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Winchester District Local Plan
Site 173 Sandy Lane, Waltham Chase
Agricultural Land Classification
ALC Map and Report
August 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

WINCHESTER DISTRICT LOCAL PLAN
SITE 173 SANDY LANE WALTHAM CHASE

1 Summary

1 1 ADAS was commissioned by MAFF s Land Use Planning Unit to provide information on land quality for a number of sites in the Winchester District of Hampshire The work forms part of MAFF s statutory input to the preparation of the Winchester District Local Plan

1 2 Site 173 comprises 3 1 hectares of land to the east of Sandy Lane in Waltham Chase Hampshire An Agricultural Land Classification (ALC) survey was carried out during July 1994 The survey was undertaken at a detailed level of approximately one boring per hectare A total of 4 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 At the time of the survey the land use was permanent pasture

1 4 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
3a	1 0	32 3	34 5
3b	1 9	61 3	65 5 (2 9 ha)
Urban	0 1	3 2	100 0
Farm Buildings	0 1	3 2	
Total area of site	3 1	100 0	

1 5 Appendix I 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 6 The agricultural land surveyed has been classified as a mixture of Subgrades 3a and 3b Subgrade 3a land (good quality) which occurs on the slightly higher land on the site is limited by a moderate soil droughtiness limitation This limitation is caused by soils which hold only moderate reserves of moisture available to plant

roots Profiles typically comprise non calcareous loamy medium sand topsoils and upper subsoils which overlie poorly structured clay at depth Subgrade 3b land (moderate quality) is restricted by significant soil wetness and workability limitations Non calcareous medium clay loam topsoils overlie slowly permeable subsoils at shallow depth resulting in poor drainage

2 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 an overall climatic limitation are average annual rainfall as a measure of overall wetness and accumulated temperature (degree days Jan June) 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 are believed to affect the site

Table 2 Climatic Interpolation

Grid Reference	SU559152
Altitude (m)	56
Accumulated Temperature (degree days Jan June)	1488
Average Annual Rainfall (mm)	854
Field Capacity (days)	178
Moisture Deficit Wheat (mm)	105
Moisture Deficit Potatoes (mm)	98
Overall Climatic Grade	1

3 Relief

3 1 Most of the site lies at approximately 56m AOD though land in the centre of the site adjacent to Sandy Lane lies at approximately 58m AOD Neither gradient nor relief impose any limitation to agricultural land quality

4 Geology and Soil

4 1 British Geological Survey (1971) Sheet 316 Fareham shows most of the site to be underlain by London Clay A narrow area of land bordering Sandy Lane in the south west corner of the site is shown to be underlain by Bagshot Beds

4 2 The published Soil Survey map (SSEW 1983 1 250 000) maps the Wickham 3 association at this site These soils are described as slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey soils and similar more permeable soils with slight seasonal waterlogging Some deep coarse loamy soils affected by groundwater' (SSEW 1983)

4 3 Detailed field examination found two soil types poorly drained soils on the lower lying land and moderately well drained soils elsewhere

5 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 are shown on the attached sample point map

Subgrade 3a

5 3 Good quality land is restricted by a moderate soil droughtiness limitation caused by sandy textured soils Non-calcareous loamy medium sand topsoils overlie well structured loamy medium sand upper subsoils At approximately 50 60cm depth the soil profile passes into moderately structured sandy clay loam lower subsoils which overlie clay at approximately 75 80cm depth The clay is poorly structured and its slowly permeable characteristics act to slightly impede drainage (Wetness Class II) as evidenced by gleying within the clay and sandy clay loam horizons However the overriding limitation is that of soil droughtiness The loamy medium sand topsoils and upper subsoils plus the poorly structured clay means that this land can hold only moderate reserves of moisture available to plant roots However the problem of soil droughtiness is partially offset because firstly the upper subsoils are well structured and thus retain more moisture and secondly because the soil moisture deficits are not regionally high at this site Consequently this land is capable of producing moderate yields of a wide range of crops and is classed as good quality Subgrade 3a This mapping unit is typified by Pit 1

Subgrade 3b

5 4 Moderate quality land is restricted by significant soil wetness and workability limitations and generally occurs on the slightly lower lying land Non calcareous medium clay loam topsoils are directly underlain by poorly structured clay which extends to depth This clay is slowly permeable and acts to severely impede soil drainage as evidenced by gleying below and occasionally within the topsoil

(Wetness Class IV) The interaction between the topsoil textures soil drainage status and climatic conditions at this site means that this land can be graded no higher than Subgrade 3b This land is subject to significantly restricted flexibility of cropping stocking and cultivations and is typified by Pit 2

ADAS Ref 1513/122/94
MAFF Ref EL15/00594

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1971) Sheet No 316 Fareham 1 63 360 (drift edition)

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 6 Soils of South East England 1 250 000 and accompanying legend

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 religous buildings cemetries 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

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

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

Definition of Soil Wetness Classes

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

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics site and climatic factors Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field The method adopted here is common to ADAS and the SSLRC

[1]The number of days specified is not necessarily a continuous period

[2] In most years is defined as more than 10 out of 20 years

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

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 appropiate 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 WINCHESTER LP SITE 173 P t N mber 1P

Grid Reference SU55901525 A erage A al R fall 855 mm
Acc lated Temperat re 1488 deg ee days
Field Capac ty Le el 178 days
Land Use Permanent Grass
Slope and Aspect 02 deg ees E

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 25	LMS	10YR43 00	0	0						
25 54	LMS	10YR54 00	0	0			WKCSAB	FR	G	
54 80	SCL	10YR53 62	0	0		M	MDCSAB	VM	M	
80 120	C	10YR51 00	0	0		M			P	

Wetness G ade 2 Wet s Cl s II
Gley ng 054 cm
SPL 080 cm

D ought Gr de 3A APW 107mm MBW 2 mm
APP 78 mm MBP 20 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Dro ght ness

SOIL PIT DESCRIPTION

Site Name WINCHESTER LP SITE 173 P t N ber 2P

G id Ref ce SU55901530 A erage Ann al Ra nfall 855 mm
Acc lated Temperat re 1488 deg ee days
F eld C p c ty Le l 178 d y
Land Use Perma ent Grass
Slope and Aspect 01 deg e E

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 25	MCL	10YR42 00	0	1	HR	C				
25 55	C	10YR53 62	0	0		M	MDCPR	VM	P	

Wetness Grade 3B Wet ess C1 ss IV
Gley ng 0 cm
SPL 025 cm

Dro ght Grade APW mm MBW 0 mm
APP mm MBP 0 mm

FINAL ALC GRADE 3B
MAIN LIMITATION Wetness

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WHEAT GRADE	POTS AP	POTS MB	M REL AP	M REL MB	DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU55901540	PGR	N	02	025	025	4	3B		0		0					WE	3B	
1P	SU55901525	PGR	E	02	054	080	2	2	107	2	78	20	3A				DR	3A	POTS LIMIT
2	SU55901530	PGR	E	02	025	025	4	3B		0		0					WE	3B	
2P	SU55901530	PGR	E	01	0	025	4	3B		0		0					WE	3B	PIT DUG TO 55
3	SU55901525	PGR	E	02	060	080	2	2	105	0	75	23	3A				DR	3A	
4	SU55951515	PGR	E	02	050	075	2	2	107	2	80	18	3A				DR	3A	

				MOTTLES			PED		STONES				STRUCT/	SUBS			
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL	GLEY	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
1	0 25	mcl	10YR43 00						0	0		0						
	25 60	c	10YR53 00	10YR58 00	M			Y	0	0		0		P			Y	
1P	0 25	lms	10YR43 00						0	0		0						
	25 54	lms	10YR54 00						0	0		0	WKCSAB FR	G				
	54 80	scl	10YR53 62	75YR58 00	M			Y	0	0		0	MDCSAB VM	M	Y			
	80 120	c	10YR51 00	75YR58 00	M			Y	0	0		0		P	Y		Y	
2	0 25	msl	10YR53 00						0	0	HR	1						
	25 80	c	10YR51 00	75YR68 00	C			Y	0	0		0		P			Y	
2P	0 25	mcl	10YR42 00	10YR56 00	C			Y	0	0	HR	1						
	25-55	c	10YR53 62	75YR58 00	M			Y	0	0		0	MDCPR VM	P	Y		Y	
3	0 30	lms	10YR53 00						0	0		0						
	30 60	lms	10YR54 00						0	0	HR	1		G				
	60 80	scl	10YR62 00	75YR68 00	C			Y	0	0		0		M				
	80 120	c	10YR51 00	75YR58 00	C			Y	0	0		0		P			Y	
4	0 30	lms	10YR53 00						0	0	HR	1						
	30 50	lms	10YR44 00						0	0		0		G				
	50 75	scl	10YR62 00	75YR58 00	C			Y	0	0		0		M				
	75 120	c	10YR51 00	75YR58 00	C			Y	0	0		0		P			Y	