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East Hampshire Local Plan

Lovedean Lane, Horndean

Agricultural Land Classification

ALC Map And Report

November 1993

EAST HAMPSHIRE LOCAL PLAN
LOVEDEAN LANE, HORNDEAN
AGRICULTURAL LAND CLASSIFICATION REPORT

1. Summary

1.1 In November 1993, a detailed Agricultural Land Classification (ALC) was made on 1.9 hectares of land at Lovedean Lane, Horndean, which is located on the western side of Horndean 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 Four soil borings and one soil pit were examined.

1.5 The site has been classified as predominantly Subgrade 3b with a small area at the northern end, which is part of a garden, mapped as Urban. The agricultural part of the site forms part of two fields and the southern field comprises clayey soils over chalk. Where the chalk is found at shallow depth the soils are free draining, but where it is deeper there is evidence of seasonal water logging. This area has therefore been classified as Subgrade 3b due a wetness and workability restriction. On the northern field, although the soils are broadly similar, they have a clay loam topsoil and are therefore slightly more easily worked. The principal restriction in this area is one of steep gradients, where slopes of 8.5° were measured.

1.6 The ALC information is shown on the attached map and the 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
3b	1.8	94.7
Urban	0.1	5.3
Total area of site	1.9	100%

1.7 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	SU686126
Altitude (m, AOD)	65
Accumulated Temperature (°days, Jan-June)	1477
Average Annual Rainfall (mm)	858
Field Capacity Days	186
Moisture deficit, wheat (mm)	102
Moisture deficit, potatoes (mm)	94

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 relatively wet in a regional context. Field capacity days are 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 forms part of two fields and has an easterly aspect. The altitude of the site ranges from 65m AOD on the western side to 60m AOD on the eastern side. Relief is not a limitation over the southern part of the site. However, the field to the north is steeper with slopes of 8.5°, as measured using an optical reading clinometer. These moderately steep slopes do impose a significant limitation in terms of agricultural land quality.

4. Geology and Soils

4.1 British Geological Survey, (1971) Sheet 316, Fareham shows most of the site to be underlain by Upper Chalk, which comprises soft white chalk with many flint nodules. A small area of river and valley gravel deposits have been mapped at the extreme north-east corner of the site.

4.2 The soil type for this site, as shown on the Soil Survey map of South East England (SSEW, 1983, 1:250,000) comprises the Upton 1 Association. These soils are described as

'shallow well drained calcareous silty soils over chalk. Mainly on moderately steep, sometimes very steep land' (SSEW, 1983). The land immediately to the west of the site is mapped as the Carstens Association. These soils are described as 'deep free draining reddish clayey soils developed in Clay-with-flints' (SSEW, 1984).

4.3 Detailed field examination of the soils on the site showed the presence of clayey or fine loamy soils, over chalk at varying depths.

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.

Subgrade 3b

5.3 All of the agricultural land surveyed on the site has been assigned to Subgrade 3b, moderate quality land. The key limitations to land quality are gradient, soil wetness and soil workability.

5.4 In the northern field, slopes with gradients of 8.5° were recorded using an optical reading clinometer. Gradient has a significant effect on mechanised farm operations since most conventional agricultural machinery performs best on level ground. Thus, the range of farm machinery which can be safely and efficiently operated is restricted.

5.5 In the southern part of the site the land is limited by a significant soil workability limitation. Topsoils comprise calcareous, slightly flinty clays. These are underlain by reddish clay upper subsoils which overlie chalk. The depth to the underlying chalk is variable, ranging from 45 cm to 80 cm. Profiles are either free draining, where chalk is encountered at shallow depth,or exhibit a slight drainage impedance (ie, gleyed below 40 cm but with no slowly permeable layer present within 80 cm). Thus profiles are placed into Wetness Class I or II. Pit 1 typifies such profiles. The interaction of the clay topsoils and soil drainage characteristics with the wet climate at this locality means that this land can be graded no higher than Subgrade 3b. Soil wetness and workability problems adversely affect seed germination and survival, as well as inhibiting the development of a good root system. In addition, restrictions are imposed on cultivations, grazing by livestock and trafficking by machinery.

Urban

5.6 A small area of Urban land has been identified at the north eastern corner of the site which is part of a garden. This belongs to one of the houses that form the eastern boundary of the site.

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MAFF Reference : EL 15/468

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.

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.

Soil Survey of England and Wales (1984) Soils and their use in South East England.

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.