

**A1**  
**Hove Borough Local Plan**  
**Site 3: Land East of Foredown Road**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**December 1993**

**HOVE BOROUGH LOCAL PLAN  
SITE 3: LAND EAST OF FOREDOWN ROAD HOVE, EAST SUSSEX  
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 four sites in Hove. The work forms part of MAFF's statutory input to the preparation of the Hove Borough Local Plan.
- 1.2 Approximately 4 hectares of land relating to Site 3, east of Foredown Road in West Hove, East Sussex was surveyed during November 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 3 soil auger borings and 1 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 survey work was conducted by members of the Resource Planning Team in the Guildford Statutory Group.
- 1.4 At the time of the survey the land was under a permanent grass cover, being grazed, in part, by horses.
- 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 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>
2	0.1	2.6	2.7
3b	1.8	47.4	48.7
4	0.8	21.1	21.6
5	1.0	26.3	<u>27.0</u>
			100% (3.7 ha)
Urban	<u>0.1</u>	<u>2.6</u>	
Total area of site	3.8	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 majority of agricultural land on the site has been classified as Subgrade 3b, moderate quality land, with soil droughtiness as the principal limitation. Medium silty clay loam topsoils are directly underlain by chalk, which restricts rooting and profile available water giving rise to a risk of moderate drought stress. Towards the east of the site, land can be classified as no better than Grades 4 and 5 due to significant slope limitations, where gradients between 12 and 18.5 degrees were recorded using an optical reading clinometer. A small area of land in the south of the site is classified as Grade 2, because of a slight workability limitation.

**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 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 km gridpoint database (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. However, climatic and soil factors interact to influence soil wetness and droughtiness limitations.

Table 2: Climatic Interpolations

Grid Reference:	TQ258073	TQ256074
Altitude (m):	55	85
Accumulated Temperature (days):	1477	1422
Average Annual Rainfall (mm):	789	805
Field Capacity (days):	166	168
Moisture Deficit, Wheat (mm):	113	109
Moisture Deficit, Potatoes (mm):	107	102
Overall Climatic Grade:	1	1

**3. Relief**

3.1 Land at this site lies between approximately 55 m AOD in the east and 85 m AOD in the west. The land rises steeply (maximum gradient 18.5°) from the east to the west. Over the site, gradient was a common limitation to land quality.

**4. Geology and Soils**

4.1 The British Geological Survey published map, Sheet 318/333, Brighton/Worthing, (1:50,000, 1984), shows the site to be underlain by Cretaceous Upper and Middle Chalk.

- 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 from the Andover 1 Association, describing them as, "shallow well drained calcareous silty soils over chalk on slopes and crests" (SSEW, 1984). Soils of this general nature were found across 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.

### 5.3 Grade 2

Land of this quality occupies a small area to the south west of the site. Soil in this area was found to consist of a very slightly chalky (c. 2% chalk fragments by volume) calcareous heavy clay loam topsoil overlying a very slightly stony (c. 5% flints by volume) non-calcareous clay subsoil, showing slight evidence of drainage impedance. Soils here are limited by workability to Grade 2 on account of the topsoil texture, which interacts with the local climatic factors to slightly restrict cultivations and grazing to drier parts of the year.

### 5.4 Subgrade 3b

Land of this quality covers the largest single area in the site, being limited by droughtiness and gradient. Towards the western boundary of the site slope gradient is not limiting in terms of agricultural land quality. In this area soils were generally found to consist of a moderately chalky (c. 15 to 25% chalk fragments) calcareous medium silty clay loam topsoil. This was found to directly overlie pure chalk. In a pit observation (1P, Appendix III), roots were seen to extend 22 cm into the chalk, at which point the chalk became harder and blocky. This shallow soil depth and shallow rooting causes a severe reduction in crop available water such that droughtiness is the principal limitation, to a degree whereby Subgrade 3b is appropriate.

Drought affected land is subject to restrictions, principally in terms of the type of crop that may successfully be grown, because at some point during, or throughout the growing season water availability will not match demand in most years. In this case, the restriction is due to shallow soil depth over chalk which restricts root penetration. Given the quality of land here, moderate yields of a narrow range of crops could be expected, principally cereals and grass.

Towards the east of the area mapped as Subgrade 3b, slope gradient becomes the overriding limitation. Slopes of between 7° and 11° were measured using an optical reading clinometer (see para 5.7).

5.5 Grade 4

Across the mid slopes of the site, slopes between 11° and 18° were measured using an optical reading clinometer. Land of this quality has severe limitations on its use for agriculture (see para 5.7).

5.6 Grade 5

Towards the east of the site, slopes became very steep (over 18°) and as such land with very severe limitations for agriculture has been mapped in this area (see para 5.7).

5.7 Slope gradient has an effect on land quality in terms of the safe and efficient use of farm machinery. The more severe a slope, the smaller the range of machinery available for safe use. Also the steeper the slope, commonly the greater the attendant risk of soil erosion, especially if unsuitable machinery is used on a weak topsoil with low bearing strength.

5.8 The area marked as Urban within the site is a metalled single track road leading to farm buildings.

ADAS Ref: 4104/238/93  
MAFF Ref: EL41/453

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

### **Sources of Reference**

- \* British Geological Survey (1984) Sheet No. 318/333, Brighton and Worthing, 1:50,000, Solid and 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 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

### 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. **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.

**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 : HOVE LP-EAST OF FOREDOWN Pit Number : 1P

Grid Reference: TQ25630731 Average Annual Rainfall : 805 mm  
Accumulated Temperature : 1442 degree days  
Field Capacity Level : 168 days  
Land Use : Permanent Grass  
Slope and Aspect : 04 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 22	MZCL	10YR53 00	0	15		
22- 44	CH	00CH00 00	0	3		

Wetness Grade : 1 Wetness Class : I  
Gleying : cm  
SPL : No SPL

Drought Grade : 3B APW : 060mm MBW : -49 mm  
APP : 060mm MBP : -42 mm

FINAL ALC GRADE : 3B  
MAIN LIMITATION : Droughtiness

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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	TQ25600738	PGR E	04		1	1	065	-44	065	-37	3B					DR 3B	IMPCH 40 1P
1P	TQ25630731	PGR E	04		1	1	060	-49	060	-42	3B					DR 3B	PIT 56 ROOTS44
2	TQ25680731	PGR E	03		1	1	121	12	114	12	2					WD 2	IMPST 100
3	TQ25640730	PGR E	03		1	1	064	-45	064	-38	3B					DR 3B	IMPCH 40 1P

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED	----STONES----			STRUCT/	SUBS	SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT		
1	0-25	mzc1	25Y 52 00					0	0	CH	20			Y
	25-47	ch	00CH00 00					0	0		0	P		Y
1P	0-22	mzc1	10YR53 00					0	0	CH	15			Y
	22-44	ch	00CH00 00					0	0	HR	3	P		Y
2	0-27	hc1	10YR43 00					0	0	CH	2			Y
	27-100	c	75YR58 00	75YR53 00	F	00MN00 00		0	0	HR	5	M		
3	0-25	mzc1	10YR53 00					0	0	CH	25			Y
	25-47	ch	00CH00 00					0	0		0	P		Y