposes a significant microrelief constraint which precludes the land from a higher grade.

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## SOURCES OF REFERENCE

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

Institute of Geological Sciences, (1977), *Quaternary map of the UK (southern sheet)*

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, *Soils of 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.