19/95

THE BARTON, NORTH TAWTON, DEVON

AGRICULTURAL LAND CLASSIFICATION

CONTENTS

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 Temperature (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 II. 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 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 NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton, North Tawton	Pit 1	3° south	Cereals	Av Rainfall: 986 mm ATO: 1448 day °C FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	Bow Conglomerates
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
19/95	8/3/95	SS647009	G M Shaw		RPT/GMS475, 476

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	2.5YR34	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)	None	None	-	Friable	Mod	Good	FVF		Smooth clear
2	100+	MSL	2.5YR36	1% >2cm HR 34% >2mm HR (average) 35% Total HR (S+D)	None	None	WCSAB	Friable	Good	Good	FVF		

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 1

Available Water Wheat: 121 mm

Potatoes: 83 mm

Moisture Deficit Wheat: 90 mm

Potatoes: 78 mm

Moisture Balance Wheat: 31 mm

Potatoes: 5 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Droughtiness

Remarks:

38, 41, 23% HR measured in Horizon 2 at 40 cm, 60 cm, 90 cm.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton North Tawton	Pit 2	3° south	Set-aside	Av Rainfall: 986 mm ATO: 1448 day °C FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	Bow conglomerates
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
19/95	9/3/95	SS650009	G M Shaw		RPT/GMS477

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	SCL	2.5YR34	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)	None	None	-	Friable	Mod	good	FVF		Clear smooth
2	50	MSL	2.5YR36	5% >2mm HR (S+D)	None	None	MCSAB	Friable	Mod	Good	FVF		Clear wavy
3	120	MSL	2.5YR36	41% >2mm HR (S+D)	None	None	WCSAB	Friable	Good	Good	-		

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 2

Available Water	Wheat:	122 mm
	Potatoes:	88 mm
Moisture Deficit	Wheat:	90 mm
	Potatoes:	78 mm
Moisture Balance	Wheat:	32 mm
	Potatoes:	10 mm
Droughtiness Grade:		2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Droughtiness

Remarks:

Borderline Grade 1. Topsoil texture SCL/MCL, 50% sand also within 1% of MSZL.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton North Tawton	Pit 3	0°	Cereal	Av Rainfall: 986 mm ATO: 1448 day °C FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	2nd Terrace River Deposits
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
19/95	10/3/95	ASP65 SS656007	G M Shaw		RPT/GMS478

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	28	MCL	7.5YR42	1% HR Visual	None	None	MCAB	Firm	Mod	Good	CVF		Abrupt smooth
2	40	MCL	05YR53	5% HR (S+D)	CDFOG 7.5YR52, 56	None	MCSAB	Friable	Mod	Good	FVF		Abrupt smooth
3	80+	HCL	05YR56, 66	14% HR patches (S+D)	CDFO 7.5YR56	None	MCSAB	Friable	Mod	Low	None		

Profile Gleyed From: 28 cm

Depth to Slowly Permeable Horizon: None

Wetness Class: III

Wetness Grade: 3a

Available Water Wheat: 154 mm

Potatoes: 116 mm

Moisture Deficit Wheat: 90 mm

Potatoes: 78 mm

Moisture Balance Wheat: 64 mm

Potatoes: 38 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3a

Main Limiting Factor(s): Wetness

Remarks:

Drought calculation with 0% stone in H3.
Topsoil texture within 1% of MSZL.

SOIL PLASTICITY RECORDING SHEET

ANNEX 2

SITE DATA

Grid Ref	SS6501		Site Name	The Barton, North Tawton		LPA	West Devon		
AAR	986	ATO	1448	FCD	202	MD (wheat)	90	MD (potatoes)	78

SOIL PIT DATA

	PIT ONE SOIL SERIES Crediton			PIT TWO SOIL SERIES Crediton			PIT THREE SOIL SERIES 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 NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton, North Tawton	Pit 1	3° south	Cereals	Av Rainfall: 986 mm ATO: 1448 day °C	Bow Conglomerates
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	SOIL SAMPLE REFERENCES
19/95	8/3/95	SS647009	G M Shaw		RPT/GMS475, 476

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	2.5YR34	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)	None	None	-	Friable	Mod	Good	FVF		Smooth clear
2	100+	MSL	2.5YR36	1% >2cm HR 34% >2mm HR (average) 35% Total HR (S+D)	None	None	WCSAB	Friable	Good	Good	FVF		

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 1

Available Water	Wheat:	121 mm
	Potatoes:	83 mm
Moisture Deficit	Wheat:	90 mm
	Potatoes:	78 mm
Moisture Balance	Wheat:	31 mm
	Potatoes:	5 mm
Droughtiness Grade:		2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Droughtiness

Remarks:

38, 41, 23% HR measured in Horizon 2 at 40 cm, 60 cm, 90 cm.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton, North Tawton	Pit 1	3° south	Cereals	Av Rainfall: 986 mm ATO: 1448 day °C FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	Bow Conglomerates
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
19/95	8/3/95	SS647009	G M Shaw		RPT/GMS475, 476

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	2.5YR34	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)	None	None	-	Friable	Mod	Good	FVF		Smooth clear
2	100+	MSL	2.5YR36	1% >2cm HR 34% >2mm HR (average) 35% Total HR (S+D)	None	None	WCSAB	Friable	Good	Good	FVF		

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 1

Available Water	Wheat:	121 mm
	Potatoes:	83 mm
Moisture Deficit	Wheat:	90 mm
	Potatoes:	78 mm
Moisture Balance	Wheat:	31 mm
	Potatoes:	5 mm
Droughtiness Grade:		2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Droughtiness

Remarks:

38, 41, 23% HR measured in Horizon 2 at 40 cm, 60 cm, 90 cm.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton, North Tawton	Pit 1	3° south	Cereals	Av Rainfall: 986 mm ATO: 1448 day °C FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	Bow Conglomerates
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
19/95	8/3/95	SS647009	G M Shaw		RPT/GMS475, 476

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	2.5YR34	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)	None	None	-	Friable	Mod	Good	FVF		Smooth clear
2	100+	MSL	2.5YR36	1% >2cm HR 34% >2mm HR (average) 35% Total HR (S+D)	None	None	WCSAB	Friable	Good	Good	FVF		

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 1

Available Water	Wheat:	121 mm
	Potatoes:	83 mm
Moisture Deficit	Wheat:	90 mm
	Potatoes:	78 mm
Moisture Balance	Wheat:	31 mm
	Potatoes:	5 mm
Droughtiness Grade:		2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Droughtiness

Remarks:

38, 41, 23% HR measured in Horizon 2 at 40 cm, 60 cm, 90 cm.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton North Tawton	Pit 2	3° south	Set-aside	Av Rainfall: 986 mm ATO: 1448 day °C FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	Bow conglomerates
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
19/95	9/3/95	SS650009	G M Shaw		RPT/GMS477

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	SCL	2.5YR34	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)	None	None	-	Friable	Mod	good	FVF		Clear smooth
2	50	MSL	2.5YR36	5% >2mm HR (S+D)	None	None	MCSAB	Friable	Mod	Good	FVF		Clear wavy
3	120	MSL	2.5YR36	41% >2mm HR (S+D)	None	None	WCSAB	Friable	Good	Good	-		

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 2

Available Water	Wheat:	122 mm
	Potatoes:	88 mm
Moisture Deficit	Wheat:	90 mm
	Potatoes:	78 mm
Moisture Balance	Wheat:	32 mm
	Potatoes:	10 mm
Droughtiness Grade:		2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Droughtiness

Remarks:

Borderline Grade 1. Topsoil texture SCL/MCL, 50% sand also within 1% of MSZL.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton North Tawton	Pit 2	3° south	Set-aside	Av Rainfall: 986 mm ATO: 1448 day °C FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	Bow conglomerates
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
19/95	9/3/95	SS650009	G M Shaw		RPT/GMS477

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	SCL	2.5YR34	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)	None	None	-	Friable	Mod	good	FVF		Clear smooth
2	50	MSL	2.5YR36	5% >2mm HR (S+D)	None	None	MCSAB	Friable	Mod	Good	FVF		Clear wavy
3	120	MSL	2.5YR36	41% >2mm HR (S+D)	None	None	WCSAB	Friable	Good	Good	-		

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 2

Available Water	Wheat:	122 mm
	Potatoes:	88 mm
Moisture Deficit	Wheat:	90 mm
	Potatoes:	78 mm
Moisture Balance	Wheat:	32 mm
	Potatoes:	10 mm
Droughtiness Grade:		2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Droughtiness

Remarks:

Borderline Grade 1. Topsoil texture SCL/MCL, 50% sand also within 1% of MSZL.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton North Tawton	Pit 2	3° south	Set-aside	Av Rainfall: 986 mm ATO: 1448 day °C FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	Bow conglomerates
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
19/95	9/3/95	SS650009	G M Shaw		RPT/GMS477

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	SCL	2.5YR34	1% >2cm HR 27% >2mm HR 28% Total HR (S+D)	None	None	-	Friable	Mod	good	FVF		Clear smooth
2	50	MSL	2.5YR36	5% >2mm HR (S+D)	None	None	MCSAB	Friable	Mod	Good	FVF		Clear wavy
3	120	MSL	2.5YR36	41% >2mm HR (S+D)	None	None	WCSAB	Friable	Good	Good	-		

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 2

Available Water Wheat: 122 mm

Potatoes: 88 mm

Moisture Deficit Wheat: 90 mm

Potatoes: 78 mm

Moisture Balance Wheat: 32 mm

Potatoes: 10 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Droughtiness

Remarks:

Borderline Grade 1. Topsoil texture SCL/MCL, 50% sand also within 1% of MSZL.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton North Tawton	Pit 3	0°	Cereal	Av Rainfall: 986 mm ATO: 1448 day °C	2nd Terrace River Deposits
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 202 Climatic Grade: 1	SOIL SAMPLE REFERENCES
19/95	10/3/95	ASP65 SS656007	G M Shaw	Exposure Grade: 1	RPT/GMS478

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	28	MCL	7.5YR42	1% HR Visual	None	None	MCAB	Firm	Mod	Good	CVF		Abrupt smooth
2	40	MCL	05YR53	5% HR (S+D)	CDFOG 7.5YR52, 56	None	MCSAB	Friable	Mod	Good	FVF		Abrupt smooth
3	80+	HCL	05YR56, 66	14% HR patches (S+D)	CDFO 7.5YR56	None	MCSAB	Friable	Mod	Low	None		

Profile Gleyed From: 28 cm

Depth to Slowly Permeable Horizon: None

Wetness Class: III

Wetness Grade: 3a

Available Water Wheat: 154 mm

Potatoes: 116 mm

Moisture Deficit Wheat: 90 mm

Potatoes: 78 mm

Moisture Balance Wheat: 64 mm

Potatoes: 38 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3a

Main Limiting Factor(s): Wetness

Remarks:

Drought calculation with 0% stone in H3.
Topsoil texture within 1% of MSZL.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton North Tawton	Pit 3	0°	Cereal	Av Rainfall: 986 mm ATO: 1448 day °C	2nd Terrace River Deposits
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	SOIL SAMPLE REFERENCES
19/95	10/3/95	ASP65 SS656007	G M Shaw		RPT/GMS478

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	28	MCL	7.5YR42	1% HR Visual	None	None	MCAB	Firm	Mod	Good	CVF		Abrupt smooth
2	40	MCL	05YR53	5% HR (S+D)	CDFOG 7.5YR52, 56	None	MCSAB	Friable	Mod	Good	FVF		Abrupt smooth
3	80+	HCL	05YR56, 66	14% HR patches (S+D)	CDFO 7.5YR56	None	MCSAB	Friable	Mod	Low	None		

Profile Gleyed From: 28 cm

Depth to Slowly Permeable Horizon: None

Wetness Class: III

Wetness Grade: 3a

Available Water Wheat: 154 mm

Potatoes: 116 mm

Moisture Deficit Wheat: 90 mm

Potatoes: 78 mm

Moisture Balance Wheat: 64 mm

Potatoes: 38 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3a

Main Limiting Factor(s): Wetness

Remarks:

Drought calculation with 0% stone in H3.
Topsoil texture within 1% of MSZL.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
The Barton North Tawton	Pit 3	0°	Cereal	Av Rainfall: 986 mm ATO: 1448 day °C FC Days: 202 Climatic Grade: 1 Exposure Grade: 1	2nd Terrace River Deposits
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
19/95	10/3/95	ASP65 SS656007	G M Shaw		RPT/GMS478

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	28	MCL	7.5YR42	1% HR Visual	None	None	MCAB	Firm	Mod	Good	CVF		Abrupt smooth
2	40	MCL	05YR53	5% HR (S+D)	CDFOG 7.5YR52, 56	None	MCSAB	Friable	Mod	Good	FVF		Abrupt smooth
3	80+	HCL	05YR56, 66	14% HR patches (S+D)	CDFO 7.5YR56	None	MCSAB	Friable	Mod	Low	None		

Profile Gleyed From: 28 cm

Depth to Slowly Permeable Horizon: None

Wetness Class: III

Wetness Grade: 3a

Available Water Wheat: 154 mm

Potatoes: 116 mm

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Potatoes: 38 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3a

Main Limiting Factor(s): Wetness

Remarks:

Drought calculation with 0% stone in H3.
Topsoil texture within 1% of MSZL.