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WEST OXFORDSHIRE LOCAL PLAN
SITE 99 : BAMPTON
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
AUGUST 1993

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1.0 Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on 8 sites in West Oxfordshire. The work forms part of MAFF's statutory input to the West Oxfordshire Local Plan.

1.2 Approximately 15 hectares of land relating to site 99 at Bampton, Oxfordshire was surveyed during August 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 15 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 At the time of the survey land had been recently ploughed.

1.4 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:5000. It is accurate at this scale, but any enlargement would be misleading.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Agricultural Area
2	5.0	32.5
3a	5.4	35.0
3b	5.0	32.5
Total agricultural area	15.4	100.0

1.5 Appendix 1 gives a general description of the grades, subgrades and land use categories identified in the survey.

1.6 The site has been classified as Grades 2 and Subgrades 3a and 3b. Grade 2 land is limited by workability, arising from the interaction of calcareous heavy topsoils and the local climatic regime. Subgrade 3a land shows slight drainage problems, as evidenced by shallow gleying. In the northern part of the site land is classified as Subgrade 3b. Poorly drained clayey soils are limited by wetness and workability resulting from the slow permeability of the subsoil.

2.0 Climate

2.1 The climatic criteria are considered first when classifying land since climate can be over-riding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

2.2 Estimates of climatic variables relevant to the assessment of land quality were obtained by interpolation from a 5 km grid point database, (Met Office, 1989) for a representative location in the survey area.

Table 2 : Climatic Interpolation

Grid Reference :	SP 319 035
Altitude (m) :	70
Accumulated Temperature: (degree days, Jan-June)	1439
Average Annual Rainfall (mm) :	683
Field Capacity (days) :	148
Moisture Deficit, Wheat (mm) :	107
Moisture Deficit, Potatoes (mm) :	99

2.3 The main parameters used in the assessment of an overall climatic limitation are, average annual rainfall, a measure of overall wetness, and accumulated temperature, as a measure of the relative warmth of a locality. In this instance, climate does not represent an overall limitation to agricultural land quality. In addition, no local climatic factors such as exposure or frost risk are significant.

2.4 However, there is an interaction between the field capacity level and soil factors which influences soil wetness and soil workability.

3.0 Relief

3.1 The site lies at an altitude of 70-75 m AOD, with land rising gently towards the north-west corner of the site. Nowhere on the site do altitude or gradient affect agricultural land quality.

4.0 Geology and Soil

4.1 British Geological Survey, Sheet 236, Witney (1982) shows the majority of the site to be underlain by Oxford Clay, with a small area of Second Terrace River Gravel deposits in the southern part of the site.

4.2 Soil Survey of England and Wales, Soils in Oxfordshire I (1982) maps the soil types at this locality. The north-west part of the site comprises the Evesham Association. These are described as being 'clayey over Jurassic or Cretaceous clay or clay-shale' (SSEW, 1982). A small area in the south-west of the site comprises the Badsey Association. These are 'typical brown calcareous earths, dry and very permeable' (SSEW, 1982). The remainder of the site comprises the Bampton Association. These are 'gleyic brown calcareous earths, associated with and partly derived from River Terrace deposits' (SSEW, 1982).

4.3 Detailed field examination generally found deep clay profiles, exhibiting varying degrees of imperfect drainage.

5.0 Agricultural Land Classification

5.1 The ALC grading of the site is primarily determined by soil and climatic factors. Approximately two-thirds of the site has been classified as 'best and most versatile' agricultural land.

5.2 Table 1 provides details of the area and extent of each grade. The distribution of ALC grades is shown on the attached ALC map.

5.2 The location of the soil observation points are shown on the attached auger boring map.

Grade 2

5.3 Land of very good quality has been assigned to the lower part of the site. Profiles typically comprise calcareous, very slightly stony (2% hard rock by volume) clay topsoils overlying calcareous stoneless clay upper and heavy clay loam lower subsoils. Gleying was evident in the subsoil, below 45 cm, due to waterlogged conditions caused by groundwater fluctuations. However, no slowly permeable layer was present and consequently these profiles are placed into Wetness Class I. The combination of the calcareous clay topsoils and field capacity days associated with the site means that the soil may be prone to structural damage. This is a factor in determining the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock. Thus this land is classed as Grade 2 due to a very slight workability limitation.

Subgrade 3a

5.4 A unit of good quality land has been mapped across the mid-slopes of the site. Very slightly stony (2% hard rock by volume) calcareous clay topsoils overlie clay subsoils. A gleyed, slowly permeable horizon was evident from about 52 cm depth. This gives rise to slight drainage impedance, such that Wetness Class II is appropriate. Combined with the calcareous clay topsoil and local field capacity day range this imposes a slight soil wetness and workability limitation on the land. Consequently this land is classed as Subgrade 3a. This land may be more prone to structural damage than the Grade 2 land.

Subgrade 3b

5.5 Moderate quality land has been mapped across the northern part of the site. This land corresponds to very slightly stony (2% hard rock by volume) clay topsoils overlying poorly structured clay subsoils. Gleying, caused by a shallow slowly permeable layer, was evident from below the topsoil. This severe wetness limitation means these profiles are placed into Wetness Class IV. The combination of Wetness Class, Field Capacity days and calcareous clay topsoils means this land is assigned to Subgrade 3b, due to a moderately severe soil wetness and soil workability limitation. This land is prone to structural damage and the timeliness of cultivations is the key to minimising this.

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 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/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

* British Geological Survey (1982), Sheet No. 236, Witney, 1:50,000

* 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 (1982), Soils in Oxfordshire I, Record No. 77, 1:25,000 map and accompanying legend

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 Abbreviations : Explanatory Note
* Soil Pit Descriptions
* Database Printout : Boring Level Information
* Database Printout : Horizon Level Information

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 : W. OXON LP - SITE 99 Pit Number : 1P

Grid Reference: SP31720387 Average Annual Rainfall : 683 mm
Accumulated Temperature : 1439 degree days
Field Capacity Level : 148 days
Land Use : Bare Soil
Slope and Aspect : 01 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	C	25 Y32 00	0	2		
25- 34	C	25 Y44 00	0	5		MDCSAB
34- 52	C	25 Y52 00	0	20	M	WKCSAB
52- 70	C	05 G51 00	0	0	F	

Wetness Grade : 3B Wetness Class : IV
Gleying :034 cm
SPL :034 cm

Drought Grade : 3A APW : 90 mm MBW : -17 mm
APP : 102mm MBP : 3 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : W. OXON LP - SITE 99 Pit Number : 2P

Grid Reference: SP31900368
Average Annual Rainfall : 683 mm
Accumulated Temperature : 1439 degree days
Field Capacity Level : 148 days
Land Use : Bare Soil
Slope and Aspect : 01 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 20	C	10YR42 00	0	2		
20- 45	C	10YR56 00	0	0		MDCSAB
45- 85	HCL	75YR46 00	0	0	C	MDCOAB - SPL

Wetness Grade : 2 3+
Wetness Class : I Til
Gleying : 045 cm
SPL : No SPL 45

Drought Grade : 2
APW : 116mm MBW : 9 mm
APP : 113mm MBP : 14 mm

FINAL ALC GRADE : 2
MAIN LIMITATION :

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	ALC LIMIT		COMMENTS
1	SP31600390	PLO	S	01	028	028	4	3B	92	-15	104	5	3A				WE	3B	SPL 28 CM
1P	SP31720387	PLO	E	01	034	034	4	3B	90	-17	102	3	3A				WE	3B	SPL 34 CM
2	SP31700390	PLO	S	01	020	020	4	3B	96	-11	101	2	3A				WE	3B	SPL 20 CM
2P	SP31900368	PLO	S	01	045		1	2	116	9	113	14	2				WD	2	GRADE 2 WK/DR
3	SP31800390	PLO	E	01	035	035	4	3B	94	-13	98	-1	3A				WE	3B	SPL 35 CM
4	SP31900390	PLO	E	01	060	060	2	3A	106	-1	109	10	3A				WE	3A	SPL 60 CM
5	SP32000390	PLO	SE	01	055	055	2	3A	103	-4	108	9	3A				WE	3A	SPL 55 CM
6	SP32100390	PLO			055	055	2	3A	106	-1	108	9	3A				WE	3A	SPL 55 CM
7	SP31500380	PLO	S	01	025	025	4	3B	87	-20	99	0	3A				WE	3B	SPL 25 CM
8	SP31800380	PLO			025	052	3	3A	113	6	91	-8	2				WK	3A	SPL 52 CM
9	SP31900380	PLO	S	01	028	028	4	3B	83	-24	89	-10	3B				WE	3B	SPL 28 CM
10	SP32000380	PLO	S	01	050		1	2	152	45	114	15	1				WK	2	YELLOW SUBSOIL
11	SP32100380	PLO			045		1	2	136	29	112	13	2				WD	2	GRADE 2 WK/DR
12	SP31900370	PLO	S	01	030		2	3A	136	29	113	14	2				WK	3A	GLEYED 30
13	SP32000370	PLO	S	01	050		1	2	152	45	114	15	1				WK	2	GLEYED 50
14	SP32100370	PLO			025		2	3A	117	10	102	3	2				WK	3A	IMP 75 CM; WET
15	SP31900360	PLO	S	01	048		1	2	151	44	113	14	1				WK	2	SLIGHTLY GLEYD

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
1	0-28	c	25 Y32 00						0	0	HR	2						Y
	28-40	c	25 Y43 53	10YR58 00	C			Y	0	0	HR	2		M			Y	Y
	40-70	c	25 Y53 00	75YR58 00	C			Y	0	0	HR	2		P			Y	Y
1P	0-25	c	25 Y32 00						0	0	HR	2						Y
	25-34	c	25 Y44 00						0	0	HR	5	MDCSAB FR	M	Y			Y
	34-52	c	25 Y52 00	10YR58 00	M			Y	0	0	HR	20	WKCSAB FR	M	Y		Y	Y
	52-70	c	05 G51 00	10YR58 00	F			Y	0	0		0		P	Y		Y	Y
2	0-20	c	25 Y42 00						0	0	HR	2						Y
	20-35	c	25 Y53 00	75YR58 00	C		10YR51 00	Y	0	0	HR	2		M			Y	Y
	35-60	c	05GY61 00	75YR68 00	M		25 Y63 00	Y	0	0	HR	2		P			Y	Y
	60-80	c	25 Y70 00	75YR58 00	M			Y	0	0	HR	10		P			Y	Y
2P	0-20	c	10YR42 00						0	0	HR	2						Y
	20-45	c	10YR56 00						0	0		0	MDCSAB FR	M				Y
	45-85	hcl	75YR46 00	10YR64 00	C		10YR56 00	Y	0	0		0	MDCOAB FR	M				Y
3	0-28	c	25 Y42 00						0	0	HR	5						Y
	28-35	c	25 Y53 54						0	0	HR	15		M				Y
	35-80	c	25 Y53 00	10YR58 00	C			Y	0	0	HR	5		P			Y	
4	0-30	c	25 Y43 00						0	0	HR	3						Y
	30-60	c	25 Y53 00						0	0	HR	2		M				Y
	60-85	c	25 Y53 00	75YR58 00	C		00MN00 00	Y	0	0	HR	2		P			Y	Y
5	0-30	c	25 Y43 00						0	0	HR	2						Y
	30-40	c	25 Y43 00						0	0	HR	2		M				Y
	40-55	c	25 Y53 00						0	0	HR	2		M				Y
	55-80	c	25 Y53 00	10YR58 68	C			Y	0	0	HR	2		P			Y	Y
6	0-30	c	25 Y42 00						0	0	HR	2						Y
	30-55	c	25 Y53 00						0	0	HR	2		M				Y
	55-85	c	25 Y53 00	10YR58 00	C		10YR61 00	Y	0	0	HR	2		P			Y	Y
7	0-25	c	25 Y42 00						0	0	HR	2						Y
	25-70	c	25 Y53 00	10YR58 00	C		10YR61 00	Y	0	0	HR	2		P			Y	Y
8	0-25	c	25Y 32 00						0	0	HR	8						Y
	25-52	c	25Y 52 53	10YR58 00	C			Y	0	0	HR	30		M				Y
	52-90	c	25Y 53 00	10YR58 00	M			Y	0	0	HR	15		P	Y		Y	Y
	90-120	c	25Y 53 00	10YR58 00	M			Y	0	0		0		P	Y		Y	Y
9	0-28	c	25Y 42 00						0	0	HR	1						Y
	28-60	c	25Y 53 00	10YR56 51	C			Y	0	0		0		P	Y		Y	
10	0-28	c	25Y 42 00						0	0	HR	2						Y
	28-50	c	10YR44 00	00MN00 00	F				0	0		0		M				Y
	50-75	hcl	10YR64 54	10YR56 00	C			Y	0	0		0		M				Y
	75-120	hcl	05Y 64 00	05Y 66 68	M			Y	0	0		0		M				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
11	0-18	c	25Y 42 00						0	0	HR	5						Y
	18-45	c	25Y 44 00						0	0		0		M				Y
	45-70	c	10YR53 00	10YR58	56 M		00MN00	00 Y	0	0		0		M				Y
	70-120	c	10YR56 00					Y	0	0		0		M				Y
12	0-12	c	10YR42 00						0	0	HR	2						Y
	12-30	c	10YR44 00						0	0		0		M				Y
	30-75	c	10YR53 00	75YR46	44 M		00MN00	00 Y	0	0		0		M				Y
	75-120	c	10YR56 00					Y	0	0	HR	2		M				Y
13	0-20	c	10YR42 00						0	0	HR	1						Y
	20-50	c	10YR44 00						0	0		0		M				Y
	50-120	hcl	10YR64 00	10YR56	58 M			Y	0	0		0		M				Y
14	0-25	c	25Y 42 00						0	0	HR	5						Y
	25-70	c	10YR53 00	10YR56	00 C		00MN00	00 Y	0	0	HR	15		M				Y
	70-120	hcl	10YR56 00					Y	0	0	HR	45		M				Y
15	0-22	c	10YR42 00						0	0	HR	2						Y
	22-48	c	10YR46 00						0	0	HR	1		M				Y
	48-120	hcl	10YR54 56	10YR58	00 C			Y	0	0		0		M				Y