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BASINGSTOKE & DEANE BOROUGH
LOCAL PLAN.
SITE 8: LAND NORTH OF WOODS
LANE, CLIDDESSEN.
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
DECEMBER 1993

**BASINGSTOKE & DEANE BOROUGH LOCAL PLAN
SITE 8: LAND NORTH OF WOODS LANE, CLIDDESSEN.
AGRICULTURAL LAND CLASSIFICATION REPORT**

1.0 Summary

1.1 In December 1993, a detailed Agricultural Land Classification (ALC) survey was undertaken on approximately 4 hectares of land north of Woods Lane, Cliddesden near Basingstoke. ADAS was commissioned by MAFF's Land Use Planning Unit to determine the quality of 22 sites around Basingstoke in Hampshire. The work forms part of MAFF's statutory input to the Basingstoke and Deane Borough Local Plan.

1.2 The survey was conducted by members of the Resource Planning Team in the Guildford Statutory Group at an observation density of approximately one boring per hectare. A total of 5 borings and 1 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 longterm limitations on its use for agriculture.

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

1.3 The distribution of the grades and subgrades is shown on the attached ALC map and the areas and extents 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.

Table 1 : Distribution of Grades and Sub-grades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>
3a	2.6	72.2
Urban	0.4	11.1
Non agricultural land	<u>0.6</u>	<u>16.7</u>
Total area of site	<u>3.6</u>	<u>100.0</u>

1.4 A general description of the grades, sub-grades and land-use categories identified in the survey is provided as an appendix. 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.

1.5 All of the agricultural land on the site has been classified as Subgrade 3a, good quality land, with soil droughtiness and workability as the main limitations. Soil profiles typically comprise heavy clay loam topsoils overlying clay upper subsoils, which in turn overlie chalk. The relatively shallow soil depth and restricted rooting into the chalk gives rise to a moderate restriction on the amount of available water in the profile for plant growth. When considered alongside the local climatic regime, such profile characteristics give rise to a moderate risk of soil droughtiness. Where soils are deeper on the site and droughtiness is not such a limitation, soils are downgraded due to a workability limitation. This arises due to a combination of a relatively heavy topsoil texture and the local climatic regime (which is moist in a regional context) producing a restriction on the number of days that these soils can be worked effectively with machinery or grazed by livestock.

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.

2.4 No local climatic factors such as exposure or frost risk affect the site. However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. In the locality of this particular site, field capacity days are relatively high, with correspondingly low moisture deficits. Thus the likelihood of soil wetness or workability restrictions will be enhanced whilst soil droughtiness may be partially offset.

Table 2 : Climatic Interpolation

Grid Reference :	SU 628 493
Altitude (m) :	135
Accumulated Temperature (days) :	1382
Average Annual Rainfall (mm) :	829
Field Capacity (days) :	180
Moisture Deficit, Wheat (mm) :	93
Moisture Deficit, Potatoes (mm) :	82
Overall Climatic Grade :	1

3.0 Relief

3.1 The site is level, lying at an altitude of 135 metres. On no part of the site do gradient or relief pose any limitation to agricultural use.

4.0 Geology and Soil

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

4.2 The published soils information for the area (SSEW Sheet 6, Soils of South East England 1983) shows the existence of two soil associations on the site, Andover 1 and Carstens. Andover 1 is described 'as shallow well drained calcareous silty soils over chalk. Deep calcareous and non-calcareous silty soils in valley bottoms'. Carstens is described as 'well drained fine silty over clayey and fine silty soils, often very flinty' (SSEW 1983). Detailed field examination broadly confirms this, although the majority of inspections on the site showed the soils to be shallow over chalk.

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 3a: All of the agricultural land on the site has been classified as Subgrade 3a, good quality land, with soil droughtiness and workability as the main limitations. Soil profiles typically comprise heavy clay loam topsoils overlying a clay upper subsoil, which in turn overlies chalk. The depth to the chalk is variable over the site, although a subsequent soil inspection pit (Pit 1) showed that rooting occurred to a depth of 35cm into the chalk. On this basis, droughtiness was calculated for other soil augerings on the assumption that rooting occurred to a similar depth into the chalk throughout the site. As a consequence, relatively shallow soils over chalk (i.e. chalk at approximately 30-40cm) show a moderate restriction on the amount of profile available water. Therefore, these soils are classified as Subgrade 3a, showing a moderate droughtiness limitation. Where soils are deeper over the chalk, there is sufficient available water and droughtiness is not the most limiting factor to agricultural use. Although these soils are well drained, Wetness Class I, they suffer from a moderate workability limitation which means that these soils can be classified as no better than Subgrade 3a. This arises due to a combination of the relatively heavy topsoil texture and the relatively high field capacity days for the site. Consequently, there is a moderate restriction on the number of days when these soils can be effectively worked with machinery, and the likelihood of soil damage resulting from grazing animals is increased.

5.4 The area marked as urban includes a private dwelling and a car park. The area marked as non-agricultural land includes scrub.

ADAS Ref: 1501/150/93
MAFF Ref: EL 15/144

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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 re-claimed 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.

REFERENCES

- * British Geological Survey (1981), Sheet No.284, Basingstoke, 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

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
FKT : 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 pedes 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 : BASINGSTOKELP (2) SITE 8 Pit Number : 1P

Grid Reference: SU 0 Average Annual Rainfall : 829 mm
Accumulated Temperature : 1382 degree days
Field Capacity Level : 180 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 20	HCL	10YR43 00	0	10		
20- 33	C	75YR46 00	0	10		
33- 68	CH	10YR71 00	0	5		

Wetness Grade : 3A Wetness Class : I
Gleying : 000 cm
SPL : No SPL

Drought Grade : 3A APW : 80 mm MBW : -13 mm
APP : 85 mm MBP : 3 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS	
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST		LIMIT
1	SU62704930	PGR			1	3A	89	-4	95	13	3A			DR	3A	
1P	SU62714923	PGR			1	3A	80	-13	85	3	3A			DR	3A	ROOTING TO 68C
2	SU62804930	PGR			1	3A	126	33	117	35	1			WK	3A	
3	SU62704920	PGR			1	3a	99	6	97	15	2			WK	3A	
4	SU62804920	PGR	E	02	1	3A	78	-15	82	0	3A			DR	3A	
5	SU62854933	PGR			1	3A	100	7	99	17	2			WK	3A	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----				STRUCT/		SUBS			
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
1	0-20	hc1	10YR43 00						0	0		0						
	20-35	c	05Y 46 00	00MN00	00	F			0	0		0					M	
	35-70	ch	10YR71 00						0	0		0					M	
1P	0-20	hc1	10YR43 00						0	0	HR	10						
	20-33	c	75YR46 00						0	0	HR	10					M	
	33-68	ch	10YR71 00						0	0	HR	5					M	
2	0-25	hc1	10YR43 00						0	0		0						
	25-70	c	05Y 46 00	00MN00	00	C			0	0		0					M	
	70-105	ch	10YR71 00						0	0		0					M	
3	0-10	hc1	10YR32 00						0	0	HR	2						
	10-20	c	10YR44 00						0	0	HR	2					M	
	20-48	c	75YR46 00	00MN00	00	C	000C00	00	0	0	HR	8					M	
	48-82	ch	10YR81 00						0	0		0					M	
4	0-17	hc1	10YR42 00						0	0	HR	2						
	17-28	c	75YR46 00						0	0	HR	5					M	
	28-63	ch	10YR81 00						0	0		0					M	
5	0-25	hc1	10YR43 00						0	0		0						
	25-45	c	05Y 46 00						0	0	HR	10					M	
	45-80	ch	10YR71 00						0	0		0					M	