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Aylesbury Vale Local Plan
Land at North East of Winslow,
Buckinghamshire
Agricultural Land Classification Report
August 1996.

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

AYLESBURY VALE LOCAL PLAN
LAND TO THE NORTH EAST OF WINSLOW

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of approximately 21 hectares of land to the north east of Winslow in Buckinghamshire. The survey was carried out during August 1996.

2. The work was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading, in connection with MAFF's statutory input to the Aylesbury Vale Local Plan. This survey supersedes any previous ALC information for this land, including a detailed survey undertaken in 1988 (ADAS Ref: 0301/23/88), which was carried out prior to MAFF's revision of its ALC guidelines.

3. The current work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey, the agricultural land on this site was under permanent pasture with remnant ridge and furrow features. The areas shown as Other Land consist of woodland, scrub, a farm house and a wide drain.

SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 below.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% Total site area	% Surveyed Area
2	14.0	68.0	75.7
3a	1.9	9.2	10.3
3b	2.6	12.6	14.0
Other land	2.1	10.2	
Total surveyed area	18.5	-	100.0
Total site area	20.6	100.0	-

7. The fieldwork was conducted at an average density of 1 boring per hectare. A total of 19 borings and 2 soil pits were described.

8. The majority of the land at this site has been classified as Grade 2 (very good quality) on the basis of minor soil wetness and/or droughtiness limitations. The soils are developed on chalky boulder clay inter-bedded with glacio-fluvial sands and gravels. The Grade 2 profiles mainly comprise calcareous medium clay loam topsoils over heavy clay loam upper subsoils and clay lower subsoils. The soils are very slightly or slightly stony (1-10% flints) with occasional sandier horizons. The clay subsoils are often poorly structured and show clear evidence of wetness at moderate depths. Other Grade 2 profiles comprise medium sandy loam topsoils and upper subsoils over loamy medium sand lower subsoils. These are very slightly stony (2-3% flints) in the topsoil but become moderately stony (15-20% flints) in the lower subsoil horizons. The combination of these soil properties and the prevailing climate results in either a minor soil wetness or soil droughtiness limitation which mean that the land cannot be classified higher than Grade 2. A small area of Subgrade 3a has also been mapped were the soil droughtiness limitation is more significant.

9. To the north of the site the profiles have been classified as Subgrade 3b (moderate quality land) due to a more severe soil wetness and workability limitation. The soil profiles here comprise medium or heavy clay loam topsoils over poorly structured, clay upper subsoils, which impede drainage. The resultant waterlogging will thus restrict seed germination and growth as well as limit the timing of cultivations. Wet soils such as these are susceptible to structural damage through trafficking by agricultural machinery and grazing livestock.

FACTORS INFLUENCING ALC GRADE

Climate

10. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

11. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

12. 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.

Table 2: Climatic and altitude data

Factor	Units	Values	Values
Grid reference	N/A	SP 779 283	SP 778 278
Altitude	m, AOD	105	119
Accumulated Temperature	day°C (Jan-June)	1377	1362
Average Annual Rainfall	mm	669	675
Field Capacity Days	days	141	142
Moisture Deficit, Wheat	mm	104	102
Moisture Deficit, Potatoes	mm	94	92

13. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (ATO, January to June), as a measure of the relative warmth of a locality.

14. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation (Climatic Grade 1). However, climatic factors can interact with soil properties to influence soil wetness and droughtiness. At this locality the relatively low field capacity day values decrease the likelihood of soil wetness.

15. Local climatic factors such as frost risk and exposure are unlikely to have a significant adverse affect on agricultural land quality at this site.

Site

16. The land on this site is gently undulating, ranging in height from 120m AOD in the south west to 102m AOD in the north.

17. Local site factors such as flooding, microrelief and gradient are not considered to limit land quality on this site.

Geology and soils

18. The relevant geological sheet (BGS, 1896) maps chalky boulder clay and glacial sands across the site.

19. The most recently published soils information for this area (SSEW, 1983) maps the Ashley soil association across much of the site. These soils are described as 'Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. Associated with similar but wetter soils. Some calcareous and non-calcareous slowly permeable clayey soils.' (SSEW, 1983). To the north of the site the Wickham 2 soil association has been mapped. These soils are said to be 'Slowly permeable seasonally waterlogged fine loamy over clayey,

fine silty over clayey and clayey soils. Small area of slowly permeable calcareous soils on steeper slopes.' (SSEW, 1983).

20. Detailed field examination revealed soils of a similar nature to those described above.

Agricultural Land Classification

21. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.

22. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III.

Grade 2

23. The majority of the agricultural land on this site has been mapped as Grade 2 (very good quality). There are two distinct soil types within this mapping unit. The majority of profiles are calcareous, comprising stone free or very slightly stony (0-2% total flints) medium clay loam topsoils. These overlie slightly stonier (5-10% total flints), calcareous heavy clay loam or clay upper subsoils before passing to paler, gleyed, clay lower subsoils with 5% chalk fragments.. Some of the upper subsoils were gleyed and most contained small, weathered ironstone fragments. The lower subsoils are all poorly structured and slowly permeable. They generally occur at between 40cm and 50cm depth (though occasionally slightly shallower), thus slightly impeding drainage through the profile. In this locally cool and dry climatic regime the resultant soil wetness is considered to be consistent with Wetness Class II (Appendix II). Given their naturally calcareous nature and medium clay locam topsoils this land is appropriately included in Grade 2 due to minor soil wetness limitations. In particular there may be limitations in the timing of cultivations as over trafficking by farm machinery or livestock can lead to structural damage.

24. Towards the centre of the site the profiles are limited to Grade 2 by a slight soil droughtiness limitation. The profiles here comprise very slightly stony (2-3% flint) medium sandy loam topsoils over moderately well structured, stonier (8-15% flint) upper subsoils of a similar texture. At 45-60cm depth the profile became impenetrable to the soil auger. However, soil inspection Pit 2 showes that a moderately well structured, loamy medium sand subsoil, with 20% flint continues to 77cm depth. Here the profile again became impenetrable due to the extremely dry conditions at that time of year (August, 1996) and the moderate stone content. However, the soil resource is considered to continue, in a similar manner based on work on similar soils in the locality, to at least 120cm depth. In this local climatic regime the combined effects of soil texture, structure and stone content lead to a slight soil droughtiness limitation as the amount of profile available water for crops is slightly reduced.

Subgrade 3a

25. A small area of Subgrade 3a, good quality, land has been mapped on the distinctly higher land to the east of the site. These soils are very similar to those described in paragraph 24 (above) but become impenetrable to the soil auger at 100cm depth. However, the lighter textured loamy medium sands occur at slightly shallower depths thus further restricting the

water holding capacity of the profile. This land is therefore restricted to Subgrade 3a on the basis of a moderate soil droughtiness limitation.

Subgrade 3b

26. The northern end of the site has been classified as Subgrade 3b. This part of the site is lower lying and acts as a catchment area for water running off the surrounding higher, sandy land. The profiles are calcareous throughout and comprise virtually stone free (0-1% flint), medium or heavy clay loam topsoils over shallow poorly structured, slowly permeable, gleyed, clay upper subsoils. Drainage through the profile is impeded resulting in prolonged waterlogging. Despite the locally dry climatic regime, wet soil such as these will disrupt seed germination and crop growth crop. The combination of topsoil textures will also limit the amount of time when the land can be worked or grazed without causing structural damage. This land is therefore limited to Wetness Class IV (Appendix II), Subgrade 3b by a significant soil wetness limitation.

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SOURCES OF REFERENCE

British Geological Survey (1896) *Sheet No. XIX, Bucks.* 1:10560 Series. Drift.
BGS: London.

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

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 6, Soils of South East England.*
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*
SSEW: Harpenden

APPENDIX I

DESCRIPTIONS 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 (e.g. 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.

APPENDIX II

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

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.

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.

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

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

[2] 'In most years' is defined as more than 10 out of 20 years.

APPENDIX III

SOIL DATA

Contents:

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. **GLEY/SPL**: 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. **GLEY**: 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:

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	

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 : AYLESBURY VLP,NE WINSLOW Pit Number : 1P

Grid Reference: SP77702780 Average Annual Rainfall : 669 mm
Accumulated Temperature : 1377 degree days
Field Capacity Level : 141 days
Land Use : Permanent Grass
Slope and Aspect : 01 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 23	MCL	10YR42 00	0	3	HR					Y
23- 43	HCL	25Y 52 53	0	5	HR		MDCSAB	FM	M	Y
43- 60	C	25Y 64 00	0	10	HR	F	MDCSAB	FM	M	Y
60- 80	C	25Y 52 00	0	5	CH	M	STCPR	FM	P	Y

Wetness Grade : 2 Wetness Class : II
Gleying :060 cm
SPL :060 cm

Drought Grade : 3A APW : 102mm MBW : -2 mm
APP : 108mm MBP : 14 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : AYLESBURY VLP,NE WINSLOW Pit Number : 2P

Grid Reference: SP77802810 Average Annual Rainfall : 669 mm
Accumulated Temperature : 1377 degree days
Field Capacity Level : 141 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 26	MSL	10YR42 00	0	2	HR					
26- 64	MSL	10YR44 00	0	15	HR		MDCSAB	FR	M	
64-120	LMS	10YR64 00	0	20	HR	C		FR	M	

Wetness Grade : 1 Wetness Class : I
Gleying :064 cm
SPL : No SPL

Drought Grade : 2 APW : 109mm MBW : 5 mm
APP : 96 mm MBP : 2 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	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SP77902880	PGR	S	02	025	025	4	3B	91	-13	103	9	3A				WE	3B	
1P	SP77702780	PGR	E	01	060	060	2	2	102	-2	108	14	3A				WE	2	At boring 18
2	SP77902870	SAS			0	025	4	3B	92	-12	104	10	3A				WE	3B	
2P	SP77802810	PGR			064		1	1	109	5	96	2	2				DR	2	I77 Border 3A
3	SP77802860	PGR	NE	01	025	040	3	2	101	-3	106	12	3A				WE	2	Calc
4	SP77902860	SAS			0	028	4	3B	99	-5	104	10	3A				WE	3B	
5	SP77802850	PGR	N	02	025	040	3	2	135	31	109	15	1				WE	2	Calc
6	SP77902850	PGR	E	01	0		2	2	140	36	115	21	1				WE	2	I100 Flinty
7	SP77802842	PGR			S25		1	1	93	-11	99	5	3A				DR	2	I65 Qlike 2P
8	SP77902840	PGR	E	02	0		2	2	159	55	123	29	1				WE	2	QSPL 75
9	SP77802830	PGR	E	03	060		2	2	153	49	115	21	1				WE	2	QSPL 60
10	SP77622785	PGR			035		2	2	113	9	113	19	2				WE	2	QSPL 60
11	SP77802820	PGR	N	01	0	025	4	3B	104	0	106	12	3A				WE	3B	
12	SP77802810	PGR	N	01	026		2	2	70	-34	70	-24	3B				DR	2	I45 See 2P
13	SP77902810	PGR	W	02			1	1	88	-16	80	-14	3A				DR	3A	I100 Flinty
14	SP77702800	PGR	N	01			2	2	92	-12	100	6	3A				WE	2	I60 Qlike 1P
15	SP77802800	PGR	E	01			1	1	87	-17	90	-4	3A				DR	2	I60 Qlike 2P
16	SP77702790	PGR	E	01	050	050	2	2	91	-13	98	4	3A				WE	2	I62 Qlike 1P
17	SP77802790	PGR	N	01	050	050	2	2	99	-5	108	14	3A				WE	2	C75PLUS
18	SP77702780	PGR	E	01			2	2	75	-29	75	-19	3B				WE	2	I45 SEE 1P
19	SP77782780	PGR	E	01	049	049	2	2	104	0	108	14	3A				WE	2	I80 Flinty

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	10YR43 00						0	0	HR	1						Y	
	25-70	c	25Y 52 00	10YR56	58 M		00MN00	00 Y	0	0		0		P		Y	Y		V. Firm
1P	0-23	mcl	10YR42 00						0	0	HR	3						Y	Ironstone frags H2-
	23-43	hcl	25Y 52 53						0	0	HR	5	MDCSAB	FM M				Y	Compound Struc
	43-60	c	25Y 64 00	10YR56	00 F				0	0	HR	10	MDCSAB	FM M				Y	Compound Struc
	60-80	c	25Y 52 00	10YR58	00 M			Y	0	0	CH	5	STCPR	FM P	Y		Y	Y	
2	0-25	hcl	25Y 41 00	10YR46	00 C			Y	0	0		0						Y	Border Clay
	25-70	c	25Y 51 52	10YR58	00 M		00MN00	00 Y	0	0		0		P		Y	Y		V. Firm
2P	0-26	msl	10YR42 00						0	0	HR	2							
	26-64	msl	10YR44 00						0	0	HR	15	MDCSAB	FR M					
	64-120	lms	10YR64 00	10YR58	00 C			Y	0	0	HR	20		FR M					Pit to 77cm
3	0-25	mcl	10YR42 00	10YR46	00 F				0	0	HR	2						Y	
	25-40	hcl	10YR53 00	10YR56	00 C			Y	0	0		0		M				Y	Border Clay
	40-80	c	25Y 52 00	10YR56	00 M		00MN00	00 Y	0	0	HR	3		P		Y	Y		
4	0-28	hcl	25Y 42 00	10YR46	00 C			Y	0	0		0						Y	
	28-45	c	25Y 31 41	10YR56	00 C		00MN00	00 Y	0	0		0		P		Y	Y		
	45-80	c	05Y 51 00	10YR58	00 M		00MN00	00 Y	0	0	HR	5		P		Y	Y		V. Firm
5	0-25	mcl	10YR42 00						0	0	HR	1						Y	
	25-40	hcl	10YR53 00	10YR56	00 C			Y	0	0	HR	2		M				Y	Ironstone frags
	40-60	c	25Y 52 00	10YR68	00 M		00MN00	00 Y	0	0		0		P		Y	Y		Fine Sand
	60-80	scl	25Y 62 00	10YR68	00 M			Y	0	0		0		M		Y	Y		
	80-120	c	05Y 41 31	75YR58	00 M			Y	0	0	HR	5		P		Y	Y		
6	0-30	mcl	10YR43 00	75YR58	00 C			S	0	0	HR	2						Y	
	30-60	hcl	10YR53 00	75YR58	00 C		00MN00	00 Y	0	0	HR	2		M				Y	
	60-95	hcl	25Y 64 00	75YR58	00 M		00MN00	00 Y	0	0	HR	5		M				Y	Friable
	95-110	scl	10YR54 00	10YR58	00 C			S	0	0	HR	15		M				Y	V. Friable
7	0-25	msl	10YR42 00						1	0	HR	2							
	25-45	scl	10YR43 00	75YR46	58 C			S	0	0	HR	2		M					
	45-65	msl	10YR43 44	75YR68	00 M			00 S	0	0	HR	8		M					I65 dry/flinty
8	0-25	mzcl	10YR42 00	10YR56	00 C			Y	0	0	HR	1							
	25-40	mzcl	10YR53 00	10YR58	00 C			Y	0	0	HR	1		M					
	40-75	hzcl	10YR52 00	10YR58	00 C		00MN00	00 Y	0	0	HR	1		M				Y	
	75-120	hzcl	10YR53 00	75YR56	00 M			Y	0	0		0		M				Y	
9	0-35	mcl	10YR42 00	75YR58	52 C			Y	1	0	HR	2							
	35-60	hcl	10YR32 00	75YR58	00 C			Y	0	0	HR	6		M					Soft
	60-120	hcl	10YR32 42	75YR58	00 C			Y	0	0	HR	2		M					Soft
10	0-35	mcl	25Y 43 00	10YR58	00 F				0	0	HR	1						Y	
	35-60	hcl	25Y 54 00	75YR56	00 C		00MN00	00 S	0	0	HR	4		M				Y	Dry/Friable
	60-90	hzcl	25Y 63 72	10YR68	00 M			Y	0	0	HR	2		M				Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
11	0-25	mcl	25Y 41 00	10YR56 00	C			Y	0	0		0						Y	
	25-63	c	25Y 51 00	10YR58 00	M		00MN00 00	Y	0	0		0		P			Y	Y	
	63-80	hcl	10YR51 61	75YR58 00	M		00MN00 00	Y	0	0		0		M			Y	Y	
12	0-26	msl	10YR31 41						0	0	HR	3							
	26-45	msl	10YR53 54	10YR56 00	C			Y	0	0	HR	5		M					Imp Flints
13	0-25	msl	10YR42 00						0	0	HR	3							
	25-35	msl	10YR43 00						0	0	HR	3		M					
	35-60	lms	10YR54 56						0	0	HR	5		M					
	60-90	lms	10YR56 00						0	0	HR	10		M					
	90-100	lms	10YR58 00						0	0	HR	20		M					Imp Flints
14	0-30	mcl	10YR42 00						0	0	HR	2						Y	Ironstone frags H2
	30-60	c	25Y 52 53	10YR56 58	F				0	0	HR	2		M				Y	I60 dry/QSPL
15	0-30	msl	10YR43 00						0	0	HR	3							
	30-50	msl	10YR44 00						0	0	HR	8		M					
	50-60	msl	10YR44 00						0	0	HR	15		M					I60 flinty/dry
16	0-25	mcl	10YR42 00						0	0	HR	2						Y	
	25-50	c	10YR53 00	10YR56 00	F				0	0	HR	2		M				Y	Ironstone frags
	50-62	c	25Y 61 00	10YR56 00	C			Y	0	0	HR	5		P			Y	Y	I62 Q C continues
17	0-25	mcl	10YR42 00						0	0	HR	3						Y	
	25-50	mcl	10YR54 00	10YR56 00	F				0	0	HR	5		M				Y	
	50-75	c	25Y 61 52	10YR58 00	M		00MN00 00	Y	0	0		0		P			Y	Y	V. Firm
18	0-25	mcl	10YR43 00						0	0	HR	2						Y	Ironstone frags H
	25-45	hcl	10YR53 00						0	0	HR	5		FM M				Y	I45 dry/flinty
19	0-30	mcl	10YR42 00						0	0	HR	2						Y	
	30-49	mcl	10YR54 00	10YR58 00	F				0	0	HR	5		M				Y	
	49-80	c	10YR51 00	75YR58 00	M		00MN00 00	Y	0	0	HR	3		P			Y	Y	I80 Flinty