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ARUN DISTRICT LOCAL PLAN-OBJECTOR SITES
Land At Kidnash Farm, Westergate, West Sussex
(Objector Site 10204 (ii))

Agricultural Land Classification
ALC Map and Report

July 1998

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

ARUN DISTRICT LOCAL PLAN - OBJECTOR SITES
LAND AT KIDNASH FARM, WESTERGATE, WEST SUSSEX
(OBJECTOR SITE 10204 (ii))

INTRODUCTION

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 3 9 ha of land at Kidnash Farm to the east of Hook Lane in Westergate West Sussex The survey was carried out during July 1998

2 The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)[1] on behalf of the Ministry of Agriculture Fisheries and Food (MAFF) in connection with its statutory input to the Arun District Local Plan This survey supersedes any previous ALC information for this land

3 The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF 1988) A description of the ALC grades and subgrades is given in Appendix I

4 At the time of survey the agricultural land was in a combination of permanent grass and set-aside The area shown as Agricultural Land Not Surveyed is a field to which access was not possible within the survey timescale The areas shown as Other Land are dense woodland to the south east of the site and a garden to the south west

SUMMARY

5 The findings of the survey are shown on the enclosed ALC map The map has been drawn at a scale of 1 10 000 It is accurate at this scale but any enlargement would be misleading

6 The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
2 Other land Agricultural Land Not Surveyed	3 0 0 6 0 3	100	76 9 15 4 7 7
Total surveyed area Total site area	3 0 3 9	100 100	76 9 100

[1] FRCA is an executive agency of MAFF and the Welsh Office

7 The fieldwork was conducted at an average density of 1 boring per hectare of agricultural land In total 4 borings and one soil pit were described

8 The agricultural land surveyed has been classified as Grade 2 (very good quality) The limitations to land quality include a combination of soil droughtiness and soil wetness

9 Across the surveyed area the soils comprise a medium silty clay loam topsoil overlying either similar or heavier subsoils The majority of the subsoils were observed to be affected by fluctuating groundwater The combination of these soil properties and the prevailing climate results in both slight soil wetness in winter and soil droughtiness in summer these may adversely affect the quality and consistency of crop yields

FACTORS INFLUENCING ALC GRADE

Climate

10 Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics

11 The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met Office 1989)

Table 2 Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SU 936 047
Altitude	m AOD	10
Accumulated Temperature	day°C (Jan June)	1537
Average Annual Rainfall	mm	771
Field Capacity Days	days	157
Moisture Deficit Wheat	mm	117
Moisture Deficit Potatoes	mm	114
Overall climatic grade	N/A	Grade 1

12 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

13 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR) as a measure of overall wetness and accumulated temperature (ATO January to June) as a measure of the relative warmth of a locality

14 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation The site is not believed to be either frost prone or to suffer from exposure As such the site may be considered as being climatically Grade 1 However climatic factors do interact with soil properties to influence soil wetness and soil droughtiness these being the dominant limitations here

Site

15 The survey area lies at approximately 10m AOD There is a very slight southerly fall across the site which is not significant in terms of the overall classification Other restrictions such as adverse microrelief do not affect the survey area

Geology and soils

16 The most detailed published geological information for this area (BGS 1972) shows this site to be underlain by brickearth drift deposits

17 The most detailed published soils information covering the area (SSGB 1967) shows this site to comprise soils from the Park Gate series in the deep phase These are described as deep stoneless silty soils developed in brickearth which are variably affected by groundwater Soils of this description were encountered across the site

AGRICULTURAL LAND CLASSIFICATION

18 The details of the classification of the survey area are shown on the attached ALC map and the area statistics of each grade are given in Table 1

19 The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II

Grade 2

20 Very good quality land has been mapped across all of the surveyed area Key limitations to land quality include both soil droughtiness and soil wetness The soils are characterised by the pit observation 1P (see Appendix II)

21 A single soil type was described across the site This comprises non calcareous medium silty clay loam topsoils and upper subsoils overlying heavy silty clay loam lower subsoils Stone contents are very slight with up to 2% flints by volume being recorded In the local climate these soils are slightly restricted in terms of the amount of water available to plants to the extent that a Grade 2 classification is appropriate Soil droughtiness may cause the level and consistency of yields to be reduced The soils also exhibit signs of soil wetness in the form of gleying at relatively shallow depths across the majority of the site The soil pit (1P) indicates that the soils have high porosity and were therefore judged to be permeable In the prevailing local climate most of the observations made are placed in Wetness Class II and subsequently Grade 2 given the medium workability status of the topsoil Soil wetness may adversely affect crop growth and development It can also limit the flexibility of the land by reducing the number of days when the soil is in a suitable condition for cultivation trafficking by machinery or grazing by livestock

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SOURCES OF REFERENCE

British Geological Survey (1972) *Sheet No 317 Chichester 1 63 360 Drift Edition*
BGS London

Ministry of Agriculture Fisheries and Food (1988) *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land*
MAFF London

Met Office (1989) *Climatological Data for Agricultural Land Classification*
Met Office Bracknell

Soil Survey of Great Britain (1967) *Bulletin No 3 Soils of the West Sussex Coastal Plain and accompanying maps (Sheet TQ00 and 10 Worthing 1 25 000 scale)*
SSGB Harpenden

Soil Survey of England and Wales (1983) *Sheet 6 Soils of South-East England 1 250 000*
SSEW Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*
SSEW Harpenden

APPENDIX I

DESCRIPTIONS 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

APPENDIX II

SOIL DATA

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	**OTH**	Other
DCW	Deciduous woodland	**BOG**	Bog or marsh	**SAS**	Set Aside
HTH	Heathland	**HRT**	Horticultural crops	**PLO**	Ploughed

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	**ST**	Topsoil Stoniness
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
EX	Exposure				

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	**FSST**	soft, fine grained sandstone
ZR	soft, argillaceous, or silty rocks	**CH**	chalk
MSST	soft, medium grained sandstone	**GS**	gravel with porous (soft) stones
SI	soft weathered igneous/metamorphic rock	**GH**	gravel with non porous (hard) stones

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		
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	**FM** firm	**EH** extremely hard
VF very friable	**VM** very firm	
FR friable	**EM** extremely firm	

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 appropriate 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

program ALC012 LIST OF BORINGS HEADERS 27/07/98 ARUN DLP WESTERGATE page 1

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	- WETNESS - SPL	CLASS	-WHEAT GRADE	AP	MB	-POTS- AP	MB	M REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	ALC LIMIT		COMMENTS
1	SU93540475	PGR			30	2	2		158	41	122	8	2				WD	2	
2	SU93650470	PGR			45	1	1		160	43	124	10	1					1	
3	SU93500460	PGR			25	2	2		159	42	123	9	2				WD	2	
4	SU93600460	PGR			26	2	2		158	41	123	9	2				WD	2	
1P	SU93500460	PGR			22	2	2		156	39	121	7	2				WD	2	PIT @ BOR 4

program ALC011 COMPLETE LIST OF PROFILES 27/07/98 ARUN DLP WESTERGATE page 1

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES---- COL	ABUN	CONT	PED COL	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
1	0-20	MZCL	10YR42	10YR46	C	F			0	0	HR	2							ROOT MOTTLES
	20-30	MZCL	10YR64						0	0		0		M					
	30-55	HZCL	10YR54 64	10YR56	C	D		Y	0	0		0		M					
	55-120	HZCL	10YR63	10YR56 58	M	D	COM MN	Y	0	0		0		M					FRIABLE
2	0-28	MZCL	10YR42						0	0	HR	2							
	28-45	MZCL	10YR54						0	0		0		M					
	45-60	MZCL	10YR53 54	10YR58	C	D	FEW MN	Y	0	0		0		M					
	60-120	HZCL	10YR53 63	10YR58	C	D	COM MN	Y	0	0		0		M					
3	0-25	MZCL	10YR42	10YR46	F	D			0	0	HR	2							ROOT MOTTLES
	25-55	MZCL	10YR63 53	10YR56	C	D		Y	0	0		0		M					
	55-120	MZCL	10YR53 62	10YR58	M	D	COM MN	Y	0	0		0		M					
4	0-26	MZCL	10YR42	10YR46	C	D			0	0	HR	2							ROOT MOTTLES
	26-45	MZCL	10YR53	10YR58	C	D		Y	0	0		0		M					
	45-60	MZCL	10YR53	10YR58	C	D	FEW MN	Y	0	0		0		M					
	60-120	HZCL	10YR63	10YR58	M	D	COM MN	Y	0	0	HR	2		M					
1P	0 22	MZCL	10YR42						0	0	HR	2							V FEW ROOT MOTS
	22-48	MZCL	10YR53	10YR56 58	C	D		Y	0	0	HR	2	MDCSAB	FR M	N				
	48-65	MZCL	10YR62 63	10YR58	C	D	FEW MN	Y	0	0	HR	2	MDCSAB	FR M	N				
	65-120	HZCL	10YR52	10YR58	M	D	COM MN	Y	0	0	HR	2	MDCAB	FR M	N		N		PIT 100 AUG 120