

RFQ 6151

89/93

Lady Lamb Farm, Fairford

**AGRICULTURAL LAND CLASSIFICATION  
AND SOIL PHYSICAL CHARACTERISTICS**

Resource Planning Team  
Taunton Statutory Unit

October 1993

# LADY LAMB FARM, FAIRFORD, GLOUCESTERSHIRE

## AGRICULTURAL LAND CLASSIFICATION AND SOIL PHYSICAL CHARACTERISTICS

### Report of Survey

#### 1. INTRODUCTION

Seventy nine hectares of land at Lady Lamb Farm, Fairford were surveyed using the Agricultural Land Classification (ALC) System in October 1993. The survey was carried out for MAFF in connection with a proposed planning application to extract gravel from the site.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000. The information is correct at this scale but any enlargement would be misleading. The distribution of grades identified in the survey area are detailed below and illustrated on the accompanying ALC map.

#### Distribution of ALC grades: Lady Lamb Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	65.1	82.2	85.5
3b	11.0	13.9	14.5
Urban	0.4	0.5	<u>100%</u>
Non Agric	2.4	3.0	(76.1ha)
Farm Bdgs	<u>0.3</u>	<u>0.4</u>	
TOTAL	79.2	100%	

The majority of the site experiences droughtiness limitations caused by light textured subsoils with variable stone contents. The stone contents are very variable within short distances and a pattern limitation exists. About three quarters of the profiles examined in the 3a mapping unit had a droughtiness grade of 2 or 3a, whilst the remaining quarter are Subgrade 3b. The pattern limitation will have an effect on the management of the site and Subgrade 3a was considered to adequately reflect the overall potential of the land mapped as Subgrade 3a. There are three small areas where the soils are poorly drained and these are Subgrade 3b.

## 2. INTRODUCTION

Seventy nine hectares of land at Lady Lamb Farm, Fairford were surveyed using the Agricultural Land Classification (ALC) System in October 1993. The survey was carried out for MAFF in connection with a proposed planning application to extract gravel from the site.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at this scale but any enlargement would be misleading. A total of 79 auger sample points and seven soil profile pits were examined.

The published Provisional one inch to the mile ALC map of this area (MAFF 1973) shows the site to be a mix of Grades 2 and 3. The recent survey supersedes this map having been carried out at a more detailed level and using the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988).

These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The grading takes account of the top 120cm of the soil profile. A description of the grades used in the ALC System can be found in Appendix 2.

## 3. CLIMATE

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

Estimates of climatic variables were obtained for the site by interpolation from the Agricultural Climate Dataset (Meteorological Office 1989). The data are shown in Table 1.

The parameters used for assessing overall climatic limitations are accumulated temperature, (a measure of the relative warmth of a locality) and average annual rainfall, (a measure of overall wetness). The values shown in Table 1 reveal that there is no overall climatic limitation. Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat (MDW) and potatoes (MDP) are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in later sections. Descriptions of the Wetness Classes used can be found in Appendix 3.

No local climatic limitations were noted.

**Table 1 Climatic Interpolations: Lady Lamb Farm**

Grid Reference	SP 144 000	SP 132 000
Height (m)	85	105
Accumulated Temperature (deg days)	1427	1405
Average Annual Rainfall(mm)	719	744
Overall Climatic Grade	1	1
Field Capacity (days)	161	166
Moisture Deficit, Wheat (mm)	102	98
Moisture Deficit, Potatoes (mm)	93	88

#### **4. RELIEF AND LANDCOVER**

The site is virtually flat except for a slight slope in the east. The altitude of the site varies from 85m AOD to 105m AOD. There are no slopes which impose restrictions on the versatility of the land.

At the time of survey the site was being used for arable cropping.

#### **5. GEOLOGY AND SOILS**

The geology of the site is shown on the published 1:63,360 scale solid and drift geology map, sheet 252 (Geological Survey of England and Wales 1974). Similarly the soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000.

The geology of the site is made up of drift river terrace deposits of the first, second and forth terraces. There are also two areas of Kellaways clays in the north and on the sloping land in the east.

The site has three mapped soil associations. In the west the Badsey 1 Association is mapped. These soils are described as well drained calcareous and non calcareous fine loamy soils over limestone gravel. There are some deeper fine loamy soils and some shallower soils. In the east there is a small area of the Badsey 2 Association. These soils are similar to the Badsey 1 soils. In the middle of the site the Evesham 2 Association has been mapped. These are slowly permeable calcareous clayey soils which may be seasonally waterlogged.

The recent survey found soils similar to the mapped associations.

## 6. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed in Table 2 and shown on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

**Table 2 Distribution of ALC grades: Lady Lamb Farm**

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	65.1	82.2	85.5
3b	11.0	13.9	14.5
Urban	0.4	0.5	<u>100%</u>
Non Agric	2.4	3.0	(76.1ha)
Farm Bdgs	<u>0.3</u>	<u>0.4</u>	
TOTAL	79.2	100%	

### Subgrade 3a

The majority of the site experiences droughtiness limitations caused by light textured subsoils with variable stone contents. The stone contents are very variable within short distances and a pattern limitation exists. About three quarters of the profiles examined had a droughtiness grade of 2 or 3a, whilst the remaining quarter are Subgrade 3b. The pattern limitation will have an effect on the management of the site but Subgrade 3a was considered to adequately reflect the potential of the land. The typical profile found in this area has heavy clay loam topsoil with 10-20% small stones, over a very stony subsoil which was usually a sandy loam or loamy sand texture. Sometimes there is an intermediate horizon with heavy clay loam or clay texture and over 20% stones. There are some medium clay loam and clay topsoils scattered across the site. The soils are generally Wetness Class I with a few Wetness Class II profiles. Six soil profile pits were dug in the area mapped as Subgrade 3a. These pits show the variability found across the site.

### Subgrade 3b

Three small areas have been mapped as Subgrade 3b. These soils are poorly drained and were found to be Wetness Class III and IV. These soils are not as stony as the soils described above and in some cases had very few stones. The topsoils in these units were either heavy clay loam or clay. The combination of the Wetness Class, topsoil texture and the number of days at which the site is at field capacity limit these areas to Subgrade 3b.

## 7. SOIL RESOURCES

The areas referred to can be found on the accompanying Soil Resources map.

"Topsoil" is defined as the organic rich surface horizon. Some of the topsoils are calcareous. The majority of the topsoils are heavy clay loams with a scattering of clays and medium clay loams. The topsoils do not need to be differentiated in terms of texture but a difference in depth of the topsoil was noted across the site. To the south west of the site the topsoils were 20cm deep and over the rest of the site they were 30cm deep. There is some variation within these units but the most common depths are those above. The structure of the topsoil is weak and moderately developed coarse subangular blocky. The soils are friable in consistence and well rooted. The topsoils have up to 20% hard small stones.

A total topsoil resource of 198000m<sup>3</sup> is available, distributed as shown in Table 3.

Table 3 Topsoil Resources

Map Unit	Depth (cm)	Area (ha)	Soils	Volume (m <sup>3</sup> )
1,2,5	30	45.8	HCL	137400
3,4	20	30.3	HCL	<u>60600</u> 198000

There may be usable soils resources within the areas of woodland marked as non agricultural land.

"Subsoil" is defined as the less organic rich lower horizons.

Much of the site has only a very stony light textured subsoil. Whilst the stone content in some of these areas is very high the material is still considered to be soil because there is less than 70% stone content. The stony soils hold an important reserve of soil water and are essential for the soil to be Subgrade 3a. To take away any part of this soil would downgrade the soil profile. Other parts of the site have an upper subsoil which is heavier in texture and less stony, but generally these are scattered profiles, reflecting the variability of the site.

Unit 1 and 4 has a clay horizon with no stones over the stony lower subsoil which occurs from 100cm. The clay horizon is weakly developed coarse angular blocky in structure and is friable. The clay has a moderate structural condition and has low porosity.

Unit 2 and 3 have stony subsoils to depth. Some of the profiles have heavy clay loam as an upper subsoil but this has stone contents of about 20% or more. Below this there are sandy loams and loamy sand with often stone contents as high as 60%. The structure of these subsoils are variable but always weakly developed.

Unit 5 is similar to Units 1 and 4 except the clay upper subsoil only extends to 50cm before the stony light textured subsoil is found.

A total subsoil resource of 715200m<sup>3</sup> is available distributed as shown in Table 4.

**Table 4 Subsoil Resources**

Map Unit	Depth (cm)	Area (ha)	Soils	Volume (m <sup>3</sup> )
1	30-100	16.3	C	114100
1	100-120	16.3	LS/SL	32600
2	30-120	25.3	LS/SL	227700
3	20-120	25.7	LS/SL	257000
4	20-100	4.6	C	36800
4	100-120	4.6	LS/SL	9200
5	30-50	4.2	C	8400
5	50-120	4.2	LS/SL	<u>29400</u>
				715200

**SOIL RESOURCES: Soil Units**

TEXTURE	DEPTH (cm)	STONES	AREA (ha)	VOLUME (m <sup>3</sup> )
<b>Unit 1</b>				
HCL	0-30	<20%HR	16.3	48900
C	30-100	0%	16.3	114100
LS/SL	100-120	>40%HR	16.3	32600
<b>Unit 2</b>				
HCL	0-30	<20%HR	25.3	75900
LS/SL	30-120	>40%HR	25.3	227700
<b>Unit 3</b>				
HCL	0-20	<20%HR	25.7	77100
LS/SL	20-120	>40%HR	25.7	257000
<b>Unit 4</b>				
HCL	0-20	<20%HR	4.6	9200
C	20-100	0%	4.6	36800
LS/SL	100-120	>40%HR	4.6	9200
<b>Unit 5</b>				
HCL	0-30	<20%HR	4.2	12600
C	30-50	0%	4.2	8400
LS/SL	50-120	>40%HR	4.2	<u>29400</u>
				913200

Abbreviations

HCL Heavy clay loam  
 C Clay  
 LS Loamy sand  
 SL Sandy loam  
 HR Hard rock

## **APPENDIX 1**

### **REFERENCES**

**GEOLOGICAL SURVEY OF ENGLAND AND WALES (1974) Solid and Drift edition. Sheet 252 Swindon, 1:63360 scale**

**MAFF (1973) Agricultural Land Classification Map sheet 157 Provisional 1:63,360 scale**

**MAFF (1988) Agricultural Land Classification of England and Wales (Revised guidelines and criteria for grading the quality of agricultural land ) Alnwick**

**METEOROLOGICAL OFFICE (1989) Published climatic data extracted from the agroclimatic dataset, compiled by the Meteorological Office**

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

## APPENDIX 2

### DESCRIPTION OF THE GRADES AND SUBGRADES

#### **Grade 1 - excellent quality agricultural land**

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

#### **Grade 2 - very good quality agricultural land**

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

#### **Grade 3 - good to moderate quality agricultural land**

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

##### **Subgrade 3a - good quality agricultural land**

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

##### **Subgrade 3b - moderate quality agricultural land**

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

#### **Grade 4 - poor quality agricultural land**

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

#### **Grade 5 - very poor quality agricultural land**

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

Descriptions of other land categories used on ALC maps

#### **Urban**

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

#### **Non-agricultural**

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: private park land, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

#### **Agricultural buildings**

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg polythene tunnels erected for lambing) may be ignored.

#### **Open water**

Includes lakes, ponds and rivers as map scale permits.

## **Land not surveyed**

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above land cover types, eg buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will usually be shown.

**Source: MAFF (1988) Agricultural Land Classification of England and Wales (Revised guidelines and criteria for grading the quality of agricultural land) Alnwick.**

## APPENDIX 3

### DEFINITION OF SOIL WETNESS CLASSES

#### **Wetness Class I**

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

#### **Wetness Class II**

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

#### **Wetness Class III**

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

#### **Wetness Class IV**

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

#### **Wetness Class V**

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

#### **Wetness Class VI**

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

**Notes:** The number of days specified is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.

**Source:** Hodgson, J M (in preparation) Soil Survey Field Handbook (revised edition).

SITE NAME		PROFILE NO.		SLOPE AND ASPECT		LAND USE		Av Rainfall: 719 mm			PARENT MATERIAL		
Lady Lamb Farm		Pit 1		0°		Recently seeded		ATO: 1427°			Kellaways Clays		
JOB NO.		DATE		GRID REFERENCE		DESCRIBED BY		FC Days: 161			TOPSOIL SAMPLE		
89/93		30/9/93		SP136005		GMS		Climatic Grade: 1			RPT/GMS260		
Horizon Number	Lowest Av Depth (cm)	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots: Abundance, Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and form
1	18	10YR43	HCL	0% >2cm 9% HR >2mm Sieved/displ	None	WCSAB	Good	-	Friable	Many fine	None	None	Smooth abrupt
2	70	10YR44	MSL	33% HR >2mm Sieved/displ	None	WMSAB	Good	Good	Friable	Common/ few fine	Yes	None	Wavy clear
3	90	10YR56	LMS	27% HR >2mm Sieved/displ	None		Good	Assume good	Friable	None	Yes	None	Wavy clear
4	120	10YR64	HCL	0% visual	None			Assume moderate	Friable	None	Yes	None	

Profile Gleyed From: Not  
Depth to Slowly Permeable Horizon: None  
Wetness Class: I  
Wetness Grade: 2

Available Water Wheat: 124 mm  
Potatoes: 89 mm  
Moisture Deficit Wheat: 102 mm  
Potatoes: 93 mm  
Moisture Balance Wheat: +22 mm  
Potatoes: -4 mm  
Droughtiness Grade: 2 (to 120 cm)

Final ALC Grade: 2  
Main Limiting Factor(s): Workability

Remarks:  
Pit dug to 90 cm, augered to 120 cm.  
Transition layer between horizons 1 and 2.

SITE NAME		PROFILE NO.		SLOPE AND ASPECT		LAND USE		Av Rainfall: 719 mm			PARENT MATERIAL		
Lady Lamb Farm		Pit 2		0°		Fallow		ATO: 1427°			4th Terrace River Deposits		
JOB NO.		DATE		GRID REFERENCE		DESCRIBED BY		FC Days: 161			TOPSOIL SAMPLE		
89/93		1/10/93		Trench 39 SP132004		V Redfern		Climatic Grade: 1			RPT/GMS268		
Horizon Number	Lowest Av Depth (cm)	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots: Abundance, Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and form
1	30	75YR4/4	HCL	15% HR	None	MDMSB	Good		Friable	C, fine		-	Smooth, abrupt
2	46	10YR5/6	LCS	64% HR	None	?	Good	Good	V friable	C, fine		-	Smooth, clear
3	120	10YR6/6	CS	66% HR	None	Granular	Good	Good	V friable	Few, fine		-	

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 2

Available Water Wheat: 62 mm

Potatoes: 57 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: -40 mm

Potatoes: -36 mm

Droughtiness Grade: 3b

Final ALC Grade: 3b

Main Limiting Factor(s): Droughtiness

Remarks:

SITE NAME		PROFILE NO.		SLOPE AND ASPECT		LAND USE		Av Rainfall: 719			PARENT MATERIAL		
Lady Lamb Farm		Pit 3		0°		Fallow		ATO: 1427			4th Terrace River Deposits		
JOB NO.		DATE		GRID REFERENCE		DESCRIBED BY		FC Days: 161			TOPSOIL SAMPLE		
89/93		1/10/93		Trench 45 SP134003		V Redfern		Climatic Grade: 1			RPT/GMS272		
Horizon Number	Lowest Av Depth (cm)	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots: Abundance, Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and form
1	20	75YR44	HCL	16% HR	None	MDMSB	Good		Friable	Few, fine			Clear, smooth
2	30	75YR56	MCL	26% HR	None	MDMSB	Good		Friable	Few, fine			Clear, irregular
3	65	10YR66	LCS	71% (99 GH)	None	Granular	Good	Good	V friable	-			Diffuse, wavy
4	130	10YR66	MSL	35%	None	Granular	Good	Good	V friable	-			
*		10YR56	FSL										

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 2

Available Water Wheat: 95 mm

Potatoes: 54 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: -7 mm

Potatoes: -39 mm

Droughtiness Grade: 3b

Final ALC Grade: 3b

Main Limiting Factor(s): Droughtiness

Remarks:

\* Within this horizon 2 bands approximately 5 cm deep of FSL material.  
All stone contents by sieving and displacement.

SITE NAME		PROFILE NO.		SLOPE AND ASPECT		LAND USE		Av Rainfall: 719 mm			PARENT MATERIAL		
Lady Lamb Farm		Pit 4		0°		Cereal		ATO: 1427°			4th Terrace River Deposits		
JOB NO.		DATE		GRID REFERENCE		DESCRIBED BY		FC Days: 161			TOPSOIL SAMPLE		
89/93		4/10/93		Trench 30 SP139005		GMS		Climatic Grade: 1			RPT/GC71		
Horizon Number	Lowest Av Depth (cm)	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots: Abundance, Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and form
1	26	10YR43	MCL	30% HR >2mm Sieved/displ	None	MCSAB	Good	-	Friable	Common fine	Yes	None	Smooth abrupt
2	54	7.5YR44	HCL	32% HR >2mm Sieved/displ	None	WCSAB		Moderate	Friable	Common v fine	Yes	None	Smooth locally but wavy along trench down to 80 cm abrupt
3	93	10YR66	MS	41% HR >2mm Sieved/displ	None	MMG		Good	V friable	Few v fine to 80 cm	Yes	None	Smooth abrupt
4	108	10YR56	MS	0% visual	None	WCSAB		Moderate	V friable	None	Yes	None	Smooth sharp
5	120	10YR54	ZL	0% visual	None	MCP		Moderate	Friable	None	Yes	None	Smooth sharp
6	120+	10YR64	MSL		None								

Profile Gleyed From: Not  
Depth to Slowly Permeable Horizon: None  
Wetness Class: I  
Wetness Grade: 1

Available Water Wheat: 98 mm  
Potatoes: 74 mm  
Moisture Deficit Wheat: 102 mm  
Potatoes: 93 mm  
Moisture Balance Wheat: -4 mm  
Potatoes: -19 mm  
Droughtiness Grade: 3A (to 120 cm)

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

Remarks:  
Iron staining in horizons 3 and 4.

SITE NAME		PROFILE NO.		SLOPE AND ASPECT		LAND USE		Av Rainfall: 719 mm			PARENT MATERIAL		
Lady Lamb Farm		Pit 5		0°		Stubble		ATO: 1427°			4th Terrace River Deposits		
JOB NO.		DATE		GRID REFERENCE		DESCRIBED BY		FC Days: 161			TOPSOIL SAMPLE		
89/93		12 October 1993		ASP 55 SP131001		NAD		Climatic Grade: 1			RPT/GC68		
Horizon Number	Lowest Av Depth (cm)	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots: Abundance, Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and form
1	30	7.5YR43	HCL	22% <2cm 1% >2cm 23% Hard (limestone) Sieved/displ	-	WCSAB	-	-	V friable	Many fine	V calc	None	Clear/ smooth
2	80	10YR56, 66	MS	60% Total Hard limestone Sieved/displ	-	Too stony poss gran sand grains around small stones	Common pores and fissures	Mod	V friable	Many fine	V calc	None	
3	80+	10YR56	MS	Approx >70% st sieved (99% used)	-			Mod					

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 2

Available Water Wheat: 57 mm

Potatoes: 53 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: -45 mm

Potatoes: -40 mm

Droughtiness Grade: 3b (to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Droughtiness

Remarks:

SITE NAME		PROFILE NO.		SLOPE AND ASPECT		LAND USE		Av Rainfall: 719 mm			PARENT MATERIAL			
Lady Lamb Farm		Pit 6		0°		OSR		ATO: 1427°			Kellaways Clays			
JOB NO.		DATE		GRID REFERENCE		DESCRIBED BY		FC Days: 161			TOPSOIL SAMPLE			
89/93		12 October 1993		ASP 50 SP141002		N Done/G Clark		Climatic Grade: 1			RPT/GC67			
Horizon Number	Lowest Av Depth (cm)	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots: Abundance, Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and form	
1	30	10YR44	HCL	<1% HR <2mm wet sieve	Common ochreous 75YR56	MCSAB	<0.5%	-	Firm	Many fine/ v fine	0	None	Abrupt wavy	
2	60	10YR46	C	1% HR visual estimate	None	MCSAB	<0.5%	Moderate	Friable	Few fine and v fine	0	None	Gradual wavy	
3	120	10YR68 (matrix) 10YR56 (ped face)	C	1% HR visual	None	MCAB tending prismatic	>0.5%	Moderate	Friable	Few v fine	0	Common		
Profile Gleyed From: Not gleyed				Available Water				Wheat: 141 mm		Final ALC Grade: 2				
Depth to Slowly Permeable Horizon: No SPL				Moisture Deficit				Wheat: 102 mm		Main Limiting Factor(s): Workability				
Wetness Class: I				Moisture Balance				Wheat: 39 mm		Remarks: Pit to 110 cm. Topsoil texture borderline HCL/C.				
Wetness Grade: 2				Droughtiness Grade: 1 (to 120 cm)				Potatoes: 117 mm						
								Potatoes: 93 mm						
								Potatoes: 24 mm						

SITE NAME		PROFILE NO.		SLOPE AND ASPECT		LAND USE		Av Rainfall: 719 mm			PARENT MATERIAL		
Fairford		Pit 7		2° E		OSR		ATO: 1427°			Kellaways Clays		
JOB NO.		DATE		GRID REFERENCE		DESCRIBED BY		FC Days: 161			TOPSOIL SAMPLE		
89/93		12 October 1993		ASP 25 SP142004		P Barnett, N Done, G Clark		Climatic Grade: 1			RPT/GC65		
Horizon Number	Lowest Av Depth (cm)	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots: Abundance, Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and form
1	30	10YR43	MCL	None	None	WCSAB and medium granular	Well fissured to 20	-	Friable	Many fine	None	None	Clear smooth
2	70+	25Y62	C	None	Many 10YR68	Weak dev. adherent CAB	<0.5%	Moderate	Friable	Few fine	None	Common manganese	-

Profile Gleyed From: 30 cm

Depth to Slowly Permeable Horizon: 30 cm

Wetness Class: IV

Wetness Grade: 3b

Available Water	Wheat: 142 mm
	Potatoes: 118 mm
Moisture Deficit	Wheat: 102 mm
	Potatoes: 93 mm
Moisture Balance	Wheat: 40 mm
	Potatoes: 25 mm
Droughtiness Grade:	1 (to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks:

Pit dug to 70 cm, augered to 120 cm.  
Structure in topsoil better near surface above 20 cm.  
Wet (water table) at 65 cm.  
Increasing fine sand at depth.