

**A1**  
**Hart District Replacement Local Plan**  
**Site 1036/26-Odiham**  
**Agricultural Land Classification**  
**September 1996**

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

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# AGRICULTURAL LAND CLASSIFICATION REPORT

## HART DISTRICT REPLACEMENT LOCAL PLAN SITE 1036/26 - ODIHAM.

### Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of approximately 11 hectares of land situated to the east of Odiham in Hampshire. The survey was carried out during September 1996.
2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF), from its Land Use Planning Unit in Reading, in connection with the Hart District Replacement Local Plan. The results of this survey supersede any previous ALC information for this land.
3. 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.
4. At the time of survey the area was used as permanent grazing. There was an area of woodland on the site and also gardens belonging to adjacent houses.

### Summary

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. 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 below.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% Total site area	% Surveyed Area
3b	10.0	86.2	100.0
Other land	1.6	13.8	-
Total surveyed area	10.0	-	100
Total site area	11.6	100	-

7. The fieldwork was conducted at an average density of approximately 1 boring per hectare. A total of 10 borings and one soil pit were described.
8. All of the agricultural land on this site has been classified as Subgrade 3b (moderate quality), the key limitation being soil wetness. The soil profiles comprise deep poorly drained clay loam and silty clay loam soils passing into clay at depth. The soils are gleyed from the surface and are slowly permeable from a shallow depth.

In this local climatic regime, the combination of soil textures and the soil water regime act to limit the level and consistency of crop yields, as well as affecting the timings of cultivations and/or trafficking. This land has therefore been classified as Subgrade 3b on the basis of a moderate soil wetness limitation.

### 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
Grid reference	N/A	SU 748 516
Altitude	m, AOD	80
Accumulated Temperature	day°C (Jan-June)	1441
Average Annual Rainfall	mm	734
Field Capacity Days	days	157
Moisture Deficit, Wheat	mm	107
Moisture Deficit, Potatoes	mm	99

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 (Climatic Grade 1). However, climatic factors do interact with soil properties to influence soil wetness and droughtiness. At this location the crop adjusted soil moisture deficits are comparatively low thus decreasing the likelihood of soil droughtiness. Correspondingly the field capacity day values are relatively high thus increasing the effects of soil wetness.

14. Local climatic factors such as frost risk and exposure are not thought likely to adversely affect agricultural land use on this site.

## Site

15. The land on this site is relatively flat, with a gradient of 2-3 degrees north-east. The site lies at an altitude of 80m-90m AOD. However, neither gradient or microrelief affect agricultural land quality on this site.

16. The site is not susceptible to flooding.

## Geology and soils

17. The relevant geological sheet (BGS, 1981) maps the north of the site as London Clay and the southern end of the site as Reading Beds.

18. The most recently published soils information for this area (SSEW, 1983) maps the whole site as Wickham 4 soil association. These soils are described as 'slowly permeable seasonally waterlogged fine loamy over clayey and fine silty over clayey soils, often brown subsoils' (SSEW, 1983).

19. Detailed field survey revealed similar soils to those described above as the Wickham 4 soil association.

## 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 1.

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. The whole site is classified as Subgrade 3b land where the land is restricted by a significant soil wetness limitation. The profiles are stoneless to slightly stony (0-8% total flints, 2% >0-2cm) medium and heavy clay loam and silty clay loam topsoils over very slightly stony to slightly stony (1-15% total flints) medium or heavy clay loam and clay subsoils. Most profiles are gleyed from the surface and slowly permeable from 35-40cm depth, others are slowly permeable from 25cm. This land has therefore been classified as Wetness Class IV, Wetness Grade 3b as wet soils such as these can significantly restrict crop growth and yields as well as limiting the timing of cultivations. This land will be best suited to grazing over most of the year.

23. There were a few auger borings of better quality land. However they represent too small an area to be mapped at this scale.

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## SOURCES OF REFERENCE

British Geological Survey (1981) *Sheet No. 284, Basingstoke*. 1:50,000 Series. Solid & Drift.  
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 (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 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 <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.

#### 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).

<sup>1</sup> The number of days 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 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.

<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.

<b>MREL:</b> Microrelief limitation	<b>FLOOD:</b> Flood risk	<b>EROSN:</b> Soil erosion risk
<b>EXP:</b> Exposure limitation	<b>FROST:</b> Frost prone	<b>DIST:</b> Disturbed land
<b>CHEM:</b> 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 dolomitic 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:

<u>degree of development</u>	<b>WK:</b> weakly developed <b>ST:</b> strongly developed	<b>MD:</b> moderately developed
<u>ped size</u>	<b>F:</b> fine <b>C:</b> coarse	<b>M:</b> medium <b>VC:</b> very coarse
<u>ped shape</u>	<b>S :</b> single grain <b>GR:</b> granular <b>SAB:</b> sub-angular blocky <b>PL:</b> platy	<b>M:</b> massive <b>AB:</b> angular blocky <b>PR:</b> 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 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 : HART LP, SITES 1036/1026 Pit Number : 1P

Grid Reference: SU74805150 Average Annual Rainfall : 745 mm  
 Accumulated Temperature : 1430 degree days  
 Field Capacity Level : 158 days  
 Land Use : Permanent Grass  
 Slope and Aspect : 02 degrees NE

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 20	MZCL	10YR42 00	0	2	HR					
20- 42	C	10YR53 00	0	15	HR	M	MDCSAB	VM	M	
42- 70	C	10YR52 00	0	1	HR	M	STCOAB	VM	P	

Wetness Grade : 3B Wetness Class : IV  
 Gleying : 020 cm  
 SPL : 042 cm

Drought Grade : APW : 000mm MBW : 0 mm  
 APP : 000mm MBP : 0 mm

FINAL ALC GRADE : 3B  
 MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--				-WHEAT-		-POTS-		M. REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT	
1	SU74805160	PGR	0	035	4	3B	000	0	000	0				WE	3B		
1P	SU74805150	PGR NE	02	020	042	4	3B	000	0	000	0			WE	3B	AT AB 3	
2	SU74705150	PGR NE	02	0	025	4	3B	000	0	000	0			WE	3B		
3	SU74805150	PGR NE	02	0	042	4	3B	000	0	000	0			WE	3B		
4	SU74905150	PGR NE	02	0	035	4	3B	000	0	000	0			WE	3B	IMP 60	
5	SU74705140	PGR NE	03	0	040	4	3B	000	0	000	0			WE	3B		
6	SU74805140	PGR NE	03	0		2	2	000	0	000	0			WE	3B	IMP 30, SEE 1P	
7	SU74905140	PGR NE	02	028		2	2	000	0	000	0			WE	3B	IMP 40, SEE 1P	
8	SU75005140	PGR NW	01	0	025	4	3B	000	0	000	0			WE	3B		
10	SU74705110	PGR S	01	0	025	4	3B	000	0	000	0			WE	3B		
11	SU74705100	PGR	0	025	4	3B	000	0	000	0				WE	3B		

SAMPLE	DEPTH	TEXTURE	COLOUR	---MOTTLES---			PED COL.	---STONES---			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR		
1	0-20	hzc1	10YR32 00	10YR56	00	C		Y	0	0	HR	2				
	20-35	c	25 Y63 00	75YR58	00	M		Y	0	0	HR	1		M		
	35-60	c	25 Y63 00	75YR58	00	M		Y	0	0		0		P		Y
1P	0-20	mzc1	10YR42 00						0	0	HR	2				
	20-42	c	10YR53 00	10YR58	00	M		Y	0	0	HR	15	MDCSAB	VM	M	
	42-70	c	10YR52 00	75YR56	00	M		Y	0	0	HR	1	STCOAB	VM	P	Y
2	0-25	hzc1	10YR42 00	10YR56	00	C		Y	0	0	HR	2				
	25-55	c	10YR53 00	75YR58	00	M		Y	0	0	HR	2		P		Y
	55-75	c	10YR52 00	75YR58	00	M		Y	0	0		0		P		Y
3	0-20	mzc1	10YR42 00	10YR56	00	C		Y	0	0	HR	2				
	20-42	c	25 Y63 00	75YR58	00	C		Y	0	0	HR	5		M		
	42-70	c	25 Y62 00	75YR58	00	M		Y	0	0	HR	5		P		Y
4	0-25	mzc1	10YR42 00	75YR56	00	C		Y	0	0		0				
	25-35	hc1	10YR53 00	75YR58	00	C	10YR71 00	Y	0	0	HR	10		M		
	35-60	c	10YR53 63	75YR58	00	M		Y	0	0	HR	5		P		Y
5	0-20	c	10YR42 00	10YR56	00	C		Y	0	0	HR	2				
	20-40	c	10YR53 00	75YR58	00	M		Y	0	0		0		M		
	40-60	c	25 Y63 00	75YR58	00	M		Y	0	0		0		P		Y
6	0-30	hzc1	10YR42 00	10YR56	00	C		Y	2	0	HR	8				
7	0-28	mc1	10YR42 00						0	0	HR	5				
	28-40	mc1	25 Y73 00	10YR58	00	C		Y	0	0	HR	10		M		
8	0-25	mc1	10YR51 00	75YR46	00	C		Y	0	0		0				
	25-80	c	10YR61 00	75YR58	00	M		Y	0	0		0		P		Y
10	0-25	hc1	10YR52 00	75YR58	00	C		Y	0	0		0				
	25-70	c	25Y 63 00	75YR58	00	M	10YR61 00	Y	0	0		0		P		Y
11	0-25	hc1	10YR41 42	10YR58	00	C		Y	0	0	Z	0				
	25-80	c	25 Y63 00	75YR68	00	C	10YR71 00	Y	0	0	HR	2		P		Y