FRCA

[redacted]

FARMING AND RURAL CONSERVATION AGENCY

An Executive Agency of the Ministry of Agriculture, Fisheries and Food and the Welsh Office

A1

Woking Borough Local Plan
Sites 12 and 13
Old Woking, Surrey

Agricultural Land Classification
ALC Map and Report
Semi-detailed survey

June 1997

Resource Planning Team
Eastern Region
FRCA Reading

RPT Job Number: 4011/082/97
MAFF Reference: EL 40/359A

AGRICULTURAL LAND CLASSIFICATION REPORT

WOKING BOROUGH LOCAL PLAN
SITES 12 and 13, OLD WOKING, SURREY
SEMI-DETAILED SURVEY

INTRODUCTION

1. This report presents the findings of a semi-detailed Agricultural Land Classification (ALC) survey of 58.6 ha of land on the eastern edge of Old Woking in Surrey. The survey was carried out during June 1997.

2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA) on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with the Woking Borough Local Plan. This survey supersedes any previous ALC information for this land.

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 land use on the site was mostly permanent grass within the floodplain, with some temporary grass and maize on the higher land. The areas mapped as 'Other land' include a road, a track and some non-agricultural land associated with a former moated site (which is now a Scheduled Ancient Monument).

SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. 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 below.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	12.7	22.5	21.7
3a	5.8	10.3	9.9
3b	10.8	19.1	18.4
4	27.1	48.1	46.2
Other land	2.2	N/A	3.8
Total surveyed area	56.4	100	96.2
Total site area	58.6	-	100

7. The fieldwork was conducted at an average density of approximately 1 boring per 2 hectares of agricultural land. A total of 34 borings and 1 soil pit was described.

8. A range of ALC grades has been mapped across the site, including Grade 2 (very good quality agricultural land) and Subgrade 3a (good quality) on the higher terrace land in the north of the site and Subgrade 3b (moderate quality agricultural land) and Grade 4 (poor quality) on the low-lying floodplain land in the south.

9. The better quality land consists of light textured profiles (sandy loams and loamy sands) with stony horizons, where soil droughtiness is the main limiting factor. The best land contains a relatively stone-free sandy loam profile to depth which experiences only a slight soil droughtiness limitation.

10. The Subgrade 3b land consists of a ridge of extremely sandy soils which experience a droughtiness limitation that will significantly restrict the yield potential of crops.

11. The Grade 4 land occurs in the floodplain of the River Wey and experiences regular and prolonged winter flooding combined with high water tables for significant periods of the year. Poor drainage outfalls limit the scope for drainage improvement. This degree of wetness and flooding will again restrict the range of crops that can be grown, and the flexibility of the land in terms of grazing or cultivations will be greatly impaired.

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).

Table 2: Climatic and altitude data

Factor	Units	Values		
Grid reference	N/A	TQ025576	TQ022573	TQ029572
Altitude	m, AOD	23	23	22
Accumulated Temperature	day°C (Jan-June)	1497	1497	1498
Average Annual Rainfall	mm	663	663	666
Field Capacity Days	days	140	140	141
Moisture Deficit, Wheat	mm	117	117	117
Moisture Deficit, Potatoes	mm	113	113	113
Overall climatic grade	N/A	Grade 1	Grade 1	Grade 1

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.

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 (AT0, 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 limitation. Local factors such as exposure or frost risk are also not significant. The site is climatically Grade 1.

Site

17. The site occupies two distinct topographic units. The southern area lies within the floodplain of the River Wey, with the river forming the southern boundary of the site. The northern area lies within the river terrace. The highest land on the terrace is at an altitude of approximately 23 metres. Nowhere on the site is gradient or microrelief a limitation.

18. Within the southern unit, flooding is likely to be a significant limitation, though no detailed information on the frequency, duration or extent of flooding was available at the time of survey. Anecdotal evidence from the local farmer suggests that the majority of this land lies wet for a period each winter, either due to localised flooding or to high groundwater levels related to poor drainage outfalls which cannot be adequately controlled.

Geology and soils

19. The most detailed published geological information for the site (BGS, 1976) shows the floodplain to contain alluvium, with the higher land containing Lower Terrace (River Gravels) deposits.

20. The most detailed published soils information for the site (SSEW, 1986) shows the floodplain to contain a mix of soils of the Fladbury and Enborne series. The Fladbury soils are described as "deep, prominently mottled, stoneless clayey soils"; the Enborne soils are described as "deep, moderately permeable, prominently mottled, stoneless, fine loamy soils". The higher land contains soils of the Wick series, described as "deep, permeable, coarse loamy soils with common or many flints".

21. The detailed fieldwork confirmed the presence of three main soils across the site - heavy soils in the floodplain with slowly permeable horizons in the lower subsoil; very sandy profiles on the ridges in the floodplain; deep sandy loams on the terrace.

AGRICULTURAL LAND CLASSIFICATION

22. 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.

23. 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

24. Land in the extreme north of the site on the terrace has been placed in this grade, with soil droughtiness as the key limitation. Typically, these soils comprise medium sandy loam topsoils, overlying subsoils of similar texture that pass into loamy medium sand at depth. Given the textures and depths, the moderate structural conditions of the subsoil and the low stone contents throughout, these soils experience a slight lack of water that is available for crops during critical times of the growing season. As a result, the level and consistency of yields are affected.

Subgrade 3a

25. Although broadly similar to the Grade 2 land, some of the soils on the terrace contain stonier subsoils which further restrict the amount of water that is available for extraction. Pit 1 is located in this mapping unit and reveals that sand horizons also occur at depth. As a result, the impact of the droughtiness limitation is greater on this land.

Subgrade 3b

26. The map unit of Subgrade 3b pinpoints the slightly higher land in the floodplain that contains the very sandy droughty profiles but also includes some adjacent land which experiences high groundwater tables, even during the summer months.

27. Typically, the sandy profiles contain loamy medium sand topsoils that change into medium sand in the upper or lower subsoil; they are relatively stone-free and show no significant signs of wetness.

Grade 4

28. The majority of the floodplain has been placed in this grade with a combination of flooding and wetness as the main limitations. Anecdotal information suggests that part of the floodplain experiences flooding in most winters, either directly from the River Wey itself or from backing-up along ditches that cannot drain effectively into the Wey during the winter. The low-lying nature of parts of this land and high groundwater levels, together with the complication of the location of some of the higher sandy land adjacent to the river, means that under-drainage is not always practical, due to lack of freeboard.

29. No detailed flooding information was available for the survey. For grading purposes, it has been assumed that there is at least a Subgrade 3b flood risk (i.e. winter flooding more than 1 in 3 years which stays for 2-4 days) over much of this area which is then complicated by the lack of adequate drainage outfalls in places, making Grade 4 the most appropriate classification.

DE Black
Resource Planning Team
Eastern Region
FRCA Reading

SOURCES OF REFERENCE

British Geological Survey (1976) *Sheet No.285 Aldershot.*
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 (1986) *Sheet TQ05 (Woking)*
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:

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:

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

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

4. **GLEY/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:

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

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

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

Soil Pits and Auger Borings

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

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

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

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

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

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. **GLEY**: 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:

HR:	all hard rocks and stones	**FSST**:	soft, fine grained sandstone
ZR:	soft, argillaceous, or silty rocks	**CH**:	chalk
MSST:	soft, medium grained sandstone	**GS**:	gravel with porous (soft) stones
SI:	soft weathered igneous/metamorphic rock	**GH**:	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	**WK**:	weakly developed	**MD**:	moderately developed
	ST:	strongly developed		
Ped size	**F**:	fine	**M**:	medium
	C:	coarse		
Ped shape	**S**:	single grain	**M**:	massive
	GR:	granular	**AB**:	angular blocky
	SAB:	sub-angular blocky	**PR**:	prismatic
	PL:	platy		

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

L: loose	**FM**: firm	**EH**: extremely hard
VF: very friable	**VM**: very firm	
FR: friable	**EM**: 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:

APW:	available water capacity (in mm) adjusted for wheat
APP:	available water capacity (in mm) adjusted for potatoes
MBW:	moisture balance, wheat
MBP:	moisture balance, potatoes

SOIL PIT DESCRIPTION

Site Name : WOKING BLP OLD WOKING Pit Number : 1P

Grid Reference: TQ02305710 Average Annual Rainfall : 666 mm
Accumulated Temperature : 1498 degree days
Field Capacity Level : 141 days
Land Use : Ley
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 35	MSL	10YR32 00	0	1	HR					
35- 62	MSL	10YR43 00	0	20	HR				M	
62- 76	MS	10YR54 00	0	10	HR		SG		M	
76-120	CS	10YR56 00	0	20	HR		SG		M	

Wetness Grade : 1 Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 3A APW : 105mm MBW : -12 mm
APP : 097mm MBP : -16 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	USE	ASPECT		GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	TQ02205740	MZE				000		1	1	105	-12	108	-5	3A				DR	3A	IMPQDR
1P	TQ02305710	LEY				000		1	1	105	-12	097	-16	3A				DR	3A	
2	TQ02305740	MZE				038		1	1	139	22	124	11	2				DR	2	IMPQDR
7	TQ02405730	MZE	N		01	095		1	1	140	23	111	-2	2				DR	2	QFS
8	TQ02505730	MZE				000		1	1	115	-2	105	-8	3A				DR	2	I QDR
9	TQ02905730	PGR				035		1	1	129	12	126	13	2				DR	2	IFLINT
10	TQ02205720	MZE				000		1	1	125	8	112	-1	2				DR	2	
13	TQ02505720	LEY				000		1	1	095	-22	097	-16	3B				DR	3A	IMPQDR
14	TQ02705720	LEY				000		1	1	155	38	112	-1	2				DR	2	
17	TQ02205710	LEY				000		1	1	102	-15	109	-4	3A				DR	3A	IMPQDR
18	TQ02305710	LEY				000		1	1	087	-30	089	-24	3B				DR	3A	IMPQDR
19	TQ02405710	LEY				000		1	1	082	-35	082	-31	3B				DR	3A	IX2QDR
20	TQ02505710	LEY				000		1	1	093	-24	097	-16	3B				DR	3A	IMPQDR
21	TQ02605710	PGR				000	030	4	3B	090	-27	096	-17	3B				FL	3B	QFLOOD
22	TQ02705710	PGR				000		4	4	121	4	121	8	3A				WE	3A	FLOOD/HIGH GWA
26	TQ02205700	LEY				000		1	1	116	-1	111	-2	3A				DR	2	QFLOOD, G4
28	TQ02405700	PGR				000	053	3	3A	000	0	000	0					WE	3A	QGWGR3B4
29	TQ02505700	PGR				000	028	4	3B	117	0	115	2	3A				FL	3B	QFL, G4
30	TQ02605700	PGR				000		4	3B	088	-29	088	-25	3B				FL	3B	HIGH GWATER
31	TQ02705700	PGR				000	078	2	2	143	26	117	4	2				WD	2	QGWATER
32	TQ02805700	PGR				000		1	1	089	-28	073	-40	3B				DR	3B	
34	TQ02305690	PGR				000	020	4	3B	000	0	000	0		Y			FL	3B	HIGH GWATER
36	TQ02505690	PGR				000		5	4	000	0	000	0		Y			WE	4	H GD WAT
38	TQ02705690	PGR				085		1	1	073	-44	056	-54	3B				DR	3B	
40	TQ02205680	PGR				000	050	5	4	082	-35	082	-28	3B	Y			WE	4	H GDWATR
42	TQ02405680	PGR				000	040	4	3B	000	0	000	0		Y			WE	3B	H GDWATR
44	TQ02605680	PGR				000	090	4	4	151	34	114	1	2				WE	3B	3B/4
49	TQ02505670	PGR				053		1	1	082	-35	065	-45	3B				DR	3B	
50	TQ02605670	PGR				000		5	4	101	-16	084	-26	3A				WE	4	FLOOD
51	TQ02705670	PGR				025		4	3B	103	-14	087	-23	3A				WE	3B	H GDWATR
52	TQ02205660	PGR				000	035	4	3B	000	0	000	0		Y			WE	3B	Q G4
54	TQ02405660	PGR				000		4	4	000	0	000	0		Y			WE	3B	Q G4 FLD
56	TQ02605660	PGR				000		1	1	071	-46	054	-56	4				DR	4	S RIDGE
58	TQ02805660	PGR				000	023	4	4	000	0	000	0		Y			FL	4	
59	TQ02505650	PGR				000		1	1	072	-45	056	-54	3B				DR	3B	S RIDGE

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
1	0-38	fsl	10YR32 00						0	0	HR	1						
	38-65	lfs	10YR53 00						0	0	HR	1		M				
1P	0-35	msl	10YR32 00						0	0	HR	1						
	35-62	msl	10YR43 00						0	0	HR	20		M				
	62-76	ms	10YR54 00						0	0	HR	10	SG	M				
	76-120	cs	10YR56 00						0	0	HR	20	SG	M				
2	0-38	fsl	10YR32 00						0	0	HR	1						
	38-60	fsl	10YR63 00	000C00 00 C				Y	0	0	HR	1		M				
	60-90	fsl	10YR63 00	000C00 00 C				Y	0	0	HR	5		M				
7	0-38	msl	10YR33 00						0	0	HR	2						
	38-70	msl	10YR54 00						0	0	HR	1		M				
	70-95	lms	10YR53 00						0	0	HR	1		M				
	95-120	scl	10YR53 00	10YR56 00 C				Y	0	0		0		M				
8	0-38	msl	10YR32 00						0	0	HR	1						
	38-62	msl	10YR54 00						0	0	HR	1		M				
	62-105	lms	10YR54 00						0	0	HR	1		M				
9	0-35	fsl	10YR33 00						0	0		0						
	35-80	fsl	10YR52 73	10YR58 00 C				Y	0	0		0		M				
10	0-40	msl	10YR32 00						0	0	HR	1						
	40-70	msl	10YR54 00						0	0	HR	2		M				
	70-90	lms	10YR54 00						0	0	HR	5		M				
	90-120	lms	10YR56 00						0	0	HR	20		M				
13	0-38	fsl	10YR32 00						0	0	HR	1						
	38-55	fsl	10YR54 00						0	0	HR	5		M				
14	0-38	msl	10YR32 00						0	0	HR	1						
	38-60	msl	10YR54 00						0	0	HR	1		M				
	60-100	scl	10YR54 00						0	0		0		M				
	100-120	msl	10YR56 00						0	0		0		M				
17	0-40	msl	10YR42 00						0	0	HR	1						
	40-68	msl	10YR54 00						0	0	HR	1		M				
18	0-40	msl	10YR42 00						0	0	HR	1						
	40-55	msl	10YR54 00						0	0	HR	2		M				
19	0-40	msl	10YR42 00						0	0	HR	1						
	40-50	msl	10YR54 00						0	0	HR	1		M				
20	0-40	msl	10YR32 00						0	0	HR	1						
	40-60	msl	10YR43 00						0	0	HR	2		M				

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
21	0-30	hcl	10YR42 00	000C00	00	C		Y	0	0		0						
	30-50	c	10YR51 00	000C00	00	M		Y	0	0		0		P	Y		Y	
	50-60	hcl	10YR52 00	000C00	00	M		Y	0	0		0		M			Y	
22	0-27	mzcl	10YR41 00	75YR46	00	C		Y	0	0		0						
	27-35	hzcl	10YR51 00	75YR56	00	M		Y	0	0		0		M				
	35-70	mcl	25 Y52 31	10YR56	00	C		Y	0	0		0		M				
	70-95	lms	10YR52 00	10YR68	00	C		Y	0	0	HR	2		M				
26	0-35	msl	10YR42 00						0	0	HR	1						
	35-82	msl	10YR54 00						0	0	HR	1		M				
28	0-28	mzcl	10YR41 00	75YR56	00	M		Y	0	0		0						
	28-53	c	25 Y52 64	75YR46	00	M		Y	0	0		0		M				
	53-100	c	10YR61 00	10YR68	00	M		Y	0	0		0		P			Y	
29	0-28	mzcl	10YR31 00	75YR46	00	C		Y	0	0		0						
	28-45	hzcl	10YR53 00	75YR46	00	M		Y	0	0		0		M				
	45-90	c	10YR52 00	75YR46	00	M		Y	0	0		0		P			Y	
30	0-25	mzcl	10YR41 00	75YR46	00	C		Y	0	0		0						
	25-35	hzcl	10YR41 00	75YR46	00	M		Y	0	0		0		M				
	35-50	mcl	10YR41 00	75YR56	00	M		Y	0	0	HR	2		M				
31	0-25	mzcl	10YR41 00	75YR46	00	M		Y	0	0		0						
	25-35	hzcl	10YR51 00	75YR46	00	M		Y	0	0		0		M				
	35-58	scl	10YR51 63	75YR46	00	M		Y	0	0		0		M				
	58-78	msl	10YR42 53	10YR56	00	C		Y	0	0		0		M				
	78-110	scl	10YR42 00	10YR46	00	C		Y	0	0		0		P			Y	
32	0-45	lms	10YR43 00						0	0		0						
	45-120	ms	10YR54 56						0	0		0		M				
34	0-20	hzcl	25Y 42 00	75YR46	00	M		Y	0	0		0						
	20-70	hzcl	25Y 61 00	10YR58	00	M		Y	0	0		0		P			Y	
36	0-25	ohzcl	25Y 31 00	75YR44	00	C		Y	0	0		0						
	25-35	hzcl	05Y 41 00	75YR44	00	C		Y	0	0		0		M				
	35-48	omsl	10YR31 00	75YR44	00	C		Y	0	0		0		M				
	48-120	msl	10YR72 68	10YR58	00	M		Y	0	0		0		M				
38	0-23	lms	10YR32 00						0	0		0						
	23-85	ms	25Y 54 00						0	0		0		M				
	85-120	ms	25Y 54 63	25Y 66	00	C		Y	0	0		0		M				
40	0-20	mszl	25Y 41 42	75YR56	00	C		Y	0	0		0						
	20-43	msl	25Y 74 76	10YR58	00	M		Y	0	0		0		M				
	43-50	scl	25Y 73 00	10YR66	00	M		Y	0	0		0		P			Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	STONES GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
42	0-23	mszl	10YR41 42	75YR46	00	C		Y	0	0		0						
	23-40	scl	10YR53 52	10YR58	00	C		Y	0	0		0		P				
	40-80	scl	10YR71 00	10YR58	00	M		Y	0	0		0		P			Y	
44	0-25	mcl	10YR41 00	75YR46	00	M		Y	0	0		0						
	25-35	c	10YR51 00	75YR46	00	M		Y	0	0		0		M				
	35-55	scl	10YR51 00	10YR46	00	C		Y	0	0		0		M				
	55-90	msl	10YR52 00	10YR56	00	C		Y	0	0		0		M				
	90-120	scl	25 Y43 00	10YR46	00	M		Y	0	0		0		P			Y	
49	0-30	lms	10YR41 00						0	0		0						
	30-53	lms	10YR42 43						0	0		0		M				
	53-120	ms	10YR52 74	10YR66	00	C		Y	0	0		0		M				
50	0-23	mzcl	10YR31 51	10YR56	00	C		Y	0	0		0						
	23-45	hcl	10YR61 00	10YR58	00	M		Y	0	0		0		P				
	45-120	ms	25Y 61 00	10YR54	00	M		Y	0	0		0		M				
51	0-25	msl	10YR32 00						0	0		0						
	25-45	msl	25Y 63 00	10YR46	00	M		Y	0	0		0		M				
	45-120	ms	25Y 63 00	75YR44	00	M		Y	0	0		0		M				
52	0-35	hzcl	10YR42 00	10YR58	00	C		Y	0	0		0						
	35-70	hcl	10YR53 52	10YR56	00	C		Y	0	0		0		P			Y	
	70-100	c	25Y 62 00	10YR44	58	M		Y	0	0		0		P			Y	
	100-120	msl	05Y 51 00					Y	0	0		0		M			Y	
54	0-25	mcl	10YR42 52	10YR58	00	C		Y	0	0		0						
	25-45	msl	25Y 72 00	53YR46	00	M		Y	0	0		0		P				
	45-120	scl	25Y 72 00	75YR58	00	M		Y	0	0		0		M				
56	0-20	lms	10YR31 00						0	0		0						
	20-120	ms	10YR54 00						0	0		0		M				
58	0-23	hzcl	10YR32 00	10YR46	00	C		Y	0	0		0						
	23-55	c	25Y 62 00	75YR56	00	M		Y	0	0		0		P			Y	
	55-70	scl	25Y 63 00	75YR34	00	C		Y	0	0		0		M			Y	
	70-120	ms	25Y 63 00	75YR34	00	C		Y	0	0		0		M			Y	
59	0-20	lms	10YR31 00						0	0		0						
	20-30	lms	10YR32 00						0	0		0		M				
	30-120	ms	10YR54 00						0	0		0		M				