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**Maidstone Borough Local Plan
Site 51 Land at Gidds Pond,
North of Ware Street /
Bearsted Road, Bearsted
Agricultural Land Classification
ALC Map and Report
August 1994**

AGRICULTURAL LAND CLASSIFICATION REPORT

MAIDSTONE BOROUGH LOCAL PLAN

SITE 51 LAND AT GIDDS POND, NORTH OF WARE STREET / BEARSTED ROAD, BEARSTED

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 Maidstone Borough Local Plan.
- 1.2 Site 51 comprises 8.7 hectares of land to the north east of Bearsted in Kent. An Agricultural Land Classification (ALC) survey was carried out in August 1994. The survey was undertaken at a detailed level. A total of 8 borings and two soil inspection pits were assessed 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 long term limitations 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 was permanent grass used for grazing. The areas shown as Woodland were established deciduous woodland. Non-Agricultural land comprised verges between field borders and tracks. Urban areas include a dwelling, its garden, a workshop and metalled tracks leading to them and the Agricultural Buildings which comprised feed storage and overwintering buildings.
- 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. This map supersedes any previous ALC survey information for this site.

Table 1 Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
2	2.8	32.2	37.8
3b	4.6	52.9	<u>62.2</u>
Woodland	0.4	4.6	100% (7.4ha)
Non Agricultural	0.1	1.1	
Urban	0.7	8.1	
Agricultural Buildings	<u>0.1</u>	<u>1.1</u>	
Total area of Site	8.7ha	100%	

- 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 agricultural land at this site has been classified very good (Grade 2) and moderate quality (Subgrade 3b) Principal limitations include soil droughtiness and slope gradient although soil wetness is equally limiting in some areas of very good quality Soil droughtiness is the overriding limitation over the majority of the site where free draining coarse and fine loamy soils occur This results in a slight to severe risk of drought stress which affects plant growth and yield Occasionally these soils overlie poorly structured clay at moderate depth and lead to a slight restriction in the number of days when stocking and/or cultivations may occur without causing structural damage to the soil The remaining agricultural land is affected by slope gradients of which were measured between 7° and 11° and as such affect the safe and efficient use of certain farm machinery especially that concerned with cultivation

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 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
- 2 4 No local climatic factors such as exposure or frost risk are believed to affect the site However climatic and soil factors interact to influence soil wetness and droughtiness limitations

Table 2 Climatic Interpolations

Grid Reference	TQ785571	TQ786569
Altitude (m AOD)	60	65
Accumulated Temperature (°days Jan -June)	1437	1432
Average Annual Rainfall (mm)	691	697
Field Capacity Days	142	143
Moisture deficit wheat (mm)	114	114
Moisture deficit potatoes (mm)	109	108
Overall Climatic Grade	1	1

3 Relief

- 3 1 The site lies between 60 and 70m AOD. It rises from the south and north to a summit around the centre of the site. Within the site there are areas where the gradient is sufficient to restrict land quality to Subgrade 3b on the basis of slope gradients between 7° and 11° measured using an optical reading clinometer.

4 Geology and Soils

- 4 1 The published geological information (BGS 1976) shows the majority of the site to be underlain by Cretaceous Folkestone Beds. Towards the north of the site a small area is shown as being underlain by Cretaceous Gault Clay. In the extreme east and west of the site head brickearth is mapped as a drift deposit with alluvium also as drift in a band from north to south between the brickearth and the Folkestone beds towards the west.
- 4 2 The published soils information (SSEW 1980) shows the site to be underlain by Soil Unit 64 argillic brown earths comprising the Barming Bearsted and Hothfield series. These are briefly described as freely draining loamy soils over Lower Greensand beds associated with coarse loamy soil and sandy podzols in Folkestone Beds. Soils over the site were typically similar to the description above the majority being coarse loamy and freely drained. Occasionally clay was encountered at moderate depth this affecting the drainage of the land towards the north of the site.

5 Agricultural Land Classification

- 5 1 Paragraph 1.5 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 Land of very good quality has been mapped towards the north and south of the site. The principal limitation is soil droughtiness although soil wetness is equally limiting in the area mapped towards the north of the site. In this section of the site profiles are typified by the pit observation 2p (see Appendix III). Here a very slightly stony (c 2% sandstone fragments) medium clay loam or medium sandy loam topsoil overlies stoneless similarly textured upper subsoils. This passes in the lower subsoil to a slightly stony (c 10% v/v sandstone fragments) poorly structured gleyed and slowly permeable clay lower subsoil horizon to depth. This may slightly impede drainage to the extent that Wetness Class II (see Appendix II) may be appropriate. Subsequently Grade 2 is applied when the topsoil workability class is taken into account leading to a slight restriction in the number of days when cultivations and/or stocking are possible without causing structural damage.

to the soil. Within local climatic parameters a profile of this nature also falls into Grade 2 on the basis of soil droughtiness such that there is a slight risk of drought stress affecting plant growth and yield.

The area of Grade 2 mapped towards the south of the site is limited by soil droughtiness alone. Profiles in this area comprise a very slightly stony (c 1-2% v/v sandstone fragments) medium sandy loam topsoil overlying a similar upper subsoil. This passes to variably textured stone free lower subsoils. Textures encountered included clay loams, sandy clay loams, clay, sandy loams or sand. In common with profiles towards the north of the site, soils of this nature are likely to slightly affect plant growth and yield due to reduced profile available water and the minor droughtiness limitation which this causes.

Subgrade 3b

- 5.4 Land of moderate quality is shown for the majority of the agricultural land at this site and is located towards the centre of the site. Principal limitations include soil droughtiness and slope gradient. Where soil droughtiness is the principal limitation, profiles are typified by the pit observation 1p (see Appendix III) and typically comprise stoneless or very slightly stony (c 2-3% v/v sandstone fragments) medium sandy loam topsoils over a stoneless or very slightly stony (c 2% v/v sandstone fragments) loamy medium sand upper subsoil horizon. This passes at between 47 and 105cm to a stoneless medium sand lower subsoil horizon to depth. Free draining profiles such as these within the prevalent local climatic parameters result in land which is severely restricted by soil droughtiness. Therefore there is a severe risk of drought stress affecting plant growth and yield in most years. Towards the north and south of the unit and across the separate area included in this grade towards the south of the site, land quality is limited by slope. Gradients were measured between 7° and 11° using an optical reading clinometer. The effect of this is to reduce the efficiency of and affect safety in the use of certain types of farm machinery, primarily those concerned with cultivation, such that this area may be graded no higher than Subgrade 3b.

ADAS Ref 2007/182/94
MAFF Ref EL20/328

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1976) Sheet 288 Maidstone 1 50 000 Solid & 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) Climatic datasets for Agricultural Land Classification

Soil Survey of England and Wales (1980) Soils of Kent Bulletin No 15 Map scale 1 250 000

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 (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.

Urban

Built up or hard uses with relatively little potential for a return to agriculture including housing industry commerce education transport religious buildings cemeteries 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 (e.g. 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 e.g. 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

DEFINITION OF SOIL WETNESS CLASS

Wetness Class I

The soil profile is not wet within 70 cm depth for more than 30 days in most years

Wetness Class 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 180 days but only wet within 40 cm depth for 31-90 days in most years

Wetness Class 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

Wetness Class 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

Wetness Class V

The soil profile is wet within 40 cm depth for 211-335 days in most years

Wetness Class VI

The soil profile is wet within 40 cm depth for more than 335 days in most years

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents

Sample Point Map

Soil Abbreviations - explanatory note

Database Printout - soil pit information

Database Printout - boring level information

Database Printout - horizon level information

SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a database. This has commonly used notations and abbreviations as set out below.

Boring Header Information

- 1 **GRID REF** national 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 measured by a hand held optical clinometer
- 4 **GLEYSPL** Depth in cm to gleying or slowly permeable layers
- 5 **AP (WHEAT/POTS)** Crop-adjusted available water capacity
- 6 **MB (WHEAT/POTS)** Moisture Balance
- 7 **DRT** Best grade according to soil droughtiness
- 8 If any of the following factors are considered significant an entry of 'Y' will be entered in the relevant column:

MREL Microrelief limitation	FLOOD Flood risk	EROSN Soil erosion risk
EXP Exposure limitation	FROST Frost	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	ST Topsoil Stones
CH Chemical	WE Wetness	WK Workability	
DR Drought	ER Erosion Risk	WD Soil Wetness/Droughtiness	

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	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 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
- 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

- 6 **STONE LITH** 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	GH gravel with non porous (hard) stones
SI soft weathered igneous/metamorphic rock	

Stone contents (>2cm >6cm and total) are given in percentages (by volume)

- 7 **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

- 8 **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

- 9 **SUBS STR** Subsoil structural condition recorded for the purpose of calculating profile droughtiness **G** good **M** moderate **P** poor

- 10 **POR** Soil porosity If a soil horizon has less than 0.5% biopores >0.5 mm a 'Y' will appear in this column

- 11 **IMP** If the profile is impenetrable a 'Y' will appear in this column at the appropriate horizon

- 12 **SPL** Slowly permeable layer If the soil horizon is slowly permeable a 'Y' will appear in this column

- 13 **CALC** If the soil horizon is calcareous a 'Y' will appear in this column

- 14 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 51 Pit Number 1P

Grid Reference TQ78505690 Average Annual Rainfall 697 mm
 Accumulated Temperature 1432 degree days
 Field Capacity Level 143 days
 Land Use Permanent Grass
 Slope and Aspect 03 degrees SW

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	MSL	10YR42 00	0	3	HR					
25- 47	LMS	10YR56 52	0	0		C	MDCSAB	FM	M	
47-120	MS	10YR82 00	0	0		C	WKMSAB	VF	M	

Wetness Grade 1 Wetness Class I
 Gleying 47 cm
 SPL cm

Drought Grade 3B APW 087mm MBW -27 mm
 APP 070mm MBP -38 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Droughtiness

SOIL PIT DESCRIPTION

Site Name MAIDSTONE LP SITE 51 Pit Number 2P

Grid Reference TQ78605710 Average Annual Rainfall 697 mm
 Accumulated Temperature 1432 degree days
 Field Capacity Level 143 days
 Land Use Permanent Grass
 Slope and Aspect 01 degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0-28	MCL	10YR43 00	0	2	HR					
28-64	MCL	10YR54 00	0	0			MDCSAB	FM	M	
64-120	C	25Y 62 00	0	10	HR	M	MDCAB	FM	P	

Wetness Grade 2 Wetness Class II
 Gleying 64 cm
 SPL 64 cm

Drought Grade 2 APW 134mm MBW 20 mm
 APP 114mm MBP 6 mm

FINAL ALC GRADE 2
 MAIN LIMITATION Soil Wetness/Droughtiness

SAMPLE NO	GRID REF	USE	ASPECT	--WETNESS--		-WHEAT		-POTS-		M REL		EROSN	FROST	CHEM	ALC	COMMENTS	
				GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST		LIMIT
1	TQ78505710	PGR	N	02	95 95	1	1	143	29	109	1	2			DR	2	SEE 2P
1P	TQ78505690	PGR	SW	03	47	1	1	087	27	070	-38	3B			DR	3B	PIT 90 AUG 120
2	TQ78605710	PGR	N	01	65 65	2	2	115	1	117	9	3A			WD	2	IMP 85 SEE 2P
2P	TQ78605710	PGR	N	01	64 64	2	2	134	20	114	6	2			WD	2	PIT 73 AUG 85
3	TQ78505700	PGR	W	05		1	1	088	-26	070	-38	3B			DR	3B	SEE 1P
4	TQ78605710	PGR	N	06		1	1	093	-21	077	-31	3B			DR	3B	SEE 1P
5	TQ78405690	PGR	W	03	30 50	3	2	132	18	109	1	2			WD	2	SEE 2P
6	TQ78505690	PGR	SW	03	30	2	1	078	-36	078	-30	3B			DR	3B	IMP 80 SEE 1P
7	TQ78605690	PGR	S	05		1	1	145	31	110	2	2			DR	2	
10	TQ78505674	PGR	W	01		1	1	153	39	109	1	2			DR	2	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED	----STONES----			STRUCT/	SUBS	SPL	CALC		
				COL	ABUN	CONT		COL	GLE	>2					>6	LITH
1	0-35	ms1	10YR43 00					0	0	HR	5					
	35-60	ms1	10YR54 56					0	0		0	M				
	60-95	mc1	25Y 53 00	10YR46 00	F			0	0		0	M		SANDY		
	95-120	c	25Y 52 00	75YR58 00	C		00MN00	00	Y	0	0	0	P	Y		
1P	0-25	ms1	10YR42 00					0	0	HR	3					
	25-47	lms	10YR56 52	00FE00 00	C			0	0		0	MDCSAB	FM	M		
	47-120	ms	10YR82 00	75YR58 00	C		00FE00	00	Y	0	0	0	WKMSAB	VF	M	
2	0-35	mc1	10YR43 00					0	0		0			SANDY		
	35-65	mc1	10YR54 00					0	0		0	M		SANDY		
	65-85	c	25Y 62 00	10YR58 68	M			Y	0	0	HR	5	P	Y	IMP STONES 85	
2P	0-28	mc1	10YR43 00					0	0	HR	2			SANDY		
	28-64	mc1	10YR54 00					0	0		0	MDCSAB	FM	M	Y	
	64-120	c	25Y 62 00	10YR58 68	M			Y	0	0	HR	10	MDCAB	FM	P	Y
3	0-20	ms1	10YR42 00					0	0		0					
	20-50	lms	10YR54 00					0	0		0	M				
	50-90	lms	10YR53 00					0	0		0	M				
	90-105	lms	10YR54 56					0	0		0	M				
	105-120	ms	10YR68 00					0	0		0	M				
4	0-30	ms1	10YR42 00					0	0	HR	2					
	30-47	lms	10YR44 00					0	0	HR	2	M				
	47-60	lms	10YR66 00					0	0		0	M				
	60-120	ms	25Y 78 63					0	0		0	M				
5	0-30	ms1	10YR42 00					0	0	HR	1					
	30-50	mc1	10YR53 00	10YR56 00	C			Y	0	0	0	M				
	50-120	c	25Y 52 00	10YR56 00	C			Y	0	0	0	P	Y			
6	0-30	ms1	10YR42 00					0	0		0					
	30-60	lms	10YR64 00	10YR58 00	C			Y	0	0	0	M				
	60-80	ms	10YR81 00					0	0		0	M		IMP SAND 80		
7	0-30	ms1	10YR43 00					0	0	HR	1					
	30-56	ms1	10YR54 00					0	0	HR	1	M				
	56-85	ms1	10YR44 00	10YR63 00	F			0	0		0	M				
	85-105	mc1	10YR44 00	10YR63 00	F			0	0		0	M				
	105-120	ms	10YR76 00					0	0		0	M				
10	0-30	ms1	10YR43 00					0	0	HR	2					
	30-50	ms1	10YR46 00					0	0	HR	2	M				
	50-80	sc1	10YR56 00					0	0		0	M				
	80-120	ms1	10YR56 00					0	0		0	M				