

**A1**  
**Vale of the White Horse District Local Plan**  
**Site H34: Land south of Major's Road,**  
**Watchfield, Oxfordshire**  
**(Revised February 1997)**

**Agricultural Land Classification**  
**February 1997**

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

**ADAS Reference: 3304/250/94**  
**MAFF Reference: EL 33/0127**  
**LUPU Commission: 01322**

**AGRICULTURAL LAND CLASSIFICATION REPORT**  
**VALE OF THE WHITE HORSE DISTRICT LOCAL PLAN**  
**SITE H34: LAND SOUTH OF MAJOR'S ROAD,**  
**WATCHFIELD, OXFORDSHIRE**  
**(REVISED FEBRUARY 1997)**

**Introduction**

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey on approximately eight hectares of land to the north of Watchfield village, Oxfordshire. The grading of this site has been re-evaluated, since the original fieldwork in October 1994, to take into account new information on land quality in the south of the site.
2. The survey was commissioned in 1994 by the Ministry of Agriculture, Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading in connection with the Vale of White Horse District Local Plan. However, the results were re-evaluated when, as part of an *ad-hoc* planning application, land to the immediate east of Site H34 was surveyed in February 1997 (ADAS Ref: 3304/009/97). As a result of this recent work the 1994 data was reviewed and a new map and report produced in 1997; this supersedes the 1994 ALC information for this land.
3. The work was conducted by members of the Resource Planning Team in the Leeds 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 both the 1994 and 1997 surveys the south of the site was sown to winter cereal. In 1994 the north of the site was under permanent grass; this area was not re-visited during the 1997 survey. The area shown as 'Other Land' comprises woodland.

**Summary**

5. The findings of the 1997 re-evaluation of the site 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. This map supersedes the 1994 ALC map.
6. The revised area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 overleaf.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% total surveyed area	% total site area
3a	2.3	31.9	28.4
3b	4.9	68.1	60.5
Other Land	0.9	-	11.1
Total surveyed area	7.2	100.0	-
Total site area	8.1	-	100.0

7. The fieldwork for the 1994 survey was conducted at an average density of one boring per hectare. A total of eleven borings and two soil pits were described; this information has been supplemented by three additional borings carried out in February 1997.

8. The site has been classified as Subgrades 3a and 3b (good and moderate quality land, respectively); soil wetness and workability are the key limitations. Where Subgrade 3a is mapped, loamy topsoils and upper subsoils overlie clay lower subsoils. The clay acts to impede soil drainage. At this locality, this will result in some restrictions to the flexibility of cropping, stocking and cultivations. Where the clay occurs at shallower depths within the soil profile, the soils are poorly drained. Here, Subgrade 3b is appropriate.

### 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).

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.

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SU 247 905
Altitude	m, AOD	100
Accumulated Temperature	day°C (Jan-June)	1413
Average Annual Rainfall	mm	665
Field Capacity Days	days	146
Moisture Deficit, Wheat	mm	104
Moisture Deficit, Potatoes	mm	95

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 accumulated temperature at this site mean that there is no overall climatic limitation. However, climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations. At this locality, the climate is relatively dry in regional terms. As a result the likelihood of soil droughtiness problems will be enhanced whilst soil wetness limitations may be reduced. No local climatic factors, such as exposure or frost risk, are believed to adversely affect the land quality on the site. This site is climatically Grade 1.

### **Site**

14. The site lies at an altitude of approximately 100 metres and is level to gently sloping (0-3°) with a westerly aspect. Nowhere on the site do gradient or microrelief affect agricultural land quality.

### **Geology and soils**

15. The British Geological Survey published map (1971, Sheet 253, Abingdon) shows the entire site to be underlain by Corallian Beds of clay and limestone.

16. Soil Survey of England and Wales (1973), Sheet 253, Abingdon shows the soils on the site to belong to the Shrivenham Series (in the east) and the Kingston Series (in the west). The Shrivenham Series is described as 'Well drained loamy, ferritic, ferruginous loams.' (SSEW, 1973), while the Kingston Series is described as 'Slowly permeable seasonally waterlogged fine loamy over clayey soils, and similar soils with slowly permeable subsoils and slight seasonal waterlogging.' (SSEW, 1973).

17. Detailed field examination of the soils on the site found fine loamy topsoils over slowly permeable fine loamy or clayey subsoils.

### **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, page 2.

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. Details from the original ALC survey, carried out in 1994, are attached in Appendix IV.

### *Subgrade 3a*

20. Subgrade 3a, good quality, land occurs in the south of the site. All of this land is limited by soil wetness and workability limitations, arising from loamy soils which overlie clay at depth. Topsoils typically comprise non-calcareous heavy clay loams. These overlie similarly textured or sandy clay loam upper subsoils. The upper subsoils are brownish, permeable and are moderately structured (see Pit 2, Appendix III). At approximately 60-70 cm depth, these pass into gleyed, plastic clay lower subsoils. As shown by Pit 2, the lower subsoils are poorly structured and slowly permeable. Consequently, these profiles are assessed as being moderately well drained (Wetness Class II). The interaction between the soil drainage status and the heavy topsoils with the prevailing climate results in soil wetness and workability limitations. As such, this land will be subject to some restrictions on the flexibility of cropping, stocking and cultivations.

### *Subgrade 3b*

21. Subgrade 3b, moderate quality, land occurs in the north of the site. All of this land is limited by soil wetness and workability limitations. Profiles consist of heavy clay loam or heavy silty clay loam topsoils overlying heavy clay loam, heavy silty clay loam, clay or silty clay subsoils. Slowly permeable layers generally begin at between 20 cm and 45 cm depth and most profiles are imperfectly drained (Wetness Class III) or poorly drained (Wetness Class IV). Soil Pit 1 is typical of these profiles.

22. Soil wetness can adversely affect seed germination and survival and can inhibit the development of a good root system. It also influences the sensitivity of soil to structural damage and is, therefore, a major factor in determining the number of days when cultivation, trafficking or grazing can take place. Subgrade 3b land is capable of producing moderate yields of a narrow range of crops such as 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.

23. An additional factor which restricts the land in the north of the site to Subgrade 3b is the presence of a number of concrete platforms which will restrict the use of some types of agricultural machinery.

Resource Planning Team  
Leeds Statutory Group  
ADAS Leeds

## SOURCES OF REFERENCE

British Geological Survey (1971) *Sheet No. 253, Abingdon, 1:63,360.*  
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 (1973) *Sheet 253, 1:63,360 and accompanying legend.*  
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 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

NO.	SAMPLE GRID REF	USE	ASPECT		--WETNESS--		--WHEAT--		--POTS--		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT		
1	SU24709040	CER SW	02	060 060	2	3A		0		0					WE	3A	S1 gleyed 50
2	SU24809040	CER SW	02	070 070	2	3B		0		0					WE	3B	S1 gleyed 50
3	SU24809030	CER SW	02		1	2	123	19	113	18	2				WK	2	Dr G2 to 90

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS				CALC	
				COL	ABUN	CONT		GLEY	>2	>6		LITH	TOT	STR	POR		IMP
1	0-30	hc1	10YR43 00					0	0	0							
	30-50	c	10YR44 00					0	0	HR	2		M				
	50-60	c	10YR44 00	10YR58 00	C		S	0	0	HR	2		M				S1 gleyed
	60-80	c	10YR53 00	75YR58 00	M		Y	0	0		0		P		Y		Plastic
2	0-30	c	10YR43 00					0	0	HR	1						
	30-50	c	10YR44 00	10YR56 00	F			0	0		0		M				
	50-70	sc1	10YR54 00	10YR58 00	C		S	0	0		0		M				S1 gleyed
	70-90	c	05Y 71 00	75YR58 00	C		Y	0	0		0		P		Y		Plastic
3	0-30	hc1	10YR46 00					1	0	HR	1						
	30-65	sc1	10YR44 00					0	0		0		M				
	65-90	sc1	10YR56 00	10YR52 68	C		S	0	0		0		M				S1 gleyed

**APPENDIX IV**

**DETAILS FROM THE 1994 SURVEY**

**A1**  
**Vale of the White Horse District Local Plan**  
**Site H34: Land South of Major's Road,**  
**Watchfield**  
**Agricultural Land Classification Report**  
**October 1994**



# AGRICULTURAL LAND CLASSIFICATION REPORT

## VALE OF THE WHITE HORSE DISTRICT LOCAL PLAN SITE H34, LAND SOUTH OF MAJOR'S ROAD, EAST OF WATCHFIELD

### 1. Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on a number of sites in the Vale of the White Horse District of Oxfordshire. The work forms part of MAFF's statutory input to the preparation of the Vale of the White Horse District Local Plan.
- 1.2 Site H34 comprises 8.0 hectares of land to the north of the village of Watchfield. An Agricultural Land Classification, (ALC) survey was carried out during October 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of eleven borings and two soil inspection pits were described 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 a long term limitation on its use for agriculture.
- 1.3 The work was carried out by members of the Resource Planning Team in the Leeds Statutory Centre of ADAS.
- 1.4 At the time of survey the north of the site was under permanent grass while the south was sown to winter cereals. An area of woodland has been mapped to the east of the site.
- 1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas and extent are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

**Table 1 : Distribution of Grades and Subgrades**

Grade	Area (ha)	% of Site	% of Agricultural Land
3b	7.2	90	100% (7.2 ha)
Woodland	0.8	10	
Total area of site	8.0 ha	100%	

- 1.6 Appendix 1 gives a general description of the grades, subgrades and land use categories identified in the survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

- 1.7 The area surveyed has been classified as Subgrade 3b (moderate quality) land. The soils are poorly drained, with heavy clay loam or heavy silty clay loam topsoils overlying slowly permeable heavy clay loam, heavy silty clay loam, clay or silty clay subsoils. The agricultural use of this land is restricted by soil wetness.

## 2. Climate

- 2.1 Estimates of climatic variables relevant to the assessment of agricultural land quality were obtained by interpolation from a 5km grid point dataset (Met Office, 1989) for a representative location in the survey area.

**Table 2: Climatic Interpolation**

Grid Reference	SU 247 905
Altitude (m)	100
Accumulated Temperature (degree days, Jan-June)	1413
Average Annual Rainfall	665
Field Capacity (days)	146
Moisture Deficit, Wheat (mm)	104
Moisture Deficit, Potatoes (mm)	95
Overall Climatic Grade	1

- 2.2 Climatic factors are considered first when classifying land since climate can be overriding in the sense that adverse conditions may restrict land quality irrespective of favourable site and soil conditions. The details in the table above show that there is no overall climatic limitation affecting this site. In addition, no local climatic factors such as exposure or frost risk are believed to affect the land quality.
- 2.3 However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. At this locality, the climate is relatively dry in regional terms. As a result the likelihood of soil droughtiness problems will be enhanced whilst soil wetness limitations may be reduced.

## 3. Relief

- 3.1 The site lies at an altitude of approximately 100 metres and is level to gently sloping (0-3°) with a westerly aspect. Nowhere on the site do gradient or microrelief affect agricultural land quality.

## 4. Geology and Soil

- 4.1 The British Geological Survey published map (1971, sheet 253, Abingdon) shows the site to be underlain by Corallian Beds of clay and limestone.

- 4.2 Soil Survey of England and Wales (1971), Sheet 253, Abingdon shows the soils on the site to belong to the Shrivvenham Series (in the east) and the Kingston Series (in the west).

The Shrivvenham Series is described (Soil Survey of England and Wales, 1973) as "well drained loamy, ferritic, ferruginous loams" while the Kingston Series is described as "slowly permeable seasonally waterlogged fine loamy over clayey soils, and similar soils with slowly permeable subsoils and slight seasonal waterlogging".

- 4.3 Detailed field examination of the soils on the site found fine loamy topsoils over slowly permeable fine loam or clayey subsoils. Generally the soils are poorly drained, falling in Wetness Class IV.

## 5. Agricultural Land Classification

- 5.1 Table 1 provides the details of the areas 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.

### Subgrade 3b

- 5.3 All of the agricultural land on this site has been mapped as moderate quality land, the principal limitation being the combination of soil wetness and topsoil texture. Profiles consist of heavy clay loam or heavy silty clay loam topsoils overlying heavy clay loam, heavy silty clay loam, clay or silty clay subsoils. Slowly permeable layers generally begin at between 20cm and 45cm depth and most profiles are imperfectly drained (Wetness Class III) or poorly drained (Wetness Class IV). Soil Pit 1 is typical of these profile.

Soil wetness can adversely affect seed germination and survival and can inhibit the development of a good root system. It also influences the sensitivity of the soil to structural damage and is therefore a major factor in determining the number of days when cultivation, trafficking or grazing can take place. Subgrade 3b land is capable of producing moderate yields of a narrow range of crops such as 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.

An additional factor which restricts the land in the north of the site to Subgrade 3b is the presence of a number of concrete platforms which will restrict the use of some types of agricultural machinery.

ADAS Ref: 3304/250/94  
MAFF Ref: EL33/0127

Resource Planning Team  
Leeds Statutory Group  
ADAS Leeds

## **SOURCES OF REFERENCE**

British Geological Survey (1971) Sheet No 253, Abingdon

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

Meteorological Office (1989), Climatological Data for Agricultural Land Classification.

Soil Survey of England and Wales (1971). Sheet 253.

SOIL PIT DESCRIPTION

Site Name : VALE OF WHITE HORSE H34 Pit Number : 1P

Grid Reference: SU24709050 Average Annual Rainfall : 665 mm  
 Accumulated Temperature : 1413 degree days  
 Field Capacity Level : 146 days  
 Land Use : Permanent Grass  
 Slope and Aspect : 02 degrees SE

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	HCL	10YR33 00	0	0						
25- 41	HCL	10YR53 00	0	0			MDCAB	VM	M	
41-100	C	10YR62 00	0	0		C	WDCAB	VM	P	

Wetness Grade : 3B Wetness Class : III  
 Gleying : 041 cm  
 SPL : 041 cm

Drought Grade : 2 APW : 117mm MBW : 13 mm  
 APP : 108mm MBP : 13 mm

FINAL ALC GRADE : 3B  
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : VALE OF WHITE HORSE H34 Pit Number : 2P

Grid Reference: SU24709032 Average Annual Rainfall : 665 mm  
 Accumulated Temperature : 1413 degree days  
 Field Capacity Level : 146 days  
 Land Use : Arable  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 35	HCL	10YR43 00	0	0						
35- 70	HCL	10YR44 00	0	0			MDMAB	FM	M	
70-120	C	25 Y63 00	0	0		C	WDCAB	VM	P	

Wetness Grade : 3A Wetness Class : II  
 Gleying : 070 cm  
 SPL : 070 cm

Drought Grade : 1 APW : 142mm MBW : 38 mm  
 APP : 119mm MBP : 24 mm

FINAL ALC GRADE : 3A  
 MAIN LIMITATION : Wetness



SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED	----STONES----			STRUCT/	SUBS			SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT	CONSIST	STR		
1	0-20	hc1	10YR32 00					0	0	0						
	20-35	hc1	10YR43 00					0	0	0		M				
	35-100	c	10YR61 00	10YR68 00	M			Y	0	0	0		P			Y
1P	0-25	hc1	10YR33 00					0	0	0						
	25-41	hc1	10YR53 00					0	0	0	MDCAB	VM	M			
	41-100	c	10YR62 00	10YR68 00	C			Y	0	0	0	WDCAB	VM	P		Y
2	0-30	hc1	10YR32 00					0	0	0						
	30-45	hc1	10YR43 00					0	0	0		M				
	45-100	c	10YR62 00	10YR68 00	M			Y	0	0	0		P			Y
2P	0-35	hc1	10YR43 00					0	0	0						
	35-70	hc1	10YR44 00					0	0	0	MDMAB	FM	M			
	70-120	c	25 Y63 00	25 Y66 00	C			Y	0	0	0	WDCAB	VM	P		Y
3	0-20	hzc1	10YR32 00					0	0	0						
	20-70	zc	10YR52 00	10YR58 00	C			Y	0	0	HR	1		P		Y
4	0-25	hzc1	10YR32 00					0	0	HR	1					
	25-35	hzc1	10YR44 00					0	0	0		M				
	35-70	zc	10YR52 00	75YR56 00	C			Y	0	0	0		P			Y
5	0-20	hc1	10YR42 00					0	0	0						
	20-40	c	10YR43 00					0	0	0		M				
	40-100	c	10YR62 00	10YR68 00	M			Y	0	0	0		P			Y
6	0-30	hc1	10YR42 00					0	0	0						
	30-60	hc1	10YR43 00					0	0	0		M				
	60-100	c	10YR46 00	10YR66 00	M			Y	0	0	0		P			Y
7	0-30	hzc1	10YR32 00					0	0	HR	1					
	30-70	zc	10YR52 00	10YR68 00	C			Y	0	0	0		P			Y
8	0-30	hzc1	10YR32 00					0	0	0						
	30-70	zc	10YR51 00	10YR58 00	C			Y	0	0	0		P			Y
10	0-35	hc1	10YR43 00					0	0	0						
	35-70	hc1	10YR44 00					0	0	0		M				
	70-120	c	25 Y63 00	25 Y66 00	C			Y	0	0	0		P			Y
11	0-30	sc1	10YR43 00					0	0	0						
	30-90	sc1	75YR56 00					0	0	0		M				
	90-120	sc1	10YR68 00					0	0	0		M				
12	0-30	sc1	10YR54 00					0	0	0						
	30-40	hc1	25 Y63 00	75YR68 00	M			Y	0	0	0		M			
	40-90	c	25 Y62 00	75YR68 00	C			Y	0	0	0		P			Y