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NEWBURY LOCAL PLAN
SITE 52 : SALISBURY ROAD
HUNGERFORD
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
JANUARY 1994

**NEWBURY LOCAL PLAN
SITE 52 : SALISBURY ROAD, HUNGERFORD
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 2 hectares of land relating to site 52, Salisbury Road, Hungerford was surveyed in January 1994. The survey was undertaken at a detailed level of approximately two borings 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). Two soil inspection pits were dug on land surveyed at the same time, immediately to the south and these were used to assess subsoil conditions for this site. The aforementioned 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 land use on the site was field beans with an area of newly planted saplings mapped as woodland.

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 map supersedes any previous survey information for this site.

Table 1 : Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
2	1.6	64	84.2
3b	0.3	12	15.8
Woodland	0.6	24	100% (1.9ha)
Total area of site	2.5	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 majority of the site is classified as grade 2, very good quality land, due to a slight soil workability limitation. Profiles comprise heavy clay loam topsoils over clayey subsoils, sometimes becoming chalky with depth. The heavy nature of the topsoil means that soils are slower to return to a workable condition after wetting, thereby reducing the flexibility of land for cultivation. A small area of land to the south east is classified as subgrade 3b due to a soil wetness limitation. The presence of poorly structured slowly permeable clay layers below the topsoil significantly restricts the movement of water through the profile and may cause the land to lie wet for a considerable part of the year.

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 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. It should be noted that climatic characteristics such as the comparatively low moisture deficits can interact with soil properties to decrease the likelihood of soil droughtiness problems. Also, the relatively high rainfall and field capacity days can increase the likelihood of soil wetness problems.

Table 2 : Climatic Interpolation

Grid Reference :	SU 333 677
Altitude (m) :	130
Accumulated Temperature (days) :	1386
Average Annual Rainfall (mm) :	774
Field Capacity (days) :	174
Moisture Deficit, Wheat (mm) :	98
Moisture Deficit, Potatoes (mm) :	87
Overall Climatic Grade :	1

3.0 Relief

3.1 The site is generally flat and lies at an altitude of approximately 130 metres. Nowhere on the site does relief or gradient affect agricultural land quality.

4.0 Geology and Soil

4.1 The published geological sheet for the site, Sheet 267 (BGS, 1971) shows the underlying geology to be Clay with Flints and Tertiary Debris.

4.2 The published soils information for the area, Sheet 6 (SSEW, 1983) shows the site to comprise soils of the Frilsham association - "Well drained mainly fine loamy soils over chalk, some calcareous. Shallow calcareous fine loamy and fine silty soils in places". (SSEW,1983). A detailed inspection of soils on the site confirmed the presence of soils similar to those described above which become chalky at depth. Additionally a small area of non calcareous slowly permeable clayey soils was encountered to the south east.

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.

Grade 2

5.3 Very good quality agricultural land is mapped over the majority of the site. Soil profiles typically comprise topsoils of non calcareous heavy clay loam with 2-3% total small flints. Upper subsoils consist of calcareous and non calcareous clay containing 0-10% total flints and chalk stones. This passes to lower subsoils of calcareous clay, heavy silty clay loam or heavy clay loam containing 10-70% total weathered chalk. Soils are well drained with no evidence of wetness problems and are assigned to wetness class I. However, the heavy topsoil texture in combination with climatic factors such as field capacity days results in a slight workability limitation and land is classified as grade 2 accordingly. A heavy topsoil will retain water for longer after wetting than a lighter one and thereby reduces the timing and flexibility with which the land can be cultivated and trafficked.

Although no soil inspection pits were dug on this site, pit information from land immediately to the south with the same soil types was interpreted to give subsoil characteristics. Soil pit 1 from the adjacent site (see Appendix IV) is typical of these soils described above.

Subgrade 3b

5.4 Moderate quality agricultural land accounts for a small area of clayey soils to the south east of the site. Soils comprise topsoils of non calcareous heavy clay loam with 3% total flints over upper and lower subsoils of slowly permeable clay. Soils are poorly drained due to the presence of slowly permeable layers from 35 cm depth and are assigned to wetness class III. Although only slightly gleyed in the upper subsoil the clay displays signs of wetness in the form of common ochreous mottles and common manganese concretions before becoming fully gleyed in the lower subsoil. Soil pit 2 dug immediately to the south on the adjacent site is typical of these soils (see Appendix IV). Clayey soils such as these are sensitive to structural damage and as a result the periods in which the land is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock are very limited.

ADAS REFERENCE : 0202/034/94
MAFF REFERENCE : EL 02/0297

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 (1971), Sheet No.267, Hungerford, 1:63,360 scale.
- * 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 scale 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 Abbreviations : Explanatory Note
 - * Soil Pit Descriptions
 - * Database Printout : Boring Level Information
 - * Database Printout : Horizon Level Information

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 WIIT : 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 HIRT : 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 CII : 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 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 : NEWBURY LP SITE 43 Pit Number : 1P

Grid Reference: SU33706740 Average Annual Rainfall : 784 mm
 Accumulated Temperature : 1392 degree days
 Field Capacity Level : 175 days
 Land Use :
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 24	HCL	10YR43 00	0	2		
24- 50	C	10YR46 00	0	0		MDCSAB
50- 85	CH	00CH00 00	0	1		

Wetness Grade : 2 Wetness Class : I
 Gleying : cm
 SPL : No SPL

Drought Grade : 2 APW : 108mm MBW : 10 mm
 APP : 104mm MBP : 17 mm

FINAL ALC GRADE : 2
 MAIN LIMITATION : Workability

SOIL PIT DESCRIPTION

Site Name : NEWBURY LP SITE 43 Pit Number : 2P

Grid Reference: SU33506750 Average Annual Rainfall : 784 mm
 Accumulated Temperature : 1392 degree days
 Field Capacity Level : 175 days
 Land Use :
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	HCL	10YR43 00	0	2		
25- 45	C	10YR44 00	0	0	C	MDCAB
45- 60	C	10YR44 00	0	1	M	MDCAB

Wetness Grade : 3B Wetness Class : III
 Gleying : 045 cm
 SPL : 025 cm

Drought Grade : APW : mm MBW : 0 mm
 APP : mm MBP : 0 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST		CHEM	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT	
1	SU33306870	BEN			1	2	140	42	116	29	1					
2	SU33406870	BEN			1	2	147	49	116	29	1			WK	2	IMP80
3	SU33306862	BEN			1	2	140	42	110	23	1			WK	2	
4	SU33406862	BEN	070	035	3	3B	129	31	106	19	1			WK	2	
5	SU33366862	BEN			1	2	107	9	115	28	2			WE	3B	
														WK	2	IMP80

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----		PED COL.	----STONES-----			STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
				COL	ABUN		CONT	GLE	>2						
1	0-30	hc1	10YR42 00												
	30-50	c	10YR44 00				0	0	HR	2					
	50-120	c	10YR66 00				0	0		0	M				
2	0-29	hc1	10YR42 00												
	29-70	c	10YR44 00				0	0	HR	3					
	70-80	c	10YR76 44				0	0		0	M				
	80-120	hzc1	10YR66 44				0	0	CH	5	M				Y
3	0-28	hc1	10YR42 00												
	28-35	c	10YR44 00				0	0	HR	2					
	35-45	c	10YR66 00				0	0		0	M				
	45-60	hc1	10YR66 00				0	0	CH	10	M				Y
	60-120	hc1	10YR64 00				0	0	CH	20	M				Y
4	0-35	hc1	10YR42 00	10YR56 00	F										
	35-70	c	10YR54 56	75YR56 00	C	00MN00 00			HR	3					
	70-120	c	25Y 53 00	75YR56 00	M	00MN00 00 Y			HR	1	M				Y
5	0-30	hc1	10YR42 00												
	30-70	c	10YR44 00	75YR56 00	F				HR	2					
	70-80	c	10YR44 00	75YR56 00	C				HR	3	M				
									HR	5	M				