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Newbury District Local Plan
Site 45 : Land at Eddington
Agricultural Land Classification
ALC Map and Report
April 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

NEWBURY DISTRICT LOCAL PLAN
SITE 45 : LAND AT EDDINGTON

1. Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on an area of land at Eddington, Berkshire. The work forms part of MAFF's statutory input to the preparation of the Newbury District Local Plan.

1.2 Approximately one hectare of land relating to site 45, Eddington, near Hungerford, Berkshire was surveyed in February 1994. The survey was undertaken at a detailed level of approximately four borings per hectare. A total of 6 soil auger 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 longterm limitations on its use for agriculture.

1.3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.

1.4 At the time of the survey the land comprised rough grass, which was not being cultivated or grazed.

1.5 The distribution of grades and subgrades is shown on the attached ALC map. The map has been drawn at a scale of 1:5,000. It is accurate at this scale, but any enlargement would be misleading. This map supersedes any previous survey information for this site.

1.6 Appendix 1 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 whole site (1.4ha) has been classified as good quality, Subgrade 3a, moderate soil droughtiness being the key limitation. This is due to slightly and moderately stony subsoil horizons in the soil profile restricting soil water availability. This reduction in combination with local factors leads to the risk of drought stress such that this subgrade is most appropriate.

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	SU344690
Altitude, (m, AOD)	100
Accumulated Temperature (°days, Jan.-June)	1420
Average Annual Rainfall (mm)	740
Field Capacity Days	168
Moisture deficit, wheat (mm)	104
Moisture deficit, potatoes (mm)	95
Overall Climatic Grade	1

3. Relief

3.1 The site lies at an altitude of 95-105 m, falling gently from north to south. Nowhere on the site does relief or gradient affect agricultural land quality.

4. Geology and Soils

4.1 The published British Geological Survey map, Sheet 267, Hungerford (1:63360 scale, 1971), shows the entire site to be underlain by recent river and valley gravel.

4.2 The published Soil Survey of England and Wales map, Sheet 6, Soils of South-East England (1983, 1:250,000 scale), shows the site to be underlain by soils of the Sonning 1 Association. The legend accompanying the map describes these as 'well drained, flinty, coarse loamy and sandy soils, mainly over gravel. Some coarse loamy over clayey soils with slowly permeable subsoils and slight

seasonal waterlogging' (SSEW, 1983). Soils of this broad nature were found at this site, although textures were finer than suggested above.

5. Agricultural Land Classification

5.1 Paragraph 1.7 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 (Subgrade 3a) has been mapped for the whole site. The principal limitation is soil droughtiness. Typically the well or moderately well drained profiles comprise very slightly stony medium clay loam topsoils, which overlie slightly and moderately stony medium and heavy clay loam upper subsoils. These occasionally pass to gravel at shallow depth, but more commonly the lower subsoils comprise moderately and very stony medium clay loams, heavy clay loams and occasionally gleyed permeable clays. Gravel is usually encountered towards the base of the profile (c.75 - 100 cm). Subsoil stone contents limit water availability to the extent where a moderate degree of drought stress to plants could occur, such that overall Subgrade 3a is appropriate within the local climatic regime. Occasional observations were of a slightly better quality but were of insufficient distribution to justify separate mapping.

ADAS Ref: 0202/030/94
MAFF Ref: EL02/0297

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1971), Sheet 267, Hungerford, 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), Climatic datasets for Agricultural Land Classification.

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 (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 **ST** : strongly developed	**MD** : moderately developed
ped size	**F** : fine **C** : coarse	**M** : medium **VC** : very coarse
ped shape	**S** : single grain **GR** : granular **SAB** : sub-angular blocky **PL** : platy	**M** : massive **AB** : angular blocky **PR** : prismatic

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 : NEWBURY LP SITE 45 Pit Number : 1P

Grid Reference: SU34426897 Average Annual Rainfall : 740 mm
Accumulated Temperature : 1420 degree days
Field Capacity Level : 168 days
Land Use : Rough Grazing
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 20	MCL	10YR42 43	0	2		
20- 44	HCL	10YR43 00	0	12		WKCSAB
44- 65	C	10YR44 00	0	30		MDCSAB
65- 74	C	75YR46 00	0	45		
74- 85	GH	00ZZ00 00	0	0		

Wetness Grade : 1 Wetness Class : I
Gleying : cm
SPL : No SPL

Drought Grade : 3A APW : 090mm MBW : -14 mm
APP : 098mm MBP : 3 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	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU34396906	RGR	SW	02			1	1	071	-33	071	-24	3B				DR	3B	IMPGH 45
1A	SU34396906	RGR	SW	02			1	1	079	-25	076	-19	3B				DR	3B	DR OF 1 TO 120
1P	SU34426897	RGR					1	1	090	-14	098	3	3A				DR	3A	PIT 76 AUG 85
1Q	SU34426897	RGR					1	1	094	-10	098	3	3A				DR	3A	DR OF1P TO 120
2	SU34426901	RGR	SW	01			1	1	138	34	108	13	1					1	
3	SU34356898	RGR					1	1	101	-3	109	14	3A				DR	3A	IMPGH 75
3Q	SU34356898	RGR					1	1	106	2	109	14	3A				DR	3A	DR OF 3 TO 120
4	SU34426895	RGR			065		1	1	118	14	112	17	2				DR	2	IMPGH 100
4Q	SU34426895	RGR			065		1	1	120	16	112	17	2				DR	2	DR OF 4 TO 120
5	SU34406900	RGR			065	065	2	2	135	31	112	17	1				WE	2	SPL 65
6	SU34426899	RGR			037		2	2	102	-2	096	1	3A				DR	3A	IMPGH 100
6Q	SU34426899	RGR			037		2	2	104	0	096	1	3A				DR	3A	DR OF 6 TO 120

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	CALC
1	0-25	hcl	10YR43 00						0	0	HR	3						
	25-45	mcl	10YR44 54						0	0	HR	15		M				IMP GRAVEL 45
1A	0-25	hcl	10YR43 00						0	0	HR	3						
	25-45	mcl	10YR44 54						0	0	HR	15		M				IMP GRAVEL 45
	45-120	gh	00ZZ00 00						0	0		0		P				
1P	0-20	mcl	10YR42 43						0	0	HR	2						
	20-44	hcl	10YR43 00						0	0	HR	12	WKCSAB FR	M				
	44-65	c	10YR44 00				10YR42 00		0	0	HR	30	MDCSAB FR	M				
	65-74	c	75YR46 00						0	0	HR	45		M				
	74-85	gh	00ZZ00 00						0	0		0		P				IMP GRAVEL 85
1Q	0-20	mcl	10YR42 43						0	0	HR	2						
	20-44	hcl	10YR43 00						0	0	HR	12	WKCSAB FR	M				
	44-65	c	10YR44 00				10YR42 00		0	0	HR	30	MDCSAB FR	M				
	65-74	c	75YR46 00						0	0	HR	45		M				
	74-120	gh	00ZZ00 00						0	0		0		P				IMP GRAVEL 85
2	0-22	mcl	10YR43 00						0	0	HR	3						
	22-75	hcl	10YR42 00						0	0	HR	10		M				
	75-120	c	10YR53 00	10YR56 00	F				0	0		0		M				
3	0-25	mcl	10YR32 42						0	0	HR	3						
	25-40	hcl	10YR33 43						0	0	HR	5		M				
	40-60	mcl	10YR42 00						0	0	HR	10		M				
	60-70	mcl	10YR42 00						0	0	HR	15		M				
	70-75	mcl	10YR43 53						0	0	HR	50		M				IMP GRAVEL 75
3Q	0-25	mcl	10YR32 42						0	0	HR	3						
	25-40	hcl	10YR33 43						0	0	HR	5		M				
	40-60	mcl	10YR42 00						0	0	HR	10		M				
	60-70	mcl	10YR42 00						0	0	HR	15		M				
	70-75	mcl	10YR43 53						0	0	HR	50		M				IMP GRAVEL 75
	75-120	gh	00ZZ00 00						0	0		0		M				
4	0-25	mcl	10YR42 00						0	0	HR	3						
	25-45	hcl	10YR43 00						0	0	HR	5		M				
	45-50	hcl	10YR43 00						0	0	HR	15		M				
	50-65	hcl	10YR42 00						0	0	HR	5		M				
	65-85	c	10YR42 00	10YR56 00	C			Y	0	0	HR	5		M				
	85-100	c	10YR42 00	10YR56 00	C			Y	0	0	HR	40		M				IMP GRAVEL 100
4Q	0-25	mcl	10YR32 42						0	0	HR	3						
	25-45	hcl	10YR43 00						0	0	HR	5		M				
	45-50	hcl	10YR43 00						0	0	HR	15		M				
	50-65	hcl	10YR42 00						0	0	HR	5		M				
	65-85	c	10YR42 00	10YR56 00	C			Y	0	0	HR	5		M				
	85-100	c	10YR42 00	10YR56 00	C			Y	0	0	HR	40		M				IMP GRAVEL 100
	100-120	gh	00ZZ00 00					Y	0	0		0		P				

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	
5	0-30	mcl	10YR32 42						0	0	HR	3							
	30-45	mcl	10YR33 43						0	0	HR	5		M					
	45-55	hcl	10YR43 00						0	0	HR	15		M					
	55-65	mcl	10YR43 00						0	0		0		M					
	65-120	c	10YR42 00	10YR56 00	M			Y	0	0		0		P			Y		
6	0-22	mcl	10YR32 42						0	0	HR	10							
	22-37	hcl	10YR42 00						0	0	HR	20		M					
	37-100	c	25Y 41 00	10YR46 00	M			Y	0	0	HR	25		M					IMP GRAVEL 100
6Q	0-22	mcl	10YR32 42						0	0	HR	10							
	22-37	hcl	10YR42 00						0	0	HR	20		M					
	37-100	c	25Y 41 00	10YR46 00	M			Y	0	0	HR	25		M					IMP GRAVEL 100
	100-120	gh	00ZZ00 00					Y	0	0		0		P					