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Newbury District Local Plan
Land Around J12 M4
Agricultural Land Classification
ALC Map And Report
November 1993

NEWBURY DISTRICT LOCAL PLAN
LAND AROUND J12 M4, THEALE, BERKSHIRE
AGRICULTURAL LAND CLASSIFICATION, REPORT

1.0 Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on several areas of land around J12 M4, Theale, Berkshire. The work forms part of MAFF's statutory input to the preparation of the Newbury District Local Plan.

1.2 Approximately 32 ha of land was surveyed in October 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 34 soil auger borings and 2 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 its physical or chemical characteristics impose long term limitations on its use for agriculture.

1.3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.

1.4 At the time of the survey the landuse on the site was Set-aside, oilseed rape and ploughed bare land.

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

Table 1: Distribution of grades and subgrades

Grade	Area (ha)	% of Site	% of Agricultural Area
3a	3.6	11.0	11.6%
3b	27.5	85.9	88.4%
Non-agricultural	0.8	2.5	100% (31.1 ha)
Urban	0.1	0.3	
Total	32.0 ha	100%	

1.6 Appendix 1 gives a general description of the grades and subgrades and landuse 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 agricultural land on the site has been classified as Subgrade 3a, good quality land and Subgrade 3b moderate quality land. Subgrade 3a land forms only a small proportion of the land concerned. This land is found directly north of J12 consisting of medium clay loam soils over shallow chalk parent material, droughtiness being the limiting factor. A small area of land to the north east is limited by droughtiness being over hard rock at 90cm. A final strip of Subgrade 3a occurs in the east, consisting of medium topsoils over poorly structured subsoils. These soils are limited to Subgrade 3a on soil wetness.

1.8 The majority of the area consists of Subgrade 3b land. Of this, areas to the north west and south west consist of heavy, poorly structured silty soils, land quality being limited by workability and soil wetness. The remainder of the Subgrade 3b land has been disturbed in the past and is very variable in texture and quality and is therefore limited to Subgrade 3b on variability alone.

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 the overall climatic limitation are annual average 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 5 km gridpoint dataset (Met Office 1989). The details are given in the table below and show that there is no overall climatic limitation affecting the site.

2.4 No local climatic factors such as exposure or frost risk affect the site.

Table 2: Climatic Interpolations

Grid Reference :	SU 649715
Altitude (m) :	45
Accumulated Temperature (days) :	1475
Average Annual Rainfall (mm) :	686
Field Capacity (days) :	143
Moisture Deficit, Wheat (mm) :	114
Moisture Deficit, Potatoes (mm) :	108
Overall Climatic Grade :	1

3. Relief

3.1 The site lies at an altitude of approximately 45 m AOD, the majority of the land being level and the remainder sloping gently south east and south west. Nowhere on the site does relief affect agricultural land quality.

4.0 Geology and Soils

The relevant geological sheet for the site (Geological Survey of Great Britain (England & Wales) Sheet 268, Reading), shows the underlying geology to be a combination of Upper Chalk and Reading beds (brightly mottled clay and sand with gravel) with a drift cover of alluvium, loam and valley gravel.

4.2 The published soils information for the area shows the site to comprise a mixture of soil series - Thames 1 and 2 (a poorly and very poorly drained calcareous groundwater gley formed over clayey alluvium); Coombe (brown calcareous soil formed over silty chalk head); Sulham (a peaty gley soil, formed over non-calcareous loamy alluvium); Swanmore (a non-calcareous surface-water gley formed over gley and mottled Eocene clay).

5.0 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 is shown on the attached sample point map.

Subgrade 3a

5.3 Subgrade 3a land forms only a small proportion of the land concerned. Land to the north of the site consists of medium clay loam topsoils over permeable, well drained (Wetness Class I) heavy clay loam upper subsoils at 30-50 cm depth, in turn over medium silty clay loam lower subsoils at 50-70 cm depth containing at least 50-60% total weathered chalk passing to pure chalk below this depth. Root penetration below 50 cm was good and soils experience a moderate droughtiness limitation as available water for plant growth is restricted.

A further small area of Subgrade 3a land is found to the north east of the site. Soils consist of very slightly stony medium sandy loam topsoils over well drained (Wetness Class I) very slightly stony sandy clay loam upper subsoils, to a depth of approximately 70 cm, in turn over very slightly stony heavy clay loam to a depth of approximately 90 cm. Below this depth hard rock consisting of flints was encountered. Soil depth over this area was variable with 90 cm being a maximum depth found. Due to variability an overall grading of Subgrade 3a is found on this land with soil droughtiness as the key limitation.

5.5 The final area of Subgrade 3a land is found in the east of the site. Soils consist of very slightly stony medium sandy loam, sandy clay loam or medium silty clay loam topsoils over imperfectly drained (Wetness Class III) gleyed, slowly permeable silty clay and clay subsoils to 120 cm. These soils are limited to Subgrade 3a by wetness.

Subgrade 3b

5.6 The majority of the area consists of Subgrade 3b land. Of this, areas to the north west, west and south west of the site consist of mainly very slightly stony heavy silty clay

loam with occasional medium silty clay loam topsoils over poorly drained (Wetness Class IV) gleyed silty clay and clay subsoils. These conditions were confirmed by the digging of two detailed soil inspection pits. Pit 1 to the north west gave a medium clay loam topsoil over a moderately developed coarse sub-angular blocky, gleyed, permeable, heavy clay loam upper subsoil over a weakly developed, gleyed, slowly permeable clay subsoil from 39-64 cm. Pit 2 to the south of the site gave a heavy silty clay loam topsoil to 29 cm over a gleyed, slowly permeable, moderately developed coarse angular blocky upper subsoil to 50 cm, in turn over a gleyed, slowly permeable, weakly developed coarse angular blocky subsoil to 95 cm.

5.7 The remainder of the Subgrade 3b land has been disturbed in the past and is very variable in terms of texture, depth and the inclusion of concrete and other extraneous material. A complicated droughtiness and workability pattern results and this land has therefore been assessed as no better than Subgrade 3b.

ADAS Reference: 0202/222/93
MAFF Reference: EL 02/297

Resource Planning Team
Guildford Statutory Group
ADAS Reading

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 on the 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.

Grade 3 : Good To Moderate Quality Agricultural Land

Land with moderate limitations which affect the choice of crops, 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.

Sub-grade 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.

Sub-grade 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 very 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 : 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 re-claimed 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/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial 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

REFERENCES

* 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.

* British Geological Survey (1946), Sheet No. 268 Reading, 1:63,360.

* Soil Survey of England and Wales (1967), Sheet No. 268 Reading, 1:63,360.

APPENDIX III

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

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

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for 31-90 days in most years.

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer within 80cm depth, it is wet within 40cm depth for 91-210 days in most years.

Wetness Class V

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

Wetness Class VI

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

(The number of days is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.)

APPENDIX IV

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 **HRT** : Horticultural Crops **PGR** : Permanent Pasture **LEY** : Ley Grass **RGR** : Rough Grazing
SCR : Scrub **CFW** : Coniferous Woodland **DCW** : Deciduous Woodland **HTH** : Heathland **BOG** : Bog or Marsh
FLW : Fallow **PLO** : Ploughed **SAS** : Set aside **OTH** : Other

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 **CH** : Chemical **WE** : Wetness **WK** : Workability
DR : Drought **ER** : Soil Erosion Risk **WD** : Combined 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
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 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

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

6. **STONE LITH** : One of the following is used.

HR : all hard rocks and stones **MSST** : soft, medium or coarse grained sandstone
SI : soft weathered igneous or metamorphic **SLST** : soft oolitic or dolimitic limestone
FSST : soft, fine grained sandstone **ZR** : soft, argillaceous, or silty rocks **CH** : chalk
GH : gravel with non-porous (hard) stones **GS** :gravel with porous (soft) stones

Stone contents (> 2cm, > 6cm and total) are given in percentages (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 appropiate 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

Site Name : THEALE NEWBURY DISTRICT Pit Number : 1P

Grid Reference: SU64727145 Average Annual Rainfall : 686 mm
Accumulated Temperature : 1475 degree days
Field Capacity Level : 143 days
Land Use : Cereals
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR33 00	0	0	F	MDCSAB
25- 39	HCL	10YR42 00	0	0	C	MDCSAB
39- 64	C	10YR41 00	0	0	C	WDCAB
64- 73	SCL	10YR63 00	0	0		

Wetness Grade : 3B Wetness Class : IV
Gleying :025 cm
SPL :039 cm

Drought Grade : 3A APW : 101mm MBW : -13 mm
APP : 109mm MBP : 1 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : THEALE NEWBURY DISTRICT Pit Number : 2P

Grid Reference: SU65427098 Average Annual Rainfall : 686 mm
Accumulated Temperature : 1475 degree days
Field Capacity Level : 143 days
Land Use : Bare Soil
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 29	HZCL	10YR32 00	0	0		MDCSAB
29- 50	ZC	10YR51 00	0	0	C	MDCAB
50- 95	ZC	10YR51 00	0	0	C	WDCAB
95-120	GH	10YR33 00	0	0		

Wetness Grade : 3B Wetness Class : IV
Gleying :029 cm
SPL :029 cm

Drought Grade : APW : 000mm MBW : 0 mm
APP : 000mm MBP : 0 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

MPLE 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	SU651 717	CER	01	000		1	1	086	-28	089	-19	3B				DR	3B	CH-40
1A	SU6502717	CER	01	000		1	1	100	-14	106	-2	3A				DR	3A	CH-50
1P	SU64727145	OTH		025	039	4	3B	101	-13	109	1	3A				WE	3B	
2P	SU65427098	PLO		029	029	4	3B	000	0	000	0					WE	3B	GH-95
3	SU655 717	CER	01	000		1	1	064	-50	065	-43	3B				DR	3B	HR-40
3A	SU654 717	CER	01	000		1	1	119	5	108	0	2				DR	2	HR-90
4	SU648 716	CER		025	025	4	3B	000	0	000	0					WE	3B	
6	SU653 716	OSR		000		1	1	050	-64	050	-58	4				DR	4	HR-30
7	SU647 715	CER		030	030	4	3B	000	0	000	0					WE	3B	
8	SU648 715	CER		050	050	3	3A	000	0	000	0					WE	3A	
9	SU649 715	CER		025		4	3B	000	0	000	0					WE	3B	
10A	SU65257152	OSR	03	000		1	1	204	90	119	11	1					1	RESTD
11	SU653 715	OSR		080	080	2	2	000	0	000	0					WE	2	
12	SU654 715	OSR	01	000		1	1	081	-33	082	-26	3B				DR	3B	HR-50
13	SU646 714	CER		025	025	4	3B	000	0	000	0					WE	3B	
14	SU647 714	CER		000		1		091	-23	095	-13	3B				DR	3B	
15	SU648 714	CER		000		1	1	077	-37	077	-31	3B				DR	3B	HR-40
16	SU654 714	OSR	04	015		4	3B	000	0	000	0					WE	3B	SPL-15
16A	SU6543714	OSR	04	000		1	1	150	36	111	3	2				DR	2	
17	SU655 714	PLO		045	045	3	3A	000	0	000	0					WE	3A	
18	SU656 714	PLO		080	080	2	2	000	0	000	0					WE	2	
19	SU657 714	PLO		020	020	4	3B	000	0	000	0					WE	3B	
20	SU658 714	PLO		025	025	4	3B	000	0	000	0					W	3B	
21	SU655 713	PLO		020	020	4	3B	000	0	000	0					WE	3B	
22	SU656 713	PLO		030	030	4	3B	000	0	000	0					WE	3B	
23	SU657 713	PLO		030	030	4	3B	000	0	000	0					WE	3B	
24	SU658 713	PLO		020	020	4	3B	000	0	000	0					WE	3B	
25	SU657 712	PLO		030	030	4	3B	000	0	000	0					WE	3B	
26	SU656 711	PLO		030	030	4	3B	000	0	000	0					WE	3B	
27	SU653 710	PLO		030	030	4	3B	000	0	000	0					WE	3B	
28	SU654 710	PLO		030	030	4	3B	000	0	000	0					W	3B	
29	SU655 710	PLO		030	030	4	3B	000	0	000	0					WE	3B	
30	SU656 710	PLO		025	025	4	3B	000	0	000	0					WE	3B	
31	SU657 710	PLO		020	020	4	3B	000	0	000	0					WE	3B	
32	SU654 709	PLO		025	025	4	3B	000	0	000	0					WE	3B	
33	SU655 709	PLO		030	030	4	3B	000	0	000	0					WE	3B	
34	SU656 709	PLO		025	025	4	3B	000	0	000	0					WE	3B	

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	mcl	10YR33 00						0	0		0						
	25-40	hcl	10YR44 00						0	0		0		M				
	40-60	ch	10YR81 00						0	0		0		M				Y
1A	0-30	mcl	10YR33 00						0	0		0						
	30-50	hcl	10YR44 00						0	0		0		M				
	50-70	ch	10YR81 00						0	0		0		M				Y
1P	0-25	mcl	10YR33 00	75YR46 00	F				0	0		0	MDCSAB	FM				
	25-39	hcl	10YR42 00	75YR44 00	C			Y	0	0		0	MDCSAB	FM	M	Y		
	39-64	c	10YR41 00	10YR58 00	C			Y	0	0		0	WDCAB	VM	P	Y	Y	
	64-73	scl	10YR63 00					Y	0	0		0			M		Y	
2P	0-29	hzcl	10YR32 00						0	0		0	MDCSAB	FM	M			Y
	29-50	zc	10YR51 00	10YR68 00	C			Y	0	0		0	MDCAB	FM	P	Y	Y	Y
	50-95	zc	10YR51 00	75YR56 00	C			Y	0	0		0	WDCAB	FM	P	Y	Y	Y
	95-120	gh	10YR33 00					Y	0	0		0					Y	
3	0-20	msl	10YR33 00						0	0	HR	2						
	20-40	msl	10YR44 00						0	0	HR	2		M				
	40-60	hr	10YR33 00						0	0		0		M				
3A	0-25	msl	10YR33 00						0	0	HR	1						
	25-70	scl	10YR44 00						0	0	HR	2		M				
	70-90	hcl	10YR44 00						0	0	HR	1		M				
	90-110	hr	10YR33 00						0	0		0		M				
4	0-25	mzcl	10YR32 00						0	0		0						
	25-100	zc	10YR51 00	10YR68 00	C			Y	0	0		0					Y	
6	0-20	scl	10YR34 00						0	0	HR	3						
	20-30	msl	10YR44 00						0	0	HR	2		M				
	30-50	hr	10YR33 00						0	0		0		M				
7	0-30	mzcl	10YR32 00						0	0		0						
	30-100	zc	10YR51 00	10YR68 00	C			Y	0	0		0					Y	
8	0-25	mcl	10YR32 00						0	0		0						
	25-50	hcl	10YR44 00						0	0		0						
	50-100	hcl	10YR51 00	10YR68 00	C			Y	0	0		0					Y	
9	0-25	hzcl	10YR32 00						0	0		0						
	25-100	zc	10YR51 00	10YR68 00	C			Y	0	0		0						
10A	0-120	msl	10YR34 00						0	0		0						
11	0-30	mcl	10YR33 00						0	0	HR	2						
	30-80	scl	10YR44 00						0	0	HR	1						
	80-120	zc	10YR51 00	10YR68 00	C			Y	0	0		0					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
12	0-25	hcl	10YR33 00						0	0	HR	5						
	25-50	scl	10YR44 00						0	0	HR	2		M				
	50-70	hr	10YR33 00						0	0		0		M				
13	0-25	mzcl	10YR32 00						0	0		0						
	25-80	zc	10YR51 00	10YR68 00	C			Y	0	0		0					Y	
	80-120	gh	10YR33 00					Y	0	0		0		M			Y	
14	0-25	mcl	10YR32 00						0	0	HR	2						
	25-55	hcl	10YR33 00						0	0	HR	1		M				
	55-75	gh	10YR33 00						0	0		0		M				
15	0-40	hzcl	10YR32 00						0	0	HR	1						
	40-60	hr	10YR33 00						0	0		0		M				
16	0-15	hcl	10YR32 00						0	0		0						
	15-120	c	10YR51 00	10YR58 00	C			Y	0	0		0						
16A	0-25	mcl	10YR33 00						0	0		0						
	25-120	scl	10YR44 00						0	0	HR	2		M				
17	0-45	mzcl	10YR32 00						0	0		0						
	45-120	zc	10YR51 00	10YR58 00	C			Y	0	0		0					Y	
18	0-20	msl	10YR32 00						0	0	HR	3						
	20-45	scl	10YR34 00						0	0		0						
	45-80	zc	10YR51 00						0	0		0						
	80-120	c	10YR51 00	10YR68 00	C			Y	0	0		0					Y	
19	0-20	hzcl	10YR32 00						0	0	HR	1						
	20-120	zc	10YR51 00	10YR58 00	C			Y	0	0		0					Y	
20	0-25	hzcl	10YR32 00						0	0	HR	1						
	25-100	zc	10YR51 00	10YR58 00	C			Y	0	0		0					Y	
21	0-20	hzcl	10YR32 00						0	0		0						
	20-100	zc	10YR51 00	10YR58 00	C			Y	0	0		0					Y	
22	0-30	hzcl	10YR32 00						0	0		0						
	30-90	zc	10YR51 00	10YR58 00	C			Y	0	0		0					Y	
23	0-30	mzcl	10YR32 00						0	0		0						
	30-100	zc	10YR51 00	10YR58 00	C			Y	0	0		0					Y	
24	0-20	hzcl	10YR32 00						0	0		0						
	20-100	zc	10YR51 00	10YR58 00	C			Y	0	0		0					Y	
25	0-30	hzcl	10YR32 00						0	0		0						
	30-100	zc	10YR51 00	10YR58 00	C			Y	0	0		0					Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
26	0-30	hzcl	10YR32 00						0	0	HR	10						Y
	30-80	zc	10YR51 00	10YR58 00	C			Y	0	0	HR	1					Y	Y
27	0-30	hzcl	10YR32 00						0	0		0						
	30-60	zc	10YR51 00	10YR68 00	F			Y	0	0		0					Y	
	60-120	zc	10YR51 00	10YR68 00	C			Y	0	0		0					Y	
28	0-30	hzcl	10YR32 00						0	0		0						Y
	30-65	zc	10YR51 00	10YR68 00	C			Y	0	0		0					Y	
	65-100	mcl	10YR51 00					Y	0	0		0					Y	
29	0-30	hzcl	10YR32 00						0	0		0						Y
	30-100	zc	10YR51 00	10YR68 00	C			Y	0	0		0					Y	
30	0-25	hzcl	10YR32 00						0	0	HR	2						
	25-100	zc	10YR61 00	10YR58 00	C			Y	0	0		0					Y	Y
31	0-20	hzcl	10YR32 00						0	0		0						Y
	20-100	zc	10YR51 00	10YR58 00	C			Y	0	0		0					Y	Y
32	0-25	hzcl	10YR32 00						0	0		0						Y
	25-90	zc	10YR61 00	10YR58 00	C			Y	0	0		0					Y	Y
33	0-30	hzcl	10YR32 00						0	0		0						Y
	30-100	zc	10YR51 00	75YR56 00	C			Y	0	0		0					Y	
34	0-25	hzcl	10YR32 00						0	0		0						Y
	25-80	zc	10YR61 00	10YR58 00	C			Y	0	0		0					Y	