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Winchester District Local Plan
Land at South Wonston.
Agricultural Land Classification
ALC Map and Report
April 1995

AGRICULTURAL LAND CLASSIFICATION REPORT

WINCHESTER DISTRICT LOCAL PLAN.
LAND AT SOUTH WONSTON.

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 preparation of the Winchester District Local Plan.

1.2 The site comprises approximately 31 hectares of land to the north and east of South Wonston. An Agricultural Land Classification (ALC) survey was carried out in April 1995. The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed. A total of 27 borings and two soil inspection pits were described in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land, (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose a long term limitation on its use for agriculture.

1.3 The survey 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 on the site comprised permanent grassland, grassland ley, set-aside and cereals. Areas of non-agricultural land comprise scrubland and a farm track, and areas of urban marked on the map comprise private dwellings and tarmac roads.

1.5 The distribution of grades and subgrades is shown on the attached ALC map, and the areas and extent are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
3a	24.5	79.5	95.0
3b	1.3	4.2	5.0
Non-agricultural	0.5	1.6	100% (25.8 ha.)
Urban	4.5	14.7	
Total area of site	30.8	100%	

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.

1.7 All of the agricultural land on the site has been classified as Subgrade 3a, good quality agricultural land, with the exception of a small area adjacent to Sanctuary Farm which has been classified as Subgrade 3b, moderate quality land. The major limitation associated

with the land on this site is droughtiness due to the presence of chalk bedrock at shallow depths restricting the depth of rooting and hence the amount of water available to the plant. The land mapped as Subgrade 3b has been restricted to this subgrade due to the presence of a stony clay cap overlying the chalk resulting in a wetness and workability restriction. In addition much of this area has very flinty topsoils causing an impediment to cultivations and crop growth, restricting the quality of the land.

2. Climate

2.1 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe climatic 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 (day °C Jan-June), as a measure of the relative warmth of a locality.

2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met. Office 1989). The details are given in the table below and these show that there is no overall climatic limitation affecting the site.

2.4 However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations.

2.5 No local climatic factors such as exposure or frost risk are believed to affect the site. However the climate at this location is relatively moist in a regional context, therefore the likelihood of a soil wetness limitation may be increased.

Table 2 : Climatic Interpolation

Grid Reference	SU 474 363
Altitude (m)	100
Accumulated Temperature (Day °C, Jan-June)	1431
Average Annual Rainfall (mm)	822
Field Capacity (days)	177
Moisture Deficit, Wheat (mm)	99
Moisture Deficit, Potatoes (mm)	90
Overall Climatic Grade	1

3. Relief

3.1 The site is located on the crest of a ridge and falls gently to the north and south. The altitude of the site ranges from approximately 85-105 m AOD and the gradients range from 0-3°. Altitude and relief therefore do not impose any limitation on agricultural use.

4. Geology and Soils

4.1 The published geological map (BGS, 1975) shows the site to be underlain by Upper Chalk, comprising soft white chalk with many flint nodules.

4.2 The published Soil Survey map (SSEW, 1983) shows the soils on the site to comprise those of the Andover 1 association. These are described as 'shallow well drained calcareous silty soils over chalk on slopes and crests' (SSEW 1983).

4.3 Detailed field examination revealed that the majority of the site is underlain by relatively shallow, well drained silty soils overlying chalk. A small area adjacent to Sanctuary Farm comprises moderately stony, fine silty over clayey soils over the chalk.

5. Agricultural Land Classification

5.1 The location of the soil observation points are shown on the attached sample point map.

Subgrade 3a

5.2 The majority of the site has been classified as Subgrade 3a with the main limitation being due to droughtiness. Soils in this unit typically have a medium silty clay loam or silt loam topsoil over a medium silty clay loam subsoil containing a large percentage of weathered chalk. Below approximately 35-50 cm depth the fissured chalk is encountered , although both deeper and shallower variants were found locally. Two soil inspection pits showed the range of soil profiles within this mapping unit. Soil profile pits revealed rooting into the fissured chalk to a depth of approximately 80 cm from the surface. Moisture balance calculations indicate that these soils will be moderately droughty causing crop stress during the drier periods of the year limiting the land quality to Subgrade 3a.

Subgrade 3b

5.3 At the northern edge of the site adjacent to Sanctuary Farm, a small area of Subgrade 3b has been mapped due to the presence of moderately stony heavy textured soils capping the chalk. The soils in this area typically have a medium or heavy silty clay loam topsoil, which is moderately flinty overlying a mottled stony clay subsoil which in turn overlies the fissured chalk. Measurement of stone content in the topsoil indicated that over much of this area there is more than 15% by volume of flints >2cm in diameter, thereby limiting the land to Subgrade 3b on the basis of topsoil stoniness. In addition the presence of mottled, slowly permeable clay subsoils also imposes a workability restriction on the soils with a heavy silty clay loam topsoil further limiting the land quality to this subgrade. The occasional presence of slowly permeable clay subsoils further restricts this land to Subgrade 3b.

SOURCES OF REFERENCE

British Geological Survey (1975), Sheet No. 299, Winchester, 1:50,000 Series (drift edition).

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

Meteorological Office (1989), Climatological Data for Agricultural Land Classification.

Soil Survey of England and Wales (1983), Sheet 6, Soils of South East England, 1:250,000 and accompanying legend.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUBGRADES

Grade 1 : Excellent Quality Agricultural Land

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

Grade 2 : Very Good Quality Agricultural Land

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

Grade 3 : Good to Moderate Quality Land

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

Subgrade 3a : Good Quality Agricultural Land

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

Subgrade 3b : Moderate Quality Agricultural Land

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

Grade 4 : Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (eg. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 : Very Poor Quality Agricultural Land

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

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

Agricultural Buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg. polythene tunnels erected for lambing) may be ignored.

Open Water

Includes lakes, ponds and rivers as map scale permits.

Land Not Surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above, eg. buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will be shown.

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

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

Definition of Soil Wetness Classes

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

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

[1]The number of days specified is not necessarily a continuous period.
[2]'In most years' is defined as more than 10 out of 20 years.

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

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

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

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

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

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

12. **IMP** : If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropiate 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 : WINCH LP SOUTH WONSTON Pit Number : 1P

Grid Reference: SU47203620
Average Annual Rainfall : 822 mm
Accumulated Temperature : 1432 degree days
Field Capacity Level : 177 days
Land Use :
Slope and Aspect : 01 degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 27	MZCL	75YR43 00	7	10	HR					Y
27- 45	MZCL	75YR43 00	0	50	CH		STFSAB	FR	G	Y
45- 80	CH	10YR82 00	0	2	HR				M	Y

Wetness Grade : 2
Wetness Class : I
Gleying : cm
SPL : No SPL

Drought Grade : 3A
APW : 100mm MBW : 1 mm
APP : 99 mm MBP : 9 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WINCH LP SOUTH WONSTON Pit Number : 2P

Grid Reference: SU47703590
Average Annual Rainfall : 822 mm
Accumulated Temperature : 1432 degree days
Field Capacity Level : 177 days
Land Use : Set-aside
Slope and Aspect : 02 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	MZCL	75YR44 00	9	12	HR					Y
25- 80	CH	05Y 81 00	0	2	HR				M	Y

Wetness Grade : 2
Wetness Class : I
Gleying : cm
SPL : No SPL

Drought Grade : 3A
APW : 87 mm MBW : -12 mm
APP : 86 mm MBP : -4 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	SU47103650	PGR					1	2	98	-1	101	11	3A				DR	3A	
1P	SU47203620	DER	N	01			1	2	100	1	99	9	3A				DR	3A	
2	SU47203650	LEY					1	2	101	2	100	10	3A				DR	3A	CH50
2P	SU47703590	SAS	S	02			1	2	87	-12	86	-4	3A				DR	3A	
3	SU47303650	LEY			S26	026	3	3B	96	-3	108	18	3A				WE	3B	I70 QSPL
4	SU47403650	SAS			S20		1	2	81	-18	85	-5	3A				TS	3B	CH35
5	SU47103640	PGR					1	2	101	2	104	14	3A				DR	3A	
6	SU47203640	LEY			040	040	3	3A	107	8	104	14	2				WE	3A	QSPLCH60
7	SU47303640	LEY					1	2	115	16	111	21	2				DR	2	CH65
8	SU47403640	SAS					1	2	73	-26	76	-14	3B				TS	3B	CH30
9	SU47503640	PGR					1	2	86	-13	90	0	3A				DR	3A	CH35
10	SU47103630	CER					1	2	108	9	124	34	2				DR	2	I70FLINT
11	SU47203630	LEY					1	2	98	-1	109	19	3A				DR	3A	I65FLINT
12	SU47303630	LEY					1	2	96	-3	98	8	3A				DR	3A	CH45
13	SU47403630	SAS					1	2	101	2	101	11	3A				DR	3A	CH48
14	SU47503630	PGR					1	2	82	-17	85	-5	3A				DR	3A	CH32
15	SU47103620	CER					1	2	118	19	112	22	2				DR	2	CH65
19	SU47503620	PGR	N	01			1	2	99	0	103	13	3A				DR	3A	CH50
20	SU47603620	PGR	N	03			1	2	95	-4	95	5	3A				DR	3A	IMP50
21	SU47103614	CER					1	2	84	-15	88	-2	3A				DR	3A	CH35
24	SU47603610	PGR					1	2	59	-40	59	-31	3B				DR	3A	IMP33 SEE2P
25	SU47503600	PGR					1	2	94	-5	95	5	3A				DR	3A	
26	SU47603600	PGR	S	03			1	2	60	-39	60	-30	3B				DR	3A	IMP30 SEE2P
27	SU47503590	PGR	SE	02			1	2	82	-17	82	-8	3A				DR	3A	CH30
28	SU47603590	SAS	S	02			1	2	98	-1	101	11	3A				DR	3A	IMP60
29	SU47703590	SAS	S	02			1	2	52	-47	52	-38	3B				DR	3A	IMP35 SEE2P
30	SU47603580	PGR	SE	02			1	2	98	-1	104	14	3A				DR	3A	CH50
31	SU47703580	SAS	S	01			1	2	109	10	122	32	2				DR	2	I75CH
32	SU47753570	SAS	S	02			1	2	100	1	110	20	3A				DR	3A	ICH60 SEE2P

				----MOTTLES-----			PED		----STONES----			STRUCT/	SUBS				
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL.	GLEY	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC	
1	0-29	mzcl	75YR43 00						10	0	HR	12					Y		
	29-40	mzcl	75YR43 00						0	0	CH	10		M			Y		
	40-45	mzcl	10YR64 00						0	0	CH	20		G			Y		
	45-75	ch	05Y 81 00						0	0	HR	2		M			Y		
1P	0-27	mzcl	75YR43 00						7	0	HR	10					Y		
	27-45	mzcl	75YR43 00						0	0	CH	50	STFSAB FR	G			Y		
	45-80	ch	10YR82 00						0	0	HR	2		M			Y		
2	0-30	mzcl	75YR43 00						9	0	HR	12					Y		
	30-45	mzcl	75YR44 00						0	0	HR	15		M			Y		
	45-50	mzcl	10YR64 00						0	0	CH	40		G			Y		
	50-80	ch	05Y 81 00						0	0	HR	2		M			Y		
2P	0-25	mzcl	75YR44 00						9	0	HR	12					Y		
	25-80	ch	05Y 81 00						0	0	HR	2		M			Y		
3	0-26	hzcl	75YR43 00						9	0	HR	12					Y		
	26-55	c	75YR46 54	75YR56 00	C		00MN00 00	S	0	0	HR	10		M		Y	Y		
	55-70	hzcl	10YR64 00					S	0	0	CH	30		M			Y		IMP70 FLINTS
4	0-20	mzcl	75YR43 00						15	2	HR	18					Y		
	20-35	c	75YR46 00	75YR58 00	C		00MN00 00	S	0	0		0		M			Y		
	35-65	ch	05Y 81 00					S	0	0	HR	2		M			Y		
5	0-25	mzcl	75YR43 00						5	0	HR	8					Y		
	25-45	mzcl	10RY64 00						0	0	CH	30		G			Y		
	45-75	ch	05Y 81 00						0	0	HR	2		M			Y		
6	0-29	mzcl	75YR43 00						9	0	HR	12					Y		
	29-40	hzcl	75YR46 00						0	0	HR	15		M			Y		
	40-60	c	75YR54 00	75YR56 00	C		00MN00 00	Y	0	0	HR	10		M		Y	Y		
	60-90	ch	05Y 81 00					Y	0	0	HR	2		M			Y		
7	0-30	mzcl	75YR43 00						8	0	HR	10					Y		
	30-40	mzcl	75YR44 00						0	0	HR	10		M			Y		
	40-65	c	75YR54 00	00MN00 00	F				0	0	CH	5		M			Y		
	65-95	ch	05Y 81 00						0	0	HR	2		M			Y		
8	0-25	mzcl	75YR43 00						15	2	HR	19					Y		
	25-30	mzcl	75YR46 00						0	0	CH	50		G			Y		
	30-60	ch	05Y 81 00						0	0	HR	2		M			Y		
9	0-25	mzcl	10YR43 00						3	0	HR	6					Y		
	25-35	c	75YR54 00	75YR58 00	C			S	0	0	HR	2		M			Y		
	35-65	ch	05Y 81 00						0	0	HR	2		M			Y		
10	0-23	mzcl	75YR43 00						9	0	HR	12					Y		
	23-35	mzcl	75YR44 00						0	0	HR	5		M			Y		
	35-70	mzcl	10YR64 00						0	0	CH	20		G			Y		IMP70 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	
11	0-30	mzcl	75YR43 00						9	0	HR	12					Y		
	30-50	hzcl	75YR54 00	00MN00	00	F			0	0	HR	8		M			Y		
	50-65	mzcl	10YR64 00						0	0	CH	30		G			Y		IMP65 FLINTS
12	0-30	mzcl	75YR43 00						9	0	HR	12					Y		
	30-40	mzcl	75YR44 00						0	0	HR	10		M			Y		
	40-45	mzcl	10YR64 00						0	0	CH	50		G			Y		
	45-75	ch	05Y 81 00						0	0	HR	2		M			Y		
13	0-27	mzcl	75YR43 00						10	0	HR	13					Y		
	27-48	mzcl	75YR54 00						0	0	CH	40		G			Y		
	48-78	ch	05Y 81 00						0	0	HR	2		M			Y		
14	0-25	mzcl	75YR43 00						3	0	HR	6					Y		
	25-32	mzcl	75YR54 00						0	0	CH	50		G			Y		
	32-62	ch	05Y 81 00						0	0	HR	2		M			Y		
15	0-30	mzcl	75YR43 00						6	0	HR	10					Y		
	30-40	mzcl	75YR44 00						0	0	HR	5		M			Y		
	40-65	mzcl	10YR64 00						0	0	CH	20		M			Y		
	65-95	ch	05Y 81 00						0	0	HR	2		M			Y		
19	0-30	mzcl	75YR43 00						3	0	HR	3					Y		
	30-50	mzcl	75YR54 00						0	0	CH	40		G			Y		
	50-65	ch	05Y 81 00						0	0	HR	2		M			Y		
20	0-28	zl	75YR43 00						3	0	HR	7					Y		
	28-45	mzcl	75YR55 00						0	0	CH	30		G			Y		
	45-50	ch	05Y 81 00						0	0	HR	2		M			Y		IMP50 CHALK
21	0-25	mzcl	75YR43 00						6	0	HR	10					Y		
	25-35	mzcl	10YR64 00						0	0	CH	50		G			Y		
	35-65	ch	05Y 81 00						0	0	HR	2		M			Y		
24	0-23	zl	75YR43 00						3	0	HR	8					Y		
	23-33	ch	05Y 81 00						0	0	HR	2		M			Y		IMP33 CHALK
25	0-33	zl	75YR43 00						3	0	HR	3					Y		
	33-55	ch	05Y 81 00						0	0	HR	2		M			Y		
26	0-27	zl	75YR43 00						6	0	HR	8					Y		
	27-30	ch	05Y 81 00						0	0	HR	2		M			Y		IMP30 CHALK
27	0-30	zl	75YR43 00						3	0	HR	3					Y		
	30-45	ch	05Y 81 00						0	0	HR	2		M			Y		
28	0-35	zl	75YR43 00						5	3	HR	9					Y		
	35-50	mzcl	75YR44 00						0	0	CH	75		M			Y		
	50-60	ch	05Y 81 00						0	0	HR	2		M			Y		

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	
29	0-25	mzcl	75YR44 00						8	2	HR	12					Y		
	25-35	ch	05Y 81 00						0	0	HR	2		M			Y		IMP35 CHALK
30	0-30	mzcl	75YR43 00						5	0	HR	8					Y		
	30-50	mzcl	75YR55 00						0	0	CH	15		M			Y		
	50-70	ch	05Y 81 00						0	0	HR	2		M			Y		
31	0-30	mzcl	75YR44 00						7	1	HR	9					Y		
	30-50	hzcl	05YR56 00						0	0	HR	7		M			Y		
	50-70	mzcl	75YR64 00						0	0	CH	20		G			Y		
	70-75	ch	05Y 81 00						0	0	HR	5		M			Y		
32	0-30	mzcl	75YR44 00						6	0	HR	6					Y		
	30-45	hzcl	75YR55 00						0	0	HR	15		M			Y		
	45-60	mzcl	75YR64 00						0	0	CH	15		G			Y		
	60-65	ch	05Y 81 00						0	0	HR	2		M			Y		