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Fareham Borough Local Plan
Land at Crofton Manor Farm
Stubbington, Hampshire.

Agricultural Land Classification
ALC Map and Report

August 1997

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

FAREHAM BOROUGH LOCAL PLAN, LAND AT CROFTON MANOR FARM.

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of approximately 15 hectares of land to the north of Stubbington, at Crofton Manor Farm. The survey was carried out during September 1997.

2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA) on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with its statutory input to the Fareham Borough Local Plan. This survey supersedes any previous ALC information for this land.

3. The work was conducted by members of the Resource Planning Team in the Eastern Region of the FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey the majority of agricultural land was in Set-aside with a small area of permanent grassland to the northwest of the survey area. The areas mapped as 'other land' comprise housing, woodland, a road and an extension to the cemetery.

SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 below.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
3b	11.5	100	81.0
Other land	2.7	N/A	19.0
Total survey area	11.5	100	N/A
Total site area	14.2	N/A	100

7. The fieldwork was conducted at an average density of 1 boring every hectare. A total of 16 borings and 2 soil pits were described.

8. The entire site has been classified as Subgrade 3b, moderate quality agricultural land, the key limitation being soil wetness.

9. The majority of profiles are poorly drained comprising very slightly or slightly stony medium clay loam topsoils with occasional thin upper subsoils which are similar or slightly heavier in texture. Clay subsoils occur at shallow depths which will impede soil drainage. The resultant waterlogging will restrict seed germination and growth as well as limit the timing of cultivations. Wet soils such as these are susceptible to structural damage through trafficking by agricultural machinery and grazing livestock. This land has therefore been classified as Subgrade 3b due to soil wetness. Occasional better quality profiles also occur within this mapping unit but these were too limited in number and extent to map separately at this scale.

FACTORS INFLUENCING ALC GRADE

Climate

10. Climate affects the grading of the land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

11. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Factors	Units	Values	Values
Grid reference	N/A	SU 552 044	SU 553 043
Altitude	m,AOD	5	10
Accumulated Temperature	day°C	1551	1545
Average Annual Rainfall	mm	778	781
Field Capacity Days	days	156	157
Moisture Deficit, Wheat	mm	118	117
Moisture Deficit, Potatoes	mm	115	114
Overall Climatic Grade	N/A	Grade 1	Grade 1

12. 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.

13. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (ATO, January to June), as a measure of the relative warmth of a locality.

14. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. The site is climatically Grade 1. The site is believed not to be at risk from frost. However, it does lie in an area which is indicated as being 'Rather Exposed' (Met. Office, 1969). Detailed field examination shows that exposure is not a significant limitation in the grading of this site.

Site

15. The agricultural land at this site lies at an altitude of 5-12m AOD. The majority of the land at the site is flat or very gently sloping with slight undulations. Nowhere does gradient or microrelief affect agricultural land quality.

Geology and soils

16. The published geological information (BGS, 1971) shows the whole of the site to be underlain with Brickearth deposits. There is also the possibility of alluvium or plateau gravel occurring to the north-west of the site.

17. The most recently published soil information (SSEW, 1983) shows the survey area to be entirely mapped as the Park Gate Association. These soils are described as 'Deep stoneless silty soils variably affected by groundwater'. (SSEW, 1983). There is also the possibility of Hamble 2 and/or Wickham 4 Associations occurring on the site. The former are described as 'Deep stoneless well drained silty soils and similar soils affected by groundwater; over gravel locally. Usually flat land.' (SSEW, 1983). The latter are described as 'Slowly permeable seasonally waterlogged fine loamy over clayey and fine silty over clayey soils associated with similar clayey soils, often with brown subsoils'. (SSEW, 1983).

18. Soils broadly consistent with the above descriptions were found upon detailed field examination. On the whole, the majority of profiles were heavier textured with clay subsoils at variable depths. However, occasional, more isolated units, of deeper, better drained soils were also found, as well as a small number of borings which became impenetrable to the auger at variable depths over flints.

AGRICULTURAL LAND CLASSIFICATION

19. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

20. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II.

Subgrade 3b

21. The entire site is mapped as moderate quality agricultural land (Subgrade 3b). This land is affected mainly by soil wetness, with soil droughtiness being equally limiting occasionally. Where land is affected by soil wetness, the soil profiles encountered have impeded soil drainage, arising from the occurrence of slowly permeable clay horizons at shallow depths (<39cm). These clay horizons are overlain by very slightly or slightly stony (0-10% total flints) medium clay loam topsoils (with variable amounts of fine sand in them). Shallow upper subsoil horizons are sometimes encountered, which often contain moderate amounts of flint stone (up to 25% total hard rock). As a consequence, these upper subsoils are occasionally impenetrable to the auger at shallow depths (35-40cm). The soils are gleyed between 0-38cm depth (suggesting seasonal waterlogging). These profiles are placed into a wetness class of IV. Soil inspection Pits 1 and 2 are typical of these soil profiles. The slowly permeable horizon has the effect of slowing water flow through the profile to the extent that air is excluded from the soil by water for long periods. This leads to poor root development, and subsequently, plant growth is affected. Excessive soil wetness also leads to a reduction in the opportunities for cultivation and/or grazing, such that within the prevalent local climatic regime, Subgrade 3b is appropriate.

22. A limited number of profiles within the Subgrade 3b unit are of better quality and tend to be affected by soil droughtiness alone or in combination with soil wetness. Such profiles

comprise a combination of much lighter soil textures throughout (fine sandy silt loam, sandy clay loam and sandy loam) and are better drained than those soils described above (generally, being gleyed at moderate depths with no slowly permeable horizons). However, it was considered that these soil profiles were too limited in number and extent (as well as being too variable in nature), to be shown separately at this scale of mapping.

Sharron Cauldwell
Resource Planning Team,
FRCA Reading.

SOURCES OF REFERENCE

British Geological Survey (1971) Sheet No. 316, Fareham 1:50,000 scale (Drift Edition). BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.* Met. Office: Bracknell.

Met. Office (1969) *Unpublished Climatological Data.* Map Sheet 181. Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 6, Soils of South East England.* 1:250,000 scale. SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England.* Bulletin 15. SSEW: Harpenden.

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 that 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 that restricts use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

SOIL DATA

Contents:

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	**OTH**	Other
DCW:	Deciduous woodland	**BOG:**	Bog or marsh	**SAS:**	Set-Aside
HTH:	Heathland	**HRT:**	Horticultural crops	**PLO:**	Ploughed

3. **GRDNT**: Gradient as estimated or measured by a hand-held optical clinometer.

4. **GLEY/SPL**: 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	**ST:**	Topsoil Stoniness
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
EX:	Exposure				

Soil Pits and Auger Borings

1 TEXTURE: soil texture classes are denoted by the following abbreviations:

S:	Sand	LS:	Loamy Sand	SL:	Sandy Loam
SZL:	Sandy Silt Loam	CL:	Clay Loam	ZCL:	Silty Clay Loam
ZL:	Silt Loam	SCL:	Sandy Clay Loam	C:	Clay
SC:	Sandy Clay	ZC:	Silty Clay	OL:	Organic Loam
P:	Peat	SP:	Sandy Peat	LP:	Loamy Peat
PL:	Peaty Loam	PS:	Peaty Sand	MZ:	Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:

F: Fine (more than 66% of the sand less than 0.2mm)
M: Medium (less than 66% fine sand and less than 33% coarse sand)
C: Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content:
M: Medium (<27% clay) H: Heavy (27-35% clay)

2. MOTTLE COL: Mottle colour using Munsell notation.

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 using Munsell notation.

6. GLEY: If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

7. STONE LITH: Stone Lithology - one of the following is used:

HR:	all hard rocks and stones	FSST:	soft, fine grained sandstone
ZR:	soft, argillaceous, or silty rocks	CH:	chalk
MSST:	soft, medium grained sandstone	GS:	gravel with porous (soft) stones
SI:	soft weathered igneous/metamorphic rock	GH:	gravel with non-porous (hard) stones

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

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		
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

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
1P	0-29	MCL	25Y 52						2	0	HR	5							
	29-60	C	25Y 62	75YR68	M		25Y 61	Y	0	0	HR	1	STVCPR	VM	P	Y		Y	
	60-95	C	25Y 62	10YR6668	M			Y	0	0	HR	1	STCPR	VM	P	Y		Y	
2P	0-25	MCL	10YR32				25Y 62		3	0	HR	10	WKCSAB	FR					
	25-40	HCL	25Y 6263	75YR4668	C		25Y 62	Y	0	0	HR	25	WKCSAB	FR	M	Y		Y	WITH FS
	40-120	C	05Y 62	10YR58	M		05Y 62	Y	0	0	HR	2	WKCPR	FM	P	Y		Y	WITH FS

LIST OF BORINGS HEADERS 18/12/97 FAREHAM BLPCROFTON MANOR

SAMPLE NO.	GRID REF	USE	ASPECT	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	SU55200450	SAS	N	2	30		2	2	59	-58	59	-55					WE	3B	IMP 38 SEE 2P
1P	SU55300450	SAS	S	2	29	29	4	3B	108	-9	103	-11					WE	3B	
2	SU55300450	SAS	S	2	30	30	4	3B	107	-10	100	-14					WE	3B	SEE PIT 1
2P	SU55410445	SAS			25	25	4	3B	130	13	106	-8					WE	3B	
3	SU55200440	SAS	S	4	70		1	1	193	76	133	19						1	
4	SU55300440	PGR	N	3	0		2	2	69	-48	69	-45					WE	3B	IMP 40 SEE 2P
5	SU55400440	SAS			32	32	4	3B	105	-12	103	-11					WE	3B	SEE PIT 1
6	SU55500440	SAS			0	32	4	3B	92	-25	101	-13					WE	3B	SEE PIT 1
7	SU55300430	SAS			38	38	4	3B	83	-34	85	-29					WE	3B	IMP 55 SEE 1P
8	SU55400430	SAS			38	38	4	3B	113	-4	111	-3					WE	3B	SEE 1P
9	SU55480430	SAS			35	35	4	3B	133	16	112	-2					WE	3B	SEE PIT 2
10	SU55250422	SAS			0	35	4	3B	93	-24	105	-9					WE	3B	SEE PIT 2
11	SU55300420	SAS			35	35	4	3B	99	-18	106	-8					WE	3B	SEE PIT 2
12	SU55400420	SAS			35	45	3	2	106	-11	117	3					DR	3A	IMP 70 POSS 2
13	SU55310412	SAS			20	35	4	3B	83	-34	89	-25					WE	3B	SEE PIT 1
14	SU55400410	SAS			45	60	2	1	122	5	131	17					DR	2	I65 POSS GR1
15	SU55160445	SAS	W	2	25	90	2	2	152	35	110	-4					WD	2	
16	SU55410445	SAS			30		2	2	68	-49	68	-46					DR	3B	IMP 35 SEE 2P

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	
1	0-30	MCL	25Y 43						2	0	HR	10							
	30-38	MCL	25Y 53	10YR68	C			Y	0	0	HR	20		M					IMP FLINTS
2	0-30	MZCL	25Y 43						0	0	HR	10							
	30-70	C	25Y 62	75YR58	M			Y	0	0		0		P		Y			DENSE, FIRM
	70-95	C	25Y 71	10YR58	M			Y	0	0		0		P		Y			PLASTIC
3	0-35	FSZL	10YR42						1	0	HR	10							
	35-70	FSZL	25Y 54						0	0	HR	15		M					LOOSE, SOFT
	70-85	FSZL	25Y 5463	75YR66	C			Y	0	0	HR	10		M					FRIABLE, LOOSE
	85-100	FSZL	25Y 73	75YR66	C			Y	0	0	HR	5		M					FRIABLE, LOOSE
	100-120	FSZL	25Y 72	75YR68	M			Y	0	0	HR	5		M					FRIABLE, LOOSE
4	0-30	MCL	25Y 52	75YR46	C			Y	0	0	HR	5							
	30-40	HCL	25Y 5262	75YR58	C			Y	0	0	HR	10		M		Y			IMP FLINTS
5	0-32	MCL	10YR42						0	0	HR	5							WITH FS
	32-90	C	05Y 6263	10YR58	M			Y	0	0	HR	2		P		Y			PLASTIC + MS
6	0-32	MCL	10YR4142	10YR46	C			Y	0	0	HR	10							WITH FS
	32-75	C	05Y 6263	10YR58	M			Y	0	0	HR	2		P		Y			DENSE, PLASTIC
7	0-38	MCL	10YR4142						0	0	HR	5							WITH FS
	38-55	C	25Y 5263	10YR5658	M			Y	0	0	HR	10		P		Y			IMP FLINTS
8	0-38	MCL	10YR4142						5	0		0							WITH FS
	38-90	C	05Y 5263	10YR58	M			Y	0	0		0		P		Y			DENSE, FIRM
9	0-35	MCL	10YR42						0	0	HR	5							WITH FS
	35-65	C	25Y6263	10YR58	M			Y	0	0	HR	5		P		Y			BORDER HZCL
	65-120	C	05Y 6263	10YR58	M			Y	0	0		0		P		Y			DENSE, PLASTIC
10	0-35	MCL	10YR4142	10YR46	C			Y	0	0	HR	5							
	35-70	C	05Y 5153	10YR58	M			Y	0	0	HR	2		P		Y			DENSE, FIRM
11	0-35	MCL	10YR42						0	0	HR	5							WITH FS
	35-65	HCL	25Y6162	10YR58	M			Y	0	0	HR	10		M		Y			BORDER C, I HR
12	0-35	FSZL	10YR42						0	0	HR	5							
	35-45	MCL	10YR5253	10YR5646	C			Y	0	0	HR	10		M					LOOSE, FRIABLE
	45-70	C	25Y5152	10YR58	M			Y	0	0	HR	10		P		Y			IMP FLINTS
13	0-20	MCL	10YR42						0	0	HR	5							
	20-35	MCL	10YR51	10YR4446	C			Y	0	0	HR	5		M					LOOSE, FRIABLE
	35-60	C	25Y6162	10YR5658	M			Y	0	0	HR	2		P		Y			IMP FLINTS
14	0-30	FSZL	10YR42						0	0	HR	3							
	30-45	FSZL	10YR42	10YR46	F				0	0	HR	5		M					LOOSE, FRIABLE
	45-60	FSZL	25Y 6263	10YR56	C			Y	0	0	HR	10		M					LOOSE, FRIABLE
	60-65	HCL	25Y 6263	10YR5658	C			Y	0	0	HR	15		M		Y			IMP FLINTS

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	
15	0-25	MCL	25Y 53						0	0	HR	5							
	25-52	SCL	05Y 63	10YR68	M			Y	0	0	HR	2		M					FRIABLE, LOOSE
	52-75	MSL	25Y 63	10YR68	M			Y	0	0		0		M					FRIABLE, LOOSE
	75-90	SCL	05Y 62	75YR6858	M			Y	0	0		0		M					FRIABLE, LOOSE
	90-120	HCL	05Y 62	75YR68	M			Y	0	0		0		M			Y		DENSE, FIRM
16	0-30	MCL	25Y 42						4	1	HR	12							
	30-35	HCL	25Y 5262	10YR4668	C			Y	0	0	HR	40		M					IMP FLINT