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AGRICULTURAL LAND CLASSIFICATION

ASHFORD LOCAL PLAN
LAND AT SEVINGTON, NR. ASHFORD, KENT

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1. BACKGROUND

1.1 The 136.72 ha area which lies to the east of Ashford and to the south of the M20 motorway at Sevington, was surveyed between December 11 1989 and January 25 1990, in connection with local plan proposals.

1.2 The area was surveyed using 110 cm and 120 cm Dutch soil augers, with samples being taken at approximately 100 m intervals. In addition six soil inspection pits were examined. Some of the area remains unsurveyed as permission to enter onto this land had not been sought.

Land use

1.3 At the time of survey most of the area was under winter cereals, although small parts were in other uses. An area adjacent to Court Lodge Farm was in grass grazed by horses, whilst north of the church at Sevington, a derelict orchard and rough grassland were present. Areas to the east of Highfield Lane were in grass and oilseed rape, in addition to winter cereals.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2.1 The altitude of the area varies between approximately 45 m A.O.D. and 65 m A.O.D., with the highest land occurring towards the east of Highfield Lane with gentle falls to the northwest, south and southeast.

Gradient is not a significant limitation in terms of land quality at this locality.

Climate

2.2 The average annual rainfall for this area occurs within the range 757 mm to 767 mm, (Met Office, 1989), which is moderate in a national context. The median accumulated temperature above 0°C, between January and June, a measure of the relative warmth of a locality, ranges between 1433 day degrees and 1451 day degrees, (Met Office, 1989), this being moderate to high for the southeast of England. The site is at field capacity for around 158 days per annum, which provides a measure of the effect of climate on the soil water regime; Crop adjusted moisture deficits are within the range 114 mm to 116 mm for wheat, and 109 mm to 111 mm for potatoes.

2.3 Climatic factors per se place no limitation on agricultural land quality, but do affect interactive limitations between soil and climate, namely soil wetness and droughtiness.

Geology and Soils

2.4 British Geological Survey, Sheet 305/306, Folkestone and Dover, (1978), shows the area to be underlain mainly by Hythe Beds, part of the Cretaceous Lower Greensand. These comprise alternate layers of ragstone and hassock, the former a greyish blue, glauconitic* sandy limestone and the latter a grey to brownish grey, glauconitic, argillaceous calcareous sand or soft sandstone (Smart, Bisson and Worssam, 1975).

2.5 Experience on the site indicates that in general terms the thickness of the hard 'ragstone' beds is about 15-20 cm. These contain approximately 50% soil material and 50% brashy sandy limestone. The intervening soft 'hassock' beds are thought to

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* Glauconite - an iron rich mineral which gives a characteristic bluish-green colouration to Upper and Lower Greensand deposits

have an average thickness of about 20-30 cm and contain between 5 and 20% brashy sandy limestone fragments.

2.6 A small part of the site along the southern boundary is underlain by Atherfield Clay, a lower division of the Cretaceous Lower Greensand.

2.7 Soil Survey of England and Wales Sheet TR04, [Ashford (1973)], shows there to be a complex pattern of soils across the site, with the Mersham, Malling, (possibly with a glauconitic variation), Linton and Hildenborough series having been mapped.
Detailed field examination of the soils broadly confirms this and indicates the presence of four main types across the site.

2.8 The first group of soils occur extensively and are found in association with the Hythe Beds. They typically rest over brashy sandy limestone deposits at depths greater than 40 cm from the surface.
These soils commonly comprise very slightly stony, (sandy limestone fragments), (fine) sandy clay loam, medium or heavy clay loam, or occasionally medium silty clay loam and sandy silt loam topsoils. These overlie similar textures or heavy, sandy clay loam, or occasionally sandy clay in the upper subsoil, which is typically very slightly stony. Profiles either become progressively impenetrable, (to soil auger), due to the presence of hard brashy ragstone beds at shallow depths, (ie, between 40 and 60 cm from the surface), or pass to heavy sandy clay loam, sandy clay, or occasionally, sandy loam, loamy sand or medium clay in the lower subsoil, and subsequently become impenetrable over brashy sandy limestone at depths greater than 60 cm. The lower subsoil is commonly slightly stony to very stony, containing between 5 and 50% sandy limestone fragments and generally becoming progressively more stony with depth.
In occasional profiles it is possible to auger through an upper, very stony, (c. 50% sandy limestone brash), ragstone bed of about 15-20 cm thickness into a moderately stony, (c. 5-20% sandy limestone fragments), hassock bed below, usually of about 20-30 cm

thickness and commonly having a sandy clay loam texture. Such profiles usually become impenetrable at depths between 70 and 100 cm, due to the presence of a second hard ragstone bed.
Most soils are slightly calcareous and well drained, (wetness Class 1), but are limited by droughtiness resulting from the variable stony nature of the profiles and the presence of sandy limestone at depths between 40 and 120 cm.

2.9 The second soil group is relatively limited in extent and is associated with glauconitic Hythe Bed deposits. They are characteristically deep and moderately well drained, becoming glauconitic at depth.
Profiles typically comprise sandy clay loam, sandy silt loam or occasionally medium silty clay loam topsoils, overlying heavy sandy clay loam, medium or heavy clay loam in the upper subsoil and progressing through sandy clay to sandy clay loam or sandy loam at depth, these commonly being greenish in colour. The lower subsoil may be slightly stony to stony, having between 5 and 30% greenish yellow sandstone inclusions.
Most soils are slightly calcareous and moderately well drained, (wetness Class II or III), being slowly permeable between 50 and 60 cm depth.
Although the sandy textures of these soils render them slightly drought-prone, the dominant limitation, in terms of agricultural land-use, is wetness, as indicated by gleying within 40 to 65 cm depth.

2.10 The third soil type occurs on the south-facing mid-slopes of the site. They are typically deep and moderately well drained, resting over Atherfield clay at depth.
Profiles characteristically comprise non-calcareous, sandy clay loam or medium silty clay loam topsoils, overlying similar textures or medium or heavy clay loam in the upper subsoil and passing to sandy clay or medium clay at depths greater than 70 cm from the surface.
Overall, these soils are limited by drainage imperfections due to the presence of slowly permeable clay horizons at depths ranging from 65 to 85 cm. Mottling and gleying at variable depths are

indicative of such wetness problems and the soils are appropriately assigned to wetness class II or III.

2.11 The fourth soil group is restricted to a small area towards the south of the site where Atherfield clay occurs at a relatively shallow depth.

Profiles typically comprise sandy clay loam or medium clay loam topsoils, passing through similar textures or heavy clean loam in the upper subsoil and becoming sandy clay or medium clay below 55 cm depth. Occasional topsoils rest directly over sandy clay or medium clay.

Wetness is the major limitation in this group, with gleying common between 25 and 40 cm from the surface. The drainage status, (ie, wetness class III or IV), is due to the presence of slowly permeable clay horizons at relatively shallow depth, ie, between 25 and 60 cm.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of the survey area is primarily determined by interactions between climate and soil factors, namely wetness and droughtiness. However, in occasional situations, topsoil stone content is also limiting. ALC grades 1, 2, 3a, 3b and 4 have been mapped and a breakdown of these grades in terms of area and extent is given below:

Grade	ha	% of total agricultural land
1	4.57	4
2	77.24	68
3a	26.42	23
3b	5.12	4
4	0.52	1
Total agricultural area	113.87	
Agricultural buildings) Not surveyed) Land in urban use) Land in non-agricultural use)	22.85	
Total area	136.72	

3.2 Appendix 1 gives a generalised description of the grades and sub-grades identified in this survey.

3.3 Grade 1

Land of this quality occupies only a very small percentage (4.57 ha), of the total agricultural land on the site and occurs as a single map unit towards the north.
Profiles typically comprise medium clay loam topsoils, which overlie similar textures or heavy clay loam or medium/heavy silty clay loam in the subsoil, occasionally passing to medium clay at depth. These soils are well drained, (wetness Class I) and deep, although occasional profiles are impenetrable over sandy limestone at depths between 80 and 110 cm. In such situations the soils may possess a very slight droughtiness limitation. Overall though, this land has no or only very minor limitations to agricultural use and is capable of supporting a wide range of agricultural and horticultural crops.

3.4 Grade 2

Land of this quality is found across the majority of the area, occupying 68%, (77.24 ha), of the total agricultural land. Two situations in which it occurs can be identified:

3.4.1 In the first instance profiles typically comprise medium clay loam or sandy clay loam, with occasional heavy clay loam topsoils, overlying similar textures or occasionally sandy clay or medium clay subsoils. Profiles are variably stony, (sandy limestone brash), and commonly become impenetrable, (to soil auger), over sandy limestone deposits at depths ranging between about 50 and 100 cm, although some deeper profiles were noted.
A number of profiles exhibit marked alternation of horizons with a very stony, (c. 50% sandy limestone fragments), 'ragstone' bed of about 15-20 cm thickness, overlying a slightly to moderately stony, (c. 5-20 % sandy limestone fragments), 'hassock' bed, usually of about 20-30% thickness and commonly having a sandy clay loam texture. Such profiles usually become impenetrable at

depths between 70 and 100 cm due to the presence of a second stony 'ragstone' bed.
These soils are characteristically well drained, (wetness class I), but a combination of variable content of sandy limestone brash and textural factors imposes a slight droughtiness limitation.

3.4.2 A very few profiles are limited by topsoil stoniness containing between about 5 and 10% brashy sandy limestone fragments, larger than 2 cm.

3.4.3 The second situation in which Grade 2 land is mapped arises through the effects of slight drainage imperfections within the soil. Profiles typically comprise sandy clay loam and medium or heavy clay loam topsoils, overlying similar textures in the upper subsoil and passing to medium clay or sandy clay with depth. Soils are commonly deep, slightly stony (especially in the lower subsoil) and moderately well drained, (wetness class II). They show evidence of gleying and slow permeability at variable depths, (ie, from c. 40 cm and 55 cm respectively), and are thus chiefly limited by slight wetness problems.

Occasional profiles are also impenetrable over sandy limestone at depths of 70 to 110 cm, and hence possess both a slight/minor drought restriction and drainage imperfections.

3.4.4 Overall, land mapped as Grade 2 has minor limitations to agricultural use, which result from slight droughtiness, (due to shallow depth, variable stone content and textural conditions), and/or slight wetness, and/or topsoil stone content.
A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility and/or yield.

3.4.5 The Grade 2 mapping unit includes occasional profiles of both better, (Grade 1) and slightly poorer quality, (Grade 3a), land. This reflects small scale variations in depth over sandy limestone and hence of droughtiness characteristics.

3.5 Grade 3a

Land of this quality occupies 23%, (26.42 ha) of the total agricultural land across the area and occurs in two main situations.

3.5.1 Firstly there are those soils whose profiles typically comprise medium or heavy clay loam or (fine) sandy clay loam topsoils. These are commonly slightly stony to stony, overlying similar textures in the subsoil and becoming impenetrable, (to soil auger), at depths between 25 and 60 cm due to the presence of brashy sandy limestone.
Soils are well drained, (wetness class I) and are principally limited by droughtiness as a result of relatively shallow depth over brashy sandy limestone and variable stone contents.
Occasional profiles are limited by topsoil stoniness, since they contain between 10 and 15% stones larger than 2 cm, this acting as an impediment to cultivations on the land and possibly causing reduced germination and plant quality.

3.5.2 The second situation in which land of this quality is mapped is where soils of poorer drainage status occur in association with the presence of Atherfield Clay at relatively shallow depth in the profile.
Profiles typically comprise very slightly stony, sandy clay loam or medium silty clay loam topsoils, overlying similar textures or medium/heavy clay loam in the upper subsoil and passing to slowly permeable sandy clay or medium clay at depths between 45 and 60 cm. Soils show evidence of gleying at variable depths, greater than 25 cm, and are thus appropriately assigned to wetness class II or III. This land is chiefly limited by wetness, although soils may also be slight droughty as a result of textural conditions.

3.6 Grade 3b

Land of this quality is mapped across 4% (5.12 ha) of the total agricultural land on the site.

Profiles typically comprise sandy clay loam or medium clay loam topsoils, overlying slowly permeable heavy clay loam or fine sandy clay in the subsoil. They are poorly drained, (wetness class IV), and show evidence of gleying between 25 and 35 cm depth. The major limitation to their agricultural potential is, therefore, wetness.

3.7 Grade 4

A very small area, (0.52 ha), of the total agricultural land on the site was mapped as this quality.
Several drains to allow for run off from the M20 motorway empty out onto this area of land, thereby causing it to be very wet, marshy and flood prone.
Taking these factors into account it was considered that this area should not be graded higher than Grade 4.

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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: 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.

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.