A1

Test Valley Local Plan
Site 58 Thorn Hill Flexford, Hampshire
(Revised January 1997)

Agricultural Land Classification
ALC Map and Report

January 1997

Resource Planning Team
Eastern Region
FRCA Reading

RPT Job Number 1512/110/93
FRCA Reference EL 6105
LURET Job Number

AGRICULTURAL LAND CLASSIFICATION REPORT

TEST VALLEY LOCAL PLAN
SITE 58 THORN HILL FLEXFORD HAMPSHIRE
(REVISED JANUARY 1997)

INTRODUCTION

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey on 4 4 hectares of land at Flexford near Chandler s Ford south Hampshire The grading of this site has been re evaluated since the original fieldwork in June 1993 to take into account new information on land quality along the western site boundary

2 The survey was commissioned in 1993 by the Ministry of Agriculture Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading in connection with the Test Valley Local Plan However the results were re evaluated when, as part of the Local Plan Review land to the immediate west of Site 58 was surveyed in 1997 (RPT Job Number 1512/198/96) As a result of this recent work the 1993 data was reviewed and a new map and report produced in 1997 this supersedes the 1993 ALC information for this land

3 Prior to 1 April 1997 the work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS After this date the work was completed by the same team as part of the Farming and Rural Conservation Agency (FRCA) Reading The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF 1988) A description of the ALC grades and subgrades is given in Appendix I

4 At the time of both the 1993 and 1997 surveys the land was in permanent grassland

SUMMARY

5 The findings of the 1997 re evaluation of the site are shown on the enclosed 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 This map supersedes the 1993 ALC map

6 The revised area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	/ surveyed area
2	1 5	31 4
3a	1 1	25 0
3b	1 8	40 9
Total surveyed area	4 4	100 0

7 The fieldwork for the 1993 survey was conducted at an average density of one boring per hectare A total of 6 borings and one soil pit were described this information has been supplemented by two additional borings carried out in January 1997

8 The majority of land at this site has been classified as best and most versatile Grade 2 (very good quality) and Subgrade 3a (good quality) Subgrade 3b (moderate quality) land occurs in the east of the site

9 The Grade 2 land is subject to a slight soil droughtiness limitation, arising from an interaction between the deep slightly stony loamy soils and the prevailing climate Land mapped as Subgrade 3a is limited by soil wetness Here loamy soils overlie clay subsoils at moderate depth within the soil profile The clay acts to impede soil drainage resulting in some restrictions to the flexibility of cropping stocking and cultivations Land classified as Subgrade 3b contains a moderate percentage of larger flints (over 2 cm in diameter) in the top 25 cm The ensuing topsoil stone content limitation acts to impede cultivation, harvesting seed germination and lower the amount of water available for uptake by crops

FACTORS INFLUENCING ALC GRADE

Climate

10 Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics

11 The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met Office 1989)

12 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

13 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR) as a measure of overall wetness and accumulated temperature (ATO January to June) as a measure of the relative warmth of a locality

Table 2 Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SU 420 218
Altitude	m AOD	37
Accumulated Temperature	day°C (Jan June)	1511
Average Annual Rainfall	mm	819
Field Capacity Days	days	175
Moisture Deficit, Wheat	mm	107
Moisture Deficit, Potatoes	mm	101
Overall climatic grade	N/A	Grade 1

14 The combination of rainfall and accumulated temperature at this site mean that there is no overall climatic limitation However climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations At this locality the climate is relatively wet in regional terms As a result the likelihood of soil wetness problems may be increased No local climatic factors such as exposure or frost risk, are believed to adversely affect the land quality on the site This site is climatically Grade 1

Site

15 The land at this site lies at approximately 35 m AOD The site is overall relatively flat but slopes increase at the edge towards the railway cutting Nowhere on the site do gradient or microrelief adversely affect agricultural land quality

Geology and soils

16 The published geology map (BGS 1987) shows the entire site to be underlain by the Wittering Formation (part of the Bracklesham Group) Undifferentiated and fourth river terrace deposits are shown in the north and south east of the site respectively

17 The reconnaissance published soil map for this area (SSEW 1983) shows the entire site to comprise soils of the Wickham 3 Association These soils are described as Slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey soils and similar more permeable soils with slight waterlogging Some deep coarse loamy soils affected by groundwater (SSEW 1983)

Agricultural Land Classification

18 The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1 page 2

19 The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II page 8 Details from the original ALC survey carried out in 1993 are attached in Appendix III

Grade 2

20 Land classified as Grade 2 (very good quality) is found in the centre of the site This land is limited by minor soil droughtiness Profiles typically comprise medium sandy loam or medium clay loam topsoils over heavy clay loam upper subsoils These pass into a gleyed but permeable clay from 55 to 85 cm depth Topsoils are slightly stony containing 0 5% flints larger than 2 cm and 5 10% total flints by volume Upper subsoils have a similar stone content Beyond 55 to 85 cm depth there is an abrupt change to a gleyed stoneless loamy medium sand horizon to depth The interaction between these soil characteristics and the local climate acts to impart slight soil droughtiness Consequently this land may have slightly lowered and less consistent crop yields

Subgrade 3a

21 The land classified as Subgrade 3a (good quality) is limited by soil wetness and workability Topsoils comprise medium clay loams These overlie similarly textured or heavy clay loam upper subsoils which are permeable and moderately structured At approximately 50 to 60 cm these pass into plastic clay lower subsoils which are poorly structured and slowly permeable Given the relatively wet local climate these profiles are assessed as being imperfectly drained (Wetness Class III) as indicated by gleying from the surface The interaction between these soil drainage characteristics and the medium topsoils with the relatively wet local climate means that this land will have some restrictions on the flexibility of cropping stocking and cultivations

Subgrade 3b

22 Land classified as Subgrade 3b (moderate quality) is subject to a significant topsoil stone content limitation This area is approximate with that shown to be underlain by the fourth river terrace gravel deposits Here the top 25 cm depth contains more than 15% of stones larger than 2 cm by volume The main effects of stones are to act as an impediment to cultivation and harvesting by increasing production costs by causing extra wear and tear to implements and tyres Crop quality may also be reduced in a stony soil due to possible bruising during harvest Hard stones also have the effect of decreasing the available water capacity of a soil by reducing the volume water in the soil matrix This may cause an inadequate water supply for crop growth either throughout or at some point during the growing season Land of this quality should be capable of producing moderate yields of grass and certain arable crops principally cereals

Resource Planning Team
Eastern Region
FRCA Reading

SOURCES OF REFERENCE

British Geological Survey (1987) *Sheet No 315 Southampton 1 50 000 (solid and drift edition)* BGS London

Ministry of Agriculture Fisheries and Food (1988) *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land* MAFF London

Met Office (1989) *Climatological Data for Agricultural Land Classification*
Met Office Bracknell
Soil Survey of England and Wales (1983) *Sheet 6 Soils of South East England 1 250 000 and accompanying map* SSEW Harpenden.

APPENDIX I

DESCRIPTIONS 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 (e g 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

APPENDIX II

SOIL DATA

Contents

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

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	**FLW**	Fallow
PGR	Permanent pasture	**LEY**	Ley grass	**RGR**	Rough grazing
SCR	Scrub	**CFW**	Coniferous woodland	**OTH**	Other
DCW	Deciduous woodland	**BOG**	Bog or marsh	**SAS**	Set Aside
HTH	Heathland	**HRT**	Horticultural crops	**PLO**	Ploughed

3 **GRDNT** Gradient as estimated or measured by a hand held optical clinometer

4 **GLEY/SPL** 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

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

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

OC	Overall Climate	**AE**	Aspect	**ST**	Topsoil Stoniness
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**	Erosion Risk	**WD**	Soil Wetness/Droughtiness
EX	Exposure				

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
ZL	Silt 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 the following 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 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

HR	all hard rocks and stones	**FSST**	soft fine grained sandstone
ZR	soft, argillaceous or silty rocks	**CH**	chalk
MSST	soft medium grained sandstone	**GS**	gravel with porous (soft) stones
SI	soft weathered igneous/metamorphic rock	**GH**	gravel with non porous (hard) stones

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		
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

AMPLE NO	GRID REF	ASPECT USE		GRDNT	GLEY	SPL	-WETNESS- CLASS	GRADE	-WHEAT AP	MB	POTS- AP	MB	M REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
7	SU41882186	PGR	E	01	058		3	3A		0		0					WE	3A	S1 gleyed 35
8	SU41862180	PGR					1	1	096	11	104	3	3A				DR	3A	Imp 65 tony

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES- COL	ABUN	CONT	PED COL	GLEY	STONES- 2	6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
7	0-35	mcl	10YR42 00						0	0	HR	5							
	35-58	c	75YR58 00	75YR56 00	C			S	0	0	HR	2		M					Sl gleyed
	58-80	c	10YR54 00	05YR58 00	C			S	0	0		0		P			Y		Sl gleyed
8	0 32	mcl	10YR34 00						0	0	HR	5							
	32 55	mcl	10YR44 00						0	0	HR	2		M					
	55-65	mcl	10YR44 00						0	0	HR	20		M					Imp 65 stony

APPENDIX III

ALC MAP AND A1 REPORT FROM THE 1993 SURVEY

A1

Test Valley Borough Local Plan
Site 058 Thornhill Flexford Hampshire
Agricultural Land Classification
ALC Map and Report
August 1993

TEST VALLEY BOROUGH LOCAL PLAN
SITE 058 THORNHILL FLEXFORD HAMPSHIRE

AGRICULTURAL LAND CLASSIFICATION REPORT

1 SUMMARY

1 1 In June 1993 a detailed Agricultural Land Classification (ALC) survey was made on approximately 4 hectares of land at Flexford near Chandlers Ford 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 for development in the Test Valley 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 6 borings and 1 soil pit was examined

1 5 The table below provides details of the grades found across the site The majority of the land is classified as of very good quality (grade 2) The key limitation is droughtiness

Table 1 Distribution of Grades and Sub grades

Grade	Area (ha)	% of Site
2	2 62	59 3
3b	1 80	40 7
Total area of site	4 42	100

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 on the site was under grass and being grazed by horses

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 A detailed assessment of the prevailing climate was made by interpolation from a 5 km 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 Interpolation

Grid Reference	SU 420218
Altitude (m)	37
Accumulated Temperature (days)	1511
Average Annual Rainfall (mm)	819
Field Capacity (days)	175
Moisture Deficit Wheat (mm)	107
Moisture Deficit Potatoes (mm)	101
Overall climatic Grade	1

3 Relief

3 1 The land at this site lies at approximately 35 m AOD The site is overall relatively flat but slopes increase at the edge towards the railway cutting

4 Geology and Soil

4 1 The relevant published geological sheet for the area (B G S Sheet 315 Southampton 1987) shows the underlying geology to be a combination of Palaeocene Period Wittering formation deposits laminated clays and sands from the Bracklesham group and Quaternery period River Terrace deposits numbered as 4 from a total of 11 rising from Southampton Water These deposits are mainly gravel with a considerable sand content

4 2 According to the Soils of South East England (SSEW Sheet 6 1983) the main soil types occurring on the site are from the Wickham 3 Association describing them as slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey soils and similar more permeable soils with slight waterlogging Some deep coarse loamy soils are affected by groundwater Most of the above descriptions were found within the survey area

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 is shown on the attached sample point map

5 3 Grade 2

The area classified as very good quality covers the majority of the site and approximately covers the area mapped as Wittering formation on the published geological sheet The soils here are limited by droughtiness and typically comprise a slightly stony (up to 10% stones by volume) sandy or medium clay loam topsoil over a very slightly stony (c 2% flints by volume) heavy clay loam passing to a similar horizon though slightly stonier (c 8% stones by volume) This overlies a gleyed though not slowly permeable very slightly stony (c 5% stones by volume) clay from 55 to 85 cm Beyond this depth there is an abrupt change to a gleyed stoneless loamy medium sand horizon to depth Soils limited by droughtiness are restricted due to a reduction in available water during all or part of the growing season causing slight stress to crops However land of this quality should still be capable of producing high yields of most crops

5 4 Subgrade 3b

The area classified as moderate quality covers less than half of the site and approximately conforms to the area mapped as Fourth River Terrace gravel deposits on the published geological sheet The land here is limited by topsoil stoniness having over 15% stones greater than 2 cm diameter within the topsoil horizon and totalling up to 23% stones by volume in a medium clay loam matrix

The main effect of stones are to act as an impediment to cultivation and harvesting by increasing production costs by causing extra wear and tear to implements and tyres Crop quality may also be reduced in a stony soil due to possible distortion or bruising during harvest Hard stones found here also have the effect of decreasing the available water capacity of a soil by reducing the volume water in the soil matrix this possibly causes an inadequate water supply for crop growth either throughout or at some point during the growing season Land of this quality should be capable of producing moderate yields of grass and certain arable crops principally cereals

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

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

SOURCES OF REFERENCE

* British Geological Survey (1987) Sheet No 315 Southampton 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 250000

* Soil Survey of England and Wales (1984) Soils and their use in South East England Bulletin No 15

APPENDIX IV

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents

SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE

Soil pit and ger boring information collected during ALC fieldwork is held on database This h s commonly sed otations and bbre iation s set out below

Boring Header Information

1 GRID REF ation l grid square and 8 f gure grid reference

2 USE Land use at the time of survey The following bbre iations are used.

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

3 GRDNT Gradient as measured by a hand-h ld optical lnometer

4 GLEY/SPL Depth n cm to gleying or slowly permeable layers

5 AP (WHEAT/POTS) Crop- dj sted ilable water capacity

6 MB (WHEAT/POTS) Moisture Balance

7 DRT Best grade ccording to soil droughtin

8 If any of th f llowing f ctors are considered s gnificant an entry of Y will be entered n the rele ant column

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

9 LIMIT Th main limitation to land qu lity Th f llowing bbre iation are sed

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 Wetn ss WK Work b lity
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 th following bbreviations

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 ilt loam classes the predominant ize of sand fraction will be indicated by the use of prefixes

F Fine (more than 66% of th sa d less than 0 2mm)
M Medium (less than 66% fine sand and less than 33% coarse sand)
C Coarse (more than 33% of th sand larger than 0 6mm)

The clay loam and silty lay loam lasse will be sub-di ided ccording to th lay content

M Medium (< 27% lay) H Heavy (27 35% clay)

2 MOTTLE COL Mottle colour

3 MOTTLE ABUN Mottle bundance expressed as a percentage of the matrix or surf ce described

F f w <2% C common 2 20% M many 20-40 VM ery many 40%+

4 MOTTLE CONT Mottle contrast

F faint ndistinct mottles e ident only on lose nspection D distinct mottles are readily seen
P promment mottlng s conspcuous and on of the outstandng features of the horizon

5 PED. COL Ped f ce colour

6 STONE LITH On of the f llowng s used

HR ll hard rocks and stones MSST soft medium or coarse grained sandston
SI soft weathered gneous or metamorphc SLST soft oolitic or dolmitic lmestone
FSST soft fin grained sandston ZR soft argillaceou or lty rocks CH ch lk
GH gra el with non porous (hard) stones GS gra el with porous (soft) stones

Stone contents (>2cm >6cm d total) are g en n percentages (by volume)

7 STRUCT the degree of de elopment size and sh pe of soil peds are described usng the followng notation

degree of de elopment WK weakly de eloped MD moderately de loped ST strongly de eloped

ped size F fin M medium C coarse VC ery coarse

ped sh pe S sngle grain M mass e GR gran lar AB angular blocky SAB sub-angular blocky PR prismatic
PL platy

8 CONSIST So l consistence s described ng th f llowng otation

L loose VF ery friable FR friabl FM firm VM ery firm EM extremely firm EH xtremely hard

9 SUBS STR Subsoil structural condition recorded for the purpose of calculating profile droughtn ss

G good M moderate P poor

10 POR Soil porosity If soil horizon h less than 0 5% biopores >0 5 mm a Y will ppear n this column

11 IMP If the profile s mpenetrable Y will ppear n this column t th ppropiate horizon

12 SPL Slowly permeable layer If the soil horizon s slowly permeable Y will ppear n this column

13 CALC If the soil horizon s calcareous Y will ppear n this column

14 Other otations

APW lable water capacity (n mm) adjusted for wheat
APP lable w ter capa ity (n mm) dj sted for potatoe
MBW moisture balance wheat
MBP moisture balance potatoes

SOIL PIT DESCRIPTION

Site Name 058 FLEXFORD TEST VAL LP Pit Number 1P

Grid Reference SU41972190

Ave ge Annual Rai f 11	819 mm
Accumulated Temperature	1511 degree days
Fi 1d Capacity Lev 1	175 d ys
Land Use	Permane t G ass
Slope and Aspect	03 degrees N

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	MOTTLES	STRUCTURE
0 20	SCL	10YR32 00	5	10		
20 32	HCL	10YR44 00	0	2		WDCSAB
32 55	HCL	10YR44 00	0	8		MDCSAB
55- 85	C	10YR53 00	0	5	M	MDCSAB
85-120	LMS	10YR53 00	0	0	M	

Wetness Grade 1

Wetness Class	I
Gleying	055 cm
SPL	No SPL

Drought G de 2

APW	121mm	MBW	14 mm
APP	107mm	MBP	6 mm

FINAL ALC GRADE 2

MAIN LIMITATION Droughtiness

SAMPLE NO	GRID REF	ASPECT USE		GRDNT	GLEY	SPL	WETNESS CLASS	GRADE	WHEAT AP	WHEAT MB	POTS- AP	POTS- MB	M REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	ALC LIMIT		COMMENTS
1	SU41902190	PGR	N	01			1	1	127	20	103	2	2				DR	2	SANDY
1P	SU41972190	PGR	N	03	055		1	1	121	14	107	6	2				DR	2	PIT 65 AUG120
2	SU42002190	PGR	N	02	055		1	1	111	4	110	9	3A				DR	2	IMPST 90 1P
3	SU41902180	PGR					1	1	97	10	105	4	3A				DR	3A	IMPST 65 1P
4	SU42002180	PGR					1	1		0		0					ST	3B	IMPST 25
5	SU42102180	PGR					1	1		0		0					ST	3A	IMPST 30
6	SU42032185	PGR					1	1		0		0					ST	3B	IMPST 25

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL	PED GLEY	STONES-- 2	STONES-- 6	STONES-- LITH	STONES-- TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
1	0 28	msl	10YR32 00						0	0	HR	10						
	28 65	msl	10YR44 00						0	0	HR	5		M				
	65 90	msl	75YR56 00						0	0	HR	10		M				
	90 120	ms	75YR68 00						0	0		0		M				
1P	0 20	scl	10YR32 00						5	0	HR	10						
	20 32	hcl	10YR44 00						0	0	HR	2	WDCSAB	FR M				
	32 55	hcl	10YR44 00						0	0	HR	8	MDCSAB	FR M				
	55-85	c	10YR53 00	75YR56 00	M		75YR53 00	Y	0	0	HR	5	MDCSAB	FR M		Y		
	85-120	lms	10YR53 00	75YR56 00	M			Y	0	0		0		M				
2	0 22	scl	10YR32 00						0	0	HR	5						
	22 30	scl	10YR44 00						0	0	HR	2		M				
	30 55	hcl	75YR56 00						0	0		0		M				
	55-90	c	10YR53 00	75YR56 00	C			Y	0	0	HR	5		M				
3	0-25	mcl	10YR43 00						0	0	HR	2						
	25-65	mcl	10YR56 00						0	0	HR	5		M				
4	0 25	mcl	10YR32 00						17	0	HR	23						
5	0 26	mcl	10YR31 00						12	0	HR	22						
	26 30	mcl	10YR53 00						0	0	HR	30		M				
6	0 25	mcl	10YR32 00						16	0	HR	20						