2007-159-96

A1
Maidstone Borough Local Plan
Objector Site 89b
Amber Green Farm, Chart Sutton, Kent
Agricultural Land Classification Report
November 1996

Ministry of Agriculture Fisheries And Food

A1

Maidstone Borough Local Plan
Objector Site 89b
Amber Green Farm, Chart Sutton, Kent
Agricultural Land Classification Report
November 1996

Resource Planning Team
Guildford Statutory Group
ADAS Reading

ADAS Reference 2007/159/96
MAFF Reference EL 20/00862
LUPU Commission 02637

AGRICULTURAL LAND CLASSIFICATION REPORT

MAIDSTONE BOROUGH LOCAL PLAN
OBJECTOR SITE 89b
AMBER GREEN FARM, CHART SUTTON, KENT

INTRODUCTION

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey on approximately 4 hectares of land at Amber Green Farm Chart Sutton near Maidstone in Kent The survey was carried out during November 1996

2 The survey was commissioned by the Ministry of Agriculture Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading in connection with the Maidstone Borough Local Plan The results of this survey supersede any previous ALC information for this land Information from two nearby sites (ADAS Refs 2007/223/94 & 2007/163/96) was also used to help grade this site

3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF 1988) A description of the ALC grades and subgrades is given in Appendix I

4 At the time of survey all of the agricultural land was under permanent pasture in the form of pony paddocks

SUMMARY

5 The findings of the survey are shown on the enclosed 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

6 The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 below

Table 1 Area of grades and other land

Grade	Area (hectares)	% Total Site Area	% Surveyed Area
3a	3 4	94 4	100 0
Other Land	0 2	5 6	
Total Surveyed Area	3 4	94 4	100 0
Total Site Area	3 6	100 0	

7 The fieldwork was conducted at an average density of one boring per hectare A total of 4 borings and one soil pit were described

8 All of the agricultural land on this site has been classified as Subgrade 3a (good quality) The profiles comprise either slightly to moderately stony medium clay loams or similarly stony medium and heavy clay loams over poorly structured clays Where the clay subsoils occur drainage through the profile is impeded resulting in seasonal waterlogging which limits the timing and flexibility of cultivations However all of the soil profiles comprise very stony subsoils which cause the profile to become impenetrable to the soil auger at moderate depths Information from the two nearby sites showed that the soil resource continues to depth but in this locally dry climatic regime the combination of soil textures structures and stone contents acts to reduce the amount of profile available water for crops Consequently this land is limited to Subgrade 3a due to soil wetness and/or soil droughtiness restrictions

FACTORS INFLUENCING ALC GRADE

Climate

9 Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics

10 The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met Office 1989)

11 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

Table 2 Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TQ 790 505
Altitude	m AOD	100
Accumulated Temperature	day°C (Jan June)	1394
Average Annual Rainfall	mm	691
Field Capacity Days	days	143
Moisture Deficit Wheat	mm	111
Moisture Deficit Potatoes	mm	104

12 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR) as a measure of overall wetness and accumulated temperature (ATO January to June) as a measure of the relative warmth of a locality

13 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation However climatic factors can interact with soil properties to influence soil

wetness and droughtiness At this locality the crop adjusted soil moisture deficits are relatively high thus increasing the likelihood of soil droughtiness restrictions

14 Local climatic factors such as frost risk and exposure are unlikely to adversely affect agricultural land use on this site The site is climatically Grade 1

Site

15 The land on this site slopes very gently from approximately 104m AOD in the south to just under 100m AOD in the north

16 Gradient microrelief and flooding do not affect land quality in this area

Geology and soils

17 The relevant geological sheet (BGS 1974) maps the Hythe Beds to the east of the site and the Sandgate Beds in a narrower strip to the west Head drift deposits are shown to cover the solid geology in the south of the site

18 The most recently published soils information for this area (SSEW 1983) maps the Malling soil association across much of the site to the north and the Marlow association over a small area to the south The former association is described as comprising Well drained non calcareous fine loamy soils over limestone at various depths Some deep well drained coarse loamy soils and similar fine loamy over clayey soils Some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging Occasional shallower calcareous soils over limestone Landslips and associated irregular terrain locally (SSEW 1983) and the latter as Well drained fine loamy over clayey and clayey soils Some coarse and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging (SSEW 1983)

19 Detailed field examination broadly confirmed the existence of soils similar to those described above as the Malling soils association

AGRICULTURAL LAND CLASSIFICATION

20 The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1 page 1

21 The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III

Subgrade 3a

22 There are two main soil profiles in this area both of which have been classified as good quality The first comprises freely draining (Wetness Class I) moderately well structured slightly stony (5 6% total Ragstone with 4% > 2cm) medium clay loam topsoils These overlie similarly textured and structured upper subsoils with 10 25% Ragstone before becoming impenetrable to the soil auger at 42-58cm depth Soil inspection Pit 1 however

shows that the soil resource continues to at least 64cm depth and information from two adjacent sites (ADAS Refs 2007/223/94 & 2007/163/96) shows that it continues to between 80 100cm depth In this local climatic regime the amount of profile available water for crops is slightly depleted by a combination of the soil textures structures and stone contents Subgrade 3a is therefore considered to be appropriate for this land

23 The second soil profile comprises a similar topsoil but it becomes heavier with depth Here moderately well structured moderately stony (15% Ragstone) heavy clay loam upper subsoils overlie poorly structured slowly permeable clay lower subsoils with 5% stone These profiles are generally slightly gleyed from 25-30cm and continue to between 60 85cm depth This land is therefore consistent with Wetness Class III (Appendix II) as the slowly permeable subsoils impede drainage through the profile resulting in prolonged seasonal waterlogging With these medium textured topsoil textures and this drainage status trafficking by agricultural machinery or grazing by livestock will cause structural damage As a result the timing and flexibility of cultivations is reduced This land is therefore limited to Subgrade 3a by a moderate soil wetness and workability restriction The combination of soil structures textures and stone contents in this local climatic regime also reduces the amount of profile available water for crops Soil droughtiness is therefore equally limiting in this area

Helen Goode
Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1974) Sh*eet No 288 Maidstone* 1 50 000 Series Solid & Drift
BGS London

Ministry of Agriculture Fisheries and Food (1988) *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land*
MAFF London

Met Office (1989) *Climatological Data for Agricultural Land Classification*
Met Office Bracknell

Soil Survey of England and Wales (1983) *Sheet 6 Soils of South East England*
SSEW Harpenden

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*
SSEW Harpenden

DESCRIPTIONS 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 (e g 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

APPENDIX II

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

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

Wetness Class	Duration of waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years [2]
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

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land* (MAFF 1988)

[1] The number of days is not necessarily a continuous period
[2] In most years is defined as more than 10 out of 20 years

APPENDIX III

SOIL DATA

Contents

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

ARA	Arable	**WHT**	Wheat	**BAR**	Barley
CER	Cereals	**OAT**	Oats	**MZE**	Maize
OSR	Oilseed rape	**BEN**	Field Beans	**BRA**	Brassicae
POT	Potatoes	**SBT**	Sugar Beet	**FCD**	Fodder Crops
LIN	Linseed	**FRT**	Soft and Top Fruit	**FLW**	Fallow
PGR	Permanent Pasture	**LEY**	Ley Grass	**RGR**	Rough Grazing
SCR	Scrub	**CFW**	Coniferous Woodland	**DCW**	Deciduous Wood
HTH	Heathland	**BOG**	Bog or Marsh	**FLW**	Fallow
PLO	Ploughed	**SAS**	Set aside	**OTH**	Other
HRT	Horticultural Crops				

3 **GRDNT** Gradient as estimated or measured by a hand-held optical clinometer

4 **GLEY/SPL** 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

MREL	Microrelief limitation	**FLOOD**	Flood risk	**EROSN**	Soil erosion risk
EXP	Exposure limitation	**FROST**	Frost prone	**DIST**	Disturbed land
CHEM	Chemical limitation				

9 **LIMIT** The main limitation to land quality The following abbreviations are used

OC	Overall Climate	**AE**	Aspect	**EX**	Exposure
FR	Frost Risk	**GR**	Gradient	**MR**	Microrelief
FL	Flood Risk	**TX**	Topsoil Texture	**DP**	Soil Depth
CH	Chemical	**WE**	Wetness	**WK**	Workability
DR	Drought	**ER**	Erosion Risk	**WD**	Soil Wetness/Droughtiness
ST	Topsoil Stoniness				

Soil Pits and Auger Borings

1 **TEXTURE** soil texture classes are denoted by the following abbreviations

S	Sand	**LS**	Loamy Sand	**SL**	Sandy Loam
SZL	Sandy Silt Loam	**CL**	Clay Loam	**ZCL**	Silty Clay Loam
ZL	Silt Loam	**SCL**	Sandy Clay Loam	**C**	Clay
SC	Sandy Clay	**ZC**	Silty Clay	**OL**	Organic Loam
P	Peat	**SP**	Sandy Peat	**LP**	Loamy Peat
PL	Peaty Loam	**PS**	Peaty Sand	**MZ**	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

F Fine (more than 66% of the sand less than 0 2mm)
M Medium (less than 66% fine sand and less than 33% coarse sand)
C 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

HR	all hard rocks and stones	**SLST**	soft oolitic or dolimitic limestone
CH	chalk	**FSST**	soft fine grained sandstone
ZR	soft argillaceous or silty rocks	**GH**	gravel with non porous (hard) stones
MSST	soft medium grained sandstone	**GS**	gravel with porous (soft) stones
SI	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 appropiate 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 BLP SITE89B Pit Number 1P

Grid Reference TQ79105040 Average Annual Rainfall 691 mm
Accumulated Temperature 1394 degree days
Field Capacity Level 143 days
Land Use Permanent Grass
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 26	MCL	10YR42 00	4	6	HR					
26 47	MCL	10YR54 00	0	25	HR			FR	M	
47-120	MCL	10YR54 64	0	50	HR			FR	M	

Wetness Grade 1 Wetness Class I
Gleying cm
SPL No SPL

Drought Grade 3A APW 109mm MBW 2 mm
APP 89 mm MBP 15 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Droughtiness

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	TQ79005050	PGR	NE	01			1	1	86	-25	91	-13	3B				DR	3A	I58 See 1P
1P	TQ79105040	PGR					1	1	109	-2	89	-15	3A				DR	3A	I64 Ragstone
2	TQ79105050	PGR	N	01	S25	045	3	3A	86	-25	93	-11	3B				WD	3A	I60 Ragstone
3	TQ79005040	PGR			S30	045	3	3A	106	-5	110	6	3A				WD	3A	I85 Ragstone
4	TQ79105040	PGR					1	1	66	-45	66	-38	3B				DR	3A	I42 See 1P

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL	GLEY	----STONES >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
1	0-25	mcl	10YR42 00						0	0	HR	5							
	25-58	mcl	10YR43 00						0	0	HR	10		M					Imp V hard/dry
1P	0-26	mcl	10YR42 00						4	0	HR	6							
	26-47	mcl	10YR54 00						0	0	HR	25		FR M					V dry/stony
	47-120	mcl	10YR54 64						0	0	HR	50		FR M					I64/roots beyond
2	0-25	mcl	10YR42 00						0	0	HR	5							
	25-45	hcl	25Y 54 00	10YR58 00	C			S	0	0	HR	15		M					V dry/friable
	45-60	c	10YR54 56	75YR58 00	M			S	0	0	HR	5		M			Y		Firm/I Ragstone
3	0-30	mcl	10YR42 00						0	0	HR	5							
	30-45	hcl	10YR54 00	10YR58 00	C			S	0	0	HR	15		M					
	45-85	c	25Y 54 00	05YR58 00	M		00MN00 00	S	0	0	HR	5		M			Y		Imp Ragstone
4	0 25	mcl	10YR42 00						0	0	HR	5							
	25-42	mcl	25Y 64 00						0	0	HR	15		M					Imp Ragstone