



**Ministry of
Agriculture
Fisheries
and Food**

**NORTH WEST LEICESTERSHIRE
LOCAL PLAN
LAND SOUTH OF PARK LANE,
CASTLE DONINGTON, LEICS.
(Site No. 6759)
Agricultural Land Classification
May 1996**

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AGRICULTURAL LAND CLASSIFICATION REPORT

NORTH-WEST LEICESTERSHIRE LOCAL PLAN LAND SOUTH OF PARK LANE, CASTLE DONINGTON. (Site no 6759)

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 17.5 ha. of land at Castle Donington. The site is located to the south west of Castle Donington and borders a housing estate along the north east boundary. The remainder of the site is surrounded by agricultural land.

2. The survey was commissioned by the Land Use Planning Unit (LUPU) of the Ministry of Agriculture Fisheries and Food (MAFF) in connection with sites identified in the North West Leicestershire Local Plan. The majority of the site was surveyed and mapped in 1993 together with various other sites under investigation at that time. This survey includes new survey work along the western boundary of the previous site which involved additional auger borings and soil pits. This report synthesises the results of the previous and present surveys and now supersedes prior ALC surveys of the site. The provisional 1: 63 360 scale ALC map (MAFF, 1971) showed most of the site to be graded 3 with a small area of grade 2 in the north. The work was conducted by members of the Resource Planning Team in the Huntingdon Statutory Group in ADAS.

3 At the time of the survey the land use on the site was predominantly winter cereals with some permanent pasture in the east of the site.

4. The land has been classified in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

Summary

5. The land classification was established by a total of 16 soil auger borings (i.e. about 1 per hectare) to a depth of 120 cm or to impenetrable stony layers. Subsoil conditions were assessed from two inspection pits. The location of the pits and auger borings is shown on the accompanying Sample Point Map

6. The results of the ALC survey are summarised in Table 1 and the distribution of the grades and subgrades is shown on the accompanying ALC map. The map is accurate at the scale of 1: 10 000 but any enlargement would be misleading.

Table 1: Areas of grades and other land

| Grade/Other land | Area (hectares) | % surveyed |
|--------------------------|------------------------|-------------------|
| 2 | 4.1 | 24 |
| 3a | 13.3 | 76 |
| Total survey area | 17.4 | 100 |

7. The north western quarter of the site has been graded 2 (very good quality agricultural land) with the remainder of the site being graded 3a (good quality agricultural land). The main limitation on the site is profile wetness, although in a minority of cases soil droughtiness is also an equal limitation.

FACTORS INFLUENCING ALC GRADE

Climate

8. Climate criteria are considered first when classifying land because severe climatic limitations will restrict land to low grades irrespective of favourable site or soil conditions. The overall climate itself may affect grading, or grading may be affected through climatic factors with soil properties to influence soil wetness and droughtiness.

9. The main parameters used in the assessment of the overall climate limitation for ALC purposes are average annual rainfall as a measure of wetness and accumulated temperature as a measure of the relative warmth of an area. Estimates of these variables were obtained from the published 5 km grid datasets using the standard interpolation methods (Met. Office, 1989). The results of this analysis are given in Table 2 and show the combination of rainfall and temperature at the site present no limitation to the agricultural quality of the land.

Table 2: Climatic and altitude data

| Parameter | Value |
|---|--------------|
| Grid reference | SK 435 269 |
| Altitude (m, AOD) | 80 |
| Accumulated Temperature (day °C, Jan.–June) | 1371 |
| Average Annual Rainfall (mm) | 648 |
| Field Capacity Days | 141 |
| Moisture Deficit, Wheat (mm) | 103 |
| Moisture Deficit, Potatoes (mm) | 94 |
| Overall Climatic Grade | 1 |

Site

10. The site lies on the northern slope of a gentle hill. The land falls from a maximum altitude of approximately 87m AOD along the south eastern boundary to approximately 68m AOD in the north western corner alongside Stud Brook which runs along the western boundary. The maximum gradient found is approximately 5°. Therefore neither gradient nor altitude impose any limitation to land quality.

Geology and Soils

11. The published 1 50 000 scale geology map (Geol Survey, 1976) shows the majority of the site to be underlain by Triassic Keuper Red Marl with beds of sandstone and bands of gypsum. Triassic Keuper Sandstone with bands of marl outcrop in the north west corner of the site.

12. There is no detailed published soils information for the site. The reconnaissance scale (1:250 000) soil survey map of the area shows the whole site to consist of the Bromsgrove association. This association is briefly described as comprising well-drained, reddish, coarse loamy soils mainly overlying soft sandstone.

13. The detailed survey carried out on the site identified two soil types. The first soil type typically comprises very slightly stony medium clay loam (occasionally fine sandy silt loam or heavy clay loam) topsoil. Subsoils comprise similar or slightly heavier textures which sometimes contain soft weathered sandstone. The structure of the subsoils are typically moderately well developed and are porous but there is evidence of gleying. Poorly structured clay is occasionally encountered at depth which is typically slowly permeable. This soil type is typically assessed as wetness class II (see Appendix II for wetness class definitions), although occasionally profiles are wetness class I

14. The second soil type comprises very slightly stony medium or heavy clay loam topsoil over heavy clay loam upper subsoils (occasionally clay). Poorly structured slowly permeable red clay is typically found in the lower subsoil. Profiles are assessed as wetness class II or III

AGRICULTURAL LAND CLASSIFICATION

Grades, Subgrades

15. The Agricultural Land Classification of the land is shown on the attached ALC Map and the areas of each grade and subgrade are given in Table 1. Within each grade areas of land of better or poorer quality may occur but cannot be delineated separately at the scale of the survey.

Grade 2

16. Land graded 2 corresponds to the soils described in paragraph 13. The combination of fine and coarse loamy topsoils and drainage characteristics result in a minor wetness and workability limitation on this land. Also where subsoil textures are lightest and contain soft weathered sandstone, this results in a slight droughtiness limitation.

Subgrade 3a

17. Land of subgrade 3a quality is associated with the soils described in paragraph 14. Profile textures are generally heavier than those soils assessed as grade 2 and with the combination of drainage impedance, result in a moderate wetness and workability constraint which excludes this land from a higher grade.

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SOURCES OF REFERENCE

ADAS (1993) *Agricultural Land Classification Report, North West Leicestershire Local Plan, Job no. 80/93.* ADAS: Cambridge.

ADAS (1993) *Agricultural Land Classification Report, Land at Hill Top Farm, Castle Donington, Leicestershire, Job no. 80/93.* ADAS: Cambridge

British Geological Survey (1976) *Sheet No. 141, Loughborough, solid and drift edition, 1:50 000 scale*

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

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.