

AGRICULTURAL LAND CLASSIFICATION

COCKERING FARM, THANINGTON, KENT

ADAS Ref : 2002/85/92

MAFF Ref : EL 20/00046

Resource Planning Team

Guildford Statutory Centre

ADAS Reading

AGRICULTURAL LAND CLASSIFICATION

COCKERING FARM, THANINGTON, KENT

1. Summary

1.1 In September 1992, an Agricultural Land Classification (ALC) survey was carried out on approximately 32 ha of land at Thanington, to the south-west of Canterbury in Kent. ADAS was commissioned by MAFF to determine the quality of land subject to proposals for golf course development.

1.2 The survey work was undertaken at a detailed level of about one boring per hectare on an approximate grid basis. A total of 31 borings and one soil inspection pit were described in accordance with 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 entire site was in horticultural use as orchards.

1.3 The distribution of the grades and sub-grades 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 1:10,000. It is accurate at this scale, but any enlargement may be misleading.

Distribution of Grades and Sub-grades

	<u>Area (ha)</u>	<u>% total agricultural land</u>
Grade 3a	26.26	82
3b	5.93	18
Total agricultural area	<u>32.19</u>	<u>100</u>
Urban	0.33	
Total area of site	<u>32.52</u> ha	

1.4 Appendix 1 gives a general description of the grades and land-use categories identified in this survey.

1.5 The site comprises good to moderate quality agricultural land which has been graded largely on the basis of soil wetness, soil droughtiness and/or topsoil stone contents. In addition, an area with localised steep slopes greater than 7° is limiting in terms of agricultural land quality.

The majority of the site comprises slightly to moderately flinty medium textured soils which are limited by a combination of topsoil stone contents and droughtiness to sub-grades 3a or 3b depending on the severity of the limitation. Occasional profiles were found to rest on Upper Chalk at depths between 30 and 65 cm; these are limited

by moderate drought risk to sub-grade 3b as a result of relatively shallow soil depth and reduced reserves of available water as a consequence. A number of profiles along the southern boundary were found to comprise heavier textures and be gleyed and slowly permeable at shallow depths, thereby suffering from a significant wetness limitation.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

- 2.1 The site lies at an altitude of 40-65 m A.O.D. with land falling from south to north, the lowest point on the site being towards the north-west. Across the majority of the site, slopes are gentle and do not represent a limitation to agricultural land quality. However, a localised area of steep slopes where gradients of 8° were recorded occurs along the western boundary of the site. Here land is limited to sub-grade 3b as a result of the limitation which a slope of 8° imposes on the safe and efficient operation of farm machinery.

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	TR 128 560	TR 131 557
Altitude (m AOD)	40	60
Accumulated Temperature (° days, Jan-June)	1452	1430
Average Annual Rainfall (mm)	691	707
Field Capacity Days	144	147
Moisture deficit, wheat (mm)	116	113
Moisture deficit, potatoes (mm)	112	108

- 2.3 There is no overall climatic limitation at this locality, although climatic factors, specifically field capacity days and crop adjusted moisture deficits will interact with soil factors to influence soil wetness and droughtiness limitations. It should be noted that the climate is particularly warm and dry at this locality.

Geology and Soils

- 2.4 British Geological Survey, Sheet 289, Canterbury (1982) shows the majority of the site to be underlain by Upper Chalk deposits. Two small areas of Quaternary River Terrace Gravels are shown to occur towards the eastern boundary of the site. In addition a localised area of Quaternary Dry Valley and Nailbourne deposits is shown to outcrop in the far north-western part of the site.
- 2.5 Soil Survey of England and Wales, Sheet 6, Soils of South-East England, (1988) indicates that the entire site comprises soils of the Coombe association. These are described as 'well drained, fine silty soils which are deep in valley bottoms and shallow over chalk on valley sides', (SSEW, 1984).

- 2.6 Detailed field examination of the site broadly confirms the presence of silty soils derived from Upper Chalk although all profiles were not found to be well drained.

3. AGRICULTURAL LAND CLASSIFICATION

- 3.1 The ALC grading of the site is determined by a number of factors, namely, soil wetness, soil droughtiness and topsoil stone contents. Less significantly gradient acts as a limitation to land quality across a small part of the site. ALC grades 3a and 3b have been mapped, in addition to some land considered to be in urban use, i.e. a farm track.

3.2 Grade 3a

Good quality agricultural land has been mapped across the majority of the site. The land has been assigned to this grade on the basis of one or more limitations, specifically soil wetness, soil droughtiness and topsoil stone contents.

Profiles typically comprise medium clay loam or silty clay loam topsoils which may be non-calcareous or calcareous and may contain between 5 and 15% flints by volume >2cm. These pass to subsoils of similar texture or heavy clay loam and clay, having similar stone contents. Profiles were frequently impenetrable to soil auger as a result of stones and dry subsoil conditions.

The combination of slightly stony soils and relatively high moisture deficits at this locality results in a moderate risk of soil droughtiness which affects the majority of the land graded 3a.

Less significantly, soil wetness acts as a limitation across small parts of the site where gleying is evident below 25-40 cm and slowly permeable clay horizons are present below 40 cm. Profiles with such drainage characteristics are assigned to wetness class III.

A few profiles were assigned to sub-grade 3a on the basis of topsoil stone contents in the range 10-15% flints by volume >2 cm. These will act to limit crop establishment, growth and quality and also increase production costs through wear of farm machinery.

3.3 Grade 3b

This moderate quality agricultural land has been mapped as four units across the site. The limitations to land quality are the same as those for grade 3a land, but are more limiting. In addition, a small area of land is limited by steep gradients to sub-grade 3b.

Soil droughtiness is acting as a limitation in the north-western corner of the site and also due south of Cockering Farm Bungalows. Here profiles of calcareous medium silty clay loam were found to overlie chalk at depths of about 30 cm. The shallow soil depth interacts with high moisture deficits to give rise to a moderate soil droughtiness limitation. The water held in the soil profile is unlikely to be sufficient to meet the demands of a growing crop, thereby resulting in a drought stress on the crop.

A small unit of sub-grade 3b land to the west of Cockering Farm has been mapped on the basis of topsoil stone contents of 18% by volume >2 cm.

Along the south-eastern boundary of the site, soil wetness is acting to limit the land to sub-grade 3b. Profiles comprise slightly stony heavy clay loam topsoils which rest directly over gleyed and slowly permeable clay in the subsoil. Profiles may pass to chalk below about 65 cm. These soils are assigned to wetness class IV and sub-grade 3b is thus appropriate given the topsoil textures and climatic regime.

December 1992
ADAS Ref: 2002/85/92
MAFF Ref: EL 20/00046

Resource Planning Team
Guildford Statutory Centre
ADAS Reading

SOURCES OF REFERENCE

- British Geological Survey (1982) Sheet 289, Canterbury.
- 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.