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Arun District Local Plan

Site 14 : *Land east of Shripney Road,*

Bognor Regis

Agricultural Land Classification

ALC Map and Report

April 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

ARUN DISTRICT LOCAL PLAN
SITE 14 : LAND EAST OF SHRIPNEY ROAD, BOGNOR REGIS

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 14 comprises 34.4 hectares of land bounded to the west by Shripney Road and the east by the Barnham to Bognor railway line, 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 19 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 or chemical characteristics impose a long term limitation on its use for agriculture.

1.3 At the time of the survey the land use on the site was a mixture of cereal, ley, permanent grass and ploughed land.

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. Land immediately north of Oldlands Farm formed part of a previous detailed survey (ADAS, 1988) which was included as part of this more recent work.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Agricultural Land
1	12.5	36.3
2	4.5	13.1
3b	17.4	50.6
Total area of site	34.4	100.0

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 surveyed has been classified as a mixture of Grade 1, 2 and Subgrade 3b. Excellent quality land, Grade 1, comprises deep silty soils with no limitations to agricultural use. Very good quality land, Grade 2, is limited by minor soil droughtiness and/or wetness restrictions. Moderate quality land, Subgrade 3b,

is limited by soil wetness and workability. In addition, this land may be prone to flooding.

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 locality the crop adjusted moisture deficits are relatively high, in a regional context, thus increasing the likelihood of soil droughtiness limitations.

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

Table 2 : Climatic Interpolation

Grid Reference	SU943017	SU944019
Altitude (m)	2	5
Accumulated Temperature (days) (°days, Jan-June)	1547	1545
Average Annual Rainfall (mm)	744	748
Field Capacity (days)	151	152
Moisture Deficit, Wheat (mm)	120	120
Moisture Deficit, Potatoes (mm)	118	117
Overall Climatic Grade	1	1

3. Relief

3.1 Most of the site lies at approximately 4m AOD, though land in the most easterly field lies at a slightly lower level. Neither gradient nor relief impose any limitation to agricultural land quality.

4. Geology and Soil

4.1 British Geological Survey (1975), Sheet 332, Bognor maps shows most of the site as brickearth. A small area in the north east corner of the site is mapped as alluvium.

Generally mapped on the lower lying land these soils are described where 'clayey and silty soils form complex patterns in marine alluvium in recently silted estuaries' (SSGB, 1967). In the centre of the site is mapped the Park Gate series, (shallow phase over loamy pebble drift to the north of the Arundel complex and shallow phase with calcareous C horizon to the south). These soils are described as 'gley soils developed in brickearth' (SSGB, 1967). The Hook series (deep phase) is mapped bordering the Park Gate series, described as 'brown earths with gleying' (SSGB, 1967). The remainder of the site is mapped as the Hamble series (deep phase), 'well drained brown earths developed in silty drift, which are stoneless, or nearly so' (SSGB, 1967).

4.3 Detailed field examination found two broad soil types. On the lower-lying land the soils are heavier and poorly drained. Across the remainder of the site, deep silty textured soils show little or no evidence of impeded drainage.

5. 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 location of the soil observation points are shown on the attached sample point map.

Grade 1

5.3 Excellent quality agricultural land is found in the west of the site. Profiles typically comprise non-calcareous silt loam topsoils overlying medium and heavy silty clay loam subsoils. Profiles are permeable, (Wetness Class I), stoneless to very slightly stony, containing between 0-1% total flints by volume, and are typified by Pit 8. Similar soils, occasionally with silt loam subsoils, were found during the previous survey. (ADAS Ref: 4202/49/88). These soils hold adequate reserves of profile available water and are not droughty at this location. Consequently, this land is capable of producing consistent and high yields from a very wide range of agricultural and horticultural crops.

Grade 2

5.4 Very good quality land is limited by slight soil droughtiness or soil wetness and workability, and occasionally both. Land restricted by soil droughtiness typically comprises non-calcareous medium silty clay loam topsoils over subsoils which become heavier with depth. These profiles are well drained and very slightly stony. The slightly higher clay content in these profiles, in comparison to land graded 1, inparts a slight reduction in profile available water. Such land may have slightly reduced yield potential as a result. Land restricted by soil wetness and workability is subject to minor restrictions on cultivations and flexibility of cropping and stocking. Profiles typically comprise non-calcareous medium silty clay loam topsoils over subsoils which become heavier and then lighter at depth. Profiles are gleyed within 40 cm, (Wetness Class II) as a result of a fluctuating groundwater table, and are typified by Pit 9.

Subgrade 3b

5.5 The moderate quality, generally lower lying land, is limited by soil wetness and workability. Non-calcareous medium and heavy silty clay loam, and occasionally silty clay, topsoils overlie poorly structured slowly permeable clay and are assigned to Wetness Class IV. The clay severely impedes soil drainage as evidenced by gleying below, and occasionally within the topsoil. Similar profiles were found during the previous detailed survey, (ADAS Ref : 4202/49/88). Soil wetness acts to reduce the flexibility of cultivations, cropping and stocking and can adversely affect crop growth and yields. This mapping unit is also prone to flood risk. The risk of flooding may be significant in affecting the choice of crops to be grown, because at certain times of the year it can have a detrimental effect on yield, and may give rise to soil management problems.

ADAS Ref: 4202/49/88, 4202/52/94
MAFF Ref: EL42/00460

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

ADAS (1988), Land at Oldlands Farm, South Bersted, 1:2,500, (ADAS Reference 4202/49/88).

British Geological Survey (1975), Sheet No 332, Bognor, 1:50,000 (drift).

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 Great Britain (1967), Bulletin No. 3, Soils of the West Sussex Coastal Plain and accompanying maps.

SOIL PIT DESCRIPTION

Site Name : ARUN LP :SITE 14 Pit Number : 8P

Grid Reference: SU94000170 Average Annual Rainfall : 745 mm
Accumulated Temperature : 1547 degree days
Field Capacity Level : 151 days
Land Use : Bare Soil
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	ZL	10YR42 00	0	1		
30- 42	MZCL	10YR54 00	0	0	F	MDCSAB
42- 70	MZCL	10YR54 00	0	0	C	MDCSAB
70-115	HZCL	10YR54 00	0	0	C	MDCSAB
115-120	HZCL	10YR64 00	0	0	C	MDCSAB

Wetness Grade : 1 Wetness Class : I
Gleying :115 cm
SPL : No SPL

Drought Grade : 1 APW : 172mm MBW : 52 mm
APP : 136mm MBP : 19 mm

FINAL ALC GRADE : 1
MAIN LIMITATION :

SOIL PIT DESCRIPTION

Site Name : ARUN LP :SITE 14 Pit Number : 9P

Grid Reference: SU94300190 Average Annual Rainfall : 745 mm
Accumulated Temperature : 1547 degree days
Field Capacity Level : 151 days
Land Use : Ley
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MZCL	10YR42 00	1	2		
28- 40	MZCL	10YR53 00	0	1	C	MDCSAB
40- 56	HZCL	10YR53 00	0	1	C	MDCSAB
56-120	FSZL	10YR72 00	0	1	M	MDCSAB

Wetness Grade : 2 Wetness Class : II
Gleying :028 cm
SPL : No SPL

Drought Grade : 1 APW : 190mm MBW : 70 mm
APP : 128mm MBP : 11 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Wetness

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	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
9P	0-28	mzcl	10YR42 00						1	0	HR	2						
	28-40	mzcl	10YR53 00	75YR58 00	C		00MN00 00	Y	0	0	HR	1	MDCSAB FM	M	Y			
	40-56	hzcl	10YR53 00	75YR58 00	C		00MN00 00	Y	0	0	HR	1	MDCSAB FM	M	Y			
	56-120	fszl	10YR72 00	10YR68 00	M		00MN00 00	Y	0	0	HR	1	MDCSAB FM	M	Y			Y
10	0-25	zc	10YR41 00	10YR58 00	M			Y	0	0		0						
	25-55	zc	05Y 51 00	10YR56 68	M			Y	0	0		0		P	Y		Y	
11	0-29	zl	10YR53 00						0	0	HR	1						
	29-45	mzcl	10YR54 00						0	0		0		M				
	45-55	mzcl	10YR54 00	10YR58 00	C			S	0	0		0		M				
	55-70	hzcl	10YR54 00	10YR56 00	C			S	0	0		0		M				
	70-100	mzcl	10YR54 00	10YR56 00	C			S	0	0		0		M				
	100-120	hzcl	10YR54 00	10YR56 00	C			S	0	0		0		M				
12	0-29	zl	10YR53 00						0	0	HR	1						
	29-35	mzcl	10YR54 64	10YR56 00	C			Y	0	0		0		M				
	35-46	c	10YR64 00	10YR56 00	C			Y	0	0	HR	1		M				
	46-65	c	25Y 63 64	75YR56 00	C			Y	0	0		0		M				
	65-120	hzcl	05Y 51 00	75YR56 00	C			Y	0	0		0		M				
14	0-28	hzcl	10YR42 00	10YR68 00	F				0	0		0						
	28-60	zc	25Y 62 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
15	0-32	hzcl	10YR42 00	75YR58 00	C			Y	0	0	HR	2						
	32-60	c	25Y 52 00	75YR58 00	M			Y	0	0	HR	1		P	Y		Y	
16	0-25	mzcl	10YR42 00	10YR56 00	F				0	0		0						
	25-37	zc	10YR53 00	10YR51 58	M			Y	0	0		0		P	Y		Y	
	37-60	zc	10YR51 00	10YR58 00	C			Y	0	0		0		P	Y		Y	
17	0-25	hzcl	10YR42 00	10YR56 00	F				0	0	CH	1						
	25-60	zc	05Y 51 00	10YR58 00	M		00MN00 00	Y	0	0		0		P	Y		Y	Y
18	0-29	zl	10YR42 00						0	0	HR	1						
	29-45	mzcl	10YR54 00	10YR56 00	F				0	0		0		M				
	45-55	mzcl	10YR64 54	10YR56 00	C			Y	0	0		0		M				
	55-70	hzcl	10YR64 54	10YR56 00	C		00MN00 00	Y	0	0		0		M				
	70-120	mzcl	10YR64 00	10YR56 00	C		00MN00 00	Y	0	0		0		M				
19	0-25	mzcl	10YR43 00	10YR56 00	F				0	0	HR	2						
	25-60	zc	10YR53 54	10YR56 51	M		00MN00 00	Y	0	0		0		P	Y		Y	
20	0-20	hzcl	10YR42 00	10YR56 00	F				0	0		0						
	20-30	zc	10YR53 00	05Y 51 58	M			Y	0	0		0		P	Y		Y	
	30-60	zc	05Y 51 00	10YR58 00	M		00MN00 00	Y	0	0		0		P	Y		Y	

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	mzcl	10YR43 00						1	0	HR	2						
	30-68	mzcl	10YR53 00						0	0	HR	1		M				
	68-120	hzcl	10YR54 00	75YR58 00	F		00MN00 00		0	0	HR	1		M				
2	0-38	mzcl	10YR43 00						1	0	HR	2						
	38-65	hzcl	10YR54 00						0	0	HR	1		M				
	65-85	c	10YR54 00						0	0	HR	1		M				
	85-120	c	10YR56 00	10YR68 00	F				0	0	HR	2		M				
3	0-28	hcl	10YR42 00						0	0	HR	1						
	28-34	c	10YR53 00	10YR56 00	F				0	0		0		M				
	34-50	c	05Y 51 00	75YR56 00	M			Y	0	0		0		P	Y		Y	
	50-80	mzcl	10YR63 00	75YR56 00	C			Y	0	0		0		M	Y		Y	
	80-120	c	10YR64 00	75YR56 00	M			Y	0	0		0		P	Y		Y	
4	0-25	hzcl	10YR41 00	10YR58 00	M			Y	0	0		0						
	25-55	zc	05Y 51 00	10YR58 68	M			Y	0	0		0		P	Y		Y	
5	0-25	mzcl	10YR42 00						0	0	HR	1						
	25-38	hzcl	10YR54 00						0	0		0		M				
	38-60	hzcl	10YR54 64	10YR56 00	C		00MN00 00	Y	0	0		0		M				
	60-90	c	10YR54 64	10YR56 00	C			Y	0	0		0		M				
	90-120	c	10YR54 73	10YR56 00	C			Y	0	0		0		M				Y
6	0-28	mzcl	10YR53 00						0	0	HR	1						
	28-34	mzcl	10YR54 00						0	0		0		M				
	34-57	hzcl	10YR64 54	10YR56 00	C		00MN00 00	Y	0	0		0		M				
	57-90	zl	25Y 73 00	75YR58 00	C			Y	0	0		0		M				Y
	90-120	fsl	25Y 73 00	75YR58 00	C			Y	0	0	HR	3		M				Y
7	0-25	mzcl	10YR43 00						1	0	HR	2						
	25-60	mzcl	10YR53 00						0	0	HR	1		M				
	60-100	c	10YR54 00						0	0	HR	1		M				
	100-120	hzcl	10YR54 00						0	0	HR	1		M				
8	0-30	mzcl	10YR43 00						2	0	HR	3						
	30-65	mzcl	10YR53 00						0	0	HR	1		M				
	65-75	hzcl	10YR54 00	10YR68 00	F		00MN00 00		0	0	HR	1		M				
	75-85	hzcl	10YR63 00						0	0	CH	50		M				Y
8P	0-30	zl	10YR42 00						0	0	HR	1						
	30-42	mzcl	10YR54 00	10YR68 00	F				0	0		0	MDCSAB FR	M	Y			
	42-70	mzcl	10YR54 00	10YR68 00	C		00MN00 00	S	0	0		0	MDCSAB FR	M	Y			
	70-115	hzcl	10YR54 00	10YR68 00	C			S	0	0		0	MDCSAB FR	M				
	115-120	hzcl	10YR64 00	10YR68 00	C		00MN00 00	Y	0	0		0	MDCSAB FR	M				
9	0-25	zc	10YR42 00	10YR56 00	C			Y	0	0		0						
	25-55	zc	05Y 51 00	10YR56 00	C			Y	0	0		0		P	Y		Y	

SAMPLE NO.	GRID REF	USE	ASPECT		--WETNESS--		-WHEAT-		-POTS-		M.REL	EROSN	FROST	CHEM	ALC	
			GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT		COMMENTS
1	SU94400200	CER				1	1	159	39	123	6	2				DR	2	
2	SU94500200	CER				1	1	149	29	124	7	2				DR	2	IMPEN 100
3	SU94600200	CER		034	034	4	3B		0		0					WE	3B	
4	SU94700200	PGR		0	025	4	3B		0		0					WE	3B	WET NEARBY
5	SU94200190	CER		038		2	2	148	28	123	6	2				WD	2	
6	SU94300190	LEY		034		2	2	181	61	131	14	1				WE	2	
7	SU94400190	PGR				1	1	150	30	121	4	2				DR	2	
8	SU94500190	PGR				1	1	122	2	123	6	3A				DR	3A	IMPEN 85
8P	SU94000170	PLO		115		1	1	172	52	136	19	1					1	SL. GLEYED 42
9	SU94600190	PGR		0	025	4	3B		0		0					WE	3B	ZC TOPSOIL
9P	SU94300190	LEY		028		2	2	190	70	128	11	1				WE	2	
10	SU94670192	PGR		0	025	4	3B		0		0					WE	3B	VERY WET
11	SU94000180	PLO				1	1	172	52	136	19	1					1	SL. GLEYED 45
12	SU94100180	PLO		029		2	2	167	47	133	16	1				WE	2	
14	SU94300180	CER		028	028	4	3B		0		0					WE	3B	
15	SU94400180	PGR		0	032	4	3B		0		0					WE	3B	
16	SU94500180	CER		025	025	4	3B		0		0					WE	3B	
17	SU94600180	CER		025	025	4	3B		0		0					WE	3B	SUBSOIL CALC.
18	SU94000170	PLO		045		1	1	172	52	136	19	1					1	
19	SU94500170	CER		025	025	4	3B		0		0					WE	3B	
20	SU94590170	CER		020	020	4	3B		0		0					WE	3B	