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ARUN DISTRICT
LOCAL PLAN : SITE 28
LAND NORTH OF
HORSEMERE GREEN LANE, CLIMPING
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
MARCH 1994

ARUN DISTRICT LOCAL PLAN : SITE 28
LAND NORTH OF HORSEMERE GREEN LANE, CLIMPING
AGRICULTURAL LAND CLASSIFICATION REPORT

1.0 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 Approximately 3 hectares of land relating to site 28 on land at Ford Aerodrome (disused) near the village of Yapton in West Sussex was surveyed in March 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 2 soil auger borings 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 conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.

1.4 At the time of the survey the land was under what appeared to be set-aside.

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 1:5,000. It is accurate at this scale, but any enlargement would be misleading. This map supersedes any previous survey information for this site.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land Surveyed
2	1.2	36.4	80
3b	0.3	9.1	20
Land Not Surveyed	1.8	54.5	100% (1.5 ha)
Total Area of Site	3.3	100%	

1.6 Appendix 1 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 on the site was classified as grades 2 and 3b with soil wetness and droughtiness being the main limitations. Grade 2 land comprises fine loamy soils over slowly permeable clay at depth. Water drainage through these soils is slightly impaired and land is classified as grade 2 due to a slight soil wetness limitation. In addition to this, a droughtiness limitation also limits this land to the same grade. The comparatively dry nature of the local climate interacts with the soils resulting in a slight restriction in available water to plants. Land classified as subgrade 3b represents an area of disturbed land with tarmac, ash, chalk stones and flints evident in the soil matrix. Approximately half the site was not surveyed due to uncertainties regarding ownership, although much of it appeared to be in non agricultural use.

2.0 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 annual average 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 affect the site. It should be noted that climatic characteristics such as rainfall and field capacity days interact with soil properties to influence soil wetness as do moisture deficits for soil droughtiness. The moisture deficits are comparatively high in a regional context and will increase the likelihood of soil droughtiness problems.

Table 2 : Climatic Interpolation

Grid Reference :	SU 996 023
Altitude (m) :	5
Accumulated Temperature (days) :	1543
Average Annual Rainfall (mm) :	741
Field Capacity (days) :	152
Moisture Deficit, Wheat (mm) :	121
Moisture Deficit, Potatoes (mm) :	119
Overall Climatic Grade :	1

3.0 Relief

3.1 The site is flat and lies at an altitude of approximately 5-6 metres AOD. Nowhere on the site do relief or gradient affect agricultural land quality.

4.0 Geology and Soil

4.1 The published geological sheet for the site, Sheet 332 (BGS, 1975) shows the underlying geology to be brickearth over Upper Chalk.

4.2 The published soils information for the area, Sheet SU90 (SSGB, 1967) shows the west of the site to comprise soils of the Hook Series-shallow phase over pebbly drift, Which is described as "Deep stoneless well drained silty soils and similar soils affected by groundwater" (SSEW, 1983). The east of the site consists of soils of the Lyminster Series, described as "Brown earths developed on pebbly and loamy marine deposits" (SSGB, 1967). A detailed inspection of soils on the site revealed the presence of fine loamy soils over slowly permeable clay at depth with associated wetness problems.

5.0 Agricultural Land Classification

5.1 Table 1 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 locations of the soil observation points are shown on the attached sample point map.

Grade 2

5.3 Very good quality agricultural land covers the majority of the land surveyed on the site. Typical soil profiles comprise medium clay loam topsoils containing 0-2% total flints over upper subsoils similar in texture. Lower subsoils consist of heavy clay loam which passes to poorly structured slowly permeable clay. Soil Pit 1 dug in similar soils on land immediately to the west (see Appendix IV) found slowly permeable horizons of clay from 80 cm depth, whereas, auger borings on this site found the clay to be between 71-75 cm depth. As a result of this profiles show signs of wetness problems in the form of gleying from 50-55 cm and are placed in wetness class II. This combined with a medium topsoil texture on this site results in a classification of grade 2 due to a slight soil wetness limitation.

5.4 In addition to this limitation land is also graded 2 due to a slight soil droughtiness limitation. The interaction of climatic characteristics (moisture deficits) with soil properties causes a slight restriction to water reserves in the profile for adequate crop growth. Such land is suited to a wide range of agricultural and horticultural uses.

Subgrade 3b

5.5 Land of moderate quality is mapped to the west of the site. An inspection of the soils found an element of disturbance with materials such as tarmac, ash, flints and chalk stones in evidence. The presence of such disturbed soils could be attributed to the previous use of the site as an airfield.

Land Not Surveyed

5.6 Due to uncertainties regarding ownership, land to the east of the site was not surveyed. Its agricultural land quality is not likely to be high; soil bunds were evident and much of it appeared to be non agricultural.

APPENDIX II

REFERENCES

* ADAS (1994), Agricultural Land Classification, Arun District Local Plan, Site 29: Land East of Yapton Road, Climping. ADAS Reference 4202/065/94.

* BRITISH GEOLOGICAL SURVEY (1975), Sheet No.332, Bognor Regis, 1:50,000 scale.

* 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 scale and accompanying legend.

* SOIL SURVEY OF GREAT BRITAIN (1967), Bulletin No.3, Soils of the West Sussex Coastal Plain.

APPENDIX III

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

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

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for 31-90 days in most years.

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer within 80cm depth, it is wet within 40cm depth for 91-210 days in most years.

Wetness Class V

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

Wetness Class VI

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

(The number of days is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.)

APPENDIX IV

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

* Soil Abbreviations : Explanatory Note
* Soil Pit Descriptions
* Database Printout : Boring Level Information
* Database Printout : Horizon Level Information

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 dolimitic 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

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SOIL PIT DESCRIPTION

Site Name : ARUN LOCAL PLAN SITE 29 Pit Number : 1P

Grid Reference: SU99300230 Average Annual Rainfall : 742 mm
Accumulated Temperature : 1543 degree days
Field Capacity Level : 152 days
Land Use : Cereals
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 32	MCL	10YR42 00	0	0		
32- 57	MCL	25Y 54 00	0	0		MDCSAB
57- 80	HCL	25Y 53 00	0	0	C	MDCSAB
80-100	C	25Y 64 00	0	0	M	WKMPR
100-120	HCL	25Y 64 00	0	0	M	

Wetness Grade : 2 Wetness Class : II
Gleying :057 cm
SPL :080 cm

Drought Grade : 2 APW : 150mm MBW : 29 mm
APP : 118mm MBP : 0 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	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	SU99500240	SAS	055	070		2	2	141	20	118	-1	2				WE	2	WEDR BDR WC2/3
2	SU99580231	SAS	050	075		2	2	141	20	117	-2	2				WE	2	WEDR

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
1	0-30	mcl	10YR42 00						0	0		0						
	30-55	mcl	10YR53 00	00MN00	00	F			0	0		0		M				
	55-71	hcl	10YR53 00	10YR58	00	C		Y	0	0		0		M				
	71-120	c	10YR64 00	10YR68	71	M	00MN00	00 Y	0	0		0		P			Y	
2	0-29	mcl	10YR43 00						0	0	HR	2						
	29-50	mcl	10YR54 00						0	0		0		M				
	50-75	hcl	10YR53 54	75YR56	00	C	00MN00	00 Y	0	0		0		M				
	75-120	c	10YR53 54	75YR56	00	M	00MN00	00 Y	0	0		0		P			Y	