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**Land South of Sayers Common
West Sussex Structure Plan**

**Agricultural Land Classification
Reconnaissance survey
ALC map report
January 1997**



**Ministry of
Agriculture
Fisheries
and Food**

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West Sussex Structure Plan**

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**Resource Planning Team
Guildford Statutory Group
ADAS Reading**

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MAFF Reference EL 42/00768
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AGRICULTURAL LAND CLASSIFICATION REPORT

LAND SOUTH OF SAYERS COMMON, WEST SUSSEX STRUCTURE PLAN

INTRODUCTION

1 This report presents the findings of a reconnaissance Agricultural Land Classification (ALC) survey of 23.3 hectares of land on the southern edge of Sayers Common in West Sussex. The survey was carried out during January 1997.

2 The survey was commissioned by the Ministry of Agriculture Fisheries and Food's (MAFF) Land Use Planning Unit in Reading in connection with its statutory input to the West Sussex Structure Plan. This survey supersedes previous ALC information for this land.

3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group in ADAS. 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 land use on the site was mostly grassland with one ploughed bare field. The areas mapped as 'Other' include woodland, farm buildings, houses and roads.

SUMMARY

5 The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:20,000; 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.

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
3b	1.2	6.3	5.2
4	17.7	93.7	76.0
Other land	4.4	N/A	18.8
Total surveyed area	18.9	100	81.1
Total site area	23.3		100

7 The fieldwork was conducted at an average density of 1 boring per 3 hectares of agricultural land. A total of 6 borings and 1 soil pit was described.

8 The majority of the agricultural area has been classified as Grade 4 (poor quality) with a small area of Subgrade 3b (moderate quality) in the north west. Soil wetness is the main limitation across the site related to clay topsoils overlying poorly structured clay subsoils that

significantly restrict the drainage of the profiles. The differentiation between the two grades relates to the improvement of the climate on the lower land to the west and north, which is slightly drier than elsewhere on the site. In these better areas the impact of soil wetness is less severe in terms of the restriction on the flexibility of the land (related to the number of days when the soils can be cultivated or grazed by livestock) and the types of crop that are suitable to such conditions.

FACTORS INFLUENCING ALC GRADE

Climate

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

10 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).

Table 2 Climatic and altitude data

Factor	Units	Values		
		TQ277178	TQ276176	TQ278179
Grid reference	N/A			
Altitude	m, AOD	25	24	30
Accumulated Temperature	day°C (Jan June)	1506	1507	1500
Average Annual Rainfall	mm	826	829	826
Field Capacity Days	days	175	176	176
Moisture Deficit, Wheat	mm	109	109	108
Moisture Deficit, Potatoes	mm	103	104	103
Overall climatic grade	N/A	1	1	1

11 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.

12 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 (AT0 January to June) as a measure of the relative warmth of a locality.

13 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. There are also no significant local factors such as exposure or frost risk affecting the area. The site however straddles the important 175 day field capacity level and this has implications for assessing the impact of soil wetness and the workability of the land. Only a small area in the north-west of the site lies at or below 175 FC days.

Site

14 The site mostly occupies gently sloping west facing land or flatter crest tops between approximately 20-35 metres. In the extreme south there is a limited area of steep gradients.

(in the Grade 4 range) probably related to previous disturbance Microrelief and flooding do not affect the site

Geology and soils

15 The most detailed published geological information for the site (BGS 1978) shows the majority of the area to be underlain by Weald Clay with a minor fringe of Head deposits along the eastern edge

16 The most detailed published soils information for the site (SSEW 1983 and 1984) shows the whole area to comprise soils of the Wickham 1 Association These are generally described as slowly permeable seasonally waterlogged fine silty over clayey fine loamy over clayey and clayey soils During the fieldwork, clays over clays were found to be the typical soil on the site

AGRICULTURAL LAND CLASSIFICATION

17 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 page 1

18 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

19 A small area of this subgrade occurs in the north-west of the site The soil pit for the site (Pit 1 see Appendix II) is located in this map unit and describes a clay topsoil and subsoil with a significant soil wetness limitation The soils are gleyed from approximately 25 cm and the subsoil is slowly permeable (with a structure described as moderately developed coarse angular blocky but tending to massive) and fall into Wetness Class IV This degree of soil wetness in combination with the prevailing field capacity level at this point (175 days) means that the land is limited to Subgrade 3b

Grade 4

20 The rest of the site falls into this lower grade The soils are similar to those described above but are downgraded due to the fact that the rest of the site is somewhat higher and crosses an important field capacity day threshold The soils still fall into Wetness Class IV but their workability is reduced (i.e. there will be fewer days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock) because the climate is marginally wetter There may also have been some previous disturbance on the south eastern field and this in combination with the presence of one area of Grade 4 slopes reinforces Grade 4 as the appropriate grade for this area

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SOURCES OF REFERENCE

British Geological Survey (1978) *Sheet No 318/33 Brighton and Worthing*
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

Soil Survey of England and Wales (1983) *Sheet 6 South East England*
SSEW Harpenden.

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

APPENDIX I

DESCRIPTIONS 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 (e.g. 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.

APPENDIX II

SOIL DATA

Contents

Sample location map

Soil abbreviations - Explanatory Note

Soil Pit Descriptions

Soil boring descriptions (boring and horizon levels)

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	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 **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	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 **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	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

SOIL PIT DESCRIPTION

Site Name LAND SE SAYERS COMMON Pit Number 1P
 Grid Reference TQ26701780 Average Annual Rainfall 826 mm
 Accumulated Temperature 1506 degree days
 Field Capacity Level 175 days
 Land Use Ley
 Slope and Aspect 02 degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	C	10YR4/2 0/0	0	0						
25- 60	C	2.5Y 6/2 0/0	0	0		M	MCAB	FM	P	

Wetness Grade 3B Wetness Class IV
 Gleying 025 cm
 SPL 025 cm

Drought Grade 3A APW 082mm MBW 63 mm
 APP 088mm MBP -15 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Wetness

program ALC012

LIST OF BORINGS HEADERS 28/01/97 LAND SE SAYERS COMMON

page 1

SAMPLE NO	GRID REF	USE	ASPECT	--WETNESS--				-WHEAT-		-POTS-		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
				GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT					
1P	TQ26701780	LEY	W	02	025	025	4	3B	082	63	088	-15	3A			WE	3B	175FCD
2	TQ26901800	PLD			025	025	4	4	081	62	087	-16	3A			WE	4	SPL
6	TQ26701780	PGR	W	03	025	025	4	3B	082	63	088	-15	3A			WE	3B	175 FCD
8	TQ26901780	ARA			025	025	4	4	084	65	090	-13	3A			WE	4	SPL
14	TQ26801760	PGR	W	02	025	025	4	4	082	63	088	-15	3A			WE	4	SPL
18	TQ26801750	PGR	W	03	0	025	4	4	078	59	078	-25	3A			WE	4	IMP50X2
24	TQ26901730	PGR			0	025	4	4	082	63	088	-15	3A			WE	4	SPL

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED COL	-----STONES-----			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT		GLEY	>2	>6		LITH	TOT	STR		
1P	0-25	c	10YR42 00					0	0	0						
	25-60	c	25Y 62 00	75YR68 00	M	00MN00 00	Y	0	0	0	MCAB	FM	P			Y
2	0-25	c	10YR42 00					1	0	HR	2					
	25-60	c	25Y 52 00	000C00 00	M		Y	0	0	0			P	Y		Y
6	0-25	c	25 Y44 00					0	0	0						
	25-60	c	25 Y54 00	10YR58 00	M		Y	0	0	0			P	Y		Y
8	0-25	hc1	10YR42 00					1	0	HR	2					
	25-60	c	25Y 63 00	000C00 00	M		Y	0	0	0			P	Y		Y
14	0-25	c	10YR42 00					0	0	0						
	25-60	c	25Y 62 00	000C00 00	M		Y	0	0	0			P	Y		Y
18	0-25	hc1	10YR42 00	000C00 00	C		Y	0	0	0						
	25-50	c	25Y 62 00	000C00 00	M		Y	0	0	0			P	Y		Y
24	0-25	c	10YR42 00	000C00 00	C		Y	0	0	0						
	25-60	c	25Y 62 00	000C00 00	M		Y	0	0	0			P	Y		Y