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Yate
Agricultural Land Classification
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YATE
AGRICULTURAL LAND CLASSIFICATION SURVEY

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YATE

AGRICULTURAL LAND CLASSIFICATION SURVEY

INTRODUCTION

1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of 547.1 ha of land North of Yate. Field survey was based on 202 auger borings and 8 soil profile pits and was completed in March 1997. During the survey 3 samples were analysed for particle size distribution (PSD)

2 The survey was conducted by the Resource Planning Team of FRCA Western Region (formerly ADAS Taunton Statutory Group) on behalf of MAFF in its statutory role in the preparation of South Gloucestershire Plan

3 Information on climate, geology and soils and from previous ALC surveys was considered and is presented in the relevant section. Apart from the published regional ALC map (MAFF 1977) which shows the site at a reconnaissance scale as Grade 3 except for Grade 4 in the central area, only the eastern part of the site had been previously surveyed in 1984 at a scale of 1:25 000 (ADAS 1984). However, the current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988) and supersedes any previous ALC survey. Grade descriptions are summarised in Appendix I

4 At the time of survey land cover was primarily grazing with a few areas in arable production. Other land which was not surveyed included a large new residential development in the south east, other residential areas, playing fields and old mine workings

SUMMARY

5 The distribution of ALC grades is shown on the accompanying 1:20 000 scale ALC map. The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas. Areas are summarised in the Table 1

Table 1 Distribution of ALC grades Yate

Grade	Area (ha)	% Surveyed Area (390.7 ha)
2	25.2	7
3a	91.3	23
3b	24.2	6
4	250.0	64
Other land	156.4	
Total site area	547.1	

6 The majority of the area surveyed is mapped as Grade 4 poorly drained soils with severe wetness limitations. In the west better drained soils were found which have been mapped as Subgrades 3a and 3b. Some soils are also slightly lighter in texture and hence their workability is improved in the same area. Also mapped is a small amount of Grade 2 which are well drained but stony soils with a minor workability limitation.

CLIMATE

7 Estimates of climatic variables for this site were derived from the published agricultural climate dataset 'Climatological Data for Agricultural Land Classification' (Meteorological Office 1989) using standard interpolation procedures. Data for key points around the site are given in Table 2 below.

8 Since the ALC grade of land is determined by the most limiting factor present, overall climate is considered first because it can have an overriding influence by restricting land to a lower grade despite more favourable site and soil conditions. Parameters used for assessing overall climate are accumulated temperature, a measure of relative warmth and average annual rainfall, a measure of overall wetness. The results shown in Table 2 indicate that there is no overall climatic limitation.

9 Climatic variables also affect ALC grade through interactions with soil conditions. The most important interactive variables are Field Capacity Days (FCD) which are used in assessing soil wetness and potential Moisture Deficits calculated for wheat and potatoes which are compared with the moisture available in each profile in assessing soil droughtiness limitations. These are described in later sections.

Table 2 Climatic Interpolations Yate

Grid Reference	ST 718 838	ST 687 838
Altitude (m)	95	69
Accumulated Temperature (day °C)	1433	1463
Average Annual Rainfall (mm)	803	780
Overall Climatic Grade	1	1
Field Capacity Days	180	175
Moisture deficit (mm) Wheat	93	98
Potatoes	82	88

RELIEF

10 Altitude ranges from 69 metres in the west to 107 metres at Home Farm in the east with mainly gently undulating or flat land except in the east where the land rises.

GEOLOGY AND SOILS

11 The underlying geology of the site is shown on the published geology map (IGS 1970) The western part of the site is underlain by sandstones of Carboniferous Upper Coal Measures separated from the Lower and Middle Coal Measures by a north south band of sandstone and conglomerate In the east Triassic Keuper Marl and Carboniferous Sandstone and limestone are found with drift deposits of Alluvium The soils found in the recent survey were related to the underlying geology although in terms of grading the greatest variability is in the west where the geology is least complex

12 Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1 250 000 (SSEW 1983) More detailed soils information is also available in the 1 63 360 scale survey of Malmesbury and Bath area (SSEW 1974)

13 The western part of the site is mapped as Swindon Bank Series (now Neath) with Stanley series along the streams Neath is well drained loamy soils but Stanley is loamy over clayey soils which are gleyed From Engine Common eastwards beyond the railway Dale Series is mapped these are poorly drained clays Further east Whimple Worcester and Spetchly all poorly drained clays developed over Keuper Marl are found On the edge of the site near Badgers Halt Dean Series is found which is a better drained soil over Carboniferous rocks A similar pattern is shown on the regional soils map

14 The soils found in the recent survey were mainly typical of the mapped series The area mapped as Swindon Bank had more poorly drained soils than expected although they were better than soils elsewhere on the site The soils were more typical of the Nercwys or Cherubeer series than Swindon Bank

AGRICULTURAL LAND CLASSIFICATION

15 The distribution of ALC grades found by the current survey is shown on the accompanying 1 20 000 scale map and areas are summarised in Table 1 The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas

Grade 2

16 Areas mapped as very good quality land Grade 2 have minor workability limitations Medium clay loam topsoils lie over heavier subsoils which are stony However the soils are not limited worse than Grade 2 by droughtiness The soils are well drained and are assessed as Wetness Class I (See Appendix II) A soil profile pit was dug within the area mapped as Grade 2 to confirm the stone content of the subsoil

Subgrade 3a

17 Most of the good quality land is mapped in the west with two isolated blocks of Subgrade 3a in the east. At Tanhouse Farm heavy clay loam topsoils were found over heavy clay loam and clay subsoils which were stony. These soils are well drained Wetness Class I. They are limited to Subgrade 3a by a moderate workability limitation imposed by the topsoil texture. Similar soils were found at Yate Rocks where a soil profile pit was dug to confirm the grading.

18 Stony soils were also found in the west at Iron Acton. Here medium sandy loam topsoils exist over sandy clay loam subsoils which are very stony. Here the soils have a moderate droughtiness limitation but are well drained.

19 The remaining areas of Subgrade 3a in the west experience moderate wetness limitations and moderate workability limitations. The soils are quite variable but the final grade in this area is generally Subgrade 3a. There were occasional poorer quality borings found but at the scale of mapping these have been included in this unit. The soils with moderate workability limitations had heavy clay loam topsoils sometimes with stony subsoils. These soils were well drained Wetness Class I. Most of the soils in the area had a moderate wetness limitation however the soils were varied including medium clay loam topsoils in Wetness Class II and III profiles and heavy clay loam topsoils in Wetness Class II profiles. In all cases the final grade is the same Subgrade 3a. The depth to the slowly permeable layers varied and hence the variable Wetness Classes. The better drained soils were found around Sunnyside Farm. A soil profile pit was dug in these soils.

Subgrade 3b

20 Two areas of moderate quality land are mapped in the west. Here medium clay loams over slowly permeable clays were found. These soils were poorly drained and assessed as Wetness Class IV. A soil profile pit was dug and the topsoil texture confirmed by PSD analysis.

Grade 4

21 The majority of the site has been mapped as poor quality land with severe wetness limitations. Here clays and some heavy clay loams lie over slowly permeable subsoils. In the east the soils are red in colour developed in Keuper Marl. These soils did not always exhibit the characteristics of gleying but the presence of the slowly permeable layer in the subsoil was confirmed in a soil profile pit. Towards the west the soils became less red and further profile pits confirmed the presence of slowly permeable layers. The soils were assessed as Wetness Class IV.

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FRCA Bristol
May 1997

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APPENDIX I

DESCRIPTION OF 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 include 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, cultivation or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in 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. Where 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 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 most 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

Source MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and Criteria for Grading the Quality of Agricultural Land MAFF Publications Alnwick

APPENDIX II

DEFINITION OF SOIL WETNESS CLASSES

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile

Wetness Class I

The soil profile is not wet within 70 cm depth for more than 30 days in most years

Wetness Class II

The soil profile is wet within 70 cm depth for 31 90 days in most years or if there is no slowly permeable layer within 80 cm depth it is wet within 70 cm for more than 90 days but not wet within 40 cm depth for more than 30 days in most years

Wetness Class III

The soil profile is wet within 70 cm depth for 91 180 days in most years or if there is no slowly permeable layer 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 and 90 days in most years

Wetness Class IV

The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years or if there is no slowly permeable layer within 80 cm depth it is wet within 40 cm depth for 91 210 days in most years

Wetness Class V

The soil profile is wet within 40 cm depth for 211 335 days in most years

Wetness Class VI

The soil profile is wet within 40 cm depth for more than 335 days in most years

Notes The number of days specified is not necessarily a continuous period

In most years is defined as more than 10 out of 20 years

Source Hodgson J M (In preparation) Soil Survey Field Handbook Revised Edition

APPENDIX III

ABBREVIATIONS AND TERMS USED IN SURVEY DATA

Soil pit and auger boring information collected during ALC survey is held on a computer database and is reproduced in this report. Terms used and abbreviations are set out below. These conform to definitions contained in the Soil Survey Field Handbook (Hodgson 1974)

1 Terms used on computer database in order of occurrence

GRID REF National 100 km grid square and 8 figure grid reference

LAND USE At the time of survey

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

GRDNT Gradient as estimated or measured by hand held optical clinometer

GLEYSPL Depth in centimetres to gleying or slowly permeable layer

AP (WHEAT/POTS) Crop adjusted available water capacity

MB (WHEAT/POTS) Moisture Balance (Crop adjusted AP - crop potential MD)

DRT Best grade according to soil droughtiness

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				

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	Erosion Risk	WD	Soil Wetness/Droughtiness
ST	Topsoil Stoniness				

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)

MOTTLE COL Mottle colour using Munsell notation

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%+

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

PED COL Ped face colour using Munsell notation

GLEYS If the soil horizon is gleyed a **Y** will appear in this column If slightly gleyed an **S** will appear

STONE LITH Stone Lithology One of the following is used

HR	All hard rocks and stones	SLST	Soft oolitic or dolimitic limestone
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CH	Chalk	FSST	Soft fine grained sandstone
ZR	Soft argillaceous or silty rocks	GH	Gravel with non porous (hard) stones
MSST	Soft medium grained sandstone	GS	Gravel with porous (soft) stones
SI	Soft weathered igneous or metamorphic rock		

Stone contents are given in % by volume for sizes >2cm >6cm and total stone >2mm

STRUCT The degree of development size and shape of soil peds are described using the following notation

<u>Degree of development</u>	WK	Weakly developed	MD	Moderately developed
	ST	Strongly developed		
<u>Ped size</u>	F	Fine	M	Medium
	C	Coarse	VC	Very coarse
<u>Ped Shape</u>	S	Single grain	M	Massive
	GR	Granular	AB	Angular blocky
	SAB	Sub angular blocky	PR	Prismatic
	PL	Platy		

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		

SUBS STR Subsoil structural condition recorded for the purpose of calculating profile droughtiness **G** Good **M** Moderate **P** Poor

POR Soil porosity If a soil horizon has poor porosity with less than 0.5% biopores >0.5mm a **Y** will appear in this column

IMP If the profile is impenetrable to rooting a **Y** will appear in this column at the appropriate horizon

SPL Slowly permeable layer If the soil horizon is slowly permeable a **Y** will appear in this column

CALC If the soil horizon is calcareous with naturally occurring calcium carbonate exceeding 1% a **Y** will appear this column

2 Additional terms and abbreviations used mainly in soil pit descriptions

STONE ASSESSMENT

VIS Visual **S** Sieve **D** Displacement

MOTTLE SIZE

EF	Extremely fine <1mm	M	Medium 5 15mm
VF	Very fine 1 2mm>	C	Coarse >15mm
F	Fine 2 5mm		

MOTTLE COLOUR May be described by Munsell notation or as ochreous (OM) or grey (GM)

ROOT CHANNELS In topsoil the presence of rusty root channels should also be noted

MANGANESE CONCRETIONS Assessed by volume

N	None	M	Many	20 40%
F	Few <2%	VM	Very Many	>40%
C	Common 2 20%			

STRUCTURE Ped Development *

WA	Weakly adherent	M	Moderately developed
W	Weakly developed	S	Strongly developed

POROSITY

P	Poor	less than 0 5% biopores at least 0 5mm in diameter
G	Good	more than 0 5% biopores at least 0 5mm in diameter

ROOT ABUNDANCE

The number of roots per 100cm ²		Very Fine and Fine	Medium and Coarse
F	Few	1 10	1 or 2
C	Common	10 25	2 5
M	Many	25 200	>5
A	Abundant	>200	

ROOT SIZE

VF	Very fine	<1mm	M	Medium	2 5mm
F	Fine	1 2mm	C	Coarse	>5mm

HORIZON BOUNDARY DISTINCTNESS

Sharp	<0 5cm	Gradual	6 13cm
Abrupt	0 5 2 5cm	Diffuse	>13cm
Clear	2 5 6cm		

HORIZON BOUNDARY FORM Smooth wavy irregular or broken *

* See Soil Survey Field Handbook (Hodgson 1974) for details

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall 803 mm		PARENT MATERIAL			
Yate		Pit 1 (ASP 52)	1 West		Oil Seed Rape		ATO 1433 day C		Marl			
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		FC Days 180		PSD SAMPLES TAKEN			
6/97		11/2/97	ST 7085 4975		PRW/GMS		Climatic Grade 1		None			
							Exposure Grade 1					

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	24	C	5YR34		None	None	N/A	N/A	Moderate	Moderate	CVF		Clear smooth
2	58	C	2 5YR44 (10R43)	1% MSST	Few 5YR46	Few Fine	Weak Coarse Angular Blocky	Firm	Poor	<0 5% biopores	FVF mainly ex ped		Gradual smooth
3	84	C	2 5YR34	1% MSST	Few 5YR46	Common	Weak Coarse Subangular Blocky	Firm	Moderate	< 0 5% biopores	FVF mainly ex ped		Clear smooth
4	100+	C with lenses of SC	2 5YR34 and 5YR43	5% MSST + HR	None	Few	MCAB	Firm	Moderate	< 0 5%	VFVF		

Profile Gleyed From Not gleyed
Depth to Slowly Permeable Horizon 24 cm
Wetness Class IV
Wetness Grade 4

Available Water Wheat 128 mm
Potatoes 104 mm
Moisture Deficit Wheat 93 mm
Potatoes 82 mm
Moisture Balance Wheat 35 mm
Potatoes 22 mm
Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 4
Main Limiting Factor(s) Wetness
Remarks

SITE NAME		PROFILE NO	SLOPE AND ASPECT	LAND USE	Av Rainfall	803 mm	PARENT MATERIAL					
Yate		Pit 2	0	OSR	ATO	1433 day C	Marl/Lower Middle Coal Measures					
JOB NO		DATE	GRID REFERENCE	DESCRIBED BY	FC Days	180	PSD SAMPLES TAKEN					
6/97		11/2/97	ST 7060 4960	PRW/GMS	Climatic Grade	1	None					
					Exposure Grade	1						

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Motting Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	26	HCL	10YR42	1% HR (VIS)	None	None					CVF		
2	36	C	10YR43	3% HR (VIS)	CDFO 10YR56	None	MCPPr	Firm	Poor	Low	FVF		
3	43	C	10YR66 and 10R48	3% HR (VIS)	None	None	MCPPr	Firm	Poor	Low	FVF		
4	75+	C	2 5YR71 and 10R46	None (VIS)	CDFO 10YR56	None	MVCPPr	Firm	Poor	Low	FVF		

Profile Gleyed From	43 cm	Available Water	Wheat	126 mm	Final ALC Grade	4
Depth to Slowly Permeable Horizon	26 cm		Potatoes	103 mm	Main Limiting Factor(s)	Wetness
Wetness Class	IV	Moisture Deficit	Wheat	93 mm		
Wetness Grade	4		Potatoes	82 mm		
		Moisture Balance	Wheat	33 mm		
			Potatoes	21 mm		
		Droughtiness Grade	1	(Calculated to 120 cm)	Remarks	

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall 803 mm		PARENT MATERIAL			
Yate		Pit 3 (ASP 254)	0		Ploughed		ATO 1433 day C		Upper Coal Measures Sandstone			
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		FC Days 180		PSD SAMPLES TAKEN			
6/97		5/3/97	ST 6850 4850		PRW/GMS		Climatic Grade 1		MSL S 55 Z 29 C 16			
							Exposure Grade 1					

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	30	MSL	5YR32	1% 2cm HR (S)	None	None					CVF		Clear smooth
2	70	SCL	25YR46	50% 2 m 15% < 2cm 65% TOT HR d	None	None	Not visible due to stone content probably WKFSAB	Friable	Good	M	CF+VF		

Profile Gleyed From Not gleyed
Depth to Slowly Permeable Horizon No SPL
Wetness Class I
Wetness Grade 1

Available Water Wheat 76 mm
Potatoes 80 mm
Moisture Deficit Wheat 93 mm
Potatoes 82 mm
Moisture Balance Wheat 19 mm
Potatoes 2 mm
Droughtiness Grade 3a (Calculated to 70 cm)

Final ALC Grade 3a
Main Limiting Factor(s) Droughtiness

Remarks

SITE NAME		PROFILE NO	SLOPE AND ASPECT	LAND USE	Av Rainfall	803 mm	PARENT MATERIAL				
Yate		Pit 4 (ASP 219)	0	PGR	ATO	1433 day C	Lower and Middle Coal Measures				
JOB NO		DATE	GRID REFERENCE	DESCRIBED BY	FC Days	180	PSD SAMPLES TAKEN				
6/97		5/3/97	ST 7015 4885	PRW/GMS	Climatic Grade	1	None				
					Exposure Grade	1					

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	30	HZCL	10YR42	None	None	None					MVFF		Clear smooth
2	65	C	10YR72	None	MDMO 10YR68	None	MVCPr	Firm	Poor	Poor	CVF		

Profile Gleyed From 30 cm
Depth to Slowly Permeable Horizon 30 cm
Wetness Class IV
Wetness Grade 4

Available Water Wheat 132 mm
Potatoes 109 mm
Moisture Deficit Wheat 93 mm
Potatoes 82 mm
Moisture Balance Wheat 39 mm
Potatoes 27 mm
Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 4
Main Limiting Factor(s) Wetness

Remarks

SITE NAME		PROFILE NO	SLOPE AND ASPECT	LAND USE	Av Rainfall	803 mm	PARENT MATERIAL					
Yate		Pit 5 (ASP 135)	0	PGR	ATO	1433 day C	Upper Coal Measures Sandstone					
JOB NO		DATE	GRID REFERENCE	DESCRIBED BY	FC Days	180	PSD SAMPLES TAKEN					
6/97		5/3/97	ST 6930 4925	PRW/GMS	Climatic Grade	1	None					
					Exposure Grade	1						

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	30	HZCL	10YR32	None	None	None					MF VF		Clear wavy
2	43	HCL	10YR42	None	CDFO 10YR58	None	MMSAB	Friable	Good	Good	MVF		Abrupt wavy
3	55	HCL	10YR62	None	CDFO 10YR58	None	MCSAB with some p smat c tendency	Friable	Mod	Some but overall poor	CVF		
4	80+	SCL lenses of sandier material	10YR72	20% HR (VIS)	CDFO 7 5YR46	None	MCSAB	Friable	Mod	Good	FVF		

Profile Gleyed From 30 cm
Depth to Slowly Permeable Horizon No SPL
Wetness Class II
Wetness Grade 3a

Available Water Wheat 153 mm
Potatoes 122 mm
Moisture Deficit Wheat 93 mm
Potatoes 82 mm
Moisture Balance Wheat 60 mm
Potatoes 40 mm
Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 3a borderline 3b
Main Limiting Factor(s) Wetness

Remarks Subsoils have near 50% sand
H2 not evident in all of pit
Also assessed by Wetness Definitions
WC II seems OK possibly WC III

SITE NAME		PROFILE NO	SLOPE AND ASPECT	LAND USE	Av Rainfall	803 mm	PARENT MATERIAL				
Yate		Pit 6 (ASP 160)	0	PGR	ATO	1433 day C	Upper Coal Measures Sandstone				
JOB NO		DATE	GRID REFERENCE	DESCRIBED BY	FC Days	180	PSD SAMPLES TAKEN				
6/97		5/3/97	ST 6915 4905	PRW/GMS	Climatic Grade	1	MCL S 44 Z 33 C 23				
					Exposure Grade	1					

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	35	MCL	7 5YR42	1% HR (VIS)	None	None					MF VF		Gradual smooth
2	75	C	10YR62 53	1% HR (VIS) 10% below 60 cm	MDFO 5YR58 10YR58	None	WCSAB with some patches of MCSAB	Friable	Moderate	Poor	FVF		

Profile Gleyed From 35 cm
Depth to Slowly Permeable Horizon 35 cm
Wetness Class IV
Wetness Grade 3b

Available Water Wheat 142 mm
Potatoes 118 mm
Moisture Deficit Wheat 93 mm
Potatoes 82 mm
Moisture Balance Wheat 49 mm
Potatoes 36 mm
Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 3b
Main Limiting Factor(s) Wetness
Remarks Water table at 60 cm

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall 803 mm		PARENT MATERIAL			
Yate		Pit 7 (ASP 258)	0		PGR		ATO 1433 day C		Upper Coal Measures Sandstone			
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		FC Days 180		PSD SAMPLES TAKEN			
6/97		5/3/97	ST 6905 4855		PRW/GMS		Climatic Grade 1		MCL S 47 Z 31 C 22			
							Exposure Grade 1					

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	32	MCL	7 5YR43	1% HR (VIS)	None	None					MF VF		Clear wavy
2	65+	HCL	5YR44	3% HR > 2cm 10% H > 2mm 45% HR Total (VIS based on Pit 3)	None	None	MMSAB	Friable	Good	Good	CVF		

Profile Gleyed From Not gleyed

Depth to Slowly Permeable Horizon No SPL

Wetness Class I

Wetness Grade 2

Available Water Wheat 118 mm

Potatoes 103 mm

Moisture Deficit Wheat 93 mm

Potatoes 82 mm

Moisture Balance Wheat 25 mm

Potatoes 21 mm

Droughtiness Grade 2 (Calculated to at least 100 cm)

Final ALC Grade 2

Main Limiting Factor(s) Workability

Remarks

SITE NAME		PROFILE NO	SLOPE AND ASPECT	LAND USE	Av Rainfall	803 mm	PARENT MATERIAL					
Yate		Pit 8 ASP 59)	0	PGR	ATO	1433 day C	Alluvium					
JOB NO		DATE	GRID REFERENCE	DESCRIBED BY	FC Days	180	PSD SAMPLES TAKEN					
6/97		5/3/97	ST 7180 4980	PRW/GMS	Climatic Grade	1	None					
					Exposure Grade	1						

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	23	HCL	7 5YR42	None	None	None					MVF F		Gradual smooth
2	56	C	7 5YR43	2% HR (VIS)	None	None	MC and MSAB	Friable	Mod	Good	CVF		Abrupt smooth
3	70+	C	10YR44	40% HR (VIS)	None	None	MMSAB	Friable	Mod	Good	FVF		

Profile Gleyed From Not gleyed

Depth to Slowly Permeable Horizon No SPL

Wetness Class I

Wetness Grade 3a

Available Water Wheat 121 mm

Potatoes 107 mm

Moisture Deficit Wheat 93 mm

Potatoes 82 mm

Moisture Balance Wheat 28 mm

Potatoes 25 mm

Droughtiness Grade 2 (Calculated to 120 cm)

Final ALC Grade 3a

Main Limiting Factor(s) Workability

Remarks