

Superseded

**Proposed M1 Services, Southbound,
Land at Redbourn, Herts.**

**Agricultural Land Classification
December 1996**

**Resource Planning Team
Huntingdon Statutory Group
ADAS Cambridge**

**ADAS Reference: 101/96
MAFF Reference: EL 18/2310
LUPU Commission: C02641**

AGRICULTURAL LAND CLASSIFICATION REPORT

Proposed M1 Services, Southbound, Land at Redbourn, Herts.

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 21.7 ha of land to the west of Redbourn to the east of the M1 Motorway centred on grid reference TL 098 118. The survey was carried out during December 1996.
2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Cambridge in connection with the proposal to locate a Service Area for southbound M1 traffic. This survey supersedes previous ALC surveys on this land.
3. The work was conducted by members of the Resource Planning Team in the Huntingdon Statutory Group in ADAS. 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, land within the application area consisted of post emergence winter cereal. Additionally an access road ran west to east across the north of the site.

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)	% Total site area
3a	3.2	14.8
3b	18.1	83.4
Other land	0.4	1.8
Total site area	21.7	100

7. The fieldwork was conducted at an average density of one borings per hectare of the agricultural land. A total of twenty one auger borings and one soil pit were described.

8. Subgrade 3a (good quality agricultural land) was mapped in a small area in the south west of the site. The majority of the site consisted of Subgrade 3b (moderate quality agricultural land). A metalled access track in the north of the site was mapped as other land

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 098 118
Altitude	m, AOD	110
Accumulated Temperature	day°C (Jan-June)	1372
Average Annual Rainfall	mm	686
Field Capacity Days	days	146
Climatic grade	N/A	1
Moisture Deficit, Wheat	mm	103
Moisture Deficit, Potatoes	mm	93

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 there is no overall climatic limitation to land quality.

Site

14. The site lies at an altitude of approximately 110 mAOD in the north and falls gently to approximately 100 mAOD in the south east. Slopes were generally gentle or very occasionally moderate. Gradient or relief do not therefore impose any overall limitation to the agricultural quality of the site.

Geology and soils

15. The published 1 : 50 000 scale drift edition geology map (Geol. Survey, 1946) shows the northern half of the site to comprise Upper Chalk with the southern half of the site mapped as Valley Gravel and gravel opposite chalk gaps.

16. No detailed soil map exists for the area but the reconnaissance (1 : 250 000 scale) soil map (Soil Survey, 1983) shows the site to comprise soils of the Charity association. This association is formed in flinty and chalky drift over chalk and is briefly described as well drained flinty soils in valley bottoms and calcareous fine silty soils over chalk or chalk rubble on valley sides, sometimes shallow. A single major soil type was found within the site during the present survey.

17. This soil type consisted generally of a moderately stony medium clay loam or very occasionally heavy clay loam textured topsoil. The stones consisted of small and medium sized flints but occasional large flints were encountered. This topsoil was usually overlying a heavy clay loam textured upper subsoil which in turn overlay a clay textured lower subsoil. Subsoil stoniness varied from slightly stony to very stony. Occasionally the upper subsoil horizon was absent and the topsoil directly overlay the clay textured subsoil. The upper subsoil was found to be unmottled or to contain only a few feint mottles and was permeable. The clay textured subsoil however did constitute a slowly permeable layer hence profiles were assessed as Wetness Class I or III or Wetness Class IV depending on the depth to the clay horizon (Appendix II).

Agricultural Land Classification

18. 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.

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

Subgrade 3a

20. Land of Subgrade 3a is found in the south west of the site and is associated with an area of land in which topsoil stone content is slightly lower than on the rest of the site. In this small area the volume of topsoil stones greater than 2 cm in size were found by riddling to be approximately 12%, hence limiting such land to Subgrade 3a quality. Stones act as an

impediment to cultivation, harvesting and crop growth. High stone contents can increase production costs by causing extra wear and tear to implements and tyres and may also reduce crop quality by the distortion of root crops or the bruising of potatoes during harvest.

Subgrade 3b

21. The majority of the site consisted of land of Subgrade 3b quality as the volume of topsoil stones greater than 2 cm in size was assessed by riddling to be greater than 15% hence limiting such land to Subgrade 3b quality. Occasionally where soil profiles were assessed as Wetness Class IV a moderately severe wetness and workability limitation also limited such profiles to Subgrade 3b quality land.

Other Land

22. A metalled access track in the north of the site is mapped as other land.

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SOURCES OF REFERENCE

British Geological Survey (1946) *Sheet No. 238, Aylesbury, 1:50 000 scale.*
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 (1983) *Sheet 4, Soils of 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

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Wetness Class	Duration of waterlogging ¹
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years. ²
II	The soil profile is wet within 70 cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

¹ The number of days is not necessarily a continuous period.

² 'In most years' is defined as more than 10 out of 20 years.