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Arun District Local Plan
Site 17 : Land north and south of Newbarn Lane, North Bersted
Agricultural Land Classification
ALC Map and Report
April 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

ARUN DISTRICT LOCAL PLAN
SITE 17 : LAND NORTH AND SOUTH OF NEWBARN LANE, NORTH BERSTED

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 17 comprises 5.9 hectares of land located to the north and south of Newbarn Lane at North Bersted, West Sussex. An Agricultural Land Classification, (ALC), survey was carried out during April 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of four 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 At the time of the survey the land use to the north of the track was permanent pasture; to the south was set-aside. Land mapped as non-agricultural in the north of the site comprises an area of felled trees; the area mapped at Newbarn Lane comprises a track and trees.

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 Site
2	5.4	91.5
Non-Agricultural	0.5	8.5
Total area of site	5.9	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 All of the agricultural land surveyed has been classed as very good quality, Grade 2. The key limitations are slight soil droughtiness and soil wetness. In the north of the site profiles comprise deep well drained silty clay loams, affected by soil droughtiness, which become slightly less permeable across the remainder of the site, thereby having a slight soil wetness restriction.

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. High crop adjusted moisture deficits increase 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	SU916010
Altitude (m)	5
Accumulated Temperature (degree days, Jan-June)	1545
Average Annual Rainfall (mm)	746
Field Capacity (days)	152
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 5m AOD. Land south of Newbarn Lane is slightly lower lying.

4. Geology and Soil

4.1 British Geological Survey (1975), Sheet 332, Bognor shows the entire site to be underlain by brickearth over Upper Chalk.

4.2 The published soil survey map, (SSGB, 1967, 1:25,000) maps the northern third of the site as the Hook series (deep phase). These soils are described as 'brown earths with gleying' (SSGB, 1967). The remainder of the site is mapped as the Park Gate series (shallow phase with calcareous C horizon). These soils are described as a 'range of gley soils developed in brickearth' (SSGB, 1967).

4.3 Detailed field examination found deep silty textured soils which are either well drained or show a slight impedance to 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 2

5.3 All of the agricultural land surveyed has been classed as very good quality. In the northern third of the site the key limitation is soil droughtiness; the remainder of the land is limited by both slight soil droughtiness and wetness restrictions. Land restricted by soil droughtiness comprises medium silty clay loam topsoils over medium and heavy silty clay loam subsoils, which are occasionally calcareous at depth. Profiles are stoneless or very slightly stony, containing between 0-2% total flints or chalk by volume, and are well drained (Wetness Class I). The interaction between the soil textures and profile stone contents at this site, which has relatively high crop adjusted moisture deficits, means that the amount of profile available water is slightly restricted. Consequently this land may have slightly reduced yield potential. The remaining land is restricted by both slight soil droughtiness and wetness limitations. Profiles are similar in texture and stone content to before but are moderately well drained (Wetness Class II). This slight impedance to drainage is caused by slowly permeable heavy silty clay loams at c. 60-65 cm, and is evidenced by gleying at c. 50-60 cm. Pit 1 typifies such soils. The interaction between the medium silty clay loam topsoils and drainage characteristics at this site means that this land can be graded no higher than Grade 2 because of a minor soil wetness limitation which may slightly restrict the flexibility of cultivations, cropping and stocking on this land.

SOURCES OF REFERENCE

British Geological Survey (1975), Sheet No. 332, Bognor, 1:50,000 (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 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 S17, N.BERSTED Pit Number : 1P

Grid Reference: SU91600100 Average Annual Rainfall : 746 mm
Accumulated Temperature : 1545 degree days
Field Capacity Level : 152 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 24	MZCL	10YR42 00	0	0	C	
24- 42	MZCL	10YR54 00	0	0	F	MDCSAB
42- 52	MZCL	10YR54 52	0	0	F	MDCSAB
52- 60	HZCL	10YR52 00	0	0	C	MDCSAB
60-100	HZCL	10YR53 00	0	0	M	MDCPR
100-120	MZCL	25Y 63 71	0	2	M	MDCSAB

Wetness Grade : 2 Wetness Class : II
Gleying :052 cm
SPL :060 cm

Drought Grade : 2 APW : 144mm MBW : 24 mm
APP : 119mm MBP : 2 mm

FINAL ALC GRADE : 2
MAIN LIMITATION :

SAMPLE NO.	GRID REF	USE	ASPECT			--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT		ALC COMMENTS
1	SU91500110	PGR				1	1	160	40	124	7	2				DR	2	Och. root mott
1P	SU91600100	PGR		052	060	2	2	144	24	119	2	2				WD	2	Och. root mott
2	SU91600110	PGR				1	1	159	39	123	6	2				DR	2	Sl. gleyed 62+
3	SU91600100	PGR		055	080	1	1	160	40	124	7	2				DR	2	
4	SU91700090	SAS		065	065	2	2	160	40	124	7	2				WD	2	

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	0-27	mzcl	10YR53 52	10YR58 00	M				0	0		0							psd=mzcl(23% c)
	27-40	mzcl	10YR53 00						0	0		0		M					
	40-80	hzcl	10YR53 00						0	0		0		M					
	80-120	mzcl	10YR53 00	10YR62 00	C				0	0		0		M				Y	
1P	0-24	mzcl	10YR42 00	10YR46 00	C				0	0		0							psd=mzcl/zl(19%c)
	24-42	mzcl	10YR54 00	10YR56 00	F				0	0		0	MDCSAB	FR M					
	42-52	mzcl	10YR54 52	10YR56 00	F				0	0		0	MDCSAB	FR M					psd=mzcl (25% c)
	52-60	hzcl	10YR52 00	10YR58 00	C		00MN00	00 Y	0	0		0	MDCSAB	FM M					
	60-100	hzcl	10YR53 00	10YR58 00	M		00MN00	00 Y	0	0		0	MDCPR	FM P	Y		Y		
	100-120	mzcl	25Y 63 71	10YR68 00	M			Y	0	0	CH	2	MDCSAB	FR M				Y	
2	0-27	mzcl	10YR53 00	10YR58 00	M				0	0		0							
	27-62	hzcl	10YR54 00	10YR58 00	F				0	0		0		M					
	62-70	zc	10YR54 00	10YR58 61	C		00MN00	00 S	0	0		0		M					sl. gleyed
	70-120	hzcl	10YR54 00	10YR56 00	C			S	0	0		0		M					sl. gleyed
3	0-30	mzcl	10YR43 53	10YR56 00	F				0	0	HR	2							
	30-45	mzcl	10YR54 00	10YR56 00	F				0	0		0		M					
	45-55	mzcl	10YR52 54	10YR56 00	F				0	0		0		M					
	55-80	mzcl	10YR53 00	10YR58 00	M		00MN00	00 Y	0	0		0		M					
	80-105	hzcl	10YR53 00	10YR58 00	M		00MN00	00 Y	0	0		0		M			Y		
	105-120	mzcl	10YR63 71	10YR68 00	C			Y	0	0	CH	2		M				Y	
4	0-33	mzcl	10YR42 00						0	0	HR	2							
	33-45	mzcl	25Y 54 00	10YR56 00	F				0	0		0		M					
	45-65	mzcl	25Y 53 63	10YR56 00	F				0	0		0		M					
	65-100	hzcl	25Y 53 00	75YR58 00	M			Y	0	0		0		M			Y		
	100-120	hzcl	10YR53 00	75YR58 00	M			Y	0	0		0		M			Y		