19/95

THE BARTON, NORTH TAWTON, DEVON AGRICULTURAL LAND CLASSIFICATION

CONTENTS

			Page
SUM	MARY		1
1.	INTROD	UCTION	2
2.	CLIMATE		2
3.	RELIEF A	AND LANDCOVER	2
4.	GEOLOG	GY AND SOILS	3
5.	AGRICU	LTURAL LAND CLASSIFICATION	3
APPE	NDIX 1	References	5
APPE	NDIX 2	Description of the grades and subgrades	6
APPE	NDIX 3	Definition of Soil Wetness Classes	8
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THE BARTON, NORTH TAWTON, DEVON

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

The survey was carried out by ADAS on behalf of MAFF as part of its statutory role in response to an ad hoc planning application for a golf course made to West Devon District Council. The fieldwork at The Barton, North Tawton was completed in March 1995 at a scale of 1:10,000. Data on climate, soils, geology and from previous Agricultural Land Classification (ALC) Surveys was used and is presented in the report. The distribution of grades is shown on the accompanying ALC map and summarised below. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: The Barton

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (80.8 ha)
2	50.9	62.9	63.0
3a	20.3	25.1	25.1
3b	3.4	4.2	4.2
4	6.2	7.7	7.7
Non Agricultural	0.1	0.1	0.0
TOTAL	80.9	100	100

The majority of the area has been mapped as best and most versatile, with most as Grade 2. These soils are well drained gritty medium sandy loams with a minor droughtiness limitation. The Subgrade 3a soils have a moderate wetness limitation, whilst the area of Grade 4 experiences severe wetness limitations. These lower lying soils are heavier in texture than the Grade 2 soils, with clay loams and clays found. Two areas have a moderate slope limitation and another has a moderate microrelief limitation. These three areas are mapped as Subgrade 3b.

1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in March 1995 at The Barton, North Tawton on behalf of MAFF as part of its statutory response to an ad hoc planning application for a golf course made to West Devon District Council. The fieldwork covering 80.9 ha of land was conducted by ADAS at a scale of 1:10,000 with approximately one boring per hectare of agricultural land. A total of 80 auger borings were examined and 3 soil profile pits used to assess subsoil conditions.

The published provisional one inch to the mile ALC map of this area (MAFF 1974) shows the grades of the site at a reconnaissance scale. The land along Spires Lake and Mill Leat is mapped as Grade 3, with the rest of the site mapped as Grade 2.

The recent survey supersedes this map having been carried out at a more detailed level and using the 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 agricultural use. The grading takes account of the top 120 cm of the soil profile. A description of the grades used in the ALC system can be found in Appendix 2.

2. CLIMATE

The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an overriding influence on restricting land to a lower grade despite other favourable conditions.

Estimates of climatic variables were interpolated from the published agricultural climate dataset (Meteorological Office 1989). The parameters used for assessing overall climate are accumulated temperature, a measure of the relative warmth of a locality, and average annual rainfall, a measure of overall wetness. The results shown in Table 1 indicate there is an overall climatic limitation which restricts part of the land to Grade 2. This limitation exists above 151 m. Below this altitude the land is climatically Grade 1.

Table 1: Climatic Interpolations: The Barton

Grid Reference		SS 652 005
Altitude (m)		136
Accumulated Temperatu	re (day °)	1448
Average Annual Rainfall	(mm)	986
Overall Climatic Grade	` '	1
Field Capacity Days		202
Moisture deficit (mm):	Wheat	90
	Potatoes	78

Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat and potatoes are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in later sections.

3. RELIEF AND LANDCOVER

The eastern part of the site is flat and the lowest part of the site at about 120 m AOD. This area does not experience flooding from Mill Leat. The area marked The Hams has irregular terrain with steep changes in slope over short distances. Spire's Lake forms a valley bottom with land rising away to the north and south. In places the slope gradient is up to 10°. The highest point is near Culm Cross at 153 m AOD.

At the time of survey all the site except The Hams was being used for arable rotation. This included cereals, fodder crops, swedes, ley and Set-aside. The Hams was in permanent pasture.

4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:63,360 scale Solid and Drift geology map, Sheet 324, Institute of Geological Sciences 1969. Permian Bow Conglomerates are mapped and these are overlain by recent deposits of alluvium and 2nd Terrace River Deposits along the Mill Leat and Spire's Lake drainage channels.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. The majority of the site is mapped as the Crediton Association. The land along the Mill Leat is mapped as the Alun Association. Crediton soils are described as well drained gritty loamy soils over breccia and may be locally less stony. Alun soils are described as deep stoneless permeable coarse loamy soils which are variably affected by groundwater. These soils may be over gravel, occur on flat land and may be at risk from flooding.

The soils found during the recent survey broadly followed the mapped associations. West of the track running north-south through the site, the soils were gritty well drained medium sandy loams. Along the valley bottom (Spire's Lake) and on the flatter land east of the track more poorly drained soils were found. These were quite variable in the degree of wetness limitation. These soils were generally clay loams, but in several areas clay subsoils were found. Both groundwater and surface water were found causing wetness in this area.

5. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades is shown in Table 2 and on the accompanying ALC map. This information could be misleading if shown at a larger scale.

Table 2: Distribution of ALC grades: The Barton

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (80.8 ha)
2	50.9	62.9	63.0
3a	20.3	25.1	25.1
3b	3.4	4.2	4.2
4	6.2	7.7	7.7
Non Agricultural	0.1	0.1	0.0
TOTAL	80.9	100	100

Grade 2

The higher western land and a small area in the east are mapped as Grade 2. These soils are well drained and are Wetness Class I (see Appendix 3). The majority of these soils are medium sandy loams. In places the sand content is slightly less and clay content slightly higher, and textures are borderline medium clay loams or sandy clay loams. These soils are stony with almost all the stones being <2 cm in size. The topsoil stone content was measured by sieving and displacement in water to be 28% and 27% at two locations. The percentage generally increases in the subsoil to an average percentage of 35%. These soils experience a minor droughtiness limitation. In places less droughty, Grade 1 soils, were found but did not form a mappable unit.

Subgrade 3a

The Subgrade 3a is found on the lower-lying land. In the south-east a small area had heavy clay loam topsoils but was well drained and Wetness Class I. These soils have a moderate workability limitation.

Three types of profiles with moderate wetness limitations were found, all Subgrade 3a.

In the eastern block profiles with heavy clay loam topsoils and groundwater gleys are Wetness Class II. Similar profiles in the western block have medium clay loam topsoils and coarse textured subsoils. Here the gleying is found in the upper subsoil. These profiles are also Wetness Class III. The third type of profile is Wetness Class III with a medium clay loam topsoil and gleying in the upper subsoil. There are occasional better and more poorly drained profiles within this unit.

Subgrade 3b

The two western blocks of this grade have a moderate slope limitation with gradients of 8° and 10°. This restricts the safe use of some machinery and thus the versatility of the land.

The eastern area in The Hams has been downgraded because of complex changes of slope angle and direction over short distances which restrict the versatility in terms of limiting the use of precision machinery.

Grade 4

This area experiences a severe wetness limitation caused by slowly permeable subsoils. The soils are Wetness Class IV and have heavy clay loam topsoils. This area is variable and there are occasional profiles which are better drained.

Other Land

There is a small area of non-agricultural land in the south-west.

Resource Planning Team Taunton Statutory Unit March 1995

APPENDIX 1

REFERENCES

INSTITUTE OF GEOLOGICAL SCIENCES (1969) Solid and Drift Edition, Sheet 324, Okehampton (1:63,360).

MAFF (1974) Agricultural Land Classification Map, Sheet 175, Provisional 1:63,360 scale.

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

METEOROLOGICAL OFFICE (1989) Climatological Data for Agricultural Land Classification.

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

APPENDIX 2

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.

Descriptions of other land categories used on ALC maps

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 park land, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

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 landcover types, eg buildings in large of grounds, and where may be shown separately. Otherwise, the most extensive cover type will usually be shown.

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

APPENDIX 3

DEFINITION OF SOIL WETNESS CLASSES

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).

SITE NA	ME		PROF	TLE NO.	SLOPE	AND AS	PECT	LA	ND USE		Av Rain	ıfall:	986 mm	ļ	PARENT MA	TERIAL	
The Barto North Ta	-]	Pit 1		3° sout	h		Cei	reals		ATO:		1448 day ^c	c	Bow Conglom	erates	
JOB NO.		1	DATI	E	GRID I	REFEREN	CE	DE	SCRIBED B	Y	FC Days	s:	202	ľ	SOIL SAMPL	E REFEREN	CES
19/95		;	8/3/95	5	SS6470	009		G N	M Shaw		Climatic		1	1	RPT/GMS475	, 476	
Horizon No.	Lowest Av. Depth (cm)	Texti	ure	Matrix (Ped Face) Colours	Stoning Size, Ty Field M	pe, and	Mottling Abundance, Contrast, Si and Colour	ize	Mangan Concs	Structure: Ped Developme Size and Shape		re Grade:	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	30	MSL		2.5YR34	27% >2 28% To	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)			None	-	Fria	able	Mod	Good	FVF		Smooth clear
2	100+	MSL	,	2.5YR36	34% >: (35% To	1% >2cm HR None 4% >2mm HR (average) 5% Total HR (S+D)			None	WCSAB	Fria	able	Good	Good	FVF		
Profile G	leyed Froi	m: N	Not gle	eyed		Availabl	e Water \	Whea	at: 121 r	nm			Final ALC	Grade:	2		
Permeable Wetness	Pepth to Slowly Permeable Horizon: No SPL Vetness Class: I Vetness Grade: 1					Moisture	Deficit V	Potat Whea Potat	at: 90 m	m			Main Limi	ting Factor(s): Droughtin	aess	
Moisture Balance								Whea Potat					Remarks:				
						Drought	iness Grade:		2 (Ca	ilculated to	120 cm)		38, 41, 239 90 cm.	% HR measu	ıred in Horizon	2 at 40 cm, 6	50 cm,

SITE NA	ME	PR	OFILE NO.	SLOPE	AND AS	PECT	LA	ND USE		Av	Rainfall:	986 mm		PARENT MA	TERIAL	
The Barto North Ta		Pit	2	3° sout	h	•	Set	-aside		АТ	°O:	1448 day ^c	c	Bow conglome	erates	
JOB NO.		DA	TE	GRID	REFEREN	ICE	DE	SCRIBED E	SY.	FC	Days:	202	ļ	SOIL SAMPL	E REFEREN	CES
19/95		9/3	/95	SS6506	009	,	GI	M Shaw			matic Grade:	1		RPT/GMS477		
Horizon No.	Lowest Av. Depth (cm) Texture Matrix (Ped Face Colours) 30 SCL 2.5YR34		(Ped Face)	Stoning Size, Ty Field N	pe, and	Mottling Abundance, Contrast, Si and Colour	ize	Mangan Concs	Structure: Ped Developm Size and Shape		Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	30	SCL	2.5YR34	27% > 28% T	2cm HR 2mm HR otal HR 5+D)	None		None	-		Friable	Mod	good	FVF		Clear smooth
2	50	MSL	2.5YR36	1	5% >2mm HR None (S+D)			None	MCSAB		Friable	Mod	Good	FVF		Clear wavy
3	120	MSL	2.5YR36		2mm HR S+D)	None		None	WCSAB		Friable	Good	Good	-		
Profile G	leyed Froi	n: Not	gleyed		Availabl	e Water \	Whea	at: 122 r	nm			Final ALC	Grade:	2		
Permeabl Wetness	Profile Gleyed From: Not gleyed Depth to Slowly Permeable Horizon: No SPL Wetness Class: I Wetness Grade: 2					e Deficit V	Potat Whea Potat	at: 90 m	m			Main Limi	ting Factor(s	s): Droughtin	ess	
Wetness	Grade:			Moisture		Whea					Remarks:					
					Drought	iness Grade:	i Ola		ilculated to	120 c	em)	Borderline within 1%		opsoil texture S	SCL/MCL, 50	% sand also

SITE NA	ME	PF	ROFILE	E NO.	SLOPE	AND AS	PECT	LA	ND USE	ļ	Av R	tainfall:	986 mm		PARENT MA	TERIAL	
The Barto North Ta		Pi	it 3		0°			Cei	real		АТО) :	1448 day °	c	2nd Terrace R	iver Deposits	
JOB NO.		D.	ATE		GRID I	REFEREN	CE	DE	SCRIBED B	Y	FC D	Days:	202	Ī	SOIL SAMPL	E REFEREN	CES
19/95		10	0/3/95		ASP65	SS6560	nn7	G	M Shaw		Clim	natic Grade:	1		RPT/GMS478		
			0/3/23		A51 05	550500			VI SILAVV		Expo	osure Grade:	1		10 1701410470		
Horizon No.	Lowest Av. Depth (cm)	Textur	re (Pe	latrix Ped Face) olours	Stoning Size,Ty Field M	pe, and	Mottling Abundance Contrast, Si and Colour		Mangan Concs	Structure: Ped Developme Size and Shape	ent	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	28	MCL	7.5	5YR42	1% H	R Visual	None		None	МСАВ]	Firm	Mod	Good	CVF		Abrupt smooth
2	40 MCL 05YR53		5YR53	5% H	R (S+D)	CDFOG 7.5YR52, 5	6	None	MCSAB]	Friable	Mod	Good	FVF		Abrupt smooth	
3	80+	HCL	05	5YR56, 66		R patches +D)	CDFO 7.5YR56		None	MCSAB		Friable	Mod	Low	None		
Profile G	leyed Fror	n; 28	cm			Availabl	e Water V	Whea	nt: 154 m	nm			Final ALC	Grade:	3a		
Depth to Permeabl	e Horizon	: No				Moisture		Potat Whea					Main Limit	ing Factor(s	s): Wetness		
Wethess	Class.	111						Potat	toes: 78 m	m							
Wetness	Grade:	3a				Maistus	Balance V	Whea									
					Moisture	e Balance v	w nea	nt: 64 m	m			Remarks:					
								Potat	toes: 38 m	m			D	11-4:	41. 00/ -4 :	112	
					Drought	iness Grade:		l (Ca	lculated to 1	120 cm	1)			th 0% stone in 1% of MSZL.	нз.		

SITE DATA

Grid Ref SS6501 Site Name The Barton, North Tawton LPA West Devon

<u>AAR</u> 986 <u>ATO</u> 1448 <u>FCD</u> 202 <u>MD (wheat)</u> 90 <u>MD (potatoes)</u> 78

SOIL PIT DATA

	PIT ONE SOIL SERIES	Crediton		PIT TWO SOIL SERIES	Crediton		PIT THREE SOIL SERIES	S Crediton	
DEPTH	TEXTURE	PLASTIC Y/N	COMMENTS	TEXTURE	PLASTIC Y/N	COMMENTS	TEXTURE	PLASTIC Y/N	COMMENTS
10 cm	MSL	Y	Very wet	MSL	Y		MCL	Y	
20 cm	MSL	Y		MSL	Y		MCL	Y	
30 cm	MSL	Y		MSL	Y		MCL	Y	
40 cm	MSL	Y		MSL	Y		MCL	Y	
50 cm	MSL	N		MSL	Y		HCL	Y	
60 cm	MSL	N		MSL	Y		HCL	Y	

SITE NA	ME	PRO	OFILE NO.	SLOPE	AND AS	PECT	LA	ND USE		Av R	ainfall:	986 mm		PARENT MA	TERIAL	-
The Barto North Tav		Pit	1	3° sout	ı		Cei	reals		АТО	•	1448 day ⁶	c c	Bow Conglom	erates	
JOB NO.	-	DA	TE	GRID I	REFEREN	CÉ	DE	SCRIBED B	Υ	FC D	ays:	202		SOIL SAMPL	E REFEREN	CES
19/95		8/3	/95	SS6470	09		Gı	M Shaw			atic Grade:	1		RPT/GMS475	, 476	
Horizon No.	Lowest Av. Depth (cm)	Texture (Ped Face) Colours F		Stoning Size, Ty Field M	pe, and	Mottling Abundance, Contrast, Si and Colour	ze	Mangan Concs	Structure: Ped Developme Size and Shape		Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	30	MSL	2.5YR34	27% >2 28% To	2cm HR 2mm HR otal HR s+D)			None	-]	Friable	Mod	Good	FVF		Smooth clear
2	100+	MSL	2.5YR36	34% >: 35% T	2cm HR 2mm HR (average) otal HR (+D)	m HR None nm HR verage) al HR		None	WCSAB		Friable	Good	Good	FVF		
Profile G	leyed Froi	n: Not	gleyed		Availabl	e Water V	Whea	at: 121 1	nm			Final ALC	Grade:	2	•	
Depth to Permeab Wetness	le Horizon Class:	:: No S I 1	SPL		Moisture	e Deficit '	Whe	toes: 83 m at: 90 m toes: 78 m	ım			Main Limi	iting Factor	(s): Droughtir	ness	
					Moisture		Whe: Pota	at: 31 m				Remarks:)		2 -4 40	· · · · ·
						iness Grade:		, 2 (Ca	alculated to	120 cm	1)	38, 41, 23° 90 cm.	% HK meas	ured in Horizon	2 at 40 cm, (ou cm,

SITE NA	ME	PR	OFILE NO.	SLOPE	AND AS	PECT	LA	ND USE		Av	Rainfall:	986 mm		PARENT MA	TERIAL	
The Barto North Tax		Pit	1	3° south	ı		Ce	reals		ATO	O:	1448 day ^c	c c	Bow Conglom	erates	
JOB NO.	······································	DA	TE -	GRID R	EFEREN	CE	DE	SCRIBED B	Y	FC:	Days:	202	Ì	SOIL SAMPL	E REFEREN	CES
19/95		8/2	/95	SS6470	00		61	M Shaw		Clir	matic Grade:	I	•	RPT/GMS475	176	
19/93		013		330470				WI Shaw		Exp	osure Grade:	1				
Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stonine Size, Ty Field M	pe, and	Mottling Abundance Contrast, S and Colour	ize	Mangan Concs	Structure: Ped Developm Size and Shape	ent	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	30	MSL	2.5YR34	27% >2 28% To	cm HR mm HR otal HR +D)	None		None	-		Friable	Mod	Good	FVF		Smooth clear
2	100+	MSL	2.5YR36	34% >2 (35% To	>2cm HR >2mm HR (average) Total HR (S+D)		-	None .	WCSAB	·	Friable	Good	Good	FVF		
Profile G	leyed Froi	n: Not	gleyed		Availabl	le Water	Whe	at: 121 r	nm			Final ALC	Grade:	2		
Permeab Wetness	Profile Gleyed From: Not gleyed Depth to Slowly Permeable Horizon: No SPL Vetness Class: I Vetness Grade: I					e Deficit	Pota Whe Pota Whe	at: 90 m	m m	•		Main Limi	ting Factor	(s): Droughtin	ness	
							Pota	itoes: 5 mm	1				% HR meas	ured in Horizon	ı 2 at 40 cm,	60 cm,
·					Drough	tiness Grade:		2 (Ca	alculated to	120 c	em)	90 cm.				

SITE NA	ME	P	PROF	ILE NO.	SLOPE	AND AS	PECT	LA	ND USE		Av Rainfal	11:	986 mm		PARENT MA	TERIAL	
The Barto North Tar		P	Pit I		3° south	1		Cer	reals		ATO:		1448 day °	С	Bow Conglom	erates	
JOB NO.	Wion		DATE]	GRID F	EFEREN	CE	DE	SCRIBED B	Y	FC Days:		202	ţ	SOIL SAMPL	E REFEREN	CES
19/95	-	8	8/3/95	;	SS6470	09		G N	M Shaw		Climatic G		1		RPT/GMS475	, 476	
Horizon No.	Lowest Av. Depth (cm)	Textu	ure	Matrix (Ped Face) Colours	Stonine Size, Ty Field M	pe, and	Mottling Abundance Contrast, Si and Colour	ize	Mangan Concs	Structure: Ped Developme Size and Shape	Exposure (Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	30	MSL	,	2.5YR34	27% >2 28% To		None		None	-	Friabl	le	Mod	Good	FVF		Smooth clear
2	100+	MSL	(S+D) MSL 2.5YR36 1% >2cm HR 34% >2mm HR (average) 35% Total HR (S+D)		None		None	WCSAB	Friabl	le	Good	Good	FVF				
Profile G	leyed Fron	m: N	lot gle	eyed	,	Availabl	e Water	Whea	at: 121 i	nm			Final ALC	Građe:	2		
Permeab Wetness	Profile Gleyed From: Not gleyed Depth to Slowly Permeable Horizon: No SPL Wetness Class: I Wetness Grade: 1					Moistur	e Deficit	Pota Whea Pota	at: 90 m	m		,	Main Limi	ting Factor(s): Droughtin	ness	
· ·						Moistur		Whea Pota	at: 31 m				Remarks:	% HR meac	ured in Horizon	2 at 40 cm	60 cm
						Drough	tiness Grade:		2 (C	alculated to	120 cm)		90 cm.	vincincas	u. • u 11011201	ω αι το citi, '	oo viii,

SITE NA	ME	P	ROFILE NO.	SLOPE	AND AS	PECT	LA	ND USE		A۱	v Rainfall:	986 mm		PARENT MA	TERIAL	
The Barto North Ta		P	it 2	3° sout	h		Set	-aside		A'	TO:	1448 day ^c	c	Bow conglome	erates	
JOB NO.		D	ATE	GRID I	REFEREN	CE	DE	SCRIBED E	BY	FC	C Days:	· 202	Ì	SOIL SAMPL	E REFEREN	CES
19/95		9/	/3/95	SS6500	009		G N	M Shaw		1	limatic Grade:	I 1		RPT/GMS477		
Horizon No.	Lowest Av. Depth (cm)	Textu	Matrix (Ped Face) Colours	Stoning Size,Ty Field N	pe, and	Mottling Abundance Contrast, Si and Colour	ize	Mangan Concs	Structure: Ped Developm Size and Shape		Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	30	277 288		27% > 28% T	2cm HR 2mm HR otal HR 5+D)	None		None .	-		Friable	Mod	good	FVF		Clear smooth
2	50	MSL	2.5YR36		2mm HR 5+D)	None		None	MCSAB		Friable	Mod	Good	FVF		Clear wavy
3	120	MSL	2.5YR36		2mm HR 5+D)	None		None	WCSAB		Friable	Good .	Good	<u> -</u>		:
Profile G	leyed From	m; No	ot gleyed		Availab	le Water	Whea	at: 122 :	mm .			Final ALC	Grade:	2		
Depth to Permeab Wetness	e Horizor Class:		o SPL		Moistur	e Deficit	Pota Whea Pota	at: 90 m	nm	,		Main Limi	ting Factor((s): Droughtir	iess	
Wettless	Graue.			Moistur		Whea					Remarks:	<u> </u>		<u> </u>	•	
						tiness Grade:	Pota		alculated to	120	cm)	Borderline within 1%		Γopsoil texture :	SCL/MCL, 50	0% sand also

SITE NAME PROFILE NO.		SLOPE AND ASPECT				ND USE		Av Rainfall:		986 mm		PARENT MATERIAL						
The Barto North Tar		Pit	2	3° south			Set	-aside		ATO:		1448 day °	с	Bow conglomerates				
JOB NO.				GRID REFERENCE			DESCRIBED BY			FC Days:		202	-	SOIL SAMPLE REFERENCES				
19/95	10/05		/95	SS6500	09		G M Shaw			Climatic Grade: Exposure Grade:		1		RPT/GMS477				
			9/3/95											KI 1/GIVIS4//				
Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size, Type, and Field Method		Mottling Abundance Contrast, Si and Colour	bundance, Ma ontrast, Size Co		Structure: Ped Developm Size and Shape	ent Cons	sistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form		
1	30	SCL	2.5YR34	27% >2 28% To	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)		None		-	Friat	ble	Mod	good	FVF	·	Clear smooth		
2	50	MSL	2.5YR36		5% >2mm HR (S+D)		None		MCSAB	Frial	ble	Mod	Good	FVF		Clear wavy		
3	120	MSL	2.5YR36	1	2mm HR +D)	None		None	WCSAB	Frial	ble	Good	Good	-	:			
Profile G	leyed Fror	n: Not	gleyed		Available Water Wheat: 122 mm							Final ALC Grade: 2						
Permeab	Depth to Slowly Permeable Horizon: No SPL						Pota Whe	toes: 88 m	,			Main Limiting Factor(s): Droughtiness						
Wetness Class: I Wetness Grade: 2							Pota	toes: 78 m	m									
·	Wetness Grade: 2						Whe					Remarks:						
		•		Drought	iness Grade:			(Calculated to 120 cm)			Borderline Grade 1. Topsoil texture SCL/MCL, 50% sand also within 1% of MSZL.							

SITE NAME PROFILE NO. The Barton Pit 2 North Tawton JOB NO. DATE 19/95 9/3/95		OFILE NO.	SLOPE AND ASPECT				ND USE		Av Rainfall:		986 mm		PARENT MATERIAL					
		Pit			3° south GRID REFERENCE			t-aside		ATO:		1448 day ^o	c	Bow conglomerates				
		DA						DESCRIBED BY			C Days:	202		SOIL SAMPL	E REFEREN	CES		
		9/3	3/95	SS650009		GM		M Shaw		Climatic Grade: Exposure Grade:		1		RPT/GMS477				
Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Size,Ty	oniness: ze,Type, and eld Method Mottling Abundance, Contrast, Siz and Colour		ize	Mangan Concs	Structure: Ped Development Size and Shape			Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form		
l	30	SCL	2.5YR34	27% >2 28% To	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)		None		-		Friable	Mod	good	FVF		Clear smooth		
2	50	MSL	2.5YR36		5% >2mm HR No. (S+D)		None		MCSAB		Friable	Mod -	Good	FVF		Clear wavy		
3	120	MSL	2.5YR36		2mm HR +D)	None		None	WCSAB		Friable	Good	Good	-				
Profile G	leyed Fron	n: Not	gleyed		Available Water Wheat: 122 mm							Final ALC Grade: 2						
	e Horizon	ı: No	SPL _.		Potatoes: 88 mm Moisture Deficit Wheat: 90 mm							Main Limiting Factor(s): Droughtiness						
Wetness	Class:	I					Pota	itoes: 78 m	m									
Wetness	Grade:			Moisture Balance Wheat: 32 mm														
							Pota	ntoes: 10 m	m			Remarks:						
					Potatoes: 10 mm Droughtiness Grade: 2 (Calculated to 120 c						cm)	Borderline within 1%		le 1. Topsoil texture SCL/MCL, 50% sand also SZL.				

SITE NAME PR		PROF	PROFILE NO.		SLOPE AND ASPECT			ND USE		Av	Rainfall:	986 mm		PARENT MATERIAL			
The Barton North Tawton		Pit 3	Pit 3		0.			Cereal			го:	1448 day °	c	2nd Terrace River Deposits			
		DAT	E	GRID I	EFERENCE		DE	DESCRIBED BY			Days:	202	Ī	SOIL SAMPLE REFERENCES			
19/95	19/95		95	ASP65 SS656007		007	G M Shaw		į		imatic Grade:	1		RPT/GMS478			
Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stonine Size, Ty Field M	pe, and Abundance,		ize	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	28	MCL	7.5YR42	1% H	IR Visual None			None	МСАВ		Firm	Mod	Good	CVF		Abrupt smooth	
2	40	MCL	05YR53	5% H	R (S+D)	CDFOG 7.5YR52, 5	CDFOG 7.5YR52, 56		MCSAB		Friable	Mod	Good	FVF		Abrupt smooth	
3	80+	HCL	05YR56, 66		R patches +D)			None	MCSAB		Friable	Mod	Low	None			
Profile G	leyed Fror	n: 28 cm			Available Water Wheat; 154 mm							Final ALC Grade: 3a					
Permeabl	Depth to Slowly Permeable Horizon: None				Potatoes: 116 mm Moisture Deficit Wheat: 90 mm							Main Limiting Factor(s): Wetness					
Wetness	Class:	III	. `			•	Pota	itoes: 78 m	m								
Wetness	Grade:	3a				. D-1	X 71	-4: (4 ::-									
						e Balance	Whe	at: 64 m	m			Remarks:					
	Potatoes: 38 mm																
					Drough	iness Grade:		1 (Ca	alculated to	120	cm)	Drought calculation with 0% stone in H3. Topsoil texture within 1% of MSZL.					

SITE NAME PROFILE NO		TILE NO.	SLOPE AND ASPECT			LAND USE				ainfall:	986 mm		PARENT MATERIAL					
The Barton Pit North Tawton		Pit 3	Pit 3 0°		,			real	·	АТО):	1448 day °	c	2nd Terrace River Deposits				
JOB NO. DATE		E	GRID REFERENCE			DESCRIBED BY			FC Days:		202	Ī	SOIL SAMPLE REFERENCES					
19/95	19/95		10/3/95		ASP65 SS656007		G M Shaw			Climatic Grade:		1		RPT/GMS478				
Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours		Mottling Abundance, Contrast, Siz and Colour		ize	Mangan Concs	Structure: Ped Developm Size and Shape		osure Grade: Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form		
1	28	MCL	7.5YR42	1% H	R Visual	sual None		None	МСАВ		Firm	Mod	Good	CVF		Abrupt smooth		
2	40	MCL	05YR53	5% H	5% HR (S+D) Cl 7.		None 56		MCSAB		Friable	Mod	Good	FVF		Abrupt smooth		
3	80+	HCL	05YR56, 66		R patches CDFO +D) 7.5YR56		<u>.</u>	None	MCSAB		Friable	Mod	Low	None				
Profile G Depth to	leyed Fron	m: 28 cm			Available Water Wheat: 154 mm							Final ALC Grade: 3a						
	le Horizon	: None			Potatoes: 116 mm Moisture Deficit Wheat: 90 mm							Main Limiting Factor(s): Wetness						
	Wetness Grade: 3a					Potatoes: 78 mm Moisture Balance Wheat: 64 mm												
								itoes: 38 m				Remarks:						
					Drough	iness Grade:		1 (C	alculated to	120 сп	n)	Drought calculation with 0% stone in H3. Topsoil texture within 1% of MSZL.						

SITE NAME PROFILE NO.		SLOPE AND ASPECT				ND USE		Av	Rainfall:	986 mm	·	PARENT MATERIAL						
The Barton Pit 3 North Tawton			0.			Cereal				O:	1448 day °	c	2nd Terrace River Deposits					
JOB NO. DATE		E	GRID REFERENCE			DESCRIBED BY			FC:	Days:	202		SOIL SAMPL	E REFEREN	CES			
19/95	19/95		95	ASP65	SS656007		G M Shaw		-	Climatic Grade:		1		RPT/GMS478				
Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Size, Ty	oniness: ze, Type, and eld Method Mottling Abundance, Contrast, Siz and Colour		ize Concs		Structure: Ped Developm Size and Shape	l l		Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form		
1	28	MCL	7.5YR42	1% H	R Visual	None	None		мсав		Firm	Mod	Good	CVF		Abrupt smooth		
2	40	MCL	05YR53	5% H	R (S+D)	CDFOG 7.5YR52, 5	6	None	MCSAB		Friable	Mod	Good	FVF		Abrupt smooth		
3	80+	HCL	05YR56, 66		R patches +D)	CDFO 7.5YR56	None		MCSAB		Friable	Mod	Low	None	_			
Profile G	leyed Froi	n: 28 cm			Availabl	le Water	Whea	at: 154 i	nm		Final ALC Grade: 3a							
Depth to Permeab	Slowly le Horizon	: None			Moistur		Pota				Main Limiting Factor(s): Wetness							
	Wetness Class: III			·		Wheat: 90 mm Potatoes: 78 mm												
Wetness	Grade:	3a			Mojetur	e Balance	iI/har	nt: 64 m	, m									
			:		ivioistur		Wheat: 64 mm					Remarks:						
					. •		Pota	toes: 38 m	ım	٠		Drought calculation with 0% stone in H3.						
					Droughtiness Grade: 1 (Calculated to					120 c	m)	Topsoil texture within 1% of MSZL.						