Agricultural Land Classification
Land Adjoining The A253
Minister
Thanet

AGRICULTURAL LAND CLASSIFICATION

LAND ADJOINING THE A253, MINSTER, THANET

1 INTRODUCTION

1 1 In February 1993 an Agricultural Land Classification (ALC) survey was carried out on 6 4 hectares of land to the north of Minster east Kent ADAS was commissioned by MAFF to determine the quality of land affected by the proposed change of land-use to a lorry park

1 2 The survey work was carried out at a detailed level of approximately one boring per hectare A total of 5 auger borings and two soil inspection pits 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 and chemical characteristics impose long term limitations on its agricultural use Information from a previous survey carried out in 1988 prior to the revision of the ALC system has been used to assist in the grading of the site where appropriate

1 3 The distribution of grades is shown on the attached ALC map and the area and extent is given below The map has been drawn at a scale of 1 2500 It is accurate at this scale but any enlargement may be misleading This map supersedes any previous ALC information for this site

Distribution of Grades and Sub-grades

Grade	Area (ha)	% total agricultural land
2	4 8	75
3a	1 6	25
Total area of site	6 4 ha	

1 4 Appendix 1 gives a general description of the grades and sub-grades identified by the survey

1 5 Land on the site is very good to good quality it being limited slightly by soil droughtiness Well drained medium textured silty soils rest over deposits of Upper Chalk at variable depths Depending upon depth of soil over chalk the land is assigned to grades 2 or 3a The climatic regime at this locality is particularly warm and dry thereby combining with the soil characteristics to give rise to a slight risk of droughtiness

2 CLIMATE

2 1 Climatic criteria are considered first when classifying land since 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 Estimates of climatic variables relevant to the assessment of land quality were obtained by interpolation from a 5 km grid point dataset (Met Office 1989) for a representative location in the survey area

Grid Reference	TR 312 656
Altitude (m AOD)	45
Accumulated Temperature (°days Jan-June)	1439
Average Annual Rainfall (mm)	613
Field Capacity Days	123
Moisture deficit wheat (mm)	123
Moisture deficit potatoes (mm)	120

2 3 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall a measure of overall wetness and accumulated temperature as a measure of the relative warmth of a locality In this instance climate does not represent an overall limitation to agricultural land quality In addition no local climatic factors such as exposure or frost risk are significant

2 4 However climatic factors specifically field capacity days and soil moisture deficits do interact with soil factors to influence soil wetness and droughtiness limitations At this locality the climate is dry in both a regional and national context The low number of field capacity days and the correspondingly high moisture deficits will increase the risk of soil droughtiness although problems associated with soil wetness and workability are less likely to occur

3 RELIEF

3 1 The site lies at an altitude of approximately 45 m AOD and is generally flat Nowhere on the site do gradient or altitude impose a limitation on agricultural land quality

4 GEOLOGY AND SOILS

4 1 British Geological Survey (1980) Sheet 274 Ramsgate shows the entire site to be underlain by Upper Chalk deposits

4 2 Soil Survey of England and Wales (1983) Sheet 6 Soils of South-East England shows the site to comprise soils of the Coombe 1 association These are described as 'fine silty typical brown calcareous earths in which the brown subsoil merges into thick flinty chalky drift" (SSEW 1984)

4 3 Detailed field examination of the soils on the site broadly confirms the presence of one soil type which comprises medium silty textures is calcareous throughout and rests over chalk at variable depths

5 AGRICULTURAL LAND CLASSIFICATION

5 1 The ALC grading of this site is primarily determined by the interaction of soil factors and climatic parameters giving rise to a slight soil droughtiness limitation such that grades 2 and 3a are appropriate

5 2 Grade 2

Land of this quality represents the majority of the site and is subject to a minor soil droughtiness limitation Profiles typically comprise calcareous silt loam topsoils which may be very slightly stony (ie 1% flints by volume) Topsoils overlie similar textures or medium silty clay loam subsoils which tend to become more chalky with depth sometimes passing to pure chalk below about 75 cm but more usually passing to chalky drift
Soils are well drained wetness class I but due to chalk or chalk stones in the profile at depth their reserves of available water for plant growth are slightly restricted
However this very good quality agricultural land is still capable of supporting a wide range of agricultural and horticultural crops

5 3 Grade 3a

Good quality land has been mapped across two areas within the site surveyed its agricultural use being limited by a slight risk of soil droughtiness
Profiles are similar to those described in section 5 2 above the difference being that deposits of Upper Chalk were encountered at shallower depth in the profile Calcareous silt loam topsoils rest directly over similar textures or silty clay loam in the upper subsoil and pass to chalk between about 45 and 52 cm depth These well drained soils (wetness class I) have only moderate reserves of available water for plant growth as a result of relatively shallow soil depth over chalk Subgrade 3a has therefore been assigned on the basis of a slight soil droughtiness limitation
The land is capable of consistently producing moderate yields of a wide range of crops

February 1993
ADAS Ref 2012/011/93
MAFF Ref EL 20/00207

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

- British Geological Survey (1980) Sheet 274 Ramsgate

- 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 (1983) Sheet 6 Soils of South-East England

- Soil Survey of England and Wales (1984) Bulletin 15 Soils and their use in South-East England

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 on the 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

Grade 3 Good To Moderate Quality Agricultural Land

Land with moderate limitations which affect the choice of crops 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

Sub-grade 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

Sub-grade 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 very 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 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/airfields Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply

Woodland

Includes commercial and non-commercial 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

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 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 HRT Horticultural Crops PGR Permanent Pasture LEY Ley Grass RGR Rough Grazing
SCR Scrub CFW Coniferous Woodland DCW Deciduous Woodland HTH Heathland BOG Bog or Marsh
FLW Fallow PLO Ploughed SAS Set aside OTH Other

3 GRDNT Gradient as measured by a hand held optical clinometer

4 GLEY/SPL 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 CH Chemical WE Wetness WK Workability
DR Drought ER Soil Erosion Risk WD Combined 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
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 MSST soft medium or coarse grained sandstone
SI soft weathered igneous or metamorphic SLST soft oolitic or dolomitic limestone
FSST soft fine grained sandstone ZR soft argillaceous or silty rocks CH chalk
GH gravel with non porous (hard) stones GS gravel with porous (soft) stones

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 appropiate 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 LAND AT MINSTER KENT Pit Number 1P

Grid Reference TR31106570

Average Annual Rainfall	613 mm
Accumulated Temperature	1439 degree days
Field Capacity Level	123 days
Land Use	Bare Soil
Slope and Aspect	01 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 32	ZL	10YR43 00	0	1		
32- 60	MZCL	10YR44 54	0	1		WKCSAB
60- 70	MZCL	10YR54 00	0	20		MDCSAB
70-110	CH		0	0		

Wetness Grade 1

Wetness Class	I
Gleying	cm
SPL	No SPL

Drought Grade 2

APW	151mm	MBW	28 mm
APP	136mm	MBP	16 mm

FINAL ALC GRADE 2

MAIN LIMITATION Droughtiness

SOIL PIT DESCRIPTION

Site Name LAND AT MINSTER KENT Pit Number 2P

Grid Reference TR31106550

Average Annual Rainfall	613 mm
Accumulated Temperature	1439 degree days
Field Capacity Level	123 days
Land Use	Bare Soil
Slope and Aspect	01 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 32	ZL	10YR42 00	0	0		
32- 45	ZL	10YR43 00	0	15		MDCSAB
45- 65	CH		0	0		

Wetness Grade	1	Wetness Class		I	
		Gleying			cm
		SPL		No SPL	
Drought Grade	3A	APW	115mm	MBW	-8 mm
		APP	120mm	MBP	0 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	TR31106570	PLO	S	01			1	1	169	46	136	16	1					1	IMP 80
1P	TR31106570	PLO	S	01			1	1	151	28	136	16	2				DR	2	
2	TR31106560	PLO	S	01			1	1	114	-9	119	-1	3A				DR	3A	
2P	TR31106550	PLO	S	01			1	1	115	-8	120	0	3A				DR	3A	
3	TR31256557	PLO	S	01			1	1	191	68	137	17	1					1	
4	TR31376556	PLO	S	01			1	1	149	26	137	17	2				DR	2	
5	TR31106550	PLO	S	01			1	1	116	-7	121	1	3A				DR	3A	

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	POR	IMP	SPL	CALC	
1	0-30	zl	10YR43 00						0	0	HR	1					Y		
	30-50	mzcl	10YR44 54						0	0		0		M			Y		
	50-60	mzcl	10YR44 54						0	0	CH	2		M			Y		
	60-70	mzcl	10YR44 54						0	0	CH	10		M			Y		
	70-120	mzcl	10YR74 00						0	0	CH	20		M			Y		Chalky drift
1P	0-32	zl	10YR43 00						0	0	HR	1					Y		
	32-60	mzcl	10YR44 54						0	0	HR	1	WKCSAB FR	M			Y		
	60-70	mzcl	10YR54 00						0	0	CH	20	MDCSAB FM	M			Y		
	70-110	ch							0	0		0		M			Y		Rooting to 110
2	0-32	zl	10YR42 00						0	0	HR	1					Y		
	32-40	mzcl	10YR43 00						0	0		0		M			Y		
	40-52	mzcl	10YR43 00						0	0	CH	70		M			Y		
	52-72	ch							0	0		0		M			Y		Rooting to 72
2P	0-32	zl	10YR42 00						0	0		0					Y		
	32 45	zl	10YR43 00						0	0	CH	15	MDCSAB FR	M			Y		
	45-65	ch							0	0		0		M			Y		Rooting to 65
3	0-30	zl	10YR42 00						0	0	HR	2					Y		
	30-65	mzcl	10YR54 00						0	0	CH	5		M			Y		
	65-95	zl	10YR74 00						0	0	CH	2		M			Y		
	95-120	zl	10YR74 00						0	0	CH	10		M			Y		
4	0-32	zl	10YR43 00						0	0	HR	1					Y		
	32-70	mzcl	10YR54 00						0	0	CH	2		M			Y		
	70-78	zl	10YR64 74						0	0	CH	5		M			Y		
	78-100	ch							0	0		0		M			Y		Rooting to 100
5	0-32	zl	10YR42 00						0	0	HR	2					Y		
	32-40	zl	10YR43 00						0	0		0		M			Y		
	40-47	zl	10YR43 00						0	0	CH	50		M			Y		
	47-67	ch							0	0		0		M			Y		Rooting to 67