

Bishops Lydeard
Agricultural Land Classification
October 1997

Resource Planning Team
Bristol
FRCA Western Region

Job Number 70/97



BISHOPS LYDEARD
AGRICULTURAL LAND CLASSIFICATION SURVEY

CONTENTS

	Page
INTRODUCTION	1
SUMMARY	1
CLIMATE	2
RELIEF	3
GEOLOGY AND SOILS	3
AGRICULTURAL LAND CLASSIFICATION AND MAP	4
REFERENCES	7
APPENDIX I Description of the Grades and Subgrades	8
APPENDIX II Definition of Soil Wetness Classes	10
APPENDIX III Survey Data:	11
Sample Point Location Map	
Pit Descriptions	
Boring Profile Data	
Boring Horizon Data	
Abbreviations and Terms used in Survey Data	

BISHOPS LYDEARD

AGRICULTURAL LAND CLASSIFICATION SURVEY

INTRODUCTION

1. This report presents the findings of a semi-detailed Agricultural Land Classification (ALC) survey of 254.6 ha of land at Bishops Lydeard, Somerset. Field survey was based on 126 auger borings and 7 soil profile pits, and was completed in October 1997. During the survey 6 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 Taunton Deane 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 Grade 1 to the North and Grade 3 to the South, 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 therefore supersedes any previous ALC information. Grade descriptions are summarised in Appendix I.
4. A previous survey adjacent to the southern part of the site at Taunton Road, Bishops Lydeard (ADAS, 1996) found mainly Subgrades 3a and 3b limited by workability and wetness. This was similar to other previous surveys at Burge Farm (ADAS, 1993) and Tonevale Hospital (ADAS 1993). Another previous survey not far from the current site at Greenway Farm, Bishops Lydeard (ADAS 1994) found Subgrade 3a and Grade 2 on similar but slightly deeper parent materials with less serious limitations due to workability and wetness. Another previous survey at Lydeard House, Bishops Lydeard (ADAS 1995) was on the north side of the village and found mainly Grade 1 where not limited by gradient or microrelief.
5. At the time of survey land cover was mainly cereal and ley grassland with some permanent grassland mainly in the meadows below Lydeard House. Other land which was not surveyed included mainly residential land and roads with two large ponds at East Lydeard Farm, several small areas of woodland and one permanent football pitch. Another less substantial football pitch near ASP 27 and the cricket ground near ASP 84E were both considered to be more easily converted to agriculture and are included within the surveyed area.

SUMMARY

6. The distribution of ALC grades is shown on the accompanying 1: 12 500 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: Bishops Lydeard

Grade	Area (ha)	% Surveyed Area (205.5 ha)
1	98.0	48
2	8.4	4
3a	29.1	14
3b	70.0	34
Other land	49.1	
Total site area	254.6	

7. This shows that 66% of the surveyed area was found to be best and most versatile with an extensive swathe of Grade 1 on the sandy soils surrounding the north side of the village. Small areas of Grade 2 limited variously by droughtiness, topsoil texture and wetness were found within the area of Grade 1 and on the alluvial deposits in the south east of the survey area. Subgrade 3a, limited mainly by wetness, was found in the south and south west of the survey area, mixed with Subgrade 3b where the clay was found to be closer to the surface, bringing a more serious wetness limitation. Other areas of Subgrade 3b were found on the lower lying land through the centre of the site and surrounding the village.

CLIMATE

8. 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.

9. 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.

10. 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. A critical boundary of 175 FC Days was found to run through the site with the higher values to the north and west of the boundary. This apparently arbitrary distinction means that similar soil profiles may be graded lower to the north west of the boundary than to the south and east.

Table 2: Climatic Interpolations: Bishops Lydeard

Grid Reference	ST 173281	ST 167311
Altitude (m)	45	91
Accumulated Temperature (day °C)	1527	1474
Average Annual Rainfall (mm)	806	856
Overall Climatic Grade	1	1
Field Capacity Days	174	182
Moisture deficit (mm): Wheat	102	94
Potatoes	94	83

RELIEF

11. Altitude ranges from 45 metres at Deane Court to 91 metres at the top of Watts Lane with mainly gentle and moderate slopes which are not limiting. One very small area of steeply sloping bank was found near ASPs26 and 27 adjacent to the 1995 survey, but this was too small to be mapped in the current survey.

12. In the same area and running up towards ASP 8 the remains of the grass field below the football pitch includes short steep banks of unknown origin which would preclude cultivation and the remaining part of this field has therefore been downgraded to take account of this.

13. There is evidence of flooding after heavy rain in the meadows below Lydeard House, but this is unlikely to be worse than to Subgrade 3b.

GEOLOGY AND SOILS

14. The underlying geology of the site is shown on the published geology map (IGS, 1975) as mainly Upper Sandstone to the north of the site, with Keuper Marl to the south of the site overlain to varying degree by valley gravel and head, mainly through the centre of the site. This was largely borne out by the current survey although the area shown as valley gravel and head was found to comprise distinct deposits of alluvium in the lower lying land and river terrace gravel deposited to varying depths over Keuper Marl on the higher ground. This is better represented on the later published geology map (BGS, 1984) where this distinction is made. The later map refers to the sandstone in the north of the site as Otter Sandstone. This was found to be somewhat variable in texture and including occasional bands of heavier material, even clay, in the subsoil.

15. Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1:250 000 (SSEW, 1983) as mainly Bromsgrove and Hodnet Associations on the sandstone in the north with mainly Whimple 1, Whimple 3 and Newnham Associations on the Keuper Marl and valley gravels in the south of the site. Brockhurst 1 Association is shown on the main alluvial deposit running through the centre of the site.

16. Bromsgrove Association is described as well drained reddish coarse loamy soils mainly over soft sandstone, deep in places, associated with fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging and a risk of water erosion. Hodnet Association is described as reddish fine and coarse loamy soils with slowly permeable subsoils and slight seasonal waterlogging with some similar well drained reddish fine loamy soils, also with a slight risk of water erosion. This was mainly borne out by the current survey in the north of the area, although there was very little evidence of the slowly permeable subsoils described.

17. Whimble 1 and Whimble 3 Associations are described as reddish fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging, whereas the Newnham Association is described as well drained reddish coarse and fine loamy soils over gravel, locally deep. This was to some extent borne out by the current survey, although the area of Newnham Association was found to be considerably less than indicated on the published map and the distribution of Whimble soils was found to be considerably broken by the occurrence of alluvial deposits south of Pound Farm and other low lying land where alluvial soils are considerably affected by ground water.

AGRICULTURAL LAND CLASSIFICATION

18. The distribution of ALC grades found by the current survey is shown on the accompanying 1: 12 500 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 1

19. A large area shown as Grade 1 was found to have mainly fine sandy loam topsoil, although this was somewhat variable ranging from almost loamy fine sand around the football pitches to the north of the village to almost sandy clay loam towards the east of the site. The subsoil was found to be even more variable, ranging from a distinct loamy fine sand through fine sandy loam to sandy clay loam and with bands of clay or sandy clay in parts. However, there was no evidence of wetness and the profiles were generally assessed a Wetness Class I (See Appendix II).

20 This is illustrated by Pits 1 and 4 which are sited in the central area of lighter topsoils. They also both indicate the presence of a plough pan, compaction immediately below the topsoil, which is typical of soils with these textural characteristics. Farmers in this area find it necessary to relieve this compaction by regular subsoiling after cropping. They also report that the sandy soils are hungry and require regular fertilising. Only a few scattered borings exceeded the permitted range of variation for Grade 1 and these were individually assessed as Grade 2 with minor limitations due to topsoil texture, droughtiness or wetness, but are included within the area shown as Grade 1

Grade 2

21. Two small areas within the area of Grade 1 have been shown as Grade 2. These are around ASP 33 where sandstone rock was found to limit the depth of the soil, leading to a minor droughtiness limitation, and around ASP 27 where the topsoil texture was found to be lighter and not acceptable for Grade 1.

22. A larger area of Grade 2 is shown on the predominantly alluvial deposits south of Pound Farm in the east of the site. Because they are alluvial these deposits are variable and are illustrated by Pits 5 and 7, both of which show distinct evidence of gleying in the upper subsoil whereas the lower subsoil is brightly coloured and not gleyed. Pit 5 was assessed as Grade 2 with medium clay loam topsoil at Wetness Class II and Pit 7 was assessed as Grade 1 with fine sandy loam topsoil at Wetness Class I. In this instance, although gleyed, the subsoil was coarse textured. This illustrates the variability of soils in this area with several auger borings assessed as Grade 1, but the overall area is shown as Grade 2 to take account of the variability and the occasional evidence of wetness in the upper subsoil.

23. The southern area of this mapping unit, around ASP 101 and 106 was found to be more consistent with medium clay loam topsoil at Wetness Class I, implying a minor limitation due to restricted workability.

Subgrade 3a

24. The area shown as Subgrade 3a in the south and west of the site has mainly medium clay loam topsoil at Wetness Class II or III generally with a slowly permeable loam where the native Keuper Marl clay is found in the subsoil. There is generally evidence of gleying above this slowly permeable layer, although this may be in a narrow band immediately over the clay. The grading of this area is somewhat confused by the presence of the 175 FCD boundary, which means that the area to the south and east of this boundary shows profiles apparently wetter than those to the north around Tollywood Farm. Soils limited by wetness as described are illustrated by Pit 1 of the 1996 survey at Taunton Road and Pit 1 of the 1994 survey at Greenway Farm.

25. This mapping unit also contains a few borings limited mainly by droughtiness. These have mainly medium sandy loam topsoil over variably gravelly deposits and are illustrated by Pit 2. The mapping unit also contains several profiles in the south around Deane Court with minor limitations due to wetness, workability or droughtiness, which occur inconsistently and cannot be mapped.

Subgrade 3b

26. The area shown as Subgrade 3b includes extensive areas in the south of the site limited by wetness where the slowly permeable clay is found closer to the surface. These are medium or occasionally heavy clay loam topsoils over clay subsoils, which with the slowly permeable layer are assessed as Wetness Class III or IV. These are illustrated by Pit 6 of the current survey and Pit 2 of the 1996 survey at Taunton Road.

27. Subgrade 3b is also shown on the alluvial deposits running through the centre of the site. Again, these are highly variable but typically include a slowly permeable layer in the upper subsoil. This is illustrated by Pit 3, which found a medium clay loam topsoil at Wetness Class IV.

28. Other borings in the meadows below Lydeard House and around ASP 53 and 62 to the east of the village are more variable. The parent material in these areas tends to be derived *from the sandy deposits on higher ground and the low lying areas receive considerable* ground water also derived from the extensive freely draining soils on the higher ground. This tends to give a sandy loam topsoil over subsoil which is also generally sandy and shows little evidence of wetness within the profile, but the evidence of ground vegetation and the abundant presence of water in the auger borings indicate assessment as Wetness Class IV. This wetness can be extreme, particularly in the narrow valley bottom around ASP 73 which was assessed as Wetness Class V and virtually unusable due to extreme wetness.

29. The meadows below Lydeard House are also liable to flooding as described in Paragraph 13. This is unlikely to be worse than to Subgrade 3b except for a few small areas where water may pond for longer periods and cause local poaching.

30. The small area of Subgrade 3b to the south of ASP 8 is limited by microrelief due to the presence of short steep banks as described previously, even though the soil profile itself may be Grade 1.

P Barnett
Resource Planning Team
FRCA Bristol
October 1997

REFERENCES

ADAS RESOURCE PLANNING TEAM, (1996) Agricultural Land Classification Survey of Taunton Road, Bishops Lydeard. Scale 1: 10 000 Reference 1.96, FRCA Bristol.

ADAS RESOURCE PLANNING TEAM, (1995) Agricultural Land Classification Survey of Lydeard House, Bishops Lydeard. Scale 1: 10 000 Reference 13.95, FRCA Bristol.

ADAS RESOURCE PLANNING TEAM, (1994) Agricultural Land Classification Survey of Greenway Farm, Bishops Lydeard. Scale 1: 10 000 Reference 62.94, FRCA Bristol.

ADAS RESOURCE PLANNING TEAM, (1993) Agricultural Land Classification Survey of Tone Vale Hospital, Bishops Lydeard. Scale 1: 10 000 Reference 54.93, FRCA Bristol.

ADAS RESOURCE PLANNING TEAM, (1993) Agricultural Land Classification Survey of Burge Farm, Bishops Lydeard. Scale 1: 10 000 Reference 55.93, FRCA Bristol.

BRITISH GEOLOGICAL SURVEY (1984) Sheet 295, Taunton, 1: 50 000 Series Solid and Drift Edition. BGS London.

INSTITUTE OF GEOLOGICAL SCIENCES (1975) Sheet 295, Taunton 1:50 000 series Solid and Drift edition. IGS, London.

HODGSON, J M (Ed) (1997) Soil Survey Field Handbook. Soil Survey Technical Monograph No 5. SSLRC, Cranfield University.

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 (e.g. 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, SSLRC, Cranfield.

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.

GLEY, SPL: 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 pedes 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
	S: Single grain	M: Massive
<u>Ped Shape</u>	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%		

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: 830 mm		PARENT MATERIAL				
Bishops Lydeard		Pit 1 (ASP15)	4° S		Cereal		ATO: 1500 day °C		Upper Sandstone				
JOB NO.		DATE	GRID REFERENCE		DESCRIBED BY		FC Days: 178		PSD SAMPLES TAKEN				
70.97		9.10.97	ST 1668 3054		PB		Climatic Grade: 1		TS 0-25 cm FSL (S57: Z28 : C15%)				
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	FSL	2.5YR34	0	0	0	-	-	-	-	CF	-	Abrupt Smooth
2	60	SCL	10YR34	0	0	0	WKVCSAB	Friable	Moderate	Good	FVF	-	Grad Smooth
3	100+	FSL	2.5YR34	10% FSST (vis)	0	0	WKVCSAB	Friable	Good	Poor	FVF	-	

Profile Gleyed From: -
 Slowly Permeable Horizon From: -
 Wetness Class: I
 Wetness Grade: 1

Available Water Wheat: 185 mm
 Potatoes: 116 mm
 Moisture Deficit Wheat: 101 mm
 Potatoes: 93 mm
 Moisture Balance Wheat: +84 mm
 Potatoes: + 23 mm
 Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 1
 Main Limiting Factor(s): -

Remarks: Top of H2 tightly packed. (Plough pan).
 Loosening had been carried out in adjacent field.

SITE NAME Bishops Lydeard		PROFILE NO. Pit 2 (ASP68)	SLOPE AND ASPECT 3° E		LAND USE Maize	Av Rainfall: 810 mm ATO: 1520 day °C		PARENT MATERIAL River terrace ground				
JOB NO. 70.97		DATE 10.10.97	GRID REFERENCE ST 1637 2966		DESCRIBED BY PB	FC Days: 178 Climatic Grade: 1 Exposure Grade: 1		PSD SAMPLES TAKEN TS 0-25 cm MSL (S60: Z25 : C15%)				

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	7.5YR43	1% > 2 cm (s) 8% < 2 cm (s+d) 9% HR	0	0	-	-	-	-	CM,F	-	Sharp Smooth
2	65	SCL	5YR43	8% > 2 cm (s) 25% < 2 cm (s+d) 34% HR	0	0	MM,CSAB	Friable	Good	Good	CF	-	Grad Smooth
3	100+	LCS	2.5YR43	25% > 2 cm (s) 33% < 2 cm (s+d) 58% HR	0	0	Too stony	Very Friable	(Good)	(Good)	FVF	-	

Profile Gleyed From: -
Slowly Permeable Horizon From: -
Wetness Class: I
Wetness Grade: 1

Available Water Wheat: 101 mm
Potatoes: 94 mm
Moisture Deficit Wheat: 101 mm
Potatoes: 93 mm
Moisture Balance Wheat: 0 mm
Potatoes: + 1 mm
Droughtiness Grade: 3a (Calculated to 120 cm)

Final ALC Grade: 3a
Main Limiting Factor(s): Dr

Remarks:

SITE NAME Bishops Lydeard		PROFILE NO. Pit 3 (ASP70)	SLOPE AND ASPECT 0	LAND USE PGR	Av Rainfall: 810 mm ATO: 1520 day °C FC Days: 176 Climatic Grade: 1 Exposure Grade:	PARENT MATERIAL Alluvium
JOB NO. 70.97		DATE 15.10.97	GRID REFERENCE ST 1664 2957	DESCRIBED BY PB		PSD SAMPLES TAKEN -

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	25	MCL	7.5YR43	0	0	0	-	-	-	-	MF,VF	-	Clear Smooth
2	44	C	75YR53	0	CDFO 75YR56	0	MDCPR	FM	P	G	CVF	-	Clear Smooth
3	70	C	75YR63	0	MDFO 7.5YR56	0	M	FM	P	P	CVF	-	Grad Smooth
4	90+	SCL	5YR63	20%HR(vis)	MDMG O 7.5YR72,56	0	M	FR	P	G	VFVF	-	

Profile Gleyed From: 25 cm

Slowly Permeable Horizon From: 44-70 cm

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 111 mm

Potatoes: 104 mm

Moisture Deficit Wheat: 101 mm

Potatoes: 93 mm

Moisture Balance Wheat: +10 mm

Potatoes: +11 mm

Droughtiness Grade: 2 (Calculated to 100 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): We

Remarks:

SITE NAME Bishops Lydeard		PROFILE NO. Pit 4 (ASP10)	SLOPE AND ASPECT 2° S	LAND USE Cereal	Av Rainfall: 830 mm ATO: 1500 day °C FC Days: 178 Climatic Grade: 1 Exposure Grade: 1	PARENT MATERIAL Upper Sandstone
JOB NO. 70.97		DATE 16.10.97	GRID REFERENCE ST 1772 3061	DESCRIBED BY PB		PSD SAMPLES TAKEN TS 0-25 cm FSL (S72:Z 16: C12%)

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	29	FSL	25YR34	0	0	0	-	-	-	-	CF, VF	-	Abrupt Smooth
2	70	FSL	25YR34	0*	0	0	WK CAB	VR	G	G	CF, VF	-	Grad Smooth
3	90+	SCL	10R34	0	0	0	WKCSAB	FR	G	G	CF, VF	-	

Profile Gleyed From: -	Available Water	Wheat: 202 mm	Final ALC Grade: 1
Slowly Permeable Horizon From: -		Potatoes: 142 mm	Main Limiting Factor(s): -
Wetness Class: I	Moisture Deficit	Wheat: 101 mm	
Wetness Grade: 1		Potatoes: 93 mm	
	Moisture Balance	Wheat: +101 mm	
		Potatoes: +49 mm	
	Droughtiness Grade: 1	(Calculated to 120 cm)	Remarks: Pit dug to 90 cm. Augured to 130 cm. Agglomeration of large stones observed in one side of pit from 50 to 90 cm, but nowhere else. H2 roots mainly in worm channels.

SITE NAME Bishops Lydeard		PROFILE NO. Pit 5 (ASP 82)	SLOPE AND ASPECT 0°	LAND USE PGR	Av Rainfall: 805 mm ATO: 1520 day °C	PARENT MATERIAL Alluvium
JOB NO. 70.97		DATE 17.10.97	GRID REFERENCE ST 17362950	DESCRIBED BY PB	FC Days: 174 Climatic Grade: 1 Exposure Grade: 1	PSD SAMPLES TAKEN TS 0-25 cm MCL (S46: Z 29: C25%)

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	7.5YR42	0	0	0	-	-	-	G	MF, VF	-	Abrupt Smooth
2	30	MCL	7.5YR52	0	CDFO, G 10YR56, 72	0	MDFSAB	FR	G	G	CF, VF	-	Clear Smooth
3	65	MSL	7.5YR63	2% > 72cm (s) 16% < 2 cm (s+ h) 18% HR, ZR	MDMG 10YR72 CDFO 10YR66	0	WKFSAB	FR	G	G	CF, VF	-	Grad Smooth
4	85+	MSL	5YR53		FFFO, G 10YR58, 72	0	WKFSAB	VR	G	G(low)	FVF	-	

Profile Gleyed From: 20 - 65 cm	Available Water	Wheat: 122 mm	Final ALC Grade: 2
Slowly Permeable Horizon From: -		Potatoes: 110 mm	
Wetness Class: II	Moisture Deficit	Wheat: 101 mm	Main Limiting Factor(s): We
Wetness Grade: 2		Potatoes: 93 mm	
	Moisture Balance	Wheat: 21 mm	Remarks: H3 topsoil mixing evident
		Potatoes: 17 mm	
	Droughtiness Grade: 2	(Calculated to 100 cm)	

SITE NAME Bishops Lydeard		PROFILE NO. Pit 6 (ASP 89)	SLOPE AND ASPECT 1° S	LAND USE Ley	Av Rainfall: 805 mm ATO: 1520 day °C FC Days: 174 Climatic Grade: 1 Exposure Grade: 1	PARENT MATERIAL River gravel over Keuper Marl
JOB NO. 70.97		DATE 17.10.97	GRID REFERENCE ST 17232936	DESCRIBED BY PB		PSD SAMPLES TAKEN TS 0-25 cm MCL (S31: Z 44: C25%)

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	1% HR (vis)	0	0	-	-	-	G	CF, VF	-	Clear Smooth
2	30	HCL	7.5YR53	2% HR (vis)	CDVFO	C	WKCSAB	FM	P	G	CF, VF	-	Clear Smooth
3	50	C	7.5YR44	5% HR (vis)	FFFO	F	MDSCAB	FM	M	P (low)	CVF	-	Clear Smooth
4	70	C	2.5YR44	40% HR (vis)	0	C	M	VM	P	P	FVF	-	Abrupt Smooth
5	86+	C	2.5YR44	0	0	C	WACAB	VM	P	P	FVF	-	-

Profile Gleyed From: 20 - 30 cm	Available Water	Wheat: 124 mm	Final ALC Grade: 3b
Slowly Permeable Horizon From: 30 cm		Potatoes: 96 mm	Main Limiting Factor(s): We
Wetness Class: IV	Moisture Deficit	Wheat: 101 mm	
Wetness Grade: 3b		Potatoes: 93 mm	Remarks:
	Moisture Balance	Wheat: 33 mm	
		Potatoes: 3 mm	
	Droughtiness Grade: 2	(Calculated to 120 cm)	

SITE NAME		PROFILE NO.	SLOPE AND ASPECT	LAND USE	Av Rainfall: 805 mm	PARENT MATERIAL
Bishops Lydeard		Pit 7 (NrASP 76)	1° SE	PGR	ATO: 1520 day °C	
JOB NO.		DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 174	PSD SAMPLES TAKEN TS 0-25 cm FSL (S58: Z 26: C16%)
70.97		17.10.97	ST 17452960	PB	Climatic Grade: 1 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	FSL	7.5YR43	0	0	0	-	-	-	G	MVF	-	Clear Smooth
2	38	SC	2.5YR62	0	CDVFO 10YR66	C	MDCPR	FR	M	G	MF, VF	-	Clear Smooth
3	56	SCL	10YR62	0	MDFO, G 10YR56,72	0	WKCSAB	FR	M	G	CVF	-	Grad Smooth
4	101+	FS/LFS	2.5YR44	0	FFMG 5YR63	0	WKCSAB	VR	G	G	CVF	-	

Profile Gleyed From: 23 - 56 cm

Slowly Permeable Horizon From: -

Wetness Class: I

Wetness Grade: 1

Available Water Wheat: 165 mm
Potatoes: 111 mm

Moisture Deficit Wheat: 101 mm
Potatoes: 93 mm

Moisture Balance Wheat: 64 mm
Potatoes: 18 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 1

Main Limiting Factor(s):

Remarks: "Coarse textured" subsoil - WC I