

**A1  
Canterbury District Local Plan  
WHT 7 Land at Knolebrook Farm (east)  
Agricultural Land Classification  
ALC Map and Report  
March 1995**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## CANTERBURY DISTRICT LOCAL PLAN WHT 7 LAND AT KNOLEBROOK FARM (EAST)

### 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 Canterbury district of Kent. The work forms part of MAFF's statutory input to the Canterbury District Local Plan.
- 1.2 The site comprises 1.5 hectares of land to the south of Chestfield near Whitstable in Kent. This site was the subject of a previous survey in 1986 (ADAS Reference 2002/003/86). This survey was carried out to assess agricultural land quality and classified the land as Grade 4. This survey was however carried out prior to the revision of MAFF's guidelines and criteria for grading the quality of agricultural land (MAFF 1988) which came into effect on 1 January 1989. Consequently this site was re-evaluated during March 1995. Applying the revised ALC guidelines which have more refined droughtiness and wetness criteria compared with the original guidelines the entire site is now classified as Subgrade 3b.
- 1.3 The 1995 survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed. A total of 2 borings were described in accordance with the revised guidelines. 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. Data from the pit observation on the adjacent site WHT 19 Land at Knolebrook Farm (west) Ref 2002/81/95 has assisted the classification of this site.
- 1.4 The work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.5 At the time of the survey the land cover comprised unmanaged grass with hawthorn and bramble scrub in places.
- 1.6 The distribution of grades and subgrades is shown on the attached ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading.
- 1.7 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 8 All of the land at this site (1 5 ha) has been classified as Subgrade 3b (moderate quality) The principal limitation to land quality is soil wetness Heavy clay loam topsoils overlie slowly permeable clay at shallow depths in the profile causing drainage to be significantly impeded restricting land utilisation

## 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 factors do interact with soil factors to influence soil wetness and droughtiness limitations The soil moisture deficits are relatively high and the field capacity days relatively low in a national context at this locality These climatic factors respectively increase the likelihood of soil droughtiness limitations and decrease that of soil wetness restrictions

**Table 1 Climatic Interpolation**

Grid Reference	TR 137 652
Altitude (m)	15
Accumulated Temperature (degree days Jan June)	1477
Average Annual Rainfall (mm)	584
Field Capacity (days)	119
Moisture Deficit Wheat (mm)	127
Moisture Deficit Potatoes (mm)	125
Overall Climatic Grade	1

2 4 Climatic reports from the Meteorological Office (Met Office 1971) suggest this area to be rather exposed However at the time of survey exposure was not felt to have significant impact on the site No other local climatic factors such as frost risk are believed to affect the site

## 3 Relief

3 1 The site occupies flat land at approximately 15 m AOD

## 4 Geology and Soil

4 1 The published geological sheet (BGS 1974) shows the entire site to be underlain by London Clay

- 4 2 The most recent published soils information (SSEW 1983) shows the site to comprise soils of the Windsor Association. These soils are described as slowly permeable seasonally waterlogged clayey soils mostly with brown subsoils. Some fine loamy over clayey and fine silty over clayey soils and locally on slopes clayey soils with only slight seasonal waterlogging. The soils for this area are also similarly described in the Soils of Kent (SSEW 1980)
- 4 3 Detailed field examination found heavy textured soils which are imperfectly drained

## **5 Agricultural Land Classification**

- 5 1 The site surveyed 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 3b**

- 5 3 All of the agricultural land surveyed has been classified as Subgrade 3b. This land is subject to significant soil wetness and workability limitations resulting from soils derived from the underlying London Clay. Non-calcareous heavy clay loam and clay topsoils directly overlie clay subsoils. The subsoils are slowly permeable and act to cause imperfect soil drainage conditions as indicated by gleying from the surface. However, this soil wetness limitation is partially offset by the very dry local climate such that Wetness Class III is appropriate. Such profiles are represented by Pit 1 on the adjoining site WHT 19 (ADAS Reference 2002/081/95). The interaction between the heavy topsoil textures and impeded soil drainage with the nationally dry prevailing climate acts to significantly restrict the flexibility of cropping, stocking and cultivations.

ADAS Ref 2002/080/95  
MAFF Ref EL 20/642

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## **SOURCES OF REFERENCE**

British Geological Survey (1974) Sheet No 273 Faversham 1 50 000 Series (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 (1971) Unpublished Climate Data

Meteorological Office (1989) Climatological Data for Agricultural Land Classification

Soil Survey of England and Wales (1980) Bulletin No 9 Soils of Kent and accompanying maps at 1 250 000

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 <b>or</b> 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 <b>or</b> 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 <b>or</b> 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 GLEY 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 CANTERBURY LP WHT 7 Pit Number 1P

Grid Reference TR13596523 Average Annual Rainfall 584 mm  
 Accumulated Temperature 1477 degree days  
 Field Capacity Level 119 days  
 Land Use Permanent Grass  
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 24	HCL	25Y 42 41	0	0		C				
24- 60	C	25Y 53 51	0	2	HR	M	WKCAB	FM	P	

Wetness Grade 3B Wetness Class III  
 Gleying 0 cm  
 SPL 24 cm

Drought Grade APW mm MBW 0 mm  
 APP mm MBP 0 mm

FINAL ALC GRADE 3B  
 MAIN LIMITATION Wetness

SAMPLE NO	GRID REF	ASPECT USE	GRDNT	--WETNESS--			-WHEAT-		-POTS-		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
				SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD					
1	TR13716525	RGR		0	30	3	3B		0		0				WE	3B	
1P	TR13596523	PGR		0	24	3	3B		0		0				WE	3B	PIT 60 AUG 100
2	TR13656516	RGR		0	30	3	3B		0		0				WE	3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED		----STONES----			STRUCT/ CONSIST	SUBS				CALC	
				COL	ABUN	CONT	COL	GLE	>2	6	LITH		TOT	STR	POR	IMP		SPL
1	0-30	c	25Y 41 00	10YR46	00	C		Y	0	0	0							
	30-70	c	25Y 53 51	10YR58	68	M		Y	0	0	0		P				Y	
1P	0-24	hc1	25Y 42 41	10YR46	58	C		Y	0	0	0							
	24-60	c	25Y 53 51	10YR58	00	M	25Y 52 00	Y	0	0	HR	2	WKCAB	FM	P	Y		Y
2	0-30	hc1	25Y 41 00	10YR46	00	C		Y	0	0	0							
	30-70	c	25Y 53 51	10YR58	00	M		Y	0	0	0		P				Y	

PIT FROM WHT 19  
ADJACENT 2002/81/95