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Lewes District Local Plan
Site 11 : Land at Ringmer.
ALC Map and Report
May 1995

AGRICULTURAL LAND CLASSIFICATION REPORT

LEWES DISTRICT LOCAL PLAN.

SITE 11: LAND AT RINGMER.

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 Lewes District of East Sussex. The work forms part of MAFF's statutory input to the preparation of the Lewes District Local Plan.
- 1.2 The site comprises approximately 3.4 hectares of land on the north east side of the village of Ringmer, north-east of Lewes. An Agricultural Land Classification (ALC) survey was carried out in May 1995. The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed. A total of 4 auger 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 survey 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 had been cultivated but no crop had been sown.
- 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
3b	<u>3.4</u>	<u>100.0</u>
Total area of site	3.4	

- 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 The agricultural land on the site has all been classified as Subgrade 3b, moderate quality agricultural land. The main limitation associated with this land is soil wetness due to the interaction between the relatively moist climatic conditions that prevail in the area and the poorly drained, clayey soils which occur on the site. This interaction causes prolonged waterlogging in the soils which restricts the period during which the land can be effectively worked without causing damage, and affects crop growth and yield potential.

2. Climate

- 2.1 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe climatic 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 grid point 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.
- 2.4 However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. The climate at this location is relatively warm and moist in a regional context therefore the likelihood of a wetness or droughtiness limitation may be enhanced depending on the soil conditions.
- 2.4 No local climatic factors such as exposure or frost risk are believed to affect the site significantly.

Table 2 : Climatic Interpolations

Grid Reference	TQ 455 129
Altitude (m)	15
Accumulated Temperature (Day °C, Jan-June)	1515
Average Annual Rainfall (mm)	808
Field Capacity (days)	171
Moisture Deficit, Wheat (mm)	111
Moisture Deficit, Potatoes (mm)	107
Overall Climatic Grade	1

3. Relief

- 3.1 The land slopes very gently toward a drain on the northern boundary of the site. The altitude of the land is approximately 15 m AOD and consequently altitude and relief do not impose any limitation to the agricultural use of the site.

4. Geology and Soil

- 4.1 The published geological map (BGS, 1979) shows the whole site to overlie Head deposits over Gault Clay.
- 4.2 The published Soil Survey map (SSEW, 1983) shows the site to be located on the boundary between the Denchworth and Kingston associations. These associations principally comprise slowly permeable clayey or fine loamy over clayey soils which are seasonally waterlogged.

4.3 Detailed field examination showed the soils to comprise predominantly stoneless, fine silty over clayey profiles. A typical soil profile has a heavy silty clay loam topsoil over a mottled heavy silty clay loam upper subsoil. Below approximately 40 cm depth the subsoil is a strongly mottled, coarse structured clay. The soils typically have been assessed as Wetness Class IV.

5. **Agricultural Land Classification**

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

Subgrade 3b

5.2 The whole site has been classified as Subgrade 3b due to a significant soil wetness limitation as a result of the interaction between the heavy textured soils and the relatively moist climatic conditions that prevail in the area. The soils have been assessed as Wetness Class IV due to the presence of poorly structured and gleyed subsoil horizons which will result in prolonged waterlogging. This wetness in association with the heavy textured topsoils makes the land more susceptible to structural damage through trafficking by agricultural machinery or poaching by livestock and thus the timing and frequency of such operations must be carefully controlled to prevent damage.

ADAS Ref:4105/033/95
MAFF Ref: EL41/00232

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1979), Sheet No 319, Lewes, 1:50,000 Series (solid and 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 England and Wales (1983), Sheet 6, Soils of South East England, 1:250,000 and accompanying legend.

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 which 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 which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

Agricultural Buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg. polythene tunnels erected for lambing) may be ignored.

Open Water

Includes lakes, ponds and rivers as map scale permits.

Land Not Surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above, eg. buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will be shown.

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging ¹
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years. ²
II	The soil profile is wet within 70 cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

¹The number of days specified is not necessarily a continuous period.

²'In most years' is defined as more than 10 out of 20 years.

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 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	DCW : Deciduous Wood
HTH : Heathland	BOG : Bog or Marsh	FLW : Fallow
PLO : Ploughed	SAS : Set aside	OTH : Other
HRT : Horticultural Crops		

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

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	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).

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 **VC** : very 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

SOIL PIT DESCRIPTION

Site Name : LEWES LP, SITE 11 Pit Number : 1P

Grid Reference: TQ45401280 Average Annual Rainfall : 808 mm
 Accumulated Temperature : 1515 degree days
 Field Capacity Level : 171 days
 Land Use : Ploughed
 Slope and Aspect : 01 degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	HZCL	10YR43 00	1	2	HR					
28- 42	HZCL	25Y 43 00	0	0		C	MDCAB	FM	P	
42-120	C	25Y 64 00	0	0		M	MDCPR	FM	P	

Wetness Grade : 3B Wetness Class : IV
 Gleying : 028 cm
 SPL : 028 cm

Drought Grade : 2 APW : 128mm MBW : 17 mm
 APP : 105mm MBP : -2 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SAMPLE ID.	GRID REF	USE	ASPECT	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
				GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB					
1	TQ45501290	PL0			028 028	4	3B	000	0 000	0				WE	3B	
1P	TQ45401280	PL0	N	01	028 028	4	3B	128	17 105	-2 2				WE	3B	
2	TQ45601290	PL0			030 030	4	3B	000	0 000	0				WE	3B	
3	TQ45401280	PL0	N	01	028 028	4	3B	133	22 108	1 2				WE	3B	
4	TQ45501280	PL0	N	01	030 030	4	3B	000	0 000	0				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
1	0-28	c	10YR43 00					1	0	HR	1						
	28-120	c	05Y 62 00	75YR58	00	M		Y	0	0	0		P				Y
1P	0-28	hzc1	10YR43 00					1	0	HR	2						
	28-42	hzc1	25Y 43 00	10YR56	00	C	25Y 53 00	Y	0	0	0	MDCAB	FM	P			Y
	42-120	c	25Y 64 00	10YR68	61	M	25Y 64 00	Y	0	0	0	MDCPR	FM	P			Y
2	0-30	hzc1	10YR43 00					1	0	HR	1						
	30-40	hzc1	25Y 63 00	75YR56	00	F		S	0	0	0			P			Y
	40-120	zc	25Y 73 00	10YR58	00	M		Y	0	0	0			P			Y
3	0-28	hzc1	10YR43 00					0	0	HR	1						
	28-38	hzc1	25Y 53 00	10YR56	62	C	25Y 53 00	Y	0	0	0			P			Y
	38-120	zc	10YR63 00	10YR68	61	M	10YR63 00	Y	0	0	0			P			Y
4	0-30	hzc1	10YR43 00					1	0	HR	2						
	30-50	zc	25Y 53 00	10YR56	00	F		S	0	0	0			P			Y
	50-120	c	25Y 63 00	75YR58	00	M		Y	0	0	0			P			Y