

**HINCKLEY AND BOSWORTH
LOCAL PLAN
Carrs Hill/Elmsthorpe Lane, Barwell
102/1/79
Agricultural Land Classification
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Eastern Statutory Centre
ADAS Cambridge**

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AGRICULTURAL LAND CLASSIFICATION REPORT

HINCKLEY AND BOSWORTH LOCAL PLAN Carrs Hill/Elmsthorpe Lane, Barwell - 102/1/79

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 9.0 ha of land between Leicester Road and Elmsthorpe Lane at Barwell in Leicestershire. The survey was carried out during January 1997.
2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Cambridge, in connection with Hinckley and Bosworth Local Plan. This survey supersedes previous ALC surveys on this land.
3. The work was conducted by members of the Resource Planning Team in the Eastern 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 the whole site was under a crop of winter oilseed rape.*

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	4.3	48
3b	4.7	52
Total surveyed area	9.0	100

7. The fieldwork was conducted at an average density of 1 boring per hectare. A total of 10 borings and 2 soil pits were described.
8. The land at the north of the site has been grade 3a (good quality agricultural land), while a larger area in the south has been graded 3b (moderate quality agricultural land). Both

moderate droughtiness and wetness/workability limitations restrict the land to subgrade 3a, while significant wetness and workability imperfections restrict the land to subgrade 3b.

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 455 967
Altitude	m, AOD	110
Accumulated Temperature	day°C (Jan-June)	1349
Average Annual Rainfall	mm	654
Field Capacity Days	days	150
Moisture Deficit, Wheat	mm	98
Moisture Deficit, Potatoes	mm	87

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. These climatic characteristics are such that in themselves they impose no limitation to land quality and therefore the climate grade for this site is 1.

Site

14. The land at the site slopes gently southwards from its highest point in the north at 120 m AOD to 97 m AOD in the south. Therefore neither gradient nor altitude impose limitations to land quality.

Geology and soils

15. Two published geology maps cover the site. In the south the majority of the site is shown on the 1:63 360 scale map, sheet 169, Coventry (Geological Survey of Great Britain,

1948) with a small area in the north shown on the 1:50 000 scale map, sheet 155, Coalville (Geological Survey of Great Britain, 1982). These show the whole site to be underlain by Keuper Marl which outcrops in the south of the site. However, the majority of the site is shown to be covered by glacial lake clay and boulder clay deposits. A thin band of glacial sand and gravel is shown in the northern part of the site.

16. On the 1:250 000 scale published soils map, sheet 3, Soils of Midland and Western England (Soil survey of England and Wales, 1983) the whole site is mapped as Whimple 3 Association soils which are briefly described as reddish fine loamy or fine silty over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. Some similar clayey soils on brows. Slowly permeable seasonally waterlogged fine loamy and fine silty over clayey soils on lower slopes.

17. The current detailed survey identified two main soil types.

18. In a small area in the north of the site light textured soils occur, corresponding with the glacial sand and gravel deposits. Profiles typically comprise very slightly stony medium sandy loam or occasionally medium clay loam topsoils over medium sandy loam, loamy medium sand or sandy clay loam upper subsoils of a similar stoniness. Lower subsoils are typically slightly stony loamy medium sand which often becomes sandy clay loam or sandy clay at depth. These soils are typically non-calcareous throughout.

19. The majority of the site has heavier textured soils and typically consists of medium, heavy or sandy clay loam topsoils which overlie slowly permeable clay is present directly below the topsoil. Occasionally heavy or sandy clay loam upper subsoils are present. These soils are typically very slightly stony and non-calcareous throughout.

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.

Subgrade 3a

22. Land at the north of the site has been graded 3a and comprises both soil types. Firstly in the extreme north of the site 3a land is associated with the light textured soils described in paragraph 18. These soils are generally free draining and assessed as wetness class I (for definition of wetness classes see Appendix II). Moisture balance calculations indicate that profiles suffer from moderate droughtiness imperfections, which are a function of climate and the soil water holding capacity and this excludes the land from a higher grade.

23. Secondly, in the northern centre of the site land graded 3a occurs in conjunction with the better drained and lighter textured variants of the soils described in paragraph 19. These profiles are assessed as wetness class III due to the presence of slowly permeable lower subsoils. This factor combines with the medium and sandy clay loam topsoils to restrict the

timing of cultivations and therefore moderate wetness and workability imperfections limit this land to subgrade 3a.

24. Although individual profiles of better grades were noted occasionally within the above mapping unit, they occurred too randomly or inextensively to permit separate delineation at the scale shown.

Subgrade 3b

23. Land graded 3b occurs in the south of the site and is associated with the fine loamy over clayey soils described in paragraph 19. These soils have been assessed as wetness class IV (or very occasionally III) due to the presence of slowly permeable clays typically directly below the topsoil. This factor combines with the topsoil textures to restrict land to subgrade 3b due to significant wetness and workability constraints.

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SOURCES OF REFERENCE

Geological Survey of Great Britain (England and Wales) (1982) *Sheet 155, Coalville*.
BGS: London.

Geological Survey of Great Britain (England and Wales) (1948) *Sheet 169, Coventry*.
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 3, Soils of Midland and Western England*.
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in Midland and Western England*.
SSEW: Harpenden

APPENDIX I

DESCRIPTION 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 that 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 (eg. 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 that restricts 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.