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West Sussex Structure Plan Review
Reconnaissance Survey
Land at Sayers Common
Agricultural Land Classification
September 1995

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

WEST SUSSEX STRUCTURE PLAN REVIEW LAND AT SAYERS COMMON

INTRODUCTION

1 This summary report presents the findings of a reconnaissance Agricultural Land Classification (ALC) survey on approximately 43 ha of land at Sayers Common in West Sussex. The survey was carried out in September 1995.

2 The survey was commissioned by the Ministry of Agriculture Fisheries and Food (MAFF) Land Use Planning Unit (Reading) in connection with the West Sussex Structure Plan Review. The survey was completed at a reconnaissance level of detail on a 'free survey' basis as it was undertaken primarily to update the 1:63,360 scale provisional ALC maps for the area of search. Consequently the results are designed for strategic planning purposes only. For site specific proposals more detailed surveys may be required.

3 This survey supersedes any previous ALC surveys on this land.

4 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of 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.

5 At the time of survey the land use on the site was permanent grassland mainly in pony paddocks with some arable land to the south west. At this mapping scale the village of Sayers Common has been mapped as urban though it does include a number of farm buildings and some Non-agricultural land. Land to the north of the depot is shown as Non-agricultural as it is overgrown with scrub and includes a series of silted up ponds. The extreme north west has been mapped as Woodland.

SUMMARY

6 The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:50,000 it is accurate at this scale but any enlargement would be misleading.

7 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
3b	27.7	63.9
Urban	8.1	18.07
Non Agricultural	3.2	7.4
Woodland	4.3	10.0
Not surveyed	0	N/A
<hr/>		
Total survey area	43.3	100
Total site area	43.3	N/A

8 The fieldwork was conducted at an average density of approximately 1 boring per 5 hectares. A total of 8 borings and 1 soil inspection pit were described.

9 The soils on this site are derived from the Weald Clay and as such comprise poorly drained loamy over clayey soils with slowly permeable subsoils. The entire site has therefore been classified as Subgrade 3b moderate quality land on the basis of a severe soil wetness limitation.

FACTORS INFLUENCING ALC GRADE

Climate

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

11 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
Grid reference	N/A	TQ 263 177
Altitude	m AOD	20
Accumulated Temperature	day°C	1512
Average Annual Rainfall	mm	815
Field Capacity Days	days	173
Moisture Deficit Wheat	mm	111
Moisture Deficit Potatoes	mm	105

12 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.

13 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

14 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation (Climate Grade 1) However climatic factors can interact with soil properties to influence soil wetness and droughtiness limitations At this locality the crop adjusted soil moisture deficits are slightly high therefore increasing the likelihood of soil droughtiness

15 Local climatic factors such as exposure or frost risk are not believed to affect the site

Site

16 The site slopes gently from 17m AOD in the north to 25m AOD in the south therefore altitude and relief impose no restrictions to agriculture land use

17 Flooding does not appear to be limiting on this site either

Geology and soils

18 The relevant geological sheet (BGS 1976) maps the entire site as Weald Clay

19 The most recently published soil information for the site (SSEW 1983) shows the Wickham 1 soil association across all of the site These soils are described as Slowly permeable seasonally waterlogged fine silty over clayey fine loamy over clayey and clayey soils (SSEW 1983) Detailed field survey broadly confirms this

AGRICULTURAL LAND CLASSIFICATION

20 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 2

21 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 III

Subgrade 3b

22 All of the agricultural land on this site has been classified as Subgrade 3b (moderate quality) Soil inspection pit 1 is typical of the profiles on this site comprising heavy clay loam topsoils and upper subsoils over poorly structured slowly permeable clay from 35cm depth Gleying is present throughout the profile with manganese concretions appearing in some of the lower subsoils In this climatic regime the land has been assessed as being consistent with Wetness Class IV as the shallow slowly permeable horizons significantly impede drainage causing prolonged waterlogging of the soil profile As a result crop germination and growth

may be adversely affected Heavy topsoil textures can also limit the timing of cultivations as trafficking by agricultural machinery or grazing by livestock may lead to structural damage

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SOURCES OF REFERENCE

British Geological Survey (1976) *Sheet No 318 Brighton 1 50 000 scale (Drift Edition)*
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 Soils of South East England*
SSEW Harpenden.

Soil Survey of England and Wales (1983) *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.

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

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

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.

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

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land* (MAFF 1988)

¹ The number of days is not necessarily a continuous period

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

APPENDIX III

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	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 **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)

8 **STRUCT** the degree of development size and shape of soil peds are described using the following notation

<u>degree of development</u>	WK weakly developed	MD moderately developed
	ST strongly developed	

<u>ped size</u>	F fine	M medium
	C coarse	VC very coarse

<u>ped shape</u>	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 W SUSSEX SP SAYERS COMN Pit Number 1P

Grid Reference TQ26291772
 Average Annual Rainfall 815 mm
 Accumulated Temperature 1512 degree days
 Field Capacity Level 173 days
 Land Use Ploughed
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0	20	HCL	10YR53 00	1	2	HR	C				
20	35	HCL	10YR62 00	0	2	HR	C	MDCSAB	FM	M	
35	70	C	05Y 62 00	0	2	HR	M	WKCAB	FM	P	

Wetness Grade 3B
 Wetness Class IV
 Gleying 0 cm
 SPL 035 cm

Drought Grade 3A
 APW 92 mm MBW -19 mm
 APP 104mm MBP 1 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Wetness

SAMPLE NO	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	TQ26551782	PGR			0 040	4	3B		0	0				WE	3B	
1P	TQ26291772	PLO			0 035	4	3B	92	19 104	-1	3A			WE	3B	
2	TQ26241818	PGR			0 028	4	3B		0	0				WE	3B	
3	TQ26501840	PGR			0 040	4	3B		0	0				WE	3B	
4	TQ26661850	PGR			0 035	4	3B		0	0				WE	3B	
5	TQ26321798	PGR	NE	02	0 028	4	3B		0	0				WE	3B	
6	TQ26411787	PGR	NE	02	0 035	4	3B		0	0				WE	3B	
7	TQ26291772	PLO			0 035	4	3B		0	0				WE	3B	
8	TQ26411762	PLO			0 030	4	3B		0	0				WE	3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	-- MOTTLES---			PED COL	- STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLEY	>2	>6		LITH	TOT	STR	POR	IMP	SPL
1	0-25	mc1	10YR53 00	10YR58 00	C			Y	0	0	HR	2					
	25-40	hc1	10YR53 00	10YR58 00	C			Y	0	0		0		M			
	40-60	c	05Y 62 00	75YR68 00	M			Y	0	0		0		P			Y
1P	0 20	hc1	10YR53 00	10YR58 00	C			Y	1	0	HR	2					
	20 35	hc1	10YR62 00	75YR58 00	C			Y	0	0	HR	2	MDCSAB	FM	M		
	35-70	c	05Y 62 00	75YR58 00	M		00MN00	00	Y	0	0	HR	2	WKCAB	FM	P	Y
2	0-28	hc1	10YR53 00	10YR58 00	C			Y	0	0	HR	2					
	28-60	c	05Y 62 00	75YR58 00	M		00MN00	00	Y	0	0	0		P			Y
3	0-25	hc1	10YR53 00	10YR58 00	C			Y	0	0	HR	0					
	25-40	hc1	10YR63 00	75YR58 00	C			Y	0	0		0		M			
	40-60	c	05Y 62 00	75YR58 00	M			Y	0	0		0		P			Y
4	0-25	hc1	10YR53 00	10YR58 00	C			Y	0	0	HR	2					
	25-35	hc1	10YR63 00	75YR58 00	C			Y	0	0		0		M			
	35 60	c	05Y 62 00	75YR58 00	M			Y	0	0		0		P			Y
5	0-28	hc1	10YR53 00	10YR58 00	C			Y	0	0	HR	2					
	28-60	c	05Y 62 00	75YR58 00	M			Y	0	0		0		P			Y
6	0-35	hc1	10YR53 00	10YR58 00	C			Y	0	0	HR	2					
	35-60	c	05Y 62 00	75YR58 00	M			Y	0	0		0		P			Y
7	0-25	hc1	10YR53 00	10YR58 00	C			Y	0	0	HR	2					
	25 35	hc1	10YR62 00	75YR58 00	C			Y	0	0		0		M			
	35 60	c	05Y 62 00	75YR58 00	M			Y	0	0		0		P			Y
8	0 30	hc1	10YR53 00	10YR58 00	C			Y	1	0	HR	2					
	30 60	c	25Y 62 00	75YR58 00	M			Y	0	0		0		P			Y