A1

Lewes District Local Plan
Site 12 : Land at Ringmer.
ALC Map and Report
May 1995

AGRICULTURAL LAND CLASSIFICATION REPORT

LEWES DISTRICT LOCAL PLAN.
SITE 12: 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 4 hectares of land on the south west 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 6 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 agricultural land on the site comprised permanent grassland. Two small areas of newly planted woodland have been mapped which are located in the middle of the site on the crest of the ridge.

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	3.9	95.0	100.0 (3.9 ha)
Woodland	0.2	5.0	
Total area of site	4.1	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 The agricultural land on the site has all been classified as Subgrade 3b, moderate quality agricultural land. The land is restricted to this subgrade principally as a result of a soil wetness limitation, although a slope limitation also exists on the western side of the site, where slopes in excess of 7° occur. Due to the clayey soils that predominate over the site and the relatively moist climatic conditions that prevail in the area, the land will suffer prolonged periods of waterlogging restricting the time that the land may be safely worked

without causing damage to the soils, and adversely affecting 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 dry in a regional context and therefore the likelihood of a droughtiness limitation may be enhanced depending on the soil conditions.

2.5 No local climatic factors such as exposure or frost risk are believed to affect this site significantly.

Table 2 : Climatic Interpolations

Grid Reference	TQ 443 122
Altitude (m)	30
Accumulated Temperature (Day °C, Jan-June)	1499
Average Annual Rainfall (mm)	824
Field Capacity (days)	174
Moisture Deficit, Wheat (mm)	109
Moisture Deficit, Potatoes (mm)	104
Overall Climatic Grade	1

3. Relief

3.1 The site is located on the south western side of the village of Ringmer on the crest of a ridge with the land falling gently toward the main road to the east and more steeply to the west. Gradients of 6-8° were measured on the western side of the site with slopes of 2-4° to the east. The altitude of the site ranges from 25 to approximately 32 m AOD. Over the majority of the site altitude and relief do not impose any limitation to land quality, but in the south western corner of the site, gradient will restrict the agricultural potential of the land to subgrade 3b.

4. Geology and Soil

4.1 The published geological map (BGS, 1979) shows the northern half of the site to overlie Gault Clay, whilst the southern half is mapped as Lower Chalk.

4.2 The published Soil Survey map (SSEW, 1983) shows the entire site to comprise soils of the Denchworth association, which are described as 'slowly permeable, seasonally waterlogged clayey soils, with some fine loamy over clayey soils'. Immediately to the south of the site, soils of the Coombe 2 association have been mapped which are described as 'well drained, calcareous fine silty soils over chalk'.

4.3 Detailed field examination showed the area to comprise predominantly stoneless, calcareous clayey profiles. A typical soil profile has a calcareous clay topsoil over a pale coloured, calcareous clay upper subsoil with faint ochreous mottling. Below approximately 40 cm depth, the lower subsoil is strongly mottled clay and has an angular blocky or coarse platy structure. The majority of the profiles on the site have been assessed as Wetness Class III.

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 III due to the presence of poorly structured and gleyed subsoil horizons which will result in prolonged waterlogging. This wetness in association with the clay textured topsoils makes the land very 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. In addition the moderately steep slopes that occur at the south west of the site will also cause a limitation to the agricultural quality of the site restricting the land to Subgrade 3b.

REFERENCES:

British Geological Survey (1979), Sheet No 319, Lewes, 1:50,000 Series (solid & 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, religous buildings, cemetries. 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.

[1]The 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 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. **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	**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 **ST** : strongly developed	**MD** : moderately developed
ped size	**F** : fine **C** : coarse	**M** : medium **VC** : very coarse
ped shape	**S** : single grain **GR** : granular **SAB** : sub-angular blocky **PL** : platy	**M** : massive **AB** : angular blocky **PR** : prismatic

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 appropiate 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 12 Pit Number : 1P

Grid Reference: TQ44301220 Average Annual Rainfall : 824 mm
Accumulated Temperature : 1499 degree days
Field Capacity Level : 174 days
Land Use : Permanent Grass
Slope and Aspect : 02 degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 23	C	10YR32 00	0	0						Y
23- 45	C	25Y 63 00	0	0			STMSB	FM	G	Y
45- 65	C	25Y 63 00	0	0		C	STMAB	FM	P	Y
65-120	C	05Y 62 00	0	0		C	STMPL	FM	P	Y

Wetness Grade : 3B Wetness Class : II
Gleying :045 cm
SPL :065 cm

Drought Grade : 1 APW : 141mm MBW : 32 mm
APP : 118mm MBP : 14 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

AMPLE D.	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	TQ44301220	PGR	W	02	040	040	3	3B	000	0	000	0					WE		3B	
1P	TQ44301220	PGR	W	02	045	065	2	3B	141	32	118	14	1				WE		3B	
2	TQ44401220	PGR	SE	04	040	040	3	3B	000	0	000	0					WE		3B	
3	TQ44301210	PGR	E	01	025		2	3B	000	0	000	0					WE		3B	
4	TQ44401210	PGR	SE	03	040	040	3	3B	128	19	105	1	2				WE		3B	SL. GLEY 20
5	TQ44701227	PGR	W	08	080		1	3A	000	0	000	0					GR		3B	SLOPE
6	TQ44201215	PGR	SW	05	035	035	3	3B	000	0	000	0					WE		3B	SL. GLEY 23

AMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST		SUBS STR	POR	IMP	SPL	CALC
1	0-25	c	10YR32 00						0	0		0							Y
	25-40	c	25Y 63 00						0	0		0			G				
	40-120	c	05Y 73 00	10YR66 00	C			Y	0	0		0			P			Y	
1P	0-23	c	10YR32 00						0	0		0							Y
	23-45	c	25Y 63 00						0	0		0	STMSB	FM	G				Y
	45-65	c	25Y 63 00	10YR66 00	C		25Y 63 00	Y	0	0		0	STMAB	FM	P				Y
	65-120	c	05Y 62 00	10YR66 00	C		05Y 62 00	Y	0	0		0	STMPL	FM	P			Y	Y
2	0-30	c	25Y 42 00						0	0	HR	1							
	30-40	c	25Y 52 00						0	0		0			G				
	40-70	c	25Y 63 00	10YR68 61	C			Y	0	0		0			P			Y	
	70-120	c	05Y 72 00	10YR68 00	M			Y	0	0		0			P			Y	
3	0-25	c	25Y 42 00						0	0		0							Y
	25-40	zc	05Y 72 00	25Y 66 00	C			Y	0	0		0			M				Y
	40-120	zc	05Y 72 00	25Y 66 00	C			Y	0	0		0			M				Y
4	0-20	c	10YR42 00						0	0	HR	1							
	20-40	c	05Y 53 00	10YR56 00	F			S	0	0		0			M				
	40-120	c	05Y 63 00	25Y 66 00	C			Y	0	0		0			P			Y	Y
5	0-25	c	10YR42 00						0	0		0							Y
	25-70	c	25Y 53 00						0	0		0			G				Y
	70-80	c	25Y 53 00	10YR56 00	F			S	0	0		0			G				Y
	80-120	c	05Y 73 00	10YR68 00	C			Y	0	0		0			P			Y	Y
6	0-23	c	10YR42 00						0	0		0							
	23-35	c	25Y 63 00	10YR66 00	F			S	0	0		0			G				
	35-120	c	25Y 63 00	10YR68 61	C			Y	0	0		0			P			Y	