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BILLINGSHURST PLANNING STRATEGY
AREA 2
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
DECEMBER 1993

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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 area of land around Little Daux Farm immediately south-east of Billingshurst in West Sussex. The work forms part of MAFF's statutory input into the preparation of the Billingshurst Planning Strategy.

1.2 Approximately 39 hectares of land was surveyed in December 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 37 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 land use on the site was a mixture of permanent grassland, cereals and Set-Aside.

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	% of Agricultural Area
3a	6.0	15.2	15.8
3b	32.0	80.8	84.2
Non-Agricultural area	0.1	0.2	100 (38.0ha)
Urban	0.7	1.8	
Woodland	0.8	2.0	
Total area of site	39.6	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 majority of land on the site has been classified as Subgrade 3b where the soils show a significant wetness problem. The profiles comprise clay loams over poorly structured clays which impede drainage. Two isolated units of subgrade 3a were also found at the north of the site and just south east of Little Daux Farm. The silty clay loams of the south eastern unit and the clay loams over sandy clay loams and clays in the north show less of a wetness problem where poorly structured clays occur deeper in the profile than elsewhere. A number of borings in the northern mapping unit of subgrade 3a, however, are also affected by soil droughtiness due to very stony subsoil horizons.

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 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 properties to influence soil wetness and droughtiness limitations.

Table 2 : Climatic Interpolation

Grid Reference :	TQ093248	TQ096258
Altitude (m) :	20	50
Accumulated Temperature (days) :	1513	1479
Average Annual Rainfall (mm) :	788	795
Field Capacity (days) :	166	167
Moisture Deficit, Wheat (mm) :	111	108
Moisture Deficit, Potatoes (mm) :	105	101
Overall Climatic Grade :	1	1

3.0 Relief

3.1 The site occupies an area of gently sloping land which rises from 20m AOD in the south west to 52m AOD in the north east. Nowhere on the site does gradient or relief impose any limitation to the land quality.

4.0 Geology and Soil

4.1 British Geological Survey (1978), sheet 301, Haslemere shows the site to be underlain by Weald Clay and Weald Clay with sandstone lenses which occur in regular bands running east-west across the site.

4.2 The soil type for this site is entirely Wickham 5 association as shown on the Soil Survey map of South East England (SSEW, 1983, 1:25,000). The soil is described as 'slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils, locally reddish. Some coarse loamy soils with slowly permeable subsoils and slight seasonal waterlogging over sandstone.' (SSEW, 1983).

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 Subgrade 3a

Two areas of good quality agricultural land, subgrade 3a, have been identified on this site. They consist of two different, though not dissimilar, soil types both with soil wetness limitations. The land to the south east of Little Daux Farm consists of medium silty clay loam topsoils becoming heavier, more poorly structured and gleyed with depth. The area to the north of the site, on the other hand, is less silty with medium clay loam topsoil which again becomes heavier, poorly structured and gleyed at depth. The poorly structured slowly permeable clay, confirmed by soil inspection pit 2, consistently occurs within 45-80cm thus impeding drainage through the profile. The combination of the soil drainage status (Wetness Class III), the medium clay loam topsoils and the climatic regime of this locality result in a moderate risk of soil wetness problems. The result of this is to restrict cultivations and cropping and to adversely affect crop establishment and development. The northern area of 3a land includes occasional very stony sandy clay loam subsoils (containing up to 50% total fine soft sandstone) which creates a soil droughtiness limitation in addition to one related to soil wetness. The stone content in combination with climatic factors reduces the amount of available water in the profile for crop growth and restricts the range of crops which can tolerate such conditions.

5.4 Subgrade 3b

The majority of the remaining agricultural land surveyed is graded as moderate quality, subgrade 3b. The soil profiles consist primarily of medium clay loam or medium silty clay loam topsoils, with occasional gleying, becoming heavier and more distinctly gleyed with depth. To the south of the railway line however the profile generally comprises a heavy clay loam topsoil which becomes clay within the upper subsoil. Soil inspection pit 1 confirmed the presence of a poorly structured, slowly permeable clay subsoil which consistently appears within the first 45cm of the surface. This is substantially shallower than the slowly permeable layers identified in the 3a mapping unit and thus causes a more severe drainage problem consistent with Wetness Class IV. The heavy clay loam topsoils present in these profiles also cause there to be a significant workability problem which limits the opportunities for trafficking, land work and grazing by livestock.

5.5 The areas marked as Urban include Little Daux Farm and Great Daux Farm.

5.6 The areas marked as non-agricultural include two areas of woodland, one just to the north of Little Daux Farm and one level with the houses at the end of Brooker's Road. There was also a small paddock for equestrian activities situated adjacent to Little Daux Farm.

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 : AREA 2, BILLINGSHURST Pit Number : 1P

Grid Reference: TQ09422497
Average Annual Rainfall : 789 mm
Accumulated Temperature : 1513 degree days
Field Capacity Level : 166 days
Land Use : Permanent Grass
Slope and Aspect : 01 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 23	HCL	10YR53 00	0	0		
23- 63	C	10YR63 00	0	0	M	MDVCAB

Wetness Grade : 3B
Wetness Class : IV
Gleying :023 cm
SPL :023 cm

Drought Grade :
APW : 000mm MBW : 0 mm
APP : 000mm MBP : 0 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : AREA 2, BILLINGSHURST Pit Number : 2P

Grid Reference: TQ09502580
Average Annual Rainfall : 789 mm
Accumulated Temperature : 1513 degree days
Field Capacity Level : 166 days
Land Use :
Slope and Aspect : 02 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR43 53	0	5		
25- 51	MCL	10YR53 00	0	10		MDCSAB
51- 80	C	25 Y53 00	0	50	C	WKCSAB
80-120	C	25 Y71 00	0	5	M	WK

Wetness Grade : 1
Wetness Class : I
Gleying :051 cm
SPL : No SPL

Drought Grade : 2
APW : 123mm MBW : 12 mm
APP : 099mm MBP : -6 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	LIMIT	ALC	COMMENTS
1	TQ09302580	SAS	S	02	039	065	3	3A	000	0	000	0					WE	3A	
1A	TQ09202590	SAS	S	02	025	025	4	3B	000	0	000	0					WE	3B	
1P	TQ09422497	PGR	S	01	023	023	4	3B	000	0	000	0					WE	3B	PIT 63
2	TQ09402580	RGR	S	02	028		2	3A	090	-21	096	-9	3B				WE	3A	
2P	TQ09502580	SAS	S	02	051		1	1	123	12	099	-6	2				DR	2	SPL 80
3	TQ09502580	RGR	S	02	040		1	1	090	-21	096	-9	3B				DR	3A	
4	TQ09602580	RGR	S	02	058	058	3	3A	107	-4	112	7	3A				WE	3A	
5	TQ09302570	SAS	S	01	028	038	4	3B	000	0	000	0					WE	3B	
6	TQ09402570	PGR	S	02	0	035	4	3B	000	0	000	0					WE	3B	
7	TQ09502570	PGR	S	03	0	042	4	3B	000	0	000	0					WE	3B	
8	TQ09602570	PGR	S	03	0	045	3	3A	000	0	000	0					WE	3A	BDR 3B
9	TQ09202560	PGR	NW	03	025	046	3	3A	000	0	000	0					WE	3A	
10	TQ09302560	PGR	N	02	025	040	4	3B	092	-19	098	-7	3A				WE	3B	
11	TQ09402560	PGR	N	02	0	025	4	3B	000	0	000	0					WE	3B	
12	TQ09502560	PGR	N	02	030	030	4	3B	000	0	000	0					WE	3B	
13	TQ09202550	CER	S		025	025	4	3B	129	18	106	1	2				WE	3B	
14	TQ09302550	CER	S	02	0	065	3	3A	123	12	122	17	2				WE	3A	
15	TQ09402550	CER	S	02	038	042	4	3B	000	0	000	0					WE	3B	
16	TQ09102540	CER	W	02	0	040	4	3B	000	0	000	0					WE	3B	
17	TQ09202540	CER	S		0	055	3	3A	000	0	000	0					WE	3A	
18	TQ09302540	CER	S	02	0	025	4	3B	087	-24	093	-12	3B				WE	3B	
19	TQ09402540	CER	S	02	0	040	4	3B	093	-18	099	-6	3A				WE	3B	
20	TQ09402530	CER			0	025	4	3B	000	0	000	0					WE	3B	
21	TQ09202530	CER	S	02	030	045	4	3B	000	0	000	0					WE	3B	BDR3A
22	TQ09302530	CER	S	02	045	065	2	2	000	0	000	0					WE	2	
23	TQ09102520	CER			025	030	4	3B	000	0	000	0					WE	3B	
24	TQ09202520	CER	S	02	028	038	4	3B	100	-11	112	7	3A				WE	3B	
25	TQ09202500	CER	W	02	055	055	3	3A	000	0	000	0					WE	3A	
26	TQ09302500	PGR			040	040	3	3B	000	0	000	0					WE	3B	
27	TQ09402500	PGR			030	040	4	3B	097	-14	109	4	3A				WE	3B	
28	TQ09502500	PGR			030	030	4	3B	094	-17	106	1	3A				WE	3B	
29	TQ09202490				025	025	4	3B	099	-12	104	-1	3A				WE	3B	
30	TQ09302490	PGR	N	01	032	032	4	3B	095	-16	107	2	3A				WE	3B	SPL 32
31	TQ09302490	PGR	N	01	025	025	4	3B	000	0	000	0					WE	3B	SPL 25
32	TQ09402490	PGR	N	01	035	035	4	3B	000	0	000	0					WE	3B	SPL 35
33	TQ09502490	PGR			025	025	4	3B	100	-11	101	-4	3A				WE	3B	
34	TQ09202480	PGR	N	01	0	035	4	3B	000	0	000	0					WE	3B	SPL 35
35	TQ09302480	PGR	N	01	030	030	4	3B	000	0	000	0					WE	3B	SPL 30
36	TQ09402480	PGR	N	01	030	030	4	3B	000	0	000	0					WE	3B	SPL 30

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	mcl	10YR53 00						0	0	HR	5						
	25-39	hcl	10YR53 63						0	0		0		M				
	39-65	hcl	10YR62 00	75YR58 00	C		10YR71 00	Y	0	0		0		M				
	65-90	c	25 Y63 73	75YR58 00	M		25 Y80 00	Y	0	0		0		P			Y	
1A	0-25	hcl	25 Y42 00						0	0		0						
	25-55	c	25 Y63 64	75YR58 00	C		25 Y70 00	Y	0	0		0		P			Y	
	55-70	c	25 Y70 80	75YR68 00	M			Y	0	0		0		P			Y	
1P	0-23	hcl	10YR53 00						0	0		0						
	23-63	c	10YR63 00	10YR68 00	M		25Y 72 00	Y	0	0		0	MDVCAB VM	P	Y		Y	
2	0-28	mcl	25Y 53 00	10YR58 00	F				0	0	HR	2						
	28-48	hcl	10YR53 00	10YR58 71	C			Y	0	0	HR	5		M				
	48-58	c	10YR71 00	10YR58 00	M			Y	0	0	HR	2		P	Y			
	58-60	scl	10YR71 00	10YR58 00	M			Y	0	0	HR	2		M				
2P	0-25	mcl	10YR43 53						0	0	FSST	5						
	25-51	mcl	10YR53 00						0	0	FSST	10	MDCSAB FR	M				
	51-80	c	25 Y53 00	75YR58 00	C		25 Y70 00	Y	0	0	FSST	50	WKCSAB FM	P				
	80-120	c	25 Y71 00	10YR58 00	M			Y	0	0	FSST	5	WK FM	P	Y			
3	0-26	mcl	25Y 63 00	10YR58 00	F				0	0	HR	2						
	26-40	hcl	10YR63 00						0	0	HR	2		M				
	40-55	scl	25Y 64 00	10YR58 00	C			Y	0	0	HR	10		M				
	55-60	c	10YR71 00	10YR58 00	M		00MN00 00	Y	0	0	HR	2		P	Y			
4	0-26	mcl	10YR53 00	10YR58 00	F				0	0	HR	2						
	26-58	hcl	10YR53 00	10YR58 00	F				0	0	HR	2		M				
	58-80	c	10YR71 00	10YR58 00	C			Y	0	0	HR	1		P	Y		Y	
5	0-28	mcl	10YR53 00						0	0		0						
	28-38	hcl	10YR63 00	75YR58 00	C			Y	0	0	HR	5		M				
	38-70	c	10YR63 00	75YR56 00	M		25 Y80 00	Y	0	0	HR	5		P			Y	
6	0-35	mzcl	25Y 53 00	10YR56 00	C			Y	0	0		0						
	35-55	c	25Y 62 63	75YR58 00	M			Y	0	0	FSST	5		P			Y	
	55-65	msl	10YR21 00					Y	0	0	FSST	5		M			Y	
	65-90	c	05Y 73 00	75YR58 00	M			Y	0	0		0		P			Y	
7	0-30	mzcl	25Y 53 00	10YR56 00	C			Y	0	0		0						
	30-42	mcl	25Y 53 52	75YR56 00	C			Y	0	0		0		M				
	42-70	c	05Y 72 00	75YR58 00	M			Y	0	0		0		P			Y	
8	0-30	mzcl	25Y 53 00	10YR56 00	C			Y	0	0		0						
	30-45	hcl	25Y 73 00	75YR56 00	C			Y	0	0		0		M				
	45-70	c	05Y 73 00	75YR58 00	M			Y	0	0		0		P			Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
9	0-25	mzcl	25Y 53 00						0	0	0						
	25-46	hcl	25Y 63 00	75YR56 00	C		00MN00 00	Y	0	0	0		M				
	46-70	c	05Y 73 72	75YR58 00	M			Y	0	0	0		P			Y	
10	0-25	mzcl	25Y 53 00	10YR56 00	F				0	0	0						
	25-40	c	25Y 53 00	75YR56 00	C			Y	0	0	0		M				
	40-60	c	25Y 72 00	75YR58 00	M			Y	0	0	0		P			Y	
11	0-25	hcl	25Y 53 00	10YR56 00	C			Y	0	0	0						
	25-70	c	05Y 72 73	75YR58 00	M			Y	0	0	0		P			Y	
12	0-25	hcl	25Y 54 00						0	0	0						
	25-30	c	25Y 54 00	75YR58 00	C				0	0	0		M				
	30-70	c	05Y 72 00	75YR58 00	M			Y	0	0	0		P			Y	
13	0-25	mzcl	25Y 53 00	10YR56 00	F				0	0	0						
	25-120	c	05Y 73 00	75YR58 00	M			Y	0	0	0		P			Y	
14	0-25	mzcl	25Y 53 00	10YR56 00	C			Y	0	0	0						
	25-65	hzcl	05Y 74 00	75YR56 00	C		00MN00 00	Y	0	0	0		M				
	65-90	c	05Y 73 00	75YR56 58	M			Y	0	0	0		P			Y	
15	0-28	mzcl	25Y 53 00						0	0	0						
	28-38	hzcl	10YR54 00				00MN00 00		0	0	0		M				
	38-42	c	05Y 73 00	75YR58 00	C			Y	0	0	0		M				
	42-60	c	05Y 73 00	75YR58 00	M			Y	0	0	0		P			Y	
16	0-28	mzcl	25Y 53 00	10YR56 00	C			Y	0	0	0						
	28-40	hzcl	25Y 64 00	75YR56 00	C		00MN00 00	Y	0	0	0		M				
	40-60	c	05Y 73 00	75YR58 00	M			Y	0	0	0		P			Y	
17	0-25	mzcl	25Y 53 00	10YR56 00	C			Y	0	0	0						
	25-45	c	05Y 73 00	75YR58 00	M			Y	0	0	0		P				
	45-55	scl	05Y 73 00	75YR58 00	M			Y	0	0	0		M				
	55-90	c	05Y 72 00	75YR58 00	M			Y	0	0	0		P			Y	
18	0-25	mzcl	25Y 53 00	10YR56 00	C			Y	0	0	0						
	25-60	c	05Y 73 00	75YR58 00	M			Y	0	0	0		P			Y	
19	0-28	mzcl	25Y 53 00	10YR56 00	C			Y	0	0	0						
	28-35	hzcl	05Y 74 00	75YR56 00	C		00MN00 00	Y	0	0	0		M				
	35-40	c	05Y 73 00	75YR58 00	M		00MN00 00	Y	0	0	0		M				
	40-60	c	05Y 73 00	75YR58 00	M			Y	0	0	0		P			Y	
20	0-25	mzcl	10YR53 00	10YR56 00	C			Y	0	0	0						
	25-60	c	75YR54 00				10YR64 00	Y	0	0	0		P			Y	
21	0-30	mzcl	25Y 53 00						0	0	0						
	30-45	hcl	10YR64 00	75YR56 00	C		00MN00 00	Y	0	0	0		M				
	45-70	c	75YR56 00	10YR64 00	C			Y	0	0	0		P			Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
22	0-30	mzcl	25Y 53 00						0	0	0						
	30-45	mzcl	25Y 64 00				00MN00 00		0	0	0		M				
	45-65	hzcl	25Y 64 00	75YR56 00	C		00MN00 00	Y	0	0	0		M				
	65-90	c	25Y 73 00	75YR56 00	M		00MN00 00	Y	0	0	0		P			Y	
23	0-25	mzcl	25Y 53 00						0	0	0						
	25-30	hzcl	25Y 53 00	75YR56 00	C			Y	0	0	0		M				
	30-60	c	25Y 63 00	75YR58 00	M			Y	0	0	0		P			Y	
24	0-28	mzcl	25Y 53 00						0	0	0						
	28-38	hzcl	25Y 53 52	75YR56 00	C			Y	0	0	0		M				
	38-70	c	25Y 63 73	75YR58 00	M			Y	0	0	0		P			Y	
25	0-25	mzcl	25Y 53 00						0	0	0						
	25-45	hzcl	25Y 54 00				00MN00 00		0	0	0		M				
	45-55	c	25Y 54 00				00MN00 00		0	0	0		M				
	55-90	c	25Y 73 00	75YR58 00	M			Y	0	0	0		P			Y	
26	0-20	hcl	10YR53 00						0	0	0						
	20-40	hcl	10YR54 00						0	0	0		M				
	40-70	c	10YR52 00	10YR68 00	M			Y	0	0	0		P	Y		Y	
	70-85	c	10YR51 00	10YR58 00	M		00MN00 00	Y	0	0	0		P	Y		Y	
27	0-30	hcl	10YR53 00						0	0	0						
	30-40	c	10YR52 00	10YR58 00	C		00MN00 00	Y	0	0	0		M				
	40-70	c	10YR52 00	10YR68 51	M		00MN00 00	Y	0	0	0		P	Y		Y	
28	0-30	hcl	10YR53 00						0	0	0						
	30-70	c	10YR52 00	10YR68 61	M			Y	0	0	0		P	Y		Y	
29	0-25	hcl	10YR53 00						0	0	0						
	25-70	c	10YR52 00	10YR68 51	M		00MN00 00	Y	0	0	0		P	Y		Y	
	70-80	c	10YR51 00					Y	0	0	0		P	Y		Y	
30	0-32	hcl	10YR53 00						0	0	0						
	32-50	c	10YR63 00	10YR68 00	M		05Y 72 00	Y	0	0	0		P			Y	
	50-70	c	05Y 72 00	10YR68 00	M			Y	0	0	0		P			Y	
31	0-25	hcl	10YR53 00						0	0	0						
	25-70	c	05Y 71 00	10YR68 00	M			Y	0	0	0		P			Y	
32	0-35	hcl	10YR53 00						0	0	0						
	35-70	c	05Y 72 00	75YR58 00	M		05YR58 00	Y	0	0	0		P			Y	
33	0-25	c	10YR52 00						0	0	0						
	25-50	c	10YR52 00	10YR68 51	M			Y	0	0	0		P	Y		Y	
	50-80	c	10YR72 00	10YR68 00	M		00MN00 00	Y	0	0	0		P	Y		Y	
	80-85	c	10YR72 00	10YR68 00	M			Y	0	0	0		P	Y		Y	

				----MOTTLES-----			PED		----STONES----			STRUCT/	SUBS			
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL.	GLEY	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
34	0-35	hcl	10YR53 00	10YR46 00	C			Y	0	0		0						
	35-70	c	10YR63 00	10YR68 00	M		05Y 72 00	Y	0	0		0			P		Y	
35	0-30	hcl	10YR53 00						0	0		0						
	30-70	c	05Y 72 00	10YR58 00	M		00MN00 00	Y	0	0		0			P		Y	
36	0-30	hcl	10YR53 00						0	0		0						
	30-70	c	05Y 72 00	10YR58 00	M			Y	0	0		0			P		Y	