

**A1**  
**Maidstone Borough Local Plan**  
**Site 83 Land off Sutton Road,**  
**Maidstone**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**April 1995**

# **AGRICULTURAL LAND CLASSIFICATION REPORT**

## **MAIDSTONE BOROUGH LOCAL PLAN**

### **SITE 83 LAND OFF SUTTON ROAD, MAIDSTONE**

#### **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 Borough of Kent. The work forms part of MAFF's statutory input to the Maidstone Borough Local Plan.
- 1 2 Site 83 comprises approximately 6 hectares of land north of Sutton Road on the south western edge of Maidstone in Kent. An Agricultural Land Classification (ALC) survey was carried out in April 1995. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 7 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 land use on the site comprised cereals.
- 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 land on the site (5.7 ha) has been classified as Subgrade 3a, good quality land with soil wetness as the main limitation. Soil profiles typically comprise medium silty clay loam topsoils resting upon clay subsoils. The clay subsoils are slightly gleyed and slowly permeable causing a drainage impedence. Therefore a classification of Subgrade 3a is appropriate due to this moderate wetness limitation. Soils with impeded drainage can restrict plant growth 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 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 moisture deficits are relatively high in a regional context which may increase the likelihood of soil droughtiness problems
- 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 791 524
Altitude (m)	100
Accumulated Temperature (day degrees Jan-June)	1394
Average Annual Rainfall (mm)	711
Field Capacity (days)	145
Moisture Deficit Wheat (mm)	110
Moisture Deficit Potatoes (mm)	104
Overall Climatic Grade	1

## **3 Relief**

- 3 1 The site is flat lying at an altitude of approximately 100m AOD Nowhere on the site do gradient or relief pose any limitation upon agricultural use

## **4 Geology and Soils**

- 4 1 The published geological map (BGS 1976) shows the entire site to be underlain by Cretaceous Hythe Beds comprising sandy limestone and calcareous sand
- 4 2 The published Soil Survey map (SSEW 1983) shows the soils on the site to comprise those of the Malling association These are described as well drained non calcareous fine loamy over limestone at variable depths Some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging (SSEW 1983)
- 4 3 Detailed field examination found the soils on the site to comprise variably stony silty clay loams over slowly permeable clays, showing signs of a drainage imperfection

## **5 Agricultural Land Classification**

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

### **Subgrade 3a**

5 2 All of the land on the site has been mapped as Subgrade 3a, good quality land with soil wetness as the main limitation. Soil profiles typically comprise slightly stony (10-15% total flints v/v) medium silty clay loam topsoils over clay subsoils commencing at depths of between 26-35cm. Occasionally medium silty clay loam upper subsoils were observed. Subsoils were also found to be slightly stony containing between 10-15% total banded soft sandstone. Profiles showed signs of a wetness imperfection in the form of slight gleying from below the topsoil. A soil inspection pit (pit no 1) found the clay subsoil to be poorly structured and slowly permeable with low porosity causing a moderate drainage impedance. Such drainage characteristics equate these soils to Wetness Class III with a resultant classification of Subgrade 3a given the prevailing local climatic conditions. These soils show a moderate wetness limitation which can restrict plant and root development and may increase the likelihood of soil structural damage through trafficking by agricultural machinery or poaching by grazing livestock. It should be noted that one soil observation found topsoil stones greater than 2cm in size to total 11%. This also results in a Subgrade 3a classification due to a moderate topsoil stone limitation. Stony topsoils can impede cultivations and crop establishment and may increase production costs due to increased wear and tear on machinery and tyres.

ADAS Ref 2007/089/95  
MAFF Ref EL 20/862

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## **SOURCES OF REFERENCE**

British Geological Survey (1976) Sheet No 288 Maidstone 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 <b>or</b> 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 <b>or</b> 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 <b>or</b> 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 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

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES			PED	----STONES----			STRUCT/	SUBS							
				COL	ABUN	CONT		COL	GLE	>2		>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL
1	0-30	mc1	10YR42 00					11	0	HR	15								Y
	30-55	c	10YR54 00 75YR58 00 M					S	0	0	MSST	10		P					Y
	55 90	c	05YR58 00 10YR64 00 C					S	0	0	MSST	15		P					Y
	90 120	c	05YR58 00 10YR64 00 C					S	0	0	MSST	15		P					Y
1P	0-26	mzc1	10YR43 00 00MN00 00 F						10	0	HR	14							
	26-70	c	05YR56 00 10YR64 00 C				05YR52 00	S	0	0	HR	10	MDCAB	FM	P	Y			Y
2	0-27	mzc1	10YR43 00						10	0	HR	15							
	27-45	c	05YR58 00 10YR64 00 C					S	0	0	HR	10		P					Y
	45-80	c	75YR58 00 10YR64 00 C					S	0	0	MSST	15		P					Y Y
	80-120	hc1	10YR54 00 75YR58 00 M				00MN00 00	S	0	0	MSST	5		M					Y Y
3	0-30	mzc1	10YR42 00						10	0	HR	15							
	30-65	c	05YR58 00 75YR58 00 C					S	0	0	HR	5		P					Y
	65 100	c	05YR58 00 10YR53 00 C					S	0	0	HR	5		P					Y
4	0-26	mzc1	10YR43 00						6	0	HR	10							
	26-70	c	05YR54 00 05YR56 58 C					S	0	0	MSST	10		P					Y
5	0 27	mzc1	75YR43 00						8	0	HR	12							
	27-35	mzc1	10YR54 00 10YR58 00 C					S	0	0		0		M					
	35-55	c	75YR54 00 75YR56 00 C					S	0	0	MSST	5		P					Y
	55 70	c	05YR56 00 05YR58 00 C					S	0	0	MSST	5		P					Y
6	0-30	mzc1	75YR46 00						6	0	HR	10							
	30 35	mzc1	75YR43 00 10YR56 00 F						0	0	HR	5		M					
	35-65	c	05YR46 00 10YR58 00 C				00MN00 00	S	0	0	MSST	10		P					Y
7	0 25	mzc1	75YR43 00						6	0	HR	10							
	25 70	c	05YR54 00 05YR58 00 C					S	0	0	MSST	5		P					Y

SAMPLE NO	GRID REF	ASPECT USE	GRDNT		-WETNESS--		-WHEAT-		-POTS		M REL	EROSN	FROST	CHEM	ALC	COMMENTS
					CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT	
1	TQ79005250	CER	S30	030	3	2			0	0					TS	3A
1P	TQ79005240	CER	S26	026	3	3A			0	0					WE	3A
2	TQ78805240	CER	S27	027	3	3A			0	0					WE	3A
3	TQ78905240	CER	S30	030	3	3A			0	0					WE	3A
4	TQ79005240	CER	S26	026	3	3A			0	0					WE	3A
5	TQ79105240	CER	S27	035	3	3A			0	0					WE	3A
6	TQ79005230	CER	S35	035	3	3A			0	0					WE	3A
7	TQ79105230	CER	S00	025	3	3A			0	0					WE	3A

SOIL PIT DESCRIPTION

Site Name MAIDSTONE OBJ SITE 83 Pit Number 1P

Grid Reference TQ79005240 Average Annual Rainfall 711 mm  
 Accumulated Temperature 1394 degree days  
 Field Capacity Level 145 days  
 Land Use Cereals  
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0-26	MZCL	10YR43 00	10	14	HR	F				
26-70	C	05YR56 00	0	10	HR	C	MDCAB	FM	P	

Wetness Grade 3A Wetness Class III  
 Gleying S26 cm  
 SPL 026 cm

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

FINAL ALC GRADE 3A  
 MAIN LIMITATION Wetness