

**A1**  
**Basingstoke and Deane Local Plan**  
**Site 19 : Land at Hannington,**  
**Basingstoke**  
**ALC Map and Report**  
**December, 1993**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## LAND AT HANNINGTON, BASINGSTOKE, HAMPSHIRE BASINGSTOKE & DEANE LOCAL PLAN

### 1. Introduction

- 1.1 In December, 1993, a detailed Agricultural Land Classification (ALC) was made on 1.1 hectares of land to the west of the village of Hannington in Hampshire.
- 1.2 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS in response to a commission by MAFF's Land Use Planning Unit to provide information on the quality of agricultural land affected by possible inclusion in the Basingstoke and Deane Borough Council Local Plan.
- 1.3 The classification has been made using 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 use for agriculture.
- 1.4 The fieldwork was carried out with an observation density of approximately three per hectare. A total of three borings were examined.
- 1.5 All of the site has been classified as Subgrade 3b (moderate quality agricultural land). The key limitations are soil wetness and soil workability. These limitations arise from heavy topsoil textures overlying poorly structured clay subsoils which cause significant shallow waterlogging.
- 1.6 The ALC information is shown on the attached map at a scale of 1:5,000. It is accurate at this level but any enlargement would be misleading. This map supercedes any previous ALC information for this site.
- 1.8 A general description of the grades, subgrades and land use categories is provided in Appendix I. 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.

## 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 5 kilometre 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. However, climatic factors do interact with soil factors to influence soil wetness and soil droughtiness. At this locality, the field capacity days and average annual rainfall are relatively high (in a regional context), thus increasing the likelihood of soil wetness.
- 2.4 No local climatic factors such as exposure or frost risk affect the site.

**Table 1 : Climatic Interpolation**

Grid Reference	SU539556
Altitude (m)	200
Accumulated Temperature (°day)	1307
Average Annual Rainfall (mm)	855
Field Capacity (days)	182
Moisture Deficit, Wheat (mm)	84
Moisture Deficit, Potatoes (mm)	70
Overall Climatic Grade	1

## 3. Relief

- 3.1 The site occupies gentle east sloping land at approximately 200 metres, AOD. Nowhere on the site does gradient or relief impose any limitation on the land quality.

#### 4. Geology and Soils

- 4.1 British Geological Survey, Sheet 284, Basingstoke (1981) shows the entire site to be underlain by Clay-with-Flints.
- 4.2 The soil type for the site, as shown on the Soil Survey map of South East England (SSEW, 1983, 1:250,000), comprises the Carstens Association. These soils are described as 'well drained fine silty over clayey, clayey and fine silty soils, often very flinty' (SSEW, 1983).

#### 5. Agricultural Land Classification

- 5.1 The ALC information is provided on the attached ALC map and the location of the soil observation points is shown on the sample point map.

##### **Subgrade 3b**

- 5.2 All of the site has been classified as Subgrade 3b, moderate quality agricultural land. Soil wetness and soil workability are the key limitations. Heavy clay loam topsoils overlie clay upper subsoils which show clear evidence of gleying. The subsoil matrix colours are often not pale or grey (7.5YR54) but show grey mottling, evidence of grey ped faces and common manganese staining. The subsoils are slowly permeable from approximately 50 cm. No soil pit was dug to confirm this, given the fact that the clays were extremely hard and compact from auger observation alone. Given the relatively wet climate (in a regional context) at this site, the depth to gleying and the slowly permeable layers places the soils into Wetness Class III. The interaction between these topsoil textures, soil drainage characteristics and the local climatic regime means that this land can be graded no higher than Subgrade 3b.
- 5.3 This wetness limitation adversely affects seed germination and survival, plus inhibits the development of a good root system. In addition, restrictions are imposed on cultivations, grazing by livestock and trafficking by machinery.

ADAS Reference : 1501/161/93  
MAFF Reference : EL 15/144

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## 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 (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 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 (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 Number 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 Number 6, Soils of South East England, 1:250,000, and accompanying legend.

## APPENDIX III

### 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

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

**APPENDIX IV**

**SOIL PIT AND SOIL BORING DESCRIPTIONS**

**Contents :**    **Soil Abbreviations - explanatory note**

**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

- GRID REF** : national grid square and 8 figure grid reference.
- 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		
- GRDNT** : Gradient as measured by a hand-held optical clinometer.
- GLEYSPL** : Depth in cm to gleying or slowly permeable layers.
- AP (WHEAT/POTS)** : Crop-adjusted available water capacity.
- MB (WHEAT/POTS)** : Moisture Balance.
- DRT** : Best grade according to soil droughtiness.
- 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>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>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 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 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

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	SU54905560	PGR	025	050	3	3B	099	15	111	41	2			WE	3B	
2	SU54875560	PGR	030	040	3	3B	090	6	096	26	2			WE	3B	MANGANESE 30
3	SU54935560	PGR	030	050	3	3B	099	15	110	40	2			WE	3B	MANGANESE 25

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED		----STONES----			STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL
1	0-25	hc1	10YR52 00						0	0	0						
	25-40	hc1	10YR52 00	75YR56 00	C			Y	0	0	0		M				
	40-50	c	10YR53 00	75YR56 00	M			Y	0	0	0		M				
	50-70	c	10YR63 00	05YR58 00	M			Y	0	0	0		P	Y		Y	
2	0-30	hc1	10YR52 00						0	0	0						
	30-40	c	75YR54 00	00GR00 00	M		75YR53 00	S	0	0	0		M				
	40-60	c	75YR54 00	00GR00 00	M		75YR53 00	S	0	0	0		P	Y		Y	
3	0-30	hc1	10YR52 00						0	0	HR	2					
	30-50	c	10YR53 00	00OC00 00	C			Y	0	0	HR	1		M			
	50-70	c	75YR54 00	10YR53 00	C			S	0	0	HR	1		P	Y		Y