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Maidstone Borough Local Plan
Site 87 Land Adjacent to All Saints Church,
Hollingbourne, Kent
Agricultural Land Classification
ALC Map and Report
May 1995

AGRICULTURAL LAND CLASSIFICATION, REPORT

MAIDSTONE BOROUGH LOCAL PLAN
SITE 87 LAND ADJACENT TO ALL SAINTS CHURCH, HOLLINGBOURNE

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 87 comprises 5 6 hectares of land to the south west of Hollingbourne in Kent An Agricultural Land Classification (ALC) survey was carried out in April 1995 The survey was undertaken at a detailed level of approximately one boring per hectare A total of 6 borings and one soil inspection pit were assessed according to 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 the survey the agricultural land was in set aside The Non-agricultural area shown is an area of scrub fenced from the remainder of the site The Urban area shown includes agricultural buildings that are now in light industrial use as vehicle repair workshops and a metalled footpath that bisecting the site

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 Area
2	1 3	23 2	27 7
3a	3 4	60 7	72 3
Non-agricultural	0 2	3 6	100% (4 7ha)
Urban	0 7	12 5	
Total area of Site	5 6ha	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 as Grade 2 (very good quality) and Subgrade 3a (good quality) Principal limitations include soil droughtiness and topsoil stoniness The area of Grade 2 land comprises slightly stony deep fine loamy soils containing from 5 to 10% flints over 2cm in diameter in the topsoil The topsoil stone content acts as an impediment to cultivation harvesting and crop growth as well as increasing production costs by causing extra wear and tear to implements and tyres Where Subgrade 3a is mapped flinty chalky drift underlies fine loamy soils at moderate depths The chalk and flint content of the soil cause rooting depth to be restricted and reduce profile available water leading to a moderate risk of drought stress

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 Interpolation

Grid Reference	TQ841549
Altitude (m AOD)	75
Accumulated Temperature (day degrees C Jan June)	1420
Average Annual Rainfall (mm)	734
Field Capacity Days	154
Moisture deficit wheat (mm)	109
Moisture deficit potatoes (mm)	101
Overall Climatic Grade	1

3 Relief

3 1 The site lies at approximately 75m AOD The site slopes slightly from north to south Nowhere in this area does relief or gradient affect agricultural land quality

4 Geology and Soils

4 1 The published geological information (BGS 1976) shows the site to be underlain by head drift deposits overlying Chalk

4 2 The most recent published soils information (SSEW 1983) shows the site to be underlain by soils of the Coombe 2 Association The legend accompanying the map describes these as well drained calcareous fine silty soils over chalk or chalk rubble Shallow in places especially on brows and steeper slopes (SSEW 1983) The soils encountered at this site were of this broad type

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 east of the site Principal limitations include soil droughtiness and topsoil stoniness Soils in this area were found to be free draining (Wetness Class I) and to comprise a slightly stony (8-9% v/v total flints including 6% >2cm) calcareous medium silty clay loam topsoil This passes to a very slightly stony (up to 5% v/v total flints) medium silty clay loam upper subsoil overlying a slightly stony and/or chalky (up to 15% v/v total chalk fragments and/or flints) heavy silty clay loam This became impenetrable to the soil auger between 90 and 110cm due to stones although it has been assumed that the soil resource extends beyond this to depth (120cm) In the local climate soils of this nature are occasionally very slightly limited in terms of available water in the profile This slightly increases the likelihood of drought stress affecting plant growth and yield The percentage by volume of stones greater than 2cm diameter in the topsoil also affects the classification in this area By increasing the wear and tear on cultivation equipment and impeding cultivation production costs are raised to the extent that Grade 2 is appropriate

Subgrade 3a

5 4 Land of good quality has been mapped across the west of the site The principal limitation is soil droughtiness The well drained (Wetness Class I) profiles typically comprise a slightly stony (up to 10% v/v flints including up to 8%>2cm) calcareous medium silty clay loam topsoil This passes to a slightly stony (10% v/v total flints) medium silty clay loam upper subsoil horizon Beneath this the soils become very chalky and moderately stony containing up to 50% v/v chalk fragments and up to 25% v/v flints in a medium and heavy silty clay loam matrix The compacted chalk rubble eventually restricts plant rooting depth which has the effect of reducing plant available water In the pit observation 1p (see Appendix

III) roots were observed to penetrate to 83cm where the volume of chalk rubble reached 50% Given the local climatic data moisture balances on these profiles fall into the range that are assigned to Subgrade 3a Soil droughtiness has the effect of reducing plant growth and yields due to drought stress In this case there is a moderate risk of this occurring

ADAS Ref 2007/092/95
MAFF Ref EL20/862

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1976) Sheet 288 Maidstone Solid & Drift Edition 1 50 000

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) Bulletin No 9 Soils of Kent

Soil Survey of England and Wales (1983) Sheet No 6 Soils of South-East England 1 250 000 and Accompanying Legend

Soil Survey of England and Wales (1984) Bulletin No 15 Soils and their use in South-East England

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 applv

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 87 Pit Number 1P

Grid Reference TQ84205500 Average Annual Rainfall 734 mm
Accumulated Temperature 1420 degree days
Field Capacity Level 154 days
Land Use Set-aside
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 24	MZCL	10YR41 42	6	7	HR					Y
24 47	MZCL	10YR44 00	0	10	HR		MDCSAB	FR	M	Y
47 56	MZCL	10YR54 64	0	10	HR				M	Y
56 83	MZCL	10YR64 81	0	18	HR				M	Y
83- 90	MZCL	10YR64 81	0	25	HR				M	Y

Wetness Grade 1 Wetness Class I
Gleying cm
SPL cm

Drought Grade 3A APW 108mm MBW 1 mm
APP 108mm MBP 7 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Droughtiness

AMPLE 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	TQ84205510	SAS				1	1	087	-22	090	-11	3B				DR	3A	IMP FLINTS 55
1P	TQ84205500	SAS				1	1	108	-1	108	7	3A				DR	3A	PIT90 ROOTS83
2	TQ84105500	SAS		70		1	1	157	48	124	23	1					1	QSPL 70 GDE 2
3	TQ84205500	SAS				1	1	129	20	118	17	2				DR	2	IMP FLINTS 95
4	TQ84305500	SAS				1	1	143	34	118	17	1				TS	2	IMP FLINTS 110
5	TQ84105490	SAS				1	1	084	-25	084	17	3B				DR	3B	IMP FLINTS 50
6	TQ84205490	SAS				1	1	120	11	115	14	2				TS	2	IMP FLINTS 90

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	CALC	
1	0-30	mzcl	10YR42 00						5	2	HR	10					Y		
	30 55	mzcl	10YR44 54						0	0	CH	25		M			Y		IMP FLINTS 55
1P	0-24	mzcl	10YR41 42						6	2	HR	7					Y		
	24-47	mzcl	10YR44 00						0	0	HR	10	MDCSAB FR	M			Y		
	47-56	mzcl	10YR54 64						0	0	HR	10		M			Y		+20% CHALK
	56-83	mzcl	10YR64 81						0	0	HR	18		M			Y		+30% CHALK
	83-90	mzcl	10YR64 81						0	0	HR	25		M		Y	Y		+50% CH IMPTOROOTS
2	0-35	mzcl	10YR41 00						2	0	HR	3					Y		
	35-70	hzcl	10YR41 42						0	0	HR	2		M			Y		
	70-110	hzcl	10YR42 52	10YR56 00	C			Y	0	0	HR	5		M			Y		
	110-120	hzcl	10YR54 64					Y	0	0	CH	20		M			Y		
3	0 30	mzcl	10YR42 41						6	2	HR	7					Y		
	30 50	mzcl	10YR44 00						0	0	HR	3		M			Y		
	50 65	mzcl	10YR44 54						0	0	CH	30		M			Y		
	65 95	mzcl	10YR64 81						0	0	CH	40		M			Y		IMP FLINTS 95
4	0 30	mzcl	10YR43 00						6	2	HR	8					Y		
	30-65	hzcl	10YR54 00						0	0	HR	3		M			Y		
	65-110	hzcl	10YR64 00						0	0	CH	15		M			Y		IMP FLINTS 110
5	0-30	mzcl	10YR43 00						8	2	HR	10					Y		
	30-35	mzcl	10YR43 00						0	0	HR	5		M			Y		
	35-50	mzcl	10YR54 64						0	0	CH	15		M			Y		IMP FLINTS 50
6	0-25	mzcl	10YR43 00						7	2	HR	9					Y		
	25-50	mzcl	10YR44 00						0	0	HR	5		M			Y		
	50-90	hzcl	10YR44 46						0	0	HR	10		M			Y		IMP FLINTS 90