A1
WEST SUSSEX MINERALS PLAN
SITE 2: MADAM GREEN FARM, OVING
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
SEPTEMBER 1993

WEST SUSSEX MINERALS PLAN
SITE 2: MADAM GREEN FARM, OVING
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 a number of sites in West Sussex. The work forms part of MAFF's statutory input to the preparation of the West Sussex Minerals Plan.

1.2 Approximately 23 hectares of land relating to Site 2 near the village of Oving close to Chichester was surveyed during September 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 21 soil auger borings and 2 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 landuse on the site was cereals which had been recently harvested.

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 1:5000. It is accurate at this scale, but any enlargement would be misleading. This map supercedes any previous survey information.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	%of Site	% of Agricultural Area
2	16.4	72.0	73.9
3B	5.8	25.0	26.1
			100.0 (22.2 ha)
Non agricultural land	0.3	1.25	
Urban	0.3	1.25	
Open water	0.1	0.5	
Total	22.9	100.0	

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 has been classified as Grades 2 and 3B with soil droughtiness as the key limitation. The area shown as Grade 2 experiences a slight limitation; there is insufficient available water in the profile to qualify for a higher grade given the textures and structures that occur in the subsoil. The soils are clay loam textures becoming heavier with depth. The area shown as Subgrade 3B is more severely limited due to the presence of stony subsoils. The high stone volumes significantly restrict profile available water for plant growth and restrict the range of crops that can tolerate such conditions.

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 the overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature (degree days Jan-June), 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.

2.4 No local climatic factors such as exposure or frost risk affect the site. However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations

Table 2 : Climatic Interpolations

Grid Reference :	SU 891045
Altitude (m) :	11
Accumulated Temperature (days) :	1536
Average Annual Rainfall (mm) :	778
Field Capacity (days) :	159
Moisture Deficit, Wheat (mm) :	117
Moisture Deficit, Potatoes (mm) :	113
Overall Climatic Grade :	1

3.0 Relief

3.1 The site lies at an altitude of 11 metres and is level.

4.0 Geology and Soil

4.1 The relevant geological sheet for the site (BGS Sheet 317: Chichester 1957) shows the underlying geology to be Valley Gravel.

4.2 The published soils information for the area (SSEW Sheet 6: Soils of South East England 1983) shows that the main soil type which occurs on the site is of the Hamble 2 association. These are described as deep stoneless well drained silty soils and similar soils affected by groundwater. Detailed field examination broadly confirms this, although the soils on some parts of the site were found to have very stony subsoils.

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.

5.3 Grade 2 : The majority of agricultural land on the site has been classified Grade 2, very good quality land. Soils typically comprise medium silty clay loam topsoils overlying similar subsoils which become heavier at depth. Pit 1 confirmed that the soils tend to be stoneless with no evidence of a wetness limitation, being generally typical of the Grade 2 soils on the site. Technically Pit 1 has a resultant classification of Grade 1, although variations in stone contents and subsoil textures means that Grade 2 is more appropriate for these soils. These soils are limited by a slight soil droughtiness imperfection due to the combination of soil textures and moderate substructural conditions with the local climatic regime.

5.4 Subgrade 3b : The remainder of the site is classified as Subgrade 3b, moderate quality agricultural land. The majority of soil inspections in this unit proved to be impenetrable below the topsoil. A subsequent soil inspection pit (Pit 2) revealed the presence of a very stony subsoil, which became impenetrable to digging at 65cm. Above this, the topsoil consists of medium silty clay loam textures containing approximately 19% total flints by volume (9% > 2cm). A moderately stony subsoil commences at 25cm and comprises a heavy clay loam containing approximately 30% flints by volume. At 45cm there is a further medium silty clay loam horizon containing approximately 45% flints. The impenetrable nature of these soils meant that assumptions regarding stoniness below this level and rooting depths had to be made. the nature of the underlying geology has made it possible to assume that profiles will not become any less stony below this level. When assuming a further 30cm of rooting depth down to 95cm, the amount of water available in the profile still limits the soil to Subgrade 3b on the basis of soil droughtiness. Although the profiles are well drained, wetness class I, they suffer significant droughtiness problems as a result of the high profile stone contents in combination with local climatic factors which will restrict available water for crop growth.

5.5 The areas marked as Urban include a private house in the west of the site.

5.6 The areas marked as Non-agricultural include a track running north to south on the site.

ADAS REFERENCE :4203/118/93
MAFF REFERENCE : EL 42/00228

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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 reclaimed 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 (1957), Sheet No.317, Chichester, 1:50,000

* 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. 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 : W. SUSSEX MINS - SITE 2 Pit Number : 1P

Grid Reference: SU89210450 Average Annual Rainfall : 778 mm
Accumulated Temperature : 1536 degree days
Field Capacity Level : 159 days
Land Use : Arable
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 31	MZCL	10YR43 00	0	1		WDCSAB
31- 65	MZCL	10YR54 00	0	1		MDCSAB
65-120	HCL	10YR53 00	0	1	C	MDCSAB

Wetness Grade : 1 Wetness Class : I
Gleying :065 cm
SPL : No SPL

Drought Grade : 1 APW : 160mm MBW : 43 mm
APP : 124mm MBP : 11 mm

FINAL ALC GRADE : 1
MAIN LIMITATION :

SOIL PIT DESCRIPTION

Site Name : W. SUSSEX MINS - SITE 2 Pit Number : 2P

Grid Reference: SU89450462 Average Annual Rainfall : 778 mm
Accumulated Temperature : 1536 degree days
Field Capacity Level : 159 days
Land Use : Arable
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MZCL	10YR42 00	9	19		WDCSAB
25- 50	HCL	10YR52 00	0	30		
50- 65	MZCL	10YR81 00	0	45		

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

Drought Grade : 3B APW : 076mm MBW : -41 mm
APP : 082mm MBP : -31 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	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	SU89800480	STB		000		1	1	054	-63	054	-59	4				DR	3B	AS 2P
1P	SU89210450	ARA		065		1	1	160	43	124	11	1					1	
2	SU89600470	STB		060		1	2	146	29	121	8	2				DR	2	
2P	SU89450462	ARA		000		1	1	076	-41	082	-31	3B				DR	3B	
3	SU89700470	STU		047		1	1	152	35	122	9	2				DR	2	
4	SU89800470	STB		085		1	1	155	38	123	10	2				DR	2	
5	SU89300460	ARA		060		1	1	149	32	123	10	2				DR	2	
6	SU89400460	ARA		000		1	1	079	-38	079	-34	3B				DR	3B	IMPEN 45 AS2P
7	SU89500460	PLO		000		1	1	049	-68	049	-64	4				DR	4	IMPEN 30 AS2P
8	SU89600460	STB		000		1	1	144	27	120	7	2				DR	2	
9	SU89700460	STU		045		1	1	154	37	122	9	2				DR	2	
10	SU89800460	STB		068		1	1	148	31	118	5	2				DR	2	AUGD 100
11	SU89100450	STB		000		1	2	106	-11	117	4	3A				DR	3A	IMPEN 68 AS 1P
12	SU89200450	STB		000		1	1	149	32	124	11	1					1	AUGD 95
13	SU89300450	STB		070		1	1	139	22	119	6	2				DR	2	
14	SU89400450	ARA		000		1	1	134	17	123	10	2				DR	2	STNS-95
15	SU89500450	PLO		000		1	1	051	-66	051	-62	4				DR	4	IMPEN 30 AS 2P
16	SU89600450	STB		045		1	1	089	-28	089	-24	3B				DR	3B	IMPEN 50
17	SU89700450	STU		040		1	1	153	36	121	8	2				DR	2	
18	SU89800450	STB		060		1	1	144	27	119	6	2				DR	2	
19	SU89900450	STU		000		1	1	118	1	122	9	3A				DR	3A	IMP Q2
20	SU89900440	STU		035		2	2	146	29	120	7	2				DR	2	
21	SU90000440	STU		000		1	1	098	-19	100	-13	3A				DR	3A	

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
1	0-25	mzcl	10YR42 00						0	0	HR	1						
	25-30	mzcl	10YR41 00						0	0	HR	20		M				
1P	0-31	mzcl	10YR43 00						0	0	HR	1	WDCSAB	FR				
	31-65	mzcl	10YR54 00						0	0	HR	1	MDCSAB	FR	M			
	65-120	hcl	10YR53 00	10YR56 00	C		00MN00 00	Y	0	0	HR	1	MDCSAB	FM	M			
2	0-28	hzcl	10YR42 00						1	0	HR	3						
	28-45	hzcl	10YR44 00						0	0	HR	2		M				
	45-60	hzcl	10YR56 00	10YR52 58	F				0	0	HR	1		M				
	60-120	c	10YR53 00	10YR58 51	C		00MN00 00	Y	0	0		0		M				
2P	0-25	mzcl	10YR42 00						9	0	HR	19	WDCSAB	FR				
	25-50	hcl	10YR52 00						0	0	HR	30		M				
	50-65	mzcl	10YR81 00						0	0	HR	45		M				
3	0-27	mzcl	10YR43 00						0	0	HR	2						
	27-47	mzcl	10YR54 00						0	0	HR	1		M				
	47-65	hzcl	10YR64 66	75YR56 00	C			Y	0	0		0		M				
	65-100	zc	10YR64 66	75YR56 00	M		00MN00 00	Y	0	0	HR	1		M				
	100-120	hzcl	10YR64 66	75YR56 00	M			Y	0	0	HR	1		M				
4	0-25	mzcl	10YR43 00						0	0		0						
	25-45	mzcl	10YR44 00						0	0	HR	1		M				
	45-60	hzcl	10YR44 00						0	0		0		M				
	60-85	c	10YR54 00	10YR58 00	F		00MN00 00		0	0		0		M				
	85-120	hcl	10YR53 00	10YR58 51	C			Y	0	0		0		M				
5	0-25	mzcl	10YR34 00						0	0	HR	1						
	25-60	mzcl	10YR44 00						0	0	HR	1		M				
	60-110	hzcl	10YR51 00	75YR68 00	C			Y	0	0	HR	1		M				
6	0-25	mzcl	10YR33 00						0	0	HR	3						
	25-45	hzcl	10YR44 00						0	0	HR	3		M				
7	0-30	mzcl	10YR43 00						0	0	HR	15						
8	0-30	mzcl	10YR42 00						0	0		0						
	30-35	hzcl	25Y 44 00						0	0		0		M				
	35-50	c	10YR44 00						0	0	HR	1		M				
	50-120	c	10YR56 00	10YR68 51	F		00MN00 00		0	0	HR	3		M				
9	0-29	mzcl	10YR42 00						0	0	HR	2						
	29-45	mzcl	10YR54 00						0	0	HR	2		M				
	45-65	hzcl	10YR64 66	75YR56 00	C			Y	0	0	HR	2		M				
	65-85	zc	10YR64 66	75YR56 00	C			Y	0	0		0		M				
	85-95	hzcl	10YR64 66	75YR56 00	C			Y	0	0	HR	1		M				
	95-120	mzcl	10YR64 66	75YR56 00	C			Y	0	0	HR	1		M				

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
10	0-25	mzcl	10YR43 00						0	0		0						
	25-45	hcl	10YR44 00						0	0	HR	3		M				
	45-68	c	10YR46 00	00MN00 00	F				0	0	HR	1		M				
	68-90	c	10YR53 00	10YR56 51	C			Y	0	0		0		M				
	90-120	hcl	10YR53 00	10YR68 51	M			Y	0	0		0		M				
11	0-23	hzcl	10YR42 00						0	0		0						
	23-50	hzcl	10YR54 00						0	0	HR	2		M				
	50-60	hzcl	10YR46 00						0	0	HR	8		M				
	60-68	hzcl	10YR54 00	10YR58 00	C		00MN00 00		0	0	HR	5		M				
12	0-30	mzcl	10YR42 00						0	0		0						
	30-60	hzcl	10YR44 00						0	0		0		M				
	60-80	c	10YR56 00						0	0		0		M				
	80-120	c	10YR56 00	10YR58 52	F		00MN00 00		0	0		0		M				
13	0-30	mzcl	10YR43 00						0	0	HR	2						
	30-45	mcl	10YR54 00						0	0		0		M				
	45-70	hcl	10YR56 00						0	0	HR	2		M				
	70-110	c	10YR53 00	10YR58 00	C			Y	0	0		0		M				
14	0-25	mzcl	10YR33 00						0	0	HR	1						
	25-60	hzcl	10YR44 00						0	0	HR	1		M				
	60-95	hzcl	10YR66 00						0	0		0		M				
15	0-30	mzcl	10YR42 00						0	0	HR	12						
16	0-35	mzcl	25Y 44 00						0	0	HR	1						
	35-45	hcl	10YR44 00						0	0	HR	3		M				
	45-50	hcl	10YR53 00	10YR56 52	C		00MN00 00	Y	0	0	HR	5		M				
17	0-28	mzcl	10YR42 00						0	0	HR	2						
	28-40	mzcl	10YR54 00						0	0	HR	2		M				
	40-60	hzcl	10YR54 66	75YR56 00	C			Y	0	0	HR	2		M				
	60-90	zc	10YR64 00	75YR56 00	M			Y	0	0		0		M				
	90-120	hzcl	10YR64 00	75YR56 00	C			Y	0	0		0		M				
18	0-25	mzcl	10YR43 00						0	0	HR	1						
	25-35	hcl	10YR44 00						0	0	HR	1		M				
	35-60	hcl	10YR46 00	00MN00 00	F				0	0		0		M				
	60-120	c	10YR53 00	10YR68 52	C		00MN00 00	Y	0	0	HR	2		M				
19	0-30	mzcl	10YR42 00						0	0	HR	2						
	30-35	mzcl	10YR54 00						0	0	HR	4		M				
	35-60	hzcl	10YR54 00				00MN00 00		0	0	HR	1		M				
	60-80	mzcl	10YR64 66						0	0	HR	5		M				
20	0-28	mzcl	10YR42 00						0	0	HR	2						
	28-35	mzcl	10YR54 00						0	0	HR	3		M				
	35-45	mzcl	10YR64 66	75YR56 00	C			Y	0	0	HR	1		M				
	45-55	hzcl	10YR64 66	75YR56 00	C			Y	0	0		0		M				
	55-120	zc	10YR64 66	75YR56 00	M			Y	0	0	HR	1		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	mzcl	10YR42 00						0	0	HR	8						
	30-55	mcl	25Y 62 00						0	0	HR	20		M				
	55-80	mcl	25Y 62 00						0	0	HR	40		M				