A1

South Oxfordshire District Local Plan

Site 194a Land at Wantage Road Didcot

Agricultural Land Classification

ALC Map and Report

December 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

SOUTH OXFORDSHIRE DISTRICT LOCAL PLAN
SITE 194A LAND AT WANTAGE ROAD DIDCOT

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 South Oxfordshire district The work forms part of MAFF s statutory input to the South Oxfordshire District Local Plan

1 2 Site 194a comprises 2 7 hectares of land to the south west of Didcot in Oxfordshire An Agricultural Land Classification (ALC) survey was carried out in November 1994 The survey was undertaken at a detailed level of approximately one boring per hectare A total of 3 borings and one soil inspection pit were assessed 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 long term limitations on its use for agriculture

1 3 The work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS

1 4 At the time of the survey the agricultural land was under stubble from the 1994 harvest The area shown as non agricultural comprises a low bank and the verge bordering the road at the site boundary

1 5 The distribution of grades and subgrades is shown on the attached ALC map and the areas 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 This map supersedes any previous ALC survey information for this site

Table 1 Distribution of Grades and Subgrades

Grade	Area (ha)	/ of Site
3a	2 6	96 3
Non Agricultural	0 1	3 7
Total area of Site	2 7ha	100%

1 6 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 7 The agricultural land at this site has been classified Subgrade 3a good quality with soil wetness as the main limitation The majority of observations encountered slowly permeable moderately and poorly structured clay horizons from between 30 and 60cm depth This causes drainage to be moderately impeded such that the classification is appropriate given the local climatic regime Poorly drained soils can inhibit plant and root development and may be more susceptible to structural damage through trafficking by machinery or poaching by grazing livestock

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 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 However climatic and soil factors interact to influence soil wetness and droughtiness limitations

Table 2 Climatic Interpolation

Grid Reference	SU510899
Altitude (m AOD)	80
Accumulated Temperature (days Jan June)	1429
Average Annual Rainfall (mm)	588
Field Capacity Days	124
Moisture deficit wheat (mm)	114
Moisture deficit potatoes (mm)	108
Overall Climatic Grade	1

3 Relief

3 1 The site lies at approximately 80m AOD rising slightly from south to north Nowhere on the site does relief or gradient affect agricultural land quality

4 Geology and Soils

4 1 The published geological information (BGS 1971) shows the entire site to be underlain by Cretaceous Upper Greensand

4 2 The published soils information (SSEW 1971) shows the entire site to be underlain by Harwell Series soils These are briefly described as a loamy brown earth over grey fine sandstone siltstone or silty marl (SSEW 1971) These soils are also included in the Harwell Association SSEW 1983) and are described as well drained loamy soils over sandstone and some similar soils with slight seasonal waterlogging Shallow stony soils locally Some slowly permeable seasonally waterlogged fine loamy or fine silty over clayey mainly on scarp slopes (SSEW 1983) Soils over the site were commonly found to be fine silty and loamy over slowly permeable clay horizons at variable depths

5 Agricultural Land Classification

5 1 Paragraph 1 5 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 Land of good quality has been mapped for the agricultural area at this site The principal limitation is soil wetness due to impeded drainage although soil droughtiness becomes dominant towards the north of the site Typical profiles comprise a very slightly stony (up to c 5% v/v soft fine sandstone fragments) medium silty clay loam topsoil In the majority of the observations this passes to a commonly gleyed very slightly to slightly stony (up to 15% v/v fine sandstone) medium or heavy silty clay loam upper subsoil overlying stoneless poorly structured gleyed and slowly permeable clay between 30 and 60cm depth Within the local climatic parameters profiles of this nature are assigned to Wetness Class III and subsequent Subgrade 3a given the medium workability status of the topsoils These soil wetness factors lead to moderate restrictions on the versatility of the land principally in terms of the timing of cultivations and stocking if structural damage to the soil is to be avoided Towards the north of the site observations became impenetrable to the soil auger around 65cm in a slightly stony (c 15% v/v fine sandstone) heavy silty clay loam subsoil beneath a medium silty

clay loam topsoil as above This leads to a moderate soil droughtiness limitation within the local climate as the stones in the profile restrict plant water availability leading to the possibility of drought stress affecting plant growth and yield therefore Subgrade 3a is appropriate here as well

ADAS Reference 3303/149/94
MAFF Reference EL33/278

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1971) Sheet 253 Abingdon 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) Climatic datasets for Agricultural Land Classification

Soil Survey of England and Wales (1971) Sheet 253 Abingdon Map scale 1 63 360

Soil Survey of England and Wales (1983) Sheet No 6 Soils of South East England 1 250 000 and Accompanying Legend

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

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 (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

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 (e g 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 e g 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

DEFINITION OF SOIL WETNESS CLASS

Wetness Class I

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

Wetness Class 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 180 days but only wet within 40 cm depth for 31 90 days in most years

Wetness Class 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

Wetness Class IV

The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth fro 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

Wetness Class V

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

Wetness Class VI

The soil profile is wet within 40 cm depth for more than 335 days in most 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 database This has commonly used notations and abbreviations as set out below

Boring Header Information

1 **GRID REF** national 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 measured by a hand held optical clinometer

4 **GLEY/SPL** Depth in cm to gleying or slowly permeable layers

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

6 **MB (WHEAT/POTS)** Moisture Balance

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

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

MREL Microrelief limitation	**FLOOD** Flood risk	**EROSN** Soil erosion risk
EXP Exposure limitation	**FROST** Frost	**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 **ST** Topsoil Stones
CH	Chemical	**WE**	Wetness	**WK**	Workability
DR	Drought	**ER**	Erosion Risk	**WD**	Soil Wetness/Droughtiness

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	**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 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

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

6 **STONE LITH** 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	**GH** gravel with non porous (hard) stones
SI soft weathered igneous/metamorphic rock	

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

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

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 S OXON LP SITE 194A P t N mbe 1P

G d Refere ce SU51008990 A age A l Ra f ll 588 mm
Acc mulated Tempe at e 1429 deg ee day
F ld C p c ty Le l 124 d ys
Land Use
Slope d A pect degree

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 25	MZCL	25Y 41 00	0	5	FSST					
25 33	MZCL	25Y 42 00	0	15	FSST				M	
33 39	HZCL	05Y 53 00	0	15	FSST	C		FR	M	
39 60	C	05Y 53 00	0	0		M	WKCSAB	FM	M	
60 70	C	05Y 53 00	0	0		M	MDCAB	FM	P	

Wet ss G de 3A Wetne Cl s III
Gley ng 33 cm
SPL 39 cm

D ought Grade 3A APW 100mm MBW 14 mm
APP 114mm MBP 6 mm

FINAL ALC GRADE 3A
MAIN LIMITATION W tness

SAMPLE NO	GRID REF	USE	ASPECT		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	SU51009000	STB		30		2	2	99	15	108	0	3A				DR	3A	IMPSANDST 65
1P	SU51008990	STB		33	39	3	3A	100	14	114	6	3A				WE	3A	PIT 70 AUG 120
2	SU51008990	STB		30	30	3	3A	134	20	113	5	2				WE	3A	SPL 30
3	SU51008980	STB		33	60	3	3A	141	27	119	11	2				WE	3A	SPL 60

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 30	mzcl	25Y 42 00						0	0	FSST	5						
	30 65	h cl	25Y 71 00	10YR68 00	M			Y	0	0	FSST	15		M				IMP SAND/SILT ST 65
1P	0 25	mzcl	25Y 41 00						0	0	FSST	5						
	25 33	mzcl	25Y 42 00						0	0	FSST	15		M				
	33 39	hzcl	05Y 53 00	10YR58 00	C			Y	0	0	FSST	15		FR M				
	39 60	c	05Y 53 00	10YR58 00	M		05Y 52 00	Y	0	0		0	WKCSAB	FM M	Y		Y	
	60 70	c	05Y 53 00	10YR58 00	M		05Y 52 00	Y	0	0		0	MDCAB	FM P	Y		Y	
2	0 30	mzcl	25Y 41 00						0	0	FSST	5						
	30 60	c	05Y 63 00	10YR58 00	C			Y	0	0	FSST	10		M			Y	
	60 120	c	05Y 63 00	10YR58 00	M			Y	0	0		0		P			Y	
3	0 33	mzcl	25Y 41 00						0	0	FSST	3						
	33 60	h cl	05Y 52 00	10YR68 00	C			Y	0	0	FSST	3		M				
	60 120	c	05Y 63 00	10YR56 00	C			Y	0	0		0		P			Y	