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HOVE BOROUGH LOCAL PLAN  
SITE 2 : LAND WEST OF FOREDOWN ROAD  
AGRICULTURAL LAND CLASSIFICATION  
ALC MAP AND REPORT  
NOVEMBER 1993

**HOVE BOROUGH LOCAL PLAN  
SITE 2 : LAND WEST OF FOREDOWN ROAD  
AGRICULTURAL LAND CLASSIFICATION REPORT**

**1.0 Introduction**

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 14 hectares of land relating to Site 2, west of Foredown Road in West Hove, in East Sussex was surveyed during November 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 9 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 had been recently ploughed.

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 supercedes 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	0.5	3.7	3.8
3b	12.8	94.1	<u>96.2</u>
Non Agricultural	0.2	1.5	100 (13.3 ha)
Urban	<u>0.1</u>	<u>0.7</u>	
Total area of site	13.6	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 underlain by chalk, which restricts crop rooting, and thereby gives rise to a moderate risk of drought stress. In the north of the site, land can be classified as no better than Subgrade 3b due to a significant slope limitation. Gradients of 7.5 degrees were recorded with optical reading clinometers. A small area of land in the south of the site is classified as Grade 2, because of a slight workability limitation.

## 2.0 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 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 :	TQ 256 070	TQ 253 076
Altitude (m) :	75	90
Accumulated Temperature (days) :	1454	1437
Average Annual Rainfall (mm) :	789	814
Field Capacity (days) :	165	170
Moisture Deficit, Wheat (mm) :	111	107
Moisture Deficit, Potatoes (mm) :	105	100
Overall Climatic Grade :	1	1

## 3.0 Relief

3.1 The survey area occupies a hillside location. Along the eastern boundary of the site, the land lies at approximately 90m, and falls to 75m along the western edge. In the northern part of the site gradients of 7.5 degrees were recorded with an optical reading clinometer. Consequently, this land cannot be classified higher than Subgrade 3b. In the remainder of the site, gradient does not impose any restriction on land quality, although land falls moderately from north-east to south-west.

## 4.0 Geology and Soil

4.1 British Geological Survey Sheet (1984), 318/333, Brighton and Worthing shows the entire site to be underlain by Upper and Middle Chalk.

4.2 The soil type for the site, as shown by the Soil Survey map of South East England (SSEW, 1983, 1:250,000) comprises the Andover 1 Association. These soils are described as 'shallow, well drained calcareous silty soils over chalk on slopes and crests, with deep calcareous and non-calcareous fine silty soils in valley bottoms' (SSEW, 1983).

## **5.0 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.

### **Grade 2**

5.3 A small area in the south of the site has been assessed as Grade 2, very good quality agricultural land. It is limited by a slight workability limitation. Heavy silty clay loams overlie freely draining clay subsoils. The interaction between these heavy topsoil textures and the local climatic regime restricts the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock. Consequently, these soils can be classified as no higher than Grade 2, on the basis of workability restrictions.

### **Subgrade 3b**

5.4 Across the northern part of the site, slopes of 7.5 degrees were measured with an optical reading clinometer. This land can be graded no better than Subgrade 3b due to a significant gradient limitation. This restricts the range of mechanised machinery that can be safely used, since most conventional agricultural machinery performs best on level ground. In turn, this limits the range of crops which may be grown.

5.5 The remaining area of land classed as Subgrade 3b, moderate quality agricultural land, has been downgraded due to a significant droughtiness risk. Across the site, medium silty clay loam topsoils are underlain by chalk from approximately 25cm. In the soil inspection pit it could be seen that the chalk became harder and more compact at approximately 65cm. Consequently, even though roots were only observed to 50cm it was felt likely that they would be able to extract water to a depth of 65cm. The effect of this restricted rooting is to reduce the available water for crops in the profile, which reduces the range of crops which can be grown. This gives rise to a moderate risk of drought stress for those crops which are grown.

## 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 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

### REFERENCES

\* British Geological Survey (1984), Sheet No.318/333, Brighton and Worthing, 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 Sets 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 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
  - \* 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-WEST OF FOREDOWN Pit Number : 1P

Grid Reference: TQ25570722 Average Annual Rainfall : 814 mm  
Accumulated Temperature : 1437 degree days  
Field Capacity Level : 170 days  
Land Use : Bare Soil  
Slope and Aspect : 05 degrees SW

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 24	MZCL	10YR53 00	0	20		
24- 50	CH	10YR81 00	0	0		

Wetness Grade : 1 Wetness Class : I  
Gleying : 000 cm  
SPL : No SPL

Drought Grade : 3B APW : 67 mm MBW : -40 mm  
APP : 67 mm MBP : -33 mm

FINAL ALC GRADE : 3B  
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	GRDNT	GLEYS	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
					SPL	CLASS	GRADE	AP	MB	AP	MB	DRT					
1P	TQ25570722	PL0 SW	05	000	1	1	67	-40	67	-33	38				DR	38	ROOTS OBSVD 50
1Q	TQ25570722	PL0 SW	05	000	1	1	78	-29	82	-18	38				DR	38	PIT DUG TO 66
5	TQ25400750	PL0 SW	06	000	1	1	71	-36	73	-27	38				DR	38	IMP CHALK 40
6	TQ25400740	PL0 SW	06	000	1	1	74	-33	77	-23	38				DR	38	IMP CHALK 70
7	TQ25500740	PL0 E	01	000	1	1	80	-27	84	-16	38				DR	38	IMP CHALK 30
8	TQ25500730	PL0 SW	05	000	1	1	74	-33	77	-23	38				DR	38	IMP CHALK 50
9	TQ25600730	PL0 E	01	000	1	1	80	-27	84	-16	38				DR	38	IMP CHALK 35
10	TQ25600720	PL0		000	1	2	81	-26	85	-15	38				DR	38	IMP CHALK 55
11	TQ25600710	PL0		000	1	1	105	-2	101	1	3A				DR	3A	IMP CHALK 65
12	TQ25700700	PL0		000	1	1	80	-27	84	-16	38				DR	38	IMP CHALK 45
13	TQ25700690	PL0		000	1	2	118	11	118	18	2				WK	2	IMPEN 90 CM

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR	POR	IMP	SPL
1P	0-24	mzc1	10YR53 00					0	0	CH	20						
	24-50	ch	10YR81 00					0	0		0						M
1Q	0-24	mzc1	10YR53 00					0	0	CH	20						
	24-65	ch	10YR81 00					0	0		0						M
5	0-18	mzc1	25Y 53 00					0	0	CH	5						
	18-58	ch	10YR81 00	10YR66 00	F			0	0		0						M
6	0-20	mzc1	25Y 53 00					0	0	CH	8						
	20-60	ch	10YR81 00					0	0		0						M
7	0-24	mzc1	25Y 53 00					0	0	CH	8						
	24-64	ch	10YR81 00	10YR66 00	F			0	0		0						M
8	0-20	mzc1	25Y 53 00					0	0	CH	5						
	20-60	ch	10YR81 00	10YR56 00	F			0	0		0						M
9	0-25	mzc1	25Y 53 00					0	0	CH	15						
	25-65	ch	10YR81 00	75YR46 00	F			0	0		0						M
10	0-25	hzc1	10YR52 00					0	0	CH	10						
	25-65	ch	10YR71 00					0	0		0						M
11	0-20	mzc1	10YR53 00					0	0		0						
	20-40	hzc1	10YR54 00					0	0	CH	10						M
	40-85	ch	10YR71 00					0	0		0						M
12	0-25	mzc1	10YR52 00					0	0	CH	15						
	25-65	ch	10YR71 00					0	0		0						M
13	0-30	hzc1	10YR54 00					0	0	HR	5						
	30-60	c	10YR58 00	75YR68 00	C			0	0		0						M
	60-90	c	75YR56 00	00M00 00	C			0	0	HR	2						M