Comprehensive Roadside Services
South of A120, Bishop's Stortford,
Hertfordshire.

Agricultural Land Classification
ALC Map and Report

February 1999

Resource Planning Team
Eastern Region
FRCA Cambridge

RPT Job Number: 04/99
MAFF Ref: EL18/02908
LURET Job No.: ME27842

AGRICULTURAL LAND CLASSIFICATION REPORT

Comprehensive Roadside Services, South of A120, Bishop's Stortford, Hertfordshire.

INTRODUCTION

1. This report presents the findings of a detailed, Agricultural Land Classification (ALC) survey of 40.8 ha of land south of the A120 road, Bishop's Stortford, Hertfordshire. The area includes the proposed service area and possible alternative sites. The survey was carried out during 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 an application for comprehensive roadside services. 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 land use on the site was a mixture of arable and grassland. The areas mapped as 'Other' include small areas of woodland and hard tracks.

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. The area and proportions of the ALC grades and subgrades on the proposed service area site (outlined in red on the ALC map) are shown in Table 3, in Appendix II.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	16.1	40	40
3a	14.0	35	34
3b	9.9	25	24
Other land	0.8	N/A	2
Total surveyed area	40.0	100	98
Total site area	40.8	-	100

7. The fieldwork was conducted at an average density of 1 boring per hectare. A total of 44 borings and 4 soil pits was described.

8. Land mapped as grade 2 (very good quality agricultural land) occurs in the central and eastern parts of the site, and is restricted to this grade due to a minor wetness and workability limitation.

9. Land mapped as subgrade 3a (good quality agricultural land) occurs in the southern part of the site and in narrow (north/south) ribbons in the west and east, and is restricted to this subgrade due to a moderate wetness and workability limitation. The block of land mapped as subgrade 3a in the east is restricted to this subgrade due to topsoil stone content (>2 cm) being >10% but <15%.

10. Land mapped as subgrade 3b (moderate quality agricultural land) occurs in the western part of the site and is restricted to this subgrade due to a more severe wetness and workability limitation. A small area of land mapped as subgrade 3b in the eastern part of the site is restricted to this subgrade due to slopes being in excess of 7°.

FACTORS INFLUENCING ALC GRADE

Climate

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

12. 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 483 229	TL 489 232
Altitude	m, AOD	85	65
Accumulated Temperature	day°C (Jan-June)	1387	1415
Average Annual Rainfall	mm	638	632
Field Capacity Days	days	123	123
Moisture Deficit, Wheat	mm	111	114
Moisture Deficit, Potatoes	mm	104	108
Overall climatic grade	N/A	1	1

13. 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.

14. 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.

15. The combination of rainfall and temperature impose no overriding limitation to agricultural land quality at this site, hence a climatic grade of 1 has been assigned.

Site

16. The site lies on the northwestern edge of Bishop's Stortford and is bounded in the north by the A120 road, and the east by part dwellings and gardens, and part a narrow lane. The remainder is bounded by open farmland, and in the west by Hoggates Wood. A small part of the southern boundary constitutes Dane O'Coys Road. The landform is gently undulating and from a height of 95 m AOD, around Hoggates Wood, the land slopes in an easterly direction towards the valley bottom containing the Bourne Brook at a height of 65 m AOD. The land rises from the valley bottom in a northeasterly direction to attain a height of 80 m AOD at the site boundary. Some slopes in this area are limiting in ALC terms.

Geology and soils

17. The published 1:50 000 scale geology map (BGS, 1990) shows the majority of the site to comprise till (boulder clay) over London Clay in the west and Reading Beds in the east. To the north of Hoggates Wood and along the Bourne Brook head material is mapped and on the eastern boundary Upper Chalk and glacial sands and gravels is shown.

18. The soils in this area have been mapped on two occasions. The 1:63 360 scale soils map (SSEW, 1962) shows the western and southern parts to comprise soils of the Mimms Association, the central part Hanslope Association, and the eastern part as Thundridge Association. The soils are briefly described as: a) Mimms - brown earth, and non-calcareous gley soil, b) Hanslope - calcareous gley soil with imperfect to poor drainage. c) Thundridge - brown earth with free to moderate drainage.

19. The 1:250 000 reconnaissance scale soils map (SSEW, 1983) shows the western part to comprise soils of the Wickham 4 Association, the central part Hanslope Association and the eastern part Melford Association. The soils are briefly described as a) Wickham 4 - slowly permeable seasonally waterlogged fine loamy over clayey and fine silty over clayey soils b) Hanslope - slowly permeable calcareous clayey soils, with some slowly permeable non-calcareous clayey soils and c) Melford - deep well drained fine loamy over clayey, coarse loamy over clayey and fine loamy soils, some with calcareous clayey subsoils.

20. During the current survey three main soil types were encountered.

Soil Type I

21. Soil Type I occurs in the central part of the site and in a small north/south ribbon in the eastern part of the site. Profiles typically comprise variably calcareous, very slightly stony medium clay loam or medium silty clay loam (occasionally heavy clay loam or heavy silty clay loam) topsoils over variably calcareous, very slightly stony permeable clay upper subsoil. Lower subsoils comprise slowly permeable chalky boulder clay. In the east central part of the site a stony variant was evident with topsoil stone content (> 2 cm) in the range of 10-15%. These profiles are moderately well drained.

Soil Type II

22. Soil Type II occurs in the southern and eastern partof the site. Profiles typically comprise non-calcareous, very slightly stony heavy silty clay loam topsoils over variably calcareous,very slightly stony permeable clay upper subsoils. Lower subsoils comprise calcareous slowly permeable clay. These profiles are moderately well drained.

Soil Type III

23. Soil Type III occurs in the western part of the site around Hoggates Wood and along the upper reaches of the small tributary to the Bourne Brook. Profiles typically comprise very slightly stony, non-calcareous heavy clay loam or occasionally heavy silty clay loam topsoils, immediately over strongly mottled slowly permeable clay subsoils. These soils are poorly drained.

AGRICULTURAL LAND CLASSIFICATION

24. 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.

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

Grade 2

26. Land mapped as grade 2 occurs in the central part of the site and in a small north/south ribbon in the east, and corresponds to the non-stony variant soils described in paragraph 21. The fine loamy and fine silty over clayey soils have been assessed as Wetness Class II and the combination of these factors restricts the land to this grade due to a minor wetness and workability limitation.

Subgrade 3a

27. Land mapped as subgrade 3a occurs in the south, the east central, east, and in a small north/south ribbon in the west of the site. Land in the east central part corresponds to the stony variant soils described in paragraph 21, where the topsoil stone (>2 cm) was found to be in the range of 10-15%. The main effects of stones are to act as an impediment to cultivation, harvesting and crop growth and can increase production costs by causing extra wear and tear to implements and tyres. Hence this area is restricted to this subgrade due to a stoniness limitation.

28. The remainder of the areas mapped as subgrade 3a correspond to the soils described in paragraph 22. The heavier textured fine silty over clayey soils have been assessed as Wetness Class II and the combination of these factors restricts the land to this subgrade due to a moderate wetness and workability limitation.

Subgrade 3b

29. Land mapped as subgrade 3b occurs in the west around Hoggates Wood and along the upper reaches of a small tributary of the Bourne Brook and corresponds to the soils described in paragraph 23. The heavy textured fine loamy and occasionally fine silty directly over slowly permeable clayey soils have been assessed as Wetness Class III and these factors combine to restrict the land to this subgrade due to a more severe wetness and workability limitation. Land mapped as subgrade 3b at the eastern end of the site is restricted to this subgrade due to gradients being in excess of 7°.

Mike Wood
Resource Planning Team
Eastern Region
FRCA Cambridge

SOURCES OF REFERENCE

British Geological Survey (1990) *Sheet No. 222, Great Dunmow. Solid and Drift. 1:50 000* 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 (1968) *Sheet 148, Saffron Walden. 1:63 360*

Soil Survey of England and Wales (1983) *Sheet 4. Eastern England. 1:250 000* 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.

APPENDIX II

Proposed Service Area

1. The total area for the proposed site is 11.5 ha, and the areas for the grades and subgrades are given Table 3 below.

2. Land mapped as grade 2 occurs over 90% of the site and corresponds to the soils described in paragraph 21 (non-stony variant), and grading evaluation in paragraph 26 in the main text.

3. Land mapped as subgrade 3a occurs in a very small area in the east and corresponds to the soils described in paragraph 21 (stony variant) and grading evaluation in paragraph 27 in the main text. Subgrade 3a is also mapped as a narrow north/south ribbon in the west of the site and this corresponds to the soils described in paragraph 22 in the main text and grading evaluation in paragraph 28 in the main text.

4. Land mapped as subgrade 3b occurs as a narrow north/south ribbon on the western boundary and corresponds to the soils described in paragraph 23, and grading evaluation in paragraph 29 in the main text.

Table 3: Area of grades for proposed service area.

Grade	Area (hectares)	% site area
2	10.4	90
3a	0.8	7
3b	0.3	3
Total site area	11.5	100