

**A1**  
**Winchester District Local Plan**  
**Site 62 Worthy Road**  
**Winchester**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**July 1994**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## WINCHESTER DISTRICT LOCAL PLAN SITE 62 WORTHY ROAD WINCHESTER

### 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 Winchester district of Hampshire. The work forms part of MAFF's statutory input to the Winchester District Local Plan.
- 1.2 The site comprises approximately 4 hectares of land to the east of Worthy Road at Winchester in Hampshire. An Agricultural Land Classification (ALC) survey was carried out in July 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 6 borings and one soil inspection pit were assessed 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 long term limitations on its use for agriculture.
- 1.3 The work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.4 At the time of the survey the agricultural land was under peas. The area of woodland comprises recently planted trees.
- 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 1:5,000. It is accurate at this scale but any enlargement would be misleading. This map supersedes any previous ALC survey information for this site.

**Table 1 Distribution of Grades and Subgrades**

Grade	Area (ha)	% of Site	% of Agricultural Land
2	0.5	6.8	7.1
3a	3.9	88.7	92.9
Woodland	0.2	4.5	100% (4.2 ha)
Total area of Site	4.4ha	100%	

- 1.6 The agricultural land on the site has been classified as Grade 2 and Subgrade 3a with soil wetness, workability and topsoil stoniness as the main limitations. The majority of the site comprises soils that suffer from a moderate wetness limitation caused by a slowly permeable clay subsoil. This land also shows a moderate topsoil stoniness limitation towards the east of the site. On the eastern edge of the site soils tend to be better drained, being limited by a slight workability limitation resulting from a combination of the topsoil texture and the local climatic regime.

## 2 Climate

- 2.1 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
- 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 gridpoint 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 and soil factors do interact to influence soil wetness and droughtiness limitations At this location field capacity days are reasonably high such that the likelihood of soil wetness limitations will be increased

**Table 2 Climatic Interpolation**

Grid Reference	SU 486512
Altitude (m AOD)	50
Accumulated Temperature (°days Jan June)	1486
Average Annual Rainfall (mm)	809
Field Capacity Days	177
Moisture deficit wheat (mm)	105
Moisture deficit potatoes (mm)	97
Overall Climatic Grade	1

## 3 Relief

- 3.1 The site lies at an altitude of approximately 40-55m falling gently from west to east. Nowhere on the site do gradient or relief pose any limitation to agricultural use

## 4 Geology and Soils

- 4.1 The published geological information (BGS 1975) shows the majority of the site to be underlain by Cretaceous Upper Chalk with inclusions of valley gravel and sand
- 4.2 The published soils information (SSEW 1983) shows the site to be underlain by soils of the Andover 1 Association. These are described as shallow well drained calcareous silty soils over chalk on slopes and crests. Deep calcareous and non calcareous fine silty soils in valley bottoms (SSEW 1983). Soils on the site tended to differ from this description chalky soils were not encountered. Soil profiles tended to comprise a stony topsoil and upper subsoil overlying a clay lower subsoil. Soils became less stony and better drained on the lower reaches of the site

## 5 Agricultural Land Classification

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map

5.2 The location of the soil observation points are shown on the attached sample point map

### Grade 2

5.3 Very good quality land has been mapped on the eastern edge of the site on land at the lowest altitude. Soil profiles typically comprise a very slightly stony (5% total flints v/v) medium silty clay loam topsoil overlying a similarly textured yet more stony (15% total flints v/v) upper subsoil. The lower subsoils comprise a very slightly stony (3-5% total flints v/v) heavy silty clay loam which extends to depth. These soils show no signs of either a wetness or droughtiness imperfection being freely drained and containing adequate reserves of available water for plant growth. However, due to a combination of the relatively wet nature of the local climate and the topsoil texture, this area is very slightly restricted by a soil workability limitation. During wetter periods, the topsoils may be prone to structural damage through trafficking by agricultural machinery or poaching by grazing livestock.

### Subgrade 3a

5.4 The majority of the agricultural land on the site has been classified as Subgrade 3a good quality land with soil wetness and topsoil stoniness as the main limitations. The nature of the soil and the time of survey meant that a number of soil auger inspections were impenetrable below the topsoil. Therefore, a number of assumptions regarding the nature of the subsoils across the site have been made, drawing conclusions from the findings of soil inspection pit no. 1. This showed the soil profile to typically comprise a slightly stony (10% total flints v/v) silt loam topsoil overlying a slightly stony (15% total flints v/v) medium silty clay loam upper subsoil extending to 39 cm. This rests upon a similarly textured horizon extending to 54 cm, yet containing a higher stone content of 40% total flints v/v, causing the soils to be impenetrable to the auger. This level of stoniness does not extend to depth, as evidenced by the very slightly stony heavy silty clay loam horizon extending from 54-65 cm, which in turn rests upon a very slightly stony clay horizon. Both of the less stony lower subsoils show signs of a wetness imperfection in the form of mottling and slight gleying, and the clay horizon is poorly structured and slowly permeable. Such drainage characteristics equate the soil profile to Wetness Class II, and the land is appropriately placed in Subgrade 3a. This moderate wetness limitation means that plant growth and rooting may be adversely affected, and soils may be more susceptible to structural damage through poaching by grazing livestock or trafficking by agricultural machinery.

5 5 Topsoil stone measurements towards the east of the site showed topsoil stones greater than 2cm in size to range between 11 12% This is sufficient to cause a moderate topsoil stone limitation with a resultant classification of Subgrade 3a High volumes of topsoil stones may inhibit the preparation of a fine seed bed and may also increase production costs due to extra wear and tear to agricultural implements and tyres Crop establishment and growth may also be affected

ADAS Ref 1513/114/94  
MAFF Ref EL15/594

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## SOURCES OF REFERENCE

British Geological Survey (1975) Sheet 299 Winchester 1 50 000 Drift Edition

MAFF (1988) Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land

Meteorological Office (1971) Unpublished Climate data relating to Sheet 168 1 63 360

Meteorological Office (1989) Climatic datasets for Agricultural Land Classification

Soil Survey of England and Wales (1983) Sheet No 6 Soils of South East England 1 250 000 and Accompanying Legend

Soil Survey of England and Wales (1984) Soils and their use in South East England Bulletin No 15

## 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

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## 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:

<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 **GLEY** 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 WINCHESTER LP SITE 42 P t N mbe 1P

Gr d Reference SU48653118 A erage A l R f l l 809 mm  
 Acc m lated Tempe at e 1486 deg d y  
 F eld Capac ty Le el 177 days  
 Land Use Peas  
 Slope a d Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 28	ZL	10YR53 52	3		10	HR					
28 39	MZCL	10YR54 00	0		15	HR		MDCSAB	FR	M	
39 54	MZCL	10YR56 00	0		40	HR				M	
54 65	HZCL	75YR54 00	0		2	HR	C	MDCSAB	FR	M	
65 100	C	75YR54 00	0		2	HR	C	WKCSAB	FR	P	

Wetness Grade 3A  
 Wet es C1 II  
 Gley ng cm  
 SPL 065 cm

Dro ght G ade 2  
 APW 123mm MBW 18 mm  
 APP 115mm MBP 18 mm

FINAL ALC GRADE 3A  
 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	SU48653118	PEA			1	2	77	28	77	20	3B			WE	3A	IMP40 SEE1P 3A
1P	SU48653118	PEA		065	2	3A	123	18	115	18	2			WE	3A	SL GLEY AT 54
2	SU48703120	PEA			1	2	78	27	78	19	3B			WE	3A	IMP45 SEE1P 3A
3	SU48723111	PEA			1	2	55	50	55	42	3B			WE	3A	IMP35 SEE1P 3A
4	SU48803112	PEA			1	2	152	47	118	21	1			WK	2	
5	SU48853117	PEA			1	2	150	45	115	18	1			WK	2	
6	SU48563125	PEA			1	2	99	6	102	5	3A			WE	3A	IMP55 SEE1P

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES			PED		STONES			STRUCT/	SUBS						
				COL	ABUN	CONT	COL	GLEYS	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC	
1	0 25	z1	10YR53 00						3	0	HR	5							
	25 40	mzc1	10YR54 00						0	0	HR	15			M				
1P	0 28	z1	10YR53 52						3	0	HR	10							
	28 39	mzc1	10YR54 00						0	0	HR	15	MDCSAB	FR	M				
	39 54	mzc1	10YR56 00						0	0	HR	40			M				
	54 65	hzc1	75YR54 00	75YR58 00 C			00MN00	00 S	0	0	HR	2	MDCSAB	FR	M				
	65 100	c	75YR54 00	10YR85 00 C					S	0	0	HR	2	WKCSAB	FR	P			Y
2	0 25	z1	10YR53 00						11	0	HR	13							TOPSOIL STONES
	25 45	mzc1	10YR54 00						0	0	HR	20			M				
3	0 20	mzc1	10YR43 00						12	0	HR	15							TOPSOIL STONES
	20 35	mzc1	10YR44 00						0	0	HR	15			M				
4	0 30	mzc1	10YR53 00						3	0	HR	5							
	30 45	mzc1	10YR44 00						0	0	HR	15			M				
	45 120	hzc1	10YR43 00						0	0	HR	3			M				
5	0 30	mzc1	10YR43 00						3	0	HR	5							
	30 55	mzc1	10YR43 00						0	0	HR	15			M				
	55 70	mzc1	10YR44 00						0	0	HR	5			M				
	70 120	h c1	10YR54 00						0	0	HR	5			M				
6	0 30	1	10YR53 00						3	0	HR	5							
	30 55	mzc1	10YR54 00						0	0	HR	15			M				