

Tytherington Quarry
Agricultural Land Classification
March 1999

Resource Planning Team
FRCA Worcester
Western Region

Job Number 64/98

MAFF Ref EL 44/01605



TYTHERINGTON QUARRY
AGRICULTURAL LAND CLASSIFICATION SURVEY

CONTENTS

	Page
INTRODUCTION	1
SUMMARY	1
CLIMATE	2
RELIEF	2
GEOLOGY AND SOILS	2
AGRICULTURAL LAND CLASSIFICATION AND MAP	3
REFERENCES	5
APPENDIX I Description of the Grades and Subgrades	6
APPENDIX II Definition of Soil Wetness Classes	8
APPENDIX III Survey Data	9
	Sample Point Location Map
	Pit Descriptions
	Boring Profile Data
	Boring Horizon Data
	Abbreviations and Terms used in Survey Data

TYTHERINGTON QUARRY

AGRICULTURAL LAND CLASSIFICATION SURVEY

INTRODUCTION

- 1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 45.8 ha of land at Tytherington. Field survey was based on 44 auger borings and 5 soil profile pits and was completed in September 1998. 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 on behalf of MAFF in its statutory role in the preparation of the South Gloucestershire Minerals Local 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 wholly Grade 3, the site had not been surveyed previously. 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 largely under grass with some fields recently ploughed following a cereal crop. Other land which was not surveyed included agricultural and residential buildings, woodland and a trackway.

SUMMARY

- 6 The distribution of ALC grades is shown on the accompanying 1:10000 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 Table 1.

Table 1 **Distribution of ALC grades** **Tytherington Quarry**

Grade	Area (ha)	% Surveyed Area (44.9 ha)
3a	5.2	11.6
3b	24.0	53.4
4	15.7	35.0
Other land	0.9	
Total site area	45.8	100.0

- 7 Best and most versatile land only covers a small area in the north of the site. The soils have heavy clay loam topsoils overlying clay onto fissured limestone. The soils are slightly droughty but are limited by topsoil workability.

- 8 The remainder of the site has been described as Subgrade 3b and Grade 4 in quality. The Subgrade 3b soils have heavy clay loam topsoils which overlie shallow stony clay subsoils over limestone. The soils are limited by soil droughtiness. The Grade 4 soils occur around Dodsmoor and in a band west of Rams oak Cottage. These soils have heavy clay loam topsoils overlying gleyed clay subsoils to depth, and are limited by soil wetness.

CLIMATE

- 9 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.
- 10 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.
- 11 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 Tytherington Quarry

Grid Reference	ST 652 879
Altitude (m)	91
Accumulated Temperature (day C)	1437
Average Annual Rainfall (mm)	827
Overall Climatic Grade	1
Field Capacity Days	181
Moisture deficit (mm) Wheat	93
Potatoes	83

RELIEF

- 12 Altitude ranges from 91 metres across the east and south of the site to 96 metres just north of Rams oak Cottage in the east, with generally level land.

GEOLOGY AND SOILS

- 13 The underlying geology of the site is shown on the published geology map (IGS 1978) as largely Carboniferous limestones with Triassic clays and limestones in the central east and extreme west of the site and a very small area of Jurassic clays in the extreme west. In the recent ALC survey the site was largely underlain by limestone with clay soils identified over those areas shown as Jurassic and Triassic clays.
- 14 Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1:250 000 (SSEW 1983) as wholly the Denchworth Soil Association.
- 15 The Denchworth Soil Association is described as having slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.
- 16 In the recent survey clayey waterlogged soils were found in the west and east of the site but remaining soils were found to be clayey overlying limestone.

AGRICULTURAL LAND CLASSIFICATION

- 17 The distribution of ALC grades found by the current survey is shown on the accompanying 1:10000 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.
- 18 **Subgrade 3a**

Good quality agricultural land was identified over a small area in the north of the site. The soils were described as having heavy clay loam topsoil texture overlying a clay upper subsoil and a stony clay lower subsoil over a soft fissured limestone. A soil profile pit confirmed that the soils were only slightly droughty but that the heavy topsoil imposed a workability limitation.
- 19 **Subgrade 3b**

Land of moderate quality has been mapped over half of the site. The soils were described as having heavy clay loam topsoils which overlay stony clay loam subsoils which passed abruptly onto hard fissured limestone. Two soil profile pits confirmed that the soil had a soil droughtiness limitation due to the nature of the limestone and the restriction to root penetration.
- 20 **Grade 4**

Land of poor quality was identified north of Dodsmoor and West of Rams oak Cottage. The soils typically have heavy clay loam topsoils overlying a gleyed grey clay to depth. Two soil profile pits confirmed that the clay was slowly permeable and the soils were placed into wetness class IV (see Appendix II) and Grade 4.

21 **Other land**

Other land included agricultural and residential buildings woodland and a trackway

S HUNTER
Resource Planning Team
FRCA Worcester
March 99

REFERENCES

INSTITUTE OF GEOLOGICAL SCIENCES (1978) Sheet 250 Chepstow 1 50 000 series
Solid edition [IGS] London

HODGSON J M (Ed) (1997) Soil Survey Field Handbook Soil Survey Technical
Monograph No 5 Silsoe

MAFF (1977) 1 250 000 series Agricultural Land Classification, South West Region MAFF ✓
Publications Alnwick

MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and
Criteria for grading the quality of agricultural land MAFF Publications Alnwick

METEOROLOGICAL OFFICE (1989) Climatological Data for Agricultural Land
Classification Meteorological Office Bracknell

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 5 Soils of South West England
1 250 000 scale SSEW Harpenden

SOIL SURVEY OF ENGLAND AND WALES (1984) Soils and Their Use in South West
England Bulletin No 14 SSEW Harpenden

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 cultivations 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 (Ed) (1997) Soil Survey Field Handbook Soil Survey Technical Monograph No 5 Silsoe

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, 1997)

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
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>	WA Weakly developed Adherent	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 in 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%			

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 1997) for details

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall		827 mm		PARENT MATERIAL			
Tytherington		Pit 1 (ASP 28 21)	level		LEY		ATO		1437 day C		Lias clay			
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		FC Days		181		PSD SAMPLES TAKEN			
64/98		16/6/98	ST 64998785		S HUNTER		Climatic Grade		1		TS 0 25cm C/HCL S 24% Z 41% C 35%			
Exposure Grade														

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	C	10YR3/2 (10YR4/1)	0	COM 10YR 5/8	none	MD F+M SAB	FR		G	MF&VF		Smooth clear
2	(34) 40	C	25Y5/2	0	MOM 10YR6/8	none	MDCSAB	FR	M	G	CVF		Smooth clear
3	59	C	25Y5/2 25Y5/1 Grey Gley M	0	MOM 10YR5/8	common	MDVCPR MASSIVE	FM	P	P	FF+VF		Smooth clear
4	100	C	N4	0	10YR5/8	none	MDCAB	FM	P	P	FVF		

Profile Gleyed From 23
Slowly Permeable Horizon From 40
Wetness Class IV
Wetness Grade 4

A ailable Water Wheat 124 mm
Potatoes 101 mm
Moisture Deficit Wheat 93 mm
Potatoes 83 mm
Moisture Balance Wheat +31 mm
Potatoes +18 mm
Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 4

Main Limiting Factor(s) WE

Remarks

H2 Structure becomes prismatic towards H3

SITE NAME		PROFILE NO		SLOPE AND ASPECT		LAND USE		Av Rainfall		PARENT MATERIAL			
Tytherington Quarry		PIT2 (ASP 43)		1 SW		Permanent grassland		827 mm		Carboniferous limestone			
JOB NO		DATE		GRID REFERENCE		DESCRIBED BY		ATO		PSD SAMPLES TAKEN			
64/98		30 9 98		ST 653875		GMS/SYH		1437 day C		none			
								FC Days					
								181					
								Climatic Grade					
								1					
								Exposure Grade					
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	21	HCL	75YR3/3	1% HR (VIS)	None	None	MDFGR	FR	G		MF+VF		Smooth clear
2	30	MCL	75YR4/3 3/3	35% > 2CM 10% 2CM 45% HR (S+D)	None	None	MD F MSAB	FR	G	G	MF+VF		Smooth clear
3	43	HCL	75YR 4/3	60% > 2 CM 18% < 2CM 78% HR (S+D)	None	None	WKFGFR	FR	G	G	MF+VF		Wavy abrupt
4	Solid Limestone bedrock with some surface cracking down which some v fine roots are penetrating												

Profile Gleyed From Not gleyed

Slowly Permeable Horizon From No SPL

Wetness Class I

W t n s G d 3

Available Water Wheat 56 mm

Potatoes 56 mm

Moisture Deficit Wheat 93 mm

Potatoes 83 mm

Moisture Balance Wheat 37 mm

Potatoes 27 mm

Droughtiness Grade 3b (Calculated to 55 cm)

Final ALC Grade 3b

Main Limiting Factor(s) DR

Remarks

SITE NAME		PROFILE NO		SLOPE AND ASPECT		LAND USE		Av Rainfall		827 mm		PARENT MATERIAL	
Tytherington Quarry		PIT 3 (ASP3)		1 NW		Ploughed		ATO		1437 day C		Carboniferous limestone	
JOB NO		DATE		GRID REFERENCE		DESCRIBED BY		FC Days		181		PSD SAMPLES TAKEN	
64/98		30/9/98		ST 653882		SH/GMS		Climatic Grade		1		Topsoil 0 25cm MCL S 48% Z 30% C 22%	
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	HCL	7 5YR4/3	0	None	None	WKCSAB	FR			MF&VF		Clear smooth
2	48	C	5YR4/3	0	None	None	WKCAB breaking into WKCSAB	FR	M	G	CVF FF		Abrupt Wavy
3	65	C	5YR4/3	45% SLST (S)	None	None	WKMSAB	FR	G	G	FVF		Abrupt Wavy
4	80+	Fissured soft limestone roots penetrating the cracks where a little soil does exist									FVF		

Profile Gleyed From not gleyed

Slowly Permeable Horizon From no SPL

Wetness Class I

Wetness Grade 3a

Available Water Wheat 107 mm

Potatoes 108 mm

Moisture Deficit Wheat 93 mm

Potatoes 83 mm

Moisture Balance Wheat 14 mm

Potatoes 25 mm

Droughtiness Grade 2 (Calculated to 90 cm)

Final ALC Grade 3a

Main Limiting Factor(s) WK

Remarks

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE	Av Rainfall 827 mm		PARENT MATERIAL				
Tytherington Quarry		PIT 4	level		Ploughed	ATO 1437day C		Carboniferous limestone				
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY	FC Days 181		PSD SAMPLES TAKEN				
64/98		30/9/98	ST 652881		SYH/GMS	Climatic Grade 1		none				
						Exposure Grade						

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	20	MCL	7 5YR43	29 HR(S)	None	None	WKCSAB	FR			CF+VF		Smooth abrupt	
2	40	HCL	7 5YR54	60% HR(S)	None	None	MDCSAB	FR	M	G	CVF		Abrupt irregular	
3	45+	Fissured limestone roots in cracks with some soil										FVF		

Profile Gleyed From Not gleyed

Slowly Permeable Horizon From No SPL

Wetness Class 1

Wetness Grade 2

Available Water Wheat 51 mm

Potatoes 51 mm

Moisture Deficit Wheat 93 mm

Potatoes 83 mm

Moisture Balance Wheat 42 mm

Potatoes 32 mm

Droughtiness Grade 3b (Calculated to 60 cm)

Final ALC Grade 3b

Main Limiting Factor(s) DR

Remarks

Rock harder than Pit 3 but softer than Pit 2

SITE NAME Tytherington Quarry		PROFILE NO PIT5 (ASP 26)	SLOPE AND ASPECT 2 NW	LAND USE Permanent grassland	Av Rainfall 827 mm	ATO 1437 day C	PARENT MATERIAL Triassic Penarth beds					
JOB NO 64/98		DATE 30 9 98	GRID REFERENCE ST 655879	DESCRIBED BY GMS/SYH	FC Days 181	Climatic Grade 1	PSD SAMPLES TAKEN TS 0 25cm HCL S 30% Z 42% C 28%					

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	22	HCL	10YR4/2	0	F 10YR 4/6	None	MDC+MSAB	FR		G	FM MF+VF		Smooth clear
2	60	C	5Y5/2 (5Y5/2)	0	M F D 10YR5/6+5/8	Few	MDCPR BREAKING TO CAB	VM	P	P	CVF		Smooth clear
3	Dug to 80 cm	C	5GY4/1	0	M F D 10YR5/6	None	MDVCPR	VM	P	P	FVF		

Profile Gleyed F om 22cm

Slowly Permeable Horizon From 22cm (35)

Wetness Class IV

Wetness Grade 4

Available Water Wheat 125 mm

Potatoes 102 mm

Moisture Deficit Wheat 93 mm

Potatoes 83 mm

Moisture Balance Wheat +32 mm

Potatoes +19 mm

Droughtness Grade 1 (Calculated to 120 cm)

Final ALC Grade 4

Main Limiting Factor(s) We

Remarks

At top of H2 common worm channels but these become rare by 30cm