

**A1**  
**Basingstoke and Deane Local Plan**  
**Land at Kingsclere Road,**  
**Overton**  
**Agricultural Land Classification,**  
**ALC Map and Report**  
**November 1994**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## BASINGSTOKE AND DEANE LOCAL PLAN LAND AT KINGSCLERE ROAD, OVERTON

### 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 approximately 1 hectare of land to the west of Kingsclere Road in Overton, Hampshire. An Agricultural Land Classification (ALC) survey was carried out during November 1994. The survey was undertaken at a detailed level of approximately four borings per hectare of agricultural land surveyed. A total of 4 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.
- 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 land was in arable use. In the north of the site there is an area of land which is not in agricultural management at present, and is thus overgrown. The area mapped as urban comprises a garden attached to a house. The land marked as being in non-agricultural use is covered in rubble deposits from a new building development.
- 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 1:5,000. It is accurate at this scale, but any enlargement would be misleading.

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

Grade	Area (ha)	% of Site	% of Agricultural Land
3a	1.0	98.0	100.0 (1.0 ha)
Urban	<0.1	1.0	
Non-agricultural	<0.1	1.0	
Total area of site	1.0	100.0	

- 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 All of the agricultural land surveyed has been classified as Subgrade 3a, good quality, because of moderate soil droughtiness limitations. Medium silty clay loam topsoils and subsoils overlie chalk at shallow depths. The amount of soil water available for uptake by crops is somewhat reduced because of limited rooting by crops into the chalk. This may give rise to a moderate risk of drought stress for those crops which are grown, thereby adversely affecting yield potential.

## 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.

**Table 2 : Climatic Interpolation**

Grid Reference	SU514504
Altitude (m)	103
Accumulated Temperature (degree days, Jan-June)	1420
Average Annual Rainfall (mm)	804
Field Capacity (days)	176
Moisture Deficit, Wheat (mm)	102
Moisture Deficit, Potatoes (mm)	93
Overall Climatic Grade	1

## 3. Relief

3.1 The site occupies a gently sloping hillside, falling through gradients of about 4°, from approximately 110m AOD along the northern site boundary to approximately 100m AOD along the southern site boundary. Nowhere on the site do gradient or relief impose any restriction on the agricultural land quality.

## 4. Geology and Soil

4.1 The published geological information for the site, (BGS, 1975) shows it to be entirely underlain by Upper Chalk, (soft white chalk with many flint nodules).

4.2 The published Soil Survey map covering the site, (SSEW, 1983) shows soils of the Andover 1 association across the whole site. These soils are described as 'shallow well drained calcareous silty soils over chalk on slopes and crests' (SSEW, 1983).

4.3 Detailed field examination found well drained silty soils overlying chalk at relatively shallow depths.

## 5. **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.

### **Subgrade 3a**

5.3 All of the agricultural land surveyed has been classified as good quality, it being affected by a soil droughtiness limitation. Profiles typically comprise calcareous, medium silty clay loam topsoils. These topsoils are slightly stony, containing about 2-5% total chalk by volume and up to 4% total flints by volume. These overlie similarly textured upper subsoils which are very slightly to moderately stony, containing about 5-20% total chalk fragments plus 2-3% total flints by volume. At depths ranging from 28-75cm, (but averaging 38cm), profiles pass into soft and blocky chalk which is very slightly stony, containing about 2% total flints by volume. As observed from Pit 1, which is representative of soils on the site, rooting by crops into the chalk was found to extend approximately 27cm. The interaction of these relatively shallow soils with restricted rooting into the chalk, with the prevailing climatic conditions, results in the amount of soil available water being slightly restricted. Although soils are shallow, the risk of soil droughtiness is partially offset by the relatively moist climate, in regional terms, at this locality. Consequently this land is classified as Subgrade 3a. Soil droughtiness may cause crops to suffer drought stress and thereby adversely affect yield potential. Within this mapping unit there are occasional profiles where the depth to chalk is either deeper (better quality land) or shallower (poorer quality land) than that observed from the pit. However, such profiles do not constitute a large enough area to be mapped as a separate unit.

ADAS Ref: 1501/288/94  
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Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## **SOURCES OF REFERENCE**

British Geological Survey (1975), Sheet No. 283, Andover, 1:50,000 (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), Climatological Data for Agricultural Land Classification.

Soil Survey of England and Wales (1983), Sheet 6, Soils of South East England, 1:250,000 and accompanying legend.

## 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

### FIELD ASSESSMENT OF SOIL WETNESS CLASS

#### SOIL WETNESS CLASSIFICATION

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.

#### Definition of Soil Wetness Classes

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.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

<sup>1</sup>The number of days specified 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 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 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. **GLEYS** : 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 sandstone	<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

SOIL PIT DESCRIPTION

Site Name : BASINGSTOKE LP OVERTON Pit Number : 1P

Grid Reference: SU51425047 Average Annual Rainfall : 804 mm  
 Accumulated Temperature : 1420 degree days  
 Field Capacity Level : 176 days  
 Land Use : Arable  
 Slope and Aspect : 04 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 24	MZCL	10YR42 00	2	4	HR					Y
24- 38	MZCL	10YR54 00	0	20	CH		WKCSAB	FR	M	Y
38- 65	CH	10YR81 00	0	1	HR				P	Y

Wetness Grade : 2 Wetness Class : I  
 Gleying : cm  
 SPL : No SPL

Drought Grade : 3A APW : 89 mm MBW : -13 mm  
 APP : 93 mm MBP : 0 mm

FINAL ALC GRADE : 3A  
 MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	GRDNT	SPL	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
					CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT		
1	SU51405050	ARA S	04		1	2	126	24	116	23	2				WD	2	Chalk at 75 cm
1P	SU51425047	ARA S	04		1	2	89	-13	93	0	3A				DR	3A	Roots to 65 cm
2	SU51405040	ARA S	04		1	2	77	-25	79	-14	3B				DR	3B	Chalk at 28 cm
3	SU51435037	ARA S	04		1	2	91	-11	96	3	3A				DR	3A	Chalk at 38 cm
4	SU51425047	ARA S	04		1	2	91	-11	95	2	3A				DR	3A	Chalk at 38 cm

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			SPL CALC	
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR		POR
1	0-30	mzc1	10YR42 00					1	0	HR	1				Y	+ 5% chalk
	30-38	mzc1	10YR43 00					0	0	CH	5		M		Y	+ 2% flints
	38-75	mzc1	10YR54 00					0	0	CH	35		M		Y	+ 3% flints
	75-100	ch	10YR81 00					0	0	HR	2		P		Y	Hard chalk 90 cm
1P	0-24	mzc1	10YR42 00					2	0	HR	4				Y	+ 5% chalk
	24-38	mzc1	10YR54 00					0	0	CH	20	WKCSAB	FR M		Y	+ 3% flints
	38-65	ch	10YR81 00					0	0	HR	1		P		Y	Roots to 65 cm
2	0-28	mzc1	10YR42 00					2	0	HR	2				Y	+ 5% chalk
	28-55	ch	10YR81 00					0	0	HR	1		P		Y	HR = flints
3	0-25	mzc1	10YR42 00					1	0	HR	1				Y	+ 1% chalk
	25-38	mzc1	10YR54 00					0	0	CH	5		M		Y	+ 1% flints
	38-65	ch	10YR81 00					0	0	HR	1		P		Y	HR = flints
4	0-28	mzc1	10YR42 00					2	0	HR	3				Y	+ 2% chalk
	28-38	mzc1	10YR54 00					0	0	CH	15		M		Y	+ 2% flints
	38-65	ch	10YR81 00					0	0	HR	1		P		Y	HR = flints