



A1
Arun District Local Plan
Site 13 : Land at Church Field,
Felpham
Agricultural Land Classification
ALC Map and Report
April 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

ARUN DISTRICT LOCAL PLAN

SITE 13 : LAND AT CHURCH FIELD, FELPHAM

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 13 comprises 4 hectares of land to the south of Felpham Way (A259) at Felpham, 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 7 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 land on the site was growing wheat.
- 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	3.6	90
3b	<u>0.4</u>	<u>10</u>
Total area of site	4.0	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 majority of agricultural land surveyed has been classed as Grade 2, very good quality. The key limitation is a minor soil droughtiness restriction which may slightly reduce yield potential. Slightly lower-lying alluvial land has been classed as Subgrade 3b, moderate quality, because of soil wetness and workability restrictions.

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	SU948000
Altitude (m)	5
Accumulated Temperature (days (°days, Jan-June)	1444
Average Annual Rainfall	736
Field Capacity (days)	149
Moisture Deficit, Wheat (mm)	121
Moisture Deficit, Potatoes (mm)	118
Overall Climatic Grade	1

3. Relief

- 3.1 The eastern part of the site is flat and lies at approximately 5m AOD. The remainder of the site occupies very gently sloping land, and falls to an altitude of approximately 3m AOD along the western boundary of the site. Neither gradient nor relief impose any restriction to land quality on this site.

4. Geology and Soil

- 4.1 British Geological Survey (1975), Sheet 332, Bognor shows most of the site to be underlain by brickearth over Upper Chalk. A narrow strip of land adjacent to the western boundary is mapped as alluvium.
- 4.2 The published soil survey map, (SSGB, 1967, 1:25,000) shows most of the site as the Hamble series. These soils are described as 'well drained brown earths

developed in silty drift' (SSGB, 1967). Adjacent to the western boundary, the Arundel complex is mapped. These soils are described as 'where clayey and silty soils form complex patterns in marine alluvium in recently silted estuaries' (SSGB, 1967).

- 4.3 Detailed field examination confirmed two soil types : deep, well drained silty soils across most of the site and poorly drained soils on the lower-lying alluvial land.

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 2

- 5.3 The majority of the agricultural land surveyed has been classed as very good quality. The key limitation is a minor soil droughtiness restriction which may slightly reduce yield potential. Profiles typically comprise deep well drained (Wetness Class I) medium silty clay loam topsoils over subsoils which become heavier with depth, though occasionally profiles are sandier at depth. Profiles are generally slightly stony, though on the slightly sloping land subsoils tend to merge into chalky drift containing a total between 10-65% v/v chalk. This mapping unit is typified by Pit 2. Gleying or slight gleying may be present within the lower subsoil due to fluctuating groundwater.

Subgrade 3b

- 5.4 The lower-lying alluvial land is classed as moderate agricultural quality because of soil wetness and workability restrictions. Heavy silty clay loam topsoils are underlain by poorly structured clay subsoils at shallow depths. This acts to significantly impede drainage, such that Wetness Class IV is appropriate. This mapping unit is typified by Pit 1. The interaction between these drainage characteristics and topsoil textures at this site means that this land can be graded no higher than Subgrade 3b, and will be subject to cropping, grazing and trafficking restrictions.

ADAS Ref: 4202/93/94
MAFF Ref: EL42/00460

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

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 13, A259 Pit Number : 1P

Grid Reference: SZ94679993 Average Annual Rainfall : 736 mm
 Accumulated Temperature : 1544 degree days
 Field Capacity Level : 149 days
 Land Use : Wheat
 Slope and Aspect : 01 degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	HZCL	10YR42 00	0	1		
30- 38	C	10YR42 00	0	1	C	WKCAB
38- 60	C	10YR61 00	0	3	M	MDCAB

Wetness Grade : 3B Wetness Class : IV
 Gleying : 030 cm
 SPL : 030 cm

Drought Grade : 3B APW : 89 mm MBW : -32 mm
 APP : 95 mm MBP : -23 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : ARUN LP SITE 13, A259 Pit Number : 2P

Grid Reference: SZ94900000 Average Annual Rainfall : 736 mm
 Accumulated Temperature : 1544 degree days
 Field Capacity Level : 149 days
 Land Use : Wheat
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 33	MZCL	10YR43 00	0	2	F	
33- 60	MZCL	10YR54 00	0	0		MDCSAB
60- 91	HZCL	10YR54 00	0	1	M	MDCSAB
91-100	C	10YR56 54	0	10		
100-120	MSL	10YR68 00	0	25		

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

Drought Grade : 2 APW : 154mm MBW : 33 mm
 APP : 124mm MBP : 6 mm

FINAL ALC GRADE : 2
 MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEYS	--WETNESS--		-WHEAT-		-POTS-		M. REL	EROSN	FROST	CHEM	ALC	COMMENTS	
						CLASS	GRADE	AP	MB	AP	MB							DRT
1	SU94700000	WHT	W	01	074	1	1	147	26	117	-1	2				DR	2	SL. GLEYED 50
1P	SZ94679993	WHT	W	01	030 030	4	3B	89	-32	95	-23	3B				WE	3B	PIT DUG TO 60
2	SU94800000	WHT			060 070	2	2	143	22	121	3	2				WD	2	
2P	SZ94900000	WHT				1	1	154	33	124	6	2				DR	2	SL. GLEYED 60
3	SU94900000	WHT			055	1	1	151	30	125	7	2				DR	2	
4	SZ94709990	WHT	W	01		1	1	138	17	111	-7	2				DR	2	IMPEN 70
4A	SZ94709992	WHT	W	01		1	1	152	31	118	0	2				DR	2	1 METRE FROM 4
5	SZ94809990	WHT	S	01		1	1	141	20	119	1	2				DR	2	
6	SZ94679993	WHT			030 030	4	3B	90	-31	96	-22	3B				WE	3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED	----STONES----			STRUCT/	SUBS								
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC		
1	0-35	mc1	10YR42 00						0	0	HR	2								
	35-50	mc1	10YR54 56	10YR68	00	F			0	0	HR	2				M				
	50-75	c	10YR54 00	10YR56	66	C		S	0	0		0				M			SL. GLEYED	
	75-105	mc1	25Y 63 00	10YR58	00	C		Y	0	0		0				M				
	105-120	mzc1	10YR54 81						0	0	CH	65				M		Y	CHALKY DRIFT	
1P	0-30	hzc1	10YR42 00						0	0	HR	1								
	30-38	c	10YR42 00	10YR56	00	C	00MN00	00	Y	0	0	HR	1	WKCAB	FM	P	Y		Y	
	38-60	c	10YR61 00	10YR56	58	M		Y	0	0	HR	3	MDCAB	VM	P	Y		Y		
2	0-30	mzc1	10YR42 00						0	0	HR	2								
	30-60	mzc1	10YR54 00						0	0		0				M				
	60-70	zc	10YR53 54	10YR56	00	C		Y	0	0	HR	5				M				
	70-120	c	10YR63 62	10YR56	66	C		Y	0	0		0				P		Y		
2P	0-33	mzc1	10YR43 00	10YR56	00	F			0	0	HR	2								
	33-60	mzc1	10YR54 00						0	0		0	MDCSAB	FR	M	Y				
	60-91	hzc1	10YR54 00	10YR58	00	M		S	0	0	HR	1	MDCSAB	FR	M	Y			SL. GLEYED	
	91-100	c	10YR56 54						0	0	HR	10			FR	M				
	100-120	ms1	10YR68 00						0	0	HR	25				M				
3	0-33	mzc1	10YR43 00						0	0	HR	1								
	33-55	mzc1	10YR56 54						0	0		0				M				
	55-75	hzc1	10YR53 52	10YR56	00	C		Y	0	0		0				M				
	75-90	zc	10Y563 62	10YR56	66	C		Y	0	0		0				M				
	90-120	c	10YR53 00	75YR58	00	M	00MN00	00	Y	0	0	HR	5				M			
4	0-29	mzc1	10YR43 00						1	0	HR	4								
	29-45	mzc1	10YR54 00	75YR58	00	F	00MN00	00		0	0	CH	5				M			
	45-55	mzc1	10YR54 53	75YR58	00	C	00MN00	00	S	0	0	CH	10				M		Y	SL. GLEYED
	55-120	ch	10YR83 82						0	0		0				M		Y		
4A	0-29	mzc1	10YR43 00						1	0	HR	4								
	29-45	mzc1	10YR54 00	75YR58	00	F	00MN00	00		0	0	CH	5				M		Y	
	45-60	mc1	10YR54 53	75YR58	00	C	00MN00	00	S	0	0	CH	10				M		Y	SL. GLEYED
	60-120	mzc1	10YR56 00						0	0	CH	30				M		Y		
5	0-28	mzc1	10YR43 00						0	0	HR	3								
	28-45	mzc1	10YR54 56						0	0	HR	2				M				
	45-50	hc1	10YR54 56						0	0	HR	1				M				
	50-90	c	10YR54 56	10YR64	00	F			0	0	HR	2				M				
	90-120	c	10YR56 00	00MN00	00	F			0	0	HR	10				M				
6	0-30	hzc1	10YR42 00	10YR56	00	F	00MN00	00		0	0		0							
	30-38	c	10YR53 00	10YR56	00	M		Y	0	0		0				P		Y		
	38-60	c	10YR61 00	10YR56	68	M		Y	0	0		0				P		Y		