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Billingshurst Planning Strategy
Area 4 : Rosier Farm, Billingshurst
Agricultural Land Classification
ALC Map and report
December 1993

BILLINGSHURST PLANNING STRATEGY
AREA 4 : ROSIER FARM, BILLINGSHURST, WEST SUSSEX
AGRICULTURAL LAND CLASSIFICATION REPORT

1. Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on a number of sites around Billingshurst in West Sussex. The work forms part of MAFF's statutory input to the preparation of the Billingshurst Planning Strategy. The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.2 Approximately 40 hectares of land relating to Area 4 : Rosier Farm near Billingshurst, West Sussex was surveyed in December 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 32 soil auger borings and one soil inspection pit 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 At the time of the survey the land was under permanent grassland. A significant area of the site is under Urban use as small industrial units, centred around the original farm buildings. Other Urban land uses include domestic dwellings and a nursery.
- 1.4 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 the site.

Table 1 : Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
3a	2.4	6.0	7.2
3b	31.0	77.7	<u>92.8</u>
Non-Agricultural	1.8	4.5	100% (33.4 ha)
Urban	4.1	10.3	
Woodland	0.1	0.3	
Open Water	<u>0.5</u>	<u>1.2</u>	
Total area of site	39.9	100%	

- 1.5 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.

1.6 The agricultural areas of the site have been classified as Subgrades 3a and 3b, soil wetness being the principal limitation, primarily due to the presence of poorly structured slowly permeable clay horizons within the profile. Land classified Subgrade 3a covers two small areas of the site to the north and west. This contains very slightly stony medium and heavy textured topsoils over gleyed slightly and moderately stony subsoils showing a slight drainage impedence. Subgrade 3b land covering the majority of the site has heavy textured topsoils over slowly permeable clay subsoils which seriously impede drainage, and are easily susceptible to trafficking damage and poaching from livestock.

2. 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 accumulates 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.

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

Table 2 : Climatic Interpolation

Grid Reference	TQ096252
Altitude (m)	30
Accumulated Temperature (days)	1502
Average Annual Rainfall (mm)	789
Field Capacity (days)	166
Moisture Deficit, Wheat (mm)	110
Moisture Deficit, Potatoes (mm)	104
Overall Climatic Grade	1

3. Relief

3.1 The site lies between 20 and 45m AOD rising gently from the lowest point just north of the southern boundary towards the north of the site. At no point does slope gradient, altitude or microrelief affect land quality.

4. Geology and Soil

- 4.1 The British Geological Survey published map sheet 301, Haslemere (1:50,000, 1978) shows the site to be underlain by Cretaceous Weald Clay and Sandstone in the Weald Clay. These lithologies occur in a total of nine alternating bands running east-west across the site.
- 4.2 The Soil Survey of England and Wales published map, sheet 6, Soils of South East England (1:250,000, 1983) shows the entire site to comprise soils of the Wickham 5 Association, describing them as 'slowly permeable, seasonally waterlogged, fine loamy over clayey, fine silty over clayey and clayey soils. Some coarse loamy soils with slowly permeable subsoils and slight seasonal waterlogging over sandstone' (SSEW, 1983). Soils of this general nature were found across the site.

5. 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

Land of good quality, covers a minority of the agricultural area, in two discrete units, towards the north and west of the site. Soils were found to typically be of two different types. Towards the north of the site, a very slightly stony (c.2% hard stones) medium clay loam topsoil gives way to a very slightly (c.2% hard stones) stony gleyed heavy clay loam upper subsoil. This passes to a slightly stony (c.10% hard stones) sandy clay loam, becoming moderately stony (c.20% hard stones) by approximately 55 cm. This passes to a poorly structured very slightly stony (c.2% hard stones) slowly permeable clay lower subsoil to depth. Within the local climatic regime, the depth of the slowly permeable layer is such that Wetness Class III (see Appendix II) is appropriate, which in combination with the workability status of the topsoil leads to Subgrade 3a being applied. Occasional borings within this unit were impenetrable to the soil auger due to the presence of sandstone within the profile.

The small area of 3a land to the west of the site is typified by a stoneless heavy clay loam topsoil overlying a gleyed stoneless heavy clay loam upper subsoil. The soil then becomes sandier with depth, passing to a sandy clay loam, remaining gleyed and stoneless. At depth this becomes medium sandy loam. The gleyed horizons within this unit occur at shallow depths, as a result of drainage impedence, and lead to Wetness Class II (see Appendix II) being applied. The heavy textured topsoil gives rise to a workability restriction, within the local climatic regime, which leads to Subgrade 3a being appropriate.

Occasional observations in the areas mapped as Subgrade 3a were of a slightly better quality, but were of insufficient quantity or distribution to justify separate mapping. Land of this quality could be expected to produce moderate yields of a wide range of

crops including cereals, oilseed rape, potatoes, sugar beet, grass and less demanding horticultural crops.

5.4 **Subgrade 3b**

Land of moderate quality is found across the majority of the agricultural area at this site. Typically soils were similar to those found at Pit 1 (Appendix III), and consist of a stoneless heavy clay loam topsoil, overlying a poorly structured gleyed and slowly permeable stoneless clay subsoil. This causes a moderate drainage impedance such that Wetness Class IV is applied (see Appendix II), which in combination with local climatic factors and the workability restrictions of a heavy topsoil leads to Subgrade 3b being appropriate.

Occasional observations were found to be of a slightly better quality. These were however of insufficient quantity or distribution to justify separate mapping. Land of this quality could be expected to produce moderate yields of a narrow range of crops, principally cereals and grass.

5.5 Wetness affected land as encountered across the site can, depending on the severity of the problem, be subject to restrictions on the number of days when cultivation by machinery and/or grazing by livestock may occur without causing structural damage to the soil. Soil wetness can also affect seed germination and development by reducing temperature and causing anaerobism due to waterlogging. These restrictions limit the range of crops that can tolerate such conditions.

5.6 Significant areas of the site are shown as Urban. This represents domestic dwellings to the north and south, a small industrial estate centred around the farm buildings of Rosier Farm with associated metalled tracks, and a plant nursery towards the east of the site. The areas shown as Non-agricultural include scrub surrounding open water, an unmetalled track and areas of spoil left as bunds assumed to be associated with building works within the industrial estate.

ADAS Reference : 4205/255/93
MAFF Reference : EL20/578

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

- British Geological Survey (1978) Sheet 301, Haslemere, 1:50,000 Drift edition.
- MAFF (1988) Agricultural Land Classification of England and Wales:
Revised guidelines and criteria for grading the quality of agricultural land.
- Meteorological Office (1989) Climatic datasets for Agricultural Land Classification.
- Soil Survey of England and Wales (1983) Soils of South East England 1:250,000
map and accompanying legend.

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.

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.

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

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 III

SOIL PIT AND SOIL BORING DESCRIPTIONS

- Contents :**
- * Soil Abbreviations : Explanatory Note
 - * Soil Pit Descriptions
 - * Database Printout : Boring Level Information
 - * Database Printout : Horizon Level Information

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 appropriate 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 4, BILLINGSHURST Pit Number : 1P

Grid Reference: TQ09742538 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- 24	HCL	10YR53 00	0	0	F	
24- 63	C	05GY61 00	0	0	M	MDCAB

Wetness Grade : 3B Wetness Class : IV
Gleying : 024 cm
SPL : 024 cm

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

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
1	TQ09702580	PGR S	02	025	2	2			0	0				WE 2	IMPSANDST 48
1P	TQ09742538	PGR S	01	024 024	4	3B			0	0				WE 3B	PIT 63
2	TQ09702570	PGR S	02	032 045	4	3B			0	0				WE 3B	3A/3B BORDER
3	TQ09802570	PGR S	01	030 038	4	3B			0	0				WE 3B	IMPSANDST 90
5	TQ09702560	RGR S	01	0 020	4	3B			0	0				WE 3B	SPL 20 1P
6	TQ09762562	PGR S	01	055 075	2	2	135	24 108	3	2				WD 2	SPL 75 1P
7	TQ09502550	PGR		020 030	4	3B			0	0				WE 3B	SPL 30 1P
8	TQ09602550	PGR		025 025	4	3B			0	0				WE 3B	SPL 25 1P
9	TQ09702550	RGR S	01	0 020	4	3B			0	0				WE 3B	SPL 20 1P
10	TQ09802550	PGR S	01	0 030	4	3B			0	0				WE 3B	SPL 30 1P
11	TQ09502540	PGR		025 025	4	3B			0	0				WE 3B	SPL 25 1P
12	TQ09602540	PGR		040 040	3	3B			0	0				WE 3B	SPL 40 1P
13	TQ09702540	PGR		025 025	4	3B			0	0				WE 3B	SPL 25 1P
14	TQ09802540	PGR		025 025	4	3B			0	0				WE 3B	SPL 25 1P
15	TQ09402533	PGR		030	2	3A	158	47 118	13	1				WE 3A	GLEYS 30
16	TQ09502533	PGR		025 025	4	3B			0	0				WE 3B	SPL 25 1P
17	TQ09622533	PGR		020 045	3	3B			0	0				WE 3B	SPL 45 1P
18	TQ09702530	PGR		030 030	4	3B			0	0				WE 3B	SPL 30 1P
19	TQ09772530	PGR		030 030	4	3B			0	0				WE 3B	SPL 30 1P
20	TQ09402520	PGR N	01	0 028	4	3B			0	0				WE 3B	SPL 28 1P
23	TQ09702520	PGR S	02	033 060	3	3B	138	27 113	8	2				WE 3B	SPL 60 1P
24	TQ09802520	PGR W	02	035 035	4	3B			0	0				WE 3B	SPL 35 1P
25	TQ09602500	PGR		025 025	4	3B			0	0				WE 3B	SPL 25 1P
26	TQ09702500	PGR		025 035	4	3B			0	0				WE 3B	SPL 35 1P
27	TQ09802500	PGR		030 045	3	3B			0	0				WE 3B	SPL 45 1P
28	TQ09602490	PGR		025 025	4	3B			0	0				WE 3B	SPL 25 1P
29	TQ09702490	PGR		030 055	3	3B			0	0				WE 3B	SPL 55 1P
30	TQ09802490	PGR		025 040	3	3B			0	0				WE 3B	SPL 40 1P
31	TQ09502480	PGR N	01	032 032	4	3B			0	0				WE 3B	SPL 32 1P
32	TQ09602480	PGR N	01	030 030	4	3B			0	0				WE 3B	SPL 30 1P
33	TQ09702480	PGR N	01	028 028	4	3B			0	0				WE 3B	SPL 28 1P
34	TQ09802480	PGR N	01	0 033	4	3B			0	0				WE 3B	SPL 33 1P
36	TQ09702514	PGR		0 025	4	3B			0	0				WE 3B	SPL 25 1P

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/		SUBS	
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT	CONSIST	STR	POR
1	0-25	mc1	10YR52 00						0	0	0				
	25-45	c	25Y 53 00 10YR66 00 C					Y	0	0	0			P	
	45-48	fsc1	25 Y53 00 10YR58 00 C				00MN00 00	Y	0	0	HR	5		P	
1P	0-24	hc1	10YR53 00 10YR56 00 F						0	0	0				
	24-63	c	05GY61 00 10YR68 00 M				05G 61 00	Y	0	0	0	MDCAB	VM	P	Y
2	0-32	mc1	10YR53 00 10YR66 00 F						0	0	0				
	32-45	hc1	10YR63 00 10YR66 00 C				00MN00 00	Y	0	0	0			M	
	45-65	c	10YR71 00 10YR58 00 M					Y	0	0	0			P	Y
3	0-30	mc1	10YR53 00						0	0	0				
	30-38	hc1	10YR53 00 10YR66 00 C					Y	0	0	HR	5		M	
	38-73	c	10YR64 00 10YR58 00 M				00MN00 00	Y	0	0	HR	5		P	Y
	73-90	sc1	10YR74 00 75YR58 00 M					Y	0	0	HR	5		M	Y
5	0-20	hc1	10YR52 00 75YR58 00 C					Y	0	0	0				
	20-60	c	25 Y63 00 10YR58 00 M				10YR61 00	Y	0	0	0			P	Y
6	0-29	mc1	10YR42 00						0	0	HR	2			
	29-45	hc1	10YR53 00 10YR66 00 F						0	0	HR	2		M	
	45-55	sc1	10YR53 00 10YR66 00 F						0	0	HR	10		M	
	55-75	sc1	10YR73 00 10YR58 00 C					Y	0	0	HR	20		M	
	75-120	c	10YR71 00 10YR58 00 M					Y	0	0	HR	2		P	Y
7	0-20	hc1	10YR54 00						0	0	0				
	20-30	c	10YR53 00 10YR58 61 C					Y	0	0	0			M	
	30-70	c	10YR52 00 10YR58 61 M					Y	0	0	0			P	Y
8	0-25	c	10YR53 00						0	0	0				
	25-70	c	10YR63 00 10YR56 61 M					Y	0	0	0			P	Y
9	0-20	hc1	10YR42 00 75YR58 00 C					Y	0	0	0				
	20-30	c	10YR52 00 75YR58 00 C					Y	0	0	0			P	Y
	30-50	c	10YR71 00 75YR58 00 M					Y	0	0	0			P	Y
10	0-30	hc1	10YR51 52 75YR58 00 C					Y	0	0	0				
	30-60	c	10YR63 00 10YR58 61 C					Y	0	0	0			P	Y
11	0-25	hc1	10YR53 00						0	0	0				
	25-70	c	10YR52 00 10YR58 61 M					Y	0	0	0			P	Y
12	0-30	hc1	10YR53 00						0	0	0				
	30-40	c	10YR54 00 00MN00 00 C						0	0	0			M	
	40-70	c	10YR43 00 10YR58 00 M				00MN00 00	Y	0	0	0			P	Y
13	0-25	hzc1	10YR53 00						0	0	0				
	25-80	c	10YR52 00 10YR68 61 M					Y	0	0	0			P	Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED	----STONES-----			STRUCT/	SUBS						
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
14	0-25	c	10YR53 00						0	0	0							
	25-70	c	10YR62 00	10YR66	00	M		Y	0	0	0		P					Y
15	0-30	hc1	10YR43 00						0	0	0							
	30-65	hc1	10YR62 00	10YR58	00	M		Y	0	0	0			M				
	65-100	sc1	10YR62 00	10YR58	61	C		Y	0	0	0			M				
	100-120	ms1	10YR62 00	10YR58	00	C		Y	0	0	0			M				
16	0-25	hc1	10YR52 00						0	0	0							
	25-70	c	10YR62 00	10YR58	00	M	00MN00	00	Y	0	0	0		P				Y
17	0-20	hc1	10YR53 00						0	0	0							
	20-45	c	10YR53 00	10YR58	00	C		Y	0	0	0			M				
	45-70	c	10YR52 00	10YR58	61	M		Y	0	0	0			P				Y
18	0-30	hc1	10YR52 00	00MN00	00	F			0	0	0							
	30-70	c	10YR62 00	10YR58	00	M	00MN00	00	Y	0	0	0		P				Y
19	0-30	hc1	10YR53 00						0	0	0							
	30-70	c	10YR53 00	10YR58	61	M	00MN00	00	Y	0	0	0		P				Y
20	0-28	hc1	10YR51 00	10YR58	00	C		Y	0	0	0							
	28-70	c	25Y 72 00	10YR68	00	M		Y	0	0	0			P				Y
23	0-33	hc1	25Y 53 00	10YR66	00	F			0	0	0							
	33-60	sc1	25Y 62 71	10YR66	00	M		Y	0	0	0			M				
	60-70	c	10YR53 00	75YR56	00	M	05G 71 00	Y	0	0	0			P				Y
	70-85	c	05YR56 00	05G 71 00	M		10YR56 00	Y	0	0	0			M				Y
	85-120	c	25Y 53 00	10YR66	00	M	05G 71 00	Y	0	0	0			P				Y
24	0-25	hc1	10YR43 00						0	0	0							
	25-35	hc1	10YR53 00						0	0	0			M				
	35-60	c	25Y 52 00	10YR58	00	M	00MN00	00	Y	0	0	0		P				Y
	60-80	c	25Y 52 62	05YR56	00	M	00MN00	00	Y	0	0	0		P				Y
25	0-25	hc1	10YR53 00	00MN00	00	F			0	0	0							
	25-70	c	10YR52 00	10YR68	51	M		Y	0	0	0			P				Y
26	0-25	hc1	10YR53 00						0	0	0							
	25-35	c	10YR52 00	10YR58	00	C		Y	0	0	0			M				
	35-70	c	10YR52 00	10YR68	61	M		Y	0	0	0			P				Y
27	0-30	hc1	10YR53 00						0	0	0							
	30-45	c	10YR52 00	10YR58	00	C	00MN00	00	Y	0	0	0		M				
	45-80	c	10YR52 00	10YR68	51	M	00MN00	00	Y	0	0	0		P				Y
28	0-25	hc1	10YR53 00						0	0	0							
	25-70	c	10YR52 00	10YR68	51	M		Y	0	0	0			P				Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES-----			STRUCT/	SUBS	SPL	CALC
				COL	ABUN	CONT	COL.	GLEI	>2	>6	LITH				
29	0-30	hc1	10YR53 00						0	0	0				
	30-55	c	10YR53 00 10YR58 00 C				00MN00	00	Y	0	0		M		
	55-80	c	10YR52 00 10YR68 00 M				00MN00	00	Y	0	0		P		Y
30	0-25	hc1	10YR53 00						0	0	0				
	25-40	hc1	10YR52 00 10YR58 00 C						Y	0	0		M		
	40-80	c	10YR52 00 10YR68 61 M						Y	0	0		P		Y
31	0-32	hc1	10YR53 00						0	0	0				
	32-70	c	05Y 71 00 10YR58 68 M						Y	0	0		P		Y
32	0-30	hc1	10YR53 00 10YR56 00 F						0	0	0				
	30-70	c	05GY71 00 10YR68 00 M						Y	0	0		P		Y
33	0-28	hc1	10YR53 00 10YR56 00 F						0	0	0				
	28-70	c	05Y 71 00 10YR68 00 M						Y	0	0		P		Y
34	0-33	hc1	10YR53 00 10YR56 00 C						Y	0	0				
	33-70	c	25Y 71 00 10YR68 00 M						Y	0	0		P		Y
36	0-25	mc1	10YR53 00 10YR56 00 C						Y	0	0				
	25-70	c	25Y 72 00 10YR68 00 M				00MN00	00	Y	0	0		P		Y