

**A1**  
**Basingstoke & Deane Local Plan**  
**Site 15: Land at Preston Candover**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**January 1994**

**BASINGSTOKE AND DEANE LOCAL PLAN  
SITE 15 : LAND AT PRESTON CANDOVER  
AGRICULTURAL LAND CLASSIFICATION REPORT**

**1. Summary**

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on an area of land at Preston Candover, Hampshire. The work forms part of MAFF's statutory input to the Basingstoke and Deane Local Plan.
- 1.2 Approximately 1 hectare of land was surveyed in December 1993. The survey was undertaken at a detailed level of approximately two borings per hectare. A total of 2 soil auger borings and one soil inspection pit were assessed 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 long term limitations on its use for agriculture.
- 1.3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.4 At the time of the survey the land use on the site was permanent grassland.
- 1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas 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. This map supersedes any previous survey information for this site.

Table 1 : Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
3a	1.3	92.9	100
Agricultural Buildings	<u>0.1</u>	<u>7.1</u>	
Total area of site	1.4	100%	

- 1.6 Appendix 1 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 land has been classified as good quality, Subgrade 3a, moderate soil droughtiness being the principal limitation. This is due to the presence of chalk at variable depths within the profile, restricting the rooting depth of crops such that water availability is reduced in most years, which, in combination with local climatic factors leads to the risk of drought stress and this subgrade being most appropriate.

## 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. However, climatic and soil factors interact to influence soil wetness and droughtiness. Within this locality, the combination of relatively high Field Capacity Days and low Moisture Deficits, in a regional context, lead to a greater probability, dependant on soil type, of wetness rather than droughtiness being the principal limitation.
- 2.4 No local climatic factors such as exposure or frost risk affect the site.

Table 2 : Climatic Interpolation

Grid Reference :	SU608414
Altitude (m) :	105
Accumulated Temperature (days) :	1420
Average Annual Rainfall (mm) :	874
Field Capacity (days) :	190
Moisture Deficit, Wheat (mm) :	95
Moisture Deficit, Potatoes (mm) :	85
Overall Climatic Grade :	1

## 3. Relief

- 3.1 The site lies between 110m and 105m AOD, gently sloping from south to north. At no point does gradient or microrelief affect land quality.

## 4. Geology and Soil

- 4.1 The British Geological Survey published map, Sheet 300, Alresford (1:50,000, 1975), shows the area to be entirely underlain by Cretaceous Upper Chalk, with the subnote that it is likely to have a clayey soil.
- 4.2 The Soil Survey of England and Wales published map, Sheet 6, Soils of South East England, (1:250,000, 1983) shows the site to be underlain by soils of the Andover Association. These are described as 'shallow, well drained calcareous silty soils over chalk on slopes and crests. Deep calcareous and non-calcareous fine silty soils in valley bottoms' (SSEW 1984). Soils of this general nature were found at the site.

## 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 at this site is considered to be of good quality. Soil droughtiness is the principal limitation due to the presence of chalk at moderate depths restricting soil depth and root penetration. Typically soil profiles consist of a very slightly stony (c.5% flints by volume) medium silty clay loam topsoil, overlying a very slightly stony (c.3% flints by volume) moderately structured heavy silty clay loam subsoil passing to pure chalk. In a pit observation (1P, Appendix III) roots were seen to extend 18 cm into the chalk. This shallow soil depth and impeded rooting causes a reduction in available water for crop growth which in combination with local climatic factors leads to Subgrade 3a being most appropriate. Land of this quality could be expected to produce moderate yields of a wide range of crops, including oilseed rape, and sugar beet and high yields of a narrow range, principally cereals and grass. Occasional borings of a better quality were found but these were of insufficient distribution to delineate separately.
- 5.4 Land affected by a drought limitation can be subject to restrictions in terms of the type and success of crop growth, dependant on the severity of the problem. This is due to the fact that, at some point during or throughout the growing season water availability will not match crop demand, in most years. At this site, the limitation is caused by a combination of shallow soil depth and restricted rooting depth due to chalk at moderate depths in the profile. This has the effect of reducing the volume of water available for extraction by crops, leading to the risk of drought stress.
- 5.5 The small area to the north of the site, shown as Agricultural Buildings is a building currently being used to stable ponies and house ducks and geese.

ADAS Reference : 1501/157/93  
MAFF Reference : EL15/144

Resource Planning Team  
Guildford Statutory Centre  
ADAS Reading

## SOURCES OF REFERENCE

- \* British Geological Survey (1975) Sheet 300, Alresford 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 No. 6, Soils of South East England, 1:250,000.
- \* Soil Survey of England and Wales (1984), Soils and their use in South East England. Bulletin No. 15.

## 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.

#### **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.

#### **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 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/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

### 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 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 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.

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

3. GRDNT : Gradient as measured by a hand-held optical clinometer.

4. GLEY/SPL : 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.

MREL : Microrelief limitation    FLOOD : Flood risk    EROSN : Soil erosion risk    EXP : Exposure limitation    FROST : Frost  
DIST : Disturbed land    CHEM : Chemical limitation

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

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

### 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    MSST : soft, medium or coarse grained sandstone

SI : soft weathered igneous or metamorphic    SLST : soft oolitic or dolimitic 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 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 : BASINGSTOKE (2), SITE 15 Pit Number : 1P

Grid Reference: SU60864143 Average Annual Rainfall : 874 mm  
Accumulated Temperature : 1420 degree days  
Field Capacity Level : 190 days  
Land Use : Permanent Grass  
Slope and Aspect : 01 degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 17	MZCL	10YR32 00	0	5		
17- 36	HZCL	10YR54 00	0	3		MDCSAB
36- 58	CH	10YR74 81	0	0		

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

Drought Grade : 3A APW : 79 mm MBW : -16 mm  
APP : 80 mm MBP : -5 mm

FINAL ALC GRADE : 3A  
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS	
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST		LIMIT
1	SU60894148	PGR N	01		1	2	104	9	110	25	2			DR	2	IMPCH 75
1P	SU60864143	PGR N	01		1	2	82	-13	84	-1	3A			DR	3A	ROOT 58 PIT 70
2	SU60814140	PGR S	02		1	2	93	-2	97	12	3A			DR	3A	SOFT CHALK 42

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----		PED	----STONES----		STRUCT/	SUBS	SPL	CALC
				COL	ABUN	CONT	COL.	GLEYS	>2	>6		
1	0-25	mzc1	10YR43 00					0	0	HR	3	
	25-50	hc1	10YR44 54					0	0	HR	8	M
	50-65	hc1	10YR46 00					0	0	HR	8	M
	65-75	ch	10YR74 81					0	0		0	M
1P	0-17	mzc1	10YR32 00					0	0	HR	5	
	17-36	hzc1	10YR54 00					0	0	HR	3	MDCSAB FR M
	36-58	ch	10YR74 81					0	0		0	M
2	0-27	mzc1	10YR43 00					0	0	HR	2	
	27-42	mzc1	10YR54 00					0	0	CH	10	M
	42-64	ch	10YR81 74					0	0		0	M