

**A1**  
**Lewes District Local Plan**  
**Site 18 : Land at Barcombe Cross**  
**ALC Map & Report,**  
**May 1995**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## LEWES DISTRICT LOCAL PLAN SITE 18: LAND AT BARCOMBE CROSS

### 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 2.4 hectares of land on the south eastern side of the village of Barcombe Cross, 4 km north 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 survey, the two fields comprising the agricultural land were under grass. The central part of the site was occupied by a house and outbuildings some of which were used for business purposes.
- 1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas 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
3a	0.3	12.5	16.7
3b	1.5	62.5	<u>83.3</u>
Urban	<u>0.6</u>	<u>25.0</u>	100.0 (1.8 ha)
Total area of site	2.4	100.0	

- 1.6 Appendix 1 gives a general description of the grades, subgrades and land use categories identified in this survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and expected level and consistency of yield.
- 1.7 The majority of the agricultural land on the site has been classified as Subgrade 3b, moderate quality agricultural land. A small area of good quality agricultural land,

Subgrade 3a has been mapped at the northern end of the site. The major limitation associated with the majority of the site is soil wetness due to the presence of slowly permeable fine loamy over clayey soils. The interaction between these soils and the relatively moist climatic conditions that prevail in the area, mean that the land will suffer prolonged waterlogging during the wetter periods of the year restricting the period that it can be worked without causing structural damage, thereby limiting the land quality to Subgrade 3b. The main limitation associated with the better land at the north of the site is soil droughtiness. The soils in this area have fine loamy upper horizons over a sandy lower subsoil. Moisture reserves in these soils will therefore be limited, resulting in droughty conditions during the drier parts of the year and thereby restricting the land quality to Subgrade 3a.

## 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 and 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 418 157
Altitude (m)	20
Accumulated Temperature (Day °C, Jan-June)	1510
Average Annual Rainfall (mm)	813
Field Capacity (days)	173
Moisture Deficit, Wheat (mm)	110
Moisture Deficit, Potatoes (mm)	105
Overall Climatic Grade	1

### **3. Relief**

- 3.1 The site is located on the south western side of the village of Barcombe Cross between the village development and a disused railway line. The altitude of the site ranges from approximately 25-30 m AOD and generally slopes toward the south west. Gradients on the site are relatively gentle, ranging from 2-4° over the southern part of the site and almost flat over the northern part. Relief and altitude therefore do not impose any limitation on the agricultural quality of the area.

### **4. Geology and Soil**

- 4.1 The published geological map (BGS, 1979) shows the entire site to be underlain by Weald Clay.

- 4.2 The published Soil Survey map (SSEW, 1983) shows the soils on the site to comprise those of the Waterstock association. These soils are deep fine loamy, gleyic, argillic brown earths with ochreous mottling in the subsoil. Immediately to the west of the site soils of the Wickham 5 association have been mapped which comprise 'slowly permeable seasonally waterlogged fine loamy over clayey soils, with some coarse loamy soils with slowly permeable subsoils and slight seasonal waterlogging over sandstone'.

- 4.3 Detailed field examination showed two distinct soil types on the site. Over the majority of the area fine loamy over clayey soils were found. These soils typically have a medium clay loam topsoil over a faintly mottled heavy clay loam upper subsoil. Below 35-40 cm depth of the subsoil is a stoneless, strongly mottled clay with a coarse prismatic structure. These soils have slowly permeable lower subsoils and have been assessed as Wetness Class III or IV.

- 4.4 In the small field at the northern end of the site, fine loamy over sandy soils were mapped. The soil profile in this field had a medium clay loam topsoil over a faintly mottled sandy clay loam upper subsoil. Below 55 cm depth the subsoil texture became a loamy sand, with distinct ochreous mottles and clay lenses. Impenetrable rock was encountered at 80 cm depth.

### **5. Agricultural Land Classification**

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

#### **Subgrade 3a**

- 5.2 The land in the small field at the northern end of the site has been classified as Subgrade 3a due to a moderate droughtiness limitation. The soils in this field have fine loamy upper horizons over a sandy lower subsoil overlying rock. Moisture reserves in these soils will therefore be limited and moisture balance calculations indicate that the interaction between these soils and the climatic conditions that prevail in the area will result in a moderate droughtiness limitation restricting the land to this subgrade.

### **Subgrade 3b**

- 5.3 The southern part of the site has been classified as Subgrade 3b due to a significant 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 or IV due to the presence of slowly permeable lower subsoil horizons which will result in prolonged periodic waterlogging. This wetness in association with the fine loamy topsoil textures 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.

ADAS Ref: 4105/035/95  
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 <sup>1</sup>
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years. <sup>2</sup>
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.

<sup>1</sup>The number of days specified is not necessarily a continuous period.

<sup>2</sup>'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.

<b>ARA</b> : Arable	<b>WHT</b> : Wheat	<b>BAR</b> : Barley
<b>CER</b> : Cereals	<b>OAT</b> : Oats	<b>MZE</b> : Maize
<b>OSR</b> : Oilseed rape	<b>BEN</b> : Field Beans	<b>BRA</b> : Brassicae
<b>POT</b> : Potatoes	<b>SBT</b> : Sugar Beet	<b>FCD</b> : Fodder Crops
<b>LIN</b> : Linseed	<b>FRT</b> : Soft and Top Fruit	<b>FLW</b> : Fallow
<b>PGR</b> : Permanent Pasture	<b>LEY</b> : Ley Grass	<b>RGR</b> : Rough Grazing
<b>SCR</b> : Scrub	<b>CFW</b> : Coniferous Woodland	<b>DCW</b> : Deciduous Wood
<b>HTH</b> : Heathland	<b>BOG</b> : Bog or Marsh	<b>FLW</b> : Fallow
<b>PLO</b> : Ploughed	<b>SAS</b> : Set aside	<b>OTH</b> : Other
<b>HRT</b> : 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.

<b>OC</b> : Overall Climate	<b>AE</b> : Aspect	<b>EX</b> : Exposure
<b>FR</b> : Frost Risk	<b>GR</b> : Gradient	<b>MR</b> : Microrelief
<b>FL</b> : Flood Risk	<b>TX</b> : Topsoil Texture	<b>DP</b> : Soil Depth
<b>CH</b> : Chemical	<b>WE</b> : Wetness	<b>WK</b> : Workability
<b>DR</b> : Drought	<b>ER</b> : Erosion Risk	<b>WD</b> : Soil Wetness/Droughtiness
<b>ST</b> : Topsoil Stoniness		

## Soil Pits and Auger Borings

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

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

<b>F</b> :	Fine (more than 66% of the sand less than 0.2mm)
<b>M</b> :	Medium (less than 66% fine sand and less than 33% coarse sand)
<b>C</b> :	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.

<b>HR</b> :	all hard rocks and stones	<b>SLST</b> :	soft oolitic or dolimitic limestone
<b>CH</b> :	chalk	<b>FSST</b> :	soft, fine grained sandstone
<b>ZR</b> :	soft, argillaceous, or silty rocks	<b>GH</b> :	gravel with non-porous (hard) stones
<b>MSST</b> :	soft, medium grained sandstone	<b>GS</b> :	gravel with porous (soft) stones
<b>SI</b> :	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 18 Pit Number : 1P

Grid Reference: TQ41881570 Average Annual Rainfall : 813 mm  
 Accumulated Temperature : 1510 degree days  
 Field Capacity Level : 173 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- 25	MCL	10YR43 00	1	3	HR					
25- 45	C	10YR54 00	0	0		C	STCAB	FM	M	
45-120	C	25Y 73 00	0	0		M	STCPR	FM	P	

Wetness Grade : 3A Wetness Class : III  
 Gleying : 045 cm  
 SPL : 025 cm

Drought Grade : 2 APW : 131mm MBW : 21 mm  
 APP : 108mm MBP : 3 mm

FINAL ALC GRADE : 3A  
 MAIN LIMITATION : Wetness

-----

SAMPLE D.	GRID REF	ASPECT		--WETNESS--				-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS	
		USE	GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT			
1	TQ41801580	PGR	SW	04	037	037	4	3B	000	0	000	0					WE	3B	SL. GLEY 25
1P	TQ41881570	PGR	W	02	045	025	3	3A	131	21	108	3	2				WE	3A	
2	TQ41801570	PGR	SW	04	055	055	3	3A	000	0	000	0					WE	3A	SL. GLEY 27
3	TQ41881586	PGR	SW	03	035	035	4	3B	125	15	103	-2	2				WE	3B	SL. GLEY 25
4	TQ41861586	PGR	NW	01	055		2	2	099	-11	100	-5	3A				DR	3A	SL. GLEY 30

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR	POR	IMP	SPL
1	0-25	mc1	10YR43 00					2	0	HR	5						
	25-37	hc1	10YR54 00	10YR66 00	F		S	0	0		0		M				
	37-120	c	25Y 63 00	10YR68 71	M		Y	0	0		0		P				Y
1P	0-25	mc1	10YR43 00					1	0	HR	3						
	25-45	c	10YR54 00	10YR66 00	C		S	0	0		0	STCAB	FM	M			Y
	45-120	c	25Y 73 00	75YR58 00	M	25Y 63 00	Y	0	0		0	STCPR	FM	P			Y
2	0-27	mc1	10YR43 00					1	0	HR	3						
	27-55	hc1	10YR54 00	00MN00 00	F		S	0	0	HR	3			M			
	55-80	c	25Y 63 00	75YR68 61	M		Y	0	0		0			P			Y
	80-120	c	25Y 72 00	75YR68 00	M		Y	0	0		0			P			Y
3	0-25	mc1	10YR33 00					3	0	HR	6						
	25-35	hc1	10YR54 00	75YR58 00	C		S	0	0	HR	3			M			
	35-60	c	10YR63 00	10YR68 61	M		Y	0	0		0			P			Y
	60-120	c	05Y 71 00	75YR58 00	M		Y	0	0	HR	3			P			Y
4	0-30	mc1	10YR33 00					0	0	HR	4						
	30-55	sc1	10YR54 00	10YR66 00	C		S	0	0		0			M			
	55-120	lms	10YR64 00	10YR68 00	C		Y	0	0		0			M			