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NEWBURY LOCAL PLAN
SITE 15: DARK LANE, TILEHURST
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
FEBRUARY 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 for 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 15 at Dark Lane in Tilehurst, West Reading, was surveyed in February 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 5 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 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 cereal cropping and two small horse paddocks. Land in urban use and farm buildings surrounded by non-agricultural land were also mapped.

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

Grade	Area (ha)	% of Site	% of Agricultural Area
3b	3.2	76.2	100
Non-Agricultural	0.4	9.5	
Urban	0.5	11.9	100%(3.2ha)
Farm Buildings	0.1	2.4	
Total area of site	4.2	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 site has been classified as Subgrade 3b with topsoil stone content being the key limitation. The profiles comprises moderately stony medium sandy silt loam or medium sandy loam topsoils over increasingly coarse textured and stony subsoils. Occasional borings became heavier at depth but the majority became more sandy. The volume of stones, greater than 2cm in diameter,in the topsoil cause a significant limitation in terms of wear and damage to farm machinery and adverse affects on crop establishment and growth. In addition the combination of the stone content and the coarse soil textures results in a moderate to significant soil droughtiness limitation.

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.

2.4 The locality is rather prone to frost but it is reasonably sheltered so is not affected by exposure (Met. Office, 1969. Unpublished data).

Table 2 : Climatic Interpolation

Grid Reference :	SU655746
Altitude (m) :	90
Accumulated Temperature (days) :	1422
Average Annual Rainfall (mm) :	684
Field Capacity (days) :	142
Moisture Deficit, Wheat (mm) :	109
Moisture Deficit, Potatoes (mm) :	101
Overall Climatic Grade :	1

3.0 Relief

3.1 The site lies at an altitude of 90m. AOD and slopes very gently (2^0) to the south east.

4.0 Geology and Soil

4.1 British Geological Survey (1971), sheet 268, Reading shows the underlying geology to be plateau gravel.

4.2 The Soil Survey Map of South East England (SSEW, 1983, 1:250,000), shows the soils on this site as the Sonning 1 Association. These soils are described as 'Well drained flinty coarse loamy and sandy soils, mainly over gravel. Some coarse loamy over clayey and slight seasonal waterlogging.'(SSEW 1983)

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 entire site has been classified as subgrade 3b, moderate quality, land. The soil profiles comprise medium sandy silt loam or medium sandy loam topsoils with 20-29% stone (15-19% > 2cm diameter) over a medium sandy loam upper subsoil of a similar stone content. The majority of subsequent horizons comprise loamy medium sand growing progressively stonier (32-55%) as they descend and occasionally becoming gravel at depth. The lower subsoil is also commonly a loamy medium sand but with substantially less stones (2-5%) and shows signs of gleying due to fluctuating groundwater. At two locations gleyed slowly permeable sandy clay was encountered at depth. The combination of a high stone content and coarse textured soils leads to a moderate soil droughtiness limitation despite the depth of the profiles. Soil droughtiness is consistent with either subgrade 3a or 3b according to the depth of the horizons and amount of stone present in each. The quantity of topsoil stones greater than 2cm in diameter, however, impose the over-riding limitation as they can inflict significant wear and tear to farm machinery and tyres as well as impeding crop establishment, growth and quantity. This land is therefore limited to subgrade 3b on topsoil stones. A small area adjacent to the farm buildings was considered to be disturbed where building material debris in the soil made it impenetrable at 25cm.

ADAS REFERENCE : 4205/027/93
MAFF REFERENCE : EL 02/00297

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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

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.268, Reading, 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 :

SAMPLE NO.	GRID REF	ASPECT USE		GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
	SU65507470	CER	SE	01	055		1	1	085	-24	083	-18	3B				TS	3B	IMP 89+
TP	SU65507470	CER	SE	02	085		1	1	099	-10	075	-26	3A				TS	3B	
2	SU65607470	CER	SE	02			1	1	051	-58	051	-50	3B				TS	3B	IMP 48+
	SU65707470	CER	SE	02	089		1	1	137	28	093	-8	2				TS	3A	
	SU65607477	CER	SE	02	048	075	2	1	115	6	082	-19	3A				TS	3A	
	SU65627462	CER	SE	02			1	1	050	-59	050	-51	3B				TS	3B	IMP 43+

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
1	0-30	msz1	10YR42 00						16	0	HR	22						
	30-39	ms1	10YR42 00						0	0	HR	22		M				
	39-55	ms1	10YR53 00	10YR56 00	F				0	0	HR	22		M				
	55-89	lms	10YR53 00	10YR56 00	F				0	0	HR	30		M				
1P	0-30	msz1	10YR42 00						16	0	HR	22						
	30-45	ms1	10YR43 00						0	0	HR	22		M				
	45-54	lms	10YR53 00						0	0	HR	32		M				
	54-70	lms	10YR54 00						0	0	HR	45		M				
	70-85	lms	10YR54 00						0	0	HR	55		M				
	85-120	lms	10YR72 00	05YR46 00	M			Y	0	0	HR	5		G				
2	0-35	msz1	10YR42 00						19	0	HR	29						
	35-48	gh	10YR54 00						0	0		0		M				
3	0-39	ms1	10YR42 00						11	0	HR	20						
	39-50	ms1	10YR54 00						0	0	HR	20		M				
	50-70	ms1	10YR53 00	10YR56 00	F				0	0	HR	15		M				
	70-89	1fs	10YR53 00	10YR56 00	F				0	0	HR	15		M				
	89-105	sc1	10YR63 00	75YR58 00	C			Y	0	0	HR	5		M				
	105-120	sc	10YR63 00	75YR46 00	M			Y	0	0	HR	5		M			Y	
5	0-25	msz1	10YR43 00						15	0	HR	20						
	25-39	ms1	10YR43 00						0	0	HR	20		M				
	39-48	sc1	10YR43 00	10YR56 00	F				0	0	HR	20		M				
	48-75	lms	10YR63 00	10YR58 00	C			Y	0	0	HR	5		M				
	75-120	sc	10YR73 00	05YR58 00	M			Y	0	0	HR	2		P	Y		Y	
6	0-35	ms1	10YR42 00						19	0	HR	29						
	35-43	ms1	10YR53 00	10YR56 00	F				0	0	HR	45		M				

SOIL PIT DESCRIPTION

Site Name : NEWBURY LP, SITE 15 Pit Number : 1P

Grid Reference: SU65507470 Average Annual Rainfall : 684 mm
Accumulated Temperature : 1422 degree days
Field Capacity Level : 142 days
Land Use : Cereals
Slope and Aspect : 02 degrees SE

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MSZL	10YR42 00	16	22		
30- 45	MSL	10YR43 00	0	22		
45- 54	LMS	10YR53 00	0	32		
54- 70	LMS	10YR54 00	0	45		
70- 85	LMS	10YR54 00	0	55		
85-120	LMS	10YR72 00	0	5	M	

Wetness Grade : 1 Wetness Class : I
Gleying :085 cm
SPL : No SPL

Drought Grade : 3A APW : 099mm MBW : -10 mm
APP : 075mm MBP : -26 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : TOP SOIL STONINESS.