

**A1**  
**Wokingham District Local Plan**  
**Site SA15, Hurst, Berkshire**  
**Agricultural Land Classification**  
**January 1996**

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

**ADAS Reference: 0206/ 172/ 95**  
**MAFF Reference: EL 02/ 1176**  
**LUPU Commission: 02301**

# **AGRICULTURAL LAND CLASSIFICATION REPORT**

## **WOKINGHAM DISTRICT LOCAL PLAN SITE SA15, HURST, BERKSHIRE**

### **Introduction**

1. This summary report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 1.9 ha of land approximately 1.5 km south-west of the village of Hurst, near Winnersh in Berkshire. The survey was carried out in January 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 Wokingham District Local Plan. This site was previously surveyed in 1976 (ref: 0206/006/76), although not under the current guidelines, and the current survey therefore supersedes all previous ALC surveys on 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 east of the site was in arable use and the western area was under pasture.

### **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. All of the site has been classified as Subgrade 3a.
6. The fieldwork was conducted at an average density of one boring per hectare with supplementary borings where necessary. On this site a total of three borings and one soil pit was described.
7. The soil textures and structures observed in some of the auger borings and in the inspection pit indicate that a crop would suffer from a lack of water in the summer months which could depress yields. Referred to as soil 'droughtiness', this can restrict the versatility of the land to varying degrees, depending on its severity.
8. Soils in a small area to the east of the site have slowly permeable subsoils which impede drainage. Such land can prove difficult to work during the wetter months of the year and the yield potential and choice of crops grown will be limited by poor drainage. This land is limited in quality on the basis of soil wetness.
9. Land quality was mapped as Subgrade 3a (good quality land) across the site, mainly on the basis of a moderate soil droughtiness limitation, but also by a moderate soil wetness limitation in a small area in the east.

## 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	SU 787 716
Altitude	m, AOD	40
Accumulated Temperature	day°C	1477
Average Annual Rainfall	mm	657
Field Capacity Days	days	137
Moisture Deficit, Wheat	mm	116
Moisture Deficit, Potatoes	mm	111

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 mean that there is no limitation on grade due to climate. Neither exposure nor frost are considered to be a problem, and this site is climatically Grade 1.

### Site

15. The site is located in an area of gentle slopes, with the site itself being level at 40 m AOD.

### Geology and soils

16. The most detailed published geological information (BGS, 1971: Sheet 268) shows the site to be underlain by a solid geology of London Clay, with a drift cover of valley gravels in the west.

17. The most detailed published soils information (SSEW, 1983), records this area as having soils corresponding to the Wickham 4 association. The soils were found to be more similar to the Hurst series across the site when surveyed. Hurst soils are described as 'coarse and fine loamy permeable soils, mainly over gravel, variably affected by groundwater' (SSEW, 1984).

### **Agricultural Land Classification**

18. 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.

19. 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 3a*

20. Good quality land was mapped across the whole site on the basis of soil droughtiness limitations in the west and soil wetness limitations in a small area in the east.

21. The majority of soils have medium clay loam topsoils, over medium clay loam or sandy clay loam upper subsoils, passing into very stony sandy clay loam lower subsoils, which are impenetrable to the auger. Topsoils are very slightly stony (3-5 % total flints by volume, of which 1-3% are >2 mm diameter). Upper subsoils are gleyed and are very slightly to slightly stony (3-10 % total flints by volume). The soil inspection confirmed the stone content of the impenetrable horizon as 60% total stones by volume, and showed that deeper horizons were gleyed, very slightly stony loamy medium sand, over very stony loamy medium sand.

22. The textures and stone content of these soils result in there being a limited amount of available water in the profile that a crop could utilise, which could result in drought stress. This would affect the crop during the drier months of the year and it imposes a limitation on the type of crops that can be grown or on their potential yield. This soil droughtiness restricts the land quality to Subgrade 3a.

23. In the east of the site, the gravel drift cover is absent and the soils are developed over London Clay. Topsoils are medium clay loam and overlie gleyed, heavy clay loam upper subsoils. Clay lower subsoils occur at a depth of 45 cm and are slowly permeable. Profiles are very slightly stony throughout and suffer impeded drainage due to the slowly permeable clay horizon.

24. Soil wetness limits the land quality in this area to Subgrade 3a, as the type of crops that can be grown and their potential yields are reduced, along with the land being inaccessible to machinery for longer periods.

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## SOURCES OF REFERENCE

British Geological Survey (1972) *Sheet No.268, Reading*  
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.

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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.

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#### 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).

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<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.

**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

<b>F:</b> faint - indistinct mottles, evident only on close inspection
<b>D:</b> distinct - mottles are readily seen
<b>P:</b> 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 : WOKINGHAM DLP SA15 Pit Number : 1P

Grid Reference: SU78757168 Average Annual Rainfall : 657 mm  
 Accumulated Temperature : 1477 degree days  
 Field Capacity Level : 137 days  
 Land Use : Cereals  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 36	MCL	10YR42 00	1	3	HR					
36- 48	MCL	10YR52 00	0	10	HR	C	MDCSAB	FR	M	
48- 65	SCL	10YR52 00	0	50	HR	C			M	
65- 75	LMS	10YR46 66	0	3	HR		WKCSAB	FR	G	
75-120	LMS	10YR64 66	0	60	HR				M	

Wetness Grade : 2 Wetness Class : II  
 Gleying : 036 cm  
 SPL : No SPL

Drought Grade : 3A APW : 107mm MBW : -9 mm  
 APP : 099mm MBP : -12 mm

FINAL ALC GRADE : 3A  
 MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST		CHEM	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT	
1	SU78707160	CER		050	1	1	101	-15	110	-1	3A				DR 3A	IMP 70, SEE 1P
1P	SU78757168	CER		036	2	2	107	-9	099	-12	3A				DR 3A	
2	SU78807160	CER S	01	030 045	3	3A	132	16	109	-2	2				WE 3A	
3	SU78757168	CER		038	2	2	083	-33	083	-28	3B				DR 3A	IMP 50, SEE 1P

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS STR POR IMP SPL CALC	
				COL	ABUN	CONT		GLY >2	>6	LITH TOT			
1	0-30	mc1	10YR32 00					3	0	HR	5		
	30-50	sc1	10YR42 00					0	0	HR	3	M	
	50-70	sc1	10YR53 00	10YR56	00	C		Y	0	0	HR	7	M
1P	0-36	mc1	10YR42 00					1	0	HR	3		
	36-48	mc1	10YR52 00	75YR46	00	C		Y	0	0	HR	10	MDCSAB FR M
	48-65	sc1	10YR52 00	75YR46	00	C		Y	0	0	HR	50	M
	65-75	lms	10YR46 66					Y	0	0	HR	3	WKCSAB FR G
	75-120	lms	10YR64 66					Y	0	0	HR	60	M
2	0-30	mc1	10YR42 00					1	1	HR	2		
	30-45	hc1	25 Y64 00	10YR58	62	C		Y	0	0		0	M
	45-120	c	25 Y63 62	75YR58	00	C		Y	0	0		0	P
3	0-38	mc1	10YR42 00					1	0	HR	3		
	38-50	sc1	10YR62 63	75YR56	00	C	00M00 00	Y	0	0	HR	10	M