8FCS 4322 24/91

UPPER THAMES PLAN - DOWN AMPNEY

AGRICULTURAL LAND CLASSIFICATION

REPORT OF SURVEY

1. Introduction

In August 1991, a detailed Agricultural Land Classification (ALC) survey and assessment of site physical characteristics was carried out over 473 ha of land at Down Ampney. The survey was requested as part of MAFF's statutory input to the Upper Thames Plan which is under review by Gloucestershire County Council.

The field work was carried out by the Resource Planning Group at a scale of 1:10,000 and this survey supersedes the previous 1979 1:25,000 survey, being at a more detailed level and carried out under the Revised Guide-lines and Criteria for grading the quality of agricultural land (MAFF 1989). A total of 330 borings and 21 soil pits were examined.

2. Agricultural Land Classification

2.1 The ALC provides 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 into account the top 120 cm of the soil profile. The distribution of the ALC grades is detailed below and illustrated on the accompanying ALC map at a scale of 1:12,000. The information is accurate at the scale of mapping but any enlargement would be misleading.

TABLE 1 DISTRIBUTION OF ALC GRADES

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	105.4	22.3	27.5
3a	225.2	47.6	58.7
3b	52.9	11.2	13.8
Urban	33.5	7.1	100% (383.5 ha)
Non Agric	55.7	11.8	
	472.7 ha	100%	

2.2 Climate

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

To assess any overall climatic limitation, estimates of important climatic variables were obtained for the site by interpolation from the 5 km grid Met Office/MAFF database (Climatological Data for Agricultural Land Classification. Met Office/MAFF/SSLRC 1989). The indicative parameters used for assessing such a limitation are accumulated temperature (a measure of the relative warmth of a locality) and average annual rainfall (a measure of overall wetness). The results, shown in Table 2 reveal that there is no overall climatic limitation across the survey area. No local climatic risk factors such as exposure were observed in the survey area.

TABLE 2 Climatic Interpolations

Grid Reference	SU107975	SU114956
Height (m)	86	78
Accumulated Temperature (° days)	1428	1438
Average Annual Rainfall (mm)	712	685
Field Capacity (Days)	161	156
Moisture Deficit, wheat (mm)	102	104
potatoes (mm)	93	96
Overall Climatic grade	1	1

2.3 Grade 2

There are several areas which have been classified as Grade 2. These are deep well drained soils but are limited by workability because the topsoil texture is a heavy clay loam. The workability of a soil affects the ease with which it can be cultivated and period during which it can be cultivated and grazed without causing structural damage. With the prevailing field capacity day level of 161 these soils can be graded no higher than Grade 2. Some of the profiles had horizons below 70 cm with high stone percentages (>30% 2 mm-2 cm) but these do not cause a droughtiness limitation within the profile.

2.4 Sub-Grade 3A

The majority of the survey area has been classified as sub-grade 3A. There are two typical profiles within this area.

The first has heavy clay loam topsoils, continuing into the subsoils which show evidence of wetness caused by high water tables during some of the year. This wetness takes the form of gleying which is seen as grey or pale

colours and ochreous mottling. The gleying occurs within 40 cm but there are no slowly permeable layers below because the profile becomes stony with up to 50% stones in a loamy coarse sand matrix. The profile is assigned to wetness Class II and thus sub-grade 3A.

The second typical profile does not have evidence of wetness but has a shallower depth of heavy clay loam topsoil and subsoil typically to 50 cm, over an increasingly stony horizon with 20-30% stones (all 2 mm-2 cm) in the upper layers increasing to up to 50% within a matrix of loamy coarse sand at the bottom of the profile. The stone percentages and depths vary across the survey area and so these profiles have been graded as 3A on droughtiness reflecting the variability. Within this variability some of the profiles could be graded higher. Stone measurements were made by sieving known volumes of soil and then obtaining stone volumes by displacement in water to obtain the percentage of stone in the matrix.

2.5 Sub-grade 3B

There are a few small areas of sub-grade 3B. One area near to Sycamore Walk had much higher stone contents in the profile than elsewhere and so the droughtiness limitation was greater here.

Near the War Memorial surface stone percentages limited a small area to Subgrade 3B.

The remaining areas of sub-grade 3B experience a wetness limitation. Generally the topsoils were clay or heavy clay loam to 30 cm. The subsoils are clay which continue to depth.

The subsoils were gleyed and slowly permeable layers were present. These occurred at variable depths and the profiles can be assigned to wetness classes III and IV, accordingly. Profiles with any of these wetness classes for a clay or heavy clay loam topsoil with 161 FCDs are classed as subgrade 3B.

3. Soil Resources: Topsoil

The areas referred to can be found on the accompanying Soil Resource maps.

"Topsoil" is defined as the organic rich surface horizon.

Two topsoil units exist in the survey area. The depth varies between 20 cm and 40 cm so an average topsoil depth of 30 cm is taken as the working depth.

The two units have clay and heavy clay loam textures. These distinct topsoils should be handled separately as they are significantly different in terms of workability.

A total topsoil resource of 1418100 m^3 is available, distributed as shown in Table 3 and on the accompanying Topsoil Resource map.

TABLE 3 TOPSOIL RESOURCES

Map Unit	Depth	Area (ha)	Soils	Volume
I	30 cm	21.3	C	63900 m^3
II	30 cm	451.4	HCL	1354200 m^3
				1418100 m^3

4. *Soil Resources: Subsoil*

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

The number (11) of subsoil units reflects the variability of soils associated with river terrace deposits. Across the site there is soil to a depth of 120 cm. However the upper subsoil texture and depth varies being either clay or heavy clay loam. In some parts the subsoil consists of only one stone free soil texture whereas elsewhere loamy sand and sandy loams exists to depth. These soils are very stony with stone percentages up to 50% (2 mm-2 cm size range). The depths at which the horizons exist is variable so average depths for the horizons have been taken in each unit.

A total subsoil resource of 4254300 m^3 is available, the distribution of which is shown in Table 4.

TABLE 4 Subsoil Resources

Map Unit	Depth	Area (ha)	Soils	Volume (m^3)
III	30-50 cm	36.0	C	72000
III	50-120 cm	36.0	LS/SL	252000
IV	30-120 cm	73.0	C	657000
V	30-45 cm	4.0	C	6000
V	45-120 cm	4.0	LS/SL	30000
VI	30-60 cm	10.7	C	32100
VI	60-120 cm	10.7	LS/SL	64200
VII	30-60 cm	19.6	HCL	58800
VII	60-120 cm	19.6	LS/SL	117600
VIII	30-120 cm	44.9	HCL	404100
IX	30-75 cm	22.3	HCL	100350
IX	75-120 cm	22.3	LS/SL	100350
X	30-45 cm	197.4	HCL	296100
X	45-120 cm	197.4	LS/SL	1480500
XI	30-70 cm	8.1	C	32400
XI	70-120 cm	8.1	LS/SL	40500
XII	30-40 cm	35.6	HCL	35600
XII	40-120 cm	35.6	LS/SL	284800
XIII	30-65 cm	21.1	HCL	73850
XIII	65-120 cm	21.1	LS/SL	116050
				4254300 m^3

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Upper Thames Plan Down Ampney	1	0°		Av Rainfall :- 712 mm ATO :- 1428 FC Days :- 161 Climatic grade:- 1	Oxford Clay
	DATE Aug 91	GRID REFERENCE 116973	Ley		

Horizon Number	Lowest Av Depth	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	0-20	10YR34	HCL	2% HR	-								
2	20-55	2.5YR54	C	5% HR	cdom 2.5Y68	MCAB	<0.5%	Poor	Firm				
3	55-80	10YR54	C	80% HR		Too stoney to assess	>0.5%	Moderate					
				All < 2 cm									

Depth to Slowly Permeable Horizon :- 35 cm Gleyed at 20 cm	Available Water	Wheat :- 82 mm	89 mm	Final ALC Grade :- 3B
		Potatoes :- 86 mm	85 mm	
Wetness Class :- IV	Moisture Deficit	Wheat :- 102 mm	102 mm	Main Limiting Factor(s) :- Wetness
		Potatoes :- 93 mm	93 mm	
Wetness Grade :- 3B	Moisture Balance	Wheat :- -20 mm	-13 mm	
		Potatoes :- -7 mm	-8 mm	Remarks :-
RPG23/WJC	Droughtiness Grade	:- 3B (to 80 cm)	3A (to 120 cm)	

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	2	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Perm Grass	FC Days :- 161	River Terrace Deposits
	Aug 91	119971		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-17	10YR53	HCL	2% HR	-								
2	17-46	10YR66	HCL	5% HR	-	MCSAB	<0.5%	Moderate	Friable				
3	46-120	2.5Y62	C	2% HR	cdom 10YR56	MC$AB	<0.5%	Poor	Firm				
				All < 2 cm									

Depth to Slowly Permeable Horizon :- 46 cm
Gleyed at 46 cm

Wetness Class :- III

Wetness Grade :- 3B

RPG23/WJC

Available Water Wheat :- 127 mm
Potatoes :- 105 mm

Moisture Deficit Wheat :- 102 mm
Potatoes :- 93 mm

Moisture Balance Wheat :- 25 mm
Potatoes :- 12 mm

Droughtiness Grade :- 2
(to 120 cm)

Final ALC Grade :- 3B

Main Limiting Factor(s) :- Wetness

Remarks :-

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
Upper Thames Plan Down Ampney	3	0°		ATO :- 1428	
	DATE	GRID REFERENCE	Cereal	FC Days :- 161	River Terrace Deposits
	Aug 91	123969		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-32	10YR44	HCL	-	-								
2	32-44	2.5Y56	HCL	26% HR	-	WMSAB	>0.5%	Good	Friable				
3	44-66	2.5Y76	LMS	36% HR		WMSAB	>0.5%	Good	Friable				
4	66-100	2.5Y73	LMS	40% HR			>0.5%	Good					
5	100-120	2.5Y73	LMS	50% HR			>0.5%	Good					
				All < 2 cm									

Depth to Slowly Permeable Horizon :-

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water	Wheat :-	111 mm
	Potatoes :-	93 mm
Moisture Deficit	Wheat :-	102 mm
	Potatoes :-	93 mm
Moisture Balance	Wheat :-	+9 mm
	Potatoes :-	0 mm
Droughtiness Grade	:-	2 to 120 cm

Final ALC Grade :- 2 in 3A mapping unit

Main Limiting Factor(s) :- Droughtiness

Remarks :- Stone measurements by sieving (2 mm) and displacement in water. Roots observed to 60 cm. Pits 3 and 14 reflect the variability in the textures, depths and stone content of the river terrace deposits. Grade 3a is the most appropriate grade.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	4	0°		ATO :- 1428	
Upper Thames Plan.Down Ampney	DATE	GRID REFERENCE	Wheat	FC Days :- 161	River Terrace Deposits
	Aug 91	121962		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-25	2.5Y44	HCL	-		MCSAB			Friable				
2	25-43	2.5Y64	HCL	-	cdgm 2.5Y70	MCSAB	>0.5%	Moderate	Friable				
3	43-62	2.5Y64	HCL	30% HR		WMG	>0.5%	Good	Very Friable				
4	62-80	2.5Y68	MSL	31% HR			>0.5%	Good	Very Friable				
5	80-100	2.5Y68	MSL	38% HR			>0.5%	Good	Loose				
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
Gleyed at 25 cm

Wetness Class :- II

Wetness Grade :- 3A

RPG23/WJC

Available Water	Wheat	:- 129 mm	146 mm	
	Potatoes	:- 112 mm	112 mm	
Moisture Deficit	Wheat	:- 102 mm	102 mm	
	Potatoes	:- 93 mm	93 mm	
Moisture Balance	Wheat	:- 27 mm	44 mm	
	Potatoes	:- 19 mm	19 mm	
Droughtiness Grade		:- 2 (to 100 cm)	1 (to 120 cm)	

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Wetness

Remarks :- Stone % by sieving and displacement in water

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	5	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Maize	FC Days :- 161	River Terrace Deposits
	Aug 91	115964		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-27	10YR42	HCL	2% HR	-	WMSAB	>0.5%		Friable		Yes		
2	27-53	2.5Y52	C	2% HR	cdgm	WMSAB	>0.5%	Good	Friable		Yes		
3	53-73	2.5Y52	C	50% HR (sieve + displacement	cdgm	WMSAB	>0.5%	Good	Friable		Yes		
4	73-120	2.5Y50 Ped 2.5Y62	C	-	mgdm	MCP	<0.5%	Poor	Very firm		Yes		
				All < 2 cm									

Depth to Slowly Permeable Horizon :- 73 cm
Gleyed at 27 cm

Wetness Class :- II

Wetness Grade :- 3A

RPG23/WJC

Available Water Wheat :- 148 mm
Potatoes :- 120 mm

Moisture Deficit Wheat :- 102 mm
Potatoes :- 93 mm

Moisture Balance Wheat :- 46 mm
Potatoes :- 27 mm

Droughtiness Grade :- 1
(to 120 cm)

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Wetness

Remarks :- Roots observed to 90 cm

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
Upper Thames Plan Down Ampney	6	0°		ATO :- 1428	
	DATE	GRID REFERENCE	Maize	FC Days :- 161	River Terrace Deposits
	Aug 91	110963		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-20	10YR36	MCL	2% HR	-	WFSAB	>0.5%						
2	20-35	10YR56	HCL	2% HR	-	WFSAB	>0.5%	Good	Friable				
3	35-45	10YR66	LMS	36% HR	-	WFGR	>0.5%	Good	Very Friable				
4	45-55	10YR66	LMS	42% HR	-	WFGR	>0.5%	Good	Very Friable				
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

Available Water	Wheat :- 78 mm	106 mm	
	Potatoes :- 79 mm	87 mm	
Moisture Deficit	Wheat :- 102 mm	102 mm	
	Potatoes :- 93 mm	93 mm	
Moisture Balance	Wheat :- -24 mm	+4 mm	
	Potatoes :- -14 mm	-6 mm	
Droughtiness Grade	:- 3B (to 55 cm)	3A (to 120 cm)	

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Droughtiness

Remarks :- Stone measurements by sieving and displacement in water.

RPG23/WJC

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	7	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Oil Seed Rape	FC Days :- 161	River Terrace Deposits
	Aug 91	112967		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-25	10YR43	HCL	2% HR	-	WFSAB	>0.5%		Friable		Yes		
2	25-70	10YR54	HCL	2% HR	-	WFSAB	>0.5%	Good	Friable		Yes		
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None

No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water	Wheat :-	123 mm	192 mm	
	Potatoes :-	137 mm	137 mm	
Moisture Deficit	Wheat :-	102 mm	102 mm	
	Potatoes :-	93 mm	93 mm	
Moisture Balance	Wheat :-	21 mm	90 mm	
	Potatoes :-	44 mm	44 mm	
Droughtiness Grade :-		2 (to 70 cm)	1 (to 120 cm)	

Final ALC Grade :- 2

Main Limiting Factor(s) :- Workability

Remarks :- Roots observed to 70 cm

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	8	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Ploughed	FC Days :- 161	River Terrace Deposits
	Aug 91	111956		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-25	10YR43	MCL	2% HR	-	WKMSAB			Friable		Yes		
2	25-30	10YR66	LCS	36% HR	-	FGR	>0.5%	Good	Friable		Yes		
3	30-65	10YR66	MSL	37% HR	-	FGR	>0.5%	Good	Friable		Yes		
4	65-80	10YR63	HCL	43% HR	-	WFGR	>0.5%	Good	Friable		Yes		
5	80-90	10YR61	C	15% HR	-	WMSAB	>0.5%	Good	Friable		Yes		
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 1

RPG23/WJC

Available Water	Wheat	:- 107 mm	145 mm	
	Potatoes	:- 92 mm	92 mm	
Moisture Deficit	Wheat	:- 102 mm	102 mm	
	Potatoes	:- 93 mm	93 mm	
Moisture Balance	Wheat	:- 5 mm	+43 mm	
	Potatoes	:- -1 mm	-1 mm	
Droughtiness Grade		:- 3A (to 90 cm)	2 (to 120 cm)	

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Droughtiness

Remarks :- Stone measurements by sieving and displacement in water

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Upper Thames Plan Down Ampney	9	0°		Av Rainfall :- 712 mm ATO :- 1428 FC Days :- 161 Climatic grade:- 1	
	DATE	GRID REFERENCE	Maize		River Terrace Deposits (Mainly gravel)
	Aug 91	104968			

Horizon Number	Lowest Av Depth	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	0-26	10YR43	HCL	22% HR	-	WMSAB			Firm				
2	26-70	10YR64-66	LCS	41% HR	-	WFGR	>0.5%	Good	Very Firm		Yes		
3	70-90	10YR64-66	LCS	42% HR	-	WFGR	>0.5%	Good	Very Firm		Yes		
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water	Wheat :- 64 mm	74 mm	
	Potatoes :- 61 mm	61 mm	
Moisture Deficit	Wheat :- 102 mm	102 mm	
	Potatoes :- 93 mm	93 mm	
Moisture Balance	Wheat :- -38 mm	-28 mm	
	Potatoes :- -32 mm	-32 mm	
Droughtiness Grade	:- 3B (to 90 cm)	3B (to 120 cm)	

Final ALC Grade :- 3B

Main Limiting Factor(s) :- Droughtiness

Remarks :- Stone measurements by sieving and displacement in water.
Roots observed to 40 cm

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Upper Thames Plan Down Ampney	10	0°		Av Rainfall :- 712 mm ATO :- 1428 FC Days :- 161 Climatic grade:- 1	*Oxford Clay*
	DATE	GRID REFERENCE	Maize		
	Aug 91	107973			

Horizon Number	Lowest Av Depth	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	0-30	10YR43	HCL	2% HR	-	WMSAB	>0.5%		Firm				
2	30-65	10YR66	LMS	41% HR	-	WFGR	>0.5%	Good	Very Friable				
3	65-75	10YR66	LMS	33% HR	-	WFGR	>0.5%	Good	Very Friable		Yes		
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water	Wheat :-	84 mm	99 mm
	Potatoes :-	77 mm	77 mm
Moisture Deficit	Wheat :-	102 mm	102 mm
	Potatoes :-	93 mm	93 mm
Moisture Balance	Wheat :-	-18 mm	-3 mm
	Potatoes :-	-16 mm	-16 mm
Droughtiness Grade	:-	3A (to 75 cm)	3A (to 120 cm)

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Droughtiness

Remarks :- Stone measurements by sieving (2 mm) and displacement in water.
Roots observed to 50 cm.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Upper Thames Plan Down Ampney	11	0°		Av Rainfall :- 712 mm ATO :- 1428 FC Days :- 161 Climatic grade:- 1	River Terrace Deposits (Mainly gravel)
	DATE Aug 91	GRID REFERENCE 105959	Oil Seed Rape		

Horizon Number	Lowest Av Depth	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	0-24	10YR43	MCL	1% HR	-	WCSAB			Friable		Yes		
2	24-65	10YR46	C	1% HR	-	WMSAB	>0.5%	Moderate	Friable				
3	65-70	10YR56	LCS	29% HR (sieve and displacement)	-	WFGR	>0.5%	Good	Very Friable				
				All at 2 cm									

Depth to Slowly Permeable Horizon :- None No gleying	Available Water	Wheat :- 98 mm	118 mm	Final ALC Grade :- 2 mapping unit
		Potatoes :- 111 mm	111 mm	
Wetness Class :- I	Moisture Deficit	Wheat :- 102 mm	102 mm	Main Limiting Factor(s) :- Droughtiness
		Potatoes :- 93 mm	93 mm	
Wetness Grade :- 1	Moisture Balance	Wheat :- -4 mm	+16 mm	
		Potatoes :- +18 mm	+18 mm	Remarks :- Roots observed to 65 cm
RPG23/WJC	Droughtiness Grade	:- 3A to 70 cm	2 to 120 cm	

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	12	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Grass	FC Days :- 161	River Terrace Deposits
	Aug 91	108969		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-25	10YR43	HCL	2% HR	-						Yes		
2	25-40	10YR56	HCL	31% HR	-	WFSAB		Good	Friable		Yes		
3	40-65	10YR75-76	LCS	42% HR	-	WFGR		Good	Very Friable		Yes		
4	65-100	10YR74-76	LCS	45% HR	-	WFGR		Good	Very Friable		Yes		
5	100-120	10YR74-76	LCS	52% HR	-	WFGR		Good	Very Friable		Yes		
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water Wheat :- 94 mm
Potatoes :- 83 mm

Moisture Deficit Wheat :- 102 mm
Potatoes :- 93 mm

Moisture Balance Wheat :- -8 mm
Potatoes :- -10 mm

Droughtiness Grade :- 3A
(to 120 cm)

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Droughtiness

Remarks :- Stone measurements by sieving (2 mm) and displacement in water
Roots observed to 55 cm

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	13	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Cereal	FC Days :- 161	River Terrace Deposits
	Aug 91	115959		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-38	10YR42	HCL	-	fdom	MCSAB			Friable				
2	38-70	2.5Y56 Ped 2.5Y52	HCL	-	cdom	MCSAB	>0.5%	Moderate	Friable				
3	70-120	10YR66 Ped 10YR54	HCL	-	cdom 10YR58	MCSAB	>0.5%	Moderate	Friable				

Depth to Slowly Permeable Horizon :- None
Gleyed at 38 cm

Wetness Class :- II

Wetness Grade :- 3A

RPG23/WJC

Available Water Wheat :- 148 mm
Potatoes :- 120 mm

Moisture Deficit Wheat :- 102 mm
Potatoes :- 93 mm

Moisture Balance Wheat :- +46 mm
Potatoes :- +27 mm

Droughtiness Grade :- 1
(to 120 cm)

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Wetness

Remarks :-

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	14	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Wheat	FC Days :- 161	River Terrace Deposits
	Aug 91	127966		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-27	10YR43	HCL	9% HR	-	WMSAB			Friable				
2	27-65	10YR56	LCS	50% HR	-	WFGR	>0.5%	Good	Very Friable				
3	65-120	10YR54	LCS	33% HR	-	WFGR	>0.5%	Good	Very Friable				
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water Wheat :- 81 mm
Potatoes :- 66 mm

Moisture Deficit Wheat :- 102 mm
Potatoes :- 93 mm

Moisture Balance Wheat :- -21 mm
Potatoes :- -27 mm

Droughtiness Grade :- 3B (to 120 cm)

Final ALC Grade :- 3A mapping unit

Main Limiting Factor(s) :- Droughtiness

Remarks :- Stone measurements by sieving (2 mm) and displacement in water.
Roots observed to 65 cm.
Pits 3 and 14 reflect the variability in the textures, depths and stone content of the river terrace deposits. Grade 3A is the most appropriate grade.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	15	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Ploughed	FC Days :- 161	River Terrace Deposits
	Aug 91	105957		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-18	10YR34	HCL	2% HR	-	WMSAB			Friable				
2	18-30	2.5Y56	MCL	15% HR	-	WMSAB	>0.5%	Good	Friable				
3	30-120	10YR66-74	LCS	42% HR	-	WFGR	>0.5%	Good	Friable				
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water Wheat :- 88 mm
Potatoes :- 75 mm

Moisture Deficit Wheat :- 102 mm
Potatoes :- 93 mm

Moisture Balance Wheat :- -14 mm
Potatoes :- -18 mm

Droughtiness Grade :- 3A
(to 120 cm)

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Droughtiness

Remarks :- Stone measurements by sieving (2 mm) and displacement in water.
Roots observed to 60 cm.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	16	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Wheat	FC Days :- 161	River Terrace Deposits
	Aug 91	111971		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-28	2.5Y44	HCL	2% HR	-	MCSAB			Friable				
2	28-73	2.5Y56	HCL	2% HR	-	MCSAB	>0.5%	Moderate	Friable				
3	73-85	2.5Y56	MSL	10% HR	-	WMSAB	>0.5%	Good	Very Friable				
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water	Wheat :- 121 mm	162 mm	
	Potatoes :- 115 mm	115 mm	
Moisture Deficit	Wheat :- 102 mm	102 mm	
	Potatoes :- 93 mm	93 mm	
Moisture Balance	Wheat :- +19 mm	+60 mm	
	Potatoes :- +22 mm	+22 mm	
Droughtiness Grade	:- 2 (to 85 cm)	1 (to 120 cm)	

Final ALC Grade :- 2

Main Limiting Factor(s) :- Workability

Remarks :- Roots observed to 85 cm

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	17	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Wheat	FC Days :- 161	River Terrace Deposits
	Aug 91	118966		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-28	10YR33	HCL	9% HR	-	WMSAB			Friable				
2	28-55	10YR76	MSL	33% HR	-	WCGR	>0.5%	Good	Friable				
3	55-80	10YR66	LMS	36% HR	-	WCGR	>0.5%	Good	Friable				
4	80-90	10YR66	LMS	46% HR	-	WCGR	>0.5%	Good	Friable				
				All < 2cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water	Wheat :-	92 mm	105 mm	
	Potatoes :-	87 mm	87 mm	
Moisture Deficit	Wheat :-	102 mm	102 mm	
	Potatoes :-	93 mm	93 mm	
Moisture Balance	Wheat :-	-10 mm	+3 mm	
	Potatoes :-	-6 mm	-6 mm	
Droughtiness Grade	:-	3A (to 90 cm)	3A (to 120 cm)	

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Droughtiness

Remarks :- Stone measurements by sieving (2 mm) and displacement in water.
Roots observed to 70 cm

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	18	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Cereal	FC Days :- 161	River Terrace Deposits
	Aug 91	103962		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-26	10YR43	HCL	5% HR	-	MMSAB			Friable				
2	26-46	7.5YR46	HCL	10% HR	-	MCSAB		Moderate	Friable				
3	46-56	10YR44	MSL	24% HR	-	WCGR		Good	Friable				
4	56-80	10YR56	LMS	33% HR	-	WCGR		Good	Friable				
5	80-120	10YR81	Chalk		-			Moderate					
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water Wheat :- 125 mm
Potatoes :- 96 mm

Moisture Deficit Wheat :- 102 mm
Potatoes :- 93 mm

Moisture Balance Wheat :- +23 mm
Potatoes :- +3 mm

Droughtiness Grade :- 2 (to 120 cm)

Final ALC Grade :- 3A unit

Main Limiting Factor(s) :- Droughtiness/workability

Remarks :- Stone measurements by sieving (2 mm) and displacement in water.
Pits 3 and 14 show the variability in the textures, depths and stone content of the river terrace deposits, so Grade 3A is the most appropriate grade for this soil.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	19	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Grass	FC Days :- 161	River Terrace Deposits
	Aug 91	102966		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-26	10YR34	HCL	5% HR	-	WCSAB			Friable				
2	26-37	10YR46	HCL	18% HR	-	WCSAB	>0.5%	Moderate	Friable				
3	37-60	10YR56	HCL	42% HR	-	WMSAB	>0.5%	Good	Friable				
4	60-75	10YR74	LCS	42% HR	-	WGR	>0.5%	Good	Friable				
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water	Wheat	:- 89 mm	104 mm	
	Potatoes	:- 94 mm	94 mm	
Moisture Deficit	Wheat	:- 102 mm	102 mm	
	Potatoes	:- 93 mm	93 mm	
Moisture Balance	Wheat	:- -13 mm	+2 mm	
	Potatoes	:- +1 mm	+1 mm	
Droughtiness Grade		:- 3A (to 75 cm)	3A (to 120 cm)	

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Droughtiness

Remarks :- Stone measurements by sieving (2 mm) and displacement in water.
Roots observed to 60 cm.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	20	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Grass	FC Days :- 161	River Terrace Deposits
	Aug 91	101967		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-28	10YR33	HCL	5% HR	-	WCSAB			Friable				
2	28-40	10YR56	HCL	18% HR	-	WCSAB	>0.5%	Moderate	Friable				
As Pit 19				All < 2 cm									

Depth to Slowly Permeable Horizon :-

Wetness Class :-

Wetness Grade :-

RPG23/WJC

Available Water Wheat :-

Potatoes :-

Moisture Deficit Wheat :-

Potatoes :-

Moisture Balance Wheat :-

Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Droughtiness

Remarks :- Similar to Pit 19

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 712 mm	PARENT MATERIAL
	21	0°		ATO :- 1428	
Upper Thames Plan Down Ampney	DATE	GRID REFERENCE	Grass	FC Days :- 161	River Terrace Deposits
	Aug 91	101967		Climatic grade:- 1	(Mainly gravel)

Horizon Number	Lowest Av Depth	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	0-29	10YR33	HCL	10% HR	-	WCSAB			Friable				
2	29-57	10YR44	HCL	-	-	MCSAB	>0.5%	Moderate	Friable				
3	57-85	10YR44	C	-	-	MCSAB	>0.5%	Moderate	Friable				
4	85-90	10YR56	HCL	25% HR	-	WMSAB	>0.5%	Good	Friable				
				All < 2 cm									

Depth to Slowly Permeable Horizon :- None
No gleying

Wetness Class :- I

Wetness Grade :- 2

RPG23/WJC

Available Water	Wheat :- 116 mm	147 mm	
	Potatoes :- 113 mm	113 mm	
Moisture Deficit	Wheat :- 102 mm	102 mm	
	Potatoes :- 93 mm	93 mm	
Moisture Balance	Wheat :- +14 mm	+45 mm	
	Potatoes :- +20 mm	+20 mm	
Droughtiness Grade	:- 2 (to 90 cm)	1 (to 120 cm)	

Final ALC Grade :- 2

Main Limiting Factor(s) :- Workability

Remarks :- Roots observed to 90 cm