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ARUN DISTRICT LOCAL PLAN
SITE 38 : LAND SOUTH OF
BARNHAM ROAD, BARNHAM
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
MARCH 1994

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AGRICULTURAL LAND CLASSIFICATION REPORT

1.0 Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on an number of sites in the Arun District of West Sussex. The work forms part of MAFF's statutory input to the preparation of the Arun District Local Plan.

1.2 Approximately 22 hectares of land relating to site 38, land south of Barnham Road in the village of Barnham, north west of Bognor Regis was surveyed in March 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 24 soil auger borings and two soil inspection pits were assessed in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on its use for agriculture.

1.3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.

1.4 At the time of the survey the majority of the land was under a grass ley and oilseed rape.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:5,000. It is accurate at this scale, but any enlargement would be misleading. This map supersedes any previous survey information for this site.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site
2	19.1	87.2
3a	0.7	3.2
3b	2.1	9.6
Total Area of Site	21.9	100%

1.6 Appendix 1 gives a general description of the grades, subgrades and land use categories identified in the survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

1.7 The site is classified as Grade 2 and Subgrades 3a and 3b with soil droughtiness and wetness being the main limitations. The majority of land is classified as Grade 2 and comprises fine silty/loamy and clayey soils limited by slight soil droughtiness. Some land in the eastern half of the site is limited by soil wetness and classified as Subgrades 3a and 3b. Subgrade 3a land comprises fine loamy soils passing to lower subsoils of poorly structured slowly permeable clay which impede the movement of water through the soil. Subgrade 3b land consists of slowly permeable clay immediately below the topsoil which causes a more severe drainage imperfection than that of Subgrade 3a land.

2.0 Climate

2.1 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.

2.2 The main parameters used in the assessment of an overall climatic limitation are annual average rainfall, as a measure of overall wetness, and accumulated temperature, as a measure of the relative warmth of a locality.

2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met. Office 1989). The details are given in the table below and these show that there is no overall climatic limitation affecting the site. It should be noted that climatic characteristics such as moisture deficits for wheat and potatoes can interact with soil properties to increase the risk of soil droughtiness problems. Equally, rainfall and field capacity days can influence the degree of wetness problems, especially on heavy soils.

2.4 No local climatic factors such as frost risk affect the site, but there is a possible risk of exposure to the site area due to it's flat low lying position coupled with it's proximity to the coast. Many coastal districts are exposed to strong winds whose effects can extend several miles inland. Strong persistent winds can have a detrimental effect on some of the more sensitive crops grown on very good quality land such as this. However, the risk of exposure is not great enough to limit land to a classification of less than Grade 2.

Table 2 : Climatic Interpolations

Grid Reference :	SU 948 049	SU 952 046
Altitude (m) :	10	10
Accumulated Temperature (degree days) :	1537	1537
Average Annual Rainfall (mm) :	774	774
Field Capacity (days) :	158	158
Moisture Deficit, Wheat (mm) :	117	117
Moisture Deficit, Potatoes (mm) :	114	114
Overall Climatic Grade :	1	1

3.0 Relief

3.1 The site is almost flat and lies at an altitude of approximately 9-10 metres. Nowhere on the site do relief or gradient affect agricultural land quality.

4.0 Geology and Soil

4.1 The published geological sheet for the site, Sheet 317 (BGS, 1972) shows the majority of the site to be mapped as Brickearth with a deposit of Valley Gravel to the northernmost part of the site.

4.2 The published soils information for the area, Sheet 6 (SSEW, 1983) shows the predominant soil type to be the Park Gate association -"Deep stoneless silty soils variably affected by groundwater" (SSEW,1983). Extending a small way into the site in the vicinity of Manor Farm are soils of the Hamble 2 association -"Deep stoneless silty soils and similar soils affected by groundwater. Over gravel locally, usually flat land" (SSEW,1983). A detailed inspection of soils on the site revealed the presence of well drained fine silty soils becoming heavier with depth. Additionally, some poorer drained clayey soils were also encountered.

5.0 Agricultural Land Classification

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.

5.2 The location of the soil observation points are shown on the attached sample point map.

Grade 2

5.3 Very good quality agricultural land covers the majority of the site. Soil profiles typically comprise medium silty clay loam topsoils containing 1-5% total flints over upper subsoils of similar texture with 0-4% total flints. Lower subsoils consist of either medium or heavy silty clay loam or clay textures containing 0-15% total flints. Soil Pit 1 is typical of these soils. Profiles are reasonably well drained, occasionally showing signs of wetness problems in the form of gleying in the upper and lower subsoils and are assigned to Wetness Classes I and II accordingly. Where the latter wetness class is assigned, the interaction of a medium topsoil texture with climatic factors results in a classification of Grade 2 due to a slight wetness limitation. Together with this limitation all profiles experience slight soil droughtiness including those better drained (Wetness Class I) profiles. The combination of soil textures and climatic factors causes a slight restriction in profile available water reserves for adequate crop growth and land is limited to Grade 2. Finally, the risk of exposure mentioned in paragraph 2.4 may also be sufficient to limit land to this grade.

Subgrade 3a

5.4 This small area of land to the east of the site marks a change to heavier clayey soils limited by wetness. Profiles typically comprise topsoils of medium clay loam containing 8% total flints of which 3% are greater than 2 cm in diameter. This passes to moderately structured clay containing 5% total flints. Underlying this is a stoneless, poorly structured slowly permeable clay. Soil Pit 2 is typical of these soils and found the clay to be slowly permeable from 60 cm depth giving a Wetness Class of III. This, in combination with a medium, more workable topsoil and climatic factors gives a resultant classification of Subgrade 3a. This land is restricted by a moderate wetness limitation.

Subgrade 3b

5.5 Moderate quality land is limited by a significant wetness limitation associated with clayey soils. Profiles comprise topsoils of medium silty clay loam with 5-6% total flints (3% being > 2 cm in diameter). This passes directly to poorly structured slowly permeable clay with 3-5% total flints. Soils are poorly drained and assigned to Wetness Class IV due to the presence of slowly permeable layers of clay from 25 cm depth. Again, this drainage status combined with a medium topsoil texture and climatic factors limits land to Subgrade 3b. Within this map unit a very small area of land may be disturbed; soils exhibiting the same textures and wetness characteristics but which are impenetrable at shallow depths and occupying a hollow in the central part of the site.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 on the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

Grade 3 : Good To Moderate Quality Agricultural Land

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

Sub-grade 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.

Sub-grade 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 (eg. 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 very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Urban

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

Non-agricultural

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

Woodland

Includes commercial and non-commercial woodland.

Agricultural Buildings

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

Open Water

Includes lakes, ponds and rivers as map scale permits.

Land Not Surveyed

Agricultural land which has not been surveyed.

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

APPENDIX II

REFERENCES

* BRITISH GEOLOGICAL SURVEY (1972), Sheet No.317, Chichester, 1:63,360 scale.

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

* METEOROLOGICAL OFFICE (1989), Climatological Data for Agricultural Land Classification.

* SOIL SURVEY OF ENGLAND AND WALES (1983), Sheet No.6, "Soils Of South East England", 1:250,000 scale and accompanying legend.

APPENDIX III

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

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

Wetness Class II

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

Wetness Class III

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

Wetness Class IV

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

Wetness Class V

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

Wetness Class VI

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

(The number of days is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.)

APPENDIX IV

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE

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

Boring Header Information

1. **GRID REF** : national 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 **HRT** : Horticultural Crops **PGR** : Permanent Pasture **LEY** : Ley Grass **RGR** : Rough Grazing
SCR : Scrub **CFW** : Coniferous Woodland **DCW** : Deciduous Woodland **HTH** : Heathland **BOG** : Bog or Marsh
FLW : Fallow **PLO** : Ploughed **SAS** : Set aside **OTH** : Other

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

4. **GLEY/SPL** : Depth in cm to gleying or slowly permeable layers.

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

6. **MB (WHEAT/POTS)** : Moisture Balance.

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

8. If any of the following factors are considered significant, an entry of 'Y' will be entered in the relevant column.

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

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

OC : Overall Climate **AE** : Aspect **EX** : Exposure **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** : Soil Erosion Risk **WD** : Combined Soil Wetness/Droughtiness **ST** : Topsoil Stoniness

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
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 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

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

6. STONE LITH : One of the following is used.

HR : all hard rocks and stones MSST : soft, medium or coarse grained sandstone
SI : soft weathered igneous or metamorphic SLST : soft oolitic or dolimitic limestone
FSST : soft, fine grained sandstone ZR : soft, argillaceous, or silty rocks CH : chalk
GH : gravel with non-porous (hard) stones GS :gravel with porous (soft) stones

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

7. 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 VC : very coarse

- ped shape S : single grain M : massive GR : granular AB : angular blocky SAB : sub-angular blocky PR : prismatic PL : platy

8. 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

9. SUBS STR : Subsoil structural condition recorded for the purpose of calculating profile droughtiness.

G : good M : moderate P : poor

10. POR : Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.

11. IMP : If the profile is impenetrable a 'Y' will appear in this column at the appropiate horizon.

12. SPL : Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

13. CALC : If the soil horizon is calcareous, a 'Y' will appear in this column.

14. 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 : ARUN LP:SITE.38, BARNHAM Pit Number : 1P

Grid Reference: SU94770495 Average Annual Rainfall : 774 mm
Accumulated Temperature : 1537 degree days
Field Capacity Level : 158 days
Land Use : Ley
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MZCL	10YR43 00	0	1		
28- 43	MZCL	10YR54 00	0	1		MDCSAB
43- 58	HCL	10YR54 00	0	1	C	MDCSAB
58- 89	C	10YR54 00	0	0	C	MDCSAB
89-120	HCL	10YR53 00	0	1	C	MDCSAB

Wetness Grade : 1 Wetness Class : I
Gleying :043 cm
SPL : No SPL

Drought Grade : 2 APW : 152mm MBW : 35 mm
APP : 121mm MBP : 7 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : ARUN LP:SITE 38, BARNHAM Pit Number : 2P

Grid Reference: SU95390440 Average Annual Rainfall : 774 mm
Accumulated Temperature : 1537 degree days
Field Capacity Level : 158 days
Land Use : Oilseed Rape
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MCL	10YR42 00	3	8		
28- 60	C	10YR63 00	0	5	C	MDCSAB
60- 80	C	25Y 63 00	0	0	M	WKCSAB

Wetness Grade : 3A Wetness Class : III
Gleying :028 cm
SPL :060 cm

Drought Grade : APW : mm MBW : 0 mm
APP : mm MBP : 0 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Wetness

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	SU94600510	PGR			055		1	1	125	8	124	10	2				DR	2	IMP90SLIGLEY55
1P	SU94770495	LEY			043		1	1	152	35	121	7	2				DR	2	SLI GLEY 43
2	SU94600500	LEY			060		1	1	151	34	121	7	2				DR	2	SLI GLEY 50
2P	SU95390440	OSR			028	060	3	3A		0		0					WE	3A	PIT TO 80
3	SU94700500	LEY			055		1	1	147	30	123	9	2				DR	2	SLI GLEY 45
4	SU94800500	LEY			055		1	1	153	36	121	7	2				DR	2	SLI GLEY 55
5	SU94900500	LEY	NE	01	050		1	1	116	-1	122	8	3A				DR	3A	IMP78SLIGLEY50
6	SU94700490	LEY			053		1	1	153	36	122	8	2				DR	2	
7	SU94800490	LEY			065		1	1	153	36	122	8	2				DR	2	SLI GLEY 54
8	SU94900490	LEY			060		1	1	151	34	119	5	2				DR	2	SLI GLEY 35
9	SU95000490	LEY			085		1	1	129	12	124	10	2				DR	2	IMP95SLIGLEY85
10	SU94900480	LEY			040		2	2	151	34	119	5	2				WE	2	SLI GLEY 27
11	SU95000480	LEY			026		2	2	144	27	118	4	2				DR	2	
12	SU95100480	LEY			050		1	1	114	-3	120	6	3A				DR	3A	IMP82 Q2DR
13	SU95200480	LEY			028	080	2	2	128	11	121	7	2				WE	2	IMP 100
14	SU95100470	LEY			025	025	4	3B		0		0					WE	3B	IMP 55
14A	SU95100474	LEY			025	025	4	3B		0		0					WE	3B	IMP 50
14B	SU95060475	LEY			025	025	4	3B		0		0					WE	3B	IMP 55
15	SU95200470	LEY			025		2	2	064	-53	064	-50	4				DR	4	DIST?IMP40 Q3B
16	SU95300470	OSR			040		2	2	143	26	119	5	2				DR	2	BDR WC1+2
17	SU95200460	LEY			030		2	2	124	7	114	0	2				DR	2	IMP 100
17A	SU95080465	LEY			028		2	2	095	-22	106	-8	3B				DR	3B	IMP 75 Q3A
18	SU95300460	OSR			028		2	2	138	21	122	8	2				DR	2	IMP 100
19	SU95300450	OSR	W	01	028		2	2	125	8	119	5	2				DR	2	IMP 90
20	SU95400440	OSR			030	058	3	3A		0		0					WE	3A	SEE 2P
21	SU95500440	OSR	W	01	040		2	2	137	20	120	6	2				WE	2	BDR WC1+2

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
1	0-17	zl	10YR43 00						0	0		0						
	17-38	mzcl	10YR43 00						0	0	HR	5		M				
	38-55	hzcl	10YR43 44						0	0	HR	5		M				
	55-73	c	10YR54 00	10YR58 00	C			S	0	0	HR	3		M				SLI GLEY
	73-87	mzcl	10YR54 00	10YR58 00	C			S	0	0	HR	20		M				SLI GLEY
	87-90	mzcl	10YR64 43	10YR56 00	C			S	0	0	HR	25		M			Y	SLI GLEY
1P	0-28	mzcl	10YR43 00						0	0	HR	1						
	28-43	mzcl	10YR54 00						0	0	HR	1	MDCSAB	FR M	Y			
	43-58	hcl	10YR54 00	10YR58 00	C			S	0	0	HR	1	MDCSAB	FM M	Y			SLI GLEY
	58-89	c	10YR54 00	10YR58 00	C		00MN00 00	S	0	0		0	MDCSAB	FM M	Y			SLI GLEY
	89-120	hcl	10YR53 00	10YR58 00	C		00MN00 00	Y	0	0	HR	1	MDCSAB	FM M	Y			
2	0-26	mzcl	10YR43 00	10YR56 00	F				0	0	HR	4						
	26-50	mzcl	10YR54 00						0	0	HR	2		M				
	50-60	hzcl	10YR54 00	10YR56 00	C			S	0	0	HR	4		M				SLI GLEY
	60-90	hzcl	10YR63 00	10YR56 00	M		00MN00 00	Y	0	0		0		M				
	90-120	c	10YR63 00	10YR56 00	M			Y	0	0		0		M				
2P	0-28	mcl	10YR42 00						3	0	HR	8						
	28-60	c	10YR63 00	10YR58 00	C			Y	0	0	HR	5	MDCSAB	FM M	Y			
	60-80	c	25Y 63 00	75YR56 00	M		00MN00 00	Y	0	0		0	WKCSAB	FM P	Y		Y	
3	0-29	mzcl	10YR53 00						0	0	HR	1						
	29-45	mzcl	10YR54 00	10YR56 00	F				0	0		0		M				
	45-55	hzcl	10YR54 00	10YR56 00	C			S	0	0		0		M				SLI GLEY
	55-120	c	10YR64 54	75YR56 00	C		00MN00 00	Y	0	0	HR	1		M				
4	0-28	mzcl	10YR42 00						0	0	HR	1						
	28-45	mzcl	10YR54 00						0	0	HR	1		M				
	45-55	c	10YR54 00	10YR56 00	C		00MN00 00	S	0	0		0		M				SLI GLEY
	55-80	c	10YR54 64	75YR56 00	C		00MN00 00	Y	0	0		0		M				
	80-120	hzcl	10YR64 54	75YR56 00	C		00MN00 00	Y	0	0		0		M				
5	0-30	mzcl	10YR43 00						0	0	HR	2						
	30-50	mzcl	10YR54 00						0	0	HR	3		M				
	50-60	mzcl	10YR54 00	75YR46 56	C		00MN00 00	S	0	0		0		M				SLI GLEY
	60-78	mzcl	10YR54 00	10YR56 00	C			S	0	0	CH	15		M			Y	SLI GLEY
6	0-30	mzcl	10YR42 00						0	0	HR	1						
	30-53	mzcl	10YR54 00	10YR56 00	F				0	0	HR	1		M				
	53-70	c	10YR64 54	75YR56 00	C			Y	0	0		0		M				
	70-90	c	10YR64 00	75YR56 00	C		00MN00 00	Y	0	0		0		M				
	90-120	hzcl	10YR64 00	75YR56 00	C		00MN00 00	Y	0	0		0		M				
7	0-30	mzcl	10YR42 00						0	0	HR	1						
	30-54	mzcl	10YR54 00						0	0	HR	2		M				
	54-65	c	10YR54 00	10YR56 00	C		00MN00 00	S	0	0		0		M				SLI GLEY
	65-90	c	10YR64 54	75YR56 00	C		00MN00 00	Y	0	0		0		M				
	90-120	hzcl	10YR64 54	75YR56 00	C			Y	0	0		0		M				

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
8	0-26	mzcl	10YR44 00						0	0	HR	2							
	26-35	mzcl	10YR56 00						0	0	HR	2		M					
	35-60	c	10YR54 00	10YR56 00	M		00MN00 00	S	0	0		0		M					SLI GLEY
	60-80	c	10YR54 64	10YR56 00	M		00MN00 00	Y	0	0		0		M					
	80-90	hzcl	10YR54 64	10YR56 00	M		00MN00 00	Y	0	0		0		M					
	90-120	hzcl	10YR56 00	75YR68 00	F		00MN00 00	S	0	0		0		M					SLI GLEY
9	0-30	mzcl	10YR53 00						0	0	HR	1							
	30-53	mzcl	10YR54 00						0	0	HR	1		M					
	53-68	hzcl	10YR54 00				00MN00 00		0	0	HR	1		M					
	68-85	c	10YR54 00	10YR68 00	F		00MN00 00		0	0	HR	1		M					
	85-95	c	10YR54 00	75YR58 00	M		00MN00 00	S	0	0	HR	5		M					SLI GLEY
10	0-27	mzcl	10YR43 00						0	0	HR	2							
	27-40	c	25Y 54 00	10YR56 00	C		00MN00 00	S	0	0	HR	2		M					SLI GLEY
	40-80	c	25Y 63 54	10YR56 00	M		00MN00 00	Y	0	0		0		M					
	80-120	hzcl	10YR63 54	10YR56 00	M		00MN00 00	Y	0	0		0		M					
11	0-26	mzcl	10YR53 00	10YR68 00	F				0	0	HR	1							
	26-45	hzcl	10YR63 00	10YR68 00	C		00MN00 00	Y	0	0	HR	1		M					
	45-70	zc	10YR63 00	75YR58 00	C		00MN00 00	Y	0	0	HR	1		M					
	70-89	hzcl	10YR63 00	75YR58 00	C		00MN00 00	Y	0	0	HR	1		M					
	89-110	hzcl	10YR61 00	75YR58 00	C		00MN00 00	Y	0	0	HR	1		M					
12	0-28	mzcl	10YR43 00	10YR68 00	F		00MN00 00		0	0	HR	1							
	28-40	hzcl	10YR54 56	75YR58 00	F		00MN00 00		0	0	HR	1		M					
	40-50	c	10YR54 65	75YR58 00	F		00MN00 00		0	0	HR	1		M					
	50-82	c	10YR54 56	75YR58 00	C		00MN00 00	S	0	0	HR	1		M					SLI GLEY
13	0-28	mzcl	10YR53 00	10YR68 00	F				0	0	HR	1							
	28-48	hzcl	10YR53 00	10YR68 00	C		00MN00 00	Y	0	0	HR	1		M					
	48-60	c	10YR53 00	10YR68 00	C		00MN00 00	Y	0	0	HR	1		M					
	60-70	c	25Y 63 00	75YR58 00	M		00MN00 00	Y	0	0	HR	1		M					
	70-80	hzcl	10YR63 00	10YR68 00	C			Y	0	0	HR	15		M				Y	
	80-100	c	10YR53 00	10YR68 00	M		00MN00 00	Y	0	0	HR	3		P	Y		Y		
14	0-25	mzcl	10YR53 00						3	0	HR	6							
	25-55	c	10YR52 00	75YR58 00	M			Y	0	0	HR	3		P	Y		Y		
14A	0-25	mzcl	10YR53 00						3	0	HR	6							
	25-50	c	25Y 72 00	75YR58 00	C			Y	0	0	HR	3		P	Y		Y		
14B	0-25	mzcl	10YR53 00						3	0	HR	6							
	25-55	c	25Y 72 00	75YR58 00	C			Y	0	0	HR	3		P	Y		Y		
15	0-25	mzcl	10YR53 00						0	0	HR	5							
	25-40	c	10YR52 00	10YR68 00	C			Y	0	0	HR	5		P	Y				

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
16	0-28	mzcl	10YR53 00						0	0	HR	2							
	28-40	hcl	10YR54 00						0	0		0		M					
	40-90	c	10YR64 00	75YR58 00	M		00MN00 00	Y	0	0		0		M					
	90-120	c	10YR54 00	10YR68 00	C			S	0	0		0		M					SLI GLEY
17	0-30	mzcl	10YR43 00						1	0	HR	3							
	30-48	c	10YR62 63	10YR58 00	M		00MN00 00	Y	0	0		0		P	Y				
	48-70	c	10YR62 63	10YR56 00	M			Y	0	0		0		M					
	70-95	mcl	10YR52 00	10YR56 00	M			Y	0	0	HR	15		M				Y	
	95-100	mcl	10YR52 00	10YR56 00	M			Y	0	0	HR	15		M				Y	
17A	0-28	mcl	10YR42 00						2	0	HR	5							
	28-75	c	10YR53 00	10YR56 00	M		00MN00 00	Y	0	0	HR	15		M					
18	0-28	mzcl	10YR42 00						0	0	HR	5							
	28-90	hzcl	25Y 64 00	75YR56 00	M			Y	0	0		0		M					
	90-100	mzcl	25Y 63 64	75YR58 00	C			Y	0	0	HR	5		M				Y	
19	0-28	mzcl	10YR43 00						0	0	HR	2							
	28-60	c	10YR53 00	10YR68 62	M		00MN00 00	Y	0	0	HR	1		M					
	60-78	hcl	10YR53 54	10YR68 62	M			Y	0	0		0		M					
	78-90	mcl	10YR63 54	10YR56 00	C			Y	0	0	CH	10		M				Y	
20	0-30	mcl	10YR42 00						3	0	HR	8							
	30-58	c	10YR63 00	10YR56 00	C			Y	0	0	HR	5		M					
	58-120	c	25Y 63 00	75YR56 00	M		00MN00 00	Y	0	0		0		P		Y			
21	0-25	mzcl	10YR44 00						0	0	HR	2							
	25-40	mzcl	10YR54 00	10YR56 00	F				0	0	HR	1		M					
	40-70	c	10YR64 00	10YR58 00	M		00MN00 00	Y	0	0		0		M					
	70-85	msl	10YR64 00	10YR58 00	M		00MN00 00	Y	0	0		0		M					
	85-120	lms	10YR56 00						0	0		0		M					