AGRICULTURAL LAND CLASSIFICATION

LAND SOUTH OF A2, FAVERHSAM, KENT

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1. BACKGROUND

1.1 The 28.27 hectare (ha) site which lies to the south of the town of Faversham and north of the M2 motorway was surveyed on 19 November 1991 in connection with a proposed Enterprise Park. It is bounded to the north by residences and a school, to the east and west by Ashford Road and Brogdale Road respectively and to the south, partly by a slip road from the M2, with the remainder being a line approximately 30 m from the motorway embankment.

1.2 26 auger samples were taken at approximately 100 m intervals in a grid across the site. In addition 3 soil pits were dug to enable more detailed soil descriptions.

Land Use

1.3 At the time of the survey much of the site was under winter cereals with a field in the north east being under a variety of vegetables, principally leeks and cabbage.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2.1 The altitude of the site varies between just under 25 m AOD to slightly above 35 m AOD, the highest being towards the south east and south west corners of the site. The land falls gently towards the north west. Towards the eastern portion of the site there is a marked ridge which falls slightly to the north, and gently to the west.

There are no areas of the site where gradients are such that they place a limitation on the agricultural land quality.

Climate

2.2 Estimates of climate variables were obtained by interpolation from a 5 km grid database (Met. Office, 1989) for representative locations in the survey area:-

Climatic Interpolation

Grid References	TR009603	TR012601	TR013600
Altitude (m AOD)	25	30	35
Accumulated Temperature Days (°days Jan-June)	1471	1465	1459
Average Annual Rainfall (mm)	671	671	681
Field Capacity Days	137	138	138
Moisture Deficit (Wheat - mm)	120	119	118
Moisture Deficit (Potatoes - mm)	116	115	114

2.3 Climatic factors place no limitation on agricultural land quality in this area, but can affect the interaction of soil factors with the climate, namely wetness and droughtiness. The climate of the area is comparatively dry and its coastal proximity results in high moisture deficits. This increases the risk of soil droughtiness on the site.

Geology and Soils

2.4 British Geological Survey Sheets 289 (1:50000 Series), Canterbury (1982) and 273 (1:50,000 Series), Faversham (1974), show the area to be underlain by three distinct geological deposits.

Cretaceous Upper Chalk (soft white chalk with abundant flints) is identified in three locations; to the north west, south west and an area in the central northern portion of the site. Tertiary Thanet Beds (fine grained grey and brown sands) are shown over the eastern portion of the site. Pleistocene Head Brickearth (aeolian loamy and silty material) are mapped over the majority of the central and western portion of the site.

2.5 The soil survey map of England and Wales (1:250000, 1983). Soils of South East England (Sheet 6), shows the soils as the Hamble 1 Association which are described in the accompanying legend as "Deep well drained often stoneless fine silty soils. Some similar soils affected by groundwater and some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Some shallower soils over chalk. Slight risk of water erosion". (SSEW, 1983).

2.6 Detailed field examination indicates that there are three main soil types occurring at this site. Most common are those profiles which typically comprise a virtually stoneless silt loam topsoil over a silt loam or medium silty clay loam upper subsoil, overlying a mottle-free or faintly mottled heavy silty clay loam or silty clay in the lower subsoil. The soils are rarely gleyed and consequently well drained (wetness class I). They occur over the central and western portions of the site. Secondly, towards the eastern side of the site, there are similar but somewhat heavier textured soils which comprise a virtually stoneless medium silty clay loam topsoil over a medium or heavy silty clay loam upper subsoil commonly grading to a silty clay lower subsoil. Occasionally the lower subsoil is a clay or sandy clay. The soils are mottled and gleyed at variable depths in subsoil horizons, where the texture is either a heavy silty clay loam, silty clay or sandy clay. These soils are commonly slowly permeable at depths of 25-65 cm.

2.7 The third soil group distinguished at this site, comprises a slightly stony (flints and chalk stones) calcareous medium silty clay loam or occasional silt loam topsoil usually over medium or heavy silty clay loam, occasionally grading to silty clay where deeper, before passing to weathered chalk (between 35 and 85 cm). These represent areas where drift covering is absent or shallow above the chalk and they occur in the south west corner of site and on the lower land along the northern boundary of the site.

3. AGRICULTURAL LAND CLASSIFICATION (ALC)

3.1 The ALC grading of this site is primarily determined by interactions between soil and climate factors, namely wetness and droughtiness. ALC grades 1, 2, 3a and 3b have been mapped on this site and a breakdown of the grades in terms of area and extent is given below. A small area of urban land is mapped where the boundary includes part of Ashford Road and its curtilege.

Grade	Area ha	% total agricultural land
1	13.39	48
2	5.64	20
3a	5.91	21
3b	3.01	11
Total Agricultural Area (ha)	27.95	
Total Site Area (ha)	28.27	

3.2 Appendix 1 gives a generalised description of the grades and subgrades encountered in this survey.

Grade 1

3.3 Land of this quality occupies 48% (13.39 ha) of the total agricultural on the site. The soil profiles encountered commonly comprise a virtually stoneless silt loam over a medium silty clay loam or silt loam upper subsoil. These horizons overlie a heavy silty clay loam or silty clay lower subsoil. Some of the profiles have ochreous or pale mottles in the lower subsoil, but none are gleyed. These soils are permeable and well drained (wetness class I) and retain good reserves of available moisture. These characteristics place very minor limitations on the agricultural use of the land which is suited to a wide variety of agricultural and horticultural cropping.

Grade 2

3.4 Land of this quality represents 20% (5.64 ha) of the land at this site and occurs towards the northern and eastern boundaries. Soils typically comprise a virtually stoneless, medium silty clay loam topsoil over a medium or heavy silty clay loam upper subsoil, occasionally mottled over a mottled and gleyed heavy silty clay loam or silty clay lower subsoil, which is slowly permeable. Consequently the soils are allocated wetness class II due to minor wetness limitations. A second soil varient also occurs. This is similar to that described above but passes into chalk rubble with flints, at depth. Minor wetness and/or slight drought limitations are the main limitations to agricultural use.

Grade 3a

3.5 Land of this quality represents 21% (5.91 ha) of the total agricultural land and occurs along the northern and south western boundaries of the site. The majority of this land is associated with relatively shallow, well drained soils over chalk. These typically comprise a slightly stony medium silty clay loam topsoil overlying a similar or slightly heavier calcareous subsoil, passing into weathered chalk between 35 and 60 cm. Such soils have drought limitations which may be increased by flinty subsoils or a high proportion of chalk stones.

3.6 In the north east corner of the site deeper but less well drained soils occur. These typically comprise silt loam topsoils, over a heavy silty clay loam and silty clay subsoils becoming gleyed and slowly permeable below 40 cm. Lower subsoil textures may include sandy clay loams and clays which are similarly gleyed and slowly permeable. These soils are placed in wetness class III and are included in grade 3a due to wetness and workability restrictions.

Grade 3b

3.7 Land in this grade occupies the remaining 11% (3.01 ha) of the site and occurs towards the south east corner. Soils are similar to those described in paragraph 3.6 but the medium silty clay loam topsoils rest directly over a mottled, gleyed and slowly permeable upper subsoil of heavy silty clay loam or clay which passes to a silty or sandy clay with depth. Land of this type is limited to this grade by moderate to severe wetness limitations (wetness class IV) due to slow subsoil permeability. This results in wetness and workability restrictions which affect flexibility for agricultural use.

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REFERENCES

BRITISH GEOLOGICAL SURVEY : (1974), Sheet 273, Faversham (1:50,000 Series).

BRITISH GEOLOGICAL SURVEY : (1972), Sheet 289, Canterbury (1:50,000 Series).

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

METEOROLOGICAL OFFICE : (1989), Climatiological datasets for Agricultural Land Classification.

SOIL SURVEY OF ENGLAND AND WALES : (1983), Sheet 6 - Soils of South East England.

APPENDIX I

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: golf courses, 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.

APPENDIX II

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 91-210 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.

[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.