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**CHERWELL DISTRICT LOCAL PLAN  
REVIEW**

**Land east of Bodicote Oxfordshire**

**Agricultural Land Classification  
ALC Map and Summary Report  
Semi Detailed Survey**

**July 1999**

**Resource Planning Team  
Eastern Region  
FRCA Reading**

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# AGRICULTURAL LAND CLASSIFICATION SUMMARY REPORT

## CHERWELL DISTRICT LOCAL PLAN REVIEW LAND EAST OF BODICOTE OXFORDSHIRE SEMI DETAILED SURVEY

### INTRODUCTION

- 1 This summary report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of approximately 99 hectares of land east of Bodicote in Oxfordshire. The survey was carried out during July 1999.
- 2 The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)<sup>1</sup> on behalf of the Ministry of Agriculture Fisheries and Food (MAFF). The survey was carried out in connection with MAFF's statutory input to the Cherwell district Local Plan Review. This survey supersedes any previous ALC information for this land, however adjacent survey information (FRCA ref 3301/012/92 and 3301/034/96) has been used to help classify the land on this site.
- 3 The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF 1988). A description of the ALC grades and subgrades is given in Appendix I.
- 4 At the time of survey the agricultural land on the site was wheat, barley, field beans, peas and permanent grassland. The areas mapped as 'Other land' include farm buildings, trackways, woodland and a pond.

### SUMMARY

- 5 The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:15,000. It is accurate at this scale but any enlargement would be misleading.
- 6 The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	/ surveyed area	/ site area
2	70.0	75.8	71.1
3a	12.6	13.6	12.8
3b	9.8	10.6	9.9
Other land	6.1	N/A	6.2
Total surveyed area	92.4	100	93.8
Total site area	98.5		100

<sup>1</sup> FRCA is an executive agency of MAFF and the Welsh Office.

- 7 This was a free survey with auger borings conducted at an average density of 1 boring per 3 hectares of agricultural land. In total 33 borings and 3 soil pits were described.
- 8 The agricultural land on this site has been classified as Grade 2 (very good quality) Subgrade 3a (good quality) and subgrade 3b (moderate quality). Soil wetness and soil droughtiness are the principal limitations with gradient along the north western boundary.
- 9 Most of the agricultural land has been classified as Grade 2. A minor soil droughtiness limitation is typical of the soils located along the south western boundary. These soils are well drained, variably stony with fine loamy textures to depth. These soil properties interact with the local climate and result in a reduction in the water available to crops, causing a minor soil droughtiness limitation. This may affect the consistency and level of yields, particularly in drier years. A minor soil wetness limitation is typical of the other soils found along the eastern and northern areas of the site. These soils comprise fine loamy or fine silty textures becoming clayey at moderate depth. The clay acts to impede drainage, causing these soils to be moderately well drained, which results in a minor soil wetness limitation. This may cause a reduction in crop yield and limit the flexibility of the land, particularly in wetter years.
- 10 Subgrade 3a land suffers from soil droughtiness and soil wetness limitations. Along the north western boundary, the land suffers from a slight soil droughtiness restriction. The stonier profiles result in a further reduction in profile available water, therefore increasing the drought stress which, in drier years, may further affect the consistency and level of yields. The lowest lying land on this site experiences a slight soil wetness limitation. The profile description is similar to the unit above, but the soil wetness limitation is more acute, resulting in imperfectly drained soils.
- 11 Subgrade 3b land is shown along the north western boundary. In this area, the land experiences a significant soil wetness limitation associated with poorly drained clayey subsoils located at a shallow depth from the surface. Soils with drainage characteristics such as these will affect the range and yield of crops that can be grown on this land, as well as restricting the number of days when the land is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock. Gradient also affects land quality in part of this location. Such slopes will restrict the safe and efficient use of farm machinery.

## **FACTORS INFLUENCING ALC GRADE**

### **Climate**

- 12 Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.
- 13 The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met Office 1989).
- 14 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

Table 2 Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	SP 475 379	SP 473 386
Altitude	m AOD	115	95
Accumulated Temperature	day C (Jan June)	1369	1391
Average Annual Rainfall	mm	699	687
Field Capacity Days	days	155	155
Moisture Deficit Wheat	mm	101	103
Moisture Deficit Potatoes	mm	91	94
Overall climatic grade	N/A	Grade 1	Grade 1

- 15 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR) as a measure of overall wetness and accumulated temperature (ATO January to June) as a measure of the relative warmth of a locality
- 16 The combination of rainfall and temperature at this site mean that there is no overall climatic variation. Local climatic factors such as exposure and frost risk do not affect land quality at this location. The site is climatically Grade 1. However climatic factors do interact with soil properties to influence soil wetness and soil droughtiness. At this locality the climate is average in regional terms.

#### Site

- 17 The site lies at altitudes in the range 91–120m AOD. The highest land is found along the south west boundary of the site with the lowest lying ground located along the eastern and northern boundaries. A diverse gradient does affect the site with a small area in the extreme north of the site restricting land quality to Subgrade 3b due to slopes of <9. Elsewhere the higher land falls through gentle to moderate gradients to the lower lying land. Flooding does not affect this site.

#### Geology and soils

- 18 The most recently published geological information for the site (BGS 1968) maps the higher land as the Marlstone Rock Bed and the sloping and lower land as clays, silts and siltstones of the Middle and Lower Lias. In the north west there is an isolated deposit of the Middle Lias.
- 19 The most recently published soils information covering the site (SSEW 1983) maps two soil associations. Soils of the Banbury association cover most of the area. These are described as well drained brashy fine and coarse loamy ferruginous soils over ironstone. Some deeper fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. The remainder of the area on the mid and lower slopes is mapped as soils of the Wickham 2 association. These soils are described as slowly permeable seasonally waterlogged fine loamy over clayey fine silty over clayey and clayey soils. Small areas of slowly permeable calcareous soils on steeper slopes. Soils fitting these descriptions were found on the site.

## AGRICULTURAL LAND CLASSIFICATION

- 20 The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1 page 1
- 21 The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II

### Grade 2

- 22 Very good quality agricultural land is mapped over most of the site and suffers from a minor soil droughtiness and soil wetness limitation. Grade 2 land is coincident with the underlying Marlstone Rock Beds and the silts and siltstones of the Middle Lias.
- 23 Grade 2 land with a minor droughtiness limitation is typical of the soils derived from the underlying Marlstone Rock Beds. These soils are typically well drained (Wetness Class I) non calcareous medium clay loams which may contain up to 10% total medium sandstone (MSST) by volume. These overlie a similarly textured upper subsoil which may contain up to 15% MSST. From 50–68cm these soil profiles were impenetrable to the soil auger. To grade these soils inspection pits from an adjacent survey (FRCA ref 3301/012/92) were used. They reveal loamy soils over solid Marlstone from 90–94cm with increasing stone contents with depth. In this local climatic regime the combination of soil textures, structures and stone contents act to reduce the amount of profile available water. This may affect the level and consistency of yields particularly in drier years. Moisture balance calculations indicate that Grade 2 land is appropriate for these soils. Better quality land was also found but was not extensive enough to map separately this was also indicated on the adjacent survey.
- 24 Grade 2 land with a minor soil wetness limitation is derived from the underlying silt and siltstones which are located on the mid slopes close to the eastern boundary. Soil Pit 1 and Pit 3 (see Appendix II) are typical of these soils. These soils comprise a non calcareous medium silty clay loam (MZCL) topsoil which contains up to 10% total MSST (by volume). The upper subsoil is similarly textured and contains up to 15% MSST. In Pit 3 this passed to a gleyed slowly permeable silty clay lower subsoil from 56cm and in pit 1 the gleyed slowly permeable silty clay was encountered at 73cm. For both pits the depth to the slowly permeable layer in the local climate (155 FCD) assigns these soils to Wetness Class II. This combined with the topsoil texture results in land classified Grade 2. Soils with a minor soil wetness limitation may affect the flexibility of the land due to a reduction in the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock.

### Subgrade 3a

- 25 Good quality agricultural land is mapped in two places along the north west boundary and on lower lying land adjacent to the Oxford Canal. Soil droughtiness and soil wetness are the principal limitations to land quality.
- 26 On the high ground which effectively separates the Marlstone from the silts and clays of the Middle and Lower Lias there is an area along the north west boundary which is restricted by a soil droughtiness limitation. These soils are similar to the droughty soil previously described.

(see para 23 ) but are either more stony and/or shallower to the underlying Marlstone Rock Bed (impenetrable to the auger in the range 40–48cm) An inspection pit from a nearby survey (FRCA ref 3301/034/96) and pit 2 (see Appendix II) are representative of these soils Both pits proved that the upper subsoils are more stony (43–55% MSST) than the lower subsoil (39–41% MSST) although at depth stone contents increased to 51% MSST This combination of soil properties interacting with the local climate reduces the soils ability to store water and this shortfall results in land classified Subgrade 3a

- 27 Subgrade 3a land with a soil wetness limitation is found on mid and lower slopes to the north east adjacent to the Oxford Canal These soils are derived from the silts and clays of the Middle and Lower Lias They are typically non calcareous medium clay loam topsoils These pass to gleyed heavy clay loam upper subsoils which overlie slowly permeable clays from 47–64cm These soils are typical of pit 2 (FRCA ref 3301/034/96) which is also located on the mid to lower slopes The pit confirmed the lower subsoil clay to be poorly structured which acts to impede the downward movement of water The depth to gleying and to the slowly permeable layer interacts with the local climate (155 FCD) to assign these soils to wetness class III This combination of imperfect drainage and topsoil texture results in soils classified Subgrade 3a A slight soil wetness limitation may limit the timing of cultivations as trafficking of the land by farm machinery and grazing livestock may increase the likelihood of damage to the soil structure

### **Subgrade 3b**

- 28 Land of moderate quality is affected by a soil wetness limitation and by gradient Land with a soil wetness limitation occurs in the west of the site in a small valley and is associated with slowly permeable clays found at shallow depth The slowly permeable clay occurs within 40cm of the surface resulting in soils assigned to wetness class IV These poor drainage characteristics combined with the topsoil texture result in land classified Subgrade 3b Excessive soil wetness adversely affects seed germination and survival partly by a reduction in soil temperature and partly because of anaerobism It also inhibits the development of a good root system all of which can affect the range of crops that can be grown and the level of yield Soil wetness also influences the sensitivity of the soil to structural damage and is therefore a major factor in determining the number of days when the soil is in a suitable condition for cultivation trafficking by machinery or grazing by livestock
- 29 A small area of land in the north of the survey area is affected by a gradient limitation where the more resistant Marlstone Rock Beds give way to the softer silts and clays of the Middle and Lower Lias Gradients in the range 7 –11 were recorded using an optical clinometer This degree of limitation restricts land quality to Subgrade 3b because slope can affect the safe and efficient use of machinery since most mechanised farm operations perform best on level ground

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## SOURCES OF REFERENCE

British Geological Survey (1968) *Sheet No 218 Chipping Norton*  
BGS London

Ministry of Agriculture Fisheries and Food (1988) *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land*  
MAFF London

Met Office (1989) *Climatological Data for Agricultural Land Classification*  
Met Office Bracknell

Soil Survey of England and Wales (1983) *Sheet 6 Soils of South East England 1 250 000*  
SSEW Harpenden

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*  
SSEW Harpenden

## APPENDIX I

### DESCRIPTIONS 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 includes 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 or horticultural crops can usually be grown but on some land of this 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 land.

#### **Grade 3 Good to Moderate Quality Land**

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When 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 the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist 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 severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.



**APPENDIX II**

**SOIL DATA**

**Contents**

**Sample location map**

**Soil abbreviations explanatory note**

**Soil pit and soil boring descriptions (boring and horizon levels)**

## SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

### Boring Header Information

1 **GRID REF** national 100 km grid square and 8 figure grid reference

2 **USE** Land use at the time of survey. The following abbreviations are used:

<b>ARA</b>	Arable	<b>WHT</b>	Wheat	<b>BAR</b>	Barley
<b>CER</b>	Cereals	<b>OAT</b>	Oats	<b>MZE</b>	Maize
<b>OSR</b>	Oilseed rape	<b>BEN</b>	Field beans	<b>BRA</b>	Brassicac
<b>POT</b>	Potatoes	<b>SBT</b>	Sugar beet	<b>FCD</b>	Fodder crops
<b>LIN</b>	Linseed	<b>FRT</b>	Soft and top fruit	<b>FLW</b>	Fallow
<b>PGR</b>	Permanent pasture	<b>LEY</b>	Ley grass	<b>RGR</b>	Rough grazing
<b>SCR</b>	Scrub	<b>CFW</b>	Coniferous woodland	<b>OTH</b>	Other
<b>DCW</b>	Deciduous woodland	<b>BOG</b>	Bog or marsh	<b>SAS</b>	Set Aside
<b>HTH</b>	Heathland	<b>HRT</b>	Horticultural crops	<b>PLO</b>	Ploughed

3 **GRDNT** Gradient as estimated or measured by a hand held optical clinometer

4 **GLEYS/SPL** Depth in centimetres (cm) to gleying and/or slowly permeable layers

5 **AP (WHEAT/POTS)** Crop adjusted available water capacity

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

7 **DRT** Best grade according to soil droughtiness

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

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

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

<b>OC</b>	Overall Climate	<b>AE</b>	Aspect	<b>ST</b>	Topsoil Stoniness
<b>FR</b>	Frost Risk	<b>GR</b>	Gradient	<b>MR</b>	Microrelief
<b>FL</b>	Flood Risk	<b>TX</b>	Topsoil Texture	<b>DP</b>	Soil Depth
<b>CH</b>	Chemical	<b>WE</b>	Wetness	<b>WK</b>	Workability
<b>DR</b>	Drought	<b>ER</b>	Erosion Risk	<b>WD</b>	Soil Wetness/Droughtiness
<b>EX</b>	Exposure				

## Soil Pits and Auger Borings

1 **TEXTURE** soil texture classes are denoted by the following abbreviations

<b>S</b>	Sand	<b>LS</b>	Loamy Sand	<b>SL</b>	Sandy Loam
<b>SZL</b>	Sandy Silt Loam	<b>CL</b>	Clay Loam	<b>ZCL</b>	Silty Clay Loam
<b>ZL</b>	Silt Loam	<b>SCL</b>	Sandy Clay Loam	<b>C</b>	Clay
<b>SC</b>	Sandy Clay	<b>ZC</b>	Silty Clay	<b>OL</b>	Organic Loam
<b>P</b>	Peat	<b>SP</b>	Sandy Peat	<b>LP</b>	Loamy Peat
<b>PL</b>	Peaty Loam	<b>PS</b>	Peaty Sand	<b>MZ</b>	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)

2 **MOTTLE COL** Mottle colour using Munsell notation

3 **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% +

4 **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

5 **PED COL** Ped face colour using Munsell notation

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

7 **STONE LITH** Stone Lithology one of the following is used

<b>HR</b>	all hard rocks and stones	<b>FSST</b>	soft fine grained sandstone
<b>ZR</b>	soft argillaceous or silty rocks	<b>CH</b>	chalk
<b>MSST</b>	soft medium grained sandstone	<b>GS</b>	gravel with porous (soft) stones
<b>SI</b>	soft weathered igneous/metamorphic rock	<b>GH</b>	gravel with non porous (hard) stones

Stone contents (>2cm >6cm and total) are given in percentages (by volume)

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

Degree of development	<b>WK</b>	weakly developed	<b>MD</b>	moderately developed
	<b>ST</b>	strongly developed		
Ped size	<b>F</b>	fine	<b>M</b>	medium
	<b>C</b>	coarse		
Ped shape	<b>S</b>	single grain	<b>M</b>	massive
	<b>GR</b>	granular	<b>AB</b>	angular blocky
	<b>SAB</b>	sub angular blocky	<b>PR</b>	prismatic
	<b>PL</b>	platy		

9 **CONSIST** Soil consistence is described using the following notation

<b>L</b> loose	<b>FM</b> firm	<b>EH</b> extremely hard
<b>VF</b> very friable	<b>VM</b> very firm	
<b>FR</b> friable	<b>EM</b> extremely firm	

10 **SUBS STR** Subsoil structural condition recorded for the purpose of calculating profile droughtiness **G** good **M** moderate **P** poor

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

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

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

14 **CALC** If the soil horizon is calcareous a Y will appear in this column

15 Other notations

<b>APW</b>	available water capacity (in mm) adjusted for wheat
<b>APP</b>	available water capacity (in mm) adjusted for potatoes
<b>MBW</b>	moisture balance wheat
<b>MBP</b>	moisture balance potatoes

SAMPLE NO	GRID REF	ASPECT USE	WETNESS			-WHEAT		POTS		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB					
16	SP47403860	WHT NE	6	0	26	4	3B	86	15	95	4	3A		WE	3B	2P /034/96
17	SP47503860	WHT NE	5	28	48	3	3A	134	33	111	20	1		WE	3A	2P /034/96
18	SP47603860	WHT		36	64	3	3A	138	37	113	22	1		WE	3A	2P /034/96
20	SP47203850	WHT N	3			1	1	145	44	110	19	1			1	POSS GR2
25	SP47703850	HRT N	4	29	47	3	3A	99	2	111	20	3A		WE	3A	2P /034/96
27	SP47103840	WHT				1	1	68	33	68	23	3B		DR	3A	I42 SEE/20/90
28	SP47203840	WHT				1	1	65	36	65	26	3B		DR	3A	I40 SEE/20/90
30	SP47403840	WHT NE	4			1	1	146	45	111	20	1			1	POSS GR2
39	SP47103830	WHT				1	1	77	24	77	14	3B		DR	3A	I48 SEE/20/90
41	SP47303830	WHT NE	3	74	74	2	2	135	34	110	19	1		WE	2	POSS GR2
43	SP47503830	WHT NE	1	77	77	2	2	135	34	110	19	1		WE	2	SEE 3P
44	SP47603830	HRT E	4	52	52	3	3A	128	27	105	14	2		WE	3A	SEE 3P
45	SP47703830	HRT N	4	55	55	2	2	170	69	120	29	1		WE	2	SEE 3P
49	SP47003820	OSR		52	52	3	3A	112	11	110	19	2		WE	3A	SEE/20/90
52	SP47303820	WHT				1	1	140	39	105	14	1			1	POSS GR2
55	SP47603820	HRT SE	5	87		1	1	153	52	118	27	1			1	BORDER WCII
57	SP46903810	OSR		28	28	4	3B	91	10	103	12	3A		WE	3B	1P /034/96
63	SP47503810	HRT NE	1			1	1	98	3	108	17	3A		DR	2	IMP63SEE2P
68	SP47103800	BEN		36	36	4	3B	87	14	97	6	3A		WE	3B	1P /034/96
73A	SP47703800	WHT E	2	72	72	2	2	111	10	108	17	2		WE	2	SEE 3P
80	SP47403790	WHT		33	33	4	3B	77	24	77	14	3B		WE	3B	1P /034/96
84	SP46803780	OSR				1	1	88	13	91	0	3A		DR	2	IMP55SEE2P
85	SP46903780	OSR				1	1	82	19	82	9	3A		DR	2	IMP50SEE2P
87	SP47103780	BEN				1	1	71	30	71	20	3B		DR	3A	AT 2P
92	SP47603780	WHT				1	1	66	35	66	25	3B		DR	3A	IMP42SEE2P
94	SP47803780	PGR SW	2	60	60	2	2	150	49	124	33	1		WE	2	SPL SEE1P
96	SP47303770	WHT				1	1	85	16	86	5	3A		DR	2	IMP52SEE2P
104	SP47503760	WHT				1	1	64	37	64	27	3B		DR	3A	IMP40SEE2P
111	SP47703750	PGR SE	2	55	55	2	2	148	47	122	31	1		WE	2	BORDER 3A
112	SP47803750	PGR NW	4			1	1	148	47	114	23	1			1	POSS GR2
113	SP47903750	PGR NW	5	54	54	3	3A	145	44	119	28	1		WE	3A	SEE1P
115	SP47503740	BAR				1	1	79	22	79	12	3B		DR	2	IMP50SEE2P
116	SP47603740	PGR NE	1	49	49	3	3A	140	39	114	23	1		WE	3A	SPL SEE1P
1P	SP47703570	PGR S	6	50	73	2	2	143	42	117	26	1		WE	2	P90AUG120
2P	SP47103780	BEN				1	2	103	3	78	11	3A		DR	3A	P95AUG120
3P	SP47603830	HRT E	3	56	56	2	2	96	5	105	14	3A		WE	2	PLATYSPL

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES			PED		STONES			STRUCT/	SUBS					
				COL	ABUN	CONT	COL	GLEYS	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
16	0 26	C	25Y 63	10YR58	C	D		Y	0	0	0							
	26 65	C	05Y 61	10YR68	M	D		Y	0	0	0		P		Y		PLASTIC	
17	0 28	MCL	10YR43						0	0	0							
	28-48	HCL	25Y 53	10YR58	C	D		Y	0	0	0		M					
	48 120	C	05Y 61	10YR58	M	D		Y	0	0	0		P		Y		PLASTIC	
18	0 36	MCL	10YR43						0	0	0							
	36 64	SCL	25Y 53	10YR58	M	D		Y	0	0	MSST 5		M					
	64 90	C	05Y 61	10YR58	M	D		Y	0	0	0		P		Y		FIRM/DRY	
	90 120	C	10Y 61	10YR66	M	D		Y	0	0	0		P		Y		PLASTIC	
20	0 29	MCL	75YR43						0	0	HR 5							
	29 78	MCL	75YR44						0	0	MSST 10		M					
	78 120	MCL	75YR34						0	0	MSST 10		M					
25	0 29	MCL	10YR43						0	0	0							
	29 47	HCL	10YR53	10YR56	C	F		Y	0	0	0		M					
	47 70	C	05Y 62	10YR68	M	D		Y	0	0	0		P		Y		PLASTIC	
27	0 25	MCL	10YR44						0	0	MSST 5							
	25 42	MCL	10YR54						0	0	MSST 10		M					
28	0 25	MCL	10YR44						0	0	MSST 5							
	25 40	HCL	10YR54						0	0	MSST 10		M					
30	0 30	MCL	75YR43						0	0	MSST 5							
	30 60	MCL	75YR44						0	0	MSST 10		M					
	60 85	MZCL	75YR5444						0	0	MSST 10		M					
	85-120	MCL	10YR44						0	0	MSST 10		M					
39	0 28	MCL	10YR43						0	0	HR 3							
	28 40	HCL	10YR44						0	0	MSST 10		M					
	40-48	MZCL	25Y54						0	0	MSST 25		M					
41	0 29	MCL	75YR43						0	0	MSST 5							
	29 55	MCL	75YR44						0	0	MSST 10		M					
	55 74	MCL	75YR5444						0	0	MSST 10		M					
	74 120	C	25Y 64	10YR56	C	D		Y	0	0	MSST 2		P		Y		FIRM/DRY	
43	0 30	MCL	75YR43						0	0	MSST 5							
	30 55	MCL	10YR44						0	0	MSST 10		M					
	55 77	MCL	10YR5444						0	0	MSST 15		M					
	77 120	C	25Y 64	10YR56	C	D		Y	0	0	MSST 2		P		Y		FIRM/DRY	
44	0 25	MCL	10YR54						2	0	MSST 10							
	25-52	HCL	10YR54						0	0	ZR 10		M					
	52 120	ZC	25Y 63	10YR56	M			Y	0	0	ZR 20		P		Y			

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES			PED		STONES		STRUCT/	SUBS					
				COL	ABUN	CONT	COL	GLEYS	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL
45	0 29	MCL	10YR43							0	0	MSST	2				
	29 55	HZCL	10YR54	10YR56	C	F		S	0	0	MSST	2		M			
	55-93	HZCL	25Y 53	10YR56	M	D		Y	0	0		0		P			Y
	93-120	ZC	05Y 53	10YR56	C	D		Y	0	0		0		P			Y
49	0 30	MCL	10YR54							0	0	HR	3				
	30 52	HCL	10YR53							0	0	HR	2		M		
	52 90	C	10YR53	10YR56	C	D		Y	0	0		0		P			Y
52	0 26	MCL	75YR43							1	0	MSST	10				
	26-45	HCL	75YR44							0	0	MSST	20		M		
	45-75	HCL	75YR44							0	0	MSST	10		M		
	75 120	HCL	75YR53							0	0	MSST	10		M		
55	0 30	MCL	10YR43							0	0	MSST	3				
	30 45	MZCL	10YR44							0	0	MSST	5		M		
	45-87	MZCL	10YR54	10YR56	C	D		S	0	0	MSST	5		M			
	87 120	HZCL	25Y 6362	10YR56	C	D		Y	0	0	MSST	2		P			Y
57	0 28	HCL	10YR5343							0	0	HR	2				
	28 60	C	10YR53	10YR5868	C	D		Y	0	0	HR	2		P			Y
	60 70	C	25Y 64	10YR56	C	D		Y	0	0		0		P			Y
63	0 30	MCL	75YR43							1	0	MSST	10				
	30 55	MCL	75YR44							0	0		0		M		
	55 68	MCL	25Y 64							0	0	MSST	15		M		
68	0 36	MCL	10YR43							1	0	MSST	10				
	36 67	C	25Y 6462	10YR68	M	D		Y	0	0	MSST	10		P			Y
73A	0 30	MCL	75YR43							0	0	MSST	5				
	30 50	MCL	75YR54							0	0	MSST	20		M		
	50 72	HCL	75YR44							0	0	MSST	10		M		
	72 90	C	25Y 64	10YR56	C	D		Y	0	0	MSST	2		P			Y
80	0 33	MCL	75YR44							0	0	MSST	5				
	33 50	C	25Y 6462	10YR56	C	D		Y	0	0	MSST	10		P			Y
84	0 35	MCL	10YR54							0	0	HR	5				
	35-55	MCL	10YR54							0	0	HR	5		M		
85	0 30	MCL	10YR53							0	0	HR	5				
	30 50	MCL	75YR44							0	0	HR	5		M		
87	0 25	MCL	10YR43							3	0	MSST	15				
	25 50	MCL	75YR46							0	0	MSST	25		M		
92	0 30	MCL	75YR44							0	0	MSST	10				
	30 42	MCL	75YR44							0	0	MSST	15		M		

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES			PED		STONES			STRUCT/	SUBS			SPL	CALC
				COL	ABUN	CONT	COL	GLEY	2	6	LITH	TOT	CONSIST	STR	POR		
94	0 33	MZCL	10YR44						0	0		0					
	33-60	HZCL	25Y 54	10YR56	C	D		S	0	0		0		M			
	60 120	ZC	05Y 53	10YR58	M	D		Y	0	0		0		P		Y	
96	0 30	MCL	75YR43						0	0	MSST	5					
	30 52	MZCL	75YR44						0	0	MSST	10		M			
104	0 30	MCL	10YR54						0	0	MSST	8					
	30 40	MCL	10YR54						0	0	MSST	10		M			
111	0 30	MZCL	10YR43						0	0		0					
	30 55	MZCL	10YR54	10YR68	C	D		S	0	0		0		M			
	55-85	ZC	25Y 64	10YR68	C	D		Y	0	0		0		P		Y	
	85-120	ZC	25Y 62	10YR68	M	D		Y	0	0		0		P		Y	
112	0 30	MZCL	10YR44						0	0	MSST	5					
	30 65	MZCL	75YR44						0	0	MSST	15		M			
	65 120	MCL	75YR43						0	0	MSST	10		M			
113	0 29	MCL	10YR43						0	0		0					
	29 54	MZCL	10YR54	10YR68	C	D		S	0	0		0		M			
	54 120	ZC	25Y 64	10YR68	M	D		Y	0	0		0		P		Y	
115	0 30	MCL	75YR44						0	0	MSST	8					
	30 50	MCL	75YR43						0	0	MSST	10		M			
116	0 29	MZCL	75YR43						0	0	MSST	5					
	29-49	MCL	75YR44						0	0	MSST	10		M			
	49 120	ZC	25Y 6261	10YR56	C	D		Y	0	0		0		P		Y	
1P	0 29	MZCL	10YR54						0	0	MSST	2					
	29 50	MZCL	10YR54						0	0	MSST	5	MCSAB	FR	M		
	50 73	ZC	05Y 61	10YR56	C			Y	0	0	ZR	5	MDCPR	FR	M		POROUS
	73 120	ZC	05Y 51	10YR56	C			Y	0	0	ZR	5	MDCPR	FR	M	Y	Y
2P	0 23	HCL	75YR53						1	0	MSST	17					WET SIEVED
	23 67	HCL	75YR54						0	0	MSST	55		M			WET SIEVED
	67 95	HCL	75YR44						0	0	MSST	39		M			WET SIEVED
	95-120	HCL	75YR54						0	0	MSST	50		M			
3P	0 28	MZCL	10YR43						2	0	MSST	10					
	28 56	HZCL	10YR44						0	0	MSST	15	MCSAB	FM	M		
	56 73	HZCL	05Y 73	10YR56	C			Y	0	0	ZR	20	MVCPL	FM	P	Y	Y