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Cliffe Chalk Quarry Extension
Manor Farm, West Street, Cliffe, Kent

Agricultural Land Classification
ALC Map and Report

May 1997

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

CLIFFE CHALK QUARRY EXTENSION, MANOR FARM, CLIFFE, KENT

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 27.0 hectares of land to the west of Manor Farm, west of Cliffe near Rochester in Kent. The survey was carried out during May 1997.

2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA) on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with a review of the conditions relating to an old planning permission to extend the existing chalk quarry which lies to the south of this site. The site comprises an area slightly larger than the planning application area, as the latter excludes 3.7 ha to the immediate west of Allens Hill Farm. This survey supersedes any previous ALC information for this land.

3. The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA. 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 winter wheat to the north, salad onions to the south and set aside to the south west. Significant areas of the site have been mapped as 'Other Land'. Land uses in these areas include the disused chalk pit to the north west of the site, adjacent to this is a small area of game cover and larger expanses of scrub and woodland. The remaining areas of 'Other Land' mapped on the site include dwellings to the north east, current chalk workings to the south and an area to the south west where soil is currently being stored from the adjacent chalk workings. This area is covered in scrubby vegetation.

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 overleaf. Table 2 refers to the area under the current application for chalk extraction.

7. The fieldwork was conducted at an average density of 1 boring per hectare of agricultural land. A total of 18 borings and 2 soil pits were described.

Table 1: Area of grades and other land - Total Site Area

Grade/Other land	Area (hectares)	% surveyed area	% site area
3a Other land	16.5 10.5	100 N/A	61.1 38.9
Total surveyed area Total site area	16.5 27.0	100 -	61.1 100

Table 2: Area of grades and other land - Application Area

Grade/Other land	Area (hectares)	% surveyed area	% site area
3a Other land	13.1 10.2	100 N/A	56.2 43.8
Total surveyed area Total site area	13.1 23.3	100 -	56.2 100

8. The agricultural land at this site has been classified as Subgrade 3a (good quality). The principal limitation is soil droughtiness.

9. The soils comprise well drained calcareous medium loams and medium silts overlying weathered chalk at moderate depths. The local climate is very dry in both national and regional terms, this, in combination with these soil properties means that this land is limited by soil droughtiness. This can lead to a reduction in plant growth and potential yield, especially in drier years.

10. Irrigation water is available on this site. It is currently of sufficient quantity to enhance agricultural production beyond that which may be expected given the classification of the land.

FACTORS INFLUENCING ALC GRADE

Climate

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

12. The key climatic variables used for grading this site are given in Table 3 overleaf obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 3: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	TQ 729 761	TQ 728 763
Altitude	m, AOD	20	25
Accumulated Temperature	day°C (Jan-June)	1476	1470
Average Annual Rainfall	mm	573	575
Field Capacity Days	days	107	107
Moisture Deficit, Wheat	mm	126	126
Moisture Deficit, Potatoes	mm	124	123
Overall climatic grade	N/A	Grade 1	Grade 1

13. 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.

14. 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.

15. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. Other local climatic factors such as exposure and frost risk are also believed not to affect the site. The site is climatically Grade 1. It should be noted that this area has a particularly dry climate, in a national context. Consequently land is more likely to suffer from a droughtiness limitation.

Site

16. The undisturbed areas of the site lie at an altitude between approximately 20 and 25m AOD. The highest land is towards the centre of the site with gentle slopes to the south and north. Towards the west of the site there is a disused chalk pit at a considerably lower level (approximately 5m AOD), The majority of the slopes between the two separate levels comprise sheer chalk cliffs. Towards the south, where the site adjoins a petrol storage depot, the slopes are at approximately 45° and are covered in scrubby woodland. To the south west of the site soil material considered to be from the recent chalk workings immediately to the south have been dumped at ground level to create a domed area. These areas are not in agricultural use and are shown as 'Other Land' on the accompanying map. In addition, land in agricultural use on this site is not adversely affected by either microrelief or flood risk.

Geology and soils

17. The published geological information for the site (BGS, 1977) shows the majority of the site to be underlain by head drift deposits overlying Cretaceous Upper Chalk. To the north west and south west of the site the Upper Chalk is exposed.

18. The most recent published soils information for the site (SSEW, 1983 and 1984) shows the site to comprise soils from the Coombe 1 association. These are described as,

'Well drained calcareous fine silty soils, deep in valley bottoms, shallow to chalk on valley sides in places. Slight risk of water erosion.' (SSEW, 1983). Soils of this overall type were encountered throughout the site. The slightly older survey, Soils of Kent (SSEW, 1980) published at a similar level of detail shows this area as comprising rendzina type soils from the Andover, Upton and Coombe soil series' over the majority of the site. These are described as, 'chalky, silty soils predominantly shallow over chalk or chalky head; free drainage.' (SSEW, 1980). Soils of this type were principally encountered towards the north of the site. To the south west of Manor Farm, brown calcareous earth soils are mapped from the Coombe, Andover, Gore and Bilting series'. These are described as, 'variably flinty and chalky soils in head associated with shallow chalky silty soils over chalk; free drainage.' (SSEW, 1980). Again soils similar to this description were extensively encountered throughout the survey.

AGRICULTURAL LAND CLASSIFICATION

19. 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.

20. 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 II.

Subgrade 3a

21. Land of good quality has been mapped over all the agricultural land at this site. The principal limitation is soil droughtiness. The soils are characterised by the soil pit observations, 1P and 2P (see Appendix II).

22. Overall the soils were found to be of a single type comprising a very slightly stony (up to 4% total flints by volume, including up to 3%>2cm diameter) medium silty clay loam and medium clay loam topsoils. This passes to a slightly stony (up to 5% total flints) and slightly chalky (up to 10% weathered chalk fragments) medium silty clay loam, medium or heavy clay loam upper subsoil. Commonly this passes to a medium silty clay loam lower subsoil horizon containing up to 50% weathered chalk fragments by volume. Below this a weathered chalk substrate was encountered between 35 and 100cm (mean depth of 68cm); this was usually impenetrable to the soil auger. In the pit observations, the weathered chalk was discovered to be relatively soft and roots were observed to extend approximately 35cm into the substrate. In the pit observations (1P and 2P, see Appendix II) rooting was observed to 120 and 110cm respectively. The presence and depth of the root restricting chalk, the volume of stones and the combination of soil textures in these well drained (Wetness Class I) profiles restricts the water holding capability of the soil to the extent that Subgrade 3a is appropriate on the basis of soil droughtiness in the dry local climate. On this basis crop growth and potential yields are likely to be restricted, particularly in drier years.

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SOURCES OF REFERENCE

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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.

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Soil Survey of England and Wales (1983) *Soils of South East England. 1:250 000 Scale.* SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils of South East England. Bulletin No. 15.* 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 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	**OTH**	Other
DCW:	Deciduous woodland	**BOG:**	Bog or marsh	**SAS:**	Set-Aside
HTH:	Heathland	**HRT:**	Horticultural crops	**PLO:**	Ploughed

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	**ST**:	Topsoil Stoniness
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
EX:	Exposure				

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

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

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 : CLIFFE CHALK QUARRY KENT Pit Number : 1P

Grid Reference: TQ72797642 Average Annual Rainfall : 573 mm
Accumulated Temperature : 1476 degree days
Field Capacity Level : 107 days
Land Use : Ploughed
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 31	MCL	10YR43 42	3	4	HR					Y
31- 55	HCL	75YR45 00	0	5	HR		WKCSAB	FR	M	Y
55- 85	MZCL	10YR64 74	0	5	HR		WKCSAB	FR	M	Y
85-120	CH	10YR81 74	0	5	HR			FM	P	Y

Wetness Grade : 1 Wetness Class : I
Gleying : cm
SPL : cm

Drought Grade : 3A APW : 138mm MBW : 12 mm
APP : 114mm MBP : -10 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : CLIFFE CHALK QUARRY KENT Pit Number : 2P

Grid Reference: TQ72807610 Average Annual Rainfall : 573 mm
Accumulated Temperature : 1476 degree days
Field Capacity Level : 107 days
Land Use : Wheat
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	MCL	10YR42 00	2	3	HR					Y
25- 52	MCL	10YR44 00	0	3	HR		MDCSAB	FR	M	Y
52- 75	MZCL	10YR64 66	0	20	CH		WKCSAB	FR	M	Y
75-110	CH	10YR81 72	0	5	HR				P	Y

Wetness Grade : 1 Wetness Class : I
Gleying : cm
SPL : cm

Drought Grade : 3A APW : 128mm MBW : 2 mm
APP : 112mm MBP : -12 mm

FINAL ALC GRADE : 3A
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	TQ72907658	WHT	N	2			1	1	103	-23	113	-11	3B				DR	3A	IMP 70 3A-103
1P	TQ72797642	PLO					1	1	138	12	114	-10	3A				DR	3A	P10SA120 BDR2
2	TQ73007658	WHT	N	1			1	1	68	-58	68	-56	4				DR	3B	IMP 40 3B-70
2P	TQ72807610	WHT					1	1	128	2	112	-12	3A				DR	3A	PIT100 RTS110
3	TQ72907649	WHT	N	2			1	1	93	-33	99	-25	3B				DR	3A	IMP 60 3A-95
4	TQ73007649	WHT	N	1			1	1	77	-49	77	-47	3B				DR	3A	IMP 50 3B-70
5	TQ72807640	WHT					1	1	103	-23	113	-11	3B				DR	3A	IMP 70 3A-100
6	TQ72907640	WHT					1	1	123	-3	119	-5	3A				DR	2	IMP 90 2-120
7	TQ73007640	WHT					1	1	118	-8	114	-10	3A				DR	3A	IMP 90 BDR G2
9	TQ72907630	WHT					1	1	67	-59	67	-57	4				DR	3A	IMP 40 3A-120
10	TQ73007630	WHT					1	1	95	-31	99	-25	3B				DR	3A	IMP 60 3A-90
11	TQ72907620	HRT	S	2			1	1	114	-12	111	-13	3A				DR	3A	IMP 85 3A-115
12	TQ73007620	HRT	S	1			1	1	109	-17	110	-14	3A				DR	3A	IMP 80 3A-120
13	TQ73107620	HRT	S	1			1	1	111	-15	108	-16	3A				DR	3A	IMP 85 3A-120
16	TQ72617610	PLO	S	1			1	1	130	4	113	-11	3A				DR	3A	IMP 100 3A-120
17	TQ72707610	PLO	S	1			1	1	108	-18	110	-14	3A				DR	3A	IMP 77 3A-112
18	TQ72807610	PLO	S	2			1	1	97	-29	105	-19	3B				DR	3A	IMP 70 3A-105
19	TQ72907610	HRT	S	2			1	1	109	-17	111	-13	3A				DR	3A	IMP 80 3A-115
20	TQ73007610	HRT					1	1	146	20	113	-11	3A				DR	3A	NO CH HORIZON
21	TQ73107610	HRT					1	1	101	-25	106	-18	3B				DR	3A	IMP 75 3A-95

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	IMP	SPL	CALC	
1	0-30	mzcl	10YR42 00						2	0	HR	3					Y		+3% CHALK
	30-68	hcl	10YR45 00						0	0	CH	10		M			Y		+3% FLINTS
	68-70	ch	10YR81 74						0	0	HR	5		P			Y		IMP CHALK 70
1P	0-31	mcl	10YR43 42						3	0	HR	4					Y		
	31-55	hcl	75YR45 00						0	0	HR	5	WKCSAB	FR	M		Y		TENDING MDCSAB
	55-85	mzcl	10YR64 74						0	0	HR	5	WKCSAB	FR	M		Y		+10% CHALK
	85-120	ch	10YR81 74						0	0	HR	5		FM	P		Y		ROOTS TO 120
2	0-35	mzcl	10YR41 51						1	0	HR	3					Y		+5% CHALK
	35-40	ch	10YR81 00						0	0	HR	5		P			Y		IMP HARD CHALK 40
2P	0-25	mcl	10YR42 00						2	0	HR	3					Y		
	25-52	mcl	10YR44 00						0	0	HR	3	MDCSAB	FR	M		Y		+5% CHALK
	52-75	mzcl	10YR64 66						0	0	CH	20	WKCSAB	FR	M		Y		+5% FLINTS
	75-110	ch	10YR81 72						0	0	HR	5		P			Y		ROOTS CUTOFF 110
3	0-30	mzcl	10YR42 00						2	0	HR	4					Y		+4% CHALK
	30-60	mzcl	10YR54 00						0	0	CH	15		M			Y		+5% FLS IMP CH 60
4	0-35	mzcl	10YR42 00						1	0	HR	3					Y		+5% CHALK
	35-50	ch	10YR81 52						0	0	HR	5		P			Y		IMPCH 50 20% SOIL
5	0-30	mzcl	10YR42 00						2	0	HR	3					Y		SEE 2P
	30-60	mcl	75YR56 00						0	0	CH	5		M			Y		+3% FLINTS
	60-65	mzcl	10YR64 81						0	0	CH	30		M			Y		+3% FLINTS
	65-70	ch	10YR81 64						0	0	HR	5		P			Y		IHR IN CH70 10%SOIL
6	0-33	mzcl	10YR42 43						1	0	HR	3					Y		
	33-65	mzcl	10YR44 54						0	0	HR	5		M			Y		+5% CHALK
	65-80	mzcl	10YR64 00						0	0	CH	15		M			Y		+3% FLINTS
	80-85	mzcl	10YR64 81						0	0	CH	50		M			Y		+3% FLINTS
	85-90	ch	10YR81 74						0	0	HR	5		P			Y		IMP CH 90 15% SOIL
7	0-30	mzcl	10YR42 00						1	0	HR	3					Y		
	30-65	mcl	10YR54 00						0	0	HR	5		M			Y		+5% CHALK
	65-80	mzcl	10YR76 81						0	0	CH	50		M			Y		+5% FLINTS
	80-90	ch	10YR81 74						0	0	HR	5		P			Y		IHR IN CH90 20%SOIL
9	0-28	mcl	10YR42 00						1	0	HR	3					Y		
	28-40	hcl	75YR56 00						0	0	HR	5		M			Y		IMP FLINT 40 x 3
10	0-30	mzcl	10YR42 00						2	0	HR	3					Y		
	30-45	mzcl	10YR44 00						0	0	HR	3		M			Y		+3% CHALK
	45-55	mzcl	10YR44 54						0	0	CH	30		M			Y		+3% FLINTS
	55-60	ch	10YR81 64						0	0	HR	5		P			Y		IMP CH 60 10% SOIL
11	0-30	mcl	10YR33 00						3	0	HR	4					Y		
	30-53	hcl	10YR45 00						0	0	HR	4		M			Y		+2% CHALK
	53-85	hcl	10YR65 74						0	0	CH	20		M			Y		+4% FLINTS

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
12	0-30	mcl	10YR33 00						3	0	HR	4					Y		
	30-50	hcl	10YR45 00						0	0	HR	4		M			Y		
	50-65	hcl	10YR55 00						0	0	CH	20		M			Y		+4% FLINTS
	65-80	hcl	10YR84 00						0	0	CH	50		M			Y		+3% HR IMP CH 80
13	0-32	scl	10YR43 00						2	0	HR	4					Y		
	32-55	scl	10YR45 00						0	0	HR	4		M			Y		
	55-85	hcl	10YR74 00						0	0	HR	5		M			Y		+5% CH IMP CH/HR 8
16	0-33	mcl	75YR43 00						2	0	HR	3					Y		
	33-55	scl	75YR45 00						0	0	HR	4		M			Y		
	55-98	hcl	75YR46 00						0	0	HR	3		M			Y		
	98-100	hcl	10YR74 00						0	0	CH	60		P			Y		+3% HR IMP CH 100
17	0-30	mcl	75YR43 00						3	0	HR	4					Y		
	30-50	hcl	75YR45 00						0	0	HR	4		M			Y		
	50-77	scl	10YR74 00						0	0	CH	15		M			Y		+3% HR IMP CH 77
18	0-30	mcl	75YR43 00						3	0	HR	4					Y		SEE 1P
	30-53	hcl	75YR45 00						0	0	HR	4		M			Y		
	53-70	hcl	10YR74 00						0	0	CH	60		P			Y		+3% HR IMP CH 70
19	0-35	mcl	10YR33 00						3	0	HR	4					Y		
	35-67	hcl	75YR56 00						0	0	HR	10		M			Y		
	67-80	hcl	10YR64 74						0	0	CH	30		M			Y		+5% HR IMP CH 80
20	0-30	mcl	10YR41 42						1	0	HR	3					Y		
	30-65	hcl	10YR46 00						0	0	HR	5		M			Y		
	65-90	mcl	10YR64 74						0	0	CH	30		M			Y		+3% FLINTS
	90-120	scl	10YR54 64						0	0	CH	20		M			Y		+5% FLINTS
21	0-30	mcl	10YR42 00						1	0	HR	3					Y		
	30-45	mcl	10YR42 43						0	0	HR	5		M			Y		
	45-60	mzcl	10YR54 81						0	0	CH	30		M			Y		+5% FLINTS
	60-75	ch	10YR81 76						0	0	HR	5		P			Y		IMP CH 75 20% SOIL