

A1
Swale Borough Local Plan
Marrowbone Hill, Isle of Sheppey
Agricultural Land Classification
ALC Map and Report
April 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

SWALE BOROUGH LOCAL PLAN MARROWBONE HILL, ISLE OF SHEPPEY

1. Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of sites in the Swale District of Kent. The work forms part of MAFF's statutory input to the preparation of the Swale Borough Local Plan.
- 1.2 Approximately 18 hectares of land at Marrowbone Hill to the east of Minister on the Isle of Sheppey was surveyed in March 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 19 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 agricultural land was under a set aside agreement.
- 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
2	6.0	32.1	32.8
3b	12.3	65.7	<u>67.2</u>
Non-Agricultural	0.2	1.1	100% (18.3 ha)
Urban	<u>0.2</u>	<u>1.1</u>	
Total area of site	18.7 ha	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 land on the site has been classified Grade 2 (very good quality), and Subgrade 3b (moderate quality). The principal limitation is soil wetness. In the area shown as Grade 2, medium clay loam topsoils overlie gleyed heavy clay loam upper subsoils which pass to slowly permeable clay at depth (c.60-85 cm), causing a slight drainage impedance. In the areas shown as Subgrade 3b, heavy clay loam topsoils immediately overlie gleyed, slowly permeable clay. This causes a significant drainage impedance which severely restricts the opportunities for cultivation and/or livestock grazing, without the risk of structural damage to the soil. Crop growth and development may also be affected by prolonged soil wetness.

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 an overall climatic limitation are average annual 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.

2.4 According to unpublished Met. Office data (1979) the site is at risk from exposure. However, climatic and soil factors interact to influence soil wetness and droughtiness limitations, which are of a greater significance to land quality than exposure, such that this does not affect the final classification. At this locality the climate is relatively warm, and very dry in national context, with associated high moisture deficits and low field capacity days.

Table 2 :Climatic Interpolations

Grid Reference	TQ976724	TQ974722
Altitude, (m, AOD)	60	70
Accumulated Temperature (°days, Jan-June)	1427	1415
Average Annual Rainfall (mm)	563	568
Field Capacity Days	101	102
Moisture deficit, wheat (mm)	123	122
Moisture deficit, potatoes (mm)	121	119
Overall Climatic Grade	1	1

3. Relief

- 3.1 The site lies between approximately 60 m and 70 m AOD. It consists of a central valley feature running from the south of the site, northwards. To the west and east of this, higher land in the form of "The Mount" and "Marrowbone Hill" occurs, this is beyond the site boundary. In a small part of the site, gradients between 7.5 and 8.5 degrees limit agricultural land quality to Subgrade 3b.

4. Geology and Soils

- 4.1 The published British Geological Survey map, Sheet 273, Faversham (1974, 1:50,000 scale), shows the majority of the site to be underlain by Eocene Bagshot Beds with some superficial recent head gravel deposits.
- 4.2 The published Soil Survey of England and Wales map, Sheet 6, Soils of South-East England (1983, 1:250,000 scale), shows the site to be entirely underlain by soils of the Bursleden Association. These are described as, "Deep fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging, associated with deep coarse loamy soils affected by groundwater. Some slowly permeable seasonally waterlogged loamy over clayey soils." (SSEW, 1983). The slightly more detailed Soils of Kent (SSEW, 1980), describes the soils as being "silty in brickearth, associated with loamy soils in Thanet and Woolwich Beds, free drainage, locally with slight impedance". The soils encountered agree broadly with the SSEW (1983) description but differ from those described in the Soils of Kent (SSEW, 1980).

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.

Grade 2

- 5.3 Approximately one third of the site has been mapped as very good quality (Grade 2) land. The principal limitations include soil wetness and soil droughtiness. Typical soil profiles consist of a stoneless to very slightly stony non-calcareous medium clay loam topsoil, passing to very slightly stony medium or heavy clay loam upper subsoil which may be gleyed or slightly gleyed. This passes to a slowly permeable clay between 60 and 85 cm. The clay lower subsoil causes a very slight drainage impedance, such that within the local climatic regime soils are placed in Wetness Class II (see Appendix II). This in combination with the moderately workable topsoils leads to Grade 2 being most appropriate due to minor wetness imperfections. Occasional well drained profiles are very slightly limited by soil droughtiness, because although the textures encountered are relatively moisture

retentive, the dry climate creates high crop moisture deficits such that slightly droughty conditions prevail. A wide range of agricultural and horticultural crops could be expected to grow.

Subgrade 3b

- 5.4 The majority (two-thirds) of the site has been assigned to Subgrade 3b, moderate quality land, commonly in association with the higher areas and slopes. The principal limitation is soil wetness, with a small area affected by gradient. Profiles typically comprise a stoneless to very slightly stony non-calcareous heavy clay loam or clay topsoil, usually directly over a gleyed, slowly permeable stoneless or very slightly stony clay horizon from between 25 and 35 cm depth. This horizon causes a reduction in permeability which, within the relatively dry local climatic regime leads to Wetness Class III (see Appendix II) being appropriate. Due to the heavy textured topsoils, there are a relatively limited number of opportunities for cultivation and grazing without causing structural damage to the soil.

In a small area of the site on the slopes of "Marrowbone Hill" towards the east of the site gradients between 7.5 and 8.5 degrees were measured using an optical reading clinometer. Slopes of this gradient are sufficient to affect the safe and efficient use of farm machinery such that Subgrade 3b is applied irrespective of soil conditions.

- 5.5 The area shown as non-agricultural towards the north west of the site is dense scrub. The area shown as Urban towards the north west of the site is a fenced off extension to a garden associated with the dwellings in the area. Towards the south west the Urban area shown is as marked, Kingsborough Cottage, a domestic dwelling and associated grounds.

ADAS Ref: 0211/043/94
MAFF Ref: EL20/0245

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1974), Sheet 273, Faversham, 1:50,000. Solid and Drift Edition.

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

Meteorological Office (1979), Unpublished Climate data relating to 1:63,360, Sheet 172.

Meteorological Office (1989), Climatic datasets for Agricultural Land Classification.

Soil Survey of England and Wales (1980), Soils of Kent, Bulletin No.9.

Soil Survey of England and Wales (1983), Sheet No. 6, Soils of South-East England, 1:250,000, and Accompanying Legend.

Soil Survey of England and Wales (1984), Soils and their use in South-East England. Bulletin No.15.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUBGRADES

Grade 1 : Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 : Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3 : Good to Moderate Quality Land

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

Subgrade 3a : Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b : Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 : Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (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 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 including: 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. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm 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

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging ¹
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years. ²
II	The soil profile is wet within 70 cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

¹The number of days specified is not necessarily a continuous period.

²'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 computer database. This uses notations and abbreviations as set out below.

Boring Header Information

1. **GRID REF** : national 100 km grid square and 8 figure grid reference.

2. **USE** : Land use at the time of survey. The following abbreviations are used.

ARA : Arable	WHT : Wheat	BAR : Barley
CER : Cereals	OAT : Oats	MZE : Maize
OSR : Oilseed rape	BEN : Field Beans	BRA : Brassicae
POT : Potatoes	SBT : Sugar Beet	FCD : Fodder Crops
LIN : Linseed	FRT : Soft and Top Fruit	FLW : Fallow
PGR : Permanent Pasture	LEY : Ley Grass	RGR : Rough Grazing
SCR : Scrub	CFW : Coniferous Woodland	DCW : Deciduous Wood
HTH : Heathland	BOG : Bog or Marsh	FLW : Fallow
PLO : Ploughed	SAS : Set aside	OTH : Other
HRT : Horticultural Crops		

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

4. **GLEYSPL** : Depth in centimetres (cm) to gleying and/or slowly permeable layers.

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

6. **MB (WHEAT/POTS)** : Moisture Balance. (Crop adjusted AP - crop adjusted MD)

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

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

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

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

OC : Overall Climate	AE : Aspect	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 : Erosion Risk	WD : 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
ZL :	Silt Loam	SCL :	Sandy Clay Loam	C :	Clay
SC :	Sandy Clay	ZC :	Silty Clay	OL :	Organic Loam
P :	Peat	SP :	Sandy Peat	LP :	Loamy Peat
PL :	Peaty Loam	PS :	Peaty Sand	MZ :	Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:

F :	Fine (more than 66% of the sand less than 0.2mm)
M :	Medium (less than 66% fine sand and less than 33% coarse sand)
C :	Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content: **M** : Medium (<27% clay) **H** : Heavy (27-35% clay)

2. **MOTTLE COL** : Mottle colour using Munsell notation.
3. **MOTTLE ABUN** : Mottle abundance, expressed as a percentage of the matrix or surface described.

F : few <2% **C** : common 2-20% **M** : many 20-40% **VM** : very many 40% +

4. **MOTTLE CONT** : Mottle contrast

F : faint - indistinct mottles, evident only on close inspection
D : distinct - mottles are readily seen
P : prominent - mottling is conspicuous and one of the outstanding features of the horizon

5. **PED. COL** : Ped face colour using Munsell notation.
6. **GLEYS** : If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.
7. **STONE LITH** : Stone Lithology - One of the following is used.

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

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

8. **STRUCT** : the degree of development, size and shape of soil peds are described using the following notation:

<u>degree of development</u>	WK : weakly developed ST : strongly developed	MD : moderately developed
<u>ped size</u>	F : fine C : coarse	M : medium VC : very coarse
<u>ped shape</u>	S : single grain GR : granular SAB : sub-angular blocky PL : platy	M : massive AB : angular blocky PR : prismatic

9. **CONSIST** : Soil consistence is described using the following notation:

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

10. **SUBS STR** : Subsoil structural condition recorded for the purpose of calculating profile droughtiness : **G** : good **M** : moderate **P** : poor

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

12. **IMP** : If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.

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

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

15. Other notations

APW : available water capacity (in mm) adjusted for wheat

APP : available water capacity (in mm) adjusted for potatoes

MBW : moisture balance, wheat

MBP : moisture balance, potatoes

SOIL PIT DESCRIPTION

Site Name : SWALE LP MARROWBONE HILL Pit Number : 1P

Grid Reference: TQ97307230 Average Annual Rainfall : 563 mm
 Accumulated Temperature : 1427 degree days
 Field Capacity Level : 101 days
 Land Use :
 Slope and Aspect : 02 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 32	HCL	10YR43 00	0	5		
32- 60	C	25Y 63 00	0	0	M	WKMA8

Wetness Grade : 3B Wetness Class : III
 Gleying : 032 cm
 SPL : 032 cm

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

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : SWALE LP MARROWBONE HILL Pit Number : 2P

Grid Reference: TQ97507240 Average Annual Rainfall : 563 mm
 Accumulated Temperature : 1427 degree days
 Field Capacity Level : 101 days
 Land Use :
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MCL	10YR43 00	0	2		
28- 51	MCL	75YR53 00	0	0		MOCSAB
51- 70	HCL	75YR44 00	0	0	C	MOCSAB
70- 90	C	75YR52 00	0	0	C	WKCSAB
90-120	C	75YR52 00	0	0	M	

Wetness Grade : 2 Wetness Class : II
 Gleying : 051 cm
 SPL : 070 cm

Drought Grade : 2 APW : 145mm MBW : 22 mm
 APP : 117mm MBP : -4 mm

FINAL ALC GRADE : 2
 MAIN LIMITATION :

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		LIMIT
1	TQ97207240	SAS		0 035	3	3A		0	0					WE	3A	
1P	TQ97307230	SAS E	02	032 032	3	3B		0	0					WE	3B	PIT 60
2	TQ97307240	SAS		025 025	3	3B		0	0					WE	3B	
2P	TQ97507240	SAS		051 070	2	2	145	22	117	-4	2			WD	2	PIT 90 AUG 120
3	TQ97407240	SAS		075 075	2	2	148	25	119	-2	2			WD	2	
4	TQ97507240	SAS		065 085	1	1	146	23	118	-3	2			DR	2	
5	TQ97607240	SAS W	02		1	1	156	33	118	-3	2			DR	2	
6	TQ97707240	SAS		025 025	3	3B		0	0					WE	3B	
7	TQ97807240	SAS W	02	025 025	3	3B		0	0					WE	3B	
8	TQ97307230	SAS NE	02	033 033	3	3B		0	0					WE	3B	
9	TQ97407230	SAS E	02	033 060	2	2	137	14	114	-7	2			WD	2	
10	TQ97507230	SAS		035 060	2	2	137	14	114	-7	2			WD	2	
11	TQ97607230	SAS E	05	0 033	2	3A	127	4	104	-17	3A			WD	3A	
12	TQ97707230	SAS		035 035	3	3B		0	0					WE	3B	
13	TQ97807230	SAS		030 030	3	3B		0	0					WE	3B	
14	TQ97307220	SAS NE	02	030 030	3	3B		0	0					WE	3B	IMPST 55
15	TQ97407220	SAS NE	02	033 033	3	3B		0	0					WE	3B	
16	TQ97507220	SAS N	01	035	2	2	157	34	119	-2	2			WD	2	
17	TQ97707220	SAS		025 025	3	3B		0	0					WE	3B	IMPST 55
18	TQ97607222	SAS W	05	035 060	2	3A		0	0					WE	3A	
19	TQ97657230	SAS W	05	035 035	3	3B		0	0					WE	3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED		-----STONES-----			STRUCT/		SUBS		SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT	CONSIST	STR	POR		
1	0-25	mc1	10YR42 00	10YR58	00	C			Y	0	0	0					
	25-35	hc1	10YR52 00	10YR58	00	C			Y	0	0	0		M			
	35-70	c	10YR63 00	10YR78	61	M			Y	0	0	0		P		Y	
1P	0-32	hc1	10YR43 00							0	0	HR	5				
	32-60	c	25Y 63 00	10YR58	00	M	25Y 53 00	Y	0	0	0	0	WK	MAB	FM	P	Y
2	0-25	hc1	10YR42 00							0	0	0					
	25-65	c	10YR62 00	10YR78	61	M			Y	0	0	0		P		Y	
2P	0-28	mc1	10YR43 00							0	0	HR	2				
	28-51	mc1	75YR53 00							0	0	0	MDCSAB	FR	M		
	51-70	hc1	75YR44 00	75YR58	00	C			S	0	0	0	MDCSAB	FR	M		
	70-90	c	75YR52 00	75YR58	00	C			Y	0	0	0	WKCSAB	FM	M	Y	Y
	90-120	c	75YR52 00	75YR58	00	M			Y	0	0	0		M		Y	
3	0-35	mc1	10YR43 00							0	0	0					
	35-75	hc1	75YR53 00							0	0	0		M			
	75-120	c	75YR52 00	000C00	00	F	00MN00	00	Y	0	0	0		M		Y	
4	0-30	mc1	10YR52 00							0	0	0					
	30-55	mc1	10YR54 00							0	0	0		M			
	55-85	hc1	10YR53 00	10YR58	00	C			Y	0	0	0		M			
	85-120	c	10YR62 00	10YR78	61	M			Y	0	0	0		P		Y	
5	0-30	mc1	10YR43 00							0	0	0					
	30-120	hc1	75YR54 00							0	0	0		M			
6	0-25	hc1	10YR42 00							0	0	HR	10				
	25-65	c	10YR62 00	10YR78	61	M			Y	0	0	HR	10		P		Y
7	0-25	hc1	10YR52 00							0	0	HR	2				
	25-65	c	10YR62 00	10YR78	61	M			Y	0	0	0		P		Y	
8	0-33	hc1	10YR43 00							0	0	HR	5				
	33-120	c	25Y 62 00	10YR68	00	M	05YR56	00	Y	0	0	0		P		Y	
9	0-33	mc1	10YR43 00							0	0	HR	2				
	33-60	hc1	10YR53 00	10YR56	00	C			Y	0	0	0		M			
	60-75	c	10YR53 00	10YR68	00	M			Y	0	0	0		P		Y	
	75-120	c	25Y 62 00	10YR68	00	M			Y	0	0	0		P		Y	
10	0-35	mc1	10YR43 00							0	0	HR	2				
	35-60	hc1	10YR53 00	10YR56	00	M	00MN00	00	Y	0	0	HR	3		M		
	60-120	c	25Y 53 00	10YR58	00	M	00MN00	00	Y	0	0	0		P		Y	
11	0-33	c	10YR43 00	10YR56	00	C			S	0	0	0					
	33-120	c	10YR54 00	10YR58	00	M	00MN00	00	S	0	0	0		P		Y	

SLIGHTLY GLEYED

SLIGHTLY GLEYED

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
12	0-35	hc1	10YR43 00						0	0	HR	5						
	35-60	c	25Y 62 00	10YR58	00	M	00MN00	00	Y	0	0	0		M				Y
	60-120	c	25Y 62 72	10YR68	00	M	00MN00	00	Y	0	0	HR	3		P			Y
13	0-30	hc1	10YR52 00							0	0	HR	5					
	30-65	c	10YR62 00	10YR78	61	M			Y	0	0	HR	5		P			Y
14	0-30	hc1	10YR43 00							0	0	0						
	30-53	c	25Y 53 51	10YR68	00	M			Y	0	0	HR	5		P			Y
	53-55	c	25Y 53 51	10YR68	00	M			Y	0	0	HR	20		P			Y
																		IMP STONES 55
15	0-33	hc1	10YR43 00							0	0	0						
	33-70	c	25Y 62 00	10YR68	00	M			Y	0	0	0			P			Y
16	0-35	mc1	10YR43 00							0	0	0						
	35-75	hc1	10YR53 00	10YR58	00	C			Y	0	0	0			M			
	75-120	hc1	10YR62 00	10YR58	00	M			Y	0	0	0			M			
17	0-25	hc1	10YR52 00							0	0	HR	5					
	25-55	c	10YR62 00	10YR78	61	M			Y	0	0	0			P			Y
																		IMP STONES 55
18	0-35	hc1	10YR43 00							0	0	0						
	35-60	hc1	10YR54 00	10YR53	56	C	00MN00	00	S	0	0	0			M			
	60-100	c	25Y 62 00	10YR58	00	M			Y	0	0	0			P			Y
19	0-35	hc1	10YR43 00							0	0	0						
	35-70	c	25Y 62 00	10YR58	00	M			Y	0	0	0			P			Y