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AGRICULTURAL LAND CLASSIFICATION
DEDSWELL MANOR FARM
WEST CLANDON, SURREY
REVISED ALC MAP AND REPORT
MAY 1993

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1 INTRODUCTION

1 1 In August 1992 an Agricultural Land Classification (ALC) survey was carried out on 74 92 hectares of land at Dedswell Manor Farm West Clandon to the north-east of Guildford ADAS was commissioned by MAFF to determine the quality of land affected by proposals for a change of land-use to a golf course and associated access road

1 2 The survey was carried out at a semi-detailed level with soil auger samples being taken at about 140 m intervals across the site A total of 53 borings and two soil inspection pits were described using MAFF s revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988) These guidelines provide a framework for classifying land according to the extent to which its physical and chemical characteristics impose long term limitations on its agricultural use

At the time of survey the land was in a variety of arable uses including linseed oilseed rape and cereals in addition to a number of fields of permanent pasture

1 3 Subsequent to this survey the alignment of the proposed access road was changed and an amended planning application was submitted As a result further survey work was undertaken during May 1993 to establish the quality of land affected by the new proposal

1 4 This survey was carried out at a detailed level with soil auger samples being taken at about 100 m intervals along the line of the proposed access road 8 borings were described in accordance with MAFF s revised guidelines for grading the quality of agricultural land (MAFF 1988) Information obtained from pits examined in August 1992 was also used to assist in the grading of the re-aligned access road

1 5 The ALC map compiled in August 1992 has been amended to show the most recent alignment of the access road adjacent to the A3 in addition to the original area which was proposed for golf course development

1 6 The distribution of the grades and sub-grades is shown on the attached ALC map and the areas and extent are given in the table below The map has been drawn at a scale of 1 10 000 It is accurate at this scale but any enlargement may be misleading

Distribution of Grades and Subgrades

	Area (ha)	% total agricultural land
Grade 2	0 60	
3a	12 45	
3b	49 26	
Total agricultural area	62 31	100
Urban	0 60	
Woodland	2 19	
Non-agricultural	0 50	
Farm buildings	0 55	
Total area of site	66 15 ha	

1 7 Appendix 1 provides a general description of the grades and land use categories identified in this survey

1 8 Grades 2 3a and 3b have been mapped at this locality This good to moderate quality agricultural land is subject to wetness workability and occasionally droughtiness limitations Most of the soils have developed over London Clay deposits and these profiles are moderately to poorly drained as a result of slowly permeable subsoil horizons at variable depths Where slowly permeable clay horizons occur at shallow depth in the profile land is graded 3b whereas better drained profiles with slowly permeable horizons at greater depth are less severely limited in terms of land quality and are thus graded 2 and 3a
Occasional profiles particularly towards Gosden Hill Farm are sandy in nature and whilst being relatively freely draining are limited to grades 2 and 3a by slight droughtiness

2 PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2 1 The altitude of the site ranges from about 35-50 m A O D the highest land occurring along he eastern edge of the site and in the far west near Gosden Hill Farm Most of the site lies at the lower altitude

Gradient and altitude do not represent limiting factors to agricultural land quality at this locality

Climate

2 2 Climate is considered first when classifying land since it may be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions

2 3 Estimates of climatic variables relevant to the assessment of land quality were obtained by interpolation from a 5 km grid dataset (Met Office 1989) for a representative location in the survey area

Climatic Interpolation

Grid Reference	TQ023529	TQ040532
Altitude (m AOD)	40	50
Accumulated Temperature (° days Jan-June)	1479	1467
Average Annual Rainfall (mm)	689	702
Field Capacity Days	146	149
Moisture Deficit wheat (mm)	113	111
Moisture Deficit potatoes (mm)	107	105

2 4 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall a measure of overall wetness and accumulated temperature as a measure of the relative warmth of a locality

In this instance climate does not represent an overall limitation to agricultural land quality In addition no local climatic factors are significant However climatic factors specifically field capacity days and crop moisture deficits do interact with soil factors to affect soil wetness and droughtiness limitations Soil wetness is of particular relevance on this site

Geology and Soils

2 5 British Geological Survey Sheet 285, Aldershot (1976) shows the majority of the site to be underlain by deposits of London Clay A narrow band of River Terrace Gravels has been mapped through the centre of the site adjacent to Cotts Wood and around Nuthill Farm

2 6 Soil Survey of England and Wales sheet TQ 05 Woking (1986) shows a complicated pattern of soils present on the site

The majority of the site including the northern half of the access road is shown to comprise soils of the Wickham series these being described as slowly permeable prominently mottled fine loamy over clayey soils (SSEW, 1986) Two units of the Windsor series have been mapped south of Dedswell Manor Farm, (pelo-stagnogleys (SSEW 1986) whilst Stixwould and Lawford soils have been shown adjacent to the stream running through the site These are described as stoneless clayey soils over sandy loam or sand and slowly permeable clayey soils with few/common flints respectively, (SSEW, 1986) The southern half of the access road is shown as the Burlesdon series deep fine loamy soils sandy in places

2 7 Detailed field examination of the soils on the site broadly confirms the presence of soils similar to those described by the Soil Survey In general terms, most of the site comprises slowly permeable clayey soils which are moderately to poorly drained Some more sandy soils were encountered towards the southern end of the access road near Gosden Hill Farm

3 AGRICULTURAL LAND CLASSIFICATION

3 1 The ALC grading of the site is primarily determined by the interaction between soil and climatic factors giving rise to soil wetness and droughtiness limitations soil wetness being the most significant limitation at this locality ALC grades 2 3a and 3b have been mapped

3 2 Grade 2

The area of land of this quality is limited in extent It comprises soils which tend to be moderately well drained as a result of the absence of slowly permeable clay horizons within about 70 cm of the surface Profiles typically comprise sandy clay loam or medium clay loam topsoils which are non-calcareous and stoneless over similar textures in the upper subsoil Profiles may then pass to gleyed and slowly permeable clay in the lower subsoil thereby being limited by slight wetness problems or pass to sandy textures such as sandy loam or loamy sand which is usually gleyed thereby being limited by slight droughtiness (and wetness)

3 3 Grade 3a

Much of the land of this quality is associated with soils similar to those described above although gleyed and slowly permeable horizons tend to occur at shallower depths
Profiles typically comprise non-calcareous medium clay loam sandy clay loam or occasionally medium sandy loam topsoils which may be very slightly stony (1-3% v/v flints in total) These overlie similar textures in the upper subsoil and pass to heavy clay loam sandy clay or clay horizons in the lower subsoil Occasional profiles become more sandy with depth passing to loamy sand or sand horizons at depth Subsoils may be very slightly to slightly stony (ie 3-10% v/v flints) although some profiles are stoneless Occasional profiles become impenetrable (to soil auger) due to stony and dry subsoil conditions Profiles are commonly gleyed at depths between 25 and 40 cm and slowly permeable clay or sandy clay horizons are usually present between 40 and 65 cm These moderately well drained soils have been assigned to wetness class III The principal limitation to land of this quality is therefore that of wetness although some of the more sandy profiles are assigned to grade 3a on the basis of soil droughtines risk

3 4 Grade 3b

The majority of the site has been assigned to this grade the most significant limitation to land quality being wetness and workability Most of the land graded 3b comprises clayey soils which are gleyed and slowly permeable at shallow depths Typically medium or heavy clay loam or sandy clay loam topsoils rest over gleyed and slowly permeable clay or sandy clay within 40 cm Profiles may be very slightly stony throughout but are more usually stoneless Occasional profiles are impenetrable (to soil auger) at variable depths as a result of slightly stony and dry subsoil conditions

The main limitation to these soils is that of soil wetness and workability Wetness clas IV is typical of most profiles The flexibility of cultivations cropping and grazing will be affected by such limitations

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ADAS Reading

SOURCES OF REFERENCE

- British Geological Survey (1976) Sheet 285 Aldershot

- MAFF (1988) Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land

- Meteorological Office (1989) Climatological datasets for Agricultural Land Classification

- Soil Survey of England and Wales (1986) Sheet TQ 05 Woking

- Soil Survey of England and Wales (1986) Soil Record No 90 Soils in Surrey 1 (Woking)

APPENDIX 1
DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur typical cropping range and the expected level and consistency of yield In practice, the grades are defined by reference to physical characteristics and the grading guidance and cut offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions The most productive and flexible land falls into Grades 1 and 2 and Subgrade 3a and collectively comprises about one third of the agricultural land in England and Wales About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4 Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates The remainder is very poor quality land in Grade 5 which mostly occurs in the uplands

Descriptions are also given of other land categories which may be used on ALC maps

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 and horticultural crops can usually be grown but on some land in the 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

Grade 3 – good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation harvesting or the level of yield Where 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 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 very severe limitations which restrict use to permanent pasture or rough grazing except for occasional pioneer forage crops

Descriptions of other land categories used on ALC maps

Urban

Built up or hard uses with relatively little potential for a return to agriculture including housing industry commerce education transport religious buildings cemeteries Also hard surfaced sports facilities permanent caravan sites and vacant land all types of derelict land including mineral workings which are only likely to be reclaimed using derelict land grants

Non agricultural

Soft uses where most of the land could be returned relatively easily to agriculture including private parkland public open spaces sports fields allotments and soft surfaced areas on airports/airfields Also active mineral workings and refuse tips where restoration conditions to soft after uses may apply

Woodland

Includes commercial and non commercial woodland A distinction may be made as necessary between farm and non farm woodland

Agricultural buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses Temporary structures (eg polythene tunnels erected for lambing) may be ignored

Open water

Includes lakes ponds and rivers as map scale permits

Land not surveyed

Agricultural land which has not been surveyed

Where the land use includes more than one of the above land cover types eg buildings in large grounds, and where map scale permits, the cover types may be shown separately Otherwise the most extensive cover type will usually be shown

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile Six revised soil wetness classes (Hodgson in preparation) are identified and are defined in Table 11

Table 11 Definition of Soil Wetness Classes

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 not wet within 40 cm depth for more than 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 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 and 90 days in most years
IV	The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years *or*, if there is no slowly permeable layer within 80 cm depth it is wet within 40 cm depth for 91 2'0 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

[1] The number of days specified is not necessarily a continuous period

[2] In most years is defined as more than 10 out of 20 years

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics site and climatic factors Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field The method adopted here is common to ADAS and the SSLRC