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East Hampshire Local Plan
Site 1133: Land at Lymington
Bottom, Four Marks
Agricultural Land Classification,
ALC Map and Report (Revised)
March 1995

AGRICULTURAL LAND CLASSIFICATION REPORT

EAST HAMPSHIRE LOCAL PLAN

SITE 1133: LAND AT LYMINGTON BOTTOM, FOUR MARKS

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 East Hampshire district of Hampshire. The work forms part of MAFF's statutory input to the East Hampshire Local Plan.
- 1.2 Site 1133 comprises 2.8 hectares of land to the west of Lyminster Bottom in Four Marks, east Hampshire. An Agricultural Land Classification (ALC) survey was carried out during February 1995. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 4 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 The work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.4 At the time of the survey the land was not under agricultural management and was under rough grazing. Land mapped as Urban comprises a house and garden.
- 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 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
3b	2.7	96.4	100.0 (2.7 ha)
Urban	<u>0.1</u>	<u>3.6</u>	
Total area of site	2.8	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 Subgrade 3b, moderate quality, because of moderate soil wetness limitations. These arise from clay

subsoils which are present either directly below the topsoil or at shallow depths within the soil profile. This results in moderately well or poorly drained soil profiles. Given the relatively wet prevailing local climate this land is thus subject to restricted flexibility of cropping, stocking and cultivations.

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, 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 Table 2 and these show that there is an overall climatic limitation which will prevent this site from being classified any higher than Grade 2. This limitation arises from the comparatively moist and cool climatic conditions at this locality which are caused by the high altitude of the site. Climatic factors also interact with soil properties to influence soil wetness and droughtiness limitation. The high average annual rainfall (and therefore high field capacity days), in combination with low crop adjusted soil moisture deficits, increase the likelihood of soil wetness limitations whilst decreasing soil droughtiness restrictions.

Table 2 : Climatic Interpolation

Grid Reference	SU 666 341
Altitude (m)	175
Accumulated Temperature (degree days, Jan-June)	1342
Average Annual Rainfall (mm)	931
Field Capacity (days)	202
Moisture Deficit, Wheat (mm)	81
Moisture Deficit, Potatoes (mm)	67
Overall Climatic Grade	2

- 2.4 Climatic reports from the Meteorological Office (Met. Office, 1971) suggest this area to be rather exposed. However, at the time of survey exposure was not felt to have significant impact on the site. No other local climatic factors, such as frost risk, are believed to affect the site.

3. Relief

- 3.1 Most of the site is relatively flat and lies at approximately 175 m AOD. The land then falls through moderately steep slopes of 5-7° (as measured using an optical reading clinometer) to lie at approximately 170 m AOD along the north-east

boundary of the site. Nowhere on the site do gradient or relief impose any limitation to agricultural land quality.

4. Geology and Soil

- 4.1 The relevant geological sheet (BGS, 1975) shows most of the site to be underlain by Upper Chalk, with a narrow strip of river and valley gravel deposits shown adjacent to Lymington Bottom.
- 4.2 The published Soil Survey map (SSEW, 1983) maps soils of the Carstens Association across the entire site. These soils are described as 'well drained fine silty soils over clayey, clayey and fine silty soils often very flinty' (SSEW, 1983).
- 4.3 Detailed field examination found soils to be broadly similar to those described in paragraph 4.2, though at this site soils are typically moderately well drained and slightly stony.
- 4.4 Nowhere on the site was the Upper Chalk encountered within 1.2 m from the surface.

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.

Subgrade 3b

- 5.3 All of the agricultural land surveyed has been classified as Subgrade 3b, moderate quality, because of moderate soil wetness and workability limitations. Brownish medium and heavy silty clay loam topsoils overlie brownish and ochreous heavy silty clay loam and clay upper subsoils which are either gleyed or slightly gleyed. These pass into similarly textured reddish lower subsoils at approximately 40-60 cm depth. From Pit 1, which represents such soils, it could be seen that these lower subsoils have pale ped faces and common mottles; they are thus gleyed. Additionally, structural assessment of these clay subsoils indicated that they were slowly permeable (medium angular blocky). Given the comparatively moist prevailing local climate and the depth to gleying, these profiles are assigned to Wetness Class III or IV. The interaction between the topsoil textures, soil drainage conditions and the local climate means that this land is subject to moderate restrictions on the flexibility of cropping, stocking and cultivations.

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MAFF Ref: EL 15/468

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1975), Sheet No. 300, Alresford, 1:50,000 Series (drift edition).

MAFF (1988), Agricultural Land Classification of England and Wales : Revised guidelines and criteria for grading the quality of agricultural land.

Meteorological Office (1971), Unpublished Climate Data.

Meteorological Office (1989), Climatological Data for Agricultural Land Classification.

Soil Survey of England and Wales (1983), Sheet 6, Soils of South East England, 1:250,000 and accompanying legend.

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES-----			STRUCT/ CONSIST	SUBS			SPL CALC		
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR		POR	IMP
1	0-30	HCL	10YR43						0	0	HR	5					
	30-50	C	10YR53	75YR58	C	D		Y	0	0	HR	10	M				
	50-65	C	05YR56	75YR56	C	D		Y	0	0	HR	15	P		Y		
	65-70	C	05YR46	75YR58	C	D		Y	0	0	HR	25	P		Y		
2	0-25	MZCL	10YR43						2	0	HR	4					
	25-40	HZCL	10YR54	10YR56	M	D		S	0	0		0	M				
	40-60	C	05YR44	75YR56	M	D		Y	0	0		0	P		Y		
3	0-30	HZCL	10YR43						0	0	HR	10					
	30-55	C	75YR56	00M00					0	0	HR	5	M		Y		
	55-70	C	75YR58	00M00					0	0	HR	15	M		Y		
	70-100	C	75YR53	75YR58	M	D		Y	0	0	HR	10	M		Y		
4	0-20	HZCL	10YR43						1	0	HR	3					
	20-60	HZCL	75YR56	00M00					0	0	HR	2	M				
	60-120	HZCL	05YR44	05YR46	C	D		Y	0	0		0	P		POSS SPL Q TEX?		
1P	0-22	MZCL	10YR43						0	0	HR	2					
	22-42	HZCL	10YR54	10YR56	C	D		S	0	0		0	MDCSAB	FR	M		
	42-62	C	75YR58	05YR46	C	D	10YR63	Y	0	0		0	STMAB	FM	P	Y	SEE 115/95
	62-75	C	05YR58	05YR46	M	D	10YR63	Y	0	0		0	STMAB	FM	P	Y	SEE 115/95

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M. REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS		
			GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP						MB	DRT
1	SU66603420	RGR		30	50	4	3B	92	0	102	0			WE	3B		
2	SU66503410	RGR	NE	1	40	40	4	3B	91	0	97	0			WE	3B	
3	SU66603410	RGR	E	2	70	30	4	3B	118	0	110	0			WE	3B	
4	SU66503400	RGR			60		2	3A	133	0	116	0			WE	3A	POSS WCIII
1P	SU66503412	RGR			42	42	3	3A	103	0	111	0			WE	3A	PALE PEDS

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 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. **GLEYS** : 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	SLST :	soft oolitic or dolimitic limestone
CH :	chalk	FSST :	soft, fine grained sandstone
ZR :	soft, argillaceous, or silty rocks	GH :	gravel with non-porous (hard) stones
MSST :	soft, medium grained sandstone	GS :	gravel with porous (soft) stones
SI :	soft weathered igneous/metamorphic rock		

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

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

- GRID REF** : national 100 km grid square and 8 figure grid reference.
- 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		
- GRDNT** : Gradient as estimated or measured by a hand-held optical clinometer.
- GLEYSPL** : Depth in centimetres (cm) to gleying and/or slowly permeable layers.
- AP (WHEAT/POTS)** : Crop-adjusted available water capacity.
- MB (WHEAT/POTS)** : Moisture Balance. (Crop adjusted AP - crop adjusted MD)
- DRT** : Best grade according to soil droughtiness.
- 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		
- 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		