

**A1**  
**Land south of Guildford Road,**  
**Ash, Surrey**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**June 1995**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## LAND SOUTH OF GUILDFORD ROAD, ASH, SURREY

### 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 around Ash in the Guildford Borough of Surrey. The work forms part of MAFF's statutory input to a number of ad hoc applications for residential development submitted to the planning authority.
- 1.2 The site comprises approximately hectares of land around Woolmer Farm to the north of the village of Bramshott. An additional area of land has been surveyed to the south of the application site so that a more comprehensive map of the land quality in the vicinity may be obtained. An Agricultural Land Classification (ALC) survey was carried out in June 1995. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 6 borings and one soil inspection pit were assessed according to 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 long term limitations on its use for agriculture.
- 1.3 The 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 barley and rough grassland. The area marked as urban includes a tarmac road. Non-agricultural land comprises scrubland. An area on the site has not been surveyed due to difficulties in obtaining permission to gain access in order to undertake the survey.
- 1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading.

**Table 1 Distribution of Grades and Subgrades**

<b>Grade</b>	<b>Area (ha)</b>	<b>% of Site</b>
3b	5.2	34.7
Non agricultural	0.8	5.3
Urban	0.5	3.3
Not surveyed	<u>8.5</u>	<u>56.7</u>
Total area of Site	15.0	100.0

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 surveyed on the site has been classified as Subgrade 3b moderate quality land with soil droughtiness as the main limitation Soils on the site typically comprise coarse sandy textured topsoils which become more sandy with depth Consequently these soils show a significant restriction on profile available water which can affect the level and consistency of crop yields Therefore a classification of Subgrade 3b due to droughtiness is appropriate

## 2 Climate

2 1 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

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 (day degrees Celsius 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 However climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations

2 4 No local climatic factors such as exposure or frost risk are believed to affect the site

**Table 2 Climatic Interpolation**

Grid Reference	SU 903 508
Altitude (m AOD)	80
Accumulated Temperature (day degrees Jan June)	1438
Average Annual Rainfall (mm)	698
Field Capacity (days)	147
Moisture Deficit Wheat (mm)	109
Moisture Deficit Potatoes (mm)	101
Overall Climatic Grade	1

## 3 Relief

3 1 The land on this site is relatively flat lying at approximately 80m AOD Nowhere on the site does altitude or relief impose limitations to agricultural land quality

#### 4 **Geology and Soil**

- 4 1 The relevant geological sheet (BGS 1976) maps the southern half of the site as London Clay with Bagshot Beds in the north
- 4 2 The published soils information (SSEW 1983) shows the Wickham 3 soil association in the south of the site. These soils are described as Slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey soils and similar more permeable soils with slight waterlogging. Some deep coarse loamy soils affected by groundwater (SSEW 1983). In the north the Swanwick soil association has been mapped. These are said to be Deep permeable coarse loamy and sandy soils some peaty surface horizons affected by groundwater (SSEW 1983)
- 4 3 Detailed field survey broadly on the part of the site where access was granted broadly confirms the existence of soils similar to those described in paragraph 4 2 as the Swanwick association

#### 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
- 5 3 **Subgrade 3b**

All of the agricultural land on this site has been classified as Subgrade 3b moderate quality land with soil droughtiness as the main limitation. Soil profiles within this mapping unit typically comprise loamy medium sand topsoils and upper subsoils over medium sand or loamy medium sand lower subsoils. The total stone content ranges from 2-20% flint (v/v) in the topsoil (of which 2-3% >2cm) increasing to 5-15% in the upper subsoil. Deeper in the profile the stone content generally diminishes (2-10% total flint) although some soil observations found that similar stone contents prevail in the lower subsoil. Pit 1 is representative of these soils and shows that all of the subsoils are moderately well structured. Given the local climatic regime a combination of coarse soil textures and profile stone contents combine to restrict the amount of profile available water such that it is not fully adequate for crop growth. This in turn will affect the level and consistency of crop yields such that a classification of Subgrade 3b due to this significant droughtiness limitation is appropriate.

## **SOURCES OF REFERENCE**

British Geological Survey (1976) Sheet No 285 Aldershot 1 50 000 Scale (solid & 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 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>	Siltv 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 dolimitic 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 S OF GUILDFORD RD ASH Pit Number 1P

Grid Reference SU90205090 Average Annual Rainfall 698 mm  
 Accumulated Temperature 1438 degree days  
 Field Capacity Level 147 days  
 Land Use Barley  
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 30	LMS	10YR32 00	6	10	HR					
30- 40	LMS	10YR32 00	0	15	HR		WKCSAB	VF	M	
40 60	MS	10YR54 56	0	2	HR		WKMSAB	VF	M	
60 120	MS	10YR6B 64	0	0			MDCPL	FR	M	

Wetness Grade 1 Wetness Class I  
 Gleying 000 cm  
 SPL No SPL

Drought Grade 3B APW 68 mm MBW 41 mm  
 APP 51 mm MBP 50 mm

FINAL ALC GRADE 3B  
 MAIN LIMITATION Droughtiness

SAMPLE NO	ASPECT	GRID REF	USE	WETNESS		WHEAT		-POTS		M REL		EROSN	FROST	CHEM	ALC	COMMENTS	
				GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST		LIMIT
		SU90105100	BAR	000	1	1	56	-53	51	50	4				DR	3B	I90 SEE1P
1P		SU90205090	BAR	000	1	1	68	-41	51	-50	3B				DR	3B	
2		SU90215095	BAR	000	1	1	45	-64	47	54	4				DR	3B	I60 SEE1P
		SU90105090	BAR	000	1	1	27	-82	27	74	4				DR	3B	I30 SEE1P
		SU90205090	BAR	000	1	1	33	-76	33	-68	4				DR	3B	I40 SEE1P
		SU90305090	BAR	000	1	1	67	42	51	-50	3B				DR	3B	
		SU90275085	BAR	000	1	1	77	-32	59	-42	3B				DR	3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	-- MOTTLES --		PED	-- -STONES --			STRUCT/	SUBS	STR	POR	IMP	SPL	CALC
				COL	ABUN		CONT	COL	GLE							
1	0 30	1ms	10YR31 00					2	0	HR	5					
	30 40	1ms	10YR32 00					0	0	HR	15			M		
	40 60	ms	10YR56 54					0	0	HR	15			M		
	60 90	ms	10YR56 66					0	0	HR	2			M		IMPEN FLINTS
1P	0 30	1ms	10YR32 00					6	0	HR	10					
	30 40	1ms	10YR32 00					0	0	HR	15	WKCSAB	VF	M		
	40 60	ms	10YR54 56 10					0	0	HR	2	WKMSAB	VF	M		
	60 120	ms	10YR68 64					0	0		0	MDCPL	FR	M		
2	0 30	1ms	10YR32 00					0	0	HR	5					
	30 40	1ms	10YR32 00					0	0	HR	5			M		
	40 60	ms	10YR54 00					0	0	HR	10			M		IMPEN FLINTS
3	0 25	1ms	10YR31 00					3	0	HR	10					
	25 30	1ms	10YR44 46					0	0	HR	15			M		IMPEN FLINTS
4	0 30	1ms	10YR32 00					0	0	HR	10					
	30 40	ms	10YR43 00					0	0	HR	10			M		IMPEN FLINTS
5	0 30	1ms	10YR42 00					3	0	HR	5					
	30 60	ms	10YR43 00					0	0	HR	5			M		
	60 120	ms	10YR43 63					0	0	HR	5			M		
6	0 30	1ms	10YR32 00					0	0	HR	2					
	30 45	1ms	10YR32 00					0	0		0			M		
	45 120	1ms	10YR54 00					0	0	HR	5			M		