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**EASTLEIGH BOROUGH LOCAL PLAN  
Major Development Area: Land Around  
Lake Farm, Fair Oak, Hampshire**

**Agricultural Land Classification  
ALC Map and Report**

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**Resource Planning Team  
Eastern Region  
FRCA Reading**

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# **AGRICULTURAL LAND CLASSIFICATION REPORT**

## **EASTLEIGH BOROUGH LOCAL PLAN MAJOR DEVELOPMENT AREA: LAND AROUND LAKE FARM, FAIR OAK, HAMPSHIRE**

### **INTRODUCTION**

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of approximately 30 hectares of land around Lake Farm, Fair Oak. The survey was carried out during August 1998.
2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)<sup>1</sup> on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF). The survey was carried out in connection with MAFF's statutory input to the Eastleigh Borough Local Plan. This survey supersedes any previous ALC information for this land. This includes a reconnaissance survey for the Hampshire Structure Plan Review (FRCA ref: 1503/247/94) which partially covers this site.
3. The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.
4. At the time of survey the land use on the site was in permanent grassland. The areas mapped as 'Other land' include extensive farm buildings and metal trackways, associated residential dwellings, and an area along the southern boundary of the site used for commercial woodland.

### **SUMMARY**

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading.
6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.
7. The fieldwork was conducted at an average density of 1 borings per hectare of agricultural land. In total, 23 borings and 1 soil pit were described.

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<sup>1</sup> FRCA is an executive agency of MAFF and the Welsh Office

**Table 1: Area of grades and other land**

Grade/Other land	Area (hectares)	% surveyed area	% site area
3a	3.0	14.8	10.0
3b	17.3	85.2	58.1
Other land	9.5	-	31.9
Total surveyed area	20.3	100.0	68.1
Total site area	29.8	-	100.0

8. The site has been classified as mostly Subgrade 3b, moderate quality land, with some Subgrade 3a, good quality land; soil wetness is the principal limitation to land quality.
9. The Subgrade 3a land comprises medium clay loam topsoils overlying slightly stony, similarly textured upper subsoils and clay lower subsoils. The clay subsoils are poorly structured and obstruct drainage through the profile, giving rise to a soil wetness limitation. On the Subgrade 3b land, poorly structured clay upper subsoils give rise to a more significant soil wetness limitation. This in turn will restrict the range of crops that are suitable for this land and will significantly limit the number of days when the land is in a suitable condition for cultivations, grazing by livestock or trafficking by machinery.

## FACTORS INFLUENCING ALC GRADE

### Climate

10. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.
11. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

**Table 2: Climatic and altitude data**

Factor	Units	Values	
		SU 481 178	SU 476 175
Grid reference	N/A	SU 481 178	SU 476 175
Altitude	m, AOD	19	10
Accumulated Temperature	day°C (Jan-June)	1531	1542
Average Annual Rainfall	mm	805	799
Field Capacity Days	days	170	168
Moisture Deficit, Wheat	mm	109	111
Moisture Deficit, Potatoes	mm	104	105
Overall climatic grade	N/A	Grade 1	Grade 1

12. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.
13. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (AT0, January to June), as a measure of the relative warmth of a locality.
14. The combination of rainfall and temperature at this site means that there is no overall climatic limitation. Local climatic factors, such as frost risk and exposure do not affect land quality at this location. The site is climatically Grade 1. However, climatic factors do interact with soil properties to influence soil wetness and soil droughtiness. At this locality the climate is relatively warm and dry, in regional terms. The likelihood of soil droughtiness may therefore be enhanced.

#### **Site**

15. The site lies at altitudes in the range 10–25 m AOD. The highest land occurs along the eastern boundary with land falling gently north, west and southward. The lowest land is found along the southern boundary. The land is not affected by any site restrictions (i.e., gradient, microrelief or flooding).

#### **Geology and soils**

16. The most detailed published geological information for the site (BGS, 1973) shows the majority of it to be underlain by the Bracklesham Beds; glauconitic sand and clay. The remainder of the site is made up of relatively recent alluvium, following the line of a drain along the southern boundary of the site.
17. The most detailed published soils information covering the area (SSEW, 1983) shows it to comprise entirely soils of the Wickham 4 association. These soils are described as 'slowly permeable seasonally waterlogged fine loamy over clayey soils associated with similar clayey soils, often with brown subsoils' (SSEW, 1983).

#### **AGRICULTURAL LAND CLASSIFICATION**

18. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.
19. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II.

### **Subgrade 3a**

20. Land of good quality is found along the northern boundary of the site. It is limited by a soil wetness restriction.
21. Soils typically comprise non-calcareous medium clay topsoils. These may contain up to 5% total flints by volume. These overlie similarly textured upper subsoils which may contain up to 10% total flints by volume. Some of these soils proved impenetrable to the soil auger from an approximate depth of 33 to 38 cm, whilst others passed through this stony horizon to the poorly structured clay subsoils beneath. The depth to these slowly permeable layers is from approximately 52 to 55 cm assigning these soils to Wetness Class III. This combination of imperfect drainage, topsoil texture and prevailing climate, results in land classified as Subgrade 3a. Soil wetness may adversely affect crop growth and development, and restrict the time when the land can be worked without causing damage to the soil.

### **Subgrade 3b**

22. Most of the land on this site is mapped as moderate quality and suffers from a significant soil wetness limitation.
23. Soils typically comprise non-calcareous medium clay loam topsoils, with up to 2% total flints by volume. These overlie poorly structured clay subsoils which are generally stoneless but may contain up to 10% total flints by volume. Pit 1 (see Appendix II) is typical of these soils and confirms the existence of these slowly permeable layers. The clay horizons impede soil drainage and it is the depth to these slowly permeable layers (SPLs) which determines the final ALC grade. The SPLs occur in the range 18–37 cm, and this results in soils being assigned to Wetness Class IV. This combination of poor soil drainage, medium clay loam topsoil texture and the prevailing field capacity level, gives rise to a land classification of Subgrade 3b. A significant soil wetness limitation such as this can adversely affect plant growth or impose significant restrictions on cultivations or grazing by livestock.

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## SOURCES OF REFERENCE

British Geological Survey (1973) *Sheet No. 315, Southampton*.  
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land*.  
MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification*.  
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 6, South East England*.  
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*  
SSEW: Harpenden

## APPENDIX I

### DESCRIPTIONS 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 (e.g. 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.

## **APPENDIX II**

### **SOIL DATA**

#### **Contents:**

**Sample location map**

**Soil abbreviations - explanatory note**

**Soil pit and soil boring descriptions (boring and horizon levels)**



## SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

### Boring Header Information

1. **GRID REF:** national 100 km grid square and 8 figure grid reference.
2. **USE:** Land use at the time of survey. The following abbreviations are used:

<b>ARA:</b> Arable	<b>WHT:</b> Wheat	<b>BAR:</b> Barley
<b>CER:</b> Cereals	<b>OAT:</b> Oats	<b>MZE:</b> Maize
<b>OSR:</b> Oilseed rape	<b>BEN:</b> Field beans	<b>BRA:</b> Brassicae
<b>POT:</b> Potatoes	<b>SBT:</b> Sugar beet	<b>FCD:</b> Fodder crops
<b>LIN:</b> Linseed	<b>FRT:</b> Soft and top fruit	<b>FLW:</b> Fallow
<b>PGR:</b> Permanent pasture	<b>LEY:</b> Ley grass	<b>RGR:</b> Rough grazing
<b>SCR:</b> Scrub	<b>CFW:</b> Coniferous woodland	<b>OTH:</b> Other
<b>DCW:</b> Deciduous woodland	<b>BOG:</b> Bog or marsh	<b>SAS:</b> Set-Aside
<b>HTH:</b> Heathland	<b>HRT:</b> Horticultural crops	<b>PLO:</b> Ploughed

3. **GRDNT:** Gradient as estimated or measured by a hand-held optical clinometer.
4. **GLEYSPL:** Depth in centimetres (cm) to gleying and/or slowly permeable layers.
5. **AP (WHEAT/POTS):** Crop-adjusted available water capacity.
6. **MB (WHEAT/POTS):** Moisture Balance. (Crop adjusted AP - crop adjusted MD)
7. **DRT:** Best grade according to soil droughtiness.
8. If any of the following factors are considered significant, 'Y' will be entered in the relevant column:

<b>MREL:</b> Microrelief limitation	<b>FLOOD:</b> Flood risk	<b>EROSN:</b> Soil erosion risk
<b>EXP:</b> Exposure limitation	<b>FROST:</b> Frost prone	<b>DIST:</b> Disturbed land
<b>CHEM:</b> Chemical limitation		

9. **LIMIT:** The main limitation to land quality. The following abbreviations are used:

<b>OC:</b> Overall Climate	<b>AE:</b> Aspect	<b>ST:</b> Topsoil Stoniness
<b>FR:</b> Frost Risk	<b>GR:</b> Gradient	<b>MR:</b> Microrelief
<b>FL:</b> Flood Risk	<b>TX:</b> Topsoil Texture	<b>DP:</b> Soil Depth
<b>CH:</b> Chemical	<b>WE:</b> Wetness	<b>WK:</b> Workability
<b>DR:</b> Drought	<b>ER:</b> Erosion Risk	<b>WD:</b> Soil Wetness/Droughtiness
<b>EX:</b> Exposure		

## Soil Pits and Auger Borings

1. **TEXTURE:** soil texture classes are denoted by the following abbreviations:

<b>S:</b> Sand	<b>LS:</b> Loamy Sand	<b>SL:</b> Sandy Loam
<b>SZL:</b> Sandy Silt Loam	<b>CL:</b> Clay Loam	<b>ZCL:</b> Silty Clay Loam
<b>ZL:</b> Silt Loam	<b>SCL:</b> Sandy Clay Loam	<b>C:</b> Clay
<b>SC:</b> Sandy Clay	<b>ZC:</b> Silty Clay	<b>OL:</b> Organic Loam
<b>P:</b> Peat	<b>SP:</b> Sandy Peat	<b>LP:</b> Loamy Peat
<b>PL:</b> Peaty Loam	<b>PS:</b> Peaty Sand	<b>MZ:</b> Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:

<b>F:</b> Fine (more than 66% of the sand less than 0.2mm)
<b>M:</b> Medium (less than 66% fine sand and less than 33% coarse sand)
<b>C:</b> Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content:

**M:** Medium (<27% clay)    **H:** Heavy (27-35% clay)

2. **MOTTLE COL:** Mottle colour using Munsell notation.
3. **MOTTLE ABUN:** Mottle abundance, expressed as a percentage of the matrix or surface described:
- F:** few <2%    **C:** common 2-20%    **M:** many 20-40%    **VM:** very many 40% +
4. **MOTTLE CONT:** Mottle contrast:
- F:** faint - indistinct mottles, evident only on close inspection  
**D:** distinct - mottles are readily seen  
**P:** prominent - mottling is conspicuous and one of the outstanding features of the horizon
5. **PED. COL:** Ped face colour using Munsell notation.
6. **GLEY:** If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.
7. **STONE LITH:** Stone Lithology - one of the following is used:

<b>HR:</b> all hard rocks and stones	<b>FSST:</b> soft, fine grained sandstone
<b>ZR:</b> soft, argillaceous, or silty rocks	<b>CH:</b> chalk
<b>MSST:</b> soft, medium grained sandstone	<b>GS:</b> gravel with porous (soft) stones
<b>SI:</b> soft weathered igneous/metamorphic rock	<b>GH:</b> gravel with non-porous (hard) stones

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

8. **STRUCT:** the degree of development, size and shape of soil pedes are described using the following notation:

Degree of development	<b>WK:</b> weakly developed	<b>MD:</b> moderately developed
	<b>ST:</b> strongly developed	
Ped size	<b>F:</b> fine	<b>M:</b> medium
	<b>C:</b> coarse	
Ped shape	<b>S:</b> single grain	<b>M:</b> massive
	<b>GR:</b> granular	<b>AB:</b> angular blocky
	<b>SAB:</b> sub-angular blocky	<b>PR:</b> prismatic
	<b>PL:</b> platy	

9. **CONSIST:** Soil consistence is described using the following notation:

<b>L:</b> loose	<b>FM:</b> firm	<b>EH:</b> extremely hard
<b>VF:</b> very friable	<b>VM:</b> very firm	
<b>FR:</b> friable	<b>EM:</b> extremely firm	

10. **SUBS STR:** Subsoil structural condition recorded for the purpose of calculating profile droughtiness:

**G:** good **M:** moderate **P:** poor

11. **POR:** Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.

12. **IMP:** If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.

13. **SPL:** Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

14. **CALC:** If the soil horizon is calcareous, a 'Y' will appear in this column.

15. Other notations:

<b>APW:</b>	available water capacity (in mm) adjusted for wheat
<b>APP:</b>	available water capacity (in mm) adjusted for potatoes
<b>MBW:</b>	moisture balance, wheat
<b>MBP:</b>	moisture balance, potatoes