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**Hampshire Structure Plan Review
Land to the north of Whiteley
Agricultural Land Classification
Reconnaissance Survey
ALC Map and Report
October 1994**

AGRICULTURAL LAND CLASSIFICATION REPORT

HAMPSHIRE STRUCTURE PLAN REVIEW LAND TO THE NORTH OF WHITELEY RECONNAISSANCE SURVEY

1. Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of 'areas of search' in connection with MAFF's input to the Hampshire Structure Plan Review.
- 1.2 Land to the north of Whiteley comprises approximately 168 hectares of land bounded to the east by the Eastleigh-Fareham railway line and to the west by the A3051. An Agricultural Land Classification (ALC) survey was carried out during October 1994. The survey was completed at a reconnaissance level of detail, on a 'free' survey basis, as it was undertaken primarily to update the 1:63,360 scale provisional ALC maps for the area of search. Consequently, the results are designed for strategic planning purposes only. For site specific proposals more detailed surveys may be required. A total of 23 borings and one 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. Information was also drawn from an existing survey (ADAS Reference 1513/121/94) within the area of search.
- 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 predominantly under permanent grass with some areas of Set-aside. Urban areas include residential dwellings, farm buildings and metalled roads. Areas of woodland are shown as Non-agricultural.
- 1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in Table 1 overleaf. The map has been drawn at a scale of 1:50,000. It is accurate at this scale, but any enlargement would be misleading.
- 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.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
2	3	1.8	1.9
3a	8	4.7	5.2
3b	144	85.7	<u>92.9</u>
Urban	3	1.8	100.0 (155 ha)
Non-Agricultural	<u>10</u>	<u>6.0</u>	
Total area of Site	168	100.0	

1.7 The majority of agricultural land surveyed in this area of search is classified as moderate quality (Subgrade 3b) because of significant soil wetness and workability limitations. These limitations arise due to the presence of slowly permeable clay, and occasionally heavy clay loam, subsoils directly below the topsoils. Topsoils generally comprise medium/heavy clay loams and clays and the interaction between these topsoils and poor drainage characteristics with the prevailing local climate acts to impose significant restraints on the flexibility of cropping, stocking and cultivations. Where the clay subsoils occur deeper within the soil profile such restraints are not as significant; depending on the depth to the clay, these areas have been classified as good quality (Subgrade 3a) or very good quality (Grade 2). A small area to the west of Ridge Farm, comprising well drained sandy textured soils, has also been classified as very good quality because of minor soil droughtiness limitations.

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 (degree days 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 on the next page and these show that there is no overall climatic limitation affecting the site.

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

3. Relief

3.1 The majority of the site is flat and lies at about 10m AOD. In the north of the site, the land gently rises through gradients of 2° to approximately 15m AOD. In the centre of the site, south of Ridge Lane, the land falls gently to about 5m AOD. In the south of the site, to the north east of Whiteley Cottages, the land occupies a

broad ridge which rises through gentle gradients of about 2° from 10m AOD to 20m AOD. Nowhere on the site do gradient or relief impose any limitation to agricultural land quality.

Table 2 : Climatic Interpolations

Grid Reference	SU532113	SU526109
Altitude (m)	10	15
Accumulated Temperature (degree days, Jan-June)	1543	1538
Average Annual Rainfall (mm)	799	804
Field Capacity (days)	165	165
Moisture Deficit, Wheat (mm)	113	113
Moisture Deficit, Potatoes (mm)	108	108
Overall Climatic Grade	1	1

4. Geology and Soil

- 4.1 The relevant geological sheet (BGS, 1971) shows the site to be underlain by four geological deposits. Reading Beds are mapped across an area approximately south of a transect running from Ridge Farm to Whiteley Cottages. To the north of this, a relatively large area of London Clay is shown. A comparatively narrow band of Bagshot Beds is shown extending across the centre of the site, from Cur Bridge to Blackmoor Copse. The remaining area, in the north of the site, is shown as Bracklesham Beds.
- 4.2 The published Soil Survey map (SSEW, 1983) shows two soil types across this site. The northern half of the site is mapped as the Wickham 3 association. These soils are described as 'slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey soils, and similar more permeable soils with slight waterlogging' (SSEW, 1983). The remaining area is shown as the Wickham 4 association. These soils are described as 'slowly permeable seasonally waterlogged fine loamy over clayey and fine silty over clayey soils associated with similar clayey soils, often with brown subsoils' (SSEW, 1983).
- 4.3 Detailed field examination found two soil types. The majority of the site comprises heavy textured poorly drained soils, which in the north of the site are sometimes slightly more permeable. The second type, which occurs on the broad ridge in the south of the site, comprises moderately well drained sandy textured soils.

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 A discrete mapping unit of very good quality land in the south of the site was identified during a previous detailed survey (ADAS Reference 1513/121/94). This land is restricted by a slight soil droughtiness limitation resulting from sandy textured soils. Profiles typically comprise non-calcareous medium sandy loam topsoils over moderately structured medium sandy loam upper subsoils. These pass into well structured loamy medium sand lower subsoils at approximately 70cm which either extend to depth or pass into well structured medium sands at approximately 90-100cm depth. Profiles are stoneless to very slightly stony (0-5% total flints by volume), and are either well drained (Wetness Class I) or moderately well drained (Wetness Class II) where gleying occurs within 40cm depth. These profiles are typified by Pit 2 of the previous survey. The interaction between the sandy textures and subsoil structural conditions means that the amount of soil water for extraction by crop roots is slightly restricted. This may result in lowered crop yields because of a minor risk of drought stress.
- 5.4 The higher, slightly sloping land in the north of the site is also classed as very good quality. This area is equally restricted by minor soil droughtiness and wetness limitations. Medium clay loam topsoils overlie gleyed medium clay loam subsoils which are moderately structured. At about 80cm depth these profiles pass into a lower horizon comprised of clay which is poorly structured and gleyed. The slowly permeable characteristics of this clay results in slightly impaired drainage of the soil profile, such that Wetness Class II is appropriate. The interaction between the topsoil texture and these drainage characteristics means that this land is subject to minor restrictions on the flexibility of cropping, stocking and cultivations. In addition, the interaction between these soil textures and subsoil structural conditions means that the amount of soil water for extraction by crop roots is slightly restricted. This may result in lowered crop yields because of a minor risk of drought stress.

Subgrade 3a

- 5.5 A relatively small area of land in the north of the site has been classified as good quality because of moderate soil wetness limitations. Medium clay loam topsoils overlie similarly textured upper subsoils which pass into clay at about 45-50cm depth. These clay lower subsoils are poorly structured and their slowly permeable characteristics act to moderately impair drainage, as evidenced by slight gleying of both the upper and lower subsoils. Such profiles, which are typified by Pit 1, are thus assigned to Wetness Class III. The interaction between the medium clay loam topsoils and these drainage conditions means that this land may be subject to moderate restrictions on the flexibility of cropping, stocking and cultivations.

Subgrade 3b

- 5.6 Moderate quality land is restricted by significant soil wetness and workability limitations. Topsoils typically comprise medium clay loams, though to the west of Ridge Farm and in the vicinity of Barn Farm heavier topsoils occur. These heavier topsoils typically comprise heavy clay loams and clays. Upper subsoils generally

comprise poorly structured clays, though moderately structured heavy clay loams also occur. These overlie clay lower subsoils which are also poorly structured. All of these subsoils are slowly permeable and act to significantly impede drainage, as evidenced by gleying below and within the topsoils. Consequently these profiles are assigned to Wetness Class IV. Such profiles are typified by Pits 1 and 3 from the previous detailed survey. This land can be classified as no better than moderate quality because of significantly reduced flexibility of cultivations, cropping and stocking.

ADAS Reference: 1513/249/94
MAFF Reference: EL15/518

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1971), Sheet No. 316, Fareham, 1:63,360 (drift edition).

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

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

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

APPENDIX I

DESCRIPTION OF THE GRADES AND SUBGRADES

Grade 1 : Excellent Quality Agricultural Land

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

Grade 2 : Very Good Quality Agricultural Land

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

Grade 3 : Good to Moderate Quality Land

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

Subgrade 3a : Good Quality Agricultural Land

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

Subgrade 3b : Moderate Quality Agricultural Land

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

Grade 4 : Poor Quality Agricultural Land

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

Grade 5 : Very Poor Quality Agricultural Land

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

Urban

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

Non-agricultural

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

Woodland

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

Agricultural Buildings

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

Open Water

Includes lakes, ponds and rivers as map scale permits.

Land Not Surveyed

Agricultural land which has not been surveyed.

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

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

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

Definition of Soil Wetness Classes

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

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

¹The 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 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 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. **GLEYSPL** : 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. **GLEYS** : 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 **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

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 appropriate 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 : HANTS SP, NORTH WHITELEY Pit Number : 1P

Grid Reference: SU53401190 Average Annual Rainfall : 804 mm
 Accumulated Temperature : 1538 degree days
 Field Capacity Level : 165 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 27	MCL	10YR43 00	0	1	HR					
27- 49	MCL	10YR43 00	0	0		C	MDCSAB	FR	M	
49- 70	C	10YR54 00	0	0		M	WKMPR	FM	P	

Wetness Grade : 3A Wetness Class : III
 Gleying : cm
 SPL : 049 cm

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

FINAL ALC GRADE : 3A
 MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--				-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEYS	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT	
1	SU52831155	PGR E	02	0	028	4	3B		0	0					WE 3B		
1P	SU53401190	PGR			049	3	3A		0	0					WE 3A	S1. gley 27	
2	SU53001160	PGR			0 025	4	3B		0	0					WE 3B	Wet to surface	
3	SU53201140	PGR			0 028	4	3B		0	0					WE 3B		
4	SU53401140	PGR		028	028	4	3B		0	0					WE 3B	Sandy	
5	SU53591140	PGR			0 028	4	3B		0	0					WE 3B	Few rushes	
6	SU53001200	PGR			0 028	4	3B		0	0					WE 3B	Sandy	
7	SU53201180	PGR S	01	030	030	4	3B		0	0					WE 3B		
8	SU53201192	PGR N	03		048	3	3A		0	0					WE 3A	S1. gley 30	
9	SU53401190	PGR			044	3	3A		0	0					WE 3A	S1. gley 28	
10	SU53401175	PGR		070		1	1	155	42	117	9	2			DR 2	S1. gley 25	
11	SU53401160	PGR		035	035	4	3B		0	0					WE 3B	S1. stony	
12	SU53631160	PGR			0 025	4	3B		0	0					WE 3B		
13	SU53801147	PGR			0 025	4	3B		0	0					WE 3B		
14	SU53661172	PGR			047	3	3A		0	0					WE 3A	S1. gley 47	
15	SU52551022	PGR		000	027	4	3B		0	0					WE 3B		
16	SU52611037	PGR		000	030	4	3B		0	0					WE 3B	Wet to surface	
17	SU52771060	PGR		000	025	4	3B		0	0					WE 3B		
18	SU52561060	PGR S	01	000	025	4	3B		0	0					WE 3B		
19	SU52361046	CER N	01	000	027	4	3B		0	0					WE 3B		
20	SU53031215	PGR N	01	000	030	4	3B		0	0					WE 3B	Poached t/s	
21	SU53271204	PGR SE	02	000	027	4	3B		0	0					WE 3B		
22	SU53071232	PGR S	02	030	080	2	2	143	30	117	9	2			WD 2	Sandy	
23	SU53021228	PGR S	01	000	028	4	3B		0	0					WE 3B		

SAMPLE	DEPTH	TEXTURE	COLOUR	---MOTTLES---			PED COL.	---STONES---			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR		
1	0-28	mc1	75YR42 00 75YR46 00 C					Y	0	0	0					
	28-45	c	10YR53 00 10YR58 51 M					Y	0	0	0		P		Y	
	45-55	c	10YR53 51 75YR56 00 M					Y	0	0	0		P		Y	
1P	0-27	mc1	10YR43 00						0	0	HR	1				
	27-49	mc1	10YR43 00 10YR56 00 C					S	0	0	0		MDCSAB FR M	Y		S1. gleyed
	49-70	c	10YR54 00 75YR56 00 M					S	0	0	0		WKMPR FM P	Y	Y	S1. gleyed
2	0-25	c	25Y 41 00 75YR58 00 M					Y	0	0	0					
	25-55	c	25Y 51 00 75YR58 00 M					Y	0	0	0		P		Y	
3	0-28	mc1	25Y 41 00 75YR46 00 C					Y	0	0	0					
	28-45	c	25Y 61 51 75YR58 00 M					Y	0	0	0		P		Y	
	45-60	c	25Y 61 00 75YR58 00 M					Y	0	0	HR	1	P		Y	
4	0-28	mc1	25Y 42 00						0	0	0					
	28-45	hc1	25Y 41 00 75YR46 00 M					Y	0	0	HR	2	M		Y	
	45-65	c	10YR53 00 75YR58 00 M					Y	0	0	HR	2	P		Y	
5	0-28	c	25Y 51 00 75YR58 00 M					Y	0	0	0					
	28-55	c	25Y 51 00 75YR58 00 M					Y	0	0	HR	2	P		Y	
6	0-28	mc1	10YR42 00 10YR56 00 C					Y	0	0	0					
	28-38	sc1	10YR63 62 10YR56 00 M					Y	0	0	0		M		Y	
	38-60	c	10YR52 00 75YR58 00 M					Y	0	0	0		P		Y	
7	0-30	mc1	10YR42 00						0	0	0					
	30-50	hc1	10YR63 62 10YR58 00 M				OOMN00	Y	0	0	0		M		Y	
	50-70	c	10YR62 00 75YR58 00 M					Y	0	0	0		P		Y	
8	0-30	hc1	10YR42 00						0	0	HR	4				
	30-48	sc1	10YR43 00 75YR46 00 C				OOMN00 00	S	0	0	HR	4	M		Y	S1. gleyed
	48-60	c	10YR43 00 75YR58 00 M					S	0	0	HR	4	P		Y	S1. gleyed
9	0-28	mc1	10YR42 00						0	0	HR	4				
	28-44	hc1	10YR43 00 10YR56 00 C					S	0	0	0		M		Y	S1. gleyed
	44-60	c	10YR43 00 10YR56 00 M					S	0	0	0		P		Y	S1. gleyed
10	0-25	mc1	10YR42 00						0	0	0					
	25-70	mc1	10YR43 00 10YR56 00 C					S	0	0	0		M		Y	S1. gleyed
	70-120	sc1	10YR53 00 75YR56 00 M					Y	0	0	0		M			
11	0-35	hc1	10YR43 00						0	0	HR	7				
	35-55	c	10YR53 00 10YR58 61 M					Y	0	0	HR	7	P		Y	
12	0-25	hc1	25Y 52 00 75YR46 00 M					Y	0	0	0					
	25-55	c	10YR53 00 10YR56 61 M					Y	0	0	HR	2	P		Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- PED			----STONES----			STRUCT/ CONSIST	SUBS							
				COL	ABUN	CONT	COL.	GLE	>2		>6	LITH	TOT	STR	POR	IMP	SPL	CALC
13	0-25	hzc1	10YR52 00	75YR46	00	C		Y	0	0	0							
	25-35	c	10YR62 63	75YR56	00	M	00MN00	00	Y	0	0	HR	4		P			Y
	35-55	c	10YR62 61	75YR58	00	M			Y	0	0	HR	4		P			Y
14	0-30	mc1	10YR43	00						0	0	0						
	30-47	mc1	10YR43	00						0	0	HR	1		M			
	47-65	c	10YR43 00	10YR56	00	M			S	0	0	0			P			Y
																		Sl. gleyed
15	0-27	hc1	75YR51 00	75YR56	00	M			Y	0	0	0						
	27-55	c	25Y 63 00	75YR58	61	M	00MN00	00	Y	0	0	0			P			Y
16	0-30	hc1	75YR51 00	75YR58	00	M			Y	0	0	0						
	30-55	c	10YR61 00	75YR58	68	M			Y	0	0	0			P			Y
17	0-25	hc1	75YR51 00	75YR56	00	M			Y	0	0	0						
	25-55	c	10YR61 00	75YR68	00	M			Y	0	0	0			P			Y
18	0-25	mc1	75YR52 00	75YR46	00	M			Y	0	0	0						
	25-35	hc1	10YR53 00	10YR56	00	M			Y	0	0	0			M			Y
	35-55	c	10YR61 00	75YR68	00	M			Y	0	0	0			P			Y
19	0-27	mc1	10YR42 00	10YR58	00	M			Y	0	0	0						
	27-55	c	10YR53 00	75YR68	61	M			Y	0	0	HR	2		P			Y
20	0-30	c	25Y 42 00	10YR58	00	C			Y	0	0	0						
	30-45	c	25Y 41 00	75YR58	00	M			Y	0	0	0			P			Y
	45-55	c	10YR51 00	75YR58	00	M			Y	0	0	0			P			Y
21	0-27	hc1	10YR42 00	75YR46	00	C			Y	0	0	HR	2					
	27-55	c	10YR61 00	75YR68	00	M			Y	0	0	0			P			Y
22	0-30	mc1	10YR42	00						0	0	HR	2					
	30-50	mc1	10YR53 00	10YR56	00	C	00MN00	00	Y	0	0	0			M			
	50-80	mc1	10YR53 00	10YR56	63	C	00MN00	00	Y	0	0	0			M			
	80-120	c	10YR53 00	10YR58	00	M			Y	0	0	0			P			Y
23	0-28	hc1	75YR42 00	75YR58	00	M			Y	0	0	HR	1					
	28-55	c	10YR61 00	75YR68	00	M			Y	0	0	0			P			Y