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Maidstone Borough Local Plan -
Objectors Sites
Site 89a Land at Warmlake Road,
Chart Sutton, Kent
Agricultural Land Classification
ALC Map and Report
November 1996

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

MAIDSTONE BOROUGH LOCAL PLAN - OBJECTORS SITES
SITE 89A LAND AT WARMLAKE ROAD, CHART SUTTON, KENT

INTRODUCTION

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 3 0 hectares of land between the B2163 Plough-Wents Road and Warmlake Road to the east of Chart Sutton, 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

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 the site was under grass and wholly in agricultural use

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 fieldwork was conducted at an average density of approximately 1 boring per hectare of agricultural land A total of 4 borings and one soil pit were described

7 The agricultural land (3 0ha) at this site has been classified as Subgrade 3a, good quality land on the basis of a soil droughtiness limitation

8 The soils on the site were found to be of a single type They comprise clay loams which overlie slowly permeable clays at depth Within the profile stone contents are variable to a maximum of 25% v/v total chert fragments The combination of stones and restricted rooting in the profile cause a restriction in the available water to plants which given the local climate leads to a Subgrade 3a classification

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 below and were obtained from the published 5km grid datasets using 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 798 504
Altitude	m AOD	105
Accumulated Temperature	day°C	1389
Average Annual Rainfall	mm	689
Field Capacity Days	days	143
Moisture Deficit, Wheat	mm	111
Moisture Deficit Potatoes	mm	103

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 Local climatic factors such as exposure and frost risk, are not believed to significantly affect the site The site is climatically Grade 1

Site

14 The site lies at an altitude of approximately 20m AOD The land is flat overall and therefore there are no slopes of sufficient gradient to affect agricultural land quality

Geology and soils

15 The published geological information for the area (BGS 1974) shows the majority of the site to be underlain by head drift deposits with a narrow band of Hythe Beds along the northern boundary

16 The most recent published soils information for the area (SSEW 1983) shows the entire site to comprise soils of the Marlow Association These are described as being 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) The soils encountered at the site were found to be similar to those described

Agricultural Land Classification

17 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

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

Subgrade 3a

19 Land of good quality extends across the whole site The principal limitation in this area is soil droughtiness

20 The soil at this site was found to be of a single type they are characterised by the soil pit observation 1P This was found to comprise a slightly stony (up to 10% v/v total flint and chert fragments) medium clay loam topsoil passing to a similarly textured though occasionally slightly more stony (up to 15% v/v total flint and chert fragments) upper subsoil The lower subsoil horizons comprise medium clay loam, heavy clay loam and clay textures containing up to 25% v/v total flint and chert fragments These horizons were commonly gleyed and where clay was encountered slowly permeable Some of the profiles were impenetrable to the soil auger due to the stone content The depth to the slowly permeable horizon is such that given the local climate Wetness Class II is applied However soil wetness is not the most significant factor in land quality at this site More importantly the combination of soil textures and stone content of the profiles examined cause the water retaining capability of the soil to be reduced to a level where given the local climatic factors Subgrade 3a is appropriate due to a soil droughtiness limitation which can affect plant growth and yield

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SOURCES OF REFERENCE

British Geological Survey (1974) *Sheet 288 Maidstone Solid and Drift Edition 1 50 000 Scale*
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

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

Soil Survey of England and Wales (1983) *Soils of South East England 1 250 000 Scale*
SSEW Harpenden

Soil Survey of England and Wales (1984) *Soils of South East England Bulletin No 15*
SSEW Harpenden

APPENDIX I

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 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 BLP SITE 89A Pit Number 1P

Grid Reference TQ79875040 Average Annual Rainfall 689 mm
Accumulated Temperature 1389 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- 29	MCL	10YR43 00	0	2	HR					
29 49	MCL	10YR44 00	0	6	HR	F	MDCSAB	FR	M	
49- 61	MCL	25Y 53 00	0	15	HR	C	MDCSAB	FR	M	
61- 90	C	25Y 52 00	0	20	HR	M	WKCSAB	FM	P	

Wetness Grade 2 Wetness Class II
Gleying 49 cm
SPL 61 cm

Drought Grade 3A APW 109mm MBW -2 mm
APP 107mm MBP 4 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	TQ79905050	PGR		45			1	1	079	-32	081	-22	3B				DR	3A	IMP 50
1P	TQ79875040	PGR		49	61		2	2	109	-2	107	4	3A				DR	3A	PIT 80 AUG 90
2	TQ79805040	PGR		35			2	2	100	-11	109	6	3A				DR	3A	IMP 65
3	TQ79905040	PGR		45			1	1	097	-14	107	4	3A				DR	3A	IMP70 1PLOCATN
4	TQ79805030	PGR					1	1	080	-31	080	-23	3B				DR	3A	IMP 50

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES- --- PED COL	ABUN	CONT	COL	GLEY	>2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
1	0-28	mcl	10YR43 00						0	0	HR	10							
	28-45	mcl	10YR53 00	00MN00	00	C			0	0	HR	15		M					
	45-55	hcl	25Y 62 00	10YR58	68	C	00MN00	00 Y	0	0	HR	25		M					IMP STONES 55
1P	0-29	mcl	10YR43 00						0	0	HR	2							
	29-49	mcl	10YR44 00	10YR56	00	F	00MN00	00	0	0	HR	6	MDCSAB	FR M					
	49-61	mcl	25Y 53 00	10YR56	66	C	00MN00	00 Y	0	0	HR	15	MDCSAB	FR M					
	61-90	c	25Y 52 00	75YR58	00	M	00MN00	00 Y	0	0	HR	20	WKCSAB	FM P	Y		Y		PIT 80 IMP AUG 90
2	0-35	mcl	10YR33 43						0	0	HR	1							
	35-65	mcl	10YR53 00	10YR58	00	C		Y	0	0	HR	3		M					IMP STONES 65
3	0-30	mcl	10YR43 00						0	0	HR	5							1P LOCATION
	30-45	mcl	10YR63 00	10YR56	00	F	00MN00	00	0	0	HR	10		M					
	45-60	hcl	25Y 53 00	10YR58	00	C	00MN00	00 Y	0	0	HR	10		M					
	60-70	hcl	25Y 52 53	10YR58	00	M	00MN00	00 Y	0	0	HR	25		M					IMP STONES 70
4	0-28	mcl	10YR43 00						0	0	HR	2							
	28 45	hcl	10YR53 00	00MN00	00	C			0	0	HR	10		M					
	45 50	mcl	10YR53 00						0	0	HR	25		M					IMP STONES 50