DETAILED/SEMI-DETAILED SURVEY OF LAND AT THRUPP END FARM, LIDLINGTON, BEDFORDSHIRE.

Agricultural Land Classification
ALC map and report.

November 1998

Resource Planning Team
Eastern Region
FRCA Cambridge

RPT Job Number: 68/98
MAFF Reference: EL 01/02822
LURET Job Number: ME1AT72

AGRICULTURAL LAND CLASSIFICATION REPORT

DETAILED/SEMI-DETAILED SURVEY OF LAND AT THRUPP END FARM, LIDLINGTON, BEDFORDSHIRE.

INTRODUCTION

1. This report presents the findings of a detailed/semi-detailed Agricultural Land Classification (ALC) survey of 248.1 ha of land located between Marston Moretaine and Lidlington in Bedfordshire. The survey was carried out during October and November 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 the Mid Bedfordshire Districts 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, the agricultural land on site comprised oilseed rape and winter cereal crops, cereal stubble, ploughed land and grassland. The areas mapped as 'Other land' comprise woodland, farm buildings, roads and tracks and in the vicinity of Sheeptick End, private gardens, old orchards and allotment gardens.

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	10.0	5	4
3a	38.6	18	15
3b	165.6	77	67
Other land	33.9	N/A	14
Total surveyed area	214.2	100	86
Total site area	248.1	-	100

7. The fieldwork was conducted at an average density of 1 auger boring per 1.6 hectares. A total of 156 auger borings and 6 pits was described. The survey was initially conducted at a semi-detailed level and additional auger borings where added to confirm the extent of the grade 2 and subgrade 3a land.

8. Most of the site has been graded 3b (moderate quality agricultural land) due to significant wetness and workability limitations caused by the combination of clay or heavy clay loam topsoils and slowly permeable clay subsoils. In a small area in the vicinity of Thrupp End Farm, a micro-topography limitation restricts the land to this subgrade. Several small areas of subgrade 3a (good quality agricultural land) have been mapped in the north and south-east. In these areas, the land is precluded from a higher grade by moderate wetness and workability constraints. Land of grade 2 (very good quality agricultural land) occurs in the north-east and south-east of the site. This land suffers equally from minor wetness and workability and droughtiness imperfections.

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	SP 990 399
Altitude	m, AOD	50
Accumulated Temperature	day°C (Jan-June)	1430
Average Annual Rainfall	mm	590
Field Capacity Days	days	112
Moisture Deficit, Wheat	mm	116
Moisture Deficit, Potatoes	mm	111
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 lies on the edge of Marston Vale (a broad flat valley associated with a tributary of the River Great Ouse) between Marston Moretaine in the north and Lidlington in the south. The land is virtually level, with altitude ranging from approximately 60 m AOD in the south-east to 41 m AOD in the north-west. Gradient and altitude are therefore not limiting factors on this site. In the vicinity of Thrupp End Farm, some land is however limited to subgrade 3b by significant microrelief constraints associated with some old earthworks.

Geology and soils

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

16. The Soil Survey of England and Wales have mapped the area on two occasions. At a scale of 1:63 360 (Sheet 147, 1968) the majority of the site is mapped as the Rowsham Series. This is summarised as a non calcareous gley soil. Whilst soils in the east and north-east are depicted as the Milton Series, a gleyed brown earth comprised of gravely or loamy drift.

17. At the reconnaissance scale of 1:250 000 the Soil Survey of England and Wales (Sheet 4, 1983) maps the majority of the site as the Denchworth Association and smaller areas in the north and north-east as the Evesham 3 Association. These soils are briefly described as:

- Denchworth: Slowly permeable calcareous clayey, and fine loamy over clayey soils. Some slowly permeable seasonally waterlogged non-calcareous clayey soils.
- Evesham 3: Slowly permeable calcareous clayey, and fine loamy over clayey soils. Some slowly permeable seasonally waterlogged non-calcareous clayey soils.

18. During the current survey two main soil types where identified.

19. The first soil type predominates the site. Topsoils typically comprise stoneless or very slightly stony, non-calcareous (very occasionally very slightly or slightly calcareous) clay or heavy clay loam. The topsoil is typically 30/35 cm deep. Subsoils are comprised of clay. They are typically gleyed and slowly permeable from immediately beneath the topsoil, stoneless to very slightly stony, non-calcareous, and extend to depth. Very occasionally subsoils are calcareous or become calcareous at depth. Profiles within this soil type have been assessed as imperfectly drained.

20. The second soil type occurs in a number of distinct areas in the north and south-east of the site. Topsoils are typically stoneless to very slightly stony, non-calcareous, and of medium clay loam texture. They extend to 30/35 cm depth. Upper subsoils typically extend to 50/70 cm depth and have a similar stone content and calcareousness to the topsoil. Their texture is typically heavy clay loam or clay. Lower subsoils are typically clay, but in a significant proportion of profiles sandy clay loam or sandy clay is encountered. Stone content ranges from stoneless to moderately stony, generally increasing with depth. Profiles within this soil

type are typically gleyed from immediately beneath the topsoil, and become slowly permeable within the upper subsoil. They are therefore typically moderately well to imperfectly drained.

AGRICULTURAL LAND CLASSIFICATION

21. 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.

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

Grade 2

23. Land mapped as grade 2 corresponds to the better drained profiles within the soil type described in paragraph 20. The combination of medium clay loam topsoils with a Wetness Class II assessment, imposes a minor wetness and workability imperfection, and thus precludes the land from a higher grade. Moisture balance calculations show that these profiles are equally limited by a minor droughtiness constraint.

Subgrade 3a

24. The subgrade 3a land on site corresponds to the less well drained profiles within the soils described in paragraph 20. These profiles have been assessed as Wetness Class III. This factor, combined with the topsoil textures present, imposes a moderate wetness and workability constraint which limits the land to subgrade 3a.

Subgrade 3b

25. Land of subgrade 3b predominates the site and corresponds almost entirely to the soils described in paragraph 19, but also to a small area in the vicinity of Thrupp End Farm where a significant micro-topography constraint exists. In the former situation the clayey or fine loamy topsoils combine with the slowly permeable subsoils (assessed as Wetness Class III) to impose a significant wetness and workability limitation. In neither situation can the land be graded higher than subgrade 3b.

Adrian Rochford
Resource Planning Team
Eastern Region
FRCA Cambridge

SOURCES OF REFERENCE

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

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.*

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.