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Basingstoke Local Plan
Site 7: Basingfield, Old Basing
Agricultural Land Classification
ALC Map and Report
July 1993

AGRICULTURAL LAND CLASSIFICATION

BASINGSTOKE AND DEANE BOROUGH LOCAL PLAN

SITE 7: LAND AT BASINGFIELD, 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 2.3 hectares of land relating to site 7 at Basingfield, 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 sub-grades 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 Sub-grades

	<u>Area(ha)</u>	<u>% total agricultural land</u>
Grade 3a	1.9	100
Total agricultural area	<u>1.9</u>	<u>100</u>
Non Agricultural	<u>0.4</u>	
Total area of site	<u>2.3 ha</u>	

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 are of good quality overall, and are affected by droughtiness, caused by Upper Chalk deposits underlying the clayey soil at varying depths, so creating a water availability problem. The area of non agricultural land shown on the accompanying map represents a recent extension to the grounds of a residential home adjoining the site.

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 average annual 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.

Climatic Interpolation

Grid Reference	SU672519
Altitude (m, AOD)	85
Accumulated Temperature (°days Jan-June)	1436
Average Annual Rainfall (mm)	761
Field Capacity Days	164
Moisture Deficit, Wheat (mm)	103
Moisture Deficit, Potatoes (mm)	94
Overall Climatic Grade	1

3.0 RELIEF

The site lies at an altitude of 80-90m AOD land sloping gently eastwards from the highest point in the west. Nowhere on the site do altitude or relief affect agricultural land quality.

4.0 GEOLOGY AND SOILS

- 4.1 The published geological map for the site (BGS 1981. Sheet 284) shows it to be mapped as Cretaceous Upper Chalk.
- 4.2 The published soils map relevant to the site (SSEW 1983, Sheet 6) shows the survey area 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 the soils on the site reveals the presence of clay loam and silty clay loam soils over chalk at varying depths.

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 The whole site is mapped as subgrade 3A. Profiles typically comprise topsoils of medium clay loam, occasionally medium silty clay loam containing 2-6% flints by volume. Upper subsoils comprise medium silty clay loam, occasionally heavy clay loam containing 5-10% flints or 50-60% weathered chalk. Underlying this is chalk from between 38-50 cm depth into which roots were found to penetrate approximately 26 cm (see pit 1). Profiles are calcareous throughout and well drained with a wetness class of I. However, the shallow soils over chalk suffer from moderate droughtiness as available water for crop growth is restricted by the relatively shallow rooting depth into the chalk. This combined with the climatic regime for the site limits the land to subgrade 3A. Within the map unit a shallower and a deeper profile over chalk were found but not mapped separately due to their limited number and distribution.

5.4 The area mapped as non agricultural is part of a garden.

ADAS Ref: 1501/022/93
MAFF Ref: EL15/144

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

BRITISH GEOLOGICAL SURVEY, 1981. Geology Sheet 284, 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. Climatic datasets for agricultural land classification.

SOIL SURVEY OF ENGLAND AND WALES, 1983. Soil map, 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

FSSST : 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 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 : SITE 7 BASINGSTOKE LP Pit Number : 1P

Grid Reference: SU67005190 Average Annual Rainfall : 770 mm
 Accumulated Temperature : 1437 degree days
 Field Capacity Level : 164 days
 Land Use : Permanent Grass
 Slope and Aspect : 01 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 27	MCL	10YR42 00	3	6		
27- 34	MZCL	10YR44 00	3	10		
34- 60	CH	00CH00 00	0	0		

Wetness Grade : 1 Wetness Class : I
 Gleying : 000 cm
 SPL : No SPL

Drought Grade : 3B APW : 80 mm MBW : -23 mm
 APP : 83 mm MBP : -11 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	GRDNT	GLEYSPL	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
					CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT		
1	SU67005190	PGR E	01	000	1	1	83	-20	87	-7	3A					DR 3A	ROOT 64
1P	SU67005190	PGR E	01	000	1	1	80	-23	83	-11	3B					DR 3B	ROOT 60
2	SU67105190	PGR E	01	000	1	1	103	0	105	11	3A					DR 3A	ROOT 76
3	SU67205192	PGR E	02	000	1	1	91	-12	97	3	3A					DR 3A	ROOT 68
4	SU67305195	PGR E	01	000	1	1	148	45	121	27	1					DR 1	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS STR POR IMP SPL	CALC
				COL	ABUN	CONT		GLE	>2	>6			
1	0-25	mc1	10YR42 43					0	0	HR	3		Y
	25-38	mzc1	10YR43 81					0	0	CH	50	M	Y
	38-64	ch	00CH00 00					0	0		0	P	Y
1P	0-27	mc1	10YR42 00					3	0	HR	6		Y
	27-34	mzc1	10YR44 00					3	4	HR	10	M	Y + 20% CHALK
	34-60	ch	00CH00 00					0	0		0	P	Y
2	0-29	mc1	10YR42 00					0	0	HR	2		Y
	29-50	mzc1	10YR53 00					0	0	HR	5	M	Y
	50-76	ch	00CH00 00					0	0		0	P	Y
3	0-25	mzc1	10YR43 00					0	0	HR	2		Y
	25-34	hc1	10YR43 00					0	0	CH	2	M	Y
	34-42	hc1	10YR43 81					0	0	CH	60	M	Y
	42-68	ch	00CH00 00					0	0		0	P	Y
4	0-30	mzc1	10YR32 42					0	0	HR	2		Y
	30-100	mzc1	10YR54 00					0	0	HR	5	M	Y
	100-120	mzc1	10YR64 81					0	0	CH	20	P	Y