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Arun District Local Plan
Site 30 : Yapton
Agricultural Land Classification,
ALC Map and Report
April 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

ARUN DISTRICT LOCAL PLAN SITE 30 : YAPTON

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 30 comprises 6.3 hectares of land to the immediate south of the Old Canal at Yapton in West Sussex. An Agricultural Land Classification, (ALC), survey was carried out during March 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of ten soil auger borings and one soil inspection pit 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 Work was conducted by members of the Resource Planning Team in the Guildford Statutory Group.
- 1.4 At the time of the survey, the majority of the site was in permanent pasture and rough grazing with the most westerly field in set-aside.
- 1.5 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. This map supersedes any previous information for this site.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
1	4.6	73.0	100 (4.6 ha)
Non-agricultural land	1.3	20.6	
Woodland	0.4	6.4	
Urban	<0.1	neg.	
Total area of site	6.3	100.0	

- 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 All of the agricultural land surveyed has been classified as Grade 1, excellent quality. Silt loam topsoils overlie deep free draining subsoils which become heavier textured with depth. Profiles are stoneless or very slightly stony. This land has no or only very minor limitations to its agricultural use.

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 (degree days Jan-June), 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. However, climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations. At this site the crop adjusted moisture deficits are relatively high in a regional context. High crop adjusted moisture deficits increase the likelihood of soil droughtiness.

2.4 No local climatic factors such as exposure or frost risk are believed to affect the site.

Table 2 : Climatic Interpolation

Grid Reference	SU985031
Altitude (m)	7
Accumulated Temperature (degree days, Jan-June)	1540
Average Annual Rainfall (mm)	751
Field Capacity (days)	154
Moisture Deficit, Wheat (mm)	120
Moisture Deficit, Potatoes (mm)	117
Overall Climatic Grade	1

3. Relief

3.1 The site is flat and lies at approximately 7m AOD. To the north of Goodhew Close, a small area of the site marked as being in non-agricultural use occupies what appears to be an overgrown bomb crater.

4. Geology and Soil

4.1 British Geological Survey (1972), Sheet 317, Chichester, shows the entire site survey area to be underlain by brickearth.

4.2 The published Soil Survey Map (SSGB, 1967, 1:25,000), maps most of the site as soils of the Hamble series (deep phase). These soils described as 'well drained brown earths developed in silty drift, which is stoneless, or nearly so', (SSGB, 1967). A small area in the east of the site is shown as the Hook series (deep phase). These soils are described as being 'intermediate in character between the soils of the well drained Hamble series and the imperfectly or poorly drained Park Gate series' (SSGB, 1967).

4.3 Detailed field examination found deep, well drained silty soils across the site.

5. Agricultural Land Classification

5.1 Table 1 provided 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 1

5.3 All of the agricultural land surveyed has been classed as excellent quality. Profiles comprise silt loam topsoils over silty clay loam, and occasionally silt loam, upper subsoils and silty clay loam or clay lower subsoils. Profiles are well drained (Wetness Class I is thereby assigned) and are stoneless or very slightly stony (0-5% v/v hard rock). Pit 1 typifies such soils. The combination of moisture retentive soil textures and low profile stone contents at this site means that there are adequate amounts of available water in the soils for crop growth. Such land has no or very minor limitations to agricultural use, and is capable of growing a very wide range of agricultural and horticultural crops with high and consistent yields.

Other Land Categories

5.4 The woodland marked on the map comprises mature trees. The non-agricultural land is occupied by scrub and the urban by a concrete shelter.

ADAS Ref: 4202/056/94
MAFF Ref: EL42/00460

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1972), Sheet No. 317, Chichester, 1:63,360 (drift edition).

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 Sets for Agricultural Land Classification.

Soil Survey of Great Britain (1967), Bulletin 3, Soils of the West Sussex Coastal Plain and accompanying maps (Sheet SU90 Bognor Regis).

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, 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. 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.

¹The 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 Abbreviations - Explanatory Note

Soil Pit Descriptions

Database Printout - Boring Level Information

Database Printout - Horizon Level Information

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. **GLEYSPL** : 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		

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 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

SOIL PIT DESCRIPTION

Site Name : ARUN LP SITE 30, YAPTON Pit Number : 1P

Grid Reference: SU98600309 Average Annual Rainfall : 751 mm
 Accumulated Temperature : 1540 degree days
 Field Capacity Level : 154 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 20	ZL	10YR44 00	0	1	F	
20- 53	ZL	10YR44 00	0	1		MDCSAB
53- 90	HZCL	10YR56 00	0	0		MDCSAB
90-120	C	10YR56 00	0	0		

Wetness Grade : 1 Wetness Class : I
 Gleying : cm
 SPL : No SPL

Drought Grade : 1 APW : 176mm MBW : 56 mm
 APP : 146mm MBP : 29 mm

FINAL ALC GRADE : 1
 MAIN LIMITATION :

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	
1	SU98300310	SAS	1	1	160	40	132	15	1					1	
1P	SU98600309	PGR	1	1	176	56	146	29	1					1	PIT DUG TO 105
2	SU98400310	SAS	1	1	167	47	130	13	1					1	
3	SU98500310	RGR	1	1	154	34	130	13	1					1	
4	SU98600309	PGR	1	1	179	59	148	31	1					1	
5	SU98710310	PGR	1	1	156	36	131	14	1					1	
6	SU98800310	PGR	1	1	169	49	133	16	1					1	
7	SU98600300	PGR	1	1	163	43	133	16	1					1	
8	SU98360312	SAS	1	1	173	53	137	20	1					1	
9	SU98550308	RGR	1	1	165	45	137	20	1					1	Q MZCL TOPSOIL
10	SU98700313	PGR	1	1	178	58	142	25	1					1	COMMON OCH ROO

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- PED			----STONES-----			STRUCT/	SUBS	SPL	CALC				
				COL	ABUN	CONT	COL.	GLE	>2					>6	LITH	TOT	CONSIST
1	0-25	z1	10YR43 00							0	0	HR	2				
	25-60	mzc1	10YR44 00	10YR56 00	C		00M00 00	S		0	0	HR	2				M
	60-80	hzc1	10YR44 00	10YR56 00	C		00M00 00	S		0	0		0				M
	80-120	c	10YR56 00	10YR68 00	F					0	0		0				M
1P	0-20	z1	10YR44 00	10YR56 00	F					0	0	HR	1				
	20-53	z1	10YR44 00							0	0	HR	1	MDCSAB	FR		M
	53-90	hzc1	10YR56 00							0	0		0	MDCSAB	FR		M
	90-120	c	10YR56 00							0	0		0				M
2	0-25	z1	10YR43 00							0	0	HR	2				
	25-65	mzc1	10YR44 00							0	0	HR	4				M
	65-120	hzc1	10YR56 00							0	0		0				M
3	0-28	z1	10YR44 00							0	0	HR	2				
	28-75	c	10YR56 00							0	0		0				M
	75-120	c	10YR56 00	10YR52 00	F		00M00 00			0	0		0				M
4	0-25	z1	10YR54 00	10YR56 00	F					0	0		0				
	25-55	z1	10YR54 00							0	0	HR	1				M
	55-75	mzc1	10YR54 56							0	0		0				M
	75-95	hzc1	10YR56 00							0	0		0				M
	95-120	c	10YR56 00	00M00 00	F					0	0		0				M
5	0-25	z1	10YR43 00							0	0	HR	2				
	25-45	mzc1	10YR54 00							0	0		0				M
	45-55	hzc1	10YR54 00							0	0		0				M
	55-120	c	10YR56 00							0	0		0				M
6	0-25	z1	10YR52 00	10YR46 00	C				S	0	0		0				
	25-40	mzc1	10YR54 00							0	0		0				M
	40-85	hzc1	10YR56 00							0	0	HR	2				M
	85-120	hzc1	10YR54 56	10YR68 00	F					0	0		0				M
7	0-25	z1	10YR54 00	10YR56 00	F					0	0		0				
	25-60	mzc1	10YR54 00							0	0	HR	2				M
	60-80	hzc1	10YR54 00	10YR56 00	C				S	0	0		0				M
	80-95	hzc1	10YR54 00	10YR56 00	C				S	0	0	HR	5				M
	95-120	c	10YR58 00							0	0	HR	2				M
8	0-30	z1	10YR43 00							0	0		0				
	30-60	mzc1	10YR44 00							0	0		0				M
	60-120	hzc1	10YR44 00							0	0		0				M
9	0-30	z1	10YR43 00							0	0		0				
	30-40	mzc1	10YR44 00							0	0		0				M
	40-80	hzc1	10YR44 00							0	0		0				M
	80-120	c	10YR54 56							0	0		0				M

PSD=MZCL/ZL, 18% C
PSD=H/MZCL, 28% C

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED	----STONES----			STRUCT/	SUBS
				COL	ABUN	CONT		COL.	GLEY >2	>6 LITH		
10	0-30	z1	10YR42 00	10YR56	00	F		0	0	0		
	30-40	z1	10YR44 00					0	0	0		M
	40-75	mzc1	10YR44 00					0	0	0		M
	75-100	hzc1	10YR44 00					0	0	0		M
	100-120	hzc1	10YR44 00	00MN00	00	F		0	0	0		M