Chichester District Local Plan
Objector Site OSH45
Land at Northchapel.
Agricultural Land Classification
ALC Map and Report
November 1995

Resource Planning Team
Guildford Statutory Group
ADAS Reading

ADAS Reference: 4203/167/95
MAFF Reference: EL 42/739
LUPU Commission: 02303

AGRICULTURAL LAND CLASSIFICATION REPORT

CHICHESTER DISTRICT LOCAL PLAN
OBJECTOR SITE OSH45: LAND AT NORTHCHAPEL

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 28.5 ha of land to the west of the village of Northchapel in West Sussex. The survey was carried out during November 1995.

2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Reading in connection with the preparation of the Chichester District Local Plan.

3. The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey, the agricultural land on the site comprised permanent grassland and cereals. The remainder of the land comprises woodland, private dwellings, farm buildings and roads.

Summary

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10000; it is accurate at this scale but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area
3a	13.2	42.7
3b	8.3	26.9
Other land	9.4	30.4
Total site area	30.9	100%

7. The fieldwork was conducted at an average density of 1 boring every 2 hectares. A total of 14 borings and two soil pits were described.

8. The majority of the agricultural land on the site has been classified as Subgrade 3a, good quality land, with soil wetness and topsoil stoniness as the main limitations. Soils within this mapping unit typically comprise medium clay loam topsoils which become heavier with depth, passing into clay and occasionally sandstone at depth. Profiles show signs of a wetness imperfection in the form of gleying from below the topsoil, the clay lower subsoil being poorly structured and slowly permeable, causing a drainage impedance. Such drainage characteristics means that these soils have a resultant classification of Subgrade 3a.

Subgrade 3b land showing a more severe wetness limitation is mapped where slowly permeable clays occur directly below the topsoil, thus exacerbating drainage imperfections.

Towards the north of the site, an area of land was found to contain sufficient amounts of hard sandstone greater than 2cm in size within the topsoil to be classified as Subgrade 3a due to a topsoil stones limitation. Excessively stony topsoils may impair crop establishment, and can raise production costs due to increased wear and tear on tyres and machinery.

FACTORS INFLUENCING ALC GRADE

Climate

8. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

9. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SU 949 292
Altitude	m, AOD	60
Accumulated Temperature	day°C	1469
Average Annual Rainfall	mm	834
Field Capacity Days	days	176
Moisture Deficit, Wheat	mm	102
Moisture Deficit, Potatoes	mm	93

10. 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.

11. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (ATO, January to June), as a measure of the relative warmth of a locality.

12. The combination of rainfall and temperature at this site means that there is no overall climatic limitation. Local climatic factors such as exposure are also believed not to affect the site. The site is climatically Grade 1.

Site

13. The site lies at an altitude of between approximately 50-70 m (AOD). The site is characterised by higher ground bisected by two valley features. Towards the north of the site, gradients are sufficiently steep to restrict agricultural operations and thus affect agricultural land quality.

Geology and soils

14. The most detailed published geological information for the site (BGS, 1981) shows the entire site to be underlain by Weald Clay, sandstone in Weald Clay and head.

15. The most detailed published soils information (SSEW, 1983) shows the soils on the site to comprise two associations. The majority is mapped as the Wickham 5 association, these being described as 'slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils' (SSEW, 1983). The remainder of the site is mapped as the Shabbington association. These are described as 'deep fine loamy and fine loamy over sandy soils variably affected by groundwater. Some slowly permeable seasonally waterlogged fine loamy over clayey soils' (SSEW, 1983).

AGRICULTURAL LAND CLASSIFICATION

16. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.

17. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III.

Subgrade 3a

18. The majority of the agricultural land on the site has been classified as Subgrade 3a, good quality land, with soil wetness as the main limitation. Soil profiles typically comprise slightly stony medium clay loam topsoils resting upon a similar textured upper subsoil which in turn rests upon sandy clay loam, heavy clay loam or clay lower subsoils. Subsoils within this mapping unit tend to contain layered sandstone which occasionally proved impenetrable to the auger at depths of between 70-90 cm. This is typical with soils formed over sandstone in Weald Clay. Profiles show evidence of a drainage imperfection in the form of gleying from either the topsoil or upper subsoil. Soil inspection pit 1, dug towards the south of the site, is typical of the soils within this mapping unit. At this location, a slightly stony (5% total hard rock v/v) medium clay loam topsoil rests upon a slightly stony (3% total sandstone v/v)

medium clay loam upper subsoil extending to a depth of 47cm. A heavy clay loam containing a similar amount of sandstone extends to a depth of 62cm. Below this depth, the lower subsoil comprises a clay, the stoniness of which varies. Between the depths of 85-110 cm flaggy sandstone was encountered, comprising approximately 30% of the matrix. At the pit, the profile was gleyed from below the topsoil, and the clay lower subsoil was found to be poorly structured with low porosity and thus slowly permeable, causing a drainage impedance. Such drainage characteristics equate these soils to Wetness Class III, which in combination with the topsoil texture and the local climatic regime gives a resultant classification of Subgrade 3a.

19. Towards the central part of the site, topsoil stone measurements found the volume of hard rock greater than 2cm in size in the topsoil to be sufficiently high (12%) as to restrict this land to a classification of Subgrade 3a. Stony topsoils can inhibit crop growth and establishment, and may increase production costs due to increased wear and tear on machinery and tyres.

Subgrade 3b

20. Over the remainder of the site, soils formed over Weald Clay tend to comprise medium clay loam topsoils over heavy clay loam upper subsoils which rest upon clay lower subsoils at relatively shallow depths. Soil inspection pit no. 2 is typical of the soils within this mapping unit. At the location of the pit, a medium clay loam topsoil was found to overlie a heavy clay loam upper subsoil which in turn rests upon a clay lower subsoil commencing at a depth of 40cm. The profile is stoneless and gleyed from below the topsoil, the clay subsoil being poorly structured with low porosity and therefore slowly permeable, causing a more significant drainage impedance. Such drainage characteristics equate these soils to Wetness Class IV, with a resultant classification of Subgrade 3b due to the more severe wetness limitation. Poorly drained wet soils can inhibit plant growth and rooting, and may be more susceptible to structural damage through trafficking by agricultural machinery or poaching by grazing livestock.

21. Towards the north of the site, gradients measured with an optical reading clinometer were found to be 9°. This is sufficiently steep to limit the safe and efficient use of agricultural machinery, such that a classification of Subgrade 3b is appropriate.

SOURCES OF REFERENCE

British Geological Survey (1981) *Sheet No.301, Haslemere.*
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 6, Soils of South East England.* SSEW: Harpenden.

Soil Survey of England and Wales (1983) *Soils and their Use in South East England*
SSEW: Harpenden

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 : CHICH DLP OSH45 NORTHCHA Pit Number : 1P

Grid Reference: SU94962891 Average Annual Rainfall : 834 mm
Accumulated Temperature : 1469 degree days
Field Capacity Level : 176 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 26	MCL	10YR53 00	0	5	HR	F				
26- 47	MCL	10YR53 00	0	3	MSST	C	MDCSAB	FR	M	
47- 62	HCL	75YR53 00	0	3	MSST	C	MDCSAB	FR	M	
62- 85	C	10YR73 64	0	3	MSST	M	WKCSAB	FM	P	
85-110	C	10YR73 64	0	30	MSST	M			P	
110-120	C	10YR73 64	0	0		M	WKCSAB	FM	P	

Wetness Grade : 3A Wetness Class : III
Gleying :026 cm
SPL :062 cm

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

FINAL ALC GRADE : 3A
MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : CHICH DLP OSH45 NORTHCHA Pit Number : 2P

Grid Reference: SU94852890 Average Annual Rainfall : 834 mm
Accumulated Temperature : 1469 degree days
Field Capacity Level : 176 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	MCL	10YR53 00	0	0		C				
28- 40	C	10YR62 00	0	0		M	MDCAB	FM	P	
40- 65	C	10YR73 00	0	0		C	STCAB	FM	P	

Wetness Grade : 3B Wetness Class : IV
Gleying : 0 cm
SPL :028 cm

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

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

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	SU94972969	WHT			026	026	4	3B		0		0					WE	3B	
1P	SU94962891	PGR			026	062	3	3A		0		0					WE	3A	SST85
2	SU95002960	WHT			030	040	4	3B		0		0					WE	3B	
2P	SU94852890	PGR			0	028	4	3B		0		0					WE	3B	
3	SU94942950	WHT			026		2	3A		0		0					WE	3A	TSSTONE
11	SU94802920	PGR	NE	02	027	070	3	3A		0		0					WE	3A	
15	SU94902910	PGR	NE	02	030	043	4	3B		0		0					WE	3B	I90SST
16	SU94802900	PGR	S	01	0	029	4	3B		0		0					WE	3B	
19	SU94852890	PGR	S	02	0	039	4	3B		0		0					WE	3B	
21	SU94962891	PGR			030	065	3	3A		0		0					WE	3A	
22	SU95102890	PGR			0	050	3	3A		0		0					WE	3A	
23	SU94902880	PGR			030		2	3A		0		0					WE	3A	I80SST
24	SU95002880	PGR			0	055	3	3A		0		0					WE	3A	
25	SU95002870	PGR			060	085	1	2	132	30	107	14	2				WD	2	
26	SU95102870	PGR			0	035	4	3B		0		0					WE	3B	
27	SU95102860	PGR			0	025	4	3B		0		0					WE	3B	

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	0-26	mcl	10YR42 00	00MN00	00	F			0	0	HR	2							
	26-65	c	10YR62 00	10YR68	71	M	00MN00	00 Y	0	0		0		P			Y		
1P	0-26	mcl	10YR53 00	10YR56	00	F	00MN00	00	0	0	HR	5							
	26-47	mcl	10YR53 00	10YR58	61	C		Y	0	0	MSST	3	MDCSAB FR	M					
	47-62	hcl	75YR53 00	75YR66	00	C		Y	0	0	MSST	3	MDCSAB FR	M					
	62-85	c	10YR73 64	10YR78	81	M		Y	0	0	MSST	3	WKCSAB FM	P	Y		Y		
	85-110	c	10YR73 64	10YR78	81	M		Y	0	0	MSST	30		P			Y		
	110-120	c	10YR73 64	10YR78	81	M		Y	0	0		0	WKCSAB FM	P	Y		Y		
2	0-30	mcl	10YR53 00	10YR56	00	F			0	0		0							
	30-40	hcl	10YR52 00	10YR58	61	C		Y	0	0		0		M					
	40-80	c	10YR62 00	10YR68	71	M		Y	0	0		0		P			Y		
2P	0-28	mcl	10YR53 00	10YR58	61	C		Y	0	0		0							
	28-40	c	10YR62 00	10YR68	71	M		Y	0	0		0	MDCAB FM	P	Y		Y		
	40-65	c	10YR73 00	05YR56	00	C	10YR71	00 Y	0	0		0	STCAB FM	P	Y		Y		
3	0-26	mcl	10YR53 43						10	0	HR	12							
	26-40	mcl	10YR63 00	10YR68	00	C	00MN00	00 Y	0	0	MSST	10		M					
	40-60	hcl	10YR62 00	10YR68	71	C	00MN00	00 Y	0	0	MSST	10		M					
	60-70	scl	10YR72 00	10YR68	00	C		Y	0	0	MSST	10		M					IMP 70 SST
11	0-27	mcl	10YR53 00	00MN00	00	C			0	0		0							
	27-39	mcl	10YR52 00	10YR68	00	M	00MN00	00 Y	0	0		0		M					
	39-62	hcl	10YR63 00	10YR68	72	M	00MN00	00 Y	0	0		0		M					
	62-70	scl	10YR63 72	75YR68	00	M	00MN00	00 Y	0	0		0		M					
	70-120	c	10YR52 62	10YR68	71	M		Y	0	0		0		P			Y		
15	0-30	mcl	10YR43 00						0	0	HR	2							
	30-43	mcl	10YR52 00	10YR68	71	C	00MN00	00 Y	0	0		0		M					
	43-80	c	10YR63 00	10YR68	71	M	00MN00	00 Y	0	0		0		P			Y		
	80-90	scl	10YR73 64	10YR68	71	M	00MN00	00 Y	0	0		0		M			Y		IMP 90 SST
16	0-29	mcl	10YR52 53	10YR56	00	C	00MN00	00 Y	0	0		0							
	29-70	c	10YR62 00	10YR68	71	M		Y	0	0		0		P			Y		
19	0-27	mcl	10YR53 00	10YR58	61	C		Y	0	0		0							
	27-39	hcl	10YR52 00	10YR68	71	M		Y	0	0		0		M					
	39-70	c	10YR72 73	10YR71	00	M	05YR56	00 Y	0	0		0		P			Y		
21	0-30	mcl	10YR53 00						0	0		0							
	30-45	mcl	10YR53 00	10YR56	00	C	00MN00	00 Y	0	0		0		M					
	45-65	hcl	10YR62 00	75YR56	00	C		Y	0	0		0		M					
	65-100	c	10YR72 00	05YR56	00	M	10YR71	00 Y	0	0		0		P			Y		
22	0-30	mcl	10YR53 00	10YR58	61	C		Y	0	0		0							
	30-40	mcl	10YR53 00	10YR58	00	C		Y	0	0		0		M					
	40-50	hcl	10YR52 62	10YR68	61	C		Y	0	0		0		M					
	50-120	c	10YR62 00	05YR56	00	M	10YR71	00 Y	0	0	MSST	5		P			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	
23	0-30	mcl	10YR53 00	10YR56 00	F				0	0		0							
	30-40	mcl	10YR53 00	10YR58 61	C			Y	0	0		0		M					
	40-55	hcl	10YR52 00	10YR68 71	C			Y	0	0		0		M					
	55-65	c	10YR52 00	05YR56 00	C			Y	0	0		0		P					
	65-80	scl	10YR62 00	10YR78 71	C			Y	0	0		0		M					IMP 80 SST
24	0-26	mcl	10YR53 00	10YR58 61	C			Y	0	0		0							
	26-55	hcl	10YR52 00	10YR68 72	C			Y	0	0		0							
	55-75	c	10YR72 00	10YR68 71	M			Y	0	0		0		P		Y			
	75-100	scl	10YR72 81	10YR68 00	C			Y	0	0		0		M		Y			
25	0-27	mcl	10YR53 00						0	0		0							
	27-40	mcl	10YR53 72						0	0		0		M					
	40-60	msl	25Y 72 82						0	0		0		M					
	60-85	lms	25Y 82 00	10YR78 00	M			Y	0	0		0		M					
	85-120	c	05Y 71 00	05YR56 00	M			Y	0	0		0		P		Y			
26	0-20	mcl	10YR53 00	10YR58 61	C			Y	0	0		0							
	20-35	hcl	10YR52 00	10YR68 61	C		00MN00 00	Y	0	0		0		M					
	35-75	c	10YR62 00	05YR56 00	M		10YR71 00	Y	0	0		0		P		Y			
27	0-25	mcl	10YR53 00	10YR58 61	C			Y	0	0		0							
	25-70	c	10YR72 00	05YR56 00	M			Y	0	0		0		P		Y			