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Arun District Local Plan

Site 23 Land east of High Street,

Findon

Agricultural Land Classification Report

April 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

ARUN DISTRICT LOCAL PLAN
SITE 23 LAND EAST OF HIGH STREET, FINDON

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 Arun District of West Sussex The work forms part of MAFF's statutory input to the preparation of the Arun District Local Plan

1 2 Site 23 comprises approximately 2 hectares of land east of the High Street in Findon West Sussex An Agricultural Land Classification (ALC) survey was carried out during April 1994 The survey was undertaken at a detailed level of approximately two borings per hectare A total of 4 borings 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 At the time of the survey the land on the site was under a grassland ley

1 4 The distribution of grades and subgrades is shown on the attached ALC map and the areas and extent are given in the table below The map has been drawn at a scale of 1 5 000 It is accurate at this scale but any enlargement would be misleading

Table 1 Distribution of Grades and Subgrades

Grade	Area (ha)	% of Agricultural Land
2	1 7	77 3
3a	0 5	22 7
Total area of site	2 2	100%

1 5 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 6 The agricultural land on the site has been classified as Grade 2 and Subgrade 3a with soil workability and droughtiness as the main limitations Soils over the majority of the site tend to be medium and heavy silty clay loams to depth which are moderately stony below an average depth of 40 cm occasionally these show insufficient reserves of profile available water to sustain high crop yields causing a slight droughtiness limitation Furthermore in the north of the site land is classified as Grade 2 due to a combination of topsoil texture and the Field Capacity Days for the site which results in a workability limitation These soils are slightly

susceptible to damage by grazing livestock and agricultural machinery In the east of the site the soils are shallow over chalk, consequently there is a restriction on the amount of profile available water for plant growth which limits this land to Subgrade 3a

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

Table 2 Climatic Interpolations

Grid Reference	TQ125081	TQ125082
Altitude (m AOD)	53	61
Accumulated Temperature (°days Jan-June)	1482	1473
Average Annual Rainfall (mm)	847	852
Field Capacity Days	175	176
Moisture deficit wheat (mm)	109	107
Moisture deficit potatoes (mm)	101	100

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 The details in the above table show that there is no overall climatic limitation affecting this site In addition no local climatic factors such as exposure or frost risk affect the land quality

2 3 However climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations

3 Relief

3 1 The site lies at an altitude of approximately 53 61m rising gently from south-west to north-east On no part of the site do gradient or relief pose any limitation to agricultural use

4 Geology and Soils

4 1 The published geology map for the site area (BGS 1984 Sheet 318/333 Brighton and Worthing) shows the majority of the site to be underlain by Upper and Middle Chalk with a small area of head in the south-western corner

4 2 The published soils information for the area (SSGB 1967 Sheet TQ10 Worthing) shows the soils over the entire site to comprise those of the Coombe series These are described well drained calcareous fine silty soils over chalk or chalk rubble Shallow in places especially on brows and steep slopes (SSEW 1983)
Detailed field examination broadly confirms this

5 Agricultural Land Classification

Grade 2

5 1 The majority of the agricultural land on the site has been classified as Grade 2 very good quality land with soil workability and droughtiness as the main limitations Soil profiles typically comprise medium silty clay loam topsoils overlying similar textured upper subsoils resting upon a heavy silty clay loam lower subsoil Profiles are commonly slightly stony below the upper subsoil containing approximately 15% flints with chalk fragments in the lower subsoil Soil textures and stone contents means that there is a slight restriction on profile available water for plant growth in some parts of the site This leads to a classification of Grade 2 on droughtiness for a number of soil observations In the north of the site soil profiles are well drained Wetness Class I Yet in combination with the topsoil texture and the field capacity days for the site these soils are classified as Grade 2 due to a workability limitation There is a slight restriction on the number of days that the land can be worked with agricultural machinery or grazed by livestock without resulting in damage to the soil structure

Subgrade 3a

5 2 A small area of land (0 5 ha) in the north of the site has been classified as Subgrade 3a good quality land with soil droughtiness as the main limitation This reflects the presence of shallower soils over chalk that prevail in this part of the site Soil profiles typically comprise medium silty clay loams to an approximate depth of 55 cm where solid chalk is encountered The horizon above the chalk contains approximately 15% total flints and 30% chalk fragments It was assumed that rooting occurs to a depth of 30 cm into the chalk When considering the soil textures structures and the relatively shallow soil depth over the chalk these soils show a moderate restriction on the amount of profile available water for plant growth This will have an effect upon crop yields consequently this land can be classified as no better than Subgrade 3a

REFERENCES

* British Geological Survey (1984) Sheet No 318/333 Brighton and Worthing 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) Climatological Data for Agricultural Land Classification

* Soil Survey of England and Wales (1983) Sheet No 6 Soils of South East England 1 250 000 and accompanying legend

*Soil Survey of Great Britain (1967) Bulletin 3 Soils of the West Sussex Coastal Plain

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)

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	TQ12500820	LEY					1	2	111	3	108	7	3A				DR	3A	CHALK 55
2	TQ12500810	LEY					1	1	149	32	122	22	1					1	
3	TQ12430819	LEY					1	2	138	29	110	10	2				DR	2	
4	TQ12570814	LEY					1	2	140	33	117	17	1				WK	2	

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	0-25	mzcl	10YR42 00						0	0	CH	5							
	25-35	mzcl	10YR43 00						0	0	CH	10		M			Y		
	35-55	mzcl	10YR72 00						0	0	CH	30		M			Y		+ 15% FLINTS
	55-85	ch	05YR81 00						0	0		0		M			Y		+ 15% FLINTS
2	0-25	mzcl	10YR42 00						0	0		0							
	25-60	mzcl	10YR54 00						0	0		0		M					
	60-95	hzcl	10YR56 00						0	0		0		M					+ 15% FLINTS
	95-120	hzcl	10YR72 00						0	0	CH	30		M			Y		+ 15% FLINTS
3	0-20	mzcl	10YR42 00						0	0		0							
	20-85	mzcl	10YR54 00						0	0	CH	2		M			Y		
	85-120	hzcl	10YR64 00						0	0	CH	30		M			Y		+ 15% FLINTS
4	0-30	mzcl	10YR42 00						0	0		0							
	30-45	mzcl	10YR54 00						0	0		0		M					
	45-75	hzcl	10YR56 00						0	0	CH	10		M			Y		+ 15% FLINTS
	75-90	hzcl	10YR72 00						0	0	CH	30		M			Y		+ 15% FLINTS
	90-120	ch	05YR81 00						0	0		0		M			Y		+ 15% FLINTS