1513-84-92

AGRICULTURAL LAND CLASSIFICATION

SOUTH LYNCH HURSLEY HAMPSHIRE

September 1992

ADAS Ref 1513/84/92

Resource Planning Team
ADAS Statutory Group
ADAS Reading

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1 INTRODUCTION

1 1 In September 1992 an Agricultural Land Classification (ALC) survey was carried out on approximately 81 ha of land at South Lynch Hursley Hampshire to the west of Winchester ADAS was commissioned by MAFF to determine the quality of land affected by proposals for a change of land use to a golf course

1 2 The survey work was carried out at a detailed level of approximately one boring per hectare A total of 65 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 or chemical characteristics impose long term limitations on its agricultural use

At the time of survey the land was in a variety of uses including permanent grassland forage cropping and cereal stubble

1 3 The distribution of the grades and subgrades is shown on the attached ALC map and the areas are given in the table below The map has been drawn at a scale of 1 5000 Any enlargement of this scale would be misleading

Distribution of Grades and Subgrades

		Area (ha)	% total agricultural land
Grade	2	1 92	3
	3a	48 72	76
	3b	11 20	17
	4	1 83	3
	5	0 39	1
Total agricultural area		64 06	100
Non-agricultural		0 89	
Urban		1 40	
Farm buildings		0 61	
Woodland		14 13	
Total area of site		81 09	

1 4 Appendix 1 gives a general description of the grades and land cover categories identified in this survey

1 5 The majority of the site comprises good quality grade 3a land with smaller areas of grades 2 3b 4 and 5 Soils on the site have developed over deposits of Upper Chalk the depth of soil over which varies depending largely on topography

Much of the site comprises relatively shallow soils over chalk within about 40 cm Such land has typically been grades 3a although a small area of deeper soils has been mapped as 2 North of Pages Wood

moderately stony topsoils cause land to be limited to subgrade 3b Similarly south of Pages Wood in the valley deeper more stony soils occur and are limited by topsoil stoniness

South-west of South Lynch land is limited by steep slopes Grades 3b 4 and 5 have been mapped depending on the severity of slope Gradients of 8 -25 were measured

2 PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2 1 Altitude on the site varies between 65 and 135 m A O D the highest land occurring along the western boundary and the lowest across the south-eastern part of the site Land falls from the north and west towards the south and east Altitude does not represent a limitation to agricultural land quality at this locality but gradient does To the west of South Lynch steep slopes in the range 7-25 were measured using an optical reading clinometer As a result land has been graded 3b 4 or 5 depending on the severity of the gradient limitation

Climate

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

Climatic Interpolation

Grid Reference	SU 424 270	SU 414 275
Altitude (m AOD)	65	130
Accumulated temperature (days Jan-June)	1476	1402
Average Annual Rainfall (mm)	827	835
Field Capacity Days	179	180
Moisture deficit wheat (mm)	103	95
Moisture deficit potatoes (mm)	95	86

2 3 There is no overall climatic limitation on this site However it should be noted that the number of days when soils are at field capacity is relatively high in a regional context whilst crop adjusted moisture deficit are relatively low This warm wet climatic regime will have implications for the way in which climatic factors interact with soil factors to affect soil wetness and droughtiness limitations

Geology and Soils

2 4 British Geological Survey Sheet 299 Winchester (1975) shows the majority of the site to be underlain by deposits of Cretaceous Upper Chalk A small band of Quaternary Valley Gravel has been mapped across the south eastern part of the site

2 5 Soil Survey of England and Wales Sheet 6 Soils of South-East England (1983) indicates the presence of two soil associations across the site Much of the northern part of the site is shown as the Andover 1 association these soils being described as variably flinty and chalky silty brown rendzinas over chalk (SSEW 1984) Fine silty over clayey typical paleo-argillic brown earths (SSEW 1984) of the Carstens association have been mapped across the southern half of the site

2 6 Detailed field examination of the soils on the site broadly confirms the presence of profiles similar to those described by the Soil Survey In general terms variable depths of silty drift were found to overlie chalk Deeper and/or more stony varients were observed across the lower lying parts of the site

3 AGRICULTURAL LAND CLASSIFICATION

3 1 The ALC grading of the site is determined by a number of factors most significantly soil droughtiness Topsoil stone content and gradient also act to limit agricultural land quality although less extensively ALC grades 2 3a 3b 4 and 5 have been mapped in addition to areas of agricultural buildings and woodland and areas in non agricultural and urban use

3 2 Grade 2

A small area of very good quality agricultural land has been mapped in association with a dry valley running north-east to south-west across the northern-most part of the site Here profiles were found to comprise calcareous medium silty clay loam topsoils with 2-10% by volume flints >2 cm overlying similar textures or heavy silty clay loam in the subsoil Typically chalk was present between 60 and 80 cm Profiles are well drained wetness class I
The field capacity day range of the site combines with the medium textured topsoils to impart a slight workability limitation whilst the moderate soil depth over chalk results in a slight soil droughtiness risk In addition where topsoil stone contents between 5 and 10% by volume >2 cm occur land may be affected by increased production costs reduced crop quality and establishment The combination of these factors results in grade 2 being appropriate

3 3 Grade 3a

Good quality agricultural land is widespread across the site accounting for 76% of the total agricultural land surveyed Profiles typically comprise medium silty clay loam or occasionally medium clay loam topsoils which are usually calcareous and contain between 0 and 15% by volume flints >2 cm (2-20% by volume total stone) These topsoils overlie similar textures in the subsoil and pass to chalk between 25 and 75 cm Subsoils where present tend to be variably stony and may contain flints and/or chalk stones Profiles are well drained wetness class I
Land of this quality is principally limited by soil droughtiness which results from shallow soil depth over chalk and slight to moderate profile stoniness The soil moisture balances which arise from the interaction of such soil and climatic factors are restricted the consequence of which will be that crops may suffer a slight drought risk particularly during dry summer months
Occasional profiles were also limited to subgrade 3a by topsoil stone contents >2 cm in the range 10-15% by volume Crop establishment and growth may be affected as a result as may the costs of production due to the additional wear of farm machinery

3 4 Grade 3b

This moderate quality agricultural land occurs in two situations on the site

- North of Pages Copse and to the south of here profiles are similar to those described previously but are generally more stony Topsoil stone contents in excess of 15% by volume flints >2 cm were

observed typically within the range 15-20% These will act as a severe constraint on the efficient and effective cultivation of the land and on crop establishment growth and quality such that subgrade 3b is appropriate

- To the west of South Lynch moderate slopes of 7-11 act to limit the land to subgrade 3b by impeding the safe and effective operation of modern farm machinery

3 5 Grade 4

Gradients in the range 11-18 were recorded using an optical reading clinometer to the west of South Lynch These slopes will act to severely limit the feasibility of performing many agricultural operations such as ploughing and harvesting

3 6 Grade 5

A very localised area where gradients were found to exceed 18 has been mapped as grade 5 It would not be possible to operate farm machinery safely and effectively on a slope such as this

September 1992
ADAS Ref 1513/84/92

RESOURCE PLANNING TEAM
ADAS Reading
Guildford Statutory Centre

SOURCES OF REFERENCE

- British Geological Survey (1975) Sheet 299 Winchester

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

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

- Soil Survey of England and Wales (1983) Sheet 6 Soils of South-East England

- Soil Survey of England and Wales (1984) Bulletin 15 Soils and their use in South-East England

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