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NEWBURY LOCAL PLAN
SITE 72: LYNCH LANE, LAMBOURNE
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
FEBRUARY 1994

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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 6 hectares of land relating to site 72 at Lynch Lane in Lambourne 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 2 soil pits 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.

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
2	3.2	55.2	60.4
3a	2.1	36.2	39.6
Non-Agricultural	0.3	5.2	100%(5.3ha)
Woodland	0.2	3.4	
Total area of site	5.8	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 site has been classified as Grades 2 and 3a due to soil droughtiness. The profiles across the site comprise slightly stony (< 5% stones > 2cm) medium clay loam or medium silty clay loam topsoils over slightly heavier and increasingly stony subsoils (developed in chalky drift). The volume of stones restricts the profile available water for plant growth thus reducing yield potential and consistency. The shallow, stonier profiles, therefore, impose a more severe soil droughtiness limitation so have been classified as Grade 3a while the remainder of the site was assessed as Grade 2.

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 local area is rather prone to frost but is reasonably well sheltered from risk of exposure. (Met. Office, 1969. Unpublished Data).

Table 2 : Climatic Interpolation

Grid Reference :	SU325 793
Altitude (m) :	130
Accumulated Temperature (days) :	1381
Average Annual Rainfall (mm) :	726
Field Capacity (days) :	162
Moisture Deficit, Wheat (mm) :	98
Moisture Deficit, Potatoes (mm) :	86
Overall Climatic Grade :	1

3.0 Relief

3.1 The site lies at an altitude of 130m. AOD and slopes very gently (2^0) towards the river in the north east.

4.0 Geology and Soil

4.1 British Geological Survey (1971), sheet 267, Hungerford shows that the majority of the site is underlain by Upper Chalk but a narrow band of river and valley gravel runs along the north eastern boundary.

4.2 The Soil Survey Map of South East England (SSEW, 1983, 1:250,000), shows that the soils on this site comprise the Coombe 1 Association. These soils are described as 'Well drained calcareous fine silty soils, deep in the valley bottoms, shallow to chalk on valley sides in places. Slight risk of water erosion.' (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 Grade 2

Very good quality land is mapped towards the western side and is associated with deep calcareous soils developed in chalky drift. These typically comprise medium clay loam or medium silty clay loam topsoils over heavy clay loam or heavy silty clay loam subsoils. The topsoils are very slightly flinty with stone content increasing to about 15% v/v in the upper subsoil. Below about 60cm soils become increasingly chalky with between 24% and 40% v/v of (hard or soft) chalk stones. Such land is well drained although occasional profiles show possible evidence of fluctuating groundwater. The main agricultural limitation of such land is slight droughtiness caused by the presence of both flints and chalk stones within the soil profile. These act to reduce the profile available water capacity and thus slightly reduce yield consistency and potential.

5.4 subgrade 3a

A strip of land towards the east of the site is classified as Subgrade 3a, good quality land. Soils are comparatively shallow over chalky drift deposits and typically comprise, calcareous, medium clay loam topsoils over similar or slightly heavier (i.e. heavy clay loam) subsoils. These pass to a weathered chalky rubble from about 40-50cm containing approximately 50-70% chalk in a subsoil matrix, with chalk bedrock encountered from about 70cm. Topsoils are slightly flinty containing up to about 12% v/v total stone, of which less than 5 % of stones are greater than 2cm in size. Upper subsoils are similarly flinty, but with an increasing content of chalk stones until the chalk bedrock is reached. Crop rooting was noted to about 80cm. Due to a combination of shallow depth over chalky rubble, restricted rooting and the content of flints in the upper profile these soils have a lower available water capacity compared with land graded 2, and are limited by slight to moderate risk of drought.

ADAS REFERENCE : 4205/028/93
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 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 :

* Soil Abbreviations : Explanatory Note
* Soil Pit Descriptions
* Database Printout : Boring Level Information
* Database Printout : Horizon Level Information

MPLE 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	SU32507940	PGR	NE	01			1	1	067	-31	067	-19	3B				DR	3A	SEE 2P
1P	SU32477937	PGR					1	1	106	8	110	24	2				DR	2	ROOTS TO 80
2	SU32507930	RGR	NE	02			1	1	117	19	108	22	2				DR	2	
2P	SU32607930	PGR	NE	02			1	1	098	0	100	14	3A				DR	3A	ROOTS TO 80
3	SU32607930	PGR					1	1	075	-23	075	-11	3B				DR	3A	IMP45 SEE 2P
4	SU32607920	RGR	NE	01			1	1	148	50	116	30	1					1	
5	SU32407935	PGR					1	1	147	49	114	28	1					1	

COMPLETE LIST OF PROFILES 04/05/94 NEWBURY LP, SITE 72

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	POR	IMP	SPL	CALC
1	0-35	mcl	10YR32 00						0	0	HR	5						Y
	35-40	mzcl	10YR42 00						0	0	CH	40		M				Y
1P	0-22	mcl	10YR32 00						2	0	HR	6						Y
	22-32	mcl	10YR42 00						0	0	HR	10	WKCSAB	FR M				Y
	32-65	hzcl	10YR64 63						0	0	HR	10	WKCSAB	FR M				Y
	65-80	hzcl	10YR63 64						0	0	CH	42	WKCSAB	FM M				Y
2	0-28	mcl	10YR42 00						0	0	HR	2						Y
	28-42	mcl	10YR43 00						0	0	HR	15		M				Y
	42-55	hcl	10YR43 00	10					0	0	HR	15		M				Y
	55-64	hcl	10YR43 00	10YR56 00	C			S	0	0	HR	15		M				Y
	64-88	hcl	10YR53 00	10YR56 00	F			S	0	0	CH	10		M				Y
	88-90	mcl	10YR63 00						0	0	CH	20		M				Y
2P	0-25	mcl	10YR32 00						3	0	HR	12						Y
	25-48	hcl	10YR42 00						0	0	HR	15	MCSAB	FR M				Y
	48-65	mcl	10YR63 00						0	0	CH	50		M				Y
	65-70	mcl	10YR63 00						0	0	CH	60		M				Y
	70-80	mcl	10YR63 00						0	0	CH	70		P				Y
3	0-32	mcl	10YR32 00						0	0	HR	3						Y
	32-45	hcl	10YR42 00						0	0	HR	10		M				Y
4	0-35	mcl	10YR42 00						0	0	HR	1						Y
	35-45	hcl	10YR42 00						0	0	HR	10		M				Y
	45-70	mcl	10YR43 00	10YR56 00	C			S	0	0	HR	2		M				Y
	70-100	hcl	10YR43 00	10YR56 00	C			S	0	0	HR	2		M				Y
	100-120	c	75YR44 00	10YR56 00	C			S	0	0	HR	15		M				Y
5	0-35	mzcl	10YR32 00						0	0	HR	5						Y
	35-45	hcl	10YR42 00						0	0	HR	10		M				Y
	45-62	c	10YR43 00						0	0	HR	10		M				Y
	62-120	hcl	10YR54 64						0	0	CH	25		M				Y

SOIL PIT DESCRIPTION

Site Name : SITE72,LYNCH LN,LAMBOURN Pit Number : 1P

Grid Reference: SU32477937 Average Annual Rainfall : 727 mm
Accumulated Temperature : 1381 degree days
Field Capacity Level : 162 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 22	MCL	10YR32 00	2	6		
22- 32	MCL	10YR42 00	0	10		WKCSAB
32- 65	HZCL	10YR64 63	0	10		WKCSAB
65- 80	HZCL	10YR63 64	0	42		WKCSAB

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

Drought Grade : 2 APW : 106mm MBW : 8 mm
APP : 110mm MBP : 24 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : NEWBURY LP, SITE 72 Pit Number : 2P

Grid Reference: SU32607930 Average Annual Rainfall : 727 mm
Accumulated Temperature : 1381 degree days
Field Capacity Level : 162 days
Land Use : Permanent Grass
Slope and Aspect : 02 degrees NE

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR32 00	3	12		
25- 48	HCL	10YR42 00	0	15		MCSAB
48- 65	MCL	10YR63 00	0	50		
65- 70	MCL	10YR63 00	0	60		
70- 80	MCL	10YR63 00	0	70		

Wetness Grade : 1 Wetness Class : I
Gleying : cm
SPL : cm

Drought Grade : 3A APW : 098mm MBW : 0 mm
APP : 100mm MBP : 14 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness