

AGRICULTURAL LAND CLASSIFICATION
AYLESHAM LOCAL PLAN
MAY 1991

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1. BACKGROUND

- 1.1 The surveyed area is divided into two areas to the north and to the south of Aylesham in Kent and covers approximately 171 ha. The area to the north of Aylesham is bounded to the north-east by the Dover to Canterbury railway line, to the south by Aylesham Village and to the north-west by the B2046. The area to the south of Aylesham is bounded to the east by the Dover to Canterbury railway line, to the south and south-west by the Snowdown Colliery site and Snowdown Firs and Oxney Woods, and to the north by Aylesham Village.
- 1.2 The site was surveyed using 110 and 120 cm Dutch soil augers, with samples being taken at approximately 100 m intervals across the site. Additional soil data was obtained from soil pits dug at representative locations.

Land-Use

- 1.3 At the time of survey, (May-July 1989 and August 1990, March 1991), the most northerly area of the site was under strawberries and blackcurrants, with the area immediately to the north of Dorman Avenue North under field beans. On the southern side of Dorman Avenue North, the land was under wheat. The whole of the area to the south of Aylesham was under cereals or oilseed rape.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

- 2.1 The site is composed of a series of dry valleys running from south-west to north-east through the Upper Chalk. Although the pattern of soils found is closely associated with the relief,

gradient is not a significant factor in affecting agricultural land quality. Altitude across the site varies from 60 to 95 m A.O.D.

Climate

- 2.2 The average annual rainfall within the survey area varies from 749-780 mm (Met. Office, 1989) depending upon altitude and location. Soils are at field capacity for 155 to 163 per annum (at the north and south of the site, respectively). The median accumulated temperature above 0°C between January and June varies from 1390 to 1429 day degrees (Met. Office, 1989), again depending upon altitude and location within the survey area. Similarly moisture deficits vary between 108 and 114 mm for wheat and 102 and 109 mm for potatoes (Met. Office, 1989).
- 2.3 Climatic factors per se place no limitation on agricultural land classification at this location, but do affect interactive limitations between soil and climate, namely soil wetness and droughtiness.

Geology and Soils

- 2.4 British Geological Survey Sheet 289, Canterbury, (1978), shows the site to be situated on the dipslope of the North Downs. It is underlain by a pattern of geology including superficial deposits associated with the Upper Chalk of the Downs and the dry valleys running through them.
- 2.5 The published geological survey map underestimates the extent of superficial deposits in the survey area which include more extensive area of head, head brickearth together with remnants of clay - with - flints.

- 2.6 Soil Survey of England and Wales Sheet 6, Soils of South-East England (1983), shows the whole area as brown calcareous earths of the Coombe 1 Association; well drained fine silty soils, deep in valley bottoms, shallow to chalk on the valley sides.
- 2.7 Detailed field examination of the soils indicates a close correlation with the pattern of geological deposits as described above. Four groups of soil have been recognised.
- 2.8 The first group of soils are found on steeper valley sides mainly in the area to the south of Aylesham. They typically comprise of shallow silty soils containing varying amounts of chalk over impenetrable chalk within 60 cm. The shallow depth of the soil over chalk and of rooting, combine to make these soils chiefly limited by drought.
- 2.9 The second group of soils comprise medium or heavy silty clay loam, silt loam or fine sandy silt loam topsoils, over fine sandy silt loam or heavy silty clay loam subsoils grading into clay at depth. These soils are variably gleyed and in some instances a clay substratum may be slowly permeable. Occasional profiles reach chalk below 60 cm. These soils were allocated to wetness classes I or II, or occasionally III, depending upon the severity of the wetness limitation. These soils are found across much of the area to the north of Aylesham.
- 2.10 The third soil type is found on gentle valley sides and floors within the survey area, particularly where Head deposits are mapped as the underlying geology. Soils typically comprise fine sandy silt loam or medium silty clay loam topsoils over medium silty clay loam, clay loams or clay subsoils, becoming flinty below about 40 cm depth. These soils may be limited by drought, surface stone content or by wetness (wetness classes II and III) due to the heavy textured and slowly permeable subsoil horizons.
- 2.11 The fourth group of soils are deep well drained soils found at the very north of the northern area and along the dry valley floors in

the southern area. They typically comprise fine sandy silt loam or silt loam topsoils over similar textures or silty clay loams in the subsoil; occasionally reaching clay at depth. A few are gleyed and hence allocated to wetness class II, but most are allocated to wetness class I, being well drained. These soils are deep and have only minor limitations to agricultural use.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of the survey area is primarily determined by interations between climate and soil factors, namely wetness and droughtiness. Grades 1, 2, 3a and 3b have been mapped and a breakdown of these grades in terms of area and extent is given below:

| <u>Grade</u> | <u>ha</u> | <u>% of total agricultural area</u> |
|-------------------------------------|-----------|---|
| 1 | 34.15 | 21.3 |
| 2 | 51.35 | 32.1 |
| 3a | 19.84 | 12.4 |
| 3b | 54.81 | 34.2 |
| Total agricultural area surveyed | 160.15 | 100 |
| Non-agricultural not surveyed. | 11.02 | |
| Total area | 171.17 | |

3.2 Appendix 1 gives a general description of the grades and sub-grades identified in this survey. Land not surveyed mainly comprises an area of disturbed derelict land.

3.3 Grade 1

Soils of this grade occur both to the north of Aylesham and to the south. In the northern area Grade 1 land is present across the lower lying region at the centre of the site and on a slight rise in the far north. To the south of Aylesham this grade is closely correlated with geology and relief being associated with the silty deposits of the dry valley feature.

Soil profiles typically comprises fine sandy silt loam and silt loam topsoils overlying medium or heavy silty clay loam in the upper Subsoil and grading to medium silty clay, medium clay or heavy clay at depth.

Overall, the profiles within this grade have a good available water capacity and no or minor wetness limitations (wetness class I or II) and consequently no significant limitation affects their agricultural use.

3.4 Grade 2

Land of this quality occurs most extensively across the area to the north of Aylesham and represents a smaller proportion of the agricultural land in the southern area of the site, being limited to the gently sloping dry valley sides. Soil profiles typically comprise fine sandy silt loam or medium silty clay loam, or occasionally medium clay loam topsoils, overlying similar textures in the subsoil or heavy silty clay loam and medium silty clay. They often pass to medium or heavy clay at depth, or become impenetrable due to the presence of chalk or flints at variable depths.

The agricultural potential of these soils is limited by droughtiness where they overlies impenetrable chalk or flints at relatively shallow depths, (c. 50-90 cm from the surface), and/or by minor wetness limitations as evidenced by slight mottling, as a result of subsoil permeability conditions. Some profiles are included in this subgrade, notably those South of Ackholt Wood, due to surface stone contents of 5-10% v/v. of flints (>2cm in size) in the topsoil.

3.5 Grade 3a

Land of this grade occupies relatively small areas both to the north and south of Aylesham.

To the north of Aylesham and occasionally to the south adjoining Aylesham Wood soil profiles are typically heavier than elsewhere with either heavy silty clay loam or clay topsoils and similarly textured subsoils over impenetrable chalk at varying depth, (c. 50-60 cm from the surface). In general, soils towards the south included in this grade are lighter in texture, comprising silt loam to medium silty clay loams which are moderately shallow over chalk. These soils are well drained and placed in wetness class I accordingly. The chief limitations are thus, either heavy textures in the topsoil which can affect the flexibility of cultivations and cropping, or droughtiness as a result of chalk being encountered at relatively shallow depths.

3.6 Grade 3b

Land of this quality is fairly extensive across the site, particularly in the area to the south of Aylesham where it occurs as shallow silty loam soils on the gently sloping higher ground. Similarly, Grade 3b land occurs on the slightly higher ground to the south and west of the northern area.

Across the area to the south of Aylesham soil profiles typically comprise calcareous medium or heavy silty clay loam, or occasionally fine sandy silt loam topsoils, overlying similar textures in the upper subsoil (if identified) and impenetrable chalk at shallow depths, (ie, c. 25-40 cm depth).

Soil profiles to the north of Aylesham have slightly heavier textures, typically medium/heavy silty clay loam topsoils over silty clay, heavy clay loam or medium clay in the upper subsoil and impenetrable chalk at shallow depths, (ie, c. 25-40 cm from the surface).

Such soils are typically well drained, (wetness class I), but are limited by a significant drought-risk due to their shallow depth over chalk, and are thus appropriately placed in Grade 3b.

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SOURCES OF REFERENCE

BRITISH GEOLOGICAL SURVEY (1982), Geological Map Sheet 289, Canterbury, 1:50,000.

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 (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 <i>or</i> , 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 <i>or</i> , 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 <i>or</i> , 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.