8FCS6978

Mendip District Local Plan
Frome

Agricultural Land Classification
May 1996

Resource Planning Team
Taunton Statutory Group
ADAS Bristol

Job Number 9/96
Commission 1020
MAFF Reference EL 548

Ministry of Agriculture Fisheries and Food
Land Use Planning Unit

MENDIP LOCAL PLAN FROME

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of 453 3 ha of land around Frome Somerset Field survey was based on 234 auger borings and 11 soil profile pits and was completed in May 1996

2 The survey was conducted by the Resource Planning Team of ADAS Taunton Statutory Group on behalf of MAFF Land Use Planning Unit in its statutory role in the preparation of Mendip 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 mainly Grade 3 the site was previously surveyed in 1980 at a scale of 1 25 000 (ADAS 1980) However the current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988) and supersedes any previous ALC survey Grade descriptions are summarised in Appendix I

4 At the time of survey land cover was mainly cereals grass and some maize Other land which was not surveyed included mainly urban land and a small area of woodland

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

Table 1 Distribution of ALC grades Frome

Grade	Area (ha)	% Surveyed Area (357 4 ha)
2	2 7	0 8
3a	44 8	12 5
3b	103 4	28 9
4	206 5	57 8
Other land	95 9	
Total site area	453 3	

6 Only 13 3 % of the surveyed area was found to be best and most versatile This was mainly Subgrade 3a with moderate limitations due to wetness and workability One small area of 2 7 ha at Vallis Mills was found to be Grade 2 with a minor limitation due to workability

7 The remainder of the site was found to be Subgrade 3b with more serious moderate limitations due to wetness and workability and Grade 4 with severe limitations mainly due to wetness Droughtiness was also found to be a limitation to Subgrade 3b particularly in an area at the east of the site

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CONTENTS

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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

Table 2 Climatic Interpolations Frome

Grid Reference		ST 787502	ST 763486	ST 795480
Altitude (m)		55	125	90
Accumulated Temperature (day °C)		1492	1413	1453
Average Annual Rainfall (mm)		781	983	844
Overall Climatic Grade		1	1	1
Field Capacity Days		177	207	186
Moisture deficit (mm)	Wheat	100	79	93
	Potatoes	91	64	82

RELIEF

11 Altitude ranges from 85 metres at Oldford to 125 metres at Vallis Mills with mainly gentle and moderate slopes which are not limiting However strongly sloping (8 11°) land is also found mainly on the slopes to the north of town This would normally cause downgrading to Subgrade 3b but in many places indications of more serious soil wetness were found in which case gradient would not be recorded as the main limitation

GEOLOGY AND SOILS

12 The underlying geology of the site is shown on the published geology map (IGS 1965) as Oxford clay in the east of the site and a variety of Jurassic limestones over the rest of the site including a larger area of Cornbrash and other areas of Forest Marble Fuller s Earth and Oolitic limestones The current survey found the most significant feature to be the distribution of Oxford clay which had a marked effect on land quality The other deposits exhibited a range of limiting factors in places with slowly permeable layers between or below bands of rock

13 Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1 250 000 (SSEW 1983) as mainly Denchworth and Wickham 3 associations on the Oxford clay with Evesham 1 and Elmton 1 assocations on the various limestone deposits

14 Denchworth association is described as slowly permeable seasonally waterlogged clayey soils with some fine loamy over clayey soils with slight seasonal waterlogging and some slowly permeable calcareous clayey soils

15 Wickham 3 association is described as slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey soils and similar more permeable soils with slight seasonal waterlogging

16 Evesham 1 association is described as slowly permeable calcareous clayey soils associated with shallow well drained brashy calcareous soils over limestone

17 Elmton 1 association is described as shallow well drained brashy calcareous fine loamy soils over limestone

18 The current survey found the Denchworth and Wickham 3 soils to be highly distinctive stoneless wet clays and also found the Elmton 1 association to be closely correlated with a brashy area exhibiting droughtiness among other limitations The larger area mapped as Evesham 1 association was found to be more variable and less distinctive exhibiting both wetness and droughtiness depending on relative depth to rock or clay

AGRICULTURAL LAND CLASSIFICATION

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

Grade 2

20 The small area of Grade 2 was mapped mainly because it was found to be so different from other soils in the area, despite the occurrence of similar geological deposits elsewhere This is illustrated by Pit 11 which found sandy clay loam topsoil and Wetness Class I a minor limitation only due to workability

Subgrade 3a

21 Three main areas of Subgrade 3a were found at various points around the site although other scattered borings were also found to be similar These show moderate limitations mainly due to workability and wetness The limitation of workability is indicated by heavy clay loam topsoil textures at Wetness Class I and is illustrated by Pits 4 and 8 The wetness limitation is illustrated by Pit 6 where medium clay loam topsoil was found at Wetness Class II However this pit subsequently was found to be isolated from similar auger borings and was excluded from a Subgrade 3a mapping unit but it is still considered to be typical of the area to the east

Subgrade 3b

22 Soils in this mapping unit have mainly clay or heavy clay loam topsoil textures The clay was found mainly on the lower slopes in the northwest of the site where with no evidence of wetness Wetness Class I the main limitation was assessed to be workability due to heavy topsoil texture

23 The more stony profiles found on the Cornbrash at the east of the site around the gypsy camp showed a droughtiness limitation due to the high stone content which in the case of profiles such as Pit 2 was the primary limitation whereas at Pit 10 where a slowly permeable layer was found below rock at 70 80 cm, wetness became the main limitation This was despite stone contents of 77% from 35 cm This is quite likely to be the case in other auger borings which proved to be impenetrable because of stone content

24 This mapping unit also contained scattered borings of both Subgrade 3a and Grade 4

Grade 4

25 The area shown as Grade 4 has mainly heavy clay loam and clay topsoils with a slowly permeable layer generally starting in the upper subsoil at 20-48 cm This indicates Wetness Class IV and was found more or less consistently through the area shown This applies not only to the area underlain by Oxford clay but also to areas of limestone deposits in the rest of the site where bands of clay are found within the limestone and where this occurs at the appropriate level in the subsoil it gives rise to a slowly permeable layer It should be noted that this is the case in the southern area around Keyford where the revised classification system required the recent survey to auger to greater depth than was necessary for the previous survey (ADAS 1980) Thus the previous survey failed to identify evidence of wetness at depth and therefore may show higher grades in areas which are now shown as Grade 4 This is the case at Pit 1

Other Land

Other land includes mainly residential land roads and railways with a small area of woodland It also includes a large sports ground a new area of development at Keyford and a small area of waste ground near Wall Bridge on the Warminster Road It also includes the gypsy camp which although a small area in itself has a profound effect on the appearance and farming of the surrounding area through the activities of its occupants

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21 May 1996

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APPENDIX I

DESCRIPTION OF GRADES AND SUBGRADES

Grade 1 excellent quality agricultural land

Land with no or very minor limitations to agricultural use A very wide range of agricultural and horticultural crops can be grown and commonly include top fruit soft fruit salad crops and winter harvested vegetables Yields are high and less variable than on land of lower quality

Grade 2 very good quality agricultural land

Land with minor limitations which affect crop yield cultivations or harvesting A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops The level of yield is generally high but may be lower or more variable than Grade 1

Grade 3 good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops timing and type of cultivation harvesting or the level of yield Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2

Subgrade 3a good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops especially cereals or moderate yields of a wide range of crops including cereals grass oilseed rape potatoes sugar beet and the less demanding horticultural crops

Subgrade 3b moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year

Grade 4 poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields of which are variable In most climates yields of grass may be moderate to high but there may be difficulties in utilisation The grade also includes very droughty arable land

Grade 5 very poor quality agricultural land

Land with very severe limitations which restrict use to permanent pasture or rough grazing except for occasional pioneer forage crops

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

APPENDIX II

DEFINITION OF SOIL WETNESS CLASSES

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

Wetness Class I

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

Wetness Class II

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

Wetness Class III

The soil profile is wet within 70 cm depth for 91 180 days in most years or if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 180 days but only wet within 40 cm depth for between 31 and 90 days in most years

Wetness Class IV

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

Wetness Class V

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

Wetness Class VI

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

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

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

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

APPENDIX III

ABBREVIATIONS AND TERMS USED IN SURVEY DATA

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

1 Terms used on computer database in order of occurrence

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

LAND USE At the time of survey

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

GRDNT Gradient as estimated or measured by hand held optical clinometer

GLEY SPL Depth in centimetres to gleying or slowly permeable layer

AB (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

GLEY 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
MISST	Soft medium grained sandstone	**GS**	Gravel with porous (soft) stones
SI	Soft weathered igneous or metamorphic rock		

Stone contents are given in % by volume for sizes >2cm >6cm and total stone >2mm
STRUCT The degree of development size and shape of soil peds are described using the following notation

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

CONSIST Soil consistence is described using the following notation

L	Loose	**VF**	Very Friable	**FR**	Friable	**FM**	Firm
VM	Very firm	**EM**	Extremely firm	**EH**	Extremely Hard		

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

POR Soil porosity If a soil horizon has poor porosity with less than 0 5% biopores >0 5mm, a Y will appear in this column

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

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

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

2 Additional terms and abbreviations used mainly in soil pit descriptions

STONE ASSESSMENT

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

MOTTLE SIZE

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

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

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

MANGANESE CONCRETIONS Assessed by volume

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

STRUCTURE Ped Development *

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

POROSITY

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

ROOT ABUNDANCE

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

ROOT SIZE

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

HORIZON BOUNDARY DISTINCTNESS

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

HORIZON BOUNDARY FORM Smooth, wavy irregular or broken *

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

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE			PARENT MATERIAL
Frome	Pit 1 (NR ASP 204)	2 S	PGR	Av Rainfall ATO FC Days Climatic Grade Exposure Grade	885 mm 1442 day C 192 1 1	Forest marble
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY			SOIL SAMPLE REFERENCES
9/96	27/3/96	ST467783	PB/GMS			9 Pit1

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	15	C	10YR53	1 % HR S eve	None	None				Good	MF VF	Yes	Gradual smooth
2	36	C	10YR54	5% HR Vis al	None	None	MDMCSAB	Friable	Good to moderate	Good	CM,VF	Yes	Abrupt smooth
3	64	C	2 5Y64 62	Vari ble content f sh ll fragments and Cal nodules which may aid drainage	CDFO 10YR56 MDFG 5Y63	None	WCSAB	Firm	Poor	Generally poor but few large worm holes	FVF	Yes	

Profile Gleyed From 36

Depth to Slowly Permeable Horizon 36

Wetness Class IV

Wetness Grade 4

Available Water	Wheat	136 mm
	Potatoes	113 mm
Moisture Deficit	Wheat	90 mm
	Potatoes	78 mm
Moisture Balance	Wheat	46 mm
	Potatoes	35 mm

Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 4

Main Limiting Factor(s) Wetness

Remarks

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE			PARENT MATERIAL
Frome	Pit 2 (ASP 89)	0°	Ley	Av Rainfall	813 mm	Cornbrash
				ATO	1452 day C	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days	181	SOIL SAMPLE REFERENCES
9/96	28/3/96	ST 79 8 493	PB/GMS	Climatic Grade	1	9 Pit 2
				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	21	HCL	10YR44	6% 2 cm 8% 2 mm 14 % HR Total (S +D)	None	None				Good	MVF		Abrupt smooth
2	58	C	10YR46	30% 2cm 24 % 2mm 54 % SLST Total (S & D)	None	None	Too stony to assess	Too stony to assess	Too stony to assess	Good	FVF		Gradual irregular
3	72+	C	10YR56	91 % 2cm 2 % 2mm 93 % HR Total (S)	None (some ochr around stones)	None	Too stony to assess	Too stony to assess	Too stony to assess	Good	FVF		

Profile Gleyed From	Not gleyed
Depth to Slowly Permeable Horizon	No SPL
Wetness Class	I
Wetness Grade	3a

Available Water	Wheat	67 mm
	Potatoes	69 mm
Moisture Deficit	Wheat	95 mm
	Potatoes	84 mm
Moisture Balance	Wheat	28 mm
	Potatoes	15 mm
Droughtiness Grade	3b	(Calculated to 100 cm)

Final ALC Grade	3b
Main Limiting Factor(s)	Dr

Remarks Rock in H2 softer oolitic limestone than H3

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Frome	Pit 3 (ASP 128)	0	PGR	Av Rainfall 813 mm ATO 1452 day C	Oxford Clay
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days 181 Climatic Grade 1 Exposure Grade 1	SOIL SAMPLE REFERENCES
9/96	28/3/96	ST 8010 4909	PB/GMS		9 Pit 3

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/ HCL	10YR52	Non	CDFO 7 5YR 58	None					MVF		Clear smooth
2	60+	C	2 5Y64	N	MDFO CDFG 10YR68 2 5Y62	None	MDC PR becoming WKC PR with depth	Firm	Poor	Poor	CVF mainly between peds		

Profile Gleyed From Surface

Depth to Slowly Permeable Horizon 20cm

Wetness Class IV

Wetness Grade 4*

Available Water Wheat 124 mm

Potatoes 101 mm

Moisture Deficit Wheat 95 mm

Potatoes 84 mm

Moisture Balance Wheat +29 mm

Potatoes +17 mm

Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 4

Main Limiting Factor(s) Wetness

Remarks * TS 0 20 cm PSD 49 % silt, 26% clay
Therefore probably HCL to 25 cm

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Frome	Pit 4 (ASP 201)	2 S	PGR	Av Rainfall 885 mm ATO 1442 day C	Cornbrash
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days 192 Climatic Grade 1 Exposure Grade 1	SOIL SAMPLE REFERENCES
9/96	11 4 96	ST 7786 4675	PB/GS		9 Pit 4

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	14	MCL	10YR42	5% 2cm 13% 2 cm 18% HR (S&D)	None						MF VF		Clear smooth
2	31	C	10YR43	8% 2 cm 12% 2 cm 20% HR (S&D)	None	None	WFSAB	Friable	Good	Good	CVF		Clear smooth
3	45	C	10YR54	35% 2 cm 23% 2 cm 58% SLST (J&D)	FFFO 10YR56	None	Too stony			Good	FVF		Gradual smooth
4	95+	C	2 5Y64	25% 2 cm 34% 2 cm 59% SLST (S&D)	CFFO 10YR56	None	Too stony			Good	FVF		

Profile Gleyed From 45 cm

Depth to Slowly Permeable Horizon No SPL

Wetness Class I

Wetness Grade 3a*

Available Water Wheat 102 mm

Potatoes 85 mm

Moisture Deficit Wheat 90 mm

Potatoes 78 mm

Moisture Balance Wheat +12 mm

Potatoes +7 mm

Droughtiness Grade 2 (Calculated to 120 cm)

Final ALC Grade 3a

Main Limiting Factor(s) Workability

Remarks * TS 0 14 cm PSD 38% silt, 26% clay therefore texture 0 26 cm probably HCL

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Frome	Pit 5 (ASP 184)	3 N	PGR	Av Rainfall 844 mm ATO 1463 day C	Oxford Clay
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days 188 Climatic Grade 1 Exposure Grade 1	SOIL SAMPLE REFERENCES
9 96	11 4 96	ST 7955 4800	GMS/PB		9 Pit 5

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	HCL	10YR53	0	CDFO 75YR58	0				G	MVF		Clear smooth
2	43	C	10YR73	1/6 HR (VIS)	CDFO 10YR58	0	WCSAB	Fm	P	P	CVF		Clear smooth
3	70+	C	10YR71	0	MDMO 10YR58	0	WCPr	Fm	P	P	FVF		

Profile Gleyed From 0

Depth to Slowly Permeable Horizon 20

Wetness Class IV

Wetness Grade 4

Available Water	Wheat	126 mm
	Potatoes	103 mm
Moisture Deficit	Wheat	93 mm
	Potatoes	82 mm
Moisture Balance	Wheat	+33 mm
	Potatoes	+21 mm

Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 4

Main Limiting Factor(s) We

Remarks

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE			PARENT MATERIAL
Frome	Pit 6 (ASP 86)	0	Winter cereal	Av Rainfall	813 mm	Cornbrash
				ATO	1452 day C	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days	181	SOIL SAMPLE REFERENCES
9/96	11 4 96	ST 7940 4937	PB/GMS	Climatic Grade	1	9 Pit 6
				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	22	MCL	10YR42	Non	None	None					CF VF		Abrupt smooth
2	40	C	10YR54	None	FFFO 10YR56	Few	MCSAB	Friable	Mod	Good	CVF		Gradual smooth
3	70	C	10YR54 (10YR53)	Non	MDFO 10YR56	Common	MCSAB	Friable	Mod	Good	CVF		
4	90+	C	10YR53 56	Non	MDFO 10YR56	Common	WCPR into WCSAB	Firm	Poor	Poor but some large	FVF		

Profile Gleyed From 40

Depth to Slowly Permeable Horizon 70

Wetness Class II

Wetness Grade 3a

Available Water	Wheat	138 mm
	Potatoes	119 mm
Moisture Deficit	Wheat	95 mm
	Potatoes	84 mm
Moisture Balance	Wheat	43 mm
	Potatoes	35 mm

Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 3a

Main Limiting Factor(s) Wetness

Remarks Not gleyed above 40cm Pit porous to at least 70cm.

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Frome	Pit 7 (ASP 11)	4 SW	CER	Av Rainfall 781 mm ATO 1492 day C	Fullers earth
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days 177 Climatic Grade 1 Exposure Grade 1	SOIL SAMPLE REFERENCES
9 96	11 4 96	ST 7898 5005	GMS/PB		9 Pit 7

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast, Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	21	C	10YR42	2 % HR (visual)	None	None					CF VF	Y	Clear smooth
2	38	C	10YR53	15% HR (visual)	None	None	MFSAB	Firm	Good	Poor with a few worm holes Good fissures	FVF	Y	Clear smooth
3	64	C	10YR54	35 % > 2 cm 23 % > 2mm 58 % HR (S&D) at top of horizon- take 65% as a erage	None	None	Too stony				FVF	Y	Gradual smooth
4	71+	C	2 5Y64	95 % HR	FDFO	Few	Too stony				None	Y	

Profile Gleyed From Not gleyed

Depth to Slowly Permeable Horizon No SPL

Wetness Class I

Wetness Grade 3b

Available Water Wheat 79 mm

Potatoes 83 mm

Moisture Deficit Wheat 100 mm

Potatoes 91 mm

Moisture Balance Wheat 21 mm

Potatoes 8 mm

Droughtiness Grade 3b (Calculated to 90 cm)

Final ALC Grade 3b

Main Limiting Factor(s) Workability

Remarks

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Frome	Pit 8 (ASP 111)	0°	PGR	Av Rainfall 781 mm ATO 1492 day C FC Days 177 Climatic Grade 1 Exposure Grade 1	Alluvium
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
9/96	12 4 96	ST 7710 4910	PB/GMS		9 Pit 8

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast, Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	22	HCL	10YR41	Non	None	None					MVF		Gradual smooth
2	80+	C	10YR53	None	None	None	MMSAB	Friable	Good	Good	CVF		

Profile Gleyed From Not gleyed

Depth to Slowly Permeable Horizon No SPL

Wetness Class I

Wetness Grade 3a

Available Water Wheat 206 mm

Potatoes 143 mm

Moisture Deficit Wheat 100 mm

Potatoes 91 mm

Moisture Balance Wheat 106 mm

Potatoes 52 mm

Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 3a

Main Limiting Factor(s) Workability

Remarks

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Frome	Pit 9 (ASP 28)	2 W	PGR	Av Rainfall 852 mm ATO 1447 day C	Inferior oolite limestone
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days 187 Climatic Grade 1 Exposure Grade 1	SOIL SAMPLE REFERENCES
9/96	12/4/96	ST 7785 4978	GMS/PB		9 Pit 9 TS SS

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	13	C	10YR42		None	None					MF VF		Clear smooth
2	27	C	10YR42	3 % >2 cm 14% < 2 cm 17 % HR (S&D)	None	None	MFSAB	Friable	Good	Not evident	CF VF		Gradual smooth
3	50	C	10YR56	35% > 2 cm 13% < 2 cm 48% HR (S&D)	None	None	Too stony to assess	Too stony to assess		Assume good	FF VF		Gradual irregular
4	80+	C	10YR56	40 % > 2cm 25% < 2cm 65% HR (S&D)	None	None	Too stony to assess	Too stony to assess		Assume good	FVF		

Profile Gleyed From	Not gleyed	Available Water	Wheat	90 mm	Final ALC Grade 3b
Depth to Slowly Permeable Horizon	No SPL		Potatoes	81 mm	Main Limiting Factor(s) Workability
Wetness Class	I	Moisture Deficit	Wheat	91 mm	
Wetness Grade	3b		Potatoes	80 mm	
		Moisture Balance	Wheat	1 mm	Remarks
			Potatoes	+1 mm	
		Droughtiness Grade 3a		(Calculated to 120 cm)	

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Frome	Pit 10 (ASP 13)	0°	Cereal	Av Rainfall 813 mm ATO 1452 day C	Cornbrash
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days 181 Climatic Grade 1 Exposure Grade 1	SOIL SAMPLE REFERENCES
9/96	12/4/96	ST 7927 5004	PB/GMS		9 Pit 10

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	C/HCL	10YR42	2% > 2 cm 14% < 2 cm 16% HR (S&D)	None	None					MF VF		Clear smooth
2	35	C	10YR54	30 / > 2 cm 19% < 2 cm 49% HR (S&D)	None	None	Too stony to assess				CVF		Clear smooth
3	55	C	10YR66	50% > 2 cm 27% < 2 cm 77 % HR (S&D)	None	Few	Too stony to assess				FVF		Gradual wavy
4	77	C	10YR64	50 % 22 % 77 % HR (S&D)	CDFO 7 5YR58*	Common	Too stony to assess				FVF		Abrupt wavy
5	100	C	2 5Y63	10 % SLST	CDFO 10YR58	Common	Massive	Firm	Poor	Poor			

Profile Gleyed From 55

Depth to Slowly Permeable Horizon 77

Wetness Class II

Wetness Grade 3b

Available Water Wheat 83 mm

Potatoes 55 mm

Moisture Deficit Wheat 95 mm

Potatoes 84 mm

Moisture Balance Wheat 12 mm

Potatoes 29 mm

Droughtiness Grade 3a (Calculated to 120 cm)

Final ALC Grade 3b

Main Limiting Factor(s) Wetness

Remarks * Sporadic

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Frome	Pit 11 (ASP 141)	4°N	Cereal	Av Rainfall 983 mm ATO 1413 day C	Forest marble
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days 207 Climatic Grade 1 Exposure Grade 1	SOIL SAMPLE REFERENCES
9 96	12 4 96	ST 7648 4869	GMS/PB		9 Pit 11

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	FSCL	10YR43	0	0	0				G	CVF		Clear smooth
2	40	HCL	10YR66	0	0	0	MCAB	Fr	M	G	CVF		Clear smooth
3	70	C	10YR66 10YR56	0	FDFO 75YR58	0	MCSAB	Fr	M	G	FVF		Clear smooth
4	90+	MSL	10YR58	0	0	0	WM,FSAB	V Fr	G	G	FVF		

Profile Gleyed From

Depth to Slowly Permeable Horizon

Wetness Class I

Wetness Grade 2

Available Water	Wheat	165
	Potatoes	116
Moisture Deficit	Wheat	794 mm
	Potatoes	64 mm
Moisture Balance	Wheat	+86
	Potatoes	+52
Droughtiness Grade	1	(Calculated to 120)

Final ALC Grade 2

Main Limiting Factor(s) WK

Remarks Pit dug to 90 Augured to 110