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**Maidstone Borough Local Plan  
Site 6 Church Landway, Bearstead  
Agricultural Land Classification  
ALC Map and Report  
July 1994**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## MAIDSTONE BOROUGH LOCAL PLAN SITE 6 CHURCH LANDWAY, BEARSTEAD

### 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 Maidstone. This work forms part of MAFF's statutory input to the Maidstone Borough Local Plan.
- 1.2 Site 6 comprises approximately 6 hectares of land to the south of Church Lane Bearsted Maidstone. 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 6 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 At the time of the survey the agricultural land was all in rough grass, part of which was being grazed informally by horses. Part of the area had been orchards in the past but these are no longer maintained.
- 1.4 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**

Grade	Area (ha)	% of Site	% of Agricultural Land
2	1.7	27.9	27.9
3a	4.0	65.6	65.6
3b	<u>0.4</u>	<u>6.5</u>	<u>6.5</u>
Total area of site	6.1	100.0	100.0

- 1.5 Appendix 1 gives a general description of the grades, subgrades and land use 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 very good quality Grade 2 to moderate Subgrade 3b. The land has been classified principally on the basis of soil droughtiness limitations, although a small area in the south west experiences wetness limitations. The droughty soils are light textured sandy loams and loamy sands with a tendency to become heavier in texture deep in the profile. The wetter area has a much more clayey profile which is not free draining.

## 2 Climate

- 2.1 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 Estimates of climatic variables relevant to the assessment of agricultural land quality were obtained by interpolation from a 5 km grid point dataset (Met Office 1989) for a representative location in the survey area

**Table 2 Climatic Interpolation**

Grid Reference	TQ800553
Altitude (m, AOD)	55
Accumulated Temperature (degree days Jan June)	1444
Average Annual Rainfall (mm)	719
Field Capacity (days)	147
Moisture Deficit Wheat (mm)	115
Moisture Deficit Potatoes (mm)	109

- 2.3 The details given in the table above show that there is no overall climatic limitation affecting the site. In addition, no local climatic factors such as exposure or frost risk affect the site.
- 2.4 Climatic factors do, however, interact with soil properties to influence soil wetness and droughtiness limitations. The climate is relatively dry in regional terms at this locality, thereby enhancing the risk of soil droughtiness restrictions.

## 3 Relief

- 3.1 The site lies at an altitude of 50-55 m AOD falling gently from the west to the east.

## 4 Geology and Soil

- 4.1 British Geological Survey (1976) Sheet 288 Maidstone shows the majority of the site to be underlain by Sandgate Beds which are silty clays and Fuller's Earth. The northern part of the site is mapped as sand of the Folkestone Beds. Both are of the Lower Greensand.
- 4.2 Soil Survey of England and Wales (1983) Sheet 6 shows the site to comprise soils of the Malling Association. These are described as being well drained non calcareous fine loamy soils over limestone with some deep well drained coarse loamy soils and similar fine loamy over clayey soils. There may be some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging (SSEW 1983).

- 4 3 Soils on the site were found to be comprise medium sandy loams over either loamy medium sands or heavy clay loams and clays. At depth these soils were occasionally affected by poor drainage. A small area in the south west had clay loams over clays which were slowly permeable.

## **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 and profile pits are given on the attached boring location map.

### **Grade 2**

- 5 3 Very good quality land has been mapped where minor soil droughtiness limitations exist. Profiles comprise non-calcareous medium sandy loam topsoils over similar upper subsoils. Profiles pass into heavy clay loams and clays in the lower subsoils. These are sometimes slowly permeable at depth and have evidence of poor drainage in the form of pale colours and mottling. Where these occur the soil is Wetness Class II. The free draining profiles are Wetness Class I. Both these profiles would qualify for Grade 1 except for the droughtiness limitation imposed by the textures found which limit the available water in the profile.

### **Subgrade 3a**

- 5 4 Good quality land has been mapped over much of the rest of the site where more severe soil droughtiness limitations exist. These profiles comprise non calcareous medium sandy loams or occasionally medium sandy silt loam topsoils over loamy medium sand subsoils. There are sometimes heavier textured lower subsoils which show evidence of impeded drainage. All these soils are Wetness Class I. The main limitation is droughtiness. The light textured soils which have few stones limit the amount of water available for crop growth and thus the versatility of the soil.

### **Subgrade 3b**

- 5 5 Moderate quality land has been mapped in a small area where there is a wetness limitation. The soil has sandy clay loam topsoils over slowly permeable clay subsoils. The drainage of the soil is impeded and the soil is Wetness Class IV. The subsoil is gleyed indicating the poor drainage of the soil. The degree of soil wetness affects the versatility of the land since it restricts the crop growth and development and timing of cultivations and/or grazing.

ADAS Ref 2007/144/94  
MAFF Ref EL20/328

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## **SOURCES OF REFERENCE**

British Geological Survey (1976) Sheet 288, Maidstone 1 50 000 (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) 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 bulletin

## 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 MAIDSTONE LP SITE 6 Pit Number 1P

Grid Reference TQ80005532 Average Annual Rainfall 719 mm  
 Accumulated Temperature 1444 deg ee days  
 Field Capacity Level 147 days  
 Land Use Permanent Grass  
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 30	MSL	10YR42 00	0	2	HR					
30 70	LMS	10YR54 00	0	0			MDCAB	FR	G	
70 120	LMS	25 Y54 00	0	0			MDCAB	VF	G	

Wetness Grade 1 Wetness Class I  
 Gleying cm  
 SPL cm

Drought Grade 3A APW 120mm MBW 5 mm  
 APP 088mm MBP 21 mm

FINAL ALC GRADE 3A  
 MAIN LIMITATION Droughtiness

SAMPLE NO	GRID REF	USE	ASPECT	--WETNESS		-WHEAT-		POTS		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
				GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB					
1	TQ80005540	PGR	S			1	1	132	17	091	-18	3A		DR	3A	SL GLEY 85
1P	TQ80005532	PGR				1	1	120	5	088	-21	3A		DR	3A	
2	TQ80205540	PGR				1	1	072	-43	072	-37	3B		DR	3A	IMP X 2 AT 40
3	TQ80005532	PGR	S	01		1	1	128	13	097	-12	3A		DR	3A	
4	TQ80105530	PGR			070	070	2	1	141	31	118	9	2	DR	2	IMP 90
5	TQ80205530	PGR					1	1	141	26	114	8	2	DR	2	
6	TQ79905520	PGR	S		035	035	4	3B	135	20	111	2	2	WE	3B	SPL 35

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES --- PED			-- -STONES			STRUCT/	SUBS	STR	POR	IMP	SPL	CALC
				COL	ABUN	CONT	COL	GLE	>2							
1	0-35	ms1	10YR44 00							0	0	HR	2			
	35 85	1ms	10YR46 00							0	0	HR	2		G	
	85 120	sc	10YR56 00	75YR58 00	C			S	0	0			0		M	
1P	0 30	ms1	10YR42 00							0	0	HR	2			
	30 70	1ms	10YR54 00							0	0		0	MDCAB	FR	G
	70 120	1ms	25 Y54 00							0	0		0	MDCAB	VF	G
2	0 30	msz1	10YR31 00							0	0		0			
	30 40	hc1	10YR33 00							0	0	SLST	5		M	
3	0-25	ms1	10YR33 00							0	0	HR	1			
	25-45	ms1	25Y 54 00							0	0	HR	10		G	
	45-90	1ms	25Y 54 00							0	0	HR	1		G	
	90 120	1ms	25Y 64 00							0	0	HR	1		G	
4	0-30	ms1	10YR22 00							0	0		0			
	30-60	ms1	10YR42 00							0	0		0		G	
	60-70	c	25 Y56 00							0	0		0		M	
	70-120	c	25Y 64 00	000C00 00	C			Y	0	0		0		P	Y	Y
5	0-30	ms1	10YR22 00							0	0		0			
	30-45	ms1	10YR42 00							0	0		0		G	
	45 65	hc1	10YR43 00			F				0	0		0		M	
	65-120	c	10YR54 00			F				0	0		0		M	
6	0 25	sc1	10YR43 00							0	0	HR	5			
	25 35	sc	10YR54 00							0	0	HR	1		M	
	35 120	c	10YR72 00	10YR68 00	C			Y	0	0		0		P	Y	Y