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**Basingstoke and Deane Local Plan  
Additional Land at Taylors Farm,  
Sherfield Hall  
Agricultural Land Classification,  
ALC Map and Report  
December 1994**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## BASINGSTOKE AND DEANE LOCAL PLAN ADDITIONAL LAND AT TAYLORS FARM, SHERFIELD HALL

### 1. Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of sites in the Basingstoke and Deane district of Hampshire. The work forms part of MAFF's statutory input to the preparation of the Basingstoke and Deane Local Plan.
- 1.2 The site comprises 4.6 hectares of land to the north of Basingstoke in Hampshire. An Agricultural Land Classification (ALC) survey was carried out during December 1994. The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed. A total of 5 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 a long term limitation on its use for agriculture. This survey was in addition to one carried out in 1991 (ADAS Ref: 1501/043/91) to the immediate west of this site, from which some data was extrapolated to confirm the classification.
- 1.3 The survey work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.4 At the time of the survey the majority of the land was overgrown grassland. The small field to the north of the site had been recently grazed or mown. The area of non-agricultural land to the south of the site is an area of scrub and trees surrounding a small derelict, partially filled pond.
- 1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas and extent are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

**Table 1: Distribution of Grades and Subgrades**

Grade	Area (ha)	% of Site
3b	4.5	97.8
Non-Agricultural	0.1	2.2
Total area of site	<u>4.6ha</u>	<u>100.0</u>

- 1.6 Appendix I gives a general description of the grades, subgrades and land use categories identified in the survey. 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.

- 1.7 The agricultural land at this site has been classified as moderate quality (Subgrade 3b). The principal limitation is soil wetness. Clay loam topsoils and upper subsoils overlie slowly permeable clay at shallow depths in the profile, causing drainage to be severely impeded. This severely restricts the opportunities for cultivation and/or stocking without the risk of structural damage to the soil.

## 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 an overall climatic limitation are average annual 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 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 are believed to affect the site. However, climatic and soil factors interact to influence soil wetness and droughtiness limitations.

**Table 2: Climatic Interpolation**

Grid Reference	SU667559
Altitude, (m, AOD)	80
Accumulated Temperature (°days, Jan.-June)	1441
Average Annual Rainfall (mm)	733
Field Capacity Days	156
Moisture deficit, wheat (mm)	106
Moisture deficit, potatoes (mm)	98
Overall Climatic Grade	1

## 3. Relief

- 3.1 The site lies between approximately 75 and 80m AOD. Overall the site falls slightly from south east towards the north. Nowhere on the site does relief or gradient affect agricultural land quality.

## 4. Geology and Soils

- 4.1 The published geological information (BGS, 1981), shows the entire site to be underlain by Eocene London Clay.
- 4.2 The published soils information (SSEW 1983 and 1984), shows the site to be underlain by soils of the Wickham 4 Association. These are described as, 'slowly

permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey soils associated with similar clayey soils, often with brown subsoils,' (SSEW, 1983). Soils on the site were commonly found to be similar to those described above, i.e. fine loamy and fine silty over slowly permeable clay subsoils.

## 5. Agricultural Land Classification

- 5.1 Paragraph 1.5 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.

### Subgrade 3b

- 5.3 Land of moderate quality, has been mapped across the whole of the agricultural area at this site. The principal limitation is soil wetness, due to poor drainage. Soil profiles typically comprise, a stoneless to very slightly stony (up to 3% total flints by volume) medium clay loam or medium silty clay loam topsoil, overlying a similarly stony, gleyed and slowly permeable heavy clay loam or clay upper subsoil. This passes to a deep stoneless gleyed clay lower subsoil which occasionally lies directly beneath the topsoil. The description for Pit 1 (1P, see Appendix III) shows that the clay lower subsoil and the heavy clay loam upper subsoil, where present, are slowly permeable by virtue of their structural characteristics and thereby severely impede drainage. These soils are assigned to Wetness Class IV (see Appendix II) which, given the topsoil texture and prevailing field capacity level (156 days), produces a wetness limitation that restricts the land to Subgrade 3b. These factors lead to severe restrictions on the versatility of the land, in terms of the timing of cropping and stocking, if structural damage to the soil is to be avoided. Excessive soil wetness will also adversely affect crop growth and development.

ADAS Ref: 1501/291/94  
MAFF Ref: EL15/144

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## **SOURCES OF REFERENCE**

ADAS (1992), Basingstoke and Deane Borough Local Plan, Sherfield Hall Agricultural Land Classification Report. Reference 1501/043/91

British Geological Survey (1981), Sheet 284 Basingstoke, 1:50,000. Solid & Drift Edition.

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

Meteorological Office (1989), Climatic datasets 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.

Soil Survey of England and Wales (1984), Bulletin No.15, Soils and their use in South-East England.

## APPENDIX I

### DESCRIPTION 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.

**Urban**

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: 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. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

**Woodland**

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

**Agricultural Buildings**

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (e.g. 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, e.g. 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 CLASS

#### **Wetness Class I**

The soil profile is not wet within 70 cm depth for more than 30 days in most years.

#### **Wetness Class 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 180 days, but only wet within 40 cm depth for 31-90 days in most years.

#### **Wetness Class 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.

#### **Wetness Class 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.

#### **Wetness Class V**

The soil profile is wet within 40 cm depth for 211-335 days in most years.

#### **Wetness Class VI**

The soil profile is wet within 40 cm depth for more than 335 days in most years.

**APPENDIX III**  
**SOIL PIT AND SOIL BORING DESCRIPTIONS**

**Contents :**

**Sample Point Map**

**Soil Abbreviations - explanatory note**

**Database Printout - soil pit information**

**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.

<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 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.

<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	<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>ST</b> : Topsoil Stones
<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	

## 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                      **SLST** : soft oolitic or dolimitic limestone  
**CH** : chalk    **FSST** : soft, fine grained sandstone  
**ZR** : soft, argillaceous, or silty rocks            **GH** : gravel with non-porous (hard) stones  
**MSST** : soft, medium grained sandstone    **GH** : gravel with non-porous (hard) stones  
**SI** : soft weathered igneous/metamorphic rock  
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 : BAS.LP ADDLAND,TAYLORSFM Pit Number : 1P

Grid Reference: SU66635596 Average Annual Rainfall : 733 mm  
 Accumulated Temperature : 1441 degree days  
 Field Capacity Level : 156 days  
 Land Use : Rough Grazing  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	MZCL	10YR42 00	0	1	HR					
28- 43	HCL	10YR52 00	0	3	HR	M	WKCSAB	FR	M	
43- 66	C	25Y 52 00	0	0		M	MDCAB	FM	P	
66-120	C	25Y 62 00	0	0		M			P	

Wetness Grade : 3B Wetness Class : IV  
 Gleying : 28 cm  
 SPL : 28 cm

Drought Grade : 2 APW : 134mm MBW : 28 mm  
 APP : 111mm MBP : 13 mm

FINAL ALC GRADE : 3B  
 MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--				--WHEAT--		--POTS--		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEYS	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT	
1	SU6657561B	PGR		0	30	4	3B		0		0				WE	3B	SPL 30 SEE 1P
1P	SU66635596	RGR		28	28	4	3B	134	28	111	13	2			WE	3B	PIT 66 AUG 120
2	SU66465610	RGR N	01	28	28	4	3B		0		0			WE	3B	SPL 40 SEE 1P	
3	SU66545602	RGR N	01	30	30	4	3B		0		0			WE	3B	SPL 30 SEE 1P	
4	SU66635596	RGR		0	30	4	3B		0		0			WE	3B	SPL 30 SEE 1P	
5	SU66755592	RGR		30	30	4	3B		0		0			WE	3B	SPL 30 SEE 1P	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES-----			STRUCT/ CONSIST	SUBS			SPL	CALC	
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR			IMP
1	0-30	mc1	10YR42 00	10YR56 00	C			Y	0	0	0							
	30-70	c	10YR53 52	10YR58 00	M			Y	0	0	0		P			Y		
1P	0-28	mzc1	10YR42 00						0	0	HR	1					WET	
	28-43	hc1	10YR52 00	10YR68 00	M		10YR53 00	Y	0	0	HR	3	WKCSAB	FR	M	Y	Y	WET
	43-66	c	25Y 52 00	10YR68 00	M		25Y 61 00	Y	0	0		0	MDCAB	FM	P	Y	Y	
	66-120	c	25Y 62 00	10YR68 00	M			Y	0	0		0			P		Y	
2	0-28	mzc1	10YR42 52	10YR56 00	F				0	0		0					WET	
	28-40	c	10YR53 00	10YR56 00	M			Y	0	0		0		P		Y	WET	
	40-70	c	25Y 62 00	10YR66 00	M			Y	0	0		0		P		Y		
3	0-30	mc1	10YR42 00						0	0		0					WET	
	30-70	c	10YR53 52	10YR56 00	M			Y	0	0		0		P		Y	SLIGHTLY SANDY	
4	0-30	mzc1	10YR42 00	10YR56 00	C			Y	0	0		0					WET	
	30-42	hc1	10YR52 00	10YR66 00	M			Y	0	0	HR	3		M		Y	WET	
	42-70	c	25Y 62 00	10YR58 00	M			Y	0	0		0		P		Y		
5	0-30	mzc1	10YR42 00	10YR56 00	F				0	0		0					WET	
	30-42	hc1	10YR42 52	10YR56 00	M			Y	0	0	HR	3		M		Y	WET	
	42-70	c	25Y 53 51	10YR68 00	M			Y	0	0		0		P		Y		