

Frankley
Agricultural Land Classification
November 1998

FRANKLEY
AGRICULTURAL LAND CLASSIFICATION SURVEY

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FRANKLEY

AGRICULTURAL LAND CLASSIFICATION SURVEY

INTRODUCTION

- 1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of 170.5 ha of land at Frankley. Field survey was based on 83 auger borings and 7 soil profile pits and was completed in October 1998. During the survey 2 samples were analysed for particle size distribution (PSD).
- 2 The survey was conducted by the Resource Planning Team of FRCA Western Region on behalf of MAFF in its statutory role in the preparation of the Worcestershire Plan.
- 3 Information on climate, geology and soils and from previous ALC surveys was considered and is presented in the relevant section. Apart from the published regional ALC map (MAFF 1977) which shows the site at a reconnaissance scale as wholly Grade 3, the site had not been surveyed previously. 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 under permanent pasture (ley grass, cereal, maize and peas), some fields had been ploughed. Other land which was not surveyed included farm buildings, roads and tracks, woodland, church and churchyard and a reservoir.

SUMMARY

- 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** **Frankley**

Grade	Area (170.5 ha)	% Surveyed Area (161.1 ha)
2	92.2	57.2
3a	14.5	9.0
3b	54.4	33.8
Other land	9.4	
Total site area	170.5	

- 6 With the exception of the lower lying land in the east of the site, the majority of the land has been classified as best and most versatile. Grade 2 land covers northern and central areas of the site where the soils largely have sandy loam topsoils north of Church Hill and clay loam topsoils south of Church Hill. The soils in the north are limited due to climatic factors, irrespective of the soil and site conditions, those in the centre of the site by climate and topsoil workability.

- 7 Small areas of Subgrade 3a soils which have clay loam topsoils are limited by soil wetness
- 8 Subgrade 3b land covers a small area around Frankley Beeches largely downgraded due to gradient and a larger area on the low lying land in the east and south east of the site where clay loam topsoils overlie clay at shallow depths. These soils have a moderate wetness limitation

CLIMATE

- 9 Estimates of climatic variables for this site were derived from the published agricultural climate dataset Climatological Data for Agricultural Land Classification (Meteorological Office 1989) using standard interpolation procedures. Data for key points around the site are given in Table 2 below
- 10 Since the ALC grade of land is determined by the most limiting factor present overall climate is considered first because it can have an overriding influence by restricting land to a lower grade despite more favourable site and soil conditions. Parameters used for assessing overall climate are accumulated temperature a measure of relative warmth and average annual rainfall a measure of overall wetness. The results shown in Table 2 indicate that there is an overall climatic limitation which limits the land to Grade 2
- 11 Climatic variables also affect ALC grade through interactions with soil conditions. The most important interactive variables are Field Capacity Days (FCD) which are used in assessing soil wetness and potential Moisture Deficits calculated for wheat and potatoes which are compared with the moisture available in each profile in assessing soil droughtiness limitations. These are described in later sections

Table 2 Climatic Interpolations Frankley

Grid Reference	SO 997 800
Altitude (m)	210
Accumulated Temperature (day C)	1254
Average Annual Rainfall (mm)	798
Overall Climatic Grade	2
Field Capacity Days	191
Moisture deficit (mm) Wheat	73
Potatoes	55

RELIEF

- 12 Altitude ranges from 176 metres in the east of the site south of the reservoir to 250 metres at Frankley Beeches with slopes around Frankley Beeches limiting an area of land to Subgrade 3b

GEOLOGY AND SOILS

- 13 The underlying geology of the site is shown on the published geology map (BGS 1996) as Carboniferous Red marls and sandstones. A small area of Till covers the northern part of the site. In the recent survey the soils were found to have variably sandy and clayey textures.
- 14 Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1:250 000 (SSEW 1983) as the Hodnet and Crediton Soil Associations.
- 15 The majority of the site is covered by soils of the Hodnet Association. They are described as reddish fine and coarse loamy soils with slowly permeable subsoils and slight seasonal waterlogging. East of Frankley Beeches the soils are described as Crediton Association. These are well drained gritty reddish loamy soils over breccia locally they can be less stony.
- 16 In the recent ALC survey the soils were found to be more variable in their textures and wetness limitations than the soil distribution would indicate.

AGRICULTURAL LAND CLASSIFICATION

- 17 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

- 18 Land of very good quality was mapped across the majority of the northern and central areas of the site. The soils can be divided into two distinct types: those north of Church Hill and those south of Church Hill.
- 19 The soils north of Church Hill were described as having sandy loam topsoil textures overlying sandy loam and sandy clay loam subsoil horizons to depth. Two profile pits confirmed that these soils were not limited by soil wetness nor soil droughtiness but the soils must be downgraded due to an overall climatic limitation.
- 20 South of Church Hill the soils have been described as having medium clay loam topsoil textures over heavy clay loam subsoils to depth. A soil profile pit confirmed that these subsoils were not slowly permeable and that the soils were not limited by soil wetness. The clay loam topsoil textures limit the workability of the soils to Grade 2 and again the overall climatic limitation also restricts the soils to Grade 2.

Subgrade 3a

- 21 Two areas of good quality land have been mapped a small area east of Park Farm and a larger area around and north of Egghill Farm The soils have been described as having clay loam topsoils overlying heavy clay loam subsoils passing onto clay to depth two soil profile pits confirmed that the clay was slowly permeable and the soils were placed into Wetness Classes II and III (see Appendix II) and Subgrade 3a

Subgrade 3b

- 22 Land of moderate quality covers the majority of the eastern and southern areas of the site together with three small isolated areas along Ravenhayes Lane Frankley Hill Lane and north of Egghill Farm These three smaller areas are limited by slope gradients in excess of 7
- 23 The area of land in the south and east of the site which has been mapped as Subgrade 3b largely coincided with the lower lying ground and the soils have been described as having clay loam topsoils overlying heavy clay loam subsoils and onto clay to depth Two soil profile pits confirmed the subsoils as slowly permeable and the soils were placed into Wetness Class IV and Subgrade 3b

Other Land

- 24 Other land across the site includes farm buildings roads and tracks woodland a church and churchyard and a reservoir A small area of land adjacent to Westminster Farm appeared to be made up and rubble

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FRCA Worcester
9 November 1998

REFERENCES

BRITISH GEOLOGICAL SURVEY/INSTITUTE OF GEOLOGICAL SCIENCES (1996) Sheet 168 Birmingham 1 50 000 series Solid and Drift edition BGS London

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

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

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

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

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 3 Soils of Midland and Western England 1 250 000 scale SSEW Harpenden

SOIL SURVEY OF ENGLAND AND WALES (1984) Soils and Their Use in Midland and Western England Bulletin No 12 SSEW Harpenden

APPENDIX I

DESCRIPTION OF GRADES AND SUBGRADES

Grade 1 excellent quality agricultural land

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

Grade 2 very good quality agricultural land

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

Grade 3 good to moderate quality agricultural land

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

Subgrade 3a good quality agricultural land

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

Subgrade 3b moderate quality agricultural land

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

Grade 4 poor quality agricultural land

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

Grade 5 very poor quality agricultural land

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

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

APPENDIX II

DEFINITION OF SOIL WETNESS CLASSES

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

Wetness Class I

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

Wetness Class II

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

Wetness Class III

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

Wetness Class IV

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

Wetness Class V

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

Wetness Class VI

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

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

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

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

APPENDIX III

ABBREVIATIONS AND TERMS USED IN SURVEY DATA

Soil pit and auger boring information collected during ALC survey is held on a computer database and is reproduced in this report. Terms used and abbreviations are set out below. These conform to definitions contained in the Soil Survey Field Handbook (Hodgson 1997)

1 Terms used on computer database in order of occurrence

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

LAND USE At the time of survey

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

GRDNT Gradient as estimated or measured by hand held optical clinometer

GLEYSPL Depth in centimetres to gleying or slowly permeable layer

AP (WHEAT/POTS) Crop adjusted available water capacity

MB (WHEAT/POTS) Moisture Balance (Crop adjusted AP - crop potential MD)

DRT Best grade according to soil droughtiness

If any of the following factors are considered significant Y will be entered in the relevant column

MREL	Microrelief limitation	FLOOD	Flood risk	EROSN	Soil erosion risk
EXP	Exposure limitation	FROST	Frost prone	DIST	Disturbed land
CHEM	Chemical limitation				

LIMIT The main limitation to land quality. The following abbreviations are used

OC	Overall Climate	AE	Aspect	EX	Exposure
FR	Frost Risk	GR	Gradient	MR	Microrelief
FL	Flood Risk	TX	Topsoil Texture	DP	Soil Depth

CH	Chemical	WE	Wetness	WK	Workability
DR	Drought	ER	Erosion Risk	WD	Soil Wetness/Droughtiness
ST	Topsoil Stoniness				

TEXTURE Soil texture classes are denoted by the following abbreviations

S	Sand	LS	Loamy Sand	SL	Sandy Loam
SZL	Sandy Silt Loam	CL	Clay Loam	ZCL	Silty Clay Loam
ZL	Silt Loam	SCL	Sandy Clay Loam	C	Clay
SC	Sandy clay	ZC	Silty clay	OL	Organic Loam
P	Peat	SP	Sandy Peat	LP	Loamy Peat
PL	Peaty Loam	PS	Peaty Sand	MZ	Marine Light Silts

For the sand loamy sand sandy loam and sandy silt loam classes the predominant size of sand fraction will be indicated by the use of the following prefixes

F	Fine (more than 66% of the sand less than 0.2mm)
M	Medium (less than 66% fine sand and less than 33% coarse sand)
C	Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub divided according to the clay content **M** Medium (< 27% clay) **H** heavy (27 - 35% clay)

MOTTLE COL Mottle colour using Munsell notation

MOTTLE ABUN Mottle abundance expressed as a percentage of the matrix or surface described

F few <2% **C** common 2 - 20% **M** many 20 - 40% **VM** very many 40% +

MOTTLE CONT Mottle contrast

F	faint indistinct mottles evident only on close inspection
D	distinct mottles are readily seen
P	Prominent mottling is conspicuous and one of the outstanding features of the horizon

PED COL Ped face colour using Munsell notation

GLEYS If the soil horizon is gleyed a **Y** will appear in this column. If slightly gleyed an **S** will appear

STONE LITH Stone Lithology One of the following is used

HR	All hard rocks and stones	SLST	Soft oolitic or dolomitic limestone
CH	Chalk	FSST	Soft fine grained sandstone
ZR	Soft argillaceous or silty rocks	GH	Gravel with non porous (hard) stones
MSST	Soft medium grained sandstone	GS	Gravel with porous (soft) stones

SI Soft weathered igneous or metamorphic rock

Stone contents are given in % by volume for sizes >2cm >6cm and total stone >2mm

STRUCT The degree of development size and shape of soil peds are described using the following notation

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

CONSIST Soil consistence is described using the following notation

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

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

POR Soil porosity If a soil horizon has poor porosity with less than 0.5% biopores >0.5mm a **Y** will appear in this column

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

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

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

2 Additional terms and abbreviations used mainly in soil pit descriptions

STONE ASSESSMENT

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

MOTTLE SIZE

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

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

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

MANGANESE CONCRETIONS Assessed by volume

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

POROSITY

P	Poor	less than 0.5% biopores at least 0.5mm in diameter
G	Good	more than 0.5% biopores at least 0.5mm in diameter

ROOT ABUNDANCE

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

ROOT SIZE

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

HORIZON BOUNDARY DISTINCTNESS

Sharp	<0.5cm	Gradual	6-13cm
Abrupt	0.5-2.5cm	Diffuse	>13cm
Clear	2.5-6cm		

HORIZON BOUNDARY FORM Smooth wavy irregular or broken *

* See Soil Survey Field Handbook (Hodgson 1997) for details

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall		798 mm		PARENT MATERIAL	
Frankley		Pit 1 (ASP3)	2 South		PGR		ATO		1254 day C		Carboniferous sandstone	
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		FC Days		191		PSD SAMPLES TAKEN	
79/98		22 9 98	SO 99158097		SH/GN		Climatic Grade		2		Topsoil 0 25cm MSL s 60% z 25% c 15% upper sub 25 55cm SCL s 66% z 16% c 18	
Exposure Grade												

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	25	FSL (SCL)	75YR4/3	<1%HR	none	none					MF+VF		smooth clear
2	55	SCL	75YR/4 (75YR4/3)	none	none	none	MDCPR	FR	mod	Good	MF+VF with a lot of roots running down ped faces		smooth gradual
3	85	MSL	5YR4/4	none	none	few v small	MDCSAB	FR	mod	Good	CF&VF		smooth gradual
4	120	MSL	5YR4/4 with thin bands of MS(10YR 4/4)	cemented SST bands within horizon	none	few v small	MD CPL	FR	mod	Good	CVF		

Profile Gleyed From not gleyed

Slowly Permeable Horizon From no SPL

Wetness Class I

Wetness Grade 1

Available Water Wheat 159mm
Potatoes 112mm

Moisture Deficit Wheat 75mm
Potatoes 55mm

Moisture Balance Wheat +86mm
Potatoes +57mm

Droughttness Grade 1 (Calculated to 120 cm)

Final ALC Grade 2

Main Limiting Factor(s) CLIMATE

Remarks

SITE NAME		PROFILE NO	SLOPE AND ASPECT	LAND USE	Av Rainfall	798 mm	PARENT MATERIAL	
Frankley		PIT 2 (ASPs no 14 15)	3 SW	Cer stubble	ATO	1254 day C	Carboniferous Sandstone	
JOB NO		DATE	GRID REFERENCE	DESCRIBED BY	FC Days	191	PSD SAMPLES TAKEN	
79198		22 9 98	SO 99478030	SH/GN	Climatic Grade	2	none	
					Exposure Grade			

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Motling 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 (29 33)	MSL	75YR3/2 3/3	none	none	none					CF+VF		smooth abrupt
2	60	MSL	5 YR4/3 (75YR4/3)	none	none	none	MDCAB	FR	mod	Good	CF+VF		smooth gradual
3	120	MSL → banded Horizon* with C→ put in datalogger as SCL	5YR/4 with 75YR 4/4 5/4 patches + 25YR3/4 25YR4/6	None but some cemented SST layers 2 3cm thick within horizon	none	none	MDCPL breaking to CAB	FR	poor	Good	CG+VF		

Profile Gleyed From not gleyed

Slowly Permeable Horizon From not SPL

Wetness Class 1

Wetness Grade 1

Available Water Wheat 124mm

Potatoes 109mm

Moisture Deficit Wheat 73mm

Potatoes 55mm

Moisture Balance Wheat +51mm

Potatoes +54mm

Droughtiness Grade 1 (Calculated to 120cm)

Final ALC Grade 2

Main Limiting Factor(s) CLIMATE

Remarks

*Horizon banded sand and clay with some cemented SST layers Horizon see be increasingly clayey with depth

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall		PARENT MATERIAL	
Frankley		PIT3(ASP34)	2		LEY		mm		Carboniferous Red Marls and sandstones	
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		ATO		PSD SAMPLES TAKEN	
79/98		22 9 98	SO 9999 8027		SH/GN		day C		None	
							FC Days		191	
							Climatic Grade		2	
							Exposure Grade			

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	25	MCL	75YR4/3		f f d along root channels 75YR5/6 5/8	none				Good	MF+WF		smooth clear
2	35	HCL	10 YR 5/4 75YR 5/4 6 7 fH2 Below th 5YR4/4(75YR5/3)	°	m f d 75YR5/8 gleyed from 32cm	common in heavier parts of horizon	WKCSAB PR MDCPR	FM FM	poor poor	good poor			
3	100	C	(5yr/3)		mfd 75YR 5/8	many in large concretions	STCPR from 90cm still some prisms but tending towards massive still low porosity + gleyed	VM	poor	poor			

Profile Gleyed From	32	Available Water Wheat mm Potatoes mm Moisture Deficit Wheat 73mm Potatoes 55mm Moisture Balance Wheat mm Droughtiness Grade Potatoes mm (Calculated to cm)	Final ALC Grade 3b
Slowly Permeable Horizon From	32		Main Limiting Factor(s) We
Wetness Class	IV		Remarks
	3b		H2 is variable in depth around pit where it is deeper there is a greater transit zone onto clay This 5YR4/4 transitional material is gleyed (Anything not 5YR or redder is n gleyed and not on SPL)

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall		798mm		PARENT MATERIAL		
Frankley		PIT4(ASP77)	4		PGR		ATO		1254day C		Carboniferous Red Marls and sandstones		
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		FC Days		191		PSD SAMPLES TAKEN		
79/98		24/9/98	SO 9970 7930		SH/GN		Climatic Grade		2		none		
				Exposure Grade									

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	25	MCL	75YR4/3	none	none	none					MF+VF		smooth gradual
2	46	HCL	75YR4/6 5YR4/6) 5YR5/4)	none	COM 5YR5/6	none	MD CSAB	Frable	Moderate	Good	CF+VF		smooth clear
3	55	HCL	5 YR4/6 (5YR5/4)	none	COM 5YR5/6	Few Mn	SD CSAB	Firm	Moderate	Poor	CF+VF		smooth clear
4	67	HCL	5YR4/6 (75YR5/3)	none	COM 75YR5/8	Few mn	SD CSAB (tending to prismatic)	Firm	Moderate	Good	FF+VF		smooth
5		C	5YR4/6 (5YR4/4)		COM 5YR5/6	Few Mn	SDVCAB	V Firm	Poor	Poor			

Profile Gleyed From

55cm

Slowly Permeable Horizon From

67cm

Wetness Class

III (Borde 1 II)
But still 3a

Wetness Grade

3a

Available Water

Wheat 125mm

Potatoes 116mm

Moist D f c t

Wh t 73mm

Potatoes 55mm

Moisture Balance

Wheat 52mm

Droughtiness Grade 1

Potatoes 61mm
(Calculated to 100cm)

Final ALC Grade 3a

Main Lim t ng Factor(s) We

Rema ks

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall		798 mm	PARENT MATERIAL			
Frankley		PIT 5 (ASP50)	5 E		peas		ATO		1254 day C	Red Marls and Sandstones			
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		FC Days		191	PSD SAMPLES TAKEN			
79/98		1 10 98	SO 99943 7985		S HUNTER		Climatic Grade		2	none			
Exposure Grade													

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	30	MCL	75YR43	3% Stone	none	none					C F + VF		Smooth Abrupt
2	58	HCL	05YR44	none	none	none	MD CSAB	friable	Moderate	Good	F VF		Smooth Clear
3	100	C	25YR46 (5YR54)	none	COM 75YR58	C	MDCP	firm	Poor	Poor	FVF		

Profile Gleyed From

Slowly Permeable Horizon From 58

Wetness Class III

Wetness Grade 3a

Available Water Wheat 122mm

Potatoes 113mm

Moisture Deficit Wheat 73mm

Potatoes 55mm

Moisture Balance Wheat 49mm

Droughtiness Grade 1 Potatoes 58mm (Calculated to 100cm)

Final ALC Grade 3a

Main Limiting Factor(s) We

Remarks

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall		798 mm	PARENT MATERIAL			
Frankley		PIT6 (ASP52)	2 E		Cer		ATO		1254 day C	Carboniferous Red Marls and sandstones			
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		FC Days		191	PSD SAMPLES TAKEN			
79198		1 10 98	SO9970 7985		SYH/GN		Climatic Grade		2	none			
				Exposure Grade									

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	35	MCL	75YR4/3	none	none	none					CF + VF		Smooth abrupt
2	90+ dug to 90	HCL	75YR4/4 5YR4/4 In some areas 75YR5/4 gritty lenses	none	none	none	MD CSAB	FR		Good	CF + VF		

Profile Gleyed From	not gleyed	Available Water	Wheat	127mm	Final ALC Grade 2
Slowly Permeable Horizon From	No SPL		Potatoes	119mm	
Wetness Class	1	Moisture Deficit	Wheat	73mm	Main Limiting Factor(s) WK and CL
			Potatoes	55mm	
Wetness Grade	2	Moisture Balance	Wheat	54mm	
		Droughtiness Grade 1	Potatoes	64mm (Calculated to 100cm)	Remarks

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall		798 mm		PARENT MATERIAL		
Frankley		PIT 7 (ASP75 81)	4 N		PGR		ATO		1254 day C		Carboniferous Red Marls and sandstones		
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		FC Days		191		PSD SAMPLES TAKEN		
79/98		1 10 98	SP 0020 7940		SYH/GN		Climatic Grade		2		None		
						Exposure Grade							

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	30	MCL	10YR4/2	6%HR	none	none					MF + VF		Smooth abrupt
2	45	HCL	10 YR5/3 (25y6/3 5/3)	10%HR (<2cm)	cfd 25Y6/3 10YR5/6	none	MD CSAB	FM	mod	low	CF + VF		
3	100	C but banded and by 60cm more sand esp along ped faces but still clay texture	5Y4/4 (10YR5/3) with many small slaty stones 25Y5/4 weathering out to 10YR5/6 by 60cm maj of matrix is 25Y5/3	none at base 80cm + small stone content 8%HR	m f d 75YR5/8	none	MD CPR slightly platy with depth	FM	poor	low	FF + VF		

P ofile Gleyed From	30cm	Available Water	Wheat	114mm	Final ALC Grade 3b
Slowly Permeable Horizon From	45cm		Potatoes	105mm	
Wet ess Class	IV	Moisture Deficit	Wheat	73mm	Main Limiting Factor(s) We
			Potatoes	55mm	
Wetness Grade	3b	Moisture Balance	Wheat	41mm	Remarks
		Droughtiness Grade 1	Potatoes	50mm (Calculated to 100cm)	
					Water in pit at 80cm