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Test Valley Borough Local Plan Review
Site 2 Land North of Barton Stacey
Hampshire
Agricultural Land Classification
ALC Map and Report
July 1996

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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LUPU Commission 02467

AGRICULTURAL LAND CLASSIFICATION REPORT

TEST VALLEY BOROUGH LOCAL PLAN REVIEW
SITE 2 LAND NORTH OF BARTON STACEY HAMPSHIRE

INTRODUCTION

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 3 9 ha of land on the northern 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 majority of the site was growing winter wheat with a small area of permanent grass on the western side

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 fieldwork was conducted at an average density of 1 boring per hectare A total of 4 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)

7 The whole (3 9ha) site has been classified as Subgrade 3a good quality agricultural land The soils on the site comprise silty clay loams overlying chalk at both shallow and moderate depths 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 soils will be slightly to moderately droughty depending on the depth to the underlying chalk and consequently the land has been restricted to Subgrade 3a

FACTORS INFLUENCING ALC GRADE

Climate

8 Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics

9 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 436 412
Altitude	m AOD	70
Accumulated Temperature	day°C	1464
Average Annual Rainfall	mm	779
Field Capacity Days	days	168
Moisture Deficit, Wheat	mm	104
Moisture Deficit Potatoes	mm	97

10 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

11 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 (ATO January to June) as a measure of the relative warmth of a locality

12 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

13 The altitude of the site ranges from approximately 75 m AOD on the eastern side falling to 60 m AOD on the western boundary Gradients on the site are relatively gentle with the majority of the area sloping at approximately 4° toward the west There are therefore no site factors which are limiting to the ALC grading of the site

Geology and soils

14 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

15 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

16 The details of the classification of the site are shown on the attached ALC map

17 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 3a

18 The whole site has been classified as Subgrade 3a with the main limitation being due to droughtiness The soil observations on the site indicate that the majority of the area comprises moderately shallow soils overlying chalk, with some shallow profiles on the upper slopes at the east of the site The deeper profiles comprise a heavy silty clay loam topsoil overlying a similar textured chalky subsoil overlying chalk below 35-40 cm depth The soil pit on similar soil on the neighbouring site (Site 3 Land East of Barton Stacey ADAS Job No 1512/92/96) shows that the subsoil structure is strongly developed fine and medium subangular blocky and that plant roots extend approximately 30 cm into the underlying fissured chalk Moisture balance calculations indicate that these soils will be slightly droughty especially for the deeper rooting crops restricting the land quality to Subgrade 3a Although some shallower profiles were found with the topsoil directly overlying the fissured chalk giving rise to a Subgrade 3b classification these were considered to be localised and have therefore not been delineated separately and consequently the whole site has been mapped as Subgrade 3a

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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[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years [2]
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)

[1] The number of days is not necessarily a continuous period
[2] In most years is defined as more than 10 out of 20 years

APPENDIX III

SOIL DATA

Contents

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

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

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

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

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

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

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

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

MREL	Microrelief limitation	**FLOOD**	Flood risk	**EROSN**	Soil erosion risk
EXP	Exposure limitation	**FROST**	Frost prone	**DIST**	Disturbed land
CHEM	Chemical limitation				

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

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

Soil Pits and Auger Borings

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

S	Sand	**LS**	Loamy Sand	**SL**	Sandy Loam
SZL	Sandy Silt Loam	**CL**	Clay Loam	**ZCL**	Silty Clay Loam
ZL	Silt Loam	**SCL**	Sandy Clay Loam	**C**	Clay
SC	Sandy Clay	**ZC**	Silty Clay	**OL**	Organic Loam
P	Peat	**SP**	Sandy Peat	**LP**	Loamy Peat
PL	Peaty Loam	**PS**	Peaty Sand	**MZ**	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

F Fine (more than 66% of the sand less than 0 2mm)
M Medium (less than 66% fine sand and less than 33% coarse sand)
C 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

HR	all hard rocks and stones	**SLST**	soft oolitic or dolimitic limestone
CH	chalk	**FSST**	soft fine grained sandstone
ZR	soft argillaceous or silty rocks	**GH**	gravel with non porous (hard) stones
MSST	soft medium grained sandstone	**GS**	gravel with porous (soft) stones
SI	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

S te Name 1EST VALLEY BLP SITE 3 P t N mbe 1P

G id Reference SU43904090 A e ge A al R i fall 788 mm
Accumul ted Tempe t re 1447 degree days
F ld Capacity Le el 169 days
Land Use Permane t G s
Slope and Aspect degrees

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	10YR81 00	0	0					P	

Wetness G ade 1 Wetness Class I
Gleying cm
SPL cm

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

FINAL ALC GRADE 3B
MAIN LIMITATION Drought ness

SOIL PIT DESCRIPTION

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

G id Reference SU44104110 A e ge A nu l Rai f ll 788 mm
Acc mul ted Tempe at re 1447 degree days
Field Capacity L el 169 days
L nd Use P rmane t G a s
Slope and Aspect 02 deg ee 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		STMS8	FR	G	Y
45- 55	HZCL	10YR54 00	0	90	CH				M	Y
55- 70	CH	10YR81 00	0	0					P	

Wetness G de 1 Wetne Clas I
Gleying cm
SPL cm

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

FINAL ALC GRADE 3A
MAIN LIMITATION Drought ess

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WETNESS GRADE	WHEAT AP	WHEAT MB	POTS AP	POTS MB	M REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	ALC LIMIT		COMMENTS
1	SU43584120	WHT	W	04	000		1	1	092	12	096	1	3A				DR	3A	
2	SU43694120	WHT	W	04	000		1	1	098	6	102	5	3A				DR	3A	CHALK 40
3	SU43734129	WHT	NW	04	000		1	1	077	27	078	19	3B				DR	3B	CHALK 27
4	SU43794113	WHT	SW	01	000		1	1	080	24	083	14	3B				DR	3B	CHALK 27

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES COL	ABUN	CONT	PED COL	GLEY	STONES 2	6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
1	0 27	hzcl	10YR53 00						2	0	HR	2						Y
	27 35	hzcl	10YR54 00						0	0	CH	10		G				Y
	35-65	ch	10YR81 00						0	0		0		P				
2	0 25	hzcl	10YR53 00						0	0	HR	2						Y
	25-40	hzcl	10YR64 00						0	0	CH	5		G				Y
	40 65	ch	10YR81 00						0	0		0		P				
3	0 27	hzcl	10YR53 00						0	0	CH	5						Y
	27 55	ch	10YR81 00						0	0		0		P				
4	0 27	mzcl	10YR53 00						0	0	HR	2						
	27 60	ch	10YR81 00						0	0		0		P				