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**East Hampshire Local Plan**  
**Lord Mayor Treloar Hospital, Alton**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**November 1993**

**EAST HAMPSHIRE LOCAL PLAN  
LORD MAYOR TRELOAR HOSPITAL, ALTON  
AGRICULTURAL LAND CLASSIFICATION REPORT**

**1. Summary**

- 1.1 In November 1993, a detailed Agricultural Land Classification (ALC) was made on 18.5 hectares of land at Lord Mayor Treloar Hospital, Alton, which are located to the north and south west of the hospital complex, on the western edge of Alton.
- 1.2 The work was conducted under ADAS sub-contracting arrangements by N A Duncan & Associates and was in response to a commission by 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 Nineteen soil borings and three soil pits were examined.
- 1.5 The site includes two discrete portions of land which together consist of predominantly Subgrade 3a. The most northerly site is composed chiefly of Subgrades 3a and 3b with two small areas of Non-agricultural land, towards the south west of the site and a small area of farm buildings at the north eastern end. This sector of the site has two distinct soil types, with shallow fine loamy soils over chalk on steeper land at the east of the site and fine loamy over clayey soils on the flatter land at the top of the ridge. The majority of the eastern half of the site has been mapped as Subgrade 3b with the major limitation being due to gradient. Where the land is less steep, the area has been graded Subgrade 3a, with the limitation being due to the shallow depth of the soil and consequent droughtiness restriction. On the higher ground at the western end, the land has a minor wetness and workability limitation restricting the area to Subgrade 3a.
- The more southern sector of land was mapped as chiefly Subgrade 3a due to a workability restriction caused by the heavy clay loam topsoil texture and also a moderate droughtiness limitation where underlying chalk occurs at shallow depth. There is also an area of Grade 5 along the northern boundary where the land is restricted by gradient. The rest of the site consists of a small area of Non-agricultural land along the southern edge and a group of Agricultural Buildings in the north-west corner.
- 1.6 The ALC information is shown on the attached map and the area measurements for each grade are given in Table 1 below. The information is presented 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

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
3a	10.3	55.7	59.6
3b	6.2	33.5	35.8
5	0.8	4.3	<u>4.6</u>
Non-Agricultural	0.9	4.9	100% (17.3 ha)
Farm Buildings	<u>0.3</u>	<u>1.6</u>	
Total	18.5 ha	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 the expected level and 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 representative locations in the survey area.

Table 2 : Climatic Interpolations

Grid Reference	SU 703380	SU 705385
Altitude (m, AOD)	125	145
Accumulated Temperature (°days, Jan-June)	1396	1373
Average Annual Rainfall (mm)	880	889
Field Capacity Days	193	194
Moisture deficit, wheat (mm)	91	89
Moisture deficit, potatoes (mm)	80	77

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 high and crop adjusted moisture deficits are correspondingly low thereby giving rise to an increased risk of soil wetness problems.

### **3. Relief**

- 3.1 To the north of the hospital, the site is located at the eastern edge of a ridge. The top of the ridge is almost level and lies at an altitude of 150m AOD, with the sides sloping moderately steeply to the south and east. The lowest part of the site lies at 125m AOD. The sides of the ridge generally have slopes of 7-9°, with the lower slopes of the south eastern end being more gentle (4-7°). The more steeply sloping land therefore imposes a limitation in terms of agricultural land quality.
- 3.2 To the south-west of the hospital, the site is located on the lower slopes of the valley side and ranges in altitude between 125 m and 140 m AOD, such that the land has a south easterly aspect. The gradient is moderate over the majority of the site with slopes of 5-7°. However, the land becomes very steep along the northern edge with slopes approaching 20°. This steeper land limits the land use to rough grazing.
- 3.3 All slopes were measured using an optical reading clinometer.

### **4. Geology and Soils**

- 4.1 British Geological Survey, (1975) Sheet 300, Alresford shows the site to be underlain by four different geological deposits. To the north of the hospital, the majority of the site comprises chalk. Middle Chalk underlies the eastern end on the slightly lower land and Upper Chalk underlies the northern and western parts. An area of Clay-with-Flints has also been mapped at the extreme north west of the site. To the south-west of the hospital, Upper Chalk underlies the northern edge of the site and the remainder comprises Middle Chalk. A narrow strip of river and valley gravel deposits have been mapped on the low lying land at the southern edge of the site.
- 4.2 The published soils information for this site, as shown on the Soil Survey map of South East England (SSEW, 1983, 1:250,000) shows soils north of the hospital to comprise the Carstens Association. These soils are described as 'well drained fine silty over clayey, clayey and fine silty soils, often very flinty' (SSEW, 1983). To the south of the hospital, the site is located on a boundary, with the Carstens Association to the north and the Coombe 1 Association to the south. The latter are described as 'well drained calcareous fine silty soils, deep in valley bottoms, shallow to chalk on valley sides in places. Slight risk of water erosion' (SSEW, 1983).
- 4.3 Detailed field examination found two distinct soil types. Reddish clayey soils, exhibiting a moderate impedance to drainage, were found on the ridge top to the north of the hospital. Shallow fine silty rendzina soils were found on the sloping land of the ridge and across the southern unit of land.

## 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 3a

- 5.3 Three areas of good quality agricultural land, Subgrade 3a, have been mapped. The key limitations are soil droughtiness, soil workability and wetness.
- 5.4 Land on the ridge top, which is developed in Clay-with-Flints, is limited by moderate soil workability and wetness. Topsoils comprise heavy clay loams which overlie clay subsoils. The subsoil generally has a medium or coarse angular blocky structure and contains medium and large nodular flints. Common manganese staining is evident in most profiles at depth with some profiles also being faintly mottled. Pit 1, dug within this mapping unit, typifies such profiles. Given the relatively wet climate at this locality (as shown by the high field capacity days and average annual rainfall associated with the site) Wetness Class I or II is appropriate, depending on the degree of mottling and depth to the slowly permeable layer. The interaction between the heavy clay loam topsoils and soil drainage characteristics at this site means that this land can be classed no higher than Subgrade 3a. Soil workability imposes restrictions on cultivations, grazing by livestock and trafficking by machinery. Land subject to soil wetness may have lowered chances of seed germination and survival.
- 5.5 The remaining area of land classed as Subgrade 3a is subject to soil droughtiness and workability limitations. Topsoils comprise calcareous heavy clay loams and, occasionally, heavy silty clay loams which are slightly stony (approximately 5-15% total small and medium flint and chalk stones by volume). These are underlain by a thin heavy clay loam or heavy silty clay loam upper subsoil. The subsoil is generally well structured and slightly to moderately stony (approximately 10-20% chalk stones by volume). This overlies fissured chalk, which is generally encountered at approximately 20-25 cm depth to the north of the hospital. Slightly deeper profiles, where the chalk occurs at approximately 35-40 cm, occur to the south of the hospital. Pits 2 and 3 typify these soils. These soils show no evidence of impeded drainage, and Wetness Class I is thereby assigned. Rooting occurs into the underlying chalk, but the soil pit revealed that rooting is restricted to approximately 60-70 cm depth.
- 5.6 The effect of this restricted rooting and shallow soil depth is to reduce the available water for crops in the profile. This gives rise to a moderate risk of drought stress for crops. Consequently, the land can be graded no higher than Subgrade 3a. In addition, the combination of heavy topsoil textures and the relatively wet local climatic regime (as shown by the high field capacity days and annual average 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 this land is classed as Subgrade 3a to reflect this moderate soil workability limitation.

### Subgrade 3b

- 5.7 All of the land assessed as Subgrade 3b, moderate agricultural quality, has been downgraded because of a significant slope limitation. Gradients of 7° to 9.5° were measured using an optical reading clinometer. Such slopes significantly restrict the range of farm machinery that can be safely and efficiently operated.

### Grade 5

- 5.8 A narrow band of very poor land, Grade 5, has been mapped. This area is restricted due to locally very steep slopes. Gradients of 18° to 20° were measured using an optical reading clinometer. The area is in rough grass and has had trees cut down, although the stumps remain in place. The land is currently used for grazing.

### Non-Agricultural

- 5.9 Three areas of Non-Agricultural land have been mapped. North of the hospital, the more westerly area comprises an old tennis court which is now overgrown. The other is an area where soils have been disturbed and materials have been dumped. To the south of the hospital, the area shown as non-agricultural is under scrubby woodland.

### Agricultural Buildings

- 5.10 A small area of old buildings which currently house pigs is located at the north western corner of the site. At the eastern end, the agricultural buildings comprise a barn and complex of old sheds.

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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, 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: 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 (1975), Sheet 300, Alresford, 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 for 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.