

**A1**  
**Test Valley Borough Local Plan Review**  
**Site 4 Land South of Barton Stacey**  
**Hampshire**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**July 1996**

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

**ADAS Reference 1512/93/96**  
**MAFF Reference EL 15/0292**  
**LUPU Commission 02467**

**AGRICULTURAL LAND CLASSIFICATION REPORT**  
**TEST VALLEY BOROUGH LOCAL PLAN REVIEW**  
**SITE 4 LAND SOUTH OF BARTON STACEY HAMPSHIRE**

**INTRODUCTION**

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 6.4 ha of land on the southern side of the village of Barton Stacey. The survey was carried out in July 1996.

2 The survey was commissioned by Ministry of Agriculture Fisheries and Food (MAFF) Land Use Planning Unit (Reading) in connection with the Test Valley Borough Local Plan Review. This survey supersedes previous ALC surveys on this land.

3 The work was conducted under sub contracting arrangements by NA Duncan and Associates and was supervised by members of the Resource Planning Team in the Guildford Statutory Group in 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 whole site was growing winter barley.

**SUMMARY**

5 The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000, it is accurate at this scale but any enlargement would be misleading.

6 The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

**Table 1 Area of grades and other land**

Grade/Other Land	Area (hectares)	/ Total Site Area	/ Surveyed Area
2	4.6	71.9	71.9
3a	1.8	28.1	28.1
Total Surveyed Area	6.4		100.0
Total Site Area	6.4	100.0	

7 The fieldwork was conducted at an average density of approximately 1 boring per hectare. A total of 9 borings were described which were backed up by data from 2 soil pits in similar soils on a neighbouring site (Site 3 Land East of Barton Stacey ADAS Job No 1512/92/96)

8 The majority of the site has been classified as Grade 2 very good quality agricultural land with an area of Subgrade 3a good quality agricultural land on the higher land at the south eastern corner of the site. The soils on the site comprise silty clay loams overlying chalk at moderate depths with some relatively shallow profiles in the south eastern corner of the site. Soil pit observations on the neighbouring site show that plant roots extend into the underlying chalk for at least 30 cm. Moisture balance calculations indicate that under the prevailing climatic conditions the majority of the site will be slightly droughty restricting the land quality to Grade 2 with more droughty conditions occurring in the south east corner which was reflected in the slightly poorer crop quality restricting this area to Subgrade 3a

## 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 437 408
Altitude	m AOD	65
Accumulated Temperature	day C	1470
Average Annual Rainfall	mm	776
Field Capacity Days	days	168
Moisture Deficit Wheat	mm	105
Moisture Deficit Potatoes	mm	97

11 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions

12 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR) as a measure of overall wetness and accumulated temperature (AT0 January to June) as a measure of the relative warmth of a locality

13 The combination of rainfall and temperature at this site mean that under this warm and relatively moist climate wetness and workability limitations may be enhanced on the heavier textured soils. In addition soils will need a moderately high available water capacity to avoid droughtiness limitations. There is however no overall climatic limitation in this area the site is climatically Grade 1

#### Site

14 The site falls gently in a general westerly direction from a high point of 75 m AOD on the eastern boundary to 55 m AOD at the south west corner of the site. Gradients are relatively gentle ranging from 2-4°. There are therefore no site factors which are limiting to the ALC grading of the site

#### Geology and soils

15 The published geological information for the area (BGS 1975) shows the site to be underlain by Upper Chalk which is described as soft chalk with many flint nodules

16 There is no detailed soil survey map for the area but the reconnaissance soil map (SSEW 1983) shows the area to comprise soils of the Andover 1 association. These soils are described as shallow well drained calcareous silty soils over chalk on the slopes and crests with deep calcareous and non calcareous fine silty soils in the valley bottoms

#### 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

#### *Grade 2*

19 The majority of the site has been classified as Grade 2 very good quality agricultural land and comprises moderately deep silty soils overlying fissured soft chalk. The soils typically have a medium or heavy silty clay loam topsoil with 4% flint stones overlying a well structured heavy silty clay loam subsoil which in turn overlies chalk at 50-60 cm depth. The soil pit described on similar but slightly shallower soils on the neighbouring site (Site 3 east of Barton Stacey) shows that the subsoil structure is strong fine and medium subangular blocky and that the plant roots extend at least 30 cm into the underlying chalk. Moisture balance calculations therefore indicate that these soils will be slightly droughty for deeper rooting crops restricting the land quality to Grade 2

#### *Subgrade 3a*

20 At the south eastern corner of the site similar but shallower soils overlying chalk have been mapped. These soils typically have a silty clay loam topsoil overlying a heavy silty clay loam upper subsoil overlying fissured soft chalk at 28-40 cm depth. Moisture balance calculations indicate that the soils in this area will be slightly to moderately droughty

restricting the land quality in this area to Subgrade 3a. It should be noted that shallow soils may occur locally giving rise to a Subgrade 3b classification but these are not considered to be widespread and are included within the Subgrade 3a classification.

N A Duncan  
for the Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## SOURCES OF REFERENCE

British Geological Survey (1946) *Sheet No 299 Winchester (Drift)* BGS London

Ministry of Agriculture Fisheries and Food (1988) *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land* MAFF London

Met Office (1989) *Climatological Data for Agricultural Land Classification*  
Met Office Bracknell

Soil Survey of England and Wales (1983) *Sheet 6 South East England* SSEW Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*  
SSEW Harpenden

## APPENDIX I

### DESCRIPTIONS OF THE GRADES AND SUBGRADES

#### **Grade 1 Excellent Quality Agricultural Land**

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

#### **Grade 2 Very Good Quality Agricultural Land**

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

#### **Grade 3 Good to Moderate Quality Land**

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

#### **Subgrade 3a Good Quality Agricultural Land**

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

#### **Subgrade 3b Moderate Quality Agricultural Land**

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

#### **Grade 4 Poor Quality Agricultural Land**

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

#### **Grade 5 Very Poor Quality Agricultural Land**

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

## APPENDIX II

### SOIL WETNESS CLASSIFICATION

#### Definitions of Soil Wetness Classes

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Wetness Class	Duration of waterlogging <sup>1</sup>
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years <sup>2</sup>
II	The soil profile is wet within 70 cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days but only wet within 40 cm depth for 30 days in most years
III	The soil profile is wet within 70 cm depth for 91-180 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days but only wet within 40 cm depth for between 31-90 days in most years
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years
V	The soil profile is wet within 40 cm depth for 211-335 days in most years
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years

#### Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF 1988).

<sup>1</sup> The number of days is not necessarily a continuous period

<sup>2</sup> In most years is defined as more than 10 out of 20 years



**APPENDIX III**

**SOIL DATA**

**Contents**

**Sample location map**

**Soil abbreviations Explanatory Note**

**Soil Pit Descriptions**

**Soil boring descriptions (boring and horizon levels)**

**Database Printout Horizon Level Information**

## SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database This uses notations and abbreviations as set out below

### Boring Header Information

1 **GRID REF** national 100 km grid square and 8 figure grid reference

2 **USE** Land use at the time of survey The following abbreviations are used

<b>ARA</b>	Arable	<b>WHT</b>	Wheat	<b>BAR</b>	Barley
<b>CER</b>	Cereals	<b>OAT</b>	Oats	<b>MZE</b>	Maize
<b>OSR</b>	Oilseed rape	<b>BEN</b>	Field Beans	<b>BRA</b>	Brassicae
<b>POT</b>	Potatoes	<b>SBT</b>	Sugar Beet	<b>FCD</b>	Fodder Crops
<b>LIN</b>	Linseed	<b>FRT</b>	Soft and Top Fruit	<b>FLW</b>	Fallow
<b>PGR</b>	Permanent Pasture	<b>LEY</b>	Ley Grass	<b>RGR</b>	Rough Grazing
<b>SCR</b>	Scrub			<b>CFW</b>	Coniferous Woodland
<b>DCW</b>	Deciduous Wood				
<b>HTH</b>	Heathland	<b>BOG</b>	Bog or Marsh	<b>FLW</b>	Fallow
<b>PLO</b>	Ploughed	<b>SAS</b>	Set aside	<b>OTH</b>	Other
<b>HRT</b>	Horticultural Crops				

3 **GRDNT** Gradient as estimated or measured by a hand held optical clinometer

4 **GLEYSPL** Depth in centimetres (cm) to gleying and/or slowly permeable layers

5 **AP (WHEAT/POTS)** Crop adjusted available water capacity

6 **MB (WHEAT/POTS)** Moisture Balance (Crop adjusted AP crop adjusted MD)

7 **DRT** Best grade according to soil droughtiness

8 If any of the following factors are considered significant Y will be entered in the relevant column

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

9 **LIMIT** The main limitation to land quality The following abbreviations are used

<b>OC</b>	Overall Climate	<b>AE</b>	Aspect	<b>EX</b>	Exposure
<b>FR</b>	Frost Risk	<b>GR</b>	Gradient	<b>MR</b>	Microrelief
<b>FL</b>	Flood Risk	<b>TX</b>	Topsoil Texture	<b>DP</b>	Soil Depth
<b>CH</b>	Chemical	<b>WE</b>	Wetness	<b>WK</b>	Workability
<b>DR</b>	Drought	<b>ER</b>	Erosion Risk	<b>WD</b>	Soil Wetness/Droughtiness
<b>ST</b>	Topsoil Stoniness				

## Soil Pits and Auger Borings

1 **TEXTURE** soil texture classes are denoted by the following abbreviations

<b>S</b>	Sand	<b>LS</b>	Loamy Sand	<b>SL</b>	Sandy Loam
<b>SZL</b>	Sandy Silt Loam	<b>CL</b>	Clay Loam	<b>ZCL</b>	Silty Clay Loam
<b>ZL</b>	Silt Loam	<b>SCL</b>	Sandy Clay Loam	<b>C</b>	Clay
<b>SC</b>	Sandy Clay	<b>ZC</b>	Silty Clay	<b>OL</b>	Organic Loam
<b>P</b>	Peat	<b>SP</b>	Sandy Peat	<b>LP</b>	Loamy Peat
<b>PL</b>	Peaty Loam	<b>PS</b>	Peaty Sand	<b>MZ</b>	Marine Light Silts

For the sand loamy sand sandy loam and sandy silt loam classes the predominant size of sand fraction will be indicated by the use of the following prefixes

<b>F</b>	Fine (more than 66% of the sand less than 0.2mm)
<b>M</b>	Medium (less than 66% fine sand and less than 33% coarse sand)
<b>C</b>	Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub divided according to the clay content **M** Medium (<27% clay) **H** Heavy (27-35% clay)

2 **MOTTLE COL** Mottle colour using Munsell notation

3 **MOTTLE ABUN** Mottle abundance expressed as a percentage of the matrix or surface described

**F** few <2% **C** common 2-20% **M** many 20-40% **VM** very many 40% +

4 **MOTTLE CONT** Mottle contrast

**F** faint indistinct mottles evident only on close inspection

**D** distinct mottles are readily seen

**P** prominent mottling is conspicuous and one of the outstanding features of the horizon

5 **PED COL** Ped face colour using Munsell notation

6 **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 1EST VALLEY BLP SITE 3 Pit N mbe 1P

Grid Reference SU43904090 Age A al R i fall 788 mm  
 Accumulated Tempe t re 1447 degree days  
 Field Capac ty Level 169 days  
 Land Use Permane t Grass  
 Slope nd Aspect degree

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 26	HZCL	10YR53 00	0		10	CH					Y
26 60	CH	10YRB1 00	0		0					P	

Wetness Grade 1 Wetness Class I  
 Gleying cm  
 SPL cm

Drought Grade 3B APW 78mm MBW 24 mm  
 APP 81mm MBP 13 mm

FINAL ALC GRADE 3B  
 MAIN LIMITATION Drought ess

SOIL PIT DESCRIPTION

Site Name 1EST VALLEY BLP SITE 3 Pit N mbe 2P

Grid Reference SU44104110 Age A al Rai fall 788 mm  
 Accumulated Tempe t re 1447 degree days  
 Field Cap city Level 169 d ys  
 Land Use Permane t G ass  
 Slope and A pect 02 degrees NW

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 27	MZCL	10YR43 00	2		3	HR					Y
27 45	HZCL	10YR54 00	0		2	HR		STMSB	FR	G	Y
45- 55	HZCL	10YR54 00	0		90	CH				M	Y
55- 70	CH	10YRB1 00	0		0					P	

Wetness Grade 1 Wetness Class I  
 Gley ng cm  
 SPL cm

Drought Grade 3A APW 106mm MBW 4 mm  
 APP 113mm MBP 19 mm

FINAL ALC GRADE 3A  
 MAIN LIMITATION Drought s

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	SU43604090	BAR W	2		1	1	98	7	104	7	3A			DR	3A	CHALK 40
2	SU43704090	BAR W	3		1	1	119	14	117	20	3A			DR	2	CHALK 55
3	SU43804090	BAR W	3		1	1	116	11	115	18	3A			DR	2	CHALK 50
4	SU43604080	BAR W	3		1	1	114	9	113	16	3A			DR	2	CHALK 50
5	SU43704080	BAR W	3		1	1	127	22	124	27	2			DR	2	CHALK 60
6	SU43804080	BAR W	3		1	1	79	26	82	15	3B			DR	3B	CHALK 28
7	SU43604070	BAR SW	3		1	1	126	21	123	26	2			DR	2	CHALK 60
8	SU43704070	BAR SW	3		1	1	97	8	103	6	3B			DR	3A	CHALK 38
9	SU43804070	BAR SW	4		1	1	80	25	83	14	3B			DR	3B	CHALK 28

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES		PED		GLEY	STONES		STRUCT/		SUBS		SPL	CALC
				COL	ABUN	CONT	COL		2	6	LITH	TOT	CONSIST	STR		
1	0 30	mzc1	10YR43 00						2	0	HR	4				Y
	30 40	hzc1	10YR53 54						0	0	HR	5		G		Y
	40 70	ch	10YR81 00						0	0		0		P		
2	0 30	mzc1	10YR43 00						2	0	HR	4				Y
	30 55	hz 1	10YR54 00						0	0	HR	7		G		Y
	55-85	ch	10YR81 00						0	0		0		P		
3	0 28	hzc1	10YR43 00						2	0	HR	3				Y
	28 50	hzc1	10YR54 00						0	0	CH	5		G		Y
	50-80	ch	10YR81 00						0	0		0		P		
4	0 28	mzc1	10YR43 00						2	0	HR	5				Y
	28 50	h c1	10YR46 00						0	0	HR	5		G		Y
	50 80	ch	10YR81 00						0	0		0		P		
5	0 28	mzc1	10YR43 00						2	0	HR	4				Y
	28 60	hzc1	10YR44 00						0	0	HR	4		G		Y
	60 90	ch	10YR81 00						0	0		0		P		
6	0 28	hzc1	10YR53 00						0	0	CH	10				Y
	28 60	ch	10YR81 00						0	0		0		P		
7	0 30	mzc1	10YR44 00						1	0	HR	3				Y
	30 60	h c1	10YR73 00						0	0	CH	15		G		Y
	60 90	ch	10YR81 00						0	0		0		P		
8	0 28	mzc1	10YR53 00						1	0	HR	3				Y
	28 38	hzc1	10YR64 00						0	0	CH	10		G		Y
	38 70	ch	10YR81 00						0	0		0		P		
9	0 28	hzc1	10YR53 00						1	0	HR	3				Y
	28 60	ch	10YR81 00						0	0		0		P		