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Maidstone Borough Local Plan
Site 19 Land at Bell Farm,
North Street, Barming
Agricultural Land Classification
ALC Map and Report
August 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

MAIDSTONE BOROUGH LOCAL PLAN
SITE 19 LAND AT BELL FARM, NORTH STREET, BARMING

1 Summary

1 1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for 47 sites within the borough of Maidstone in Kent The work forms part of MAFF's statutory input to the preparation of the Maidstone Borough Local Plan

1 2 Site 19 comprises 10 2 hectares of land west of North Street in the village of Barming An Agricultural Land Classification (ALC) survey was carried out during August 1994 The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed A total of 10 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 the Resource Planning Team of the Guildford Statutory Group of ADAS

1 4 At the time of survey the agricultural land on the site was a mixture of bramley orchards and permanent grass The area mapped as urban comprises a house garden and metalled track The area of woodland shown consists of mature deciduous trees

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
2	9 7	95 0	98 0
3b	0 2	2 0	2 0
Urban	0 2	2 0	100 0 (9 9 ha)
Woodland	0 1	1 0	
Total area of site	10 2	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 The majority of agricultural land surveyed has been classified as Grade 2 very good quality, because of a slight soil droughtiness limitation Medium textured topsoils and upper subsoils overlie subsoils which become more sandy with depth The soil profiles are well drained and very slightly to slightly stony throughout The interaction between these soil textures and profile stone contents and local climatic parameters at this site may slightly restrict plant growth and yield due to slightly restricted soil available water Part of the land adjacent to the northern site boundary can be classified as no better than Subgrade 3b due to a significant slope limitation Gradients of 7 5° measured using an optical reading clinometer act to restrict the range of agricultural machinery that may be safely and efficiently operated

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 relatively high in a regional context 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 Interpolations

Grid Reference	TQ724547	TQ722550
Altitude (m)	60	80
Accumulated Temperature (degree days Jan June)	1440	1417
Average Annual Rainfall (mm)	678	682
Field Capacity (days)	139	139
Moisture Deficit Wheat (mm)	115	111
Moisture Deficit Potatoes (mm)	110	106
Overall Climatic Grade	1	1

3 Relief

3 1 The site occupies a gentle hillside falling through gradients of 1-3° from approximately 80m AOD along to the northern site boundary to approximately 62m AOD along the southern site boundary Adjacent to the northern boundary gradients of 7 5° were measured using an optical reading clinometer Such gradients act to impose limitations upon the agricultural land quality by restricting the range of agricultural machinery that may be safely and efficiently operated

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 well drained loamy soils which are very slightly to slightly stony throughout often becoming sandier at 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

Grade 2

5 3 The majority of agricultural land surveyed has been classified as Grade 2 very good quality, because of a slight soil droughtiness limitation Topsoils typically comprise non-calcareous medium clay loams and medium sandy loams These generally overlie medium clay loam subsoils which either continue to depth or become sandier at depth typically sandy clay loams and medium sandy loams Topsoils are very slightly to slightly stony (c 0-4% hard sandstone >2cm and 2 8 total hard sandstone by volume) and similar stone contents generally occur within the well drained subsoils Due to the very dry conditions at the time of survey many of the soil borings within this area proved impenetrable to an auger between 20 and 40 cm depth Consequently a soil inspection pit (Pit 1) was dug to assess subsoil conditions This pit confirmed profile characteristics similar to those where it was possible to auger to depth This land is restricted by a minor soil droughtiness limitation resulting from the interaction between the soil textures and profile stone contents with the relatively dry climate which prevails at this locality The slightly restricted soil available water for crops at this site will tend to reduce the level and consistency of crop yields and give rise to a minor risk of drought stress for those crops which are grown

Subgrade 3b

5 4 A small area of land adjacent to part of the northern site boundary can be classified as no better than Subgrade 3b moderate quality because of a significant slope limitation Gradients of 7 5° measured using an optical reading clinometer act to impose limitations upon the agricultural land quality by restricting the range of agricultural machinery that may be safely and efficiently operated

ADAS Ref 2007/166/94
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 19 Pit Number 1P

Grid Reference TQ72305490 Average Annual Rainfall 678 mm
Accumulated Temperature 1440 degree days
Field Capacity Level 139 days
Land Use
Slope and Aspect 02 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 26	MSL	10YR43 00	2	5	HR					
26- 52	MCL	10YR54 00	0	8	HR		MDCSAB	FR	M	
52- 70	MCL	10YR44 00	0	1	HR		MDCSAB	FR	M	
70- 90	MCL	10YR44 00	0	1	HR		MDCSAB	FR	M	
90-120	SCL	10YR54 00	0	0				FR	M	

Wetness Grade 1 Wetness Class I
Gleying cm
SPL No SPL

Drought Grade 2 APW 147mm MBW 32 mm
APP 109mm MBP -1 mm

FINAL ALC GRADE 2
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	TQ72205500	PGR			080		1	1	151	36	113	3	2				DR	2	
1P	TQ72305490	ORC	S	02			1	1	147	32	109	-1	2				DR	2	PIT80 AUGD120
2	TQ72305500	PGR	S	01			1	1	34	81	34	-76	4				DR	2	IMP 21 RE 1P
3	TQ72405500	PGR	S	01			1	1	61	54	61	49	4				DR	2	IMP 38 RE 1P
4	TQ72305490	PGR	S	01			1	1	33	-82	33	77	4				DR	2	IMP 20 RE 1P
5	TQ72405490	ORC	S	02			1	1	72	-43	72	38	3B				DR	2	SL GLEYED 22
5A	TQ72415490	ORC	S	02			1	1	62	-53	62	48	4				DR	2	SL GLEYED 22
6	TQ72505490	ORC	S	01			1	1	151	36	113	3	2				DR	2	
7	TQ72305480	PGR	S	02			1	1	40	-75	40	70	4				DR	2	IMP 25 RE 1P
8	TQ72405480	PGR	S	03			1	1	154	39	111	1	2				DR	2	
9	TQ72405470	ORC	S	01			1	1	154	39	117	7	2				DR	2	IMPEN 95

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-30	mcl	10YR42 00						1	0	HR	4							
	30-40	mcl	10YR43 00						0	0	HR	5		M					
	40-60	mcl	10YR54 00						0	0	HR	8		M					
	60-80	mcl	10YR54 00						0	0	HR	2		M					
	80-120	mcl	10YR64 00	10YR56 00	C		00MN00 00	Y	0	0		0		M					
1P	0-26	msl	10YR43 00						2	0	HR	5							psd msl hand-mcl
	26-52	mcl	10YR54 00						0	0	HR	8	MDCSAB	FR M					
	52-70	mcl	10YR44 00						0	0	HR	1	MDCSAB	FR M					
	70-90	mcl	10YR44 00						0	0	HR	1	MDCSAB	FR M					psd=mcl hand=hcl
	90 120	scl	10YR54 00						0	0		0		FR M					psd=scl/msl
2	0 19	mcl	10YR43 00						4	0	HR	8						Y	
	19 21	hcl	10YR42 43						0	0	HR	15		M				Y	Impen 21 v dry
3	0-25	mcl	10YR43 00						4	0	HR	8							
	25-38	mcl	10YR43 46						0	0	HR	5		M					Impen 38 v dry
4	0-20	mcl	10YR42 00						4	0	HR	8							Impen 20 v dry
5	0-22	mcl	10YR43 00						3	0	HR	6							
	22-30	scl	75YR54 00	10YR68 00	C			S	0	0	HR	8		M					
	30-45	c	75YR54 00	10YR68 00	C			S	0	0	HR	2		M					Impen 45 v dry
5A	0-22	mcl	10YR43 00						3	0	HR	6							
	22-40	scl	75YR54 00	10YR68 00	C			S	0	0	HR	8		M					Impen 40 v dry
6	0-28	mcl	10YR42 00						3	0	HR	4							
	28 62	mcl	10YR44 00						0	0	HR	4		M					
	62 85	hcl	10YR54 00						0	0	HR	2		M					
	85-120	scl	10YR54 00						0	0	HR	2		M					
7	0-20	mcl	10YR42 00						4	0	HR	8							
	20-25	mcl	10YR43 00						0	0	HR	15		M					Impen 25 v dry
8	0-25	mcl	10YR42 00						1	0	HR	5							
	25-38	mcl	10YR42 00						0	0	HR	8		M					
	38-57	hcl	10YR56 54						0	0	HR	8		M					
	57-72	mcl	10YR56 54						0	0	HR	2		M					
	72-120	msl	10YR56 00						0	0		0		M					
9	0-25	mszl	10YR42 00						0	0	HR	2							
	25 40	mcl	10YR56 54						0	0	HR	2		M					
	40-60	mcl	10YR54 00						0	0	HR	2		M					
	60-80	mcl	10YR54 00						0	0	HR	5		M					
	80-120	mcl	10YR54 00						0	0	HR	2		M					