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Maidstone Borough Local Plan
Site 95 Land at Coxheath
Agricultural Land Classification
ALC Map and Report
March 1996

Resource Planning Team
Guildford Statutory Group
ADAS Reading

ADAS Reference 2007/028/96
MAFF Reference EL 20/862
LUPU Commission 02430

8 The land at this site has been classified as Subgrade 3a (good quality) on the basis of a soil wetness limitation, sometimes in conjunction with a soil droughtiness limitation Soils consist of very slightly to slightly stony medium clay loam topsoils over slightly to moderately stony permeable medium clay loam upper subsoils These in turn overlie slightly stony to moderately stony slowly permeable clay subsoils This results in imperfect drainage, and this land is limited to Subgrade 3a by a moderate soil wetness limitation Where subsoil stone contents of 30% or more are found moderate soil droughtiness is also a limitation

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 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

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 Other local climatic factors such as exposure and frost risk are also believed not to affect the site The site is climatically Grade 1

Table 2 Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TQ 746 509
Altitude	m AOD	127
Accumulated Temperature	day°C	1365
Average Annual Rainfall	mm	710
Field Capacity Days	days	142
Moisture Deficit Wheat	mm	109
Moisture Deficit, Potatoes	mm	102

Site

14 The agricultural land at this site lies at an altitude in the range of 125-130 m AOD The site rises gently from east to west Nowhere on the site does gradient or microrelief affect the land quality

AGRICULTURAL LAND CLASSIFICATION REPORT

MAIDSTONE BOROUGH LOCAL PLAN
SITE 95 LAND AT COXHEATH

Introduction

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 10 hectares of land at Clockhouse Farm, Heath Road Coxheath in Kent The survey was carried out during March 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 majority of the site was in orchard The part of the site shown as Other Land to the west is a machine storage area

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/Other land	Area (hectares)	% Site Area	% Surveyed Area
3a	9 5	95 0	100 0
Other Land	0 5	5 0	
Total Surveyed Area	9 5		100 0
Total Site Area	10 0	100 0	

7 The fieldwork was conducted at an average density of approximately 1 boring per hectare A total of 12 borings and one soil pit were described

Geology and soils

15 The published geological information for the site (BGS 1978) shows Pleistocene/Recent head material overlying Hythe Beds for the whole site

16 The most detailed published soils information for the site (SSEW 1983) shows the site to comprise soils of the Marlow association These are described as well drained fine loamy over clayey soils Some coarse and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging (SSEW 1983) Soils of this broad type were found across the site

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 has been mapped over the whole site The principal limitations are soil wetness and droughtiness

20 Soils comprise very slightly stony to moderately stony (4-8% hard sandstone >2cm 5-20% total hard sandstone) medium clay loam topsoils These pass to similar but gleyed or slightly gleyed upper subsoils overlying slightly to moderately stony (6-30% total hard sandstone) gleyed and slowly permeable clay horizons to depth The slowly permeable clay normally occurs between 40 cm and 45 cm depth The slowly permeable horizons have the effect of restricting water flow through the soil profile causing drainage to be impeded The depth at which these horizons occur in combination with the local climate means the soils fall into Wetness Class III and subsequently Subgrade 3a, given the workability of the topsoil textures encountered Occasional borings of poorly drained (Wetness Class IV) soils were encountered but these were not sufficiently common to be mapped separately Soil wetness affects plant growth and yield as well as restricting land utilisation in terms of the number of days when machinery cultivations and grazing by livestock can occur without causing structural damage to the soil

21 Some of the clay subsoils also contained up to 30% hard stones This stone content leads to a reduction in plant available water to the extent that given the local climate Subgrade 3a in appropriate onthe basis of soil droughtiness which will affect plant growth and yield

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SOURCES OF REFERENCE

British Geological Survey (1978) *Sheet 288 Maidstone Solid and Drift Edition 1 50 000* 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) *Soils of South East England 1 250 000 Scale* SSEW Harpenden

Soil Survey of England and Wales (1984) Bulletin 15 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 SITE 95 Pit Number 1P

Grid Reference TQ74705090 Average Annual Rainfall 710 mm
Accumulated Temperature 1365 degree days
Field Capacity Level 142 days
Land Use
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	MCL	10YR42 00	8	15	HR					
25- 41	MCL	10YR64 74	0	15	HR	M		FR	M	
41- 60	C	10YR64 63	0	20	HR	M	MDCAB	FM	P	

Wetness Grade 3A Wetness Class III
Gleying 025 cm
SPL 041 cm

Drought Grade 3B APW 076mm MBW -33 mm
APP 081mm MBP -21 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Wetness

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	TQ74505090	ORC		045	045	3	3A	000	0	000	0					WE	3A	
1P	TQ74705090	ORC		025	041	3	3A	076	-33	081	-21	3B				WE	3A	I60 Ragstone
2	TQ74605090	ORC		045	045	3	3A	000	0	000	0					WE	3A	
3	TQ74705090	ORC		030	040	3	3A	076	-33	079	-23	3B				WE	3A	I55 Ragstone
4	TQ74805090	HRT		028		2	2	043	-66	043	-59	4				DR	4	I30 Ragstone
5	TQ74305080	ORC		050	050	2	2	000	0	000	0					WE	2	Border 3A
6	TQ74405080	ORC		025	025	4	3B	000	0	000	0					WE	3B	
7	TQ74505080	ORC		030	045	3	3A	000	0	000	0					WE	3A	
8	TQ74605080	ORC			040	3	3A	000	0	000	0					WE	3A	S1 gleyed 28
9	TQ74705080	ORC			028	3	3A	000	0	000	0					WE	3A	S1 gleyed 28
10	TQ74805080	FRT		028	035	4	3B	096	-13	101	-1	3A				WE	3B	
11	TQ74905080	ORC		028		2	2	066	-43	066	-36	3B				DR	3B	I40 Q 3A
12	TQ74905088	ORC		030		2	2	071	-38	071	-31	3B				DR	3B	I50 Q 3A

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	0-30	mcl	10YR32 00						0	0	HR	5							
	30-45	mcl	10YR63 00	10YR58 00	F				0	0	HR	3		M					
	45-70	c	10YR63 00	05YR56 00	C			Y	0	0	HR	2		P			Y		
1P	0-25	mcl	10YR42 00						8	0	HR	15							
	25-41	mcl	10YR64 74	05YR56 00	M			Y	0	0	HR	15		FR	M				
	41-60	c	10YR64 63	05YR58 00	M		75YR58 00	Y	0	0	HR	20	MDCAB	FM	P		Y		Imp Ragstone
2	0-30	mcl	10YR32 00						0	0	HR	8							
	30-45	mcl	10YR53 00						0	0	HR	8		M					
	45-70	c	10YR63 00	05YR56 00	C			Y	0	0	HR	5		P			Y		
3	0-30	mcl	10YR43 00						6	0	HR	10							
	30-40	mcl	10YR53 00	75YR58 00	C			Y	0	0	HR	15		M					
	40-55	c	10YR64 00	05YR58 00	M			Y	0	0	HR	20		P			Y		Imp Ragstone
4	0-28	mcl	10YR43 00						9	0	HR	20							
	28-30	mcl	10YR64 00	75YR58 00	C			Y	0	0	HR	30		M					Imp Ragtsone
5	0-25	mcl	10YR33 00						0	0	HR	8							
	25-50	mcl	10YR34 00						0	0	HR	8		M					
	50-70	c	10YR63 00	05YR56 00	C			Y	0	0	HR	5		P			Y		
6	0-25	mcl	10YR32 00						0	0	HR	8							
	25-70	c	10YR63 00	05YR58 00	C			Y	0	0	HR	5		P			Y		
7	0-30	mcl	10YR32 00						0	0	HR	8							
	30-45	mcl	10YR56 00	05YR58 00	C			Y	0	0	HR	5		M					
	45-70	c	10YR63 00	05YR58 00	C			Y	0	0	HR	2		P			Y		
8	0-28	mcl	10YR42 00						4	0	HR	10							
	28-40	hcl	10YR54 00	10YR58 00	C			S	0	0	HR	5		M					
	40-55	c	10YR54 56	05YR58 00	C			Y	0	0	HR	10		P			Y		
	55-60	c	10YR54 56	05YR58 00	C			S	0	0	HR	30		P			Y		Imp Ragstone
9	0-28	mcl	10YR42 00						4	0	HR	10							
	28-45	c	10YR54 56	05YR58 00	C			S	0	0	HR	10		P			Y		
	45-50	c	10YR54 56	05YR58 00	C			S	0	0	HR	40		P			Y		Imp Ragstone
10	0-28	mcl	10YR42 00						5	0	HR	12							
	28-35	c	10YR54 64	10YR58 00	C			Y	0	0		0		M					
	35-80	c	10YR54 56	05YR58 00	C			S	0	0		0		P			Y		
11	0-28	mcl	10YR42 00						3	0	HR	10							
	28-40	mcl	10YR53 52	10YR56 00	C			Y	0	0	HR	20		M					
	40-45	scl	10YR53 00	75YR58 00	M			Y	0	0	HR	40		M					Imp Ragtsone
12	0-30	mcl	10YR53 00	75YR58 00	F				7	0	HR	20							
	30-50	mcl	10YR64 00	75YR58 00	C			Y	0	0	HR	15		M					Imp Ragstone