1513/117/94

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Winchester District Local Plan
Barton Farm Winchester
Agricultural Land Classification
ALC Map and Report
July 1994
(AMENDED 24 10 97)

AGRICULTURAL LAND CLASSIFICATION, SUMMARY REPORT

WINCHESTER DISTRICT LOCAL PLAN
BARTON FARM WINCHESTER (AMENDED 24 10 97)

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 Winchester district of Hampshire The work forms part of MAFF s statutory input to the Winchester District Local Plan

1 2 Land at Barton Farm comprises 47 3 hectares of land to the north of Winchester in Hampshire An Agricultural Land Classification (ALC) survey was carried out in July 1994 The survey was undertaken at a detailed level on the agricultural land A total of 50 borings and three 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 it s physical or chemical characteristics impose long term limitations on it s use for agriculture The results of the original survey carried out in 1994 have been amended slightly to account for the additional information collected during the 1997 survey of land to the immediate north of the site (FRCA Ref 1513/116/97)

1 3 The work was carried out 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 wheat and winter oilseed rape The Urban area consists of farm buildings converted to offices and light industrial use and metalled tracks The agricultural buildings associated with the Urban area are used for machinery and fertiliser storage The Non Agricultural land primarily comprises footpaths scrub and an area of allotments to the south east of the site The woodland shown is primarily mature and deciduous The area shown as Not Surveyed was at the time of survey a field of winter oilseed rape which was largely inaccessible due to the advanced stage of growth

1 5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in Table 1 overleaf The map has been drawn at a scale of 1 10 000 It is accurate at this scale but any enlargement would be misleading This map supersedes any previous ALC survey information for this site

1 6 Appendix I 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

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	3.5	11.9	7.4
3a	23.1	78.3	48.8
3b	2.9	9.8	6.1
Not surveyed	13.5		28.6
Other Land	4.3		9.1
Total surveyed area	29.5	100	
Total site area	47.3		100

1.7 The agricultural land at this site has been classified as very good quality (Grade 2) to moderate quality (Subgrade 3b) including a substantial proportion of good quality (Subgrade 3a). Principal limitations include soil workability and soil droughtiness. Soil workability restrictions occur where land is mapped as Grade 2. Local climatic parameters interact with the medium textured topsoils encountered causing this land to be prone to structural damage during wetter periods were it to be stocked or cultivated. Soil droughtiness restricts land quality across the majority of the site. Where Subgrade 3a is mapped weathered chalk and flints over solid chalk at moderate depths cause profile available water to be restricted. Where solid chalk underlies moderately to extremely chalky soils at shallow depth Subgrade 3b is appropriate. Solid chalk has the effect of restricting plant rooting depth such that there is a reduction in the available water capacity of the soil leading to, in this case, a moderate to severe risk of drought stress to plants in most years.

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 Table 2 overleaf and these show that there is no overall climatic limitation affecting the site. However, according to unpublished Met Office data (1971) the majority of the site towards the east is shown as being frost prone.

2.4 Climatic and soil factors interact to influence soil wetness, workability and droughtiness limitations. Given the other limitations acting to affect land quality on this site frost risk (see para 2.3) does not have overriding significance. At this locality average annual rainfall and field capacity days are relatively high in

regional terms Therefore the likelihood of soil wetness and/or workability will be enhanced

Table 2 Climatic Interpolation

Grid Reference	SU479313	SU475311
Altitude (m AOD)	50	65
Accumulated Temperature (days Jan June)	1490	1473
Average Annual Rainfall (mm)	810	819
Field Capacity Days	177	178
Moisture deficit wheat (mm)	105	103
Moisture deficit potatoes (mm)	98	95
Overall Climatic Grade	1	1

3 Relief

3 1 The site lies at an altitude of approximately 50 75 m AOD falling gently from the north west and south east to form a dry valley running from south west to north east across the site Nowhere on the site does relief or gradient affect agricultural land quality

4 Geology and Soils

4 1 The published geological information (BGS 1975) shows the entire site to be underlain by Cretaceous Upper Chalk comprising soft white chalk with many flint nodules

4 2 The published soils information (SSEW 1983) shows the site to be underlain by soils of the Andover 1 Association The legend accompanying the map describes these as Shallow well drained calcareous silty soils over chalk on slopes and crests Deep calcareous and non calcareous fine silty soils in valley bottoms (SSEW 1983) Typically soils of this type were found across the site following the pattern described i e shallow and silty over chalk on the higher areas of land to the north west and south east of the site and deeper silty flinty soils towards the dry valley bottom On some of the mid slopes soils were found to be flinty and chalky over solid chalk at moderate depth

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 Land of very good quality has been mapped towards the south west of the site in the dry valley bottom The principal limitation is soil workability Profiles typically comprise a very slightly stony to slightly stony (2 6% v/v flints 2%>2cm and 1% weathered chalk) medium silty clay loam topsoil over a similarly stony medium silty clay loam upper subsoil This commonly overlies a moderately chalky (up to c 25% v/v weathered chalk) and very slightly stony (c 5% v/v flints) medium silty clay loam horizon which became impenetrable to the soil auger between 50 and 70cm In the pit observation typical of this soil type 3p (see Appendix III) this horizon extended to 85cm passing to a slightly more chalky (c 30% weathered chalk) and similarly flinty medium silty clay loam lower subsoil Plants roots were observed to this depth which given local climatic parameters and the moisture retentive nature of the soils is sufficient to provide adequate reserves of soil water for plant growth However due to the relatively wet local climate and the medium topsoil textures encountered this area is very slightly restricted by soil workability as during wetter periods the topsoil could be prone to structural damage were trafficking of machinery or stock grazing to occur

Subgrade 3a

5 4 Land of good quality has been mapped for the majority of this site The principal limitation is soil droughtiness Soils fall into two main types The first is found towards the centre of the site on the shallow slopes towards the dry valley bottom Typically profiles comprise a very slightly stony (2 5% v/v flints 2%>2cm) occasionally very slightly chalky (up to 5% v/v weathered chalk) medium silty clay loam topsoil This passes to a slightly to moderately stony (c 10 20% v/v flints) medium silty clay loam upper subsoil which was commonly impenetrable to the soil auger In the pit observation typical of this soil type 1p (see Appendix III) the upper subsoil passes to a moderately chalky (c 30% v/v weathered chalk) slightly stony (c 5% v/v flints) medium silty clay loam horizon passing to hard solid chalk at 65cm No roots were visible in the chalk horizon The restriction of rooting depth due to the chalk causes a reduction in available water such that there is a moderate risk of drought stress affecting plant growth and yield

The second soil type occurs towards the north west of the site and is typified by the pit observation 2p (see Appendix III) Profiles comprise a very slightly stony and chalky (c 5% v/v flints up to 10% weathered chalk) medium silty clay loam occasionally silt loam topsoil commonly passing to a very slightly to slightly stony (c 5 10% v/v flints) slightly to moderately chalky (c 5 15% weathered chalk) medium silty clay loam upper subsoil This was found to overlie chalk impenetrable to the soil auger between 30 and 50cm Occasionally the upper subsoil horizon comprised an extremely chalky (c 80% weathered chalk) medium silty clay loam over the pure chalk In the pit observation roots were visible to a depth of 85cm approximately 45cm into the slightly weathered blocky chalk The restriction of rooting caused by the chalk in combination with shallow soil depth means that there is a moderate reduction in water available to plants such that within the local climatic parameters Subgrade 3a is appropriate

Subgrade 3b

5 5 Land of moderate quality (Subgrade 3b) has been mapped on the land of highest altitude towards the west of the site The principal limitation is soil droughtiness Typically soils in this area comprise a very slightly stony (up to 3% v/v flints) slightly to moderately chalky (c 15 20% v/v weathered chalk) medium silty clay loam topsoil occasionally passing to a shallow extremely chalky (c 80% v/v weathered chalk) medium silty clay loam subsoil This directly overlies blocky chalk between 20 and 26cm which is impenetrable to the soil auger In the pit observation 2p (see Appendix III) roots were visible for approximately 45cm into slightly weathered blocky chalk A similar rooting depth has been assumed for these observations such that within local climatic parameters a severe restriction in plant available water occurs due to the chalk restricting plant rooting depth combined with a very shallow soil resource This leads to a severe risk of drought stress affecting plant growth and yield

ADAS Ref 1513/117/94
MAFF Ref EL15/594

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1975) Sheet 299 Winchester 1 50 000 Drift Edition

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

Meteorological Office (1971) Unpublished Climate data relating to Sheet 168 1 63 360

Meteorological Office (1989) Climatic datasets for Agricultural Land Classification

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 that 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 that restricts use to permanent pasture or rough grazing except for occasional pioneer forage crops

APPENDIX II

DEFINITION OF SOIL WETNESS CLASS

Wetness Class I

The soil profile is not wet within 70 cm depth for more than 30 days in most years

Wetness Class 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 180 days but only wet within 40 cm depth for 31 90 days in most years

Wetness Class 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

Wetness Class IV

The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth fro 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

Wetness Class V

The soil profile is wet within 40 cm depth for 211 335 days in most years

Wetness Class VI

The soil profile is wet within 40 cm depth for more than 335 days in most years

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents

SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a database This has commonly used notations and abbreviations as set out below

Boring Header Information

1 **GRID REF** *national grid square and 8 figure grid reference*

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

ARA Arable	**WHT** Wheat	**BAR** Barley
CER Cereals	**OAT** Oats	**MZE** Maize
OSR Oilseed rape	**BEN** Field Beans	**BRA** Brassicae
POT Potatoes	**SBT** Sugar Beet	**FCD** Fodder Crops
LIN Linseed	**FRT** Soft and Top Fruit	**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 measured by a hand held optical clinometer

4 **GLEY/SPL** Depth in cm to gleying or slowly permeable layers

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

6 **MB (WHEAT/POTS)** Moisture Balance

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

8 If any of the following factors are considered significant an entry of Y will be entered in the relevant column

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

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

OC Overall Climate	**AE** Aspect	**EX** Exposure
FR Frost Risk	**GR** Gradient	**MR** Microrelief
FL Flood Risk	**TX** Topsoil Texture	**DP** Soil Depth **ST** Topsoil Stones
CH Chemical	**WE** Wetness	**WK** Workability
DR Drought	**ER** Erosion Risk	**WD** Soil Wetness/Droughtiness

Soil Pits and Auger Borings

1 **TEXTURE** soil texture classes are denoted by the following abbreviations

S Sand	**LS** Loamy Sand	**SL** Sandy Loam
SZL Sandy Silt Loam	**CL** Clay Loam	
ZCL Silty Clay Loam	**SCL** Sandy Clay Loam	
C Clay	**SC** Sandy Clay	**ZC** Silty Clay
OL Organic Loam	**P** Peat	**SP** Sandy Peat
LP Loamy Peat	**PL** Peaty Loam	**PS** Peaty Sand
MZ Marine Light Silts		

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

F Fine (more than 66% of the sand less than 0 2mm)
M Medium (less than 66% fine sand and less than ɔɔ% coarse sand)
C Coarse (more than 33% of the sand larɡer 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 ɔ5% clay)

2 **MOTTLE COL** Mottle colour

3 **MOTTLE ABUN** Mottle abundance expressed as a percentaɡe 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 outstandinɡ features of the horizon

5 **PED COL** Ped face colour

6 **STONE LITH** One of the followinɡ is used

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

Stone contents (>2cm >6cm and total) are ɡiven in percentaɡes (by volume)

7 **STRUCT** the degree of development size and shape of soil peds are described using the following notation

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

8 **CONSIST** Soil consistence is described using the following notation

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

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

10 **POR** Soil porosity If a soil horizon has less than 0 5% biopores >0 5 mm a Y will appear in this column

11 **IMP** If the profile is impenetrable a Y will appear in this column at the appropriate horizon

12 **SPL** Slowly permeable layer If the soil horizon is slowly permeable a Y will appear in this column

13 **CALC** If the soil horizon is calcareous a Y will appear in this column

14 Other notations
APW available water capacity (in mm) adjusted for wheat
APP available water capacity (in mm) adjusted for potatoes
MBW moisture balance wheat
MBP moisture balance potatoes

SOIL PIT DESCRIPTION

S t N me WINCHESTER LP BARTON FM P t N mbe 1P

G d Refe nce SU47803130 A e ag A l Ra f ll 818 mm
Acc mu l ted Tempe t 1473 deg ee d y
F ld C p c ty L l 178 d y
L d Us Whe t
Slope d A pect 04 d g es SE

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 26	MZCL	10YR43 00	2	5	HR					Y
26 44	MZCL	10YR44 00	10	20	HR		WKMSAB	FR	G	Y
44 65	MZCL	10YR44 81	0	30	CH				M	Y
65 77	CH	10YR81 00	0	2	HR				P	Y

Wet ess G ade 2 Wet ss Class I
Gl y g cm
SPL cm

Drought G ade 3A APW 100mm MBW 3 mm
APP 109mm MBP 14 mm

FINAL ALC GRADE 3A
MAIN LIMITATION D ought

SOIL PIT DESCRIPTION

S t Name WINCHESTER LP BARTON FM P t N be 2P

G id R f ence SU47603140 A g A l R f ll 818 mm
A mul ted Tempe t 1473 deg ee d y
F ld C p c ty L l 178 d y
L d U Wh at
Sl pe d A pect 01 deg s S

HORIZON		TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0	24	MZCL	10YR42 00	0	5	HR					Y
24	37	MZCL	10YR44 54	0	10	HR		WKCSAB	FR	M	Y
37	90	CH	10YR81 00	0	2	HR				P	Y

Wet G d 2 W t Cl I
Gley g cm
SPL cm

Drought G de 3A APW 104mm MBW 1 mm
APP 096mm MBP 1 mm

FINAL ALC GRADE 3A
MAIN LIMITATION D o ght ss

SOIL PIT DESCRIPTION

S te Name WINCHESTER LP BARTON FM P t N b 3P

G d R f nce SU47603100 A g A l R f ll 818 mm
Acc mulated Tempe t 1473 deg ee day
F eld Cap c ty Le l 178 d y
L d Us Wh t
Sl pe a d Aspe t 01 deg S

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 25	MZCL	10YR43 00	2	6	HR					Y
25 85	MZCL	10YR44 54	1	5	HR		MDMSAB	FR	G	Y
85 90	MZCL	10YR56 81	0	30	CH				M	Y

Wet ss G de 2 Wet ess Clas I
Gley ng cm
SPL cm

Drought G d 1 APW 139mm MBW 36 mm
APP 135mm MBP 40 mm

FINAL ALC GRADE 2
MAIN LIMITATION Wo k b l ty

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WHEAT GRADE	POTS AP	POTS MB	M REL	DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1P	SU47803130	WHT	SE	04			1	2	100	3 109	14	3A				DR	3A	PIT77 ROOTS65
2P	SU47603140	WHT	S	01			1	2	104	1 096	1	3A				DR	3A	PIT90 ROOTS85
3P	SU47603100	WHT	S	01			1	2	139	36 135	40	1				WK	2	PIT 85 AUG 90
9	SU47603150	WHT	S	01			1	2	077	26 077	18	3B				DR	3A	IMPCH 50 2P
13	SU47403140	WHT	E	01			1	2	070	33 070	25	3B				DR	3A	IMPCH 40 2P
14	SU47503140	WHT	E	01			1	2	068	35 068	27	3B				DR	3A	IMPCH 35 2P
15	SU47603140	WHT	S	01			1	2	077	26 077	18	3B				DR	3A	IMPCH&HR 45 2P
19	SU47403130	WHT	E	01			1	2	044	59 044	51	4				DR	3A	IMPCH 28 2P
20	SU47503130	WHT	SE	01			1	2	076	27 076	19	3B				DR	3A	IMPCH 45 2P
21	SU47603130	WHT	S	01			1	2	115	12 125	30	2				WD	2	IMPCH 72 2P
22	SU47703130	WHT	S	04			1	2	045	58 045	50	4				DR	3A	IMPHR 25 1P
23	SU47803130	WHT	SE	03			1	2	036	69 036	62	4				DR	3A	IMPHR 20 1P
24	SU47903130	WHT	W	04			1	2	085	18 085	10	3A				DR	3A	IMPHR 50 1P
25	SU48103130	WHT					1	2	085	18 085	10	3A				WD	2	IMPCH 50 2P
26	SU48203130	WHT					1	2	070	33 070	25	3B				DR	3A	IMPSOIL 40
27	SU47403120	WHT	S	01			1	2	041	62 041	54	4				DR	3B	IMPCH 25 2P
28	SU47503120	WHT	S	01			1	2	045	58 045	50	4				DR	3A	IMPHR 25 1P
29	SU47603120	WHT	S	03			1	2	072	31 072	23	3B				DR	3A	IMPCH 50 2P
30	SU47703120	WHT	E	04			1	2	054	49 054	41	3B				DR	3A	IMPHR 25 1P
31	SU47803120	WHT	S	03			1	2	050	53 050	45	4				DR	3A	IMPHR 29 1P
32	SU47903120	WHT	NW	04			1	2	050	53 050	45	4				DR	3B	IMPCH 30 2P
33	SU48003120	WHT	W	01			1	2	082	21 082	13	3B				DR	2	IMPCH 50 2P
34	SU48103120	WHT					1	2	060	43 060	35	3B				DR	3A	IMPCH 35 2P
35	SU47503110	WHT	SE	01			1	2	052	51 052	43	4				DR	3A	IMPHR 30 1P
36	SU47603110	WHT	SE	03			1	2	078	25 078	17	3B				DR	3A	IMPCH 50 2P
37	SU47703110	WHT	S	02			1	2	100	3 109	14	3A				WK	2	IMPHR 65 3P
38	SU47803110	WHT	N	01			1	2	073	30 073	22	3B				DR	3A	IMPHR 40 1P/3P
39	SU47903110	WHT	NW	02			1	2	054	49 054	41	3B				DR	3A	IMPHR 30 1P
40	SU48003110	WHT	W	02			1	2	040	63 040	55	4				DR	3B	IMPCH 25 2P
42	SU47503100	WHT	S	01			1	2	039	64 039	56	4				DR	3B	IMPCH 25 2P
43	SU47603100	WHT	S	02			1	2	107	4 119	24	3A				WK	2	IMPHR 70 3P
44	SU47703100	WHT	N	02			1	2	054	49 054	41	3B				DR	3A	IMPHR 30 1P/3P
45	SU47603090	WHT	N	02			1	2	086	17 086	9	3A				DR	3A	IMPHR 50 1P/3P

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	CALC	
1P	0 26	mzcl	10YR43 00						2	0	HR	5					Y		@ BORING 23
	26 44	mzcl	10YR44 00						10	0	HR	20	WKMSAB	FR	G		Y		
	44 65	mzcl	10YR44 81						0	0	CH	30			M		Y		5% HR ROOTS VIS 65
	65 77	ch	10YR81 00						0	0	HR	2			P		Y		NO ROOTS VIS IN CH
2P	0 24	mzcl	10YR42 00						0	0	HR	5					Y		@ BORING 15
	24 37	mzcl	10YR44 54						0	0	HR	10	WKCSAB	FR	M		Y		10% CH BDY 35-40
	37 90	ch	10YR81 00						0	0	HR	2			P		Y		INC 5% SOIL ROOT 85
3P	0 25	mzcl	10YR43 00						2	0	HR	6					Y		
	25 85	mzcl	10YR44 54						1	0	HR	5	MDMSAB	FR	G		Y		
	85 90	mzcl	10YR56 81						0	0	CH	30			M		Y		+5% FLINTS
9	0 25	mzcl	10YR43 53						0	0	CH	5					Y		+3% FLINTS
	25 35	mzcl	10YR52 00						0	0	CH	20			M		Y		
	35 50	ch	10YR81 00						0	0	HR	2			P		Y		IMP CHALK 50
13	0 29	mzcl	10YR42 00						1	0	HR	1					Y		+5% CHALK
	29 38	mzcl	10YR53 00						0	0	CH	20			M		Y		5% FLINTS
	38 40	ch	10YR81 00						0	0	HR	2			M		Y		IMP CHALK 40
14	0 28	zl	10YR42 00						1	0	HR	5					Y		+5% CHALK
	28 30	mzcl	10YR54 00						0	0	CH	80			M		Y		
	30 35	ch	10YR81 00						0	0	HR	2			M		Y		IMP CHALK 35
15	0 25	mz l	10YR43 53						0	0	HR	5					Y		+5% CHALK SEE 2P
	25 45	mzcl	10YR54 00						0	0	CH	15			M		Y		+5% HR IMP CH&HR 45
19	0 20	mzcl	10YR52 00						2	0	HR	2					Y		15% CHALK
	20 26	mzcl	10YR54 00						0	0	CH	80			M		Y		
	26 28	ch	10YR81 00						0	0	HR	2			M		Y		IMP CHALK 28
20	0 28	mzcl	10YR42 00						3	0	HR	3					Y		5% CHALK
	28 40	mzcl	10YR44 54						0	0	HR	5			M		Y		5% CHALK
	40 45	ch	10YR81 00						0	0	HR	2			M		Y		IMP CHALK 45
21	0 30	zl	10YR43 53						0	0	HR	5					Y		+5% CHALK
	30 40	mzcl	10YR54 00						0	0	CH	10			M		Y		5% FLINTS
	40 70	mzcl	10YR74 81						0	0	CH	40			M		Y		5% FLINTS
	70 72	ch	10YR81 00						0	0	HR	2			P		Y		IMP CHALK 72
22	0 20	mzcl	10YR44 00						1	0	HR	5					Y		1% CHALK
	20 25	mzcl	10YR43 00						0	0	HR	10			M		Y		3% CH IMPFLINTS 25
23	0 20	mzcl	10YR44 00						1	0	HR	5					Y		1%CH IMPFLINTS201P
24	0 27	mzcl	10YR43 00						0	0	HR	2					Y		1% CHALK
	27 50	mzcl	10YR44 00						0	0	HR	10			M		Y		IMP FLINTS 50

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES COL	ABUN	CONT	PED COL	GLEY	STONES 2	6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
25	0 25	mzcl	10YR43 00						0	0	HR	2					Y		+1% CHALK
	25 44	mzcl	10YR44 00						0	0	HR	5		M			Y		+3% CHALK
	44 50	mzcl	10YR54 44						0	0	CH	30		M			Y		+4% HR IMP CHALK 50
26	0 25	mzcl	10YR43 00						0	0	HR	2					Y		
	25 32	mzcl	10YR44 00						0	0	HR	4		M			Y		
	32 40	mzcl	10YR54 44						0	0	CH	30		M			Y		+5%HR IMP40 DRYSOIL
27	0 22	mzcl	10YR52 00						0	0	CH	20					Y		
	22 25	ch	10YR81 00						0	0	HR	2		M			Y		IMP CHALK 25
28	0 25	mzcl	10YR42 00						3	0	HR	3					Y		+3% CH IMPFLINTS 25
29	0 25	mzcl	10YR43 00						0	0	HR	3					Y		+5% CHALK
	25-30	mzcl	10YR54 81						0	0	CH	50		P			Y		
	30 50	ch	10YR81 00						0	0	HR	2		P			Y		IMP CHALK 50
30	0 23	zl	10YR43 00						1	0	HR	5					Y		+1% CHALK
	23 25	mzcl	10YR53 00						0	0	HR	2		M			Y		+1% CH IMPFLINTS 25
31	0 29	mzcl	10YR43 00						3	0	HR	10					Y		+5% CH IMPFLINTS 29
32	0 25	mzcl	10YR43 00						0	0	CH	10					Y		
	25 30	ch	10YR81 54						0	0	HR	2		M			Y		IMP CHALK 30
33	0 24	mzcl	10YR43 00						0	0	HR	2					Y		+2% CHALK
	24 45	mzcl	10YR44 81						0	0	CH	30		M			Y		
	45-50	mzcl	10YR54 00						0	0	CH	60		M			Y		+2% HR IMP CHALK 50
34	0 27	mzcl	10YR43 00						0	0	CH	5					Y		+2% FLINTS
	27 35	mzcl	10YR54 00						0	0	CH	60		M			Y		3% HR IMP CHALK 35
35	0 25	mzcl	10YR42 00						2	0	HR	2					Y		+5% CHALK
	25 30	mzcl	10YR54 00						0	0	HR	10		M			Y		5% CH IMPFLINTS 30
36	0 28	mzcl	10YR42 52						0	0	HR	3					Y		+5% CHALK
	28 35	mzcl	10YR54 56						0	0	CH	15		M			Y		+5% FLINTS
	35 50	ch	10YR81 56						0	0	HR	2		P			Y		INC10%SOIL IMPCH 50
37	0 26	mzcl	10YR44 54						1	0	HR	2					Y		
	26 35	mzcl	10YR44 00						0	0	HR	2		M			Y		+1% CHALK
	35 65	mzcl	10YR44 00						0	0	CH	25		M			Y		2% HR IMPFLINTS 65
38	0 30	mzcl	10YR43 00						1	0	HR	2					Y		1% CHALK
	30 40	h l	10YR44 00						0	0	HR	2		M			Y		2% CH IMPFLINTS 40
39	0 25	mzcl	10YR43 00						0	0	CH	5					Y		+2% FLINTS
	25 30	mzcl	10YR44 00						0	0	CH	30		M			Y		+8% HR IMPFLINTS 30

				-MOTTLES			PED		STONES				STRUCT/	SUBS				
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL	GLEY	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
40	0 20	mzcl	10YR43 00						0	0	CH	15					Y	
	20 25	ch	10YR81 54						0	0	HR	5		M			Y	IMP CHALK 25
42	0 20	mzcl	10YR52 00						3	0	CH	20					Y	
	20 25	ch	10YR81 00						0	0	HR	2		M			Y	IMP CHALK 25
43	0 28	mzcl	10YR43 53						0	0	HR	3					Y	+3% CHALK SEE 3P
	28 60	mzcl	10YR54 56						0	0	CH	10		M			Y	3% FLINTS
	60 70	mzcl	10YR54 56						0	0	HR	10		M			Y	+5% CH IMPFLINTS 70
44	0 20	mzcl	10YR43 00						1	0	HR	2					Y	+1% CHALK
	20 30	mzcl	10YR44 00						0	0	CH	2		M			Y	+1% HR IMPFLINTS 30
45	0 25	mzcl	10YR42 52						0	0	HR	5					Y	+2% CHALK
	25 50	mzcl	10YR54 00						0	0	HR	5		M			Y	IMP FLINTS 50