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TEST VALLEY BOROUGH LOCAL PLAN
SITE 125 ANDOVER DOWN
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
JUNE 1993

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AGRICULTURAL LAND CLASSIFICATION REPORT

1 0 Summary

1 1 In April 1993 a detailed Agricultural Land Classification (ALC) was made on approximately 12 hectares of land at Andover Down in Hampshire

1 2 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS in response to a commission by MAFF s Land Use Planning Unit to provide information on the quality of agricultural land affected by proposals for development in the Test Valley Borough Local Plan

1 3 The classification has been made using MAFF s revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988) These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on its use for agriculture

1 4 The fieldwork was carried out with an observation density of approximately one per hectare A total of 12 borings and 2 soil pits were examined

1 5 The table below provides the details of the grades found across the site The majority of the land is classified as being good quality The key limitation is droughtiness

Table 1 - Distribution of Grades and Subgrades

Grade	Area (ha)	%of Site	% of Agricultural Area
2	5 3	44 8	49 1
3A	5 5	46 5	50 9
Total Agricultural Area	10 8	100	
Woodland	0 03		
Urban	1 0		
Total area of site	11 83		

1 6 The distribution of the ALC grades is shown on the attached map The information is presented at a scale of 1 5000 it is accurate at this level but any enlargement would be misleading This map supercedes any previous ALC information for this site

1 7 At the time of survey the land use on the site was permanent pasture

1 8 A general description of the grades and sub grades is provided as an appendix 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

2 0 Climate

2 1 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions

2 2 The main parameters used in the assessment of the overall climatic limitation are annual average rainfall as a measure of overall wetness and accumulated temperature as a measure of the relative warmth of a locality

2 3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met Office 1989) The details are given in the table below and these show that there is no overall climatic limitation affecting the site

2 4 No local climatic factors such as exposure or frost risk affect the site

Table 2 _ Climatic Interpolations

Grid Reference	SU398460	SU402462
Altitude (m)	100	105
Accumulated Temperature (days)	1428	1472
Average Annual Rainfall (mm)	756	760
Field Capacity (days)	164	165
Moisture Deficit Wheat (mm)	106	105
Moisture Deficit Potatoes (mm)	97	96
Overall Climatic Grade	1	1

3 0 Relief

3 1 Land within the survey area lies between 95 and 105m AOD rising gently from the south west to the north east At no point within the site does gradient or altitude represent a limitation to the agricultural land quality

4 0 Geology and Soil

4 1 The relevant geological sheet (British Geological Survey Sheet 283 1 50000) for the site shows the underlying geology to be entirely Cretaceous Upper Chalk describing it as soft white chalk with many flinty nodules

4 2 The main soil type occurring on the site as shown by the Soil Survey map of South East England (SSEW 1983 1 250000) was found to be Andover 1 Association shallow well drained calcareous silty soils over chalk on slopes and deeper though similar in valley bottoms Detailed field examination broadly confirms this

5 0 Agricultural Land Classification

5 1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map

5 2 The location of the soil observation points is shown on the attached sample point map

5 3 Grade 2

Land of this quality is mapped as a single block covering nearly half of the agricultural area of the site The soils observed in this area consist of a slightly stony (up to 8% flints (2% > 2cm) in addition to up to 10% small (< 2cm) chalk fragments) calcareous heavy clay loam topsoil over either a moderately stony (up to 30% small chalk fragments) calcareous clay and/or heavy silty clay loam passing to pure chalk between 50 and 114cm

The climate of the area is such that topsoils of this texture have the effect of limiting the land to a maximum grade of 2 as a result of workability This is the principal limitation for much of this map unit Where chalk occurs at shallower depths (within 57cm) the principal limitation is droughtiness caused by restricted rooting depths limiting water availability for plant growth

5 4 Grade 3A

Good quality grade 3a land is mapped across the remaining agricultural area of the site being divided into two blocks to the west and north east of the site The soils in these areas consist of a slightly stony (up to 3% flints (all < 2cm) in addition to up to 5% chalk) calcareous heavy silty clay loam or heavy clay loam occasionally clay topsoil Below this pure chalk is encountered between 26 and 35cm From an observation pit dug in this area it was found that the vegetation had been able to root approximately 55cm into the chalk This relatively shallow rooting causes a droughtiness limitation by restricting available water in the profile such that grade 3a is appropriate In those areas where a clay topsoil is present soils are also limited to this grade by workability given the local climatic regime

5 5 The areas marked as Urban include some residential areas including domestic gardens and driveways Some agricultural buildings that have been converted to light industrial use are also mapped as urban

5 6 The area marked as Non-agricultural is a small area of mature coniferous woodland within grassland

ADAS REFERENCE 1512/058/93
MAFF REFERENCE EL 6105

Resource Planning Team
Guildford Statutory Group
ADAS Reading

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB GRADES

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 on the 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

Grade 3 Good To Moderate Quality Agricultural Land

Land with moderate limitations which affect the choice of crops 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

Sub grade 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

Sub grade 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 very 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 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/airfields Also active mineral workings and refuse tips where restoration conditions to soft after uses may apply

Woodland

Includes commercial and non commercial 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

REFERENCES

* British Geological Survey (1975) Sheet No 283 Andover 1 50000

* 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 (1983) Sheet No 6 Soils of South East England 1 250000

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

APPENDIX III

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years

Wetness Class II

The soil profile is wet within 70cm depth for 31 90 days in most years or if there is no slowly permeable layer within 80cm depth it is wet within 70cm for more than 90 days but not wet within 40cm depth for more than 30 days in most years

Wetness Class III

The soil profile is wet within 70cm depth for 91 180 days in most years or if there is no slowly permeable layer within 80cm depth it is wet within 70cm for more than 180 days but only wet within 40cm depth for 31 90 days in most years

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years or if there is no slowly permeable layer within 80cm depth it is wet within 40cm depth for 91 210 days in most years

Wetness Class V

The soil profile is wet within 40cm depth for 211 335 days in most years

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years

(The number of days is not necessarily a continuous period In most years is defined as more than 10 out of 20 years)

APPENDIX IV

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents

SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE

Soil profile and pit information obtained during ALC surveys is held on a database This has commonly used notations and abbreviations as set out below

BORING HEADERS

1 GRID REF National grid square followed by 8 figure grid reference

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

ARA - arable	PAS/PGR - permanent pasture
WHT - wheat	RGR - rough grazing
BAR - barley	LEY - ley grassland
CER - cereals	CFW - coniferous woodland
OAT - Oats	DCW - deciduous woodland
MZE - maize	SCR - scrub
OSR - Oilseed rape	HTH - heathland
BEN - field beans	BOG - bog or marsh
BRA - brassicae	FLW - fallow
POT - potatoes	PLO - ploughed
SBT - sugarbeet	SAS - set-aside
FCD - fo'der crops	OTH - other
FRT - soft and top fruit	LIN - linseed
HOR/HRT - horticultural crops	

3 GRDNT Gradient as measured by optical reading clinometer

4 GLEY/SPL Depth in centimetres (cm) to gleyed and/or slowly permeable horizons

5 AP (WHEAT/POTS) Crop-adjusted available water capacity The amount of soil water (in millimetres) held in the soil profile that is available to a growing crop (wheat and potatoes are used as reference crops)

6 MB (WHEAT/POTS) The moisture balance for wheat and potatoes obtained by subtracting the soil moisture deficit from the crop-adjusted available water capacity

7 DRT Grade according to soil droughtiness assessed against soil moisture balances

8

M REL	Micro-relief	) If any of these factors are considered significant in terms of the assessment of agricultural land quality a y will be entered in the relevant column
FLOOD	Flood risk	)
EROSN	Soil erosion	)
EXP	Exposure	)
FROST	Frost prone	)
DIST	Disturbed land	)
CHEM	Chemical limitation	)

9 LIMIT Principal limitation to agricultural land quality
The following abbreviations are used

OC - overall climate
AE - aspect
EX - exposure
FR - frost
GR - gradient
MR - micro-relief
FL - flooding
TX - soil texture
DP - soil depth
CH - chemical limitations
WE - wetness
WK - workability
DR - drought
ER - erosion
WD - combined soil wetness/soil droughtiness
ST - topsoil stoniness

PROFILES & PITS

1 TEXTURE Soil texture classes are denoted by the following abbreviations

S - sand
LS - loamy sand
SL - sandy loam
SZL - sandy silt loam
ZL - silt loam
MZCL - medium silty clay loam
MCL - medium clay loam
SCL - sandy clay loam
HZCL - heavy silty clay loam
SC - sandy clay
ZC - silty clay
C - clay

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

F - fine (more than $\frac{2}{3}$ of the sand less than 0 2 mm)
C - coarse (more than $\frac{1}{3}$ of sand greater than 0 6 mm)
M - medium (less than $\frac{2}{3}$ fine sand and less than $\frac{1}{3}$ coarse sand)

The sub-divisions of clay loam and silty clay loam classes according to clay content are indicated as follows

M - medium (less than 27- clay)
H - heavy (27-35- clay)

Other possible texture classes include

OL - organic loam
P - peat
SP - sandy peat
LP - loamy peat
PL - peaty loam
PS - peaty sand
MZ - marine light silts

2 MOTTLE COL Mottle colour

3 MOTTLE ABUN Mottle abundance

F - few - less than 2% of matrix or surface described
C - common - 2-20% of the matrix
M - many - 20-40% of the matrix
VM - very many - 40% + of the matrix

4 MOTTLE CONT Mottle continuity

F - faint - indistinct mottles evident only on close examination
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

6 STONE LITH Stone lithology One of the following is used

HR - all hard rocks or stones
MSST - soft medium or coarse grained sandstone
SI - soft weathered igneous or metamorphic
SLST - soft oolitic or dolomitic limestone
FSST - soft fine grained sandstone
ZR - soft argillaceous or silty rocks
CH - chalk
GH - gravel with non-porous (hard) stones
GS - gravel with porous (soft) stones

Stone contents (>2cm >6cm and total) are given in percentages (by volume)

7 STRUCT the degree of development size and shape of soil peds are described using the following notation

- <u>degree of development</u>
  WK - weakly developed
  MD - moderately developed
  ST - strongly well developed

- <u>ped size</u>
  F - fine
  M - medium
  C - coarse
  VC - very coarse

- <u>ped shape</u>
  S - single grain
  M - massive
  GR - granular
  SB/SAB - sub-angular blocky
  AB - angular blocky
  PR - prismatic
  PL - platy

8 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

9 SUBS STR Subsoil structural condition recorded for the purpose of calculating profile droughtiness

G - good
M - moderate
P - poor

10 POR Soil porosity If a soil horizon has less than 0 5% biopores >0 5 mm a y will appear in this column

11 IMP If the profile is impenetrable a y will appear in this column at the appropriate horizon

12 SPL Slowly permeable layer If the soil horizon is slowly permeable a y will appear in this column

13 CALC If the soil horizon is calcareous a y will appear in this column

14 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 ANDOVER DOWN TEST VAL LP Pit Number 1P

Grid Reference SU39904590

Average Annual Rainfall	760 mm
Accumulated Temperature	1422 degree days
Field Capacity Level	165 days
Land Use	Permanent Grass
Slope and Aspect	01 degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 28	HCL	10YR43 00	2	8		
28- 50	C	75YR44 54	0	3		WKCSAB
50- 83	HZCL	10YR63 64	0	15		MDCSAB
83-120	CH	10YR81 00	0	5		

Wetness Grade 2

Wetness Class	I
Gleying	000 cm
SPL	No SPL

Drought Grade 1

APW	137mm	MBW	32 mm
APP	113mm	MBP	17 mm

FINAL ALC GRADE 2

MAIN LIMITATION

SOIL PIT DESCRIPTION

Site Name ANDOVER DOWN TEST VAL LP Pit Number 2P

Grid Reference SU40004610

Average Annual Rainfall	760 mm
Accumulated Temperature	1422 degree days
Field Capacity Level	165 days
Land Use	Permanent Grass
Slope and Aspect	01 degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 26	HCL	10YR43 00	0	3		
26- 85	CH	10YR81 00	0	0		

Wetness Grade 2

Wetness Class	I
Gleying	000 cm
SPL	No SPL

Drought Grade 3A

APW	92 mm	MBW	-14 mm
APP	89 mm	MBP	-7 mm

FINAL ALC GRADE 3A

MAIN LIMITATION Droughtiness

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	WHEAT- AP	MB	-POTS- AP	MB	DRT	M REL FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU40004620	PGR	S	01	000		1	2	108	3	98	2	3A				DR	3A	CH 35
1P	SU39904590	PGR	W	01	000		1	2	137	32	113	17	1				WK	2	PIT
2	SU39824614	PGR			000		1	2	124	19	104	8	2				DR	2	DRWE
2P	SU40004610	PGR	W	01	000		1	2	92	-14	89	-7	3A				DR	3A	PIT 90
3	SU39904610	PGR	W	01	000		1	2	103	2	96	0	3A				DR	3A	CH 32
4	SU40004610	PGR	W	01	000		1	3A	91	-14	87	-9	3A				DR	3A	CH 27
5	SU39804600	PGR	E	01	000		1	1	104	1	95	-1	3A				DR	3A	CH 35
6	SU39904600	PGR	W	01	000		1	2	142	37	114	18	1				WK	2	CH 95
7	SU40004600	PGR	W	01	000		1	3A	99	-6	91	-5	3A				DR	3A	DRWE
8	SU39804590	PGR	E	01	000		1	2	96	-9	92	-4	3A				DR	3A	CH 28
9	SU39904590	PGR	NW	01	000		1	2	145	40	117	21	1				WK	2	CH 95
10	SU39804580	PGR	E	01	000		1	2	129	24	108	12	2				DR	2	DRWE
11	SU39864572	PGR	S	01	000		1	2	145	40	115	19	1				WK	2	
12	SU39724585	PGR	NE	01	000		1	2	140	35	115	19	1				WK	2	IMP 90

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-35	hzcl	10YR42 53						0	0	CH	10						Y	
	35-92	ch	10YR81 00						0	0		0		P				Y	
1P	0 28	hcl	10YR43 00						2	0	HR	8							
	28-50	c	75YR44 54						0	0	HR	3	WKCSAB FR M						
	50-83	hzcl	10YR63 64						0	0	CH	15	MDCSAB FR M					Y	
	83-120	ch	10YR81 00						0	0	HR	5		P				Y	
2	0-25	hzcl	10YR42 00						0	0	CH	3						Y	
	25-50	hzcl	10YR63 81						0	0	CH	30		M				Y	
	50-107	ch	00ZZ00 00						0	0		0		P				Y	
2P	0-26	hcl	10YR43 00						0	0	HR	3						Y	+ 3% CHALK
	26 85	ch	10YR81 00						0	0		0		P				Y	
3	0-32	hzcl	10YR43 00						0	0	CH	10						Y	
	32-89	ch	10YR81 00						0	0		0		P				Y	
4	0-27	zc	10YR43 00						0	0	CH	10						Y	
	27-84	ch	10YR81 00						0	0		0		P				Y	
5	0-30	mcl	10YR43 00						0	0	CH	5						Y	
	30-35	mzcl	10YR53 81						0	0	CH	50		M				Y	
	35-92	ch	10YR81 00						0	0		0		P				Y	
6	0-30	hcl	10YR43 00						0	0	HR	2						Y	
	30-52	hzcl	10YR44 54						0	0	CH	20		M				Y	
	52-95	hzcl	10YR63 81						0	0	CH	30		M				Y	
	95-120	ch	10YR81 00						0	0	HR	5		P				Y	
7	0-34	c	10YR43 00						0	0	CH	5						Y	
	34-91	ch	10YR81 00						0	0	HR	5		P				Y	
8	0-28	hzcl	10YR43 00						0	0	CH	5						Y	
	28-85	ch	10YR81 00						0	0	HR	5		P				Y	
9	0-35	hcl	10YR43 00						0	0	HR	2							
	35-52	c	10YR44 54						0	0	HR	2		M					
	52-95	hzcl	10YR63 81						0	0	CH	20		M				Y	
	95-120	ch	10YR81 00						0	0		0		P				Y	
10	0-30	hcl	10YR43 00						0	0	HR	2						Y	
	30-57	mzcl	10YR63 81						0	0	CH	20		M				Y	
	57-114	ch	10YR81 00						0	0	HR	5		P				Y	
11	0-35	hcl	10YR43 00						0	0	HR	3							
	35 80	c	10YR44 54						0	0	HR	5		M				Y	
	80 120	mzcl	10YR63 81						0	0	CH	20		M				Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES- --- PED COL	ABUN	CONT	COL	GLEY	----STONES -- STRUCT/ >2	6	LITH	TOT	CONSIST	SUBS STR	POR	IMP	SPL	CALC
12	0-32	hcl	10YR43 00						0	0	HR	2						
	32-60	c	10YR44 54						0	0	HR	5		M				
	60 90	mzcl	10YR63 81						0	0	CH	20		M				Y
	90-120	ch	00ZZ00 00						0	0	HR	5		P				Y