

**A1**  
**Horsham District Local Plan**  
**Land at South Leas Farm/  
Adjacent to Oaklands, Cowfold**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**February 1995**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## HORSHAM DISTRICT LOCAL PLAN

### LAND AT SOUTH LEAS FARM / ADJACENT TO OAKLANDS, COWFOLD

#### 1 Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of sites in the district of Horsham in West Sussex. The work forms part of MAFF's statutory input to the preparation of the Horsham District Local Plan.
- 1.2 The site comprises 2.6 hectares of land south of South Leas Farm and east of Oaklands in the village of Cowfold. An Agricultural Land Classification (ALC) survey was carried out in January 1995. The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land. A total 3 borings and one soil inspection pit were described in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose a long term limitation on its use for agriculture.
- 1.3 The survey work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.4 At the time of the survey the agricultural land on the site comprised permanent grassland.
- 1.5 The distribution of grades and subgrades is shown on the attached 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.
- 1.6 Appendix I gives a general description of the grades, subgrades and land use categories identified in the survey. 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.
- 1.7 All of the agricultural land on the site (2.6 ha) has been classified as Subgrade 3b moderate quality land with soil wetness as the main limitation. Soil profiles typically comprise medium clay loam topsoils resting upon clay subsoils. Profiles are gleyed from the topsoil and the clay subsoils are poorly structured and slowly permeable with a resultant classification of Subgrade 3b due to a significant wetness limitation. Poorly drained wet soils restrict plant growth and development and may be more susceptible to structural damage through trafficking by agricultural machinery or poaching by grazing livestock.

## 2 Climate

- 2.1 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe climatic limitations will restrict land to low grades irrespective of favourable site or soil conditions
- 2.2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall as a measure of overall wetness and accumulated temperature (degree days Jan-June) as a measure of the relative warmth of a locality
- 2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met Office 1989) The details are given in the table below and these show that there is no overall climatic limitation affecting the site
- 2.4 However climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations At this locality the climate is relatively warm and moist in a regional context which may increase the likelihood of soil wetness limitations
- 2.5 No local climatic factors such as exposure or frost risk are believed to affect the site

**Table 2 Climatic Interpolation**

Grid Reference	TQ 214 220
Altitude (m)	15
Accumulated Temperature (degree days Jan June)	1517
Average Annual Rainfall (mm)	797
Field Capacity (days)	169
Moisture Deficit Wheat (mm)	113
Moisture Deficit Potatoes (mm)	108
Overall Climatic Grade	1

## 3 Relief

- 3.1 The site is flat lying at an altitude of approximately 15m AOD

## 4 Geology and Soils

- 4.1 The relevant geological map (BGS 1984) shows the site to be underlain by Weald Clay with a small strip of alluvium in the south of the site
- 4.2 The published Soil Survey map (SSEW 1983) shows the soils on the site to comprise those of the Wickham 5 association These are described as slowly permeable seasonally waterlogged fine loamy over clayey fine silty over clayey and clayey soils (SSEW 1983)
- 4.3 Detailed field examination found the soils on the site to be clayey with slowly permeable subsoils

## 5 **Agricultural Land Classification**

5 1 The location of the soil observation points are shown on the attached sample point map

### **Subgrade 3b**

5 2 All of the agricultural land on the site has been classified as Subgrade 3b due to a significant soil wetness limitation. Soil profiles were found to comprise medium clay loam topsoils overlying clay subsoils. Profiles show evidence of imperfect drainage in the form of gleying throughout the topsoils and subsoils. A subsequent soil inspection pit found the clay subsoil to be poorly structured with low porosity from directly below the topsoil therefore it is classified as a slowly permeable layer which will significantly impede soil drainage. The presence of gleying and the shallow depth to the slowly permeable layer means that these soils are assigned to Wetness Class IV with a resultant classification of Subgrade 3b given the prevailing climatic conditions. Poorly drained wet soils can inhibit plant and root development and may be more susceptible to structural damage through trafficking by agricultural machinery or poaching by grazing livestock.

ADAS Ref 4205/30/95  
MAFF Ref EL 42/130

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## **SOURCES OF REFERENCE**

British Geological Survey (1984) Sheet No 318/333 Brighton and Worthing 1 50 000 Series (solid and drift edition)

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 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

### 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 soil wetness classes are identified and are defined in the table below.

#### Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging <sup>1</sup>
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years <sup>2</sup>
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 only wet within 40 cm depth for 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 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
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
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

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.

<sup>1</sup>The number of days specified is not necessarily a continuous period

<sup>2</sup>In most years is defined as more than 10 out of 20 years



**APPENDIX III**  
**SOIL PIT AND SOIL BORING DESCRIPTIONS**

**Contents**

**Soil Abbreviations - Explanatory Note**

**Soil Pit Descriptions**

**Database Printout - Boring Level Information**

**Database Printout - Horizon Level Information**

## 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>DCW</b> Deciduous Wood
<b>HTH</b> Heathland	<b>BOG</b> Bog or Marsh	<b>FLW</b> Fallow
<b>PLO</b> Ploughed	<b>SAS</b> Set aside	<b>OTH</b> Other
<b>HRT</b> Horticultural Crops		

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>EX</b> Exposure
<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>ST</b> Topsoil Stoniness		

## 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 **GLEYS** 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>SLST</b>	soft oolitic or dolomitic limestone
<b>CH</b>	chalk	<b>FSST</b>	soft fine grained sandstone
<b>ZR</b>	soft argillaceous or silty rocks	<b>GH</b>	gravel with non porous (hard) stones
<b>MSST</b>	soft medium grained sandstone	<b>GS</b>	gravel with porous (soft) stones
<b>SI</b>	soft weathered igneous/metamorphic rock		

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

- 8 **STRUCT** the degree of development size and shape of soil peds are described using the following notation

degree of development    **WK** weakly developed    **MD** moderately developed  
   **ST** strongly developed

ped size                    **F** fine                                    **M** medium  
   **C** coarse                                **VC** very coarse

ped shape                **S** single grain                        **M** massive  
   **GR** granular                            **AB** angular blocky  
   **SAB** sub-angular blocky        **PR** prismatic  
   **PL** platy

- 9 **CONSIST** Soil consistence is described using the following notation

**L** loose    **VF** very friable    **FR** friable    **FM** firm    **VM** very firm  
**EM** extremely firm                    **EH** extremely hard

- 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

**APW** available water capacity (in mm) adjusted for wheat

**APP** available water capacity (in mm) adjusted for potatoes

**MBW** moisture balance wheat

**MBP** moisture balance potatoes

SOIL PIT DESCRIPTION

Site Name HORSHAM LP 13 COWFOLD Pit Number 1P

Grid Reference TQ21302200 Average Annual Rainfall 797 mm  
 Accumulated Temperature 1517 degree days  
 Field Capacity Level 169 days  
 Land Use Permanent Grass  
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 22	MCL	10YR52 00	0	1	HR	C				
22 35	C	25Y 52 00	0	1	HR	C	WKCSAB	FM	P	
35 65	C	25Y 71 00	0	0		M	MDCAB	VF	P	

Wetness Grade 3B Wetness Class IV  
 Gleying 0 cm  
 SPL 022 cm

Drought Grade APW mm MBW 0 mm  
 APP mm MBP 0 mm

FINAL ALC GRADE 3B  
 MAIN LIMITATION Wetness

SAMPLE NO	GRID REF	ASPECT USE	WETNESS-		WHEAT		-POTS		M REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRONT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
1	TQ21302200	PGR		0 018	4	3B		0		0				WE 38	SPL 18
1P	TQ21302200	PGR		0 022	4	3B		0		0				WE 38	
2	TQ21402200	PGR		0 020	4	3B		0		0				WE 38	SPL 20
3	TQ21502200	PGR		0 020	4	3B		0		0				WE 38	SPL 20

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES			PED		STONES----			STRUCT/		SUBS				
				COL	ABUN	CONT	COL	GLEYS >2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC	
1	0-18	mc1	10YR52 00	10YR58 00	C				Y	0	0	HR	1					
	18-32	c	25Y 52 00	10YR68 00	C				Y	0	0	HR	1		P	Y		Y
	32-60	c	25Y 62 00	10YR68 71	M			00MN00	00	Y	0	0	0		P	Y		Y
1P	0-22	mc1	10YR52 00	75YR58 00	C				Y	0	0	HR	1					
	22-35	c	25Y 52 00	10YR58 00	C				Y	0	0	HR	1	WKCSAB	FM	P	Y	Y
	35-65	c	25Y 71 00	75YR58 00	M			00MN00	00	Y	0	0	0	MDCAB	VF	P	Y	Y
2	0-20	mc1	10YR42 00	75YR46 00	C				Y	0	0	HR	1					
	20-39	c	75YR46 00	75YR46 00	C			00MN00	00	Y	0	0	HR	1		P	Y	Y
	39-60	c	25Y 62 00	75YR46 00	M			00MN00	00	Y	0	0	0		P	Y		Y
3	0-20	mc1	10YR42 00	75YR46 00	C				Y	0	0	HR	1					
	20-29	c	10YR52 00	75YR46 00	C			00MN00	00	Y	0	0	HR	1		P	Y	Y
	29-60	c	25Y 62 00	75YR46 00	M				Y	0	0	0	0		P	Y		Y