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NEWBURY LOCAL PLAN
SITE 67c: LAND WEST OF
ENBORNE ROW, NEWBURY
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
JANUARY 1994

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AGRICULTURAL LAND CLASSIFICATION REPORT

1.0 Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on a number of sites in the Newbury District of Berkshire. The work forms part of MAFF's statutory input to the preparation of the Newbury Local Plan.

1.2 Approximately 4 hectares of land relating to site 67c, west of Enborne Row near Newbury was surveyed in January 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 5 soil auger borings 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 conducted 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 use on the site was permanent grassland being partly grazed by cattle. There was also a building within a small area of non-agricultural land.

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 1:5,000. It is accurate at this scale, but any enlargement would be misleading. This survey supersedes a previous survey carried out during 1988 in connection with the proposals for the Newbury By-Pass.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Area
3b	3.77	99.3	100
Non-Agricultural	0.03	0.7	100% (3.77ha)
Total area of site	3.8	100%	

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 entire site has been classified as subgrade 3b due to a moderate soil wetness limitation. The majority of profiles comprise gleyed, stone-free medium clay loam topsoils over poorly structured, gleyed heavy clay loam or clay upper subsoils. Occasional borings show only few ochreous mottles in the topsoil and comprise coarse textured upper subsoils. However, these also pass to poorly structured clay in the lower subsoil. The gleyed heavy clay loam and clay horizons have been identified as slowly permeable. Their occurrence at shallow depths significantly impedes drainage and results in a wetness limitation such that the land cannot be graded higher than sub-grade 3b.

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 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. However climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations. At this locality the moisture deficits are relatively low and the field capacity days correspondingly high, in a regional context, therefore increasing the likelihood of soil wetness.

2.4 No local climatic factors such as exposure or frost risk affect the site.

Table 2 : Climatic Interpolation

Grid Reference :	SU445636	SU445635
Altitude (m) :	111	100
Accumulated Temperature (days) :	1407	1419
Average Annual Rainfall (mm) :	768	760
Field Capacity (days) :	171	170
Moisture Deficit, Wheat (mm) :	99	101
Moisture Deficit, Potatoes (mm) :	89	91
Overall Climatic Grade :	1	1

3.0 Relief

3.1 The site lies at a maximum altitude of 111m. AOD towards the north and falls gently in all directions to 100m. AOD along the southern boundary.

4.0 Geology and Soil

4.1 British Geological Survey (1947), sheet 267, Hungerford shows the entire site to be underlain by London Clay.

4.2 The Soil Survey Map of South East England (SSEW, 1983, 1:250,000), shows that the soils on this site comprise the Wickham 3 Association. 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 waterlogging. Some deep coarse loamy soils affected by ground water. Land slips locally.'(SSEW 1983). Detailed field examination showed that this was indeed the main soil type for this site.

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 are shown on the attached sample point map.

5.3 Subgrade 3b

The site has been classified as moderate quality, subgrade 3b, agricultural land. The majority of profiles comprise stone-free medium clay loam topsoils with few or common ochreous mottles. The upper subsoils were generally found to consist of a gleyed, poorly structured, heavy clay loam or clay. From a soil inspection pit on adjacent land it was confirmed that these horizons are slowly permeable. Occasional borings revealed a lighter medium clay loam or fine sandy loam upper subsoil over the slowly permeable clay or sandy clay loam. The majority of lower subsoils continued to depth as slowly permeable clay. However, occasional moderately structured fine sandy loams were encountered above poorly structured sandy clay loam at depth.The presence of a slowly permeable horizon at shallow depths significantly impedes drainage. The combination of this and the local climatic regime leads to a significant soil wetness problem consistent with Wetness Class IV. The medium clay loam topsoil within a moist climatic regime also causes a workability limitation as the land cannot sustain prolonged trafficking and working or grazing by livestock. The site ,therefore, has been classified as subgrade 3b as a result of both soil wetness and workability limitations.

5.5 The areas marked as Non-Agricultural consist of scrub land around a disused building.

ADAS REFERENCE : 0202/004/93
MAFF REFERENCE : EL 02/00297

Resource Planning Team
Guildford Statutory Group
ADAS Reading

APPENDIX II

REFERENCES

* British Geological Survey (1947), Sheet No.267, Hungerford, 1:50,000

* 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, 1:250,000. And accompanying legend.

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 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 HRT : Horticultural Crops PGR : Permanent Pasture LEY : Ley Grass RGR : Rough Grazing
SCR : Scrub CFW : Coniferous Woodland DCW : Deciduous Woodland HTH : Heathland BOG : Bog or Marsh
FLW : Fallow PLO : Ploughed SAS : Set aside OTH : Other

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 CH : Chemical WE : Wetness WK : Workability
DR : Drought ER : Soil Erosion Risk WD : Combined 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
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 MSST : soft, medium or coarse grained sandstone
SI : soft weathered igneous or metamorphic SLST : soft oolitic or dolimitic 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:

- 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 appropiate 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

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	0-28	mcl	10YR41 00 75YR46 00	C				Y	0	0		0						
	28-55	hcl	25Y 71 00 10YR58 00	M				Y	0	0		0		P	Y		Y	
	55-60	c	25Y 71 00 10YR58 00	M				Y	0	0		0		P	Y		Y	
	60-80	c	25Y 71 00 10YR58 00	M				Y	0	0		0		P	Y		Y	
2	0-28	mcl	10YR53 00 10YR58 00	F					0	0		0						
	28-40	c	10YR63 00 75YR58 00	M				Y	0	0		0		P	Y		Y	
	40-60	c	10YR71 00 75YR58 00	M				Y	0	0		0		P	Y		Y	
3	0-28	mcl	25 Y42 00 10YR58 00	C				Y	0	0		0						
	28-35	c	10YR53 00 10YR58 00	C				Y	0	0		0		P	Y		Y	
	35-60	c	10YR53 00 10YR58 00	C				Y	0	0		0		P	Y		Y	
	60-90	fsl	10YR63 00 75YR58 00	M				Y	0	0		0		M				
	90-100	scl	10YR53 00 75YR58 00	C				Y	0	0		0		P				
4	0-28	mcl	10YR43 00 10YR58 00	F					0	0		0						
	28-38	fsl	10YR53 00 10YR58 00	C				Y	0	0		0		M				
	38-48	scl	10YR53 00 10YR58 00	C				Y	0	0		0		P	Y		Y	
	48-60	c	10YR63 00 75YR58 00	M				Y	0	0		0		P	Y		Y	
	60-90	c	10YR63 00 75YR58 00	M				Y	0	0		0		P	Y		Y	
5	0-28	mcl	10YR32 00 75YR46 00	C				Y	0	0		0						
	28-60	mcl	10YR53 00 75YR58 00	M				Y	0	0		0		M				
	60-80	c	10YR51 52 75YR58 00	M				Y	0	0		0		P	Y		Y	

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	SU44406470	PGR	W	01	0	028	4	3B	109	8	115	24	2				WE	3B	3B	V WET TOPSOIL
2	SU44506470	PGR	N	01	028	028	4	3B	90	-11	96	5	3A				WE	3B	3B	SPL 28
3	SU44406460	PGR	W	01	0	028	4	3B	137	36	112	21	1				WE	3B	3B	SPL 28
4	SU44506460	PGR	E	01	028	038	4	3B	116	15	116	25	2				WE	3B	3B	SPL 38
5	SU45496450	PGR			0	060	3	3A	110	10	115	25	2				WE	3A	3A	SPL 60