Salmon Springs, Stroud

Agricultural Land Classification

October 1997

Resource Planning Team
Bristol
FRCA Western Region

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SALMON SPRINGS STROUD

AGRICULTURAL LAND CLASSIFICATION SURVEY

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INTRODUCTION

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 112 8 ha of land at Salmon Springs Stroud Field survey was based on 57 auger borings and three soil profile pits A further 18 topsoil pits were also examined The survey was completed in October 1997

2 The survey was conducted by the Resource Planning Team of FRCA Western Region This was on behalf of MAFF in its statutory role in the preparation of Stroud District Local Plan

3 Information on climate geology and soils and from previous ALC surveys was considered and is presented in the relevant section The published regional ALC map (MAFF 1977) shows the site at a reconnaissance scale as being mainly Grade 3 with Grade 4 land along the western valley bottom Apart from this the site had not been surveyed previously The current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988) and therefore supersedes any previous ALC survey Grade descriptions are summarised in Appendix I

4 At the time of survey land cover was permanent pasture and mowing grass with some cereal fields Other land that was not surveyed included agricultural and residential buildings woodland and a small light industrial estate An area of 16 5 ha of agricultural land within the survey area was not surveyed because of access restrictions

SUMMARY

5 The distribution of ALC grades is shown on the accompanying 1 10 000 scale ALC map The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas Areas are summarised in the Table 1

Table 1 Distribution of ALC grades Salmon Springs Stroud

Grade	Area (ha)	% Surveyed Area (76 2 ha)
3a	20 6	27
3b	45 7	60
4	7 5	10
5	2 4	3
Agricultural land not surveyed	16 5	
Other land	20 1	
Total site area	112 8	100

6 Of the agricultural land surveyed in the recent survey 27% has been mapped as Subgrade 3a (good quality) and is best and most versatile The Subgrade 3a mapping units developed on alluvium below Hammonds Farm and The Grange are variable in their agricultural quality and include some Grades 1 and 2 profiles within them Due to the scale of the survey it is not possible to map these better quality areas The Subgrade 3a land has a mixture of shallow droughty and wet profiles with moderate limitations

7 The rest of the site is typically very shallow over limestone or has moderately steeply and steeply sloping gradients The land mapped as Subgrade 3b (moderate quality) has moderate gradient and soil depth limitations These will restrict the type of machinery that can be used and the type of cultivations that can be undertaken

8 The land mapped as Grades 4 (poor quality) and 5 (very poor quality) has severe and very severe limitations respectively to its agricultural use This is due to the moderately steeply and steeply sloping gradients which will restrict the type of machinery that can be safely and accurately used

CLIMATE

9 Estimates of climatic variables for this site were derived from the published agricultural climate dataset Climatological Data for Agricultural Land Classification (Meteorological Office 1989) using standard interpolation procedures Data for key points around the site are given in Table 2 below

10 Since the ALC grade of land is determined by the most limiting factor present overall climate is considered first This is because it can have an overriding influence by restricting land to a lower grade despite more favourable site and soil conditions Parameters used for assessing overall climate are accumulated temperature a measure of relative warmth and average annual rainfall a measure of overall wetness The results shown in Table 2 indicate that there is no overall climatic limitation

Table 2 Climatic Interpolations Salmon Springs Stroud

Grid Reference		SO 848 070	SO 852 067	SO 857 070
Altitude (m)		60	100	150
Accumulated Temperature (day C)		1460	1414	1357
Average Annual Rainfall (mm)		801	840	860
Overall Climatic Grade		1	1	1
Field Capacity Days		169	175	179
Moisture deficit (mm)	Wheat	97	90	83
	Potatoes	86	77	68

11 Climatic variables also affect ALC grade through interactions with soil conditions The most important interactive variables are Field Capacity Days (FCD) and potential Moisture Deficits The FCDs are used in assessing soil wetness limitations The calculated potential

Moisture Deficits for wheat and potatoes are compared with the moisture available in each profile This is used in assessing soil droughtiness limitations These are described in later sections A potentially critical boundary of 175/176 FCD was found running North South through the site Due to the nature of the limitations found during the survey this boundary does not have a marked affect upon the grading of the land

RELIEF

12 Altitude ranges from 53 metres near the junction of Old Painswick Road and Painswick Road (A46) to 150 metres near Heart Wood Most of the site has gentle and moderate gradients which impose no limitation to its agricultural use The valley sides to the North of Badbrook around Salmon Springs and below Hammonds Farm are strongly moderately steeply and steeply sloping These areas have moderate severe and very severe limitations due to their gradients

GEOLOGY AND SOILS

13 The underlying geology of the site is shown on the published geology map (IGS 1975) as being landslip and foundered strata The soils found during the recent survey indicate that the parent material on the eastern side of the site is Oolitic Limestone This also outcrops in the western part of the site within alluvium

14 Soil across the site was mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1 250 000 (SSEW 1983) This shows the Elmton 1 Association on the limestone with the Martock Association elsewhere

15 The Elmton soils are described as being shallow well drained fine loams over brashy limestone but they may be deeper in places In contrast the Martock soils are described as being slowly permeable seasonally waterlogged stoneless silty over clayey and clayey soils over siltstone or shale Some similar soils have slowly permeable subsoils and slight seasonal waterlogging

16 Shallow well drained soils over limestone bedrock similar to those of the Elmton 1 Association were found to the East of Hammonds Farm and Old Painswick Road The rest of the site has variable well drained to poorly drained sandy clay loams clay loams and clays

AGRICULTURAL LAND CLASSIFICATION

17 The distribution of ALC grades found by the current survey is shown on the accompanying 1 10 000 scale map and areas are summarised in Table 1 The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas

Subgrade 3a

18 Of the agricultural land surveyed 27% has been mapped as Subgrade 3a (good quality land) which is best and most versatile The Subgrade 3a land has a mixture of shallow droughty and wet profiles with moderate limitations

19 Most of this grade on the lower lying alluvial land has a moderate wetness limitation These mapping units are variable in their agricultural quality and include some Grades 1 and 2 profiles within them Due to the scale of the survey it is not possible to map these better quality areas The profiles tend to have medium clay loam topsoils over heavy clay loam upper subsoils and sandy clay and clay subsoils There is gleying in the upper subsoil and a slowly permeable layer in the lower subsoil These were assessed as Wetness Class III (see Appendix II) with a moderate wetness limitation The poor drainage means that the soil water regime will adversely affect plant growth and impose restrictions on cultivations and grazing by livestock

20 Some of the better quality areas in the mapping unit have a slowly permeable layer starting farther down the profile These were assessed as Wetness Class II with a minor wetness limitation Pit 1 is an example of these profiles A few profiles showed no signs of wetness and were assessed as Grade 1

21 The Subgrade 3a land to the South of Hammonds Farm has moderate limitations The profiles consist of well drained clay loams over fractured bedrock These were assessed as Wetness Class I The soils are shallow and stony with 65% hard rock by volume in the upper subsoil This means that the amount of available moisture in the profile is reduced and the soils are not able to meet the potential crop moisture requirements throughout the year

22 Eighteen small topsoil pits were examined over the area of shallow soils These were used to accurately measure the depth of soil above the rock In the auger borings the depths were assessed as being around 30 cm which is the cut off between Subgrades 3a and 3b The soil depth of the Subgrade 3a land to the south of Hammonds Farm between 30 and 50 cm will also cause a moderate soil depth limitation This limits the type of cultivation that can be undertaken therefore reducing the type of cropping which can be undertaken

Subgrade 3b

23 Most of the land that is mapped as Subgrade 3b has a depth limitation The profiles are similar to those in the shallow Subgrade 3a unit but here the soil is shallower with the depth to the rock being between 20 and 30 cm These depths were taken from the topsoil pits These were also assessed as Wetness Class I

24 Some of the Subgrade 3b land near Badbrook Salmon Springs and Hammonds Farm has a moderate limitation to its agricultural use due to its gradient The gradients found during the survey of 8 11 will restrict the safe and accurate use of some agricultural machinery thus restricting cropping practises

Grade 4

25 The land mapped as Grade 4 is strongly and moderately steeply sloping with gradients between 12° and 18° This will cause a severe limitation to its agricultural use

Grade 5

26 The land mapped as Grade 5 is steeply sloping with gradients greater than 18 This will cause a very severe limitation to its agricultural use

Other Land

27 Other land was found to occupy 20 1 ha of the site This includes agricultural buildings residential land and buildings and woodland There is also a small light industrial estate

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October 1997

REFERENCES

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APPENDIX I

DESCRIPTION OF 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 include 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 that affect crop yield cultivations or harvesting A wide range of agricultural and horticultural crops can usually be grown but on some land in 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 that affect the choice of crops timing and type of cultivation harvesting or the level of yield Where 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 that can be grazed or harvested over most of the year

Grade 4 poor quality agricultural land

Land with severe limitations that significantly restrict the range of crops and/or level of yields It is mainly suited to grass with occasional arable crops (e g cereals and forage crops) the yields of which are variable In most 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 that restrict use to permanent pasture or rough grazing except for occasional pioneer forage crops

Source MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and Criteria for Grading the Quality of Agricultural Land MAFF Publications Alnwick

APPENDIX II

DEFINITION OF SOIL WETNESS CLASSES

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile

Wetness Class I

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

Wetness Class 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 not wet within 40 cm depth for more than 30 days in most years

Wetness Class 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 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 and 90 days in most years

Wetness Class IV

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

Wetness Class V

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

Wetness Class VI

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

Notes The number of days specified is not necessarily a continuous period

In most years is defined as more than 10 out of 20 years

Source Hodgson J M (Ed) (1997) Soil Survey Field Handbook Soil Survey Technical Monograph No 5 SSLRC Cranfield University

MOTTLE SIZE

EF	Extremely fine <1mm	**M**	Medium 5 15mm
VF	Very fine 1 2mm>	**C**	Coarse >15mm
F	Fine 2 5mm		

MOTTLE COLOUR May be described by Munsell notation or as ochreous (OM) or grey (GM)

ROOT CHANNELS In topsoil the presence of rusty root channels should also be noted

MANGANESE CONCRETIONS Assessed by volume

N	None		**M**	Many	20 40%
F	Few	<2%	**VM**	Very Many	>40%
C	Common	2 20%			

POROSITY

P	Poor	less than 0 5% biopores at least 0 5mm in diameter
G	Good	more than 0 5% biopores at least 0 5mm in diameter

ROOT ABUNDANCE

The number of roots per 100cm^2		Very Fine and Fine	Medium and Coarse
F	Few	1 10	1 or 2
C	Common	10 25	2 5
M	Many	25 200	>5
A	Abundant	>200	

ROOT SIZE

VF	Very fine	<1mm	**M**	Medium	2 5mm
F	Fine	1 2mm	**C**	Coarse	>5mm

HORIZON BOUNDARY DISTINCTNESS

Sharp	<0 5cm	**Gradual**	6 13cm
Abrupt	0 5 2 5cm	**Diffuse**	>13cm
Clear	2 5 6cm		

HORIZON BOUNDARY FORM Smooth wavy irregular or broken *

* See Soil Survey Field Handbook (Hodgson 1997) for details

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
SalmonSprings	Pit 1 (ASP 28)	3 West	Permanent grass	Av Rainfall 823 mm ATO 1431 day C FC Days 172 Climatic Grade 1 Exposure Grade 1	Landslip and foundered strata
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY		PSD SAMPLES TAKEN
61/97	26/9/97	SO 8500 9700	HLJ		None

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	23	MCL	10YR42	2%HR t tal (s)	FDFO (75YR56)	None				Good	MF + VF		Abrupt Smooth
2	64	(F)SCL	10YR54,56	0% (s)	FDFO (75YR56)	None	WKCSAB	Friable	Moderate	Good	CF+VF		Clear Smooth
3	95+	(F)SCL	10YR53,54	0% (s)	MDFO +G (75YR58) (25Y72)	None	WKCSAB (some WKCAb)	Friable	Moderate	Poor*[1]	FF + VF		

Profile Gleyed From 64 cm

Slowly Permeable Horizon From 64 cm

Wetness Class II

Wetness Grade 2

Available Water	Wheat	151 mm
	Potatoes	111 mm
Moisture Deficit	Wheat	90 mm
	Potatoes	77 mm
Moisture Balance	Wheat	61 mm
	Potatoes	34 mm

Droughtiness Grade 1 (Calculated to 120 cm)

Final ALC Grade 2

Main Limiting Factor(s) Wetness

Remarks *[1] Good in places but overall poor

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE			PARENT MATERIAL
Salmon Springs	Pit 2 (ASP 44)	5 West	Stubble	Av Rainfall ATO	854 mm 1374 day C	Landslip and foundered strata (Oolitic Limestone)
JOB NO 61/97	DATE 26/9/97	GRID REFERENCE SO 8560 0690	DESCRIBED BY HLJ	FC Days Climatic Grade Exposure Grade	178 1 1	PSD SAMPLES TAKEN None

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	28	MCL	10YR42	2% HR> 2 m (s) 26%HR<2 m (+d) 28% HR TOTAL	None	None				Good	CF +MVF		Clear Smooth
2	42	HCL	75YR44	35% HR 2 m( ) [1] 29% HR< 2 m (+ d) 64% HR TOTAL	None	None	MDFSAB	Friable	Good	Good	FF + MVF		Clear Smooth
3	70+	HCL	10YR64	65% HR TOTAL (s)*	None	None	MDFSAB	Friable	Good	Good	FF + MVF		

Profile Gleyed From	Not gleyed
Slowly Permeable Horizon From	No spl
Wetness Class	I
Wetness Grade	2

Available Water	Wheat	81 mm
	Potatoes	71 mm
Moisture Deficit	Wheat	90 mm
	Potatoes	77 mm
Moisture Balance	Wheat	9 mm
	Potatoes	6 mm
Droughtiness Grade	3a	(Calculated to 100 cm)

Final ALC Grade	3b
Main Limiting Factor(s)	Soil depth

Remarks

Hard rock is limestone
*[1] and *[2] pockets of soil within fractured rock
Drought is well into 3a using climate data specific to the pit site MBs are 4 and 0

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE			PARENT MATERIAL
Salmon Springs	Pit 3 (ASP 66)	3 West	Stubble	Av Rainfall ATO	845 mm 1412 day C	Landslip and foundered strata (Oolitic limestone)
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days Climatic Grade Exposure Grade	176 1 1	PSD SAMPLES TAKEN
61/97	29/9/97	SO 8520 0660	HLJ			None

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	27	MCL	10YR42	5% 2 cm (s) 24%< 2 m (d) 29%HR TOTAL	None	None				Good	MF + VF		Clear Smooth
2	47	HCL	10YR44	30% 2 m ( ) 35% 2 m (s +d) 65% HR TOTAL	None	None	MDMSAB	Friable	Good	Good	FF + MVF		Clear Smooth
3	80+	C	10YR64	70% HR TOTAL(s)	None	None	MDMSAB	Friable	Good	Good	FF + MVF		

Profile Gleyed From	Not Gleyed	Available Water	Wheat	85 mm	Final ALC Grade 3b
Slowly Permeable Horizon From	No spl		Potatoes	67 mm	Main Limiting Factor(s) Soil Depth
Wetness Class	I	Moisture Deficit	Wheat	90 mm	
Wetness Grade	2		Potatoes	77 mm	
		Moisture Balance	Wheat	5 mm	Remarks
			Potatoes	10 mm	
		Droughtiness Grade	3a	(Calculated to 120 cm)	

APPENDIX III

ABBREVIATIONS AND TERMS USED IN SURVEY DATA

Soil pit and auger boring information collected during ALC survey is held on a computer database and is reproduced in this report Terms used and abbreviations are set out below These conform to definitions contained in the Soil Survey Field Handbook (Hodgson 1997)

1 Terms used on computer database in order of occurrence

GRID REF National 100 km grid square and 8 figure grid reference

LAND USE At the time of survey

WHT	Wheat	**SBT**	Sugar Beet	**HTH**	Heathland
BAR	Barley	**BRA**	Brassicas	**BOG**	Bog or Marsh
OAT	Oats	**FCD**	Fodder Crops	**DCW**	Deciduous Wood
CER	Cereals	**FRT**	Soft and Top Fruit	**CFW**	Coniferous Woodland
MZE	Maize	**HRT**	Horticultural Crops	**PLO**	Ploughed
OSR	Oilseed Rape	**LEY**	Ley Grass	**FLW**	Fallow (inc Set aside)
POT	Potatoes	**PGR**	Permanent Pasture	**SAS**	Set Aside (where known)
LIN	Linseed	**RGR**	Rough Grazing	**OTH**	Other
BEN	Field Beans	**SCR**	Scrub		

GRDNT Gradient as estimated or measured by hand held optical clinometer

GLEY SPL Depth in centimetres to gleying or slowly permeable layer

AP (WHEAT/POTS) Crop adjusted available water capacity

MB (WHEAT/POTS) Moisture Balance (Crop adjusted AP crop potential MD)

DRT Best grade according to soil droughtiness

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				

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				

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)

MOTTLE COL Mottle colour using Munsell notation

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%+

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

PED COL Ped face colour using Munsell notation

GLEY If the soil horizon is gleyed a Y will appear in this column If slightly gleyed an S will appear

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 or metamorphic rock

Stone contents are given in % by volume for sizes >2cm >6cm and total stone >2mm

STRUCT The degree of development size and shape of soil peds are described using the following notation

Degree of development	**WA**	Weakly developed Adherent	**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		

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		

SUBS STR Subsoil structural condition recorded for the purpose of calculating profile droughtiness **G** Good **M** Moderate **P** Poor

POR Soil porosity If a soil horizon has poor porosity with less than 0 5% biopores >0 5mm a Y will appear in this column

IMP If the profile is impenetrable to rooting a Y will appear in this column at the appropriate horizon

SPL Slowly permeable layer If the soil horizon is slowly permeable a Y will appear in this column

CALC If the soil horizon is calcareous with naturally occurring calcium carbonate exceeding 1% a Y will appear this column

2 Additional terms and abbreviations used mainly in soil pit descriptions

STONE ASSESSMENT

VIS	Visual	**S**	Sieve	**D**	Displacement