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Maidstone Borough Local Plan
Site 26 Land off Oakapple Lane, Barming
Agricultural Land Classification
ALC Map and Report
August 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

MAIDSTONE BOROUGH LOCAL PLAN
SITE 26 LAND OFF OAKAPPLE LANE, BARMING

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 preparation of the Maidstone Borough Local Plan

1 2 Site 26 comprises 2 7 hectares of land west of the cemetery off Oakapple Lane north of the village of Barming Heath An Agricultural Land Classification (ALC) survey was carried out during August 1994 The survey was undertaken at a detailed level of approximately two borings per hectare of agricultural land surveyed A total of 4 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 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 survey the agricultural land on the site was in permanent pasture used for grazing by horses The areas mapped as urban are in the north of the site a gravel track and in the south of the site disused concrete bunkers The agricultural buildings mapped are horse stables The non agricultural land shown comprises a track and an overgrown area

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

Table 1 Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
3a	2 2	81 5	100 0 (2 2 ha)
Urban	0 1	3 7	
Non agricultural	0 3	11 1	
Agricultural buildings	0 1	3 7	
Total area of site	2 7	100 0	

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 All of the agricultural land surveyed has been classified as Subgrade 3a good quality because of a moderate soil droughtiness limitation Profiles typically comprise medium sandy loam topsoils over medium clay loam or sandy clay loam subsoils which are slightly stony throughout These overlie poorly structured clay at moderate depths causing slightly imperfect drainage This clay becomes increasingly stony with depth The interaction between these soil textures and profile stone contents and local climatic parameters at this site may moderately restrict plant growth and yield due to reduced profile available water

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 (degree days Jan June) 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 The crop adjusted soil moisture deficits at this locality are slightly higher than the regional average High soil moisture deficits increase the likelihood of soil droughtiness limitations

2 4 No local climatic factors such as exposure or frost risk are believed to affect the site

Table 2 Climatic Interpolation

Grid Reference	TQ729554
Altitude (m)	88
Accumulated Temperature (degree days Jan-June)	1407
Average Annual Rainfall (mm)	693
Field Capacity (days)	141
Moisture Deficit Wheat (mm)	111
Moisture Deficit Potatoes (mm)	105
Overall Climatic Grade	1

3 Relief

3 1 The site is flat and lies at approximately 88m AOD

4 Geology and Soil

4 1 British Geological Survey (1976), Sheet 288 shows the entire site to be underlain by Hythe Beds (sandy limestone and calcareous sands)

4 2 Soil Survey of England and Wales (1983) Sheet 6 shows the entire site to comprise soils of the Malling Association These soils are described as 'well drained non calcareous fine loamy soils over limestone at variable 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' (SSEW 1983)

4 3 Detailed field examination found imperfectly drained soils which become heavier textured and increasingly stony with depth

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 are shown on the attached sample point map

Subgrade 3a

5 3 All of the agricultural land surveyed has been classified as Subgrade 3a because of a moderate soil droughtiness limitation Topsoils typically comprise non-calcareous medium sandy loams In the north of the site topsoils are very slightly stony (c 1% total hard sandstone) and in the south of the site are slightly stonier (c 5% hard sandstone >2cm and 10% total hard sandstone by volume) These overlie upper subsoils of varying texture typically medium clay loams medium sandy loams and sandy clay loams These upper subsoils are very slightly to slightly stony (c 3-12 % total hard sandstone by volume) These overlie clay lower subsoils at approximately 40 45 cm which change from being very slightly stony (c 2% total hard sandstone by volume) to moderately stony (c 30% total hard sandstone) at approximately 62 cm depth Due to the very dry conditions at the time of survey some of the borings proved impenetrable below the topsoil and all of the auger borings proved impenetrable between 55 and 80 cm depth However a soil inspection pit (Pit 1) confirmed similar profiles to those described above From this pit it could be seen that the clay lower subsoils are poorly structured Consequently their slowly permeable characteristics results in slight gleying of these lower horizons and such profiles are assigned to Wetness Class III Given the relatively dry prevailing climatic conditions at this site and the sandy textured topsoils this land is subject to only minor soil wetness limitations The overriding limitation is that of soil droughtiness This moderate limitation results from the

interaction between the soil properties (soil textures profile stone contents and subsoil structures) with the local climate The restricted available water for crops in such profiles will tend to reduce the level and consistency of crop yields and give rise to a moderate risk of drought stress for those crops which are grown

ADAS Ref 2007/181/94
MAFF Ref EL 20/328

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1976) Sheet No 288 Maidstone 1 50,000 Series (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) Climatological Data for Agricultural Land Classification

Soil Survey of England and Wales (1983) Sheet 6 Soils of South East England 1 250 000 and accompanying legend

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 religous buildings cemetries 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[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

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

[1]The number of days specified is not necessarily a continuous period

[2] In most years is defined as more than 10 out of 20 years

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

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 LP SITE 26 Pit Number 1P

Grid Reference TQ72805530 Average Annual Rainfall 693 mm
Accumulated Temperature 1407 degree days
Field Capacity Level 141 days
Land Use Permanent Grass
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 22	MSL	10YR43 00	5	10	HR					
22- 41	SCL	75YR56 00	0	12	HR	M	MDCSAB	FM	M	
41- 62	C	75YR54 00	0	2	HR	M	STCAB	VM	P	
62-120	C	75YR54 00	0	30	HR	M		VM	P	

Wetness Grade 2 Wetness Class III
Gleying cm
SPL 041 cm

Drought Grade 3A APW 108mm MBW -3 mm
APP 94 mm MBP 11 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	TQ72885540	PGR			040		3	2	98	-13	103	-2	3A				DR	3A	I80 sl gley40
1P	TQ72805530	PGR			041		3	2	108	3	94	-11	3A				DR	3A	Pit70sl gley41
2	TQ72805530	PGR					1	1	43	68	43	-62	4				DR	3A	Imp28 Re 1P
3	TQ72895530	PGR					1	1	38	-73	38	-67	4				DR	3A	Imp25 Re 1P
4	TQ72875550	PGR	S	01			1	1	82	-29	84	-21	3B				DR	3A	Imp54 Re 1P

				----MOTTLES-----			PED		-- STONES----			STRUCT/	SUBS				
AMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL	GLEY	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC	
1	0 20	msl	10YR43 00						0	0	HR	1							
	20-40	mcl	10YR44 00						0	0	HR	2		M					
	40-65	c	10YR44 00	10YR58 00	C			S	0	0	HR	2		P			Y		Sl gleyed
	65-80	c	75YR56 00	10YR58 00	C			S	0	0	HR	2		P			Y		Sl gleyed
1P	0 22	msl	10YR43 00						5	0	HR	10							
	22-41	scl	75YR56 00	05YR46 00	M				0	0	HR	12	MDCSAB	FM	M				
	41-62	c	75YR54 00	75YR58 00	M		75YR54 00	S	0	0	HR	2	STCAB	VM	P	Y		Y	Sl gleyed
	62-120	c	75YR54 00	75YR58 00	M		75YR54 00	S	0	0	HR	30		VM	P	Y		Y	Sl gley Pit70
2	0-25	msl	10YR43 00						5	0	HR	10							
	25-28	mcl	10YR43 00						0	0	HR	10		M					Imp 28 v dry
3	0 22	msl	10YR43 00						5	0	HR	10							
	22-25	mcl	10YR44 00						0	0	HR	10		M					Imp 25 v dry
4	0-23	msl	10YR43 00						0	0	HR	1						Y	
	23-45	msl	10YR43 44						0	0	HR	3		M				Y	
	45-54	hcl	10YR44 00	00MN00 00	F				0	0	HR	8		M				Y	Imp54dry+stony