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Basingstoke & Deane Borough Local Plan
Land at North Waltham
Agricultural Land Classification
ALC Map and Report
May 1995

AGRICULTURAL LAND CLASSIFICATION REPORT

BASINGSTOKE & DEANE BOROUGH LOCAL PLAN
LAND AT NORTH WALTHAM

1. Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for an area of agricultural land which may be the subject of a representation for a lorry park in connection with the Local Plan. This forms part of MAFF's input to the preparation of the Basingstoke and Deane Borough Local Plan.

1.2 Approximately 15 hectares of land between the A33 and M3, to the south east of North Waltham, in Hampshire, was surveyed during May 1995. The Agricultural Land Classification (ALC) survey was undertaken at a detailed level of approximately one boring per hectare. A total of 15 auger borings and 1 soil inspection pit 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 its physical or chemical characteristics impose long-term limitations on its use for agriculture.

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 permanent pasture.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in Table 1 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
2	6.3	40.4	40.9
3a	4.2	26.9	27.3
3b	4.9	31.4	31.8
Farm Buildings	0.2	1.3	100% (15.4)
Total area of site	15.6	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 The area has been classified as very good quality, Grade 2, land with smaller areas of good quality, Subgrade 3a, and moderate quality, Subgrade 3b. The key limitations are topsoil stoniness and soil droughtiness with a gradient limitation in the south west corner. The Grade 2 is the most extensive and the soil profiles generally comprise slightly stony, deep and freely drained, silty soils with a relatively high percentage of large stones in the topsoil.

Two areas of good quality, Subgrade 3a, land occur towards the north east and south west ends of the site. Here the topsoils contain a higher percentage of large stones. In the south west corner of the site an area of steeply sloping land has been assigned to moderate quality, Subgrade 3b, on the basis of both a significant gradient restriction and severe topsoil stone limitation.

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 (day degrees Celsius, 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. However, climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations. At this locality the relatively high average annual rainfall (in regional terms) and corresponding high field capacity days increase the likelihood of soil wetness and moderate the risk of drought.

2.4 No local climatic factors such as frost risk and exposure are believed to affect the site.

Table 2 : Climatic Interpolations

Grid Reference	SU 572 457	SU 570 452	SU 577 461	SU 568 450
Altitude (m)	130	145	145	160
Accumulated Temperature (day degrees, Jan-June)	1391	1373	1373	1357
Average Annual Rainfall (mm)	838	854	854	863
Field Capacity (days)	183	185	185	187
Moisture Deficit, Wheat (mm)	95	92	92	90
Moisture Deficit, Potatoes (mm)	83	80	80	77
Overall Climatic Grade	1	1	1	1

3. Relief

3.1 The land on this site slopes from 150m AOD in the north east corner to 130m AOD in the dry valley through the centre of the site. The land then rises again to 160m AOD in the south west with a small area of steeply sloping land (7.5 degrees) near to the top of the hill at the extreme west (close to boring 14). The gradients at this locality are sufficient to restrict the land to a maximum grading of 3b due to limitations in the safe and efficient use of farm machinery.

4. Geology and Soil

4.1 The British Geological Survey (1978), sheet 284, Basingstoke (Solid & Drift Edition, 1:50,000 scale), shows the entire site to be underlain by the Upper Chalk.

4.2 The Soil Survey of England and Wales (1983) maps the Carstens association across the southern end of the site, and in the extreme north, while the Charity 2 soil association is mapped through the centre of the site. The soils of the Carstens association are described as 'well drained fine silty over clayey, clayey and fine silty soils, often very flinty.' (SSEW, 1993) and the Charity 2 soils are 'well drained flinty fine silty soil in valley bottoms. Calcareous fine silty soils over chalk or chalk rubble on valley sides, sometimes shallow.' (SSEW, 1993).

4.3 Detailed field survey broadly confirms the existence of well drained soils similar to those described in paragraph 4.2., with deeper silty soils in the valley bottom and shallow, more flinty soils, often with clayey subsoils overlying chalk on the valley sides.

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 The majority of the site has been classified as very good quality agricultural land. The soil profiles here comprise slightly to moderately flinty (10-20% total stone) medium silty clay loam topsoils which contain a relatively high proportion of large flints (6-9% >2cm and 1-2% >6cm). The upper subsoils are similar in texture, though more stony (10-25% total flint), thus generally becoming impenetrable to the soil auger at between 40-80cm depth. *Occasional borings overlie chalk at depth, however, soil inspection pit 1 is thought to be* more typical of these profiles with similar, slightly heavier or slightly less silty horizons, containing 40-50% total flint, and continuing to 120cm. The soils are well drained (Wetness Class I) but due to the comparatively moist local climatic land is limited to Grade 2 due to a minor workability restriction of the medium silty clay loam topsoils. Additionally, in this local climatic regime the total stone content within the profile will only slightly reduce the amount of profile available water for crops but this is sufficient to increase the likelihood of soil droughtiness. The proportion of larger stones within the topsoil will also interfere with crop establishment as well as increase production costs by causing tyre wear and damage to agricultural machinery. This land has therefore been assigned to Grade 2 on the basis of a slight soil workability, droughtiness and topsoil stoniness limitation.

Subgrade 3a

5.4 Two small areas of the site, corresponding to the midslopes, have been classified as good quality agricultural land. The soil profiles here are similar in texture to the Grade 2 land

but are shallower and more flinty. The total stone content in the topsoil measures 16-20% flints with 11-14% >2cm (of which 1-4% >6cm in diameter). This increases to 20-25% in the upper subsoil before the profile becomes impenetrable to the auger at 50-70cm depth. The percentage of large stones can increasingly interfere with mechanised operations, hinder plant establishment and reduce profile available water for crops. This land has therefore been assessed as Subgrade 3a due to a moderate topsoil stoniness and soil droughtiness limitation.

5.4 **Subgrade 3b**

In the south west of the site the soil profiles comprise stony medium silty clay loam topsoils over heavier upper subsoils. In the topsoil the total flint content measure 15-25% with 9-16% >2cm (of which 2-11% >6cm). The upper subsoil usually contains 20-25% flint and occasionally 50% chalk fragments before the weathered chalk bedrock is encountered at 40-50cm depth in most profiles. It has been assumed that plant roots are able to extract water from the relatively soft chalk to a depth of 75cm. Profile available water for crops will therefore be reduced. However, in addition, the large quantity of flints >2cm or >6cm will significantly impede crop establishment and increase production costs by causing damage to agricultural machinery during cultivations. This land has therefore been classified as Subgrade 3b principally on the basis of a moderately severe topsoil stoniness limitation.

5.5 In the south west of the site a steeply sloping hillside (7.5 degrees) is also mapped within the Subgrade 3b unit as the gradient is such that the safe and efficient use of agricultural machinery is restricted.

SOURCES OF REFERENCE

British Geological Survey (1974), Sheet No. 284, Basingstoke, 1:50,000 Scale (solid & 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, 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, religous buildings, cemetries. 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 : B'STOKE LP,NORTH WALTHAM Pit Number : 1P

Grid Reference: SU57204570 Average Annual Rainfall : 846 mm
Accumulated Temperature : 1379 degree days
Field Capacity Level : 184 days
Land Use : Permanent Grass
Slope and Aspect : 02 degrees SW

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	MZCL	10YR43 00	8	20	HR					
28- 40	MZCL	10YR44 00	0	25	HR			FR	M	
40- 60	MCL	10YR44 00	0	40	HR			FR	M	
60-120	MCL	10YR44 00	0	50	HR			FR	M	

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

Drought Grade : 2 APW : 106mm MBW : 13 mm
APP : 87 mm MBP : 6 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Topsoil Stoniness

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	SU57604610	PGR	NW	02			1	2	85	-8	90	9	3A				ST	2	Imp 60 see Pit
1P	SU57204570	PGR	SW	02			1	2	106	13	87	6	2				ST	2	DR/WK also 2
2	SU57704610	PGR					1	2	108	15	98	17	2				ST	2	DR/WK also 2
3	SU57504600	PGR	N	02			1	2	98	5	106	25	2				ST	2	DR/WK also 2
4	SU57604600	PGR					1	2	70	-23	70	-11	3B				ST	2	Imp 45 see Pit
5	SU57404590	PGR	NW	02			1	2	87	-6	98	17	3A				ST	3A	DR also 3A
6	SU57504590	PGR					1	2	80	-13	85	4	3A				ST	3A	Dr also 3A
7	SU57304580	PGR	SW	02			1	2	105	12	110	29	2				ST	2	DR/WK also 2
8	SU57204570	PGR	SW	03			1	2	71	-22	71	-10	3B				ST	2	Imp 50 see Pit
9	SU57104560	PGR					1	2	65	-28	65	-16	3B				ST	2	Imp 40 see Pit
10	SU56904540	RGR	NE	01			1	2	83	-10	88	7	3A				ST	3A	
11	SU56804530	RGR	NE	02			1	2	62	-31	62	-19	3B				ST	3B	
12	SU57104530	PGR	W	01			1	2	75	-18	75	-6	3A				ST	3A	
13	SU57004520	PGR	N	02			1	2	85	-8	88	7	3A				ST	3B	
14	SU56904510	PGR	NE	06			1	2	87	-6	89	8	3A				ST	3B	Rooting to 75
15	SU56874505	PGR	NE	02			1	2	90	-3	93	12	3A				ST	3A	Rooting to 75

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	
1	0-25	mzcl	10YR43 00						6	1	HR	12							
	25-60	mzcl	10YR44 00						0	0	HR	20		M					
1P	0-28	mzcl	10YR43 00						8	0	HR	20							
	28-40	mzcl	10YR44 00						0	0	HR	25		FR	M				Too stony to
	40-60	mcl	10YR44 00						0	0	HR	40		FR	M				structure
	60-120	mcl	10YR44 00						0	0	HR	50		FR	M				horizons 2-4
2	0-30	mzcl	10YR43 00						7	2	HR	15							
	30-50	mzcl	10YR44 00						0	0	HR	25		M					
	50-65	mzcl	10YR44 00						0	0	HR	30		M					
	65-95	hzcl	10YR54 00						0	0	HR	50		M					
	95-105	ch	10YR81 00						0	0	HR	2		P				Y	
3	0-25	mzcl	10YR43 00						8	2	HR	12							
	25-60	hzcl	10YR44 00						0	0	HR	12		M					
	60-75	zc	75YR68 00						0	0	HR	25		M					
4	0-25	mzcl	10YR53 00						6	2	HR	14							
	25-45	mzcl	75YR54 00						0	0	HR	15		M					
5	0-28	mzcl	10YR43 00						14	4	HR	20							
	28-70	hzcl	10YR44 00						0	0	HR	25		M					
6	0-30	mzcl	10YR43 00						14	3	HR	20							
	30-60	hzcl	10YR44 00						0	0	HR	25		M					
7	0-25	mzcl	10YR43 00						9	0	HR	16							
	25-35	mzcl	10YR43 00						0	0	HR	10		M					
	35-75	mzcl	10YR44 00						0	0	HR	10		M					
	75-80	hzcl	75YR54 00						0	0	HR	25		M					
8	0-25	mzcl	10YR43 00						9	0	HR	18							
	25-45	mzcl	10YR44 00						0	0	HR	25		M					
	45-50	hzcl	10YR46 00						0	0	HR	35		M					
9	0-28	mzcl	10YR43 00						6	2	HR	10							
	28-40	mzcl	10YR44 00						0	0	HR	20		M					
10	0-28	mzcl	10YR44 00						11	1	HR	16							
	28-45	mzcl	10YR56 00						0	0	HR	20		M					
	45-60	mzcl	10YR54 00						0	0	HR	25		M					
11	0-20	mzcl	10YR53 00						16	2	HR	20							
	20-35	mzcl	10YR44 00						0	0	HR	25		M					
	35-45	hzcl	75YR56 44						0	0	HR	35		M					
12	0-25	mzcl	10YR44 00						11	3	HR	16							
	25-35	mzcl	10YR56 00						0	0	HR	18		M					
	35-50	hzcl	75YR56 44						0	0	HR	20		M					

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
13	0-25	mzcl	10YR43 00						16	8	HR	25						
	25-45	hzcl	10YR44 00	00MN00	00	F			0	0	HR	20		M				
	45-75	ch	10YR81 00						0	0	HR	5		P				Y
14	0-30	mzcl	10YR43 00						14	11	HR	20						
	30-40	hzcl	10YR43 00						0	0	CH	50		M				Y
	40-75	ch	10YR81 00						0	0	HR	2		P				Y
15	0-30	mzcl	10YR43 00						9	6	HR	15						
	30-50	zc	10YR44 00						0	0	HR	20		M				
	50-75	ch	10YR81 00						0	0	HR	2		P				Y