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Basingstoke Local Plan
Site 6: Huish Lane, Old Basing
Agricultural Land Classification
ALC Map and Report
July 1993

AGRICULTURAL LAND CLASSIFICATION

BASINGSTOKE AND DEANE BOROUGH LOCAL PLAN

SITE 6: LAND AT HUISH LANE, OLD BASING

1. Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on 22 sites around Basingstoke in Hampshire. The work forms part of MAFF's input to the Basingstoke and Deane Borough Local Plan.

1.2 4.1 hectares of land relating to site 6 at Huish Lane in Old Basing, Hampshire was surveyed during March 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 4 borings and one soil inspection pit were described 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 agricultural use.

At the time of survey, the land was under permanent pasture.

1.3 The distribution of the 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 1:5000. It is accurate at this scale, but any enlargement may be misleading.

Distribution of Grades and Subgrades

	Area(ha)	% total agricultural land
Grade 3a	3.5	85.4
3b	0.6	14.6
Total area of site	4.1 ha	100

1.4 Appendix 1 gives a general description of the grades and land use categories identified in this survey.

1.5 The soils at this site were affected both by droughtiness and wetness, creating moderate and poor conditions. Those affected by droughtiness were underlain by soft chalk between 27 and 40 cm limiting them to 3a on drought. Those affected by wetness were deeper clayey soils having a slowly permeable layer beginning between 36 cm (subgrade 3b) and 55 cm (subgrade 3a), shown by the structure and condition of the soil at these depths and beyond.

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 the overall climatic limitation are annual average rainfall, as a measure of overall wetness, and accumulated temperature as a measure of the relative warmth of the 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.

Climate Interpolation

Grid Reference	SU668519
Altitude (m.AOD)	95
Accumulated Temperature (°days Jan-June)	1425
Average Annual Rainfall (mm)	769
Field Capacity Days	166
Moisture Deficit, Wheat (mm)	101
Moisture Deficit, Potatoes (mm)	92
Overall Climatic Grade	1

3.0 RELIEF

3.1 The site lies at an altitude of 95-100m AOD with land sloping gently to the highest point on the western boundary. Nowhere on the site do altitude or relief affect agricultural land quality.

4.0 GEOLOGY AND SOIL

4.1 The published geological sheet for the site (BGS 1981, Sheet 284) shows the underlying geology to be Cretaceous Upper Chalk.

4.2 The published soils map relevant to the site (SSEW 1983, Sheet 6) shows the site to be mapped as Andover 1 Association - "Shallow well drained calcareous silty soils over chalk on slopes and crests. Deep calcareous and non calcareous fine silty soils in valley bottoms." (SSEW, 1983)

4.3 A detailed examination of soils on the site revealed the presence of clay loams and silty clay loams over chalk at varying depths. Also to the west slowly permeable clay soils were found.

5.0 AGRICULTURAL LAND CLASSIFICATION

5.1 Paragraph 1.3 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 3A

5.3 Land of this quality is limited by wetness and/or droughtiness. Soils affected by wetness typically comprise topsoils of medium clay loam containing 2% flints by volume. Upper subsoils comprise heavy clay loam containing 5% flints over slowly permeable clay from 55 cm depth, containing 10% flints. Soils are assigned to wetness class III and subgrade 3A accordingly. Soils affected by droughtiness comprise topsoils of medium clay loam containing 5% flints by volume. Upper subsoils comprise a thin horizon of medium silty loam containing 65% weathered chalk over pure chalk at a depth of 40 cm. Information from pit 1 on adjacent site 7 indicates that plant roots are effective to a depth of about 26 cm into the chalk. Profiles are calcareous throughout and well drained, wetness class I. However due to the proximity of chalk to the surface and the shallow rooting restricting available water for crop growth, land is limited to subgrade 3A due to droughtiness. A shallower more droughty profile was found but not mapped separately due to land of better quality surrounding it.

Subgrade 3B

5.4 Land of this quality is limited by significant wetness imperfections. Soils are similar to those described in paragraph 5.3. However, these are assigned to wetness class IV as a result of the occurrence of a slowly permeable layer from 38 cm depth. The grade of 3B reflects the more severe wetness limitation arising from a shallower slowly permeable horizon..

ADAS Ref: 1501/21/93
MAFF Ref: EL 15/144

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

BRITISH GEOLOGICAL SURVEY, 1981. Geology sheet 284, Basingstoke. Solid and Drift edition. 1:50,000 scale.

MAFF, 1988. Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land (Alnwick).

METEOROLOGICAL OFFICE, 1989. Climatological data for agricultural land classification.

SOIL SURVEY OF ENGLAND AND WALES, 1983. Sheet 6 "Soils of South East England" 1:250,000 scale 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 **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

SOIL PIT DESCRIPTION

Site Name : SITE 6 BASINGSTOKE LP Pit Number : 1P

Grid Reference: SU51906660
Average Annual Rainfall : 781 mm
Accumulated Temperature : 1426 degree days
Field Capacity Level : 166 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 26	MCL	10YR43 00	0	3		
26- 36	HCL	10YR43 00	0	3		MDCSAB
36- 55	C	75YR56 00	0	3	C	MDCAB

Wetness Grade : 3B
Wetness Class : IV
Gleying :999 cm
SPL :036 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	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	SU51906660	PGR			038	4	3B		0		0					WE	3B	SPL 38
1P	SU51906660	PGR			036	4	3B		0		0					WE	3B	SPL 36
2	SU51906670	PGR			055	3	3A		0		0					WE	3A	SPL 55
3	SU51906680	PGR				1	1	72	-29	72	-20	3B				DR	3B	ROOT 53
4	SU51906690	PGR				1	1	83	-18	88	-4	3A				DR	3A	ROOT 66

SAMPLE	DEPTH	TEXTURE	COLOUR	--MOTTLES-- COL	ABUN	CONT	PED COL.	GLEY	--STONES-- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
1	0-28	mcl	10YR43 00						0	0	HR	3						
	28-38	hcl	10YR44 00	00OC00	00	F			0	0	HR	3		M				
	38-105	c	75YR46 00	75YR56	00	C	00MN00	00	0	0	HR	10		M	Y		Y	
	105-120	hzcl	10YR64 81						0	0	CH	50		M				Y
1P	0-26	mcl	10YR43 00						0	0	HR	3						
	26-36	hcl	10YR43 00						0	0	HR	3	MDCSAB	FR M	Y			
	36-55	c	75YR56 00	00MN00	00	C	75YR54	00	0	0	HR	3	MDCAB	FM M	Y		Y	
2	0-26	mcl	10YR42 43						0	0	HR	2						
	26-55	hcl	10YR44 00						0	0	HR	5		M				
	55-120	c	75YR46 56	00MN00	00	C			0	0	HR	10		M			Y	
3	0-27	mcl	10YR43 00						0	0	CH	10						Y
	27-53	ch	00CH00 00						0	0		0		P				Y
4	0-25	mcl	10YR43 00						0	0	HR	5						Y
	25-40	mzcl	10YR64 81						0	0	CH	65		M				Y
	40-66	ch	00CH00 00						0	0		0		P				Y