

**A1**  
**BASINGSTOKE AND DEANE BOROUGH**  
**LOCAL PLAN**  
**SITE 16: LAND AT WORTING**  
**AGRICULTURAL LAND CLASSIFICATION**  
**ALC MAP AND REPORT**  
**JUNE 1993**

AGRICULTURAL LAND CLASSIFICATION

BASINGSTOKE AND DEANE BOROUGH LOCAL PLAN

Site 16: Land at Worting

1. SUMMARY

- 1.1 In March 1993, a detailed Agricultural Land Classification (ALC) Survey was made on approximately 4 hectares of land at Worting to the south west of Basingstoke 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 proposals within the Basingstoke and Deane Borough 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 one per hectare. A total of 4 borings were examined.
- 1.5 The table below provides the details of the grades found across the site. The majority of the land is classified as being of very good quality. The key limitation is droughtiness.

Table 1 : Distribution of Grades and Sub-grades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
2	<u>3.9</u>	100	100
Total Site Area	<u>3.9</u>		

- 1.6 The distribution of the ALC grades is shown on the attached map. The information is presented at a scale of 1:5000; it is accurate at this level but any enlargement would be misleading. This map supersedes any previous ALC information for this site.
- 1.7 At the time of survey the land use on the site was rough grassland used for grazing horses and geese.
- 1.8 A general description of the grades and sub-grades is provided as an appendix. 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 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 The 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 affect the site.

Table 2 : Climatic Interpolations

Grid Reference:	SU 602517	SU 600516
Altitude (m):	105	110
Accumulated Temperature (days):	1415	1410
Average Annual Rainfall (mm):	796	803
Field Capacity (days):	173	175
Moisture Deficit, Wheat (mm)	98	97
Moisture Deficit, Potatoes (mm)	87	86
Overall Climatic Grade	1	1

## 3. RELIEF

- 3.1 Land within the survey area lies between 102 and 110 m AOD, gently rising from north east to south west. At no point does gradient or altitude represent a limitation to agricultural land quality.

## 4. GEOLOGY AND SOILS

- 4.1 The relevant geological sheet (British Geological Survey, Sheet 284, 1:50000) for the site, shows the underlying geology to be entirely Cretaceous Upper Chalk, describing it as "soft white chalk with many flinty nodules" (BGS, 1978).
- 4.2 The main soil type occurring on the site as shown by the Soil Survey Map of South East England (SSEW, 1983, 1:250000), was found to be Andover 1 Association, shallow well drained calcareous silty soils over chalk on slopes, and deeper though of similar conditions in valley bottoms. This site could be considered as being in a valley bottom as land rises to the north such that the latter condition applies, and as such detailed field examination broadly confirmed the presence of soils characteristic of the deeper variant of the Association.

5. AGRICULTURAL LAND CLASSIFICATION

5.1 Table 1 provides the details of the area measurements for each grade land 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.

5.3 Grade 2

Land of this quality covers the entire site, soils consisting of a very slightly stony (2-6% flints) occasionally calcareous clay loam topsoil over a stoneless to slightly stony (0-10%) non-calcareous heavier clay loam or clay upper subsoil. These pass to either a stoneless moderately stony (0-30%) clay or a very stony (40% chalk fragments) silty clay loam at depth. Occasional profiles were impenetrable due to the stone content of the lower subsoil. This area has a slight droughtiness limitation primarily caused by the stone content in the subsoil. This restricts the water holding capability of the soil to an extent whereby crops may suffer slight drought stress and grade 2 is appropriate. However, this land is capable of supporting a wide range of agricultural and horticultural crops.

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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 re-claimed 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
- \* 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, 1:250000
- \* Soil Survey of England and Wales (1984), Soils and their use in South East England. Bulletin No. 15.

## 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**
  - \* Database Printout : Boring Level Information**
  - \* Database Printout : Horizon Level Information**

## SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE

Soil profile and pit information obtained during ALC surveys is held on a database. This has commonly used notations and abbreviations as set out below.

### BORING HEADERS

1. GRID REF : National grid square followed by 8 figure grid reference.
2. USE : Land-use at the time of survey.  
The following abbreviations are used.

ARA - arable	PAS/PGR - permanent pasture
WHT - wheat	RGR - rough grazing
BAR - barley	LEY - ley grassland
CER - cereals	CFW - coniferous woodland
OAT - Oats	DCW - deciduous woodland
MZE - maize	SCR - scrub
OSR - Oilseed rape	HTH - heathland
BEN - field beans	BOG - bog or marsh
BRA - brassicae	FLW - fallow
POT - potatoes	PLO - ploughed
SBT - sugarbeet	SAS - set-aside
FCD - fodder crops	OTH - other
FRT - soft and top fruit	LIN - linseed
HOR/HRT - horticultural crops	

3. GRDNT : Gradient as measured by optical reading clinometer.
4. GLEY/SPL : Depth in centimetres (cm) to gleyed and/or slowly permeable horizons.
5. AP (WHEAT/POTS) : Crop-adjusted available water capacity. The amount of soil water (in millimetres) held in the soil profile that is available to a growing crop (wheat and potatoes are used as reference crops).
6. MB (WHEAT/POTS) : The moisture balance for wheat and potatoes obtained by subtracting the soil moisture deficit from the crop-adjusted available water capacity.
7. DRT: Grade according to soil droughtiness assessed against soil moisture balances.
8. M REL : Micro-relief )  
FLOOD : Flood risk )  
EROSN : Soil erosion )  
EXP : Exposure )  
FROST : Frost prone )  
DIST : Disturbed land )  
CHEM : Chemical limitation )  
If any of these factors are considered significant in terms of the assessment of agricultural land quality, a y will be entered in the relevant column.

9. LIMIT : Principal limitation to agricultural land quality.  
The following abbreviations are used:

OC - overall climate	CH - chemical limitations
AE - aspect	WE - wetness
EX - exposure	WK - workability
FR - frost	DR - drought
GR - gradient	ER - erosion
MR - micro-relief	WD - combined soil wetness/soil droughtiness
FL - flooding	ST - topsoil stoniness
TX - soil texture	
DP - soil depth	

#### PROFILES & PITS

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

S	- sand
LS	- loamy sand
SL	- sandy loam
SZL	- sandy silt loam
ZL	- silt loam
MZCL	- medium silty clay loam
MCL	- medium clay loam
SCL	- sandy clay loam
HZCL	- heavy silty clay loam
SC	- sandy clay
ZC	- silty clay
C	- clay

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction may be indicated by the use of prefixes.

F	- fine (more than $\frac{2}{3}$ of the sand less than 0.2 mm)
C	- coarse (more than $\frac{1}{3}$ of sand greater than 0.6 mm)
M	- medium (less than $\frac{2}{3}$ fine sand and less than $\frac{1}{3}$ coarse sand)

The sub-divisions of clay loam and silty clay loam classes according to clay content are indicated as follows:

M	- medium (less than 27% clay)
H	- heavy (27-35% clay)

Other possible texture classes include:

OL	- organic loam
P	- peat
SP	- sandy peat
LP	- loamy peat
PL	- peaty loam
PS	- peaty sand
MZ	- marine light silts

2. MOTTLE COL : Mottle colour

3. MOTTLE ABUN : Mottle abundance

F - few - less than 2% of matrix or surface described

C - common - 2-2% of the matrix

M - many - 20-40% of the matrix

VM - very many - 40% + of the matrix

4. MOTTLE CONT : Mottle continuity

F - faint - indistinct mottles, evident only on close examination

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 : Stone lithology. One of the following is used.

HR - all hard rocks or stones

MSST - soft, medium or coarse grained sandstone

SI - soft weathered igneous or metamorphic

SLST - soft oolitic or dolomitic 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 peds are described using the following notation.

- degree of development WK - weakly developed  
MD - moderately developed  
ST - strongly well developed

- ped size F - fine  
M - medium  
C - coarse  
VC - very coarse

- ped shape S - single grain  
M - massive  
GR - granular  
SB/SAB - sub-angular blocky  
AB - angular blocky  
PR - prismatic  
PL - platy

8. CONSIST : Soil consistence is decribed 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