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BASINGSTOKE LOCAL PLAN
SITE 13: FORGE FIELD, BRAMLEY GREEN
AGRICULTURAL LAND CLASSIFICATION
ALC MAP AND REPORT
JULY 1993

AGRICULTURAL LAND CLASSIFICATION, REPORT OF SURVEY

BASINGSTOKE AND DEANE BOROUGH LOCAL PLAN

SITE 13: LAND AT FORGE FIELD, BRAMLEY GREEN, HAMPSHIRE

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. Site 13 relates to approximately 7 hectares of land surveyed in March 1993, separating the villages of Bramley and Bramley Green to the east of the Reading to Basingstoke railway line, and between the Sherfield Road and Lane End.

Fieldwork was carried out by members of the Resource Planning Team in the Guildford Statutory Group. The survey followed MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988). This agricultural land classification system provides 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.

At the time of the survey, the land appeared to be in set-aside.

- 1.3. A total of 8 borings and 2 soil pits were described. The distribution of the grades and sub-grades is shown on the attached ALC map and the areas given in the table below. The map was drawn at a scale of 1:5000. It is accurate at this scale but any enlargement may be misleading.

Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of total Agricultural Area</u>
Grade 3A	1.4	20.6
Grade 3B	5.4	79.4
Total site Area	<u>6.8</u>	100

- 1.4. Appendix 1 gives a general description of the grades and land use categories identified in this survey.
- 1.5. The soils found at this site were of moderate to poor quality, being most affected by soil wetness, exhibiting variable depths to slowly permeable clay layers. The major difference between the subgrades is whether the slowly permeable layer begins within 40 cm of the surface where subgrade 3B is assigned or between 40-68 cm of the surface where sub-grade 3A is assigned.

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 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 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.

Climatic Interpolation

Grid Reference :	SU 660 590
Altitude (m) :	60
Accumulated Temperature (°days Jan-June) :	1462
Average Annual Rainfall (mm) :	700
Field Capacity (days) :	150
Moisture Deficit, Wheat (mm) :	110
Moisture Deficit, Potatoes (mm) :	102
Overall Climatic Grade :	1

3. RELIEF

- 3.1. The site lies at an altitude of approximately 60 m AOD sloping very gently north. Nowhere on the site do altitude or relief affect agricultural land quality.

4. GEOLOGY AND SOILS

- 4.1. The published geological map Sheet 284 (BGS, 1981) for the site shows the underlying geology to be Eocene London Clay.
- 4.2. The published soils map Sheet 6 (SSEW, 1983) for the site area shows the presence of Wickham 4 Association - "Slowly permeable seasonally waterlogged fine loamy over clayey and fine silty over clayey soils associated with similar clayey soils, often with brown subsoils" (SSEW, 1983).
- 4.3. A detailed examination of soils on the site confirmed the presence of fine loamy over clayey soils, slowly permeable at varying depths.

5. AGRICULTURAL LAND CLASSIFICATION

- 5.1. Paragraph 1.3. and the table below 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 mapped to the east and west of the site. Profiles typically comprise topsoils of medium clay loam over upper subsoils of heavy clay loam. Lower subsoils consist of slowly permeable clay. Soils are non calcareous with negligible stone. Wetness is the main limitation as evidenced by gleying from the topsoil to 46 cm depth and slowly permeable layers from 42-46 cm depth, of which pit 2 is typical. A wetness class of III is assigned, this in combination with topsoil texture and field capacity day range (150) limits land to subgrade 3A. The ease and flexibility with which the land can be worked is restricted by this limitation.

Subgrade 3B

- 5.4. Moderate quality land covers the majority of the site. Profiles typically comprise topsoils of medium clay loam containing 0-2% flints. Upper subsoils consist of a thin horizon of clay or heavy clay loam over slowly permeable clay to depth. Profiles are non calcareous throughout and suffer from significant wetness imperfections. This is evidenced by the presence of gleying from the topsoil to 35 cm depth in the profile and slowly permeable layers from 28-37 cm depth. Soils are assigned to wetness class IV (of which pit 1 is typical). This combined with medium topsoil textures and the field capacity day range limits land to subgrade 3B. The more severe wetness imperfections further reduce the period during which the land can be effectively cultivated.

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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 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

REFERENCES

- * BRITISH GEOLOGICAL SURVEY (1981), Sheet No. 284, Basingstoke, 1:50,000 scale.
- * 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 and accompanying legend, 1:250,000 scale.

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
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. **GLEYSPL** : 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 : BASINGSTOKE LP SITE 13 Pit Number : 1P

Grid Reference: SU66005900 Average Annual Rainfall : 700 mm
 Accumulated Temperature : 1462 degree days
 Field Capacity Level : 150 days
 Land Use :
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR43 00	0	2		
25- 30	HCL	10YR43 00	0	1		
30- 37	C	10YR52 00	0	0	M	MDCSAB
37- 60	C	10YR52 00	0	0	M	MDCAB

Wetness Grade : 3B Wetness Class : IV
 Gleying :030 cm
 SPL :037 cm

Drought Grade : APW : mm MBW : 0 mm
 APP : mm MBP : 0 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : BASINGSTOKE LP SITE 13 Pit Number : 2P

Grid Reference: SU65805910 Average Annual Rainfall : 700 mm
Accumulated Temperature : 1462 degree days
Field Capacity Level : 150 days
Land Use :
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 26	MCL	10YR42 00	0	0		
26- 46	HCL	10YR54 00	0	0	M	MDCSAB
46- 65	C	10YR63 64	0	0	M	MDCAB

Wetness Grade : 3A Wetness Class : III
Gleying :046 cm
SPL :046 cm

Drought Grade : APW : mm MBW : 0 mm
APP : mm MBP : 0 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEY SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
1	SU65905920	SAS	045	045	3	3A		0	0					WE 3A	
1P	SU66005900	SAS	030	037	4	3B		0	0					WE 3B	PIT TO 60
2	SU65805910	SAS	042	042	3	3A		0	0					WE 3A	
2P	SU65805910	SAS	046	046	3	3A		0	0					WE 3A	
3	SU65905910	SAS	035	035	4	3B		0	0					WE 3B	
4	SU66005910	SAS	042	042	3	3A		0	0					WE 3A	PROB SPL 42
5	SU66105910	SAS	028	028	4	3B		0	0					WE 3B	
6	SU65905900	SAS	028	028	4	3B		0	0					WE 3B	
7	SU66005900	SAS	0	037	4	3B		0	0					WE 3B	
8	SU66105900	SAS	0	045	3	3A		0	0					WE 3A	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED		----STONES----			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR		
1	0-30	mc1	10YR42 00						0	0	0						
	30-45	mzc1	10YR54 00						0	0	0			M			
	45-120	c	10YR52 00	10YR56 00 M			00MN00 00 Y	0	0	0				P			Y
1P	0-25	mc1	10YR43 00						0	0	HR	2					
	25-30	hc1	10YR43 00						0	0	HR	1		M			
	30-37	c	10YR52 00	10YR58 00 M			10YR54 00 Y	0	0	0			MDCSAB	FM M	Y		
	37-60	c	10YR52 00	10YR58 00 M			10YR53 00 Y	0	0	0			MDCAB	FM P	Y		Y
2	0-28	mc1	10YR42 00						0	0	0						
	28-42	hc1	10YR54 53						0	0	0			M			
	42-120	c	10YR53 00	10YR58 00 M			00MN00 00 Y	0	0	0				P			Y
2P	0-26	mc1	10YR42 00						0	0	0						
	26-46	hc1	10YR54 00	75YR56 58 M					0	0	0		MDCSAB	FM M	Y		
	46-65	c	10YR63 64	75YR58 00 M			00MN00 00 Y	0	0	0			MDCAB	FM P	Y		Y
3	0-28	mc1	10YR43 00						0	0	0						
	28-35	hc1	10YR53 54						0	0	0			M			
	35-120	c	10YR53 00	10YR58 00 M			00MN00 00 Y	0	0	0				P			Y
4	0-28	mc1	10YR42 00						0	0	0						
	28-42	mc1	10YR43 00						0	0	0			M			
	42-120	hc1	05Y 51 00	05Y 44 00 M				Y	0	0	0			P			Y
5	0-28	mc1	10YR42 00						0	0	0						
	28-60	c	25Y 63 64	75YR56 00 M			00MN00 00 Y	0	0	0				P			Y
6	0-28	mc1	10YR42 00						0	0	0						
	28-60	c	25Y 63 74	75YR58 00 C			00MN00 00 Y	0	0	0				P			Y
7	0-28	mc1	10YR42 00	75YR56 00 C				Y	0	0	0						
	28-37	c	10YR54 00	75YR56 00 C					0	0	0			M			
	37-60	c	25Y 73 64	75YR56 00 M			00MN00 00 Y	0	0	0				P			Y
8	0-32	mc1	10YR42 00	75YR56 00 C				Y	0	0	0						
	32-45	c	10YR54 00	75YR56 00 C					0	0	0			M			
	45-60	c	25Y 63 64	75YR56 00 M				Y	0	0	0			P			Y