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Newbury District Local Plan
Site 8: Grange Place, Beenham
Agricultural Land Classification
ALC Map and Report
February 1994

**NEWBURY DISTRICT LOCAL PLAN
SITE 8: GRANGE PLACE, BEENHAM
AGRICULTURAL LAND CLASSIFICATION REPORT**

1. 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 District Local Plan.
- 1.2 Approximately 2 hectares of land relating to site 8, Grange Place, Beenham was surveyed in February 1994. The survey was undertaken at a detailed level of approximately two borings per hectare. A total of 4 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 was being used for grazing. The site also contained a dwelling, a workshop converted from old farm buildings and associated metalled roadways.
- 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.

Table 1: Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area(ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
3b	2.1	80.8	100
Urban	<u>0.5</u>	<u>19.2</u>	
Total Area of Site	2.6	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 agricultural land on the site has been classified as moderate quality, Subgrade 3b. The principal limitation is soil wetness. Gleyed clay loam topsoils and upper subsoils overlie slowly permeable clay at shallow depths in the profile causing drainage to be significantly impeded. This severely restricts the

opportunities for cultivation and/or livestock grazing, without the risk of structural damage to the soil. Crop growth and development may also be affected by prolonged soil wetness.

2. 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, 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 5 km 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, climatic and soil factors interact to influence soil wetness and droughtiness limitations.

Table 2: Climatic Interpolation

Grid Reference:	SU595679
Altitude (m):	59
Accumulated Temperature (days):	1461
Average Annual Rainfall (mm):	689
Field Capacity (days):	147
Moisture Deficit, Wheat (mm):	111
Moisture Deficit, Potatoes (mm):	104
Overall Climatic Grade:	1

3. Relief

- 3.1 The site lies at approximately 59m AOD, towards the northern edge of the River Kennet valley floor. Overall the land is flat and as such neither gradient, or microrelief affect the agricultural land quality.

4. Geology and Soil

- 4.1 The British Geological Survey published map, Sheet 268, Reading, (1946, 1:63,360), shows the site to be entirely underlain by Eocene London Clay.
- 4.2 The Soil Survey of England and Wales published map, Sheet 6, Soils of South East England, (1983, 1:250,000), shows the site to be underlain by soils of the Wickham 4 Association. The accompanying legend describes these as 'slowly permeable seasonally waterlogged fine loamy over clayey soils' Soils of this general nature were found at this site.

5 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.

5.3 Subgrade 3b

Land of moderate quality is mapped across the whole of the agricultural area of the site. Soils here are characterised by a stoneless medium or heavy clay loam topsoil commonly found to be gleyed, passing to either a permeable moderately structured stoneless heavy clay loam over slowly permeable clay or directly to slowly permeable stoneless clay. The slowly permeable horizons occur at shallow depths, thereby causing drainage to be significantly impeded. Under the local climatic regime Wetness Class IV (See Appendix II) and therefore Subgrade 3b is most appropriate.

Soil wetness adversely affects plant growth, partly by affecting seed germination and survival and/or reducing soil temperature and/or because of anaerobism. It also inhibits the development of a good root system and can eventually lead to plant death. It can also affect sensitivity to structural damage by trafficking, such that there is a limitation on the number of days when cultivation by machinery and/or livestock grazing is possible.

- 5.4 The areas shown as Urban include a domestic dwelling, old farm buildings converted to workshops and associated metalled roadways.

ADAS Reference : 0202/021/94
MAFF Reference : EL02/00297

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

- * British Geological Survey (1946), Sheet No 268, Reading, 1:63,360.
- * 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 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.

Subgrade 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

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 III

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 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.

IIR : 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

GII : 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 **IM** : 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 : NEHBURY LP SITE 8 Pit Number : 1P

Grid Reference: SU59576785 Average Annual Rainfall : 689 mm
 Accumulated Temperature : 1461 degree days
 Field Capacity Level : 147 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 20	MCL	10YR42 00	0	0	F	
20- 37	HCL	25Y 52 51	0	0	M	MDCSAB
37- 60	C	25Y 51 00	0	0	M	WKCSAB
60- 75	C	25Y 41 00	0	0	M	WKCB
75- 90	C	25Y 52 00	0	30	M	

Wetness Grade : 3B Wetness Class : IV
 Gleying : 020 cm
 SPL : 037 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 EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRDNT	GLEY SPL	CLASS	GRADE	AP	MB	AP	MB					
1	SU59526788	PGR	005	005	4	3B		0	0				WE	3B	SPL 5
1P	SU59576785	PGR	020	037	4	3B		0	0				WE	3B	PIT 66 AUG 90
2	SU59596780	PGR	0	020	4	3B		0	0				WE	3B	SPL 20
3	SU59526780	PGR	0	030	4	3B		0	0				WE	3B	SPL 30
4	SU59616774	PGR	010	035	4	3B		0	0				WE	3B	SPL 35

SAMPLE	DEPTH	TEXTURE	COLOUR	---MOTTLES---			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT		GLEY	>2	>6		LITH	TOT	STR		
1	0-5	hc1	10YR42 00					0	0	0						
	5-40	c	25Y 52 00	10YR58	00 M		00M00	00 Y	0	0	0		P		Y	
	40-80	c	10YR53 51	10YR58	00 M		00M00	00 Y	0	0	0		P		Y	
	80-120	c	25Y 51 00	10YR46	00 M			Y	0	0	0		P		Y	
1P	0-20	mc1	10YR42 00	10YR46	56 F			0	0	0						
	20-37	hc1	25Y 52 51	10YR46	56 M			Y	0	0	0	MDCSAB	FR M	Y		
	37-60	c	25Y 51 00	10YR56	00 M		00M00	00 Y	0	0	0	WKCSAB	FR M	Y		Y
	60-75	c	25Y 41 00	10YR46	00 M		00M00	00 Y	0	0	0	WKCAB	FM P	Y		Y
	75-90	c	25Y 52 00	10YR58	00 M			Y	0	0	HR 30		M			
2	0-20	mc1	10YR42 52	10YR56	00 C			Y	0	0	0					
	20-55	c	25Y 53 00	10YR58	00 M			Y	0	0	0		P		Y	
	55-80	c	25Y 41 31	75YR46	00 M			Y	0	0	0		P		Y	
3	0-15	mc1	10YR41 42	10YR46	00 C			Y	0	0	0					
	15-30	hc1	10YR51 52	10YR46	56 M			Y	0	0	0		M			
	30-70	c	25Y 51 00	10YR56	00 M			Y	0	0	0		P		Y	
4	0-10	mc1	10YR42 00						0	0	0					
	10-35	hc1	10YR53 51	10YR56	00 M			Y	0	0	0		M			
	35-45	c	10YR52 00	10YR58	00 M			Y	0	0	0		P		Y	
	45-70	c	05Y 21 00	10YR46	00 C			Y	0	0	0		P		Y	