Land at Cotgrave Place, Nottinghamshire
Agricultural Land Classification &
Statement of Site Physical Characteristics
September 1996

Resource Planning Team
Eastern Statutory Centre
ADAS Cambridge

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AGRICULTURAL LAND CLASSIFICATION REPORT

Land at Cotgrave Place, Nottinghamshire.

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 28 ha of land at Cotgrave Place Golf Course in Nottinghamshire. The survey was carried out during September 1996.

2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Cambridge in connection with an application to extend an existing golf course. 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 the land use on the site was a mixture of grassland used for golf practice and rough grassland.

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	12.0	42
3b	10.9	39
Other land	0.6	2
Unsurveyed	4.9	17
Total site area	28.4	100

7. The fieldwork was conducted at an approximate density of one borings per hectare. A total of twenty two borings and two soil pits were described.

8. On the slightly higher ground in the south and south east of the site the land was assessed as Subgrade 3a quality (good quality agricultural land). Lower lying land in the north and north west of the site was assessed as Subgrade 3b quality (moderate quality agricultural 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 5km grid datasets using the standard interpolation procedure (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SK 632 373
Altitude	m, AOD	30
Accumulated Temperature	day°C (Jan-June)	1419
Average Annual Rainfall	mm	578
Field Capacity Days	days	119
Moisture Deficit, Wheat	mm	115
Moisture Deficit, Potatoes	mm	109
Climatic grade	N/A	1

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 north and west of the site is generally level with the land rising gently to the south and south east. Slopes are only gentle or moderate at most with slopes assessed as being between 2 to 6°. Therefore there are no relief or gradient limitations to the quality of the agricultural land.

Geology and soils

15. The published 1: 50 000 scale geology map of the area (Geol. Survey, 1972, Solid and Drift edition) shows the occurrence of Alluvium in the north west of the site and Keuper Marl (red and green marl with thin sandstones) to the south east.

16. The reconnaissance scale (1 : 250 000) soil survey map for the area (Soil Survey, 1983) shows the soils within the site to closely follow the underlying geology. In the north west Soils of the Fladbury 2 association are mapped. This soil association is briefly described as stoneless clayey soils variably affected by groundwater, some with sandy subsoils, with some similar fine loamy soils occurring on flat land on river alluvium. The south east of the site is mapped as the Dunnington Heath association which are described as reddish coarse and fine loamy over clayey soils with slowly permeable subsoils. The present survey found a single main soil type within the site with a variant having a lighter textured topsoil found in the south east of the site. The main soil type generally consists of a clay textured topsoil (occasionally heavy clay loam) usually overlying a similar textured upper subsoil horizon which in turn overlies a red or reddish brown clay textured lower subsoil. In the south east of the site the texture of the topsoil was invariably lighter, consisting of medium clay loam or sandy clay loam textures. At a limited number of sample points the topsoil was found to directly overlie the reddish clay subsoil.

Agricultural Land Classification

17. 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.

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

Subgrade 3a

19. Land of this quality was associated with soils having the lighter textured topsoil (paragraph 16) in the south east of the site. The reddish clay textured subsoil horizon was found to constitute a slowly permeable layer, hence profiles were assessed as Wetness Class III (see Appendix II). The combination of medium clay loam or sandy clay loam textured topsoil and a Wetness Class of III results in a moderate wetness and workability limitation restricting such profiles to Subgrade 3a quality land.

Subgrade 3b

20. Land of Subgrade 3b quality is found in the north east of the site and is associated with land having the heavier textured topsoil (paragraph 16). Where a clay textured upper subsoil occurred this was found to constitute a slowly permeable layer, as was the reddish clay textured lower subsoil, hence profiles were assessed as Wetness Class III. A significant wetness and workability limitation therefore restricts such soil profiles to Subgrade 3b quality land.

Other Land

21. Two small areas in the south west of the site are mapped as other land. The most southerly of these areas consisted of tracks, hard standing and trees with the second being an area undergoing construction alongside the access road.

Unsurveyed Land

22. Two areas of land within the site were unsurveyed. In the west of the site was an area presently used as part of the existing golf course and in the south of the site was an existing driving range.

Soil Resources

23. A statement of the physical characteristics of the soil type is given in Appendix III. The thicknesses and volumes given in Table 3 below should be treated with some caution due to variability in the soils, additionally the subsoils may extend below 120 cm.

Table 3: soil resources

	Area (ha)	Thickness (m)	Volume (m^3)
Topsoil	22.9	0.27	61830
Upper subsoil	22.9	0.23	52670
Lower subsoil	22.9	0.70	160300

Ray Leverton
Resource Planning Team
Eastern Statutory Centre
ADAS Cambridge

SOURCES OF REFERENCE

Geological Survey of Great Britain (England and Wales) (1972) *Sheet 126, Nottingham, Solid and Drift Edition.* 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.*

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.

APPENDIX III

STATEMENT OF SOIL PHYSICAL CHARACTERISTICS

Topsoil	Texture	: Clay, occasionally heavy clay loam
	Variant in south east of site	: Medium clay loam/sandy clay loam
	Colour	: Dark brown (7.5YR3/2,4/2), dark reddish brown (5YR3/2,3/3)
	Stone	: Stoneless
	Boundary	: Clear, wavy
	Roots	: Many fine and very fine
	Depth	: 25/29 cm
Upper Subsoil	Texture	: Clay/heavy clay loam
	Matrix colour	: Reddish brown (5YR5/3,5/4), reddish grey (5YR5/2)
	Mottles	: Common / many ochreous
	Stone	: Stoneless
	Structure	: Moderately developed coarse prismatic.
	Consistence	: Firm
	Porosity	: <0.5% biopores
	Boundary	: Clear, wavy
	Roots	: Many fine and very fine
	Depth	: 50 cm.
Lower Subsoil	Texture	: Clay
	Matrix colour	: Reddish brown (2.5YR4/4), red (2.5YR4/6)
	Mottles	: None
	Stone	: Very slightly stony (3%)
	Structure	: Weakly developed coarse and very coarse prismatic
	Porosity	: <0.5% biopores
	Roots	: Few fine and very fine
	Depth	: 120 cm.

Comments : Wetness class III.