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East Hampshire Local Plan
Causeway Farm, Petersfield
Agricultural Land Classification
ALC Map And Report
November 1993

EAST HAMPSHIRE LOCAL PLAN
CAUSEWAY FARM, PETERSFIELD
AGRICULTURAL LAND CLASSIFICATION REPORT

1. Summary

1.1 In November 1993, a detailed Agricultural Land Classification (ALC) was made on 14.2 hectares of land at Causeway Farm, Petersfield, which is located on the southern side of Petersfield in Hampshire.

1.2 The work was conducted under ADAS sub-contracting arrangements by N A Duncan & Associates and was in response to a commission from MAFF's Land Use Planning Unit to provide information on the quality of agricultural land affected by the potential inclusion of this land in the East Hampshire Local Plan.

1.3 The classification has been made 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 use for agriculture.

1.4 Fifteen soil borings and 2 soil pits were examined.

1.5 The southern half of the site has been mapped as Grade 4 and Subgrade 3b due to a moderately severe wetness and workability limitation. The soils in this area, which are developed on the Gault Clays, have slowly permeable clayey subsoils and are assessed as Wetness Class IV restricting them to Subgrade 3b. The area mapped as Grade 4 appears to have undergone some clay extraction for brick making and due to the thinner topsoil depth and absence of upper subsoil horizons, the land has been restricted to Grade 4.

1.6 The northern half of the site comprises an area of Grade 2 on the south side of the stream, with Subgrade 3a on the northern side and Grade 4 on the low-lying alluvial land associated with the stream. The land on the south side of the stream comprises free draining fine loamy soils which are restricted to Grade 2 due to a minor workability restriction. The area on the northern side is variable and comprises both free draining sandy soils which are moderately droughty and loamy soils with a wetness limitation, both of which restrict the area to Subgrade 3a. The low-lying alluvial land has poorly drained clay soils which have a moderately severe wetness and workability restriction.

1.7 The ALC information is shown on the attached map and areas are given in Table 1 below. The map has been drawn at a scale of 1:5,000 and is accurate at this level, but any enlargement would be misleading. This map supersedes any previous ALC information for this site.

Table 1 : Distribution of Grades and Subgrades

Grade	Area(ha)	% of Site	% of Agricultural Area
2	4.6	32.4	32.9
3a	1.8	12.7	12.9
3b	4.3	30.3	30.7
4	3.3	23.2	23.5
Non Agricultural	0.2	1.4	100% (14.0 ha)
Total area of site	14.2	100%	

1.8 A general description of the grades and subgrades is provided as an appendix. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and expected level of consistency of yield.

2. Climate

2.1 Estimates of climatic variables relevant to the assessment of agricultural land quality were obtained by interpolation from a 5 km grid point dataset (Met. Office, 1989) for a representative location in the survey area.

Table 2 : Climatic Interpolation

Grid Reference	SU747226
Altitude (m, AOD)	60
Accumulated Temperature (°days, Jan-June)	1476
Average Annual Rainfall (mm)	959
Field Capacity Days	211
Moisture deficit, wheat (mm)	94
Moisture deficit, potatoes (mm)	84

2.2 Climatic factors are considered first when classifying land since climate can be overriding in the sense that adverse climatic conditions may restrict land quality irrespective of favourable site and soil conditions. The details in the table above show that there is no overall climatic limitation affecting this site. In addition, no local climatic factors such as exposure or frost risk affect the site.

2.3 However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. At this locality, the climate is wet in a regional context. Field capacity days are very high and crop adjusted moisture deficits are correspondingly low thereby giving rise to an increased risk of soil wetness problems.

3. Relief

3.1 The site occupies slightly undulating land which rises from 55m AOD besides the stream at the northern end of the site to 65m AOD at the south western corner. At the south western corner of the site is an area of land slightly lower than the surrounding area which is understood to be an old clay pit for the brick works that

used to operate in the area. Nowhere on the site do relief or gradient impose any limitation to the agricultural land quality.

4. Geology and Soils

4.1 British Geological Survey, (1971) Sheet 316, Fareham shows the entire site to be underlain by Gault Clay, a blue marly clay.

4.2 There are two soil types for the site, as shown on the Soil Survey map of South East England (SSEW, 1983, 1:250,000). To the south and west of the stream, the soils are shown as the Denchworth Association. These soils are described as 'slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils. Some fine loamy over clayey soils with only slight seasonal waterlogging and some slowly permeable calcareous clayey soils' (SSEW, 1983). The remaining area comprises soils of the Fyfield 4 Association. These soils are described as 'deep well drained often stoneless coarse loamy and sandy soils. Some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging and some slowly permeable seasonally waterlogged fine loamy over clayey soils' (SSEW, 1983).

4.3 Detailed field examination showed the presence of four soil types on the site. In the southern half, clay loam topsoils overlie poorly drained clay subsoils. On the low lying land associated with the stream, silty clay loam topsoils are underlain by poorly drained clay subsoils. The land between these two soil types comprises free draining sandy clay loam/clay loam topsoils over similar textured subsoils. In the north east corner of the site sandy loam topsoils overlie loamy sand and sand subsoils, some of which are subject to a fluctuating groundwater table.

5. Agricultural Land Classification

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.

5.2 The location of the soil observation points are shown on the attached sample point map.

Grade 2

5.3 Approximately one third of the agricultural land surveyed has been classified as Grade 2. This very good quality land is limited by a minor soil workability limitation. Profiles comprise sandy clay loam or medium clay loam topsoils which are underlain by similar textured upper subsoils. At approximately 50-65 cm depth the subsoil becomes a heavy clay loam which passes into a sandy clay at depth, and in some profiles shows faint ochreous mottling. Pit 1, dug within this mapping unit, typifies such profiles. Subsoils were generally found to be of moderate structural condition and permeable, and the soils are thereby assigned to Wetness Class I. However, the combination of topsoil textures and the very wet local climatic regime (as shown by the high field capacity days and average annual rainfall associated with the site), means that the soil may be prone to workability restrictions. This is a factor in determining the number of days when the soil is in a suitable condition for

cultivation, trafficking by machinery or grazing by livestock. Thus the land is classed as Grade 2 to reflect this slight soil workability limitation.

Subgrade 3a

5.4 A small area of Subgrade 3a has been mapped in the north-east corner of the site. In this variable mapping unit, the key limitations are soil wetness, workability and droughtiness.

5.5 Over most of this area the soils have a medium sandy loam topsoil over a loamy sand subsoil which becomes sandier with depth. Adjacent to the stream there is evidence of a fluctuating groundwater table, and these soil profiles have been assigned to Wetness Class III. The interaction between the topsoil textures and soil drainage characteristics with the local climatic regime means that this land can be classed as no higher than Subgrade 3a. The key limitations are soil workability and soil wetness. Soil wetness adversely affects seed germination and survival, and inhibits the development of a good root system. In addition, moderate restrictions are imposed on cultivations, grazing by livestock and trafficking by machinery.

5.6 Within this mapping unit, some of the land is subject to soil droughtiness restrictions. These profiles are generally found on the slightly higher land, away from the stream, and are free draining and are thereby assigned to Wetness Class I. The combination of the coarse textured soils with the local climatic regime means that crops are subject to a moderate risk of drought stress which reduces the level and consistency of crop yields. Thus this land cannot be graded any higher than Subgrade 3a.

Subgrade 3b

5.7 The majority of the southern end of the site has been classed as Subgrade 3b, moderate quality agricultural land. The key limitations are soil wetness and workability. Topsoils comprise medium clay loam topsoils over clay subsoils. Profiles are gleyed and slowly permeable within 40 cm, placing them into Wetness Class IV. Pit 2, dug within this mapping unit, typifies such profiles. The interaction between the topsoil textures and soil drainage characteristics with the local climatic regime means that this land can be graded no higher than Subgrade 3b. The soil wetness and workability restrictions are more severe than for similar land classed as Subgrade 3a.

Grade 4

5.8 Two areas of Grade 4 have been mapped. The land at the south-west corner of the site, which is an old restored clay pit, shows evidence of disturbance which has resulted in poor drainage conditions (Wetness Class IV/V). Past extraction of clay has reduced the topsoil depth to 15 cm, thus bringing the underlying heavy clay loam upper subsoil within normal cultivation depth. These soil workability and wetness limitations means that this land can be graded no higher than Grade 4.

5.9 The low lying alluvial soils associated with the stream are also restricted to Grade 4 because of a severe wetness and workability restriction. Heavy silty clay loam topsoils overlie a clay subsoil. Profiles are gleyed and slowly permeable within 40 cm, placing them into Wetness Class IV. The interaction between the heavy topsoil textures, soil drainage characteristics and the local climatic regime means that this land can be graded no higher than Grade 4.

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Resource Planning Team
Guildford Statutory Group
ADAS Reading

APPENDIX I

DESCRIPTION OF THE GRADES AND SUBGRADES

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 or horticultural crops can usually be grown but on some land of this 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 land.

Grade 3 : Good to Moderate Quality Land
Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When 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 the 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 severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Urban
Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religous buildings, cemetries. 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. 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, eg. buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will be shown.

APPENDIX II

REFERENCES

British Geological Survey (1971), Sheet 316, Fareham, 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 data for Agricultural Land Classification.

Soil Survey of England and Wales (1983), Sheet 6, Soils of South East England, 1:250,000 and accompanying legend.

APPENDIX III

DEFINITION OF SOIL WETNESS CLASS

Wetness Class I

The soil profile is not wet within 70 cm depth for more than 30 days in most years.

Wetness Class 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 180 days, but only wet within 40 cm depth for 31-90 days in most years.

Wetness Class 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 present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.

Wetness Class IV

The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth fro more than 210 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.

Wetness Class V

The soil profile is wet within 40 cm depth for 211-335 days in most years.

Wetness Class VI

The soil profile is wet within 40 cm depth for more than 335 days in most years.