2006-135-92

AGRICULTURAL LAND CLASSIFICATION
CHENEYS FARM, THONG LAND, GRAVESEND, KENT

ADAS Ref: 2006/135/92

MAFF Ref: EL 20/00186

S COLVINE
Resource Planning Team
Guildford Statutory Centre
Reading
February 1993

AGRICULTURAL LAND CLASSIFICATION
CHENEYS FARM, THONG LANE, GRAVESEND, KENT

1. INTRODUCTION

1.1 In February 1993 an Agricultural Land Classification (ALC) survey was carried out on approximately 51 hectares of land at Cheneys Farm, Thong Lane, Gravesend, Kent. ADAS was commissioned by MAFF to determine the quality of land in connection with proposals for a golf course development.

1.2 The survey work was carried out at a detailed level of approximately 1 boring per hectare. A total of 53 auger borings and 5 soil inspection pits were assessed using MAFF's revised guidelines and criteria for grading the quality of agricultural land. 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 the survey the land was under oilseed rape.

1.3 The distribution of 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.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% Total agricultural land
2	11	21.4
3A	25.2	48.9
3B	15.3	29.7
Total area of site	51.5 ha	100% (51.5 ha)

1.4 A general description of the ALC grades and subgrades is attached.

1.5 The majority of the site has been classified as subgrade 3A partly due to moderate wetness limitations associated with slowly permeable layers in the upper and lower subsoil. Moreover droughtiness limits land to this subgrade due to the presence of chalk in the lower subsoil, limiting available water reserves.

1.6 Very shallow soils over chalk associated with sloping land to the south of the site have been classified as subgrade 3B due to significant droughtiness limitations.

1.7 Deep clayey soils on land to the north and south of the site have been classified as grade 2 due to a slight droughtiness and occasionally wetness/workability limitation.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Altitude and Relief

2.1 The site lies at an altitude of 50-70 metres AOD with land falling gently from west to east. The lowest point on the site being in a dry valley to the south. Altitude and relief do not affect agricultural land quality.

Climate

2.2 Estimates of climatic variables were obtained by interpolation of a 5 km grid database (Met. Office, 1989) for a representative location in the survey area.

Table 2 : Climatic Interpolation

Grid Reference	TQ677715	TQ674714	TQ671714
Altitude (m)	50	60	70
Accumulated Temperature (°days Jan-June)	1445	1433	1422
Average Annual Rainfall (mm)	613	617	621
Field Capacity Days	118	118	119
Moisture Deficit - wheat	119	118	116
Moisture Deficit - potatoes	115	113	111

2.3 There is no overall climatic limitation to agricultural land quality however it should be noted that average annual rainfall and field capacity days are relatively low in a regional context. In addition soil moisture deficits are particularly high. Climate and soil factors, however, do interact to affect soil droughtiness and wetness limitations.

Geology and Soils

2.4 The published 1:50,000 scale Drift edition geology map sheet 271, Dartford (Geological Survey, 1977) shows the site to be mapped as Cretaceous Upper Chalk.

2.5 The published 1:250,000 scale soils map, sheet 6 "Soils of South East England" shows the occurrence of Coombe 1 Association to the north - "well drained calcareous fine silty soils deep in valley bottoms, shallow to chalk on valley sides in places. To the south is mapped the Frilsham Association - "well drained mainly fine loamy soils over chalk, some calcareous. Shallow calcareous fine loamy and fine silty soils in places". A detailed examination of soils broadly confirms the presence of two soil types described above.

3. AGRICULTURAL LAND CLASSIFICATION

Grade 2

3.1 Very good quality land is allocated with deep clayey soils in the north and south of the site area often with chalk occurring at depth. Profiles typically comprise non calcareous topsoils of medium clay loam which are very slightly stony (1-3% flints by volume). Upper subsoils consists of calcareous and non calcareous medium and heavy

clay loams and silty clay loams with similar stone contents. Lower subsoils comprise similar textures including clay, typically calcareous. In places between 3-75% chalk was encountered often grading to pure chalk at depths of 75-80 cm. Soils are well drained with a wetness class of I however due to the particularly dry nature of the climate and the locality (see paragraph 2.3) suffer from a slight to moderate droughtiness limitation. Consequently land is classified as grade 2.

Subgrade 3A

3.2 Good quality land covers the majority of the site comprising topsoils of very slightly stony (2-5% flints by volume) medium and heavy clay loams which are occasionally non calcareous. Upper subsoils are variable in texture comprising clay, silty clay, medium and heavy silty clay loams and clay loams. Stone content is typically between 10-80% chalk fragments. Below this pure chalk is encountered at depth of 45-68 cm with roots common on average 30 cm into the chalk. Occasionally very slightly stony (1-5%) slowly permeable clays were found in the subsoil. Soils are typically well drained, wetness class I but are classified as subgrade 3A due to moderate droughtiness limitations associated with the presence of chalk in the lower subsoil limiting available water for crop growth. In places land is limited by moderate wetness limitations due to the presence of slowly permeable layers in the subsoil. Soils have been assigned to wetness classes II and III and classified as subgrade 3A. On occasion some borings of better and poorer quality were found, however due to their limited number and extent these were included in this subgrade.

Subgrade 3B

3.3 Moderate quality land is associated with calcareous shallow soils on valley sides to the south of the site. Topsoils typically comprise medium clay loams and silty clay loams which are very slightly stony (2-8% flints and chalk stones by volume). Pure chalk is encountered between 26-40 cm often with a thin horizon of medium silty clay loam lying above this containing between 10-30% chalk fragments. Rooting was found to be typically 25-30 cm into the chalk. Consequently land is limited by significant droughtiness imperfections and classified 3B. Occasionally less droughty profiles were found with chalk at depth however, again due to their limited number and extent these were included in this subgrade.

SOURCES OF REFERENCE

BRITISH GEOLOGICAL SURVEY, 1977. Drift edition Geology Map Sheet 271 (Dartford) 1:50,000 scale.

MAFF, 1988. Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land. Alnwick.

METEOROLOGICAL OFFICE, 1989. Climatological datasets for agricultural land classification.

SOIL SURVEY OF ENGLAND AND WALES, 1983. Sheet 6 Soils of South East England. 1:250,000 scale.

SOIL SURVEY OF ENGLAND AND WALES, 1984. Bulletin 15. Soils and their use in South East England.

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.