

FRCA



FARMING AND RURAL CONSERVATION AGENCY
An Executive Agency of the Ministry of Agriculture, Fisheries and Food and the Welsh Office

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**WOKING BOROUGH LOCAL PLAN
Sites 6, 9, and 10
Brookwood, Surrey**

**Agricultural Land Classification
ALC Map and Report**

June 1997

**Resource Planning Team
Eastern Region
FRCA Reading**

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AGRICULTURAL LAND CLASSIFICATION REPORT

WOKING BOROUGH LOCAL PLAN

SITES 6, 9 AND 10

BROOKWOOD, SURREY.

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of approximately 24 hectares of land to the north of Brookwood, Surrey. The survey was carried out during June 1997.

2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA) for 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 including a detailed survey (ADAS Ref: 4011/55/84) covering a wider area of land of which this site forms only a part. Since the 1984 survey, MAFF has updated the ALC system (MAFF, 1988) and consequently a new survey was undertaken using the revised 1988 guidelines.

3. The work was conducted by members of the Resource Planning Team in the Eastern Region of the 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 this site was in permanent grassland and rough grassland. The area of the site shown as 'Other Land' comprises allotment gardens and woodland.

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
3a	11.8	59.0	50.2
4	8.2	41.0	34.9
Other land	3.5	N/A	14.9
Total survey area	20.0	100	N/A
Total site area	23.5	N/A	100

7. The fieldwork was conducted at an average density of 1 boring per hectare. A total of 20 borings and 1 soil pit were described.

8. The majority of the land at this site has been classified as Subgrade 3a (good quality), with Grade 4 (poor quality) making up the remainder. Soil droughtiness and soil wetness are the principal limitations throughout, with high topsoil stone content also being a limiting factor at some locations.

9. The majority of the land in the Subgrade 3a area (good quality) is affected by soil droughtiness restrictions. The degree of restriction determines the ALC grade. The soils are variable but typically comprise fine and coarse loamy profiles, which are on the whole freely draining. Profile available water is restricted to varying degrees by the presence of stones, gravelly horizons and/or sandy textures. Soil droughtiness may result in a reduction in yield potential.

10. Grade 4 (poor quality) land has been mapped in the valley bottom where soil wetness is the overriding limitation. The soils are variable in composition and are affected by flooding and high groundwater levels which are unlikely to be adequately controlled. Some profiles within this unit have poorly structured clay horizons at depth which will impede drainage even further. The versatility of this land will be affected by restricting the number of days when the land is in a suitable condition for mechanised operations and/or grazing by livestock. Soil wetness may also adversely affect crop establishment and development.

FACTORS INFLUENCING ALC GRADE

Climate

11. Climate affects the grading of the land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

12. 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

Factors	Units	Values	Values
Grid reference	N/A	SU 956 575	SU 955 573
Altitude	m,AOD	45	45
Accumulated Temperature	day°C	1473	1473
Average Annual Rainfall	mm	686	685
Field Capacity Days	days	143	143
Moisture Deficit, Wheat	mm	114	115
Moisture Deficit, Potatoes	mm	110	110
Overall Climatic Grade	N/A	Grade 1	Grade 1

13. 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.

14. 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.

15. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. The site is climatically Grade 1. The site is believed not to be at risk from exposure or frost.

Site

16. The land falls gently to a valley feature running approximately northwest to southeast through the survey area. The agricultural land at this site lies at an altitude of 40-50m AOD. Nowhere does gradient or microrelief adversely affect agricultural land quality. The survey area immediately surrounding the brook may be at risk of periodic flooding.

Geology and soils

17. The published geological information (BGS, 1976) shows the whole site to be underlain with Bracklesham Beds (interbedded sands and clays with some pebble and flint beds). Towards the west of the site, (close to the recreation ground) the Barton Sand deposits may be exposed at the surface.

18. The most recently published soil information (SSEW, 1983) shows the majority of the survey area to be mapped as the Holidays Hill Association with a small area of Wickham 3 Association to the northeast of the site. The former is described as 'Naturally very acid sandy over clayey and loamy over clayey soils, locally with humose or peaty surface horizons, slowly permeable subsoils and slight seasonal waterlogging. Some very acid, well drained sandy soils and some perennially waterlogged soils with a peaty surface horizon. Shallow soils over sandstone in places. (SSEW, 1983). Wickham 3 Association is described as 'Slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey soils, and similar more permeable soils with slight waterlogging. Some deep coarse loamy soils affected by groundwater. Landslips with irregular terrain locally. (SSEW, 1983).

19. Upon detailed field examination, soils broadly consistent with the above descriptions were found in the survey area.

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.

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.

Subgrade 3a

22. Over half of the area is mapped as good quality agricultural land (Subgrade 3a). This land is principally affected by soil droughtiness. The soils within this unit comprise intermixed sand and clays, so are therefore variable depending on the amount of sand in the profile. On the

whole, the profiles comprise stoneless to slightly stony (0-10% total flints, 0-6% > 2cm, 0-2 % > 6cm diameter) fine and medium sandy loam or loamy fine sand topsoils. These topsoils overlie upper subsoils which range considerably in texture from medium sand to clay (which is sandy). The upper subsoils are often gleyed or slightly gleyed and are very slightly to moderately stony (0-26% total flints). Lower subsoils are very similar in that they vary in composition from fine and medium sand to friable, clay textures and are gleyed or slightly gleyed and slightly to moderately stony (containing up to around 26% total flints). Some of the profiles are impenetrable to the auger at depths between 35-95cm over flints. Despite the subsoils being gleyed at depths in excess of 35cm they are generally permeable and well drained aided in some instances by the high flint content. A wetness class of I, or sometimes II has been assigned to these soils depending on the depth to gleying and subsoil texture. Pit 1 is representative of this mapping unit, although it is stonier than some soil variants [data from two soil pits in adjoining land were also used in the assessment of these soils]. On the whole, the combination of soil texture and hard stone restricts the water available to crops such that there is a risk of drought stress to the plants in most years. This restricts the land to Subgrade 3a. Land of this quality could be expected to produce moderate yields of a wide range of crops including oilseed rape and potatoes, and moderate to high yields of a narrow range of crops, principally cereals and grass.

Grade 4

23. Land of poor quality (Grade 4) is mapped extensively in the flat, lower lying areas in the valley bottom adjacent to the brook. The land is assigned to this grade on account of severe soil wetness and workability limitations. Topsoils consist of stoneless or very slightly stony (0-3% total stone, 0-3% > 2cm diameter) fine sandy silt loams or fine sandy loams (which are often organic) with occasional medium clay loam or peaty loam textures. These are often wet and gleyed from the surface. Subsoils are variable in texture, ranging from medium sand to clay (many of which are organic), all of which are saturated with water. Occasional profiles become slowly permeable at depth where plastic clay impedes drainage. The subsoils vary in their stone content, with up to 50% total flints in places. Many of the profiles become impenetrable to the auger over gravel at depths between 45 and 100cm. Given the high ground water levels and extreme saturation of the land at the time of survey, Wetness Class V (locally Wetness Class IV) was felt to be most appropriate. The predominance of hydrophilic vegetation (such as rushes and sedges) is indicative of long periods of waterlogging. Such land is unlikely to benefit significantly from artificial drainage. As such, it will present severe difficulties in terms of cropping and cultivations and will be best suited to seasonal grazing.

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SOURCES OF REFERENCE

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

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*. Bulletin 15. SSEW: Harpenden.

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 descriptions

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:

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. **GLEYSPL:** 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. **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:

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

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 BROOKWOOD Pit Number : 1P

Grid Reference: SU95405760 Average Annual Rainfall : 685 mm
 Accumulated Temperature : 1473 degree days
 Field Capacity Level : 144 days
 Land Use : Permanent Grass
 Slope and Aspect : 01 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	MSL	10YR32 00	4	8	HR					
25- 35	MSL	25 Y64 00	0	26	HR			FR	M	
35- 50	HCL	25 Y54 00	0	22	HR	M	MDCSAB	FR	M	
50- 77	SCL	25 Y64 00	0	26	HR	M	MDCSAB	FR	M	
77-120	SCL	05 Y63 62	0	25	HR	M	WKVCPL	FR	P	

Wetness Grade : 1 Wetness Class : I
 Gleying : 050 cm
 SPL : cm

Drought Grade : 3A APW : 114mm MBW : -1 mm
 APP : 090mm MBP : -20 mm

FINAL ALC GRADE : 3A
 MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	USE	ASPECT	--WETNESS--				-WHEAT-		-POTS-		M. REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
				GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT					
1P	SU95405760	PGR	E	01	050		1	1	114	-1	090	-20	3A			DR	3A	SL. GL. 35
5	SU95405770	PGR	SE	02	055		1	1	150	35	105	-5	2			DR	2	SL. GL. 25
6	SU95505770	PGR			0		5	4	000	0	000	0		Y		WE	4	GROUNDWATER
9	SU95405760	PGR	E	01			1	1	053	-62	053	-57	4			DR	3A	IMP35 SEE 1P
10	SU95505760	PGR	E	01	032	040	5	4	131	16	122	12	2	Y		WE	4	GROUNDWATER
11	SU95605760	PGR	W	01			1	1	077	-38	077	-33	3B			DR	3A	IMP45 SEE 1P
13	SU95405750	PGR	E	02	028		2	1	152	37	113	3	2			DR	2	
14	SU95505750	PGR			031		4	3B	121	6	116	6	2	Y		WE	3B	GROUNDWATER
15	SU95605750	PGR	SW	03	030		1	1	167	52	114	4	2			DR	2	
16	SU95705750	PGR	S	03	035	090	2	1	132	17	111	1	2			DR	2	ALSO STONES
17	SU95305740	PGR	S	03	023		1	1	105	-10	087	-23	3A			DR	3A	
18	SU95405740	PGR			0		5	4	000	0	000	0		Y		WE	4	IMP 45 G/W
19	SU95505740	PGR			0	038	5	4	000	0	000	0		Y		WE	4	GROUNDWATER
20	SU95605740	PGR			0		5	4	000	0	000	0		Y		WE	4	GROUNDWATER
21	SU95705740	PGR			0	040	5	4	000	0	000	0		Y		WE	4	GROUNDWATER
24	SU95505730	PGR	N	02	030	105	2	1	145	30	111	1	2			DR	2	
25	SU95405730	PGR	NE	03			1	1	056	-59	056	-54	4			DR	3A	IMP50 SEE 1P
26	SU95705730	PGR	NE	01	0	105	1	1	124	9	098	-12	3A			DR	3A	
27	SU95805730	PGR			0	052	5	4	106	-9	096	-14	3A	Y		WE	4	GROUNDWATER
28	SU95605720	PGR	NE	02	028		2	1	120	5	112	2	2			DR	2	IMP 95
29	SU95705720	PGR	E	02	035		1	1	171	56	156	46	1				1	SEEPAGE

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED	-----STONES-----			STRUCT/	SUBS	CALC				
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT		CONSIST	STR	POR	IMP
1P	0-25	msl	10YR32 00					4	1	HR	8						
	25-35	msl	25 Y64 00					0	0	HR	26		FR	M			
	35-50	hc1	25 Y54 00 10YR58 00 M					S	0	0	HR	22	MDCSAB	FR	M		loose, porous
	50-77	sc1	25 Y64 00 75YR56 00 M					Y	0	0	HR	26	MDCSAB	FR	M		porous, stony
	77-120	sc1	05 Y63 62 75YR58 00 M					Y	0	0	HR	25	WKVCPL	FR	P		not spl
5	0-25	msl	10YR31 00					3	0	HR	5						
	25-55	msl	10YR54 56 10YR58 00 C					S	0	0	HR	5			M		
	55-120	msl	10YR53 56 10YR58 00 M					Y	0	0	HR	5			M		
6	0-23	mc1	75YR31 32 75YR46 00 M					Y	3	0	HR	3					
	23-40	mc1	75YR25 01 75YR46 00 M					Y	0	0	HR	3			M		
	40-65	sc1	05Y 52 53 10YR46 00 M					Y	0	0	HR	20			M		imp, gravel
9	0-25	msl	10YR32 00					4	0	HR	8						
	25-35	msl	10YR43 00					0	0	HR	10			M			imp, flint
10	0-32	fsz1	10YR32 00					1	0	HR	1						
	32-40	hc1	25 Y41 00 05 Y46 00 M					Y	0	0		0		M			
	40-70	c	10YR51 00 75YR46 00 M					Y	0	0		0		P		Y	dense, firm
	70-100	c	05 Y42 00 75YR46 00 M					Y	0	0		0		P		Y	plastic
11	0-25	fs1	10YR32 00					1	0	HR	5						
	25-45	fs1	10YR44 00					0	0	HR	7			M			imp, flint
13	0-28	fs1	10YR32 00					3	0	HR	6						
	28-55	c	05Y 53 54 10YR58 00 M					Y	0	0		0		M			sandy, friable
	55-120	sc1	05Y 53 00 10YR58 00 M					Y	0	0		0		M			
14	0-31	oz1	10YR42 00					0	0	HR	3						
	31-50	hc1	10YR71 61 05Y 46 58 M				00MN00	00	Y	0	0	HR	10		M		
	50-60	hc1	05Y 51 00 05Y 46 58 M					Y	0	0		0		P			groundwater
	60-95	hc1	05Y 51 00 05Y 46 58 M					Y	0	0	HR	20		P			imp, gravel
15	0-30	fs1	10YR32 00 10YR56 00 F					0	0		0						
	30-50	lfs	10YR72 00 10YR56 00 C					Y	0	0		0		M			
	50-80	lfs	10YR72 63 10YR58 00 M				00MN00	00	Y	0	0		0		M		
	80-100	fs	05Y 53 00 10YR46 58 M				00MN00	00	Y	0	0		0		M		
	100-120	sc1	05Y 52 63 75YR58 00 M					Y	0	0		0		M			see 1p, h5
16	0-35	lfs	10YR31 00					6	2	HR	10						
	35-50	msl	25Y 53 00 10YR58 00 C					Y	0	0	HR	2		M			
	50-90	c	05Y 53 62 75YR58 00 M				00MN00	00	Y	0	0	HR	1		M		loose, friable
	90-120	c	05Y 62 72 75YR58 00 M				00MN00	00	Y	0	0		0		P		Y
17	0-23	msl	10YR31 00					3	0	HR	5						
	23-48	msl	25Y 31 00 75YR46 00 C					Y	0	0	HR	10		M			
	48-73	lms	10YR82 71 10YR56 00 M					Y	0	0	HR	3		M			
	73-120	lms	10YR73 00 10YR46 00 M					Y	0	0	HR	3		M			

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED COL.	-----STONES-----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR	POR	IMP	SPL
18	0-40	pty1	25Y 31 00					Y	0	0	0						groundwater
	40-45	osc1	25Y 31 00					Y	0	0	HR 50		P				imp, gravel
19	0-23	ofsz1	75YR46 00	75YR46 00	C			Y	0	0	0						
	23-38	ofsz1	25Y 41 51	75YR46 00	M			Y	0	0	HR 5		M				
	38-90	sc1	05GY01 00	10YR58 00	C	05Y 64 00	Y	0	0	HR 15		M					groundwater
20	0-40	ofsz1	25Y 31 41	10YR44 46	M			Y	0	0	0						
	40-50	ms1	10YR41 00	75YR46 00	M			Y	0	0	HR 50		M				imp, gravel
21	0-20	ofsz1	25Y 31 00	75YR44 00	M			Y	0	0	0						
	20-40	ohc1	25Y 31 00	75YR44 00	M			Y	0	0	0		M				
	40-80	hc1	10YR53 00	10YR58 00	M			Y	0	0	0		M				groundwater
24	0-30	ms1	10YR32 00						0	0	HR 6						
	30-52	mc1	25Y 64 00	10YR58 00	C			Y	0	0	HR 2		M				porous
	52-95	hc1	05Y 53 00					Y	0	0	0		M				porous, loose
	95-105	sc1	05Y 43 00	10YR58 00	C			Y	0	0	0		M				dense, firm
	105-120	c	05Y 63 00	10YR56 00	C			Y	0	0	0		P		Y		
25	0-25	ms1	10YR32 00						2	0	HR 7						
	25-50	lms	10YR43 00						0	0	HR 10		M				imp, flints
26	0-30	fs1	10YR32 00	75YR44 00	C			Y	0	0	0						
	30-55	lfs	10YR32 62	75YR44 00	M	00MNOO 00	Y	0	0	HR 5		M					
	55-105	ms	05 Y53 00	75YR56 00	M			Y	0	0	HR 1		M				
	105-120	sc1	05 Y42 00	10YR56 00	M			Y	0	0	0		M				porous
27	0-35	fs1	10YR43 00	75YR34 00	M			Y	0	0	0						
	35-52	ms	10YR42 00	75YR56 00	M			Y	0	0	0		M				
	52-100	c	10 Y04 00	75YR44 00	M			Y	0	0	0		P		Y		dense, firm
28	0-28	ms1	10YR31 00						0	0	0						
	28-60	ms1	25Y 64 72	10YR58 00	C			Y	0	0	0		M				
	60-95	c	05Y 53 54	75YR58 00	M			Y	0	0	0		M				sandy, friable
29	0-35	oms1	10YR21 00	10YR46 00	F				0	0	HR 2						
	35-58	o1ms	10YR21 00	75YR46 58	C			Y	0	0	0		M				
	58-80	ms	10YR63 72	10YR46 58	M			Y	0	0	0		M				
	80-120	lms	25Y 53 63	10YR58 00	M			Y	0	0	0		G				