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Fareham Borough Local Plan
Winnham Farm, Portchester, Hampshire

Agricultural Land Classification
ALC Map and Report

September 1997

Resource Planning Team
Eastern Region
FRCA Reading

RPT Job Number:1504/109/97
MAFF Reference: EL 15/00967

AGRICULTURAL LAND CLASSIFICATION REPORT

FAREHAM BOROUGH LOCAL PLAN
WINNHAM FARM, PORTCHESTER

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 36.1 ha of land to the north of Portchester. The survey was carried out during September 1997.

2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)[1] on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with its statutory input to the Fareham Borough Local Plan. 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 land use on the site was mainly cereal stubble, with some permanent grassland. The areas mapped as 'Other land' include farm and agricultural buildings. There was also a disturbed area which had previously been used as a chalk pit, and an area yet to be extracted where the soil resource had been removed.

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.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
3a	18.5	62.9	51.2
3b	10.9	37.1	30.2
Other land	6.7	N/A	18.6
Total surveyed area	29.4	100	81.4
Total site area	36.1	-	100

[1] FRCA is an executive agency of MAFF and the Welsh Office

7. The fieldwork was conducted at an average density of 1 boring per hectare of agricultural land. A total of 32 borings and 4 soil pits were described.

8. The land on this site ranges from Subgrade 3a (good quality) agricultural land to Subgrade 3b (moderate quality) agricultural land. The main limitation across this site is soil droughtiness. The majority of the site is underlain by chalk; the depth of the soil over the chalk and the soil characteristics determine the amount of available water for crops and thereby the ALC grade. The soils which are shallow over chalk and/or more stony are more droughty than the deeper soils. Land along the southern part of the site is moderately restricted by soil droughtiness due to the underlying gravel deposits. The combination of the soil characteristics and the prevailing climate cause soil moisture to be restricted. Soil droughtiness will have the effect of lowering the level and consistency of crop yields, as well as restricting the range of crops which can tolerate droughty conditions.

9. There were also small areas where the land is limited by topsoil stoniness. These stones cause a mechanical limitation by impeding cultivation, harvesting and crop growth.

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).

Table 2: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	SU 605 060	SU 605 066
Altitude	m, AOD	15	55
Accumulated Temperature	day°C (Jan-June)	1539	1493
Average Annual Rainfall	mm	800	829
Field Capacity Days	days	162	167
Moisture Deficit, Wheat	mm	113	107
Moisture Deficit, Potatoes	mm	109	101
Overall climatic grade	N/A	Grade 1	Grade 1

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.

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 (AT0, 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 and the site is classified as climate grade 1. The climate is relatively warm and moist, being in a coastal location. Climatic factors do interact with soil properties to influence soil wetness and droughtiness. For example, across the site the moisture deficit values are relatively high, increasing the likelihood of soil droughtiness. Local climatic factors, such as exposure and frost risk do not affect land quality at this location.

Site

15. The site lies at an altitude which ranges from 15m to 55m AOD. The highest land occurs along the northern boundary with land sloping by one to six degrees south, towards the Portchester Road. The site is not affected by site restrictions such as gradient, microrelief or flooding.

Geology and soils

16. The most detailed published geological information for the site (BGS, 1971) shows the majority of the site to be underlain by Upper Chalk, with river and valley gravels underlying the lower land in the southeast corner. There is also an area of raised beach deposits situated to the northwest of Winnham Farm.

17. The most detailed published soils information covering the area (SSEW, 1983) shows it to comprise entirely of the Upton 1 association. These soils are described as 'shallow well drained calcareous silty soils over chalk. Mainly on moderately steep, sometimes very steep land. Deeper fine silty calcareous soils in coombes and dry valleys' (SSEW, 1983). Soils consistent with this description were observed across most of the site; fine silty and fine loamy soils overlie chalk at variable depth. More gravelly soils were also found in the south of the site.

AGRICULTURAL LAND CLASSIFICATION

18. 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.

19. 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

20. Land of good quality has been mapped on the higher land and mid-slopes on the site, overlying the Upper Chalk. It occurs in conjunction with two main soil types.

21. Much of the higher land is classified as Subgrade 3a due to a slight droughtiness limitation. Soils are well drained and typically comprise calcareous medium silty clay loam topsoils, which are very slightly to slightly stony (5-15% total flints, 2-7%>2cm). Topsoils overlie similar, and/or heavy silty clay loam subsoils. The latter upper subsoils may contain up to 65% chalk and up to 25% flints. These pass to chalk at a depth of 37-70cm, which may

also contain up to 5% flints. The soil pit showed that a crop is able to root to a depth of about 80cm within the chalk (soil pit 2, see Appendix II). These soil characteristics, in particular the stone contents and depth to chalk, in combination with the locally dry climate, cause the amount of water available to a growing crop to be slightly restricted. The resulting drought stress may cause the level and consistency of yields to be depressed and Subgrade 3a is appropriate.

22. *The remaining Subgrade 3a land is found on the mid-slopes in the centre of the site,* where the land is also graded on the basis of a slight droughtiness limitation. Soils are well drained and typically similar to those described in paragraph 21. However, they are non-calcareous and are deeper than those described in paragraph 21, passing to medium silty clay loam subsoils at depth. These subsoils contain 5 to 20% total flints and are moderately structured. Soil pit 4 typically describes these soils (see Appendix II). At this locality, these soil characteristics slightly restrict the amount of available water to a growing crop and the land is classified as Subgrade 3a.

Subgrade 3b

23. The moderate quality agricultural land is mainly found on the lower slopes in the south and west of the site. There is also a small area on the higher land in the east of the site, overlying chalk. The main limitation is of soil droughtiness.

24. The majority of the Subgrade 3b land overlies river and valley gravel. The soils are well drained and typically comprise non-calcareous medium silty clay loam topsoils, which contain up to 22% total flints (8-14%>2cm, 2-7%>6cm). These pass to similar and heavy silty clay loam subsoils which contain up to 56% total flints. Below the subsoils, gravel is reached at a depth of 65cm. This gravel and the stony subsoils significantly restrict the amount of water available in the profile. At this locality, the result is a significant soil droughtiness limitation, which is likely to cause the level and consistency of yields to be depressed. These soils are typically decribed by Soil Pit 1 (see Appendix II).

25. There is also an area which is underlain by beach deposits, located in the west of the site. These are classified on the basis of topsoil stone content, which is equally as significant as soil droughtiness. The soils are typically similar to those described in paragraph 24., but may also comprise silt loam topsoils and subsoils. Stone contents within the topsoils vary from 23% to 35% total flints (16-20%>2cm, 5-12%>6cm). As there are more than 15% flints by volume, that are greater than 2cm in size within the topsoil, these cause a significant mechanical limitation. This has the effect of increasing production costs by enhancing wear and tear to farm machinery, and impairing the establishment, growth and quality of crops.

26. A small area of Subgrade 3b land overlies chalk at shallow depth in the east of the site. The soils typically comprise medium silty clay loam topsoils which, where they occur, overlie similar and occasionally heavy silty clay loam subsoils. The soils are well drained and calcareous. The topsoils contain 5-15% total flints (4-12%>2cm) and up to 20% chalk. The subsoils contain 5-15% total flints and up to 50% chalk. The soils pass to chalk at a depth of 28-35cm (see soil pit 3, Appendix II). In Pit 3 roots were seen to penetrate to a depth of 75cm, being more restricted here than across the rest of the site. This land is classified on the basis of a significant soil droughtiness limitation. This is caused by the soil

characteristics, especially stone contents and depth to chalk, acting in combination with the locally dry climate to limit the amount of water available to crops. Consequently the range of crops able to be grown and the level and consistency of yields are likely to be significantly reduced. Subgrade 3b is appropriate.

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SOURCES OF REFERENCE

British Geological Survey (1971) *Sheet No.316, Fareham.* 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, 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 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

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
3	SU60400660	STB	S	3			1	1	86	-27	89	-20	3B				DR	3A	See2P
4	SU60500660	PGR	S	2			1	1	99	-14	102	-7	3A				DR	3A	See2P
5	SU60600660	PGR	S	2			1	1	100	-13	102	-7	3A				DR	3A	See2P
9	SU60300650	STB	S	3			1	1	94	-19	100	-9	3A				DR	3A	See2P
10	SU60400650	STB	S	3			1	1	56	-57	56	-53	4				DR	3A	Imp35 See2P
11	SU60500650	STB	S	3			1	1	87	-26	93	-16	3B				DR	3A	See2P
12	SU60600650	STB	S	3			1	1	61	-52	61	-48	3B				DR	3A	Imp37 See2P
13	SU60100640	STB	S	4			1	1	45	-68	45	-64	4				TS	3B	Imp35 See1P
14	SU60200640	STB	S	2			1	1	88	-25	93	-16	3B				DR	3B	See3P
15	SU60300640	STB	S	3			1	1	72	-41	72	-37	3B				DR	3A	Imp50 See4P
16	SU60400640	STB	S	3			1	1	99	-14	100	-9	3A				DR	3A	See2P
17	SU60500640	STB	S	3			1	1	83	-30	85	-24	3B				DR	3A	Imp55 See2P
18	SU60600640	STB	S	3			1	1	87	-26	93	-16	3B				DR	3A	Imp60 See2P
19	SU60700640	STB	E	4			1	1	84	-29	90	-19	3B				DR	3B	See3P
20	SU59900630	PGR	S	1			1	1	56	-57	56	-53	4				DR	3B	Imp40 See1P
21	SU60000630	PGR	S	2			1	1	52	-61	52	-57	4				TS	3B	Imp35 See1P
22	SU60100634	STB	S	3			1	1	50	-63	50	-59	4				DR	3B	Imp35 See1P
23	SU60200630	STB	S	4			1	1	68	-45	68	-41	3B				DR	3A	Imp45 See4P
24	SU60300630	STB	S	4			1	1	89	-24	96	-13	3B				DR	3A	Imp60 See4P
25	SU60400630	STB	S	4			1	1	98	-15	106	-3	3A				DR	3A	Imp65 See4P
26	SU60500630	STB	S	4			1	1	97	-16	96	-13	3A				DR	3A	See2P
27	SU60600630	RGR	S	4			1	1	70	-43	72	-37	3B				DR	3B	See3P
28	SU60070622	PGR	S	6			1	1	58	-55	58	-51	4				TS	3B	Imp38 See1P
29	SU60200620	STB	S	1			1	1	57	-56	57	-52	4				DR	3B	3B TS Stone
30	SU60300620	STB	S	2			1	1	83	-30	86	-23	3B				DR	3A	Imp55 See4P
31	SU60400620	STB	S	2			1	1	83	-30	86	-23	3B				DR	3A	Imp55 See4P
32	SU60500620	STB	S	2			1	1	69	-44	69	-40	3B				DR	3A	Imp45 See4P
33	SU60300610	STB	S	1			1	1	51	-62	51	-58	4				DR	3B	Imp35 See1P
34	SU60400610	STB	S	2			1	1	64	-49	64	-45	3B				DR	3B	Imp40 See1P
35	SU60500610	STB	S	2			1	1	81	-32	86	-23	3B				DR	3B	Imp60 See1P
36	SU60500600	STB	S	2			1	1	63	-50	63	-46	3B				DR	3B	Imp40 See1P
37	SU59800637	PGR	S	1			1	1	38	-75	38	-71	4				DR	3B	Imp30 See1P
1P	SU60400610	STB	S	3			1	1	76	-36	83	-25	3B				DR	3B	3A TS Stone
2P	SU60500640	STB	S	3			1	1	100	-9	100	-4	3A				DR	3A	2 TS Stone
3P	SU60700640	STB	E	4			1	1	78	-32	81	-24	3B				DR	3B	3A TS Stone
4P	SU60300630	STB	S	2			1	1	104	-7	113	7	3A				DR	3A	2 TS Stone

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	SUBS IMP	SUBS SPL	SUBS CALC	
3	0-29	MZCL	10YR43						3	0	HR	10						Y	+5% Chalk
	29-50	HZCL	10YR44						0	0	CH	25		M				Y	+5% Flints
	50-60	CH	10YR81						0	0	HR	2		P				Y	Hard Chalk
4	0-30	MZCL	10YR43						2	0	HR	5						Y	
	30-48	MZCL	10YR44						0	0	CH	25		M				Y	+5% Flints
	48-75	CH	10YR81						0	0	HR	2		P				Y	
5	0-29	MZCL	10YR4243						2	0	HR	5						Y	
	29-35	MZCL	10YR43						0	0	CH	25		M				Y	+5% Flints
	35-45	MZCL	10YR43						0	0	CH	50		M				Y	
	45-75	CH	10YR81						0	0	HR	2		P				Y	
9	0-30	MZCL	10YR43						4	2	HR	12						Y	
	30-40	MZCL	10YR44						0	0	CH	65		M				Y	
	40-70	HZCL	10YR44						0	0	CH	50		M				Y	
	70-75	CH	10YR81						0	0	HR	2		P				Y	
10	0-28	MZCL	10YR42						3	1	HR	10						Y	
	28-35	MZCL	10YR43						0	0	HR	10		M				Y	+20% Chalk, Imp
11	0-28	MZCL	10YR4243						3	1	HR	10						Y	+2% Chalk
	28-37	MZCL	10YR73						0	0	CH	30		M				Y	+5% Flints
	37-70	CH	10YR81						0	0	HR	2		P				Y	Hard Chalk
12	0-28	MZCL	10YR42						0	0	CH	10						Y	+5% Flints
	28-37	MZCL	10YR73						0	0	CH	30		M				Y	+5% Flints, Imp
13	0-30	MZCL	10YR43						16	10	HR	30							
	30-35	MZCL	10YR4454						0	0	HR	50		M					Imp Flints
14	0-30	MZCL	10YR43						4	2	HR	10						Y	+5% Chalk
	30-45	MZCL	10YR54						0	0	CH	50		M				Y	+10% Flints
	45-70	CH	10YR81						0	0	HR	15		P				Y	
15	0-30	MZCL	10YR43						7	3	HR	15						Y	+5% Chalk
	30-50	MZCL	10YR44						0	0	HR	25		M				Y	+10% Chalk, Imp
16	0-30	MZCL	10YR43						6	2	HR	15							
	30-55	HZCL	10YR44						0	0	HR	15		M					
	55-80	CH	10YR81						0	0	HR	5		P				Y	
17	0-35	MZCL	10YR4342						6	2	HR	15						Y	
	35-45	HZCL	10YR44						0	0	HR	10		M				Y	
	45-55	MZCL	10YR44						0	0	CH	50		M				Y	ChalkRubble, Imp
18	0-35	MZCL	10YR43						5	0	HR	15						Y	
	35-60	MZCL	10YR44						0	0	HR	10		M				Y	+15% Chalk, Imp

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	SUBS IMP	SUBS SPL	SUBS CALC	
19	0-30	MZCL	10YR43						12	2	HR	5					Y		+15% Chalk
	30-35	MZCL	10YR44						0	0	CH	50		M			Y		Chalk Rubble
	35-70	CH	10YR81						0	0	HR	5		P			Y		
20	0-28	MZCL	10YR4344						9	4	HR	20							
	28-40	MZCL	10YR5464						0	0	HR	35		M			Y		+5% Chalk, Imp
21	0-28	ZL	10YR5242						20	12	HR	32							
	28-35	MZCL	10YR5464						0	0	HR	35		M					Imp Flints
22	0-25	MZCL	10YR4353						8	3	HR	20							
	25-35	MZCL	10YR5464						0	0	HR	35		M					Imp Flints
23	0-30	MZCL	10YR4243						11	4	HR	20							
	30-45	HZCL	10YR4454	75YR56	C		00MN00	S	0	0	HR	15		M					Imp Flints
24	0-35	MZCL	10YR43						8	2	HR	15							
	35-60	HZCL	10YR44				00MN00		0	0	HR	10		M					
25	0-30	MZCL	10YR43						2	0	HR	5							
	30-55	HZCL	10YR44						0	0	HR	5		M					+2% Chalk
	55-65	C	10YR44	10YR56	C			S	0	0	HR	10		M					Imp Flints
26	0-35	MZCL	10YR4344						5	2	HR	15					Y		+5% Chalk
	35-45	HZCL	10YR44	75YR56	C		00MN00	S	0	0	HR	10		M			Y		
	45-50	MZCL	10YR54						0	0	HR	10		M			Y		+50% Chalk
	50-80	CH	10YR81						0	0	HR	5		P			Y		
27	0-15	MZCL	10YR43						5	2	CH	20					Y		+10% Flint
	15-35	MZCL	10YR4344						0	0	CH	50		M			Y		+5% Flint
	35-60	CH	10YR81						0	0	HR	5		P			Y		
28	0-30	ZL	10YR4252						18	8	HR	35							
	30-38	ZL	10YR64						0	0	HR	35		M					Imp Flints
29	0-30	MZCL	10YR43						17	5	HR	23							
	30-40	HZCL	10YR44						0	0	HR	30		M			Y		Imp Flints
30	0-35	MZCL	10YR43						9	3	HR	13							
	35-55	MZCL	10YR44						0	0	HR	20		M					Imp Flints
31	0-35	MZCL	10YR43						8	2	HR	13							
	35-55	HZCL	10YR44						0	0	HR	20		M					Imp Flints
32	0-28	MZCL	10YR43						11	3	HR	16							
	28-40	MZCL	10YR44						0	0	HR	20		M					
	40-45	HZCL	10YR44						0	0	HR	10		M					Imp Flints

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	SUBS IMP	SUBS SPL	SUBS CALC	
33	0-30	MZCL	10YR43						14	5	HR	22							
	30-35	HZCL	10YR44						0	0	HR	30		M					Imp Flints
34	0-30	MZCL	10YR43						8	2	HR	13							
	30-40	MZCL	10YR44						0	0	HR	20		M					LargeFlints,Imp
35	0-32	MZCL	10YR43						14	3	HR	19							
	32-60	HZCL	10YR44						0	0	HR	25		M					LargeFlints,Imp
36	0-30	MZCL	10YR43						10	2	HR	15							
	30-40	MZCL	10YR44						0	0	HR	20		M					Imp Flints
37	0-25	MZCL	10YR43						13	7	HR	33							
	25-30	MZCL	10YR44						0	0	HR	35		M					Imp Flints
1P	0-32	MZCL	10YR33						12	4	HR	20							Flints Roots
	32-53	MZCL	10YR34						35	15	HR	47		M					Flints Roots
	53-58	HZCL	10YR44						32	15	HR	44		M					Flints Roots
	58-65	HZCL	10YR44						40	20	HR	56		M					Flints Roots
	65-70	GH	10YR44						0	0		0		P					Roots To 70cm
2P	0-30	MZCL	10YR42						7	2	HR	15					Y		Flints
	30-48	MZCL	10YR43						0	0	HR	10	WKCSAB	FR	M		Y		+5% Chalk
	48-55	MZCL	10YR5363						0	0	CH	30	WKCSAB	FR	M		Y		Roots +5%Flint
	55-80	CH	10YR81						0	0	HR	5		P			Y		Roots To 80cm
3P	0-28	MZCL	10YR43						12	2	HR	15					Y		+5% Chalk
	28-80	CH	10YR81						0	0	HR	15		P			Y		Roots to 75cm
4P	0-36	MZCL	10YR33						8	2	HR	15					Y		Flints
	36-56	MZCL	10YR34						4	0	HR	5	MDCSAB	FR	M		Y		Flints Roots
	56-70	MZCL	10YR36						5	0	HR	7	MDCSAB	FM	M		Y		Flints Roots
	70-75	MZCL	10YR36						0	0	HR	15	MDCSAB	FM	M		Y		Imp Stoney