

**A1**  
**Maidstone Borough Local Plan**  
**Site 48 Chatham Road, Sandling**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**July 1994**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## MAIDSTONE BOROUGH LOCAL PLAN SITE 48, CHATHAM ROAD, SANDLING

### 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 Maidstone district of Kent. This work forms part of MAFF's statutory input to the Maidstone Borough Local Plan.
- 1.2 Site 48 comprises approximately 8 hectares of land to the north east of the junction between the A229 and the M20 at Sandling. An Agricultural Land Classification (ALC) survey was carried out in July 1994. The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land. A total of 5 borings and one soil inspection pit were assessed 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 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 all of the agricultural land on the site was in permanent grazing. There were several areas of non agricultural land in addition to residential areas (mapped as urban) and agricultural buildings.
- 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. This map supersedes any previous survey information for this site.

**Table 1 Distribution of Grades and Subgrades**

Grade	Area (ha)	% of Site	% of Agricultural Land
3a	2.0	25.3	39.2
3b	3.1	39.2	<u>60.8</u>
Urban	1.7	21.5	100%
Agricultural Buildings	0.1	12.7	
Non Agricultural	<u>1.0</u>	<u>1.3</u>	
Total area of site	7.9 ha	100%	

- 1 5 Appendix 1 gives a general description of the grades and landuse categories identified in this survey. The main classes are described in terms of limitation that can occur, the typical cropping range and expected level and consistency of yield.
- 1 6 Land quality on this site ranges from good, Subgrade 3a to moderate Subgrade 3b. The land has been graded principally on the basis of soil wetness although the Subgrade 3a mapping unit also experiences droughtiness limitations. Soils are heavy textured and clay horizons in the subsoil impede drainage. The depth to clay varies across the site and determines the grade. Where it is shallow in the profile across the southern most part of the site the soil wetness restriction is more severe than across the northern part of the site where clay occurs deeper in the profile.

## 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 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 grid point 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.

**Table 2 Climatic Interpolation**

Grid Reference	TQ755588
Altitude (m, AOD)	30
Accumulated Temperature (degree days Jan June)	1471
Average Annual Rainfall (mm)	655
Field Capacity (days)	135
Moisture Deficit Wheat (mm)	118
Moisture Deficit Potatoes (mm)	113
Overall Climatic Grade	1

## 3 Relief

- 3 1 The site lies at an altitude of c 25-35 m AOD. The land slopes gently down from the north.

## 4 Geology and Soil

- 4 1 The British Geology Survey (1976), Sheet 288 Maidstone shows the majority of the site to be underlain by Gault Clay with some small areas of head on the northern western and southern sides of the site.

4 2 The Soil Survey of England and Wales (1983) Sheet 6 shows the site to comprise soils of the Block Association. The legend accompanying the map describes these as being moderately permeable calcareous loamy soils over chalky gravel variably affected by groundwater (SSEW 1983)

4 3 Soils of the site were found to be mainly calcareous and clay throughout the profile though occasional heavy clay loam topsoils were noted. The subsoils are slowly permeable at various depths and contain variable stone contents across the site

## 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 Good quality land has been mapped in the north of the site. These calcareous soils experience a wetness and droughtiness limitation. The slightly flinty (10% total by volume) heavy clay loam or clay topsoils overlie clay subsoils in which the flint content (2-10% total by volume) generally decreases with depth. The subsoils are mottled and gleyed and act as slowly permeable layers. The soils here are consistent with Wetness Class III and with the naturally occurring calcareous topsoil are classified as Subgrade 3a on the basis of soil wetness/workability. The land is also limited to this subgrade as a result of soil droughtiness. The poorly structured clay subsoils and flints within the profile restrict soil moisture which may be available for plant growth. Soil wetness will restrict the opportunities for cultivations and grazing by livestock whilst soil droughtiness will affect crop growth and yield potential.

### Subgrade 3b

5 4 Moderate quality land has been mapped over the rest of the agricultural land at this site. The calcareous soils are clays throughout the profile and are slowly permeable from the upper subsoil. The topsoil and subsoil is generally gleyed. The soils are Wetness Class IV. This degree of soil wetness severely affects the versatility of the land in terms of restricting crop growth and the timing of cultivations.

ADAS Ref 2007/143/94  
MAFF Ref EL20/328

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## **SOURCES OF REFERENCE**

British Geological Survey (1976) Sheet No 288 Maidstone 1 50 000 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) Climatic datasets 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 Bulletin No 15

# 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 **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>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 MAIDSTONE LP SITE 48 Pit Number 1P

Grid Reference TQ75605890 Average Annual Rainfall 655 mm  
 Accumulated Temperature 1471 degree days  
 Field Capacity Level 135 days  
 Land Use Permanent Grass  
 Slope and Aspect 02 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 35	C	10YR5/3 5/2	0	10	HR					Y
35 58	C	2.5Y 5/6 0/0	0	10	HR	C	WKCSAB	FM	P	Y
58 120	C	2.5Y 7/2 0/0	0	2	HR	M	WKCSAB	FR	M	Y

Wetness Grade 3A Wetness Class III  
 Gleying 035 cm  
 SPL 040 cm

Drought Grade 3A APW 125mm MBW 7 mm  
 APP 100mm MBP 13 mm

FINAL ALC GRADE 3A  
 MAIN LIMITATION Wetness

SAMPLE NO	GRID REF	USE	ASPECT	WETNESS -		WHEAT		POTS-		M REL		EROSN	FROST	CHEM	ALC	COMMENTS	
				GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP						MB
1P	TQ75605890	PGR	S	02	035	040	3	3A	125	7	100	13	3A		WE	3A	3A DROUGHT
2	TQ75505890	PGR	S	02			1	2	127	9	111	2	2		WK	2	IMP 65 3A UNIT
3	TQ75605890	PGR	S	02	055	040	3	3A	134	16	111	2	2		WE	3A	IMP 75 SPL 40
5	TQ75605980	PGR			0	035	4	3B	082	36	088	-25	3B		WE	3B	SPL 35
6	TQ75705980	PGR			025	025	4	3B	074	44	074	-39	3B		WE	3B	SPL 25
8	TQ75605970	PGR			0	030	4	3B	080	-38	086	27	3B		WE	3B	SPL 30

SAMPLE	DEPTH	TEXTURE	COLOUR	--MOTTLES--			PED	- STONES-			STRUCT/	SUBS					
				COL	ABUN	CONT	COL	GLEYS	>2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL
1P	0-35	c	10YR53 52					0	0	HR	10						Y
	35-58	c	25Y 56 00 000C00 00 C				00MN00 00 Y	0	0	HR	10	WKCSAB FM P	Y			Y	Y
	58 120	c	25Y 72 00 000C00 00 M				00MN00 00 Y	0	0	HR	2	WKCSAB FR M	Y			Y	Y
2	0-30	hc1	10YR53 00					0	0	CH	5						Y
	30-60	c	10YR54 00					0	0	HR	2		M				Y
	60 120	c	10YR54 00					0	0	HR	30		M				Y
3	0 25	c	10YR53 00					0	0	HR	2						Y
	25 55	c	10YR64 00 75YR58 00 C					Y	0	0	HR	10		M Y		Y	Y
	55 120	c	25Y 73 00 75YR58 00 C					Y	0	0	HR	5		M Y		Y	Y
5	0 35	c	10YR42 00 000C00 00 C					Y	0	0	HR	5					Y
	35 60	c	25 Y64 00 000C00 00 M					Y	0	0	HR	5		P		Y	Y
6	0-25	c	10YR42 00			F		0	0		0						Y
	25 50	c	25YR64 00 000C00 00 M					Y	0	0	HR	5		P		Y	Y
8	0 30	c	10YR42 00 000C00 00 C					Y	0	0	HR	5					Y
	30 60	c	10YR53 00 000C00 00 M					Y	0	0	HR	5		P		Y	Y