

**Newbury District Local Plan  
Land at Chieveley**

**Agricultural Land Classification  
Summary Report**

**December 1995**

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

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# AGRICULTURAL LAND CLASSIFICATION REPORT

## NEWBURY DISTRICT LOCAL PLAN LAND AT CHIEVELEY

### Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 6.7 ha of land to the west of the village of Chieveley in Berkshire. The survey was carried out during November 1995.
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 preparation of the Newbury District Local Plan.
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 agricultural land on the site comprised arable and permanent grassland.

### Summary

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10000; 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.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area
3a	6.6	98.5
Other land	0.1	1.5
Total site area	6.7	100.0

7. The fieldwork was conducted at an average density of 1 boring per hectare. A total of eight borings and one soil pit were described.
8. All of the agricultural land on the site has been classified as Subgrade 3a, good quality land, with soil wetness as the main limitation. Soil profiles typically comprise medium clay loam topsoils over heavy clay loam upper subsoils which in turn rest upon clay lower subsoils.

The clays are gleyed and slowly permeable, causing a drainage impedance, such that a classification of Subgrade 3a 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).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SU 475 744
Altitude	m, AOD	125
Accumulated Temperature	day°C	1510
Average Annual Rainfall	mm	703
Field Capacity Days	days	151
Moisture Deficit, Wheat	mm	101
Moisture Deficit, Potatoes	mm	92

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 means that there is no overall climatic limitation. Local climatic factors such as exposure are also believed not to affect the site. The site is climatically Grade 1.

### Site

14. The site is flat, lying at an altitude of approximately 125m AOD. Nowhere on the site does gradient affect land quality. No other site factors such as flooding or microrelief affect the survey area.

## **Geology and soils**

15. The most detailed published geological information for the site (BGS, 1971) shows the entire site to be underlain by brickearth.

16. The most detailed published soils information (SSEW, 1975) shows all of the site to comprise soils of the Frilsham series. These are described as 'well drained flinty fine or coarse loamy soils over chalky head. Moderately deep fine or coarse loamy soils in chalky head and shallow fine silty soils over chalk' (SSEW, 1975).

## **AGRICULTURAL LAND CLASSIFICATION**

17. 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.

18. 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**

19. All of the agricultural land on the site has been classified as Subgrade 3a, good quality, with soil wetness as the main limitation. Soil profiles typically comprise very slightly or slightly stony (4-8% total flints v/v) medium clay loam topsoils overlying a variably stony (5-15% total flints v/v) heavy clay loam or clay upper subsoils. The lower subsoils were found to comprise stoneless or slightly stony (5-10% total flints v/v) clays. Profiles show signs of a wetness imperfection in the form of gleying or slight gleying from the upper or lower subsoils. A soil inspection pit (Pit 1) found the slightly gleyed clay lower subsoil, commencing at approximately 39 cm, to be poorly structured with low porosity and therefore slowly permeable. Such drainage characteristics equate the soils at the location of the pit to Wetness Class II (see Appendix II) and, given the topsoil textures and the prevailing field capacity level (151 days), these soils cannot be graded higher than Subgrade 3a. Due to different drainage characteristics observed across the site, such as depth to clay and extent of gleying, there were some slight variations in grade at particular borings but the variation is not significant enough to warrant separate map units. The wetness limitation on poorly drained soils such as these limits the number of days when the land is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock.

Richard Champion  
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December 1995

## SOURCES OF REFERENCE

British Geological Survey (1971) *Sheet No.267, Hungerford*.  
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 (1975) *Soils of Berkshire*  
SSEW: Harpenden

## 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.

## 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 PIT AND SOIL BORING DESCRIPTIONS**

**Contents :**

**Soil Abbreviations - Explanatory Note**

**Soil Pit Descriptions**

**Database Printout - Boring Level Information**

**Database Printout - Horizon Level Information**

## SOIL ABBREVIATIONS : 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:

<u>degree of development</u>	<b>WK</b> : weakly developed	<b>MD</b> : moderately developed
	<b>ST</b> : strongly developed	
<u>ped size</u>	<b>F</b> : fine	<b>M</b> : medium
	<b>C</b> : coarse	<b>VC</b> : very coarse
<u>ped shape</u>	<b>S</b> : single grain	<b>M</b> : massive
	<b>GR</b> : granular	<b>AB</b> : angular blocky
	<b>SAB</b> : sub-angular blocky	<b>PR</b> : prismatic
	<b>PL</b> : platy	

9. **CONSIST** : Soil consistence is described using the following notation:

<b>L</b> : loose	<b>VF</b> : very friable	<b>FR</b> : friable	<b>FM</b> : firm	<b>VM</b> : very firm
<b>EM</b> : extremely firm		<b>EH</b> : 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

<b>APW</b> :	available water capacity (in mm) adjusted for wheat
<b>APP</b> :	available water capacity (in mm) adjusted for potatoes
<b>MBW</b> :	moisture balance, wheat

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	
1	SU47507460	WHT		S40	1	1		0	0					DR 3B	I45 X2
1P	SU47507450	WHT		S39 039	3	3A		0	0					WE 3A	
2	SU47607450	WHT		S35 035	3	3A		0	0					WE 3A	
3	SU47667452	RGR		S75 075	2	2		0	0					WD 2	
4	SU47757452	RGR		S55 055	2	2		0	0					WE 2	
5	SU47507450	WHT		S35 035	3	3A		0	0					WE 3A	
6	SU47607450	WHT		030 030	4	3B		0	0					WE 3B	
7	SU47507440	WHT		S40 040	3	3A		0	0					WE 3A	
8	SU47507430	WHT		045 045	3	3A		0	0					WE 3A	

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	0-26	mc1	10YR43 42						2	0	HR	5						
	26-40	hc1	10YR54 00						0	0	HR	8			M			
	40-45	c	10YR56 00	00MN00	00	C		S.	0	0	HR	10			P		Y	IMP STONES
1P	0-28	mc1	10YR43 42						2	0	HR	5						
	28-39	hc1	75YR44 00	10YR46	00	F			0	0	HR	15	MDCSAB	FR	M			
	39-70	c	75YR54 00	10YR56	00	C	00MN00	00	S	0	0	HR	2	MDCAB	FM	P	Y	Y
2	0-25	mc1	10YR43 42						3	0	HR	6						
	25-35	hc1	10YR54 00						0	0	HR	5			M			
	35-65	c	75YR56 00	10YR58	00	C	00MN00	00	S	0	0	HR	5			P		Y
	65-120	hc1	10YR74 00						0	0	CH	30			M			Y
3	0-30	mc1	10YR43 53						4	0	HR	6						
	30-75	hc1	75YR54 00	10YR68	00	F			0	0	HR	15			M			
	75-100	c	75YR54 00	10YR58	00	C	00MN00	00	S	0	0	HR	10			P		Y
4	0-25	mc1	10YR43 00						2	0	HR	4						
	25-55	hc1	10YR56 00	00MN00	00	F			0	0	HR	5			M			
	55-100	c	05YR54 00	10YR68	00	C	00MN00	00	S	0	0		0			P		Y
5	0-25	mc1	10YR43 00						2	0	HR	4						
	25-35	hc1	10YR54 00						0	0	HR	5			M			
	35-75	c	05YR53 00	05YR58	00	C	00MN00	00	S	0	0	HR	8			P		Y
6	0-30	mc1	10YR42 00						5	0	HR	8						
	30-70	c	10YR52 00	10YR68	71	C	00MN00	00	Y	0	0	HR	5			P		Y
7	0-30	mc1	10YR42 43						2	0	HR	4						
	30-40	c	10YR54 00						0	0	HR	10			M			
	40-90	c	75YR54 00	10YR58	00	C	00MN00	00	S	0	0	HR	5			P		Y
8	0-25	mc1	10YR42 00						3	0	HR	5						
	25-45	hc1	10YR56 00						0	0	HR	10			M			
	45-70	c	10YR52 56	10YR58	00	M		Y	0	0		0			P		Y	

SOIL PIT DESCRIPTION

Site Name : NEWBURY LP - CHIEVELEY Pit Number : 1P

Grid Reference: SU47507450 Average Annual Rainfall : 703 mm  
 Accumulated Temperature : 1386 degree days  
 Field Capacity Level : 151 days  
 Land Use : Wheat  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	MCL	10YR43 42	2	5	HR					
28- 39	HCL	75YR44 00	0	15	HR	F	MDCSAB	FR	M	
39- 70	C	75YR54 00	0	2	HR	C	MDCAB	FM	P	

Wetness Grade : 3A Wetness Class : III  
 Gleying : S39 cm  
 SPL : 039 cm

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

FINAL ALC GRADE : 3A  
 MAIN LIMITATION : Wetness