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NEWBURY LOCAL PLAN
SITE 81 : LAND NORTH WEST
OF TADLEY
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
FEBRUARY 1994

**NEWBURY LOCAL PLAN
SITE 81 : LAND NORTH WEST OF TADLEY
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 in Berkshire. The work forms part of MAFF's statutory input to the preparation of the Newbury Local Plan.

1.2 Approximately 11 hectares of land relating to site 81, Land North West of Tadley was surveyed in February 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 8 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 landuse on the site was permanent grass.

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 the site.

Table 1 : Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
3b	10.7	98.2	100% (10.7 ha)
Non Agricultural	0.1	0.9	
Agricultural Buildings	<u>0.1</u>	<u>0.9</u>	
Total Area of Site	10.9	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 All the agricultural land on the site is classified as subgrade 3b with soil wetness being the main limitation. Soils comprise medium clay loam topsoils overlying poorly structured slowly permeable clay subsoils. Drainage of water through these soils is significantly impaired and land is classified as subgrade 3b, moderate quality agricultural land, to reflect the resulting difficulties associated with farming this land.

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. However, it should be noted that the local climate is quite wet in a regional context with high rainfall and field capacity days and low moisture deficits for wheat and potatoes. These climatic parameters influence soil wetness and droughtiness problems, such that the likelihood of soil wetness restrictions is enhanced.

Table 2 : Climatic Interpolation

Grid Reference :	SU 574 626
Altitude (m) :	108
Accumulated Temperature (days) :	1408
Average Annual Rainfall (mm) :	759
Field Capacity (days) :	160
Moisture Deficit, Wheat (mm) :	99
Moisture Deficit, Potatoes (mm) :	89
Overall Climatic Grade :	1

3.0 Relief

3.1 The site is flat and lies at an altitude of approximately 108 metres. Relief or gradient do not affect agricultural land quality.

4.0 Geology and Soil

4.1 The published geological sheet for the site, Sheet 268 (BGS, 1971) shows the underlying geology to be Plateau Gravel.

4.2 The published soils information for the area, Sheet 6 (SSEW, 1983) shows the majority of the site to comprise soils of the Southampton association - "Well drained, very acid, very flinty sandy soils with bleached subsurface horizons...". (SSEW, 1983). Towards the south west boundary of the site is mapped soils of the Sonning 2 association - "Well drained flinty coarse loamy and gravelly soils...". (SSEW, 1983). A detailed inspection of soils on the site revealed the presence of a very different soil type to any of those described above. These consisted of medium clay loam topsoils over slowly permeable clay subsoils with significant soil drainage problems.

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.

Subgrade 3b

5.3 The agricultural land on the site is classified as subgrade 3b, moderate quality agricultural land. Soil profiles consist of medium clay loam topsoils typically with 2-12% total flints, though in a few profiles this is significantly higher - 22-30% total flints of which 11-16% are over 2 cm diameter. Upper and lower subsoils comprise poorly structured slowly permeable clay with 3-15% total flints. Occasionally there is a thin horizon of heavy clay loam above the clay. Soils show signs of wetness imperfections in the form of gleying above 40 cm depth and frequently within the topsoil. This is caused by the presence of slowly permeable clay horizons beginning from 25-40 cm depth which severely impede drainage. Consequently profiles are assigned to a wetness class of IV and this in combination with a medium topsoil texture and climatic factors limits land to subgrade 3b due to a significant soil wetness limitation. The clayey soils impede soil water drainage and inhibit seed germination, the development of good root systems and take longer to return to workable condition after wetting. One profile representing those with stony topsoils is limited to subgrade 3b due to a total of 16% flints > 2 cm in diameter present in the topsoil. Stoniness in the topsoil such as this can be detrimental to crop establishment and cause excessive wear and tear to farm machinery. Included in this mapping unit are a small number of better drained profiles that were not mapped separately due to their limited number and distribution.

5.4 Elsewhere on the site the area marked as Non-agricultural comprises a tumulus.

ADAS REFERENCE : 0202/026/94
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 re-claimed 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.268, Reading, 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 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 MSSST : 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 pedes 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 81 Pit Number : 1P

Grid Reference: SU57406270 Average Annual Rainfall : 759 mm
Accumulated Temperature : 1408 degree days
Field Capacity Level : 160 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR32 00	6	12		
25- 38	MCL	25Y 62 00	0	5	M	MDCSAB
38- 60	C	25Y 62 00	0	5	M	WKCSAB

Wetness Grade : 3B Wetness Class : IV
Gleying : 025 cm
SPL : 038 cm

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

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	USE	ASPECT	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
				GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
1	SU57206270	PGR		027	027	4	3B		0		0				WE 3B	IMP75
1P	SU57406270	PGR		025	038	4	3B		0		0				WE 3B	
2	SU57306270	PGR		025	045	3	3A		0		0				WE 3A	3ASTIM70
3	SU57406270	PGR		025	040	4	3B		0		0				WE 3B	IMP75
4	SU57506270	PGR		035	035	4	3B		0		0				WE 3B	IMP80
5	SU57606270	PGR		025	025	4	3B		0		0				WE 3B	IMP80
6	SU57306260	PGR		027	045	3	3A		0		0				ST 3B	IMP65
7	SU57406260	PGR		030	040	4	3B		0		0				WE 3B	
8	SU57506260	PGR		030	035	4	3B		0		0				WE 3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES-----			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT		GLEY	>2	>6		LITH	TOT	STR		
1	0-27	mc1	10YR31 00					0	0	HR	2					
	27-50	c	25Y 61 62 75YR58 00 M					Y	0	0	HR	2		P	Y	Y
	50-70	c	25Y 61 62 75YR58 00 M					Y	0	0	HR	10		P	Y	Y
	70-75	c	25Y 61 62 75YR58 00 M					Y	0	0	HR	15		M		Y
1P	0-25	mc1	10YR32 00					6	0	HR	12					
	25-38	mc1	25Y 62 00 75YR58 00 M					Y	0	0	HR	5	MDCSAB	FR	M	
	38-60	c	25Y 62 00 75YR58 00 M					Y	0	0	HR	5	WKCSAB	FM	P	Y
2	0-25	mc1	10YR31 00					11	0	HR	22					
	25-45	hc1	25Y 61 62 75YR58 00 M					Y	0	0	HR	20		M		
	45-70	c	25Y 61 62 75YR58 00 M					Y	0	0	HR	10		P		Y
	70-120	c	25Y 61 62 75YR58 00 M					Y	0	0	HR	15		M		Y
3	0-25	mc1	10YR32 00					0	0	HR	3					
	25-40	mc1	25Y 63 00 75YR58 00 M					Y	0	0	HR	2		M		
	40-75	c	25Y 62 63 75YR58 00 M					Y	0	0	HR	3		P		Y
4	0-35	mc1	10YR32 00					0	0	HR	2					
	35-75	c	25Y 62 00 75YR58 00 M					Y	0	0	HR	3		P		Y
	75-80	c	25Y 62 00 75YR58 00 M					Y	0	0	HR	10		P		Y
5	0-25	mc1	10YR31 00					0	0	HR	2					
	25-60	c	25Y 51 00 75YR58 00 M					Y	0	0	HR	2		P	Y	Y
	60-80	c	25Y 51 00 75YR58 00 M					Y	0	0	HR	10		P		Y
6	0-27	mc1	10YR32 00					16	0	HR	30					
	27-45	hc1	25Y 52 00 75YR58 00 M					Y	0	0	HR	25		M		
	45-65	c	25Y 52 00 75YR58 00 M					Y	0	0	HR	15		P		Y
7	0-30	mc1	10YR32 00					0	0	HR	10					
	30-40	hc1	25Y 61 62 75YR58 00 M					Y	0	0	HR	8		M		
	40-80	c	25Y 61 62 75YR58 00 M					Y	0	0	HR	4		P	Y	Y
8	0-30	mc1	10YR32 00					0	0	HR	10					
	30-35	hc1	25Y 63 00 75YR58 00 M					Y	0	0	HR	10		M		
	35-70	c	25Y 62 00 75YR58 00 M					Y	0	0	HR	5		P		Y