

**A1**  
**Maidstone Borough Local Plan**  
**Site 84 Land South of Ashford Road,**  
**Harrietsham, Kent**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**May 1995**

# AGRICULTURAL LAND CLASSIFICATION, REPORT

## MAIDSTONE BOROUGH LOCAL PLAN

### SITE 84 LAND SOUTH OF ASHFORD ROAD, HARRIETSHAM

#### 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 84 comprises 3.2 hectares of land to the south east of Harrietsham 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 5 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. In addition information from previous surveys carried out in 1994 and 1995 were used in the assessment of land quality on this site.
- 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 was under permanent grass. The Non agricultural area shown is an area of scrub on a steep slope.
- 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 ALC survey information for this site.

**Table 1 Distribution of Grades and Subgrades**

Grade	Area (ha)	% of Site	% of Agricultural Area
2	1.5	46.9	48.4
3a	1.6	50.0	<u>51.6</u>
Non agricultural	<u>0.1</u>	<u>3.1</u>	100% (3.1ha)
Total area of Site	3.2ha	100%	

- 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 The agricultural land at this site has been classified as Grade 2 (very good quality) and Subgrade 3a (good quality). Principal limitations include soil droughtiness and

topsoil workability The area of Grade 2 land contains deep fine loamy soils over chalk leading to a slight soil droughtiness limitation Where Subgrade 3a is mapped solid chalk underlies fine loamy soils at shallow to moderate depth This causes profile available water to be moderately restricted Chalk has the effect of restricting plant rooting depth such that there is a reduction in the available water capacity of the soil This leads to slight and moderate risks of drought stress at this site

## 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 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 The site is believed to be rather frost prone (Met Office 1971) This is due to site location in an area of cold air drainage and from which further air movement is poor The site is not thought to be exposed However climatic and soil factors interact to influence soil wetness and droughtiness limitations to a greater extent

**Table 2 Climatic Interpolation**

Grid Reference	TQ878527	TQ877526
Altitude (m AOD)	105	110
Accumulated Temperature (day degrees C Jan June)	1386	1380
Average Annual Rainfall (mm)	742	743
Field Capacity Days	155	155
Moisture deficit wheat (mm)	106	106
Moisture deficit potatoes (mm)	98	97
Overall Climatic Grade	1	1

## 3 Relief

- 3 1 The site lies between approximately 105 and 110m AOD The site is flat towards the south at the higher altitude Towards the north the land is part of a wide U shaped valley the lowest land being towards the west Nowhere on the site does slope gradient influence land quality as the steep slope crossing the centre of the site is Non agricultural

#### **4 Geology and Soils**

- 4 1 The published geological information (BGS 1976) shows the site to be underlain by Cretaceous Lower Chalk
- 4 2 The most recent published soils information (SSEW 1983) shows the site to be underlain by soils of the Coombe 2 Association. The legend accompanying the map describes these as well drained calcareous fine silty soils over chalk or chalk rubble. Shallow in places especially on brows and steeper slopes (SSEW 1983). The soils encountered at this site were of this broad type being in the deeper phase as the slopes on the site were shallow.

#### **5 Agricultural Land Classification**

- 5 1 Paragraph 1.5 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.

##### **Grade 2**

- 5 3 Land of very good quality has been mapped across the north of the site. The principal limitation is topsoil workability. Soils in this area were found to comprise a very slightly stony (2% v/v total flints) calcareous medium or heavy silty clay loam topsoil. This passes to a stoneless heavy silty clay loam upper subsoil that occasionally continues to depth (120cm). The remaining profile contains a very chalky (c 50% v/v chalk) medium silty clay loam lower subsoil from approximately 75cm passing to solid chalk around 90cm. Chalk has the effect of restricting rooting depth and subsequent profile available water. From the pit observations 1p at the adjacent sites (ADAS Ref 2007/158/94 and 2007/91/95) roots were found to penetrate up to 35cm into the Chalk. These relatively deep well drained (Wetness Class I) medium textured profiles have good reserves of available water for plant growth and soil droughtiness is not likely to be a problem in the local climate. However the presence of a heavy textured topsoil in some areas of this unit is sufficient to restrict the land to Grade 2 on the basis of topsoil workability. Because of the heavy topsoil cultivations and/or grazing opportunities are slightly restricted as they might cause structural damage to the topsoil at certain times of the year.

##### **Subgrade 3a**

- 5 4 Land of good quality has been mapped across the south of the site on the flat land of highest altitude. The principal limitation is soil droughtiness. Profiles typically comprise a stoneless calcareous medium silty clay loam topsoil passing to a very chalky (c 40% v/v soft chalk) medium silty clay loam subsoil over soft solid chalk from 38-40cm. Solid chalk has the effect of restricting plant rooting depth and subsequently causes profile available water to be reduced. In the pit observation 1p roots were observed to penetrate approximately 38cm into the chalk substrate.

Given local climatic data moisture balances fall into the range assigned to Subgrade 3a Soil droughtiness has the effect of reducing plant growth and yield in this case to a moderate degree

ADAS Ref 2007/090/95  
MAFF Ref EL20/862

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## **SOURCES OF REFERENCE**

ADAS (1994) Maidstone Borough Local Plan Site 13 The Tynme Ashford Road  
Harrietsham Agricultural Land Classification ADAS Ref 2007/158/94 MAFF  
Ref EL20/328

ADAS (1995) Maidstone Borough Local Plan Site 86 Land south of Dickley Lane  
Harrietsham Agricultural Land Classification ADAS Ref 2007/91/90 MAFF  
Ref EL20/862

British Geological Survey (1976) Sheet 288 Maidstone Solid & Drift Edition 1 50 000

MAFF (1988) Agricultural Land Classification of England and Wales Revised guidelines  
and criteria for grading the quality of agricultural land

Meteorological Office (1971) Unpublished Climate data relating to Sheet 173 1 63 360

Meteorological Office (1989) Climatic datasets for Agricultural Land Classification

Soil Survey of England and Wales (1980) Bulletin No 9 Soils of Kent

Soil Survey of England and Wales (1983) Sheet No 6 Soils of South East England  
1 250 000 and Accompanying Legend

Soil Survey of England and Wales (1984) Bulletin No 15 Soils and their use in South  
East England

# 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 84 Pit Number 1P

Grid Reference TQ87705250 Average Annual Rainfall 743 mm  
 Accumulated Temperature 1380 degree days  
 Field Capacity Level 155 days  
 Land Use Rough Grazing  
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0-25	MZCL	25Y 4/2 0/0	0	0						Y
25-38	MZCL	10YR 7/4 0/0	0	40	CH			FR	M	Y
38-76	CH	25Y 7/1 0/0	0	0		C			P	Y

Wetness Grade 1 Wetness Class I  
 Gleying cm  
 SPL cm

Drought Grade 3A APW 96 mm MBW 10 mm  
 APP 98 mm MBP 1 mm

FINAL ALC GRADE 3A  
 MAIN LIMITATION Droughtiness

SAMPLE NO	GRID REF	ASPECT USE	--WETNESS --		-WHEAT-		-POTS-		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB					
1	TQ87705260	RGR	1	1	139	33	125	28	1					1	IMP CHALK 100
1P	TQ87705250	RGR	1	1	96	10	98	1	3A				DR	3A	PIT80 ROOTS76
2	TQ87805260	RGR	1	2	158	52	123	26	1				WK	2	
3	TQ87605250	RGR	1	1	97	-9	99	2	3A				DR	3A	
4	TQ87705250	RGR	1	1	99	-7	101	4	3A				DR	3A	
5	TQ87805250	RGR	1	1	97	-9	98	1	3A				DR	3A	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED		----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT	COL	GLEYS	2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
1	0-35	mzc1	25Y 42 00						0	0	HR	2						Y
	35-75	hzc1	25Y 54 00						0	0		0		M				Y
	75-90	mzc1	25Y 64 71						0	0	CH	50		M				Y
	90-105	ch	25Y 71 00						0	0		0		P				Y
1P	0-25	mzc1	25Y 42 00						0	0		0						Y
	25-38	mzc1	10YR74 00						0	0	CH	40		FR M				Y
	38-76	ch	25Y 71 00	10YR66	00	C			0	0		0		P				Y
																		ROOTS TO 76
2	0-30	hzc1	25Y 53 00						0	0	HR	2						Y
	30-120	hzc1	25Y 54 00						0	0	CH	5		M				Y
3	0-27	mzc1	25Y 42 00						0	0	HR	2						Y
	27-38	mzc1	10YR74 00						0	0	CH	30		M				Y
	38-76	ch	10YR71 00						0	0		0		P				Y
4	0-30	mzc1	25Y 42 00						0	0	HR	2						Y
	30-40	mzc1	10YR64 00						0	0	CH	30		M				Y
	40-76	ch	10YR71 00						0	0		0		P				Y
5	0-25	mzc1	25Y 42 00						0	0	HR	2						Y
	25-39	hzc1	10YR64 00						0	0	CH	30		M				Y
	39-77	ch	10YR71 00						0	0		0		P				Y