

**A1**

**Basingstoke and Deane Borough Local Plan  
Site 17  
Land at Razor's Farm**

**Agricultural Land Classification  
Reconnaissance survey**

**June 1996**

**Resource Planning Team  
Guildford Statutory Group  
ADAS Reading**

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LUPU Commission: 02486**

**AGRICULTURAL LAND CLASSIFICATION REPORT**  
**BASINGSTOKE AND DEANE BOROUGH LOCAL PLAN**  
**SITE 17, LAND AT RAZOR'S FARM**

**Introduction**

1. This report presents the findings of a reconnaissance Agricultural Land Classification (ALC) survey of 89 ha of land on the northern edge of Chineham, Basingstoke, in Hampshire. The southern edge of the site is adjacent to the Hampshire International Business Park. The survey was carried out during June 1996.
2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Reading, in connection with the preparation of the Basingstoke and Deane Borough Local Plan. This survey supersedes previous ALC surveys on this land.
3. The fieldwork was conducted by members of the Resource Planning Team in the Guildford Statutory Group in ADAS. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.
4. At the time of survey the land use on the site was mostly arable (wheat, maize and peas or beans) with some permanent grass. The areas marked as 'Other Land' include woodland, scrub and farm buildings.

**Summary**

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:15,000. It is accurate at this scale but any enlargement would be misleading.
6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% Total site area	% Surveyed Area
3b	81.4	91.6	100
Other land	7.5	8.4	-
<b>Total surveyed area</b>	<b>81.4</b>		<b>100</b>
<b>Total site area</b>	<b>88.9</b>	<b>100</b>	<b>-</b>

7. The fieldwork was conducted at an average density of one boring per 4.6 hectares. A total of 18 borings and one soil pit were described.

8. All of the agricultural land has been classified as Sub-grade 3b due to a significant soil wetness limitation. Similar soils exist over the whole of the site and are, typically, medium clay loam topsoils overlying clay subsoils that are poorly structured at shallow depths; these horizons impede drainage and limit the range of crops that can tolerate such conditions and the number of days when the land is in a suitable condition for grazing by livestock or for cultivating.

### Factors Influencing ALC Grade

#### Climate

9. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

10. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values		
		SU655567	SU649564	SU655561
Grid reference	N/A			
Altitude	m, AOD	65	75	82
Accumulated Temperature	day°C (Jan-June)	1458	1447	1439
Average Annual Rainfall	mm	721	737	741
Field Capacity Days	days	154	157	158
Moisture Deficit, Wheat	mm	109	107	106
Moisture Deficit, Potatoes	mm	101	99	98

11. 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.

12. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (AT0, January to June), as a measure of the relative warmth of a locality.

13. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. Local climatic factors are also not believed to be significant. The site is climatically Grade 1.

## Site

14. The site has a gently undulating topography throughout. There are no site limitations, such as gradient, microrelief or flooding, affecting the area.

## Geology and soils

15. The published geological information for the site shows the whole area to be underlain by London Clay.

16. The published soils information for the site shows the whole area to be made up of soils of the Wickham IV Association. These are described as "slowly permeable, seasonally waterlogged, fine loamy over clayey and coarse loamy over clayey, with similar more permeable soils with slight waterlogging."

## Agricultural Land Classification

17. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.

18. The location of the auger borings and the soil pit are shown on the attached sample location map and the details of the soils data are presented in Appendix III.

## *Subgrade 3b*

19. All of the agricultural land on the site has been classified as Subgrade 3b, moderate quality agricultural land. Soil wetness is the key limitation. Soil Pit 1 is representative of the soils on the site, which typically have medium clay loam topsoils overlying clay subsoils. The profiles show clearance of wetness at shallow depths (within the top 40cm), in the form of gleying. The wetness is directly related to slowly permeable subsoils which, in Pit 1, are described as moderately developed, coarse angular blocky. The combination of the depth to gleying and the slowly permeable layer places these soils in Wetness Class IV (see Appendix IV). This degree of waterlogging in the profile, together with the prevailing field capacity level (154-158 days) restricts the flexibility of the land due to the reduction in the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock. As a result, the land on the site cannot be classified any better than Subgrade 3b.

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## SOURCES OF REFERENCE

British Geological Survey (1978) *Sheet No.284 , Basingstoke.*  
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*  
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 6, Soils of South East England.*  
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*  
SSEW: Harpenden

## APPENDIX I

### DESCRIPTIONS OF THE GRADES AND SUBGRADES

#### **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 of this 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 land.

#### **Grade 3: Good to Moderate Quality Land**

Land with moderate limitations which affect the choice of crops, the 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.

#### **Subgrade 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 (e.g. 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 severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

## APPENDIX II

### SOIL WETNESS CLASSIFICATION

#### Definitions of Soil Wetness Classes

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

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Wetness Class	Duration of waterlogging <sup>1</sup>
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years. <sup>2</sup>
II	The soil profile is wet within 70 cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

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#### Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

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<sup>1</sup> The number of days is not necessarily a continuous period.

<sup>2</sup> 'In most years' is defined as more than 10 out of 20 years.

**APPENDIX III**

**SOIL DATA**

**Contents:**

**Sample location map**

**Soil abbreviations - Explanatory Note**

**Soil Pit Descriptions**

**Soil boring descriptions (boring and horizon levels)**

**Database Printout - Horizon Level Information**



## SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

### Boring Header Information

1. **GRID REF:** national 100 km grid square and 8 figure grid reference.
2. **USE:** Land use at the time of survey. The following abbreviations are used.

<b>ARA:</b> Arable	<b>WHT:</b> Wheat	<b>BAR:</b> Barley
<b>CER:</b> Cereals	<b>OAT:</b> Oats	<b>MZE:</b> Maize
<b>OSR:</b> Oilseed rape	<b>BEN:</b> Field Beans	<b>BRA:</b> Brassicae
<b>POT:</b> Potatoes	<b>SBT:</b> Sugar Beet	<b>FCD:</b> Fodder Crops
<b>LIN:</b> Linseed	<b>FRT:</b> Soft and Top Fruit	<b>FLW:</b> Fallow
<b>PGR:</b> Permanent Pasture	<b>LEY:</b> Ley Grass	<b>RGR:</b> Rough Grazing
<b>SCR:</b> Scrub	<b>CFW:</b> Coniferous Woodland	
<b>DCW:</b> Deciduous Wood		
<b>HTH:</b> Heathland	<b>BOG:</b> Bog or Marsh	<b>FLW:</b> Fallow
<b>PLO:</b> Ploughed	<b>SAS:</b> Set aside	<b>OTH:</b> Other
<b>HRT:</b> Horticultural Crops		

3. **GRDNT:** Gradient as estimated or measured by a hand-held optical clinometer.
4. **GLEYSPL:** Depth in centimetres (cm) to gleying and/or slowly permeable layers.
5. **AP (WHEAT/POTS):** Crop-adjusted available water capacity.
6. **MB (WHEAT/POTS):** Moisture Balance. (Crop adjusted AP - crop adjusted MD)
7. **DRT:** Best grade according to soil droughtiness.
8. If any of the following factors are considered significant, 'Y' will be entered in the relevant column.

<b>MREL:</b> Microrelief limitation	<b>FLOOD:</b> Flood risk	<b>EROSN:</b> Soil erosion risk
<b>EXP:</b> Exposure limitation	<b>FROST:</b> Frost prone	<b>DIST:</b> Disturbed land
<b>CHEM:</b> Chemical limitation		

9. **LIMIT:** The main limitation to land quality. The following abbreviations are used.

<b>OC:</b> Overall Climate	<b>AE:</b> Aspect	<b>EX:</b> Exposure
<b>FR:</b> Frost Risk	<b>GR:</b> Gradient	<b>MR:</b> Microrelief
<b>FL:</b> Flood Risk	<b>TX:</b> Topsoil Texture	<b>DP:</b> Soil Depth
<b>CH:</b> Chemical	<b>WE:</b> Wetness	<b>WK:</b> Workability
<b>DR:</b> Drought	<b>ER:</b> Erosion Risk	<b>WD:</b> Soil Wetness/Droughtiness
<b>ST:</b> Topsoil Stoniness		

## Soil Pits and Auger Borings

1. **TEXTURE:** soil texture classes are denoted by the following abbreviations.

<b>S:</b> Sand	<b>LS:</b> Loamy Sand	<b>SL:</b> Sandy Loam
<b>SZL:</b> Sandy Silt Loam	<b>CL:</b> Clay Loam	<b>ZCL:</b> Silty Clay Loam
<b>ZL:</b> Silt Loam	<b>SCL:</b> Sandy Clay Loam	<b>C:</b> Clay
<b>SC:</b> Sandy Clay	<b>ZC:</b> Silty Clay	<b>OL:</b> Organic Loam
<b>P:</b> Peat	<b>SP:</b> Sandy Peat	<b>LP:</b> Loamy Peat
<b>PL:</b> Peaty Loam	<b>PS:</b> Peaty Sand	<b>MZ:</b> 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 the following prefixes:

<b>F:</b> Fine (more than 66% of the sand less than 0.2mm)
<b>M:</b> Medium (less than 66% fine sand and less than 33% coarse sand)
<b>C:</b> 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 using Munsell notation.
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 using Munsell notation.
6. **GLEY:** If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.
7. **STONE LITH:** Stone Lithology - One of the following is used.

<b>HR:</b> all hard rocks and stones	<b>SLST:</b> soft oolitic or dolimitic limestone
<b>CH:</b> chalk	<b>FSST:</b> soft, fine grained sandstone
<b>ZR:</b> soft, argillaceous, or silty rocks	<b>GH:</b> gravel with non-porous (hard) stones
<b>MSST:</b> soft, medium grained sandston	<b>GS:</b> gravel with porous (soft) stones
<b>SI:</b> soft weathered igneous/metamorphic rock	

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

8. **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

9. **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

10. **SUBS STR**: Subsoil structural condition recorded for the purpose of calculating profile droughtiness: **G**: good    **M**: moderate    **P**: poor

11. **POR**: Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.

12. **IMP**: If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.

13. **SPL**: Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

14. **CALC**: If the soil horizon is calcareous, a 'Y' will appear in this column.

15. 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

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	LIMIT	
1	SU652 570	WHT	0	030	4	3B	000	0	000	0				WE	3B	SPL	
1P	SU649 565	BEA	0	040	4	3B	090	-17	096	-3	3A			WE	3B		
9	SU650 568	WHT	0	035	4	3B	090	-17	096	-3	3A			WE	3B	SPL	
11	SU652 568	WHT	030	040	4	3B	000	0	000	0				WE	3B		
13	SU654 568	MZE	0	030	4	3B	087	-20	093	-6	3A			WE	3B	SPL	
25	SU651 566	WHT	020	020	4	3B	079	-28	082	-17	3B			WE	3B		
27	SU653 566	WHT	0	028	4	3B	083	-24	086	-13	3B			WE	3B	SPL	
41	SU657 565	MZE	0	028	4	3B	000	0	000	0				WE	3B	SPL	
45	SU649 564	BEA	028	028	4	3B	086	-21	092	-7	3B			WE	3B	SPL	
47	SU652 564	WHT	040	040	3	3A	000	0	000	0				WE	3A		
49	SU654 564	MZE	028	028	4	3B	000	0	000	0				WE	3B	SPL	
53	SU659 564	PGR	0	040	4	3B	000	0	000	0				WE	3B	SPL	
64	SU657 563	PGR	0	028	4	3B	000	0	000	0				WE	3B	SPL	
66	SU648 562	BEA	0	030	4	3B	084	-23	090	-9	3B			WE	3B	SPL	
68	SU650 562	BEA	025	025	4	3B	085	-22	091	-8	3B			WE	3B	SPL	
70	SU652 562	BEA	030	030	4	3B	087	-20	093	-6	3A			WE	3B	SPL	
72	SU654 562	PGR	0	028	4	3B	000	0	000	0				WE	3B		
76	SU658 562	PGR	000	030	4	3B	000	0	000	0				WE	3B	SPL	
89	SU649 559	BEA	025	025	4	3B	000	0	000	0				WE	3B	SPL	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR		
1	0-30	mc1	10YR42 00	000C00	00	C		Y	0	0	0					
	30-55	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
1P	0-28	mc1	10YR42 00						0	0	0					
	28-40	mc1	10YR53 00	10YR56 00	C		Y	0	0	0	MCSAB	FR	M			
	40-60	c	10YR53 00	10YR56 00	M		Y	0	0	0	MCAB	VM	P	Y		Y
9	0-35	mc1	10YR42 00	000C00	00	C		Y	0	0	0					
	35-60	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
11	0-30	mc1	10YR42 00	000C00	00	F			0	0	0					
	30-40	hc1	10YR53 00	000C00	00	C		Y	0	0	0			M		
	40-60	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
13	0-30	hc1	10YR32 00	000C00	00	M		Y	0	0	0					
	30-60	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
25	0-20	mc1	10YR42 00						0	0	0					
	20-55	c	75YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
27	0-28	mc1	10YR42 00	000C00	00	C		Y	0	0	0					
	28-55	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
41	0-28	hc1	10YR32 00	000C00	00	C		Y	0	0	0					
	28-55	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
45	0-28	mc1	10YR43 00						0	0	0					
	28-60	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
47	0-40	mc1	10YR43 00						0	0	0					
	40-60	c	10YR53 54	000C00	00	C		Y	0	0	0		P	Y		Y
49	0-28	mc1	10YR42 00						0	0	0					
	28-60	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
53	0-28	mc1	10YR42 00	000C00	00	C		Y	0	0	0					
	28-40	mc1	10YR53 00	000C00	00	C		Y	0	0	0			M		
	40-55	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
64	0-28	hc1	10YR42 00	000C00	00	C		Y	0	0	0					
	28-55	c	10YR52 00	000C00	00	M		Y	0	0	0		P	Y		Y
66	0-30	c	10YR42 00	000C00	00	M		Y	0	0	0					
	30-60	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y
68	0-25	mc1	10YR43 00						0	0	0					
	25-60	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y		Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			CALC
				COL	ABUN	CONT		GLEY	>2	>6		LITH	TOT	STR	
70	0-30	mc1	10YR43 00					0	0	0					
	30-60	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y	Y
72	0-28	hc1	10YR42 00	000C00	00	C		Y	0	0	0				
	28-55	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y	Y
76	0-30	mc1	10YR42 00	000C00	00	C		Y	0	0	0				
	30-55	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y	Y
89	0-25	c	10YR32 00					0	0	0					
	25-60	c	10YR53 00	000C00	00	M		Y	0	0	0		P	Y	Y

SOIL PIT DESCRIPTION

Site Name : BASINGSTOKE 17, RAZOR FM Pit Number : 1P

Grid Reference: SU649 565 Average Annual Rainfall : 721 mm  
 Accumulated Temperature : 1458 degree days  
 Field Capacity Level : 154 days  
 Land Use :  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	MCL	10YR42 00	0	0						
28- 40	MCL	10YR53 00	0	0		C	MCSAB	FR	M	
40- 60	C	10YR53 00	0	0		M	MCAB	VM	P	

Wetness Grade : 3B Wetness Class : IV  
 Gleying : 028 cm  
 SPL : 040 cm

Drought Grade : 3A APW : 090mm MBW : -17 mm  
 APP : 096mm MBP : -3 mm

FINAL ALC GRADE : 3B  
 MAIN LIMITATION : Wetness