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Ministry of
Agriculture
Fisheries
and Food

NORTH WEST LEICESTERSHIRE
LOCAL PLAN
LAND SOUTH OF PARK LANE
CASTLE DONINGTON
(Site No 6195)
Agricultural Land Classification
May 1996

Resource Planning Team
Huntingdon Statutory Group
ADAS Cambridge

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AGRICULTURAL LAND CLASSIFICATION REPORT

NORTH-WEST LEICESTERSHIRE LOCAL PLAN
LAND SOUTH OF PARK LANE, CASTLE DONINGTON, LEICS.
(Site No. 6195)

Introduction

1. This report presents the findings of a detailed, Agricultural Land Classification (ALC) survey of 42.3 ha of land at Castle Donington. The site is enclosed by Park Lane to the north, Castle Donington to the north east and east, the B6540 to the south east and open farmland to the west.

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 survey the land use on the site was partly under grassland with grazing cattle and partly utilised for winter cereals.

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 44 soil auger borings (i.e. approximately 1 per hectare) to a depth of 120 cm or to impenetrable stony layers. Subsoil conditions were assessed from three 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 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	11.6	27
3a	26.1	60
3b	2.7	6
Other land	2.8	7
Total agricultural land	41.4	93
Total survey area	43.2	100

7. The majority of this area has been graded 3a (good quality agricultural land) with two areas of grade 2 land (very good quality agricultural land) on the western boundary. This land is limited by wetness and workability constraints with the better quality land being associated with lighter textured topsoils. A small area of subgrade 3b land (moderate quality agricultural land) is mapped on the eastern boundary. This land is graded 3b because of past disturbance which has resulted in an uneven microtopography. This restricts the agricultural potential of this land. Areas mapped as other land include a playing field, Hill Top Farm and its associated farm buildings and a pond.

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 436 266
Altitude (m, AOD)	90
Accumulated Temperature (day °C, Jan.–June)	1359
Average Annual Rainfall (mm)	653
Field Capacity Days	142
Moisture Deficit, Wheat (mm)	102
Moisture Deficit, Potatoes (mm)	92
Overall Climatic Grade	1

Site

10. From a maximum altitude of 95 m AOD to the west of Hill Top Farm the lands falls gently in a northerly direction to a minimum altitude of approximately 70 m AOD adjacent to Park Lane on the northern boundary of the site. Gradients typically do not exceed 5° and thus in general do not impose any limitation to agricultural activities. However to the north of Hill Top Farm there is an area of old disturbed mineral extraction which contains embankments and mounds. Due to the uneven microtopography this is likely to hinder any mechanical activities, and thus restricts the land to subgrade 3b.

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 northern part of the site, with a thin ribbon running parallel to the contours along the mid-slopes.

12. There is no detailed published soils information for the site. The relevant reconnaissance soil map and legend (Soil Survey, 1983) shows the presence of two soil associations. Over much of the area occurs well drained, reddish, coarse loamy soils mainly overlying soft sandstone (Bromsgrove association), but near Hill Top Farm there are slowly permeable, reddish , clayey soils of the Worcester association mapped.

13. The detailed survey carried out on the site identified two soil types. The first soil type occurs in two locations on the site. The first is mapped in the north whilst the second occurs along the south west boundary. Profiles typically contain fine sandy silt loam, medium clay loam or sandy clay loam topsoils (the latter is found particularly in the north). These overlay similar or slightly heavier textured upper subsoils which sometimes contain soft weathered sandstone. The structure of the upper subsoils is typically moderately well developed and porous, but there is occasionally some evidence of gleying. Reddish clay is frequently encountered at depth which is typically slowly permeable. Profiles have been typically

assessed as Wetness Class II (see Appendix II for definitions of soil Wetness Classes), although some better and worse drained variants do occur. This soil type is non calcareous and typically very slightly stony in the topsoil.

14. The second soil type comprises medium or heavy clay loam over similar or slightly heavier subsoils. Lower subsoils are typically clay but occasionally deep heavy clay loam extends to depth. Soils are mainly moderately well drained (Wetness Class II) although individual profiles with better or poorer drainage (Wetness Class I or III) do occur locally. Soils are non calcareous and usually very slightly stony throughout, although occasionally soft weathered sandstone is found at variable depths within the profile.

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 subgrade have been given in Table 1. Within any subgrade small areas of land of better or poorer quality may occur but cannot be delineated separately at the scale of survey.

Grade 2

16. Land graded 2 is found in association with the first soil type described in paragraph 13. Soils are typically slowly permeable at depth (Wetness Class II) and the land is limited by minor wetness and workability constraints. Within the area of land mapped as grade 2 there are some profiles which exhibit better or worse drainage characteristics. At the scale of this survey however these cannot be delineated separately.

Subgrade 3a.

17. The land graded 3a is found in association with the second soil type described in paragraph 14 above. These soils typically comprise slightly heavier textures which with the combination of drainage characteristics restrict the land from a higher grade due to moderate wetness and workability constraints. Care with cultivation and harvesting will be necessary to prevent structural damage to these soils.

Subgrade 3b

18. Land graded 3b occurs in an area to the north of Hill Top Farm. This area has previously been disturbed and still has an irregular microtopography. This restricts the type of mechanical operations that can be carried out on this land and thus this area has been assessed as subgrade 3b.

Other land

19. This includes a playing field, Hill Top Farm and its surrounding farm buildings, and a pond.

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SOURCES OF REFERENCE

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

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British Geological Survey (1976) *Sheet No. 141, Loughborough, Solid and Drift edition, 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 3, Midland and Western England, 1:250 000 scale map and legend.* SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in Midland and Western 1 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.